

Environmental Monitoring Report

PUBLIC

Project Number: 51077-003
Quarterly Report (January - March 2024)
May 2024

Maldives: Greater Male Waste-to-Energy Project

Part A: Main Report

Prepared by the Ministry of Climate Change, Environment and Energy for the Ministry of Finance and the Asian Development Bank (ADB).

CURRENCY EQUIVALENTS

(As of 1 January 2024)

Currency unit	–	Equivalent
1 MVR	=	\$ 0.065
\$1.00	=	MVR15.46

ABBREVIATIONS

ADB	–	Asian Development Bank
CVRA	–	climate vulnerability and risk assessment
DBO	–	design-build-operate
EA	–	executing agency
EIA	–	environmental impact assessment
EMP	–	environmental management plan
EPA	–	Environmental Protection Agency
ER	–	employer’s representative
IA	–	implementing agency
IEE	–	initial environmental examination
MoCCEE	–	Ministry of Climate Change, Environment and Energy
MoF	–	Ministry of Finance
MTCC	–	Maldives Transport and Contracting Company
PMDCSC	–	project management, design and construction supervision consultant
PMU	–	project management unit
URA	–	Utility Regulatory Authority of the Maldives
WAMCO	–	Waste Management Corporation Limited
WTE	–	waste-to-energy

WEIGHTS AND MEASURES

°C	degree Celsius
dB	decibel
tpd	tons per day
cm	centimetre
km	kilometre
kg	kilogram
MW	megawatt
kW	kilowatt
µg/L	microgram per litre
µg/m ³	microgram per cubicmetre

NOTE

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

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TABLE OF CONTENTS

I.	INTRODUCTION	7
A.	GREATER MALE WASTE-TO-ENERGY PROJECT	7
B.	PROJECT OUTCOME AND OUTPUTS	7
C.	ENVIRONMENTAL CATEGORY	8
D.	ABOUT THIS REPORT	8
II.	PROJECT IMPLEMENTATION ARRANGEMENTS	10
A.	PROJECT AND SAFEGUARDS IMPLEMENTATION ARRANGEMENTS	10
B.	STATUS OF STAFF RESOURCES	10
III.	PROJECT IMPLEMENTATION STATUS	13
A.	STATUS OF BIDDING AND CONTRACT AWARD	13
B.	IMPLEMENTATION STATUS	14
IV.	COMPLIANCE STATUS WITH NATIONAL/STATE/LOCAL STATUTORY ENVIRONMENTAL REQUIREMENTS	16
A.	STATUS OF CLEARANCES	16
V.	COMPLIANCE STATUS WITH ENVIRONMENTAL REQUIREMENTS	19
A.	COMPLIANCE WITH LOAN COVENANTS	19
B.	STATUS OF ENVIRONMENTAL ASSESSMENT REPORTS AND APPROVAL	22
C.	SAFEGUARDS IN BID DOCUMENTS AND CONTRACTS	23
VI.	STATUS OF EMP IMPLEMENTATION	24
A.	DETAILS OF SITE VISITS/FIELD VERIFICATIONS BY SAFEGUARD STAFF	24
B.	IMPLEMENTATION OF DESIGN AND PRE-CONSTRUCTION STAGE EMP	25
C.	IMPLEMENTATION OF CONSTRUCTION STAGE EMP	51
D.	IMPLEMENTATION OF HEALTH & SAFETY COVID-19 PLAN	119
E.	KEY SITE OBSERVATIONS AND ACTION TAKEN	119
F.	PROJECT CONSTRUCTION RELATED ACCIDENTS AND INCIDENTS	123
G.	UNANTICIPATED IMPACTS	124
VII.	ENVIRONMENTAL MONITORING	125
A.	MONITORING ACTIVITIES - PROPOSED AND CONDUCTED	125
B.	MONITORING RESULTS	127
VIII.	TRAINING AND CAPACITY BUILDING ACTIVITIES	146
IX.	PUBLIC CONSULTATION	150
X.	GRIEVANCE REDRESS MECHANISM	151
A.	GRIEVANCE REDRESS MECHANISM	151
B.	COMPLAINTS RECEIVED	152
XI.	FINDINGS &RECOMMENDATIONS	154
A.	FINDINGS AND RECOMMENDATIONS	154

List of Tables

Table 1: Subprojects/Packages	8
Table 2: Environmental Safeguards Team	11
Table 3: Status of Contract Packages	13
Table 4: Implementation Status of Civil Works Contract Packages.....	14
Table 5: Status of Statutory Clearances.....	16
Table 6: Status of Compliance with Loan Covenants	19
Table 7: Status of the EIA Report.....	23
Table 8: Field Verification Visits by Safeguards Supervision and Monitoring Staff.....	24
Table 9: Design/Pre-Construction Mitigation Measures Implementation & Compliance	26
Table 10: Status of HSE Plans mentioned in the CEMP	51
Table 11: Construction Mitigation Measures Implementation & Compliance	53
Table 12: Site Observations and Current Status.....	120
Table 13: Details of Construction related incidents (reporting period).....	123
Table 14: Construction related incidents	124
Table 15: Additional Baseline Data Gathering During Construction Stage.....	125
Table 16: Description of Ambient Air Quality Sampling Stations.....	129
Table 17: Results of Ambient Air Quality Sampling, January, February and March 2024	130
Table 18: Description of Noise Sampling Stations.....	131
Table 19: Results of Ambient Noise Level Measurements.....	133
Table 20: Description of OHS Monitoring Stations (Air quality, Noise and Illumination levels) .	134
Table 21 Results of OHS Air Quality Monitoring within the site.....	135
Table 22 Results of OHS Illumination Monitoring within the site	136
Table 23 Results of OHS Noise Monitoring within the site	136
Table 24: Results of Marine Water Quality Sampling, February 2024.....	138
Table 25: Groundwater Quality Results, February 2024.....	141
Table 26: Water quality for domestic supply of water used in construction camp during January- March -24.....	142
Table 27: Treated Wastewater Quality from WWTP/STP during January, February and March – 2024	143
Table 28: Discharge Water Quality from Dewatering during January, February and March – 2024	144
Table 29: Training and Capacity building activities to be conducted by DBO/ EPC contractor during April, 2024	148
Table 30: Details of Complaints received and Status.....	153
Table 31: Status of Key Issues identified in previous QEMR (October to December-23)	155
Table 32: Key Issues identified and Proposed Remedial Measures.....	160

List of Figures

Figure 1:	Project Implementation Area	9
Figure 2:	Proposed WTE Site in Thilafushi	9
Figure 3:	Ambient Air Quality Sampling Stations	128
Figure 4:	Noise Sampling Stations	132
Figure 5:	Marine Water Quality Sampling Stations	137
Figure 6:	Groundwater Sampling Stations	140
Figure 7:	Underwater Marine Survey Locations (M8, M9 and M10)	145
Figure 8:	Grievance Redress Mechanism Flow Chart.....	151

Appendixes

Appendix 1	Status of permits applicable during construction and copies of permits obtained during reporting period.
Appendix 2	Site Inspection Reports by PMDCSC from January – March 2024, including Site Inspection Photos
Appendix 3	Results of Monitoring (Air Quality, Noise, Water and Wastewater Quality and Illumination level)
Appendix 4	Marine ecology survey report conducted in February 2024
Appendix 5	MOM of stakeholder consultation held on Feb 18 2024
Appendix 6	Other Site Photos (from Contractor)

I. INTRODUCTION

A. Greater Male Waste-to-Energy Project

1. The project will establish a sustainable regional solid waste treatment system in the Greater Malé capital region by (i) developing treatment (proven waste-to-energy [WTE] technology), recycling and disposal infrastructure; (ii) strengthening institutional capacities for sustainable solid waste services delivery and environmental monitoring; and (iii) improving public awareness on WTE and reduce-reuse-recycle (3Rs). The project is designed to reduce disaster risk and improve climate change resilience while creating a cleaner environment and reducing greenhouse gas (GHG) emissions.
2. The Greater Malé capital region and its outer islands (see Figure 1 for the project implementation area) suffer from inadequate collection and haphazard disposal of solid waste leading to environmental pollution and deteriorating livability. The project area covers 32 inhabited islands in the North Ari Atoll (Alifu Alifu Atoll), South Ari Atoll (Alifu Dhaalu Atoll), Malé' Atoll (Kaafu Atoll) and Vaavu Atoll, including the capital city of Malé, with a total population of 295,000 (53% of Maldives) as stated by the National Bureau of Statistics (2018), Maldives Population Projections 2014-2054.
3. Lack of a sustainable system to manage the 836 tons per day (tpd) of solid waste (Feasibility Study, 2018) generated in the project area resulted in waste spillage into the ocean, and open dumping and burning of garbage at the 30-year-old, 10-hectare dumpsite on Thilafushi Island which has no pollution control measures, creating a public health and environmental hazard. Plumes of smoke visible from the capital Malé, the international airport and nearby resorts compromise air quality and pose nuisance to residents and tourists, while leachate and plastics contaminate the surrounding marine environment. This poses a critical threat to tourism and fisheries, both of which rely heavily on the country's pristine environment and are cornerstones to Maldives' economy. This project will establish a sustainable regional solid waste treatment and disposal system. Proposed project site is shown in Figure 2.

B. Project Outcome and Outputs

4. The project will have two outputs and Table 1 presents the subprojects and/or packages:
 - 4.1. **Output 1:** Disaster- and climate-resilient regional waste management facility developed. This will include (i) a 500 tpd WTE plant with 15-year operations and maintenance (O&M) contract, including two treatment lines of 250 tpd each, energy recovery and air pollution control (APC) system; and (ii) a landfill for safe disposal of APC residues and non-marketable bottom ashes. The facility is expected to export 10.5 megawatt (MW) of electricity to the grid and will be designed to accommodate a third 250 tpd treatment line, required to respond to further demand increase. All facilities will adopt disaster- and climate-resilient features such as raised floor elevations, flood-proof mechanical and electrical equipment and landfill cells, and enhanced drainage systems.
 - 4.2. **Output 2:** Institutional capacity in sustainable solid waste management (SWM) services delivery (WTE) and environmental monitoring strengthened and public awareness on WTE and 3Rs improved. This will include (i) capacity building support in monitoring sustainable WTE operations, including the Ministry of Climate Change, Environment and Energy (MoCCEE) and the Environmental Protection Agency (EPA) institutional capacity strengthening and training to monitor WTE O&M and environmental standards; (ii) public awareness on WTE and 3Rs in Greater Malé improved; and (iii) project management and supervision consultant support provided.

Table 1: Subprojects/Packages

No.	Subproject / package	Type of contract
1	WTE plant and auxiliary facilities of plant with 15 years O&M contract	Design-Build-Operate (DBO)
2	Project management and supervision	Consulting services contract
3	Community awareness consultant	Consulting services contract
4	Individual Environmental Monitor	Consulting services contract
5	Joint Crediting Mechanism Auditor	Consulting services contract

C. Environmental Category

5. The project is classified as environmental category A according to Safeguard Policy Statement (SPS) 2009 of the Asian development Bank (ADB) due to construction and operation of a large WTE facility which may have potential significant adverse impacts. This project is classified as a Schedule D project by the Environmental Protection Agency (EPA), Republic of Maldives based on the Regulation on the Preparation of Environmental Impact Assessment (EIA) Report (2012/R-27). The Approval/Decision Statement for this project has been received from the EPA on 21 January 2020 and extended until December 2021. As site preparation work and demarcation work and site levelling work started within the EIA extension period, the EIA is valid till the end of project construction phase and operation phase. However, any change or any new activity which require permit should follow a screening process with the EPA. As such an addendum was prepared for construction and operation of a domestic sewerage treatment plant which was not covered in the EIA. ¹

D. About this Report

6. This is the quarterly environmental monitoring report (QEMR) prepared by the Project Management Unit (PMU), the Ministry of Climate Change, Environment and Energy (MoCCEE), for the monitoring period from 1st January 2024 to 31st March 2024. This QEMR provides the status of project implementation, presents the preparation and implementation of environmental management, details of mitigation and monitoring actions, and status reports of compliance with the environmental management plan (EMP) and ADB loan covenants. This report covers the contract packages implemented under this project.

¹ According to EIA regulation 2012 validity of EIA is one year and can only be extended once for another year. Before validity of decision statement expires, construction related work such as site clearance and mobilization of equipment and materials can be carried out. EPA considers such preliminary works as site activities as project initiation. Once a project is initiated within the validity period of EIA decision statement validity period of the permit will remain.

Figure 1: Project Implementation Area

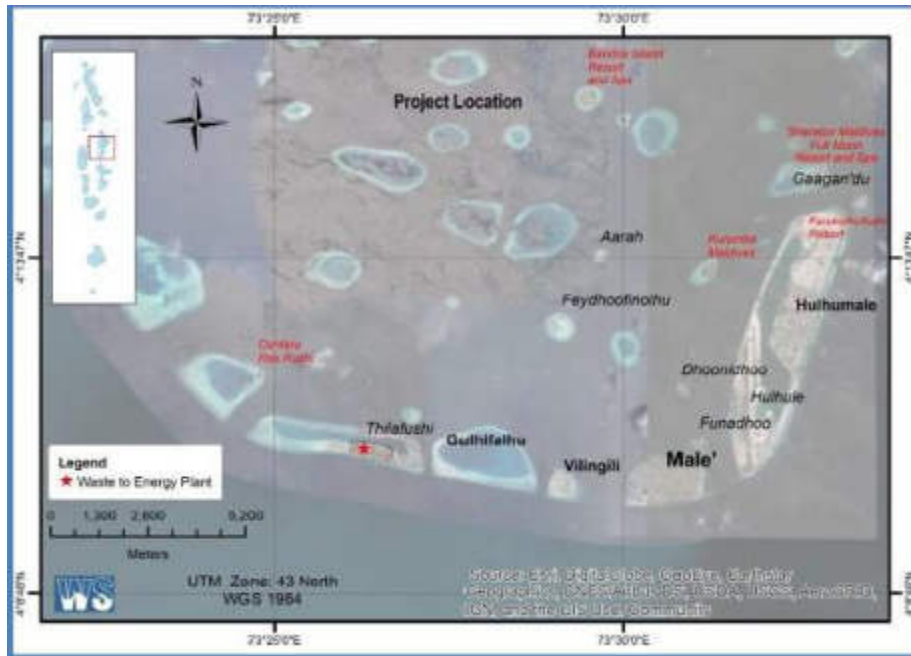


Figure 2: Proposed WTE Site in Thilafushi



II. PROJECT IMPLEMENTATION ARRANGEMENTS

A. Project and Safeguards Implementation Arrangements

7. The project's executing agency (EA) is the Ministry of Finance (MoF), while the implementing agency (IA) is the MoCCEE. The PMU at the MoCCEE will assist in: (i) project management; and (ii) function as project implementation unit to assist in day-to-day project implementation and operation of water supply, water resource management, and capacity building components.
8. A project steering committee (PSC), with membership comprising of officials from relevant ministries, representatives from other relevant institutions/agencies, provides overall policy and strategic guidance to the Project and ensures collaboration among central level agencies. The PSC is Chaired by the Minister, MoCCEE (or a senior official designated by the Minister), and representative from Ministry of Finance, Ministry of Housing, Land and Urban Development, Waste Management Corporation Limited (WAMCO), Ministry of Tourism, Ministry of Health, Ministry of Social and Family Development, Local Government Authority, Environmental Protection Agency and State Electric Company Limited (STELCO).
9. MoCCEE, through the PMU, is responsible for ensuring the project's compliance with the ADB loan covenants. Headed by the Project Director, PMU is responsible for the overall project and for the day-to-day implementation of the project. The PMU is staffed with technical, financial, safeguards, capacity building/governance and procurement officers to manage all technical, procurement, safeguards, and loan account administration. The PMU's key technical and managerial staff are supported by the Project Management Design and Construction Supervision Consultant (PMDSC).
10. PMU is responsible for the implementation of this project in compliance with ADB's SPS 2009 and the applicable government rules and regulations. PMU, through a Safeguards Specialist, oversees the implementation and monitoring of environmental safeguards and is responsible for implementation, monitoring, reporting and compliance with safeguards related ADB loan covenants. PMU is supported by various experts, and the details of consultants, DBO contractor and monitoring experts involved in the project are given below:
 - 10.1. Consultants for implementation and monitoring. PMU is assisted by the Environmental specialist consultants of PMDCSC in environmental safeguards.
 - 10.2. DBO Contractor. The WTE plant will be designed, constructed, operated, and maintained by a single contractor using the DBO contract. The O&M period under the DBO Contract will be 15 years. The DBO Contractor is responsible for the implementation of the EMP at all stages of the project. The DBO Contractor includes a full-time Environmental Specialist with extensive experience.
 - 10.3. External monitoring. As required by SPS 2009 for a category A project, an Independent External Monitor (IEM), an environmental expert has been contracted for this project to verify its monitoring information and reports directly to ADB. The IEM shall not be involved in the day-to-day project implementation or supervision of the project but will closely coordinate his/her site visits and work with the PMU.

B. Status of Staff Resources

11. **Current status.** Table 2 shows the environmental safeguards staff engaged at all levels in the project including project agencies, consultants, contractors, and monitoring personnel. As of the end of this reporting period, the Social and Environmental Safeguards Specialist

at the PMU resigned effective 15th March 2024 and a replacement has been contracted as of 28th March 2024. According to the DBO contractor's obligations, three health and safety inspectors and three environmental inspectors must be on site, one for each shift. However, there are two subordinates for environment and health and safety as at present most of construction work is executed/envisaged in one shift and on a need basis in second shift.

Table 2: Environmental Safeguards Team

No	Positions	Name of the expert/staff	Contact Number & Email	Remarks
A PMU				
1	Social and Environmental Safeguards Specialist	Ibrahim Mohamed, Fathimath Yamna Mohamed	+9609995153 fathimath.yamna@environment.gov.mv	Ibrahim Mohamed left his position on the 15 th of March 2024 and Fathimath Yamna Mohamed was contracted on the 28 th of March 2024.
B PMDCSC (Fichtner GmbH& Co. KG together with Renewable Energy Maldives)				
1	Team Leader	Javier Varon	+34608147897 Javier.varon@fichtner.es	-
2	Project Manager	Maximilian Schrade	+601112201489 Maximilian.schrade@fichtner.de	-
3	Environmental Expert (international)	Sunil Chandra Gupta	+91- 9759955477, 9412230242 heenagrwal1@yahoo.co.uk	-
4	Environmental Officer (national)	Mariyam Rifga	+9607799374 maryam.rifga@outlook.com	-
C DBO Contractor (URBASER SA)				
1	Project Manager, URBASER (DBO contractor)	Javier Gamero Sutil	+34914122000 / +34 914122907 infoMaldivesWtE@urbaser.com	-
2	EHS Manager, URBASER (DBO contractor)	Roshan Thomas	+960 911 0165 rthomas@urbaser.com	-
3	Contractor's Engineers (Project Manager)	Raymond Lee	+6590057789 rlee@ramboll.com	Ramboll as a company has been contracted as contractor's engineer by URBASER on 15 th March 2022
4	HSE Manager	Sedat Cot	sedat.cot@aawte.com	Joined on 16 August 2023 as replacement of Mr. Ta Hoa Binh.

No	Positions	Name of the expert/staff	Contact Number & Email	Remarks
				Appointed as HSE Manager from 24 th December 2023.
5	Environmental Manager	Sujith Sudhakaran	+9609502431 sujith@aawte.com	Joined as an Environmental Manager on 3 rd January 2024
6	HS manager	Dhamothara Kannan	+9609188331 dhamu@aawte.com	-
7	Environmental Consultant (national)	Dr. Mahmood Riyaz	+9607890307 mahmood.riyaz@gmail.com	-
D	Independent External Monitor			
1	Independent environmental monitoring expert	Nicholas Skinner	nick.skinner@vistaenvironment.com 0046736504583	-

III. PROJECT IMPLEMENTATION STATUS

A. Status of Bidding and Contract Award

12. The project has five contract packages. Details of contract packages are given in Table 3.

Table 3: Status of Contract Packages

No.	Package Number/Name	Project components	Status	Name of contractor	Duration of contract	Contract start date
1	DBO a WTE plant in Thilafushi	WTE plant and balance of plant with 15 years O&M	Contract awarded	Urbaser SA	18.5 years	10 October 2021
2	Project management, design and construction supervision	Project management, design and construction supervision	Contract awarded	Fichtner GmbH & Co. KG and Renewable Energy Maldives (REM)	66 months	30 January 2022
3	Community/Public Awareness consultant	Community Awareness consultant	Four consulting organizations have been shortlisted on the basis of EOI on March 6 2023 and the proposals were submitted on 7 September 2023. Technical evaluation is still ongoing.	-	-	Consultant was not finalized in this quarter. It will be finalized within the next quarter.
4	Individual Environmental Monitor	Independent external monitor for environment category A project	Contract signed. Site visits ongoing	Vista Environnent AB - Nicholas Skinner	60 months	19 December 2021

No.	Package Number/Name	Project components	Status	Name of contractor	Duration of contract	Contract start date
5	Joint Crediting Mechanism (JCM) Auditor	To validate proposed JCM project and verify GHG emissions reduction	Not advertised yet and to be hired in Q3 of 2024	-	-	-

B. Implementation Status

13. Implementation status of awarded civil work contract packages is presented in Table 4.

Table 4: Implementation Status of Civil Works Contract Packages

No.	Package	Progress during reporting period	Cumulative progress as of 31 March 2024	List of main activities/works conducted during reporting period	Activities / Components completed to date
1	WTE plant and balance of plant with 15 years O&M.	Design: 16.36% Construction: 5.43% Procurement 2.46% Overall Progress 4.58%	Design: 65.21% Construction: 11.20% Procurement 22.73% Overall Progress 16.95%	Design, documentation, monitoring <ul style="list-style-type: none"> ▪ Detailed design of foundation and boiler components ongoing. ▪ Monitoring of ambient air quality, noise level, ground water and marine water quality is ongoing. ▪ Preparation /review / finalization of HSE Plans. ▪ Dewatering permits for WtE Building excavation from URA and excavation permits from Urbanco (HDC) for main process 	<ul style="list-style-type: none"> ▪ Geotechnical investigation. ▪ Concept design ▪ Permitting design ▪ EIA update based on conceptual design. ▪ Installation of wastewater treatment plant (WWTP) ▪ Foundation detailed design of the main process building approved by ER. ▪ Bunker area excavation to 3.7m below ground level completed and sheet piling completed. ▪ Spun pile driving, Pile

No.	Package	Progress during reporting period	Cumulative progress as of 31 March 2024	List of main activities/works conducted during reporting period	Activities / Components completed to date
				<p>building and bunker.</p> <ul style="list-style-type: none"> ▪ Detailed design is ongoing. ▪ Development of construction related method statements <p>construction works.</p> <ul style="list-style-type: none"> ▪ Continuous dewatering at the bunker area is ongoing. ▪ Concrete for foundation slabs and walls in the Bunker area is ongoing. ▪ Backfilling between the pile caps in the Main Process Building area is ongoing. ▪ 	<p>caps concrete work has been completed for the bunker area except for 4 pile caps.</p> <ul style="list-style-type: none"> ▪ Spun pile static loading for turbine area completed. ▪ Commissioning and operation of batching plant.

IV. COMPLIANCE STATUS WITH NATIONAL/STATE/LOCAL STATUTORY ENVIRONMENTAL REQUIREMENTS

A. Status of Clearances

14. Details of clearances, permits and approvals required for the implementation of the projects, status, and further actions required for compliance are presented in Table 5 and copy of each permit obtained during reporting period is enclosed as Appendix-1.

Table 5: Status of Statutory Clearances

Clearance/Permit Required	Status	Further Actions/Remarks
DBO Contract		
Environmental Clearance from EPA	<ul style="list-style-type: none"> ▪ Decision Statement (DS) obtained on 21 January 2020 and extended until 31 December 2021 ▪ EIA Addendum for commissioning of domestic Wastewater Treatment Plant (WWTP) at the WtE site has been approved by EPA and the documents were sent to URA for approval on 23 February 2023. URA issued the permit for operation of STP via letter dated 12 April 2023. 	<ul style="list-style-type: none"> ▪ There is no need to apply or renew for the construction phase as site clearance and levelling works started on 28 December 2021 by the contractor and has been informed to EPA. As site works already started no renewal of permit required from EPA. Site works undertaken after levelling involved securing of required Government permits, boundary fencing, setting up of project site office. ▪ Monitoring program outlined in the EIA are being implemented during construction phase and summary of environmental monitoring reports will be submitted to MoCCEE as outlined in paragraph 8 of the Decision Statement. Failure to submit may result in the suspension or revocation of the permit. All quarterly environmental monitoring reports which include all details of monitoring are submitted to EPA. The last report was submitted on 10th December 2023.
Dewatering Permit	<ul style="list-style-type: none"> • Dewatering permit for WtE Building excavation has been renewed from URA on 24.01.24, 27.02.24 and 26.03.24 as its one-time validity is for 28 days. • Location permit for dewatering from HDC has been extended up to 25.03.24. However, renewal of same is in process. 	<ul style="list-style-type: none"> ▪ Must be obtained from the Maldives Utility Regulatory Authority (URA) after every 28 days till completion of dewatering. ▪ Samples of water to be discharged into sea must be tested for parameters as specified by URA on monthly basis. ▪ For dewatering permit the required water quality tests are conducted and results submitted as per compliance requirement. ▪ Location permit is to be obtained for laying pipeline and need to be renewed after 28 days.

Clearance/Permit Required	Status	Further Actions/Remarks
Sewerage and wastewater treatment permit from the Utility Regulatory Agency (URA).	<ul style="list-style-type: none"> ▪ Permit via ref no 485-TE/PRIV/2023/233 dated 12 April 2023 has been obtained from URA to start operation of domestic WWTP ▪ Unit has started operation from May 2023. ▪ Submission of monthly testing report from the discharge point of unit to the URA has been started from June 2023. 	<ul style="list-style-type: none"> ▪ For discharging of treated grey water or black water to sea or ground, permit is required. Permit has been obtained ▪ Monthly testing report from discharge point of unit is to be submitted to URA on regular basis. ▪ Monthly reports of treated water quality are submitted to URA
Operation of DG sets	<ul style="list-style-type: none"> ▪ Application has been submitted to URA and a temporary permit is given via an official email. ▪ At present DG sets of total capacity 200 KW are being used at project site while anticipated total capacity of DG sets is 600 KW during construction phase. 	Maldives Utility Regulatory Authority (URA). The URA has given a conditional approval to operate gen sets on 18 th September 2023 via an official email. All requirements are fulfilled by contractor, but final approval is pending due to URA being unable to process fees. Hence, waiting for this issue to be resolved by URA.
Excavation	Permit for excavation of area for WtE building has been extended by HDC until completion of excavation work in December-23.	<ul style="list-style-type: none"> ▪ Must be obtained from the HDC after every 14 days till completion of excavation. ▪ Need to comply with conditions as stipulated in permit. The conditions state that no disturbance should be to reclamation work ongoing on Thilafushi western part and cable relocation work on site. Contractor has complied with this requirement.
Desalination plant registration and License to operate desalination plant from the URA	Yet to be obtained as same Will be required during the operation stage	For the desalination plant, it is required to submit the EIA Decision Note for EIA report and completed application forms with all details of the plant to be registered must be submitted to URA. A copy of the relevant section of this EIA may be appended to the forms as justification for the desalination plant.
Fire Safety (Kitchen and Worker Accommodation)	Permit from MNDF (Fire Approval Letter) has been obtained on 15 February 2023 for accommodations	Maldives National Defense Force (MNDF) has provided permit for fire safety to camp facilities in operation including kitchen and workers accommodation. No fire hydrants required according to local regulations.

Clearance/Permit Required	Status	Further Actions/Remarks
	<p>and offices at the camp site for the construction phase.</p> <ul style="list-style-type: none"> ▪ Inspection was conducted by MNDF on 3.07.23 for verification of firefighting system installed for compliance with standards. 	

V. COMPLIANCE STATUS WITH ENVIRONMENTAL REQUIREMENTS

A. Compliance with Loan Covenants

15. The status of compliance with environmental safeguard related loan covenants is given in Table 6. All loan covenants are being complied with

Table 6: Status of Compliance with Loan Covenants

Loan Agreement	Covenant	Compliance Status	Proposed actions, if any
Schedule 4, paragraph 4 Environment	The Borrower, through the Project Executing Agency and the Implementing Agency, shall ensure that the preparation, design, construction, implementation, operation and decommissioning of the Project and all Project facilities comply with (a) all applicable laws and regulations of the Borrower relating to environment, health and safety (b) the Environmental Safeguards; and (c) all measures and requirements set forth in the EIA, the EMP, and any corrective or preventative actions set forth in a safeguards monitoring report.	Being complied. PMU is continuously monitoring to ensure that Project activities follow all applicable laws and regulations and the Safeguards Specialist of the PMU ensures that all measures and requirements set forth in the EIA and EMP are complied with.	
Schedule 4, paragraph 6 Human and Financial Resources to Implement	The borrower shall make available necessary budgetary and human resources to fully implement the EMPs.	Being complied. The Social and Environmental Safeguard Specialist and PMDCSC are assisting PMU in monitoring and in	

Loan Agreement	Covenant	Compliance Status	Proposed actions, if any
Safeguards Requirements		reviewing of documents and approval process.	
Schedule 4, paragraph 7 Safeguards-Related Provisions in Bidding Documents and Works Contracts	<p>The Borrower through the Project Executing Agency and the Implementing Agency, shall ensure that all bidding documents and contracts for Works contain provisions that require the contractors to:</p> <p>a) comply with the measures relevant to the contractor set forth in the EIA and the EMP, and any corrective or preventative actions set forth in a Safeguards Monitoring Report;</p> <p>b) make available a budget for all such environmental measures; and,</p> <p>c) provide the Borrower with a written notice of any unanticipated environmental, resettlement or indigenous peoples risks or impacts that arise during construction, implementation or operation of the Project that were not</p>	<ul style="list-style-type: none"> • Complied. All bidding documents related to the project included the EIA and the EMP, and compliance have been ensured by the Safeguards Specialist, PMU. • EIA update considering approved conceptual design details, prepared by contractor has been approved in September-23 and is in use. 	<ul style="list-style-type: none"> • Any updated version of the EIA will be provided to the Contractor. Contractor shall be required to comply with all relevant requirements in the updated EIA (including any new requirements not included in the draft EIA and/or any amended requirements from the draft EIA). • As per contract, further EIA update is to be made considering the approved design details which is still under process of finalization.

Loan Agreement	Covenant	Compliance Status	Proposed actions, if any
	considered in the EIA and the EMP.		
Schedule 4, paragraph 8 Safeguards Monitoring and Reporting	The Borrower, through the Project Executing Agency and the Implementing Agency, shall do the following: a) submit quarterly Safeguards Monitoring Reports to ADB during construction of the project facilities and semi- annual Safeguards Monitoring Reports thereafter, and disclose relevant information from such reports to affected persons promptly upon submission; b) if any unanticipated environmental and/or social risks and impacts arise during construction, implementation or operation of the Project that were not considered in the EIA and the EMP, promptly inform ADB of this occurrence of each risks or impacts, with detailed description of the	Being complied. Environmental monitoring reports are submitted to ADB accordingly and the Independent External Monitor has been engaged on 19 December 2021 to verify the monitoring information of the project. Any breach or potential breach will be reported.	-

Loan Agreement	Covenant	Compliance Status	Proposed actions, if any
	<p>event and proposed corrective action plan;</p> <p>c) no later than 3 months after the Effective Date, engage qualified and experienced external experts or qualified NGOs under a selection process and terms of reference acceptable to ADB, to verify information produced through the project monitoring process and facilitate the carrying out of any verification activities by such external experts; and,</p> <p>d) report any actual or potential breach of compliance with the measures and requirements set forth in the EMP promptly after becoming aware of the breach.</p>		

B. Status of Environmental Assessment Reports and Approval

16. The Environmental Impact Assessment (EIA) Report has been cleared by ADB and disclosed in their website in July 2020 as complying with the requirements of SPS 2009. The EIA report has been further updated by the DBO Contractor considering the approved concept design and baseline environment monitoring results during pre-construction activity, reviewed, and cleared by PMDCSC / PMU and submitted to ADB. Updated EIA report has been cleared by ADB. Table 7 presents the status of the EIA report.

Table 7: Status of the EIA Report

No.	Package	Status		Remarks
		Concept Design	Detailed Design	
1	WTE plant	EIA update considering change in power production from 10 MW to 13 MW capacity and the required additional baseline data, as well as the environmental monitoring results during pre-construction activity has been approved in September-2023.	In the process EIA will be further updated with reflect the detailed design	<ul style="list-style-type: none"> ▪ Draft EIA disclosed in ADB website in December 2019 ▪ Updated draft EIA disclosed in ADB website in March 2020 and July 2020 provide explanatory notes for the updates. ▪ The updated EIA is disclosed by ADB on 11th September 2023 ▪ Draft and updated EIA reports also disclosed on implementing agency / project website. ▪ Also, EIA update with air quality dispersion modeling, thermal plume modeling, and other appropriate updates will be done based on the detailed design by the DBO Contractor after approval of the detailed design.

17. The link for the EIA update disclosed in July 2020 at the ADB website is <https://www.adb.org/projects/documents/mld-51077-003-eia-2> while the link for the project website is <https://www.environment.gov.mv/v2/en/download/10368>. The link for EIA updated in August 2023 in ADB website is <https://www.adb.org/projects/documents/mld-51077-003-eia-3> and link from Project website is https://mymaldiveshome.environment.gov.mv/knowledge_articles/environmental-impact-assessment-greater-male-waste-to-energy-project-waste-to-energy-plant-part-a/

C. Safeguards in Bid Documents and Contracts

18. The EIA including the EMP has been included in the bid documents as well as in the DBO Contract for implementation and compliance.

VI. STATUS OF EMP IMPLEMENTATION

A. Details of site visits/field verifications by Safeguard Staff

19. Table 8 provides the details of field/construction site visits conducted by the environmental safeguards' officers/experts for supervision and monitoring. The purpose of the site visits was to ensure compliance to contractual obligations on the HSE aspects including the status of documents (CEMP, CEMP Guide, H &S Plan, SOPs and others) for pre-construction and construction period, and the HSE requirements during pre-construction and construction period etc.

Table 8: Field Verification Visits by Safeguards Supervision and Monitoring Staff

No	Position of staff/expert	Name	Date of visit	Purpose of visit	Name of work sites visited	Indicate if the onsite environmental staff of the contractor is available onsite during the visit
1	PMU Safeguards Specialist	Dr Ibrahim Mohamed	21 st January and 27 th February	Inspection	WtE facility construction site in Thilafushi	Yes
2	<u>PMDCSC</u> : Site Engineer	Sofi bin Ismail	Deputed on project site on full time basis.	Supervision		
3	<u>PMDCSC</u> : Deputy Team Leader	Naahee Nazim	<ul style="list-style-type: none"> • 3rd, 15th, 16th, 17th, 25th and 30th January • 13th and 27th February • 06th and 27th March 	Inspection		
5	PMDCSC: Local Environment Safeguard	Mariyam Rifga	<ul style="list-style-type: none"> • 17th January • 25th January • 06th and 27th March 	Site visit with ADB project review mission		
				Inspection		

20. The inspections included assessments of signages, compliance on personal protective equipment usage, heavy machinery operation procedures and logs of activities. The

verification of baseline environmental monitoring is also part of the scope of work. Reports of onsite inspections done by the PMDCSC in January, February and March 2024 are enclosed as Appendix-2.

B. Implementation of Design and Pre-construction Stage EMP

21. Table 9 presents the status of the EMP implementation during the design and pre-construction stage. Table 10 was based on Table 64 (Environmental Management Plan Matrix) from the EIA (July 2020) which was disclosed in ADB website as well as in the project website. The design EMP being implemented and mitigation measures shall be duly integrated into the project detailed design.

Table 9: Design/Pre-Construction Mitigation Measures Implementation & Compliance

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
	Category of compliance				<i>“Complied”, “Being complied”, “Partially complied”, “Not complied”²</i>
1	Invitation for Bids	<ul style="list-style-type: none"> ▪ No bidding documents shall be issued without having the mitigation measures and monitoring requirements in the EIA report included in the safeguard clauses of technical specifications in bidding and contract documents. 	<ul style="list-style-type: none"> ▪ Bidding and contract documents include safeguard provisions 	<ul style="list-style-type: none"> ▪ Completed 	<ul style="list-style-type: none"> ▪ Complied
2	Locating intake and outfall of cooling/thermal water.	<ul style="list-style-type: none"> ▪ If necessary, undertake coral and benthic study following Reef Check protocol. ▪ Confirm that the pre-identified best location for intake and outfall is acceptable to the DBO Contractor. If changes are planned, the DBO Contractor shall ensure that withdrawal of cooling water and discharge of 	<ul style="list-style-type: none"> ▪ Findings of marine ecological survey being conducted ▪ The intake and outfall locations identified in the initial design still remains. However, the depth and locations may get changed due to proposed reclamation work by Maldivian authority in 	<ul style="list-style-type: none"> ▪ Marine ecological survey is being conducted on quarterly basis. ▪ Modelling has been carried out as part of approved EIA for previous intake and outfall locations and marine ecological survey is being conducted on quarterly basis. 	<ul style="list-style-type: none"> ▪ Being complied ▪ Being complied

² Complied: Mitigation measures have been implemented, Being complied: Some mitigation measures have been implemented and some are yet to be implemented, Partially complied: There is a gap in compliance and a remedial action is required, Not complied: Mitigation measures have not been implemented

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		cooling water will have no or minimum impact to underwater ecosystem.	<p>the same area which will be determined in detailed design phase.</p> <ul style="list-style-type: none"> ▪ Additionally, the Contractor is proposing a revised intake and outfall design which impacts the intake and outfall locations. ▪ Hot water discharge - maximum temperature difference of 3°C from the ambient temperature ▪ Findings of marine ecological survey being conducted 	<ul style="list-style-type: none"> ▪ As part of EIA update on finalization of design details, modelling will be carried out since locations and depths of discharge is being changed. 	
		<ul style="list-style-type: none"> ▪ Contract documents to include performance guarantee by the facility that hot water discharge shall have maximum temperature difference of 3 degrees Celsius from the ambient temperature. 	<ul style="list-style-type: none"> ▪ Hot water discharge - maximum temperature difference of 3°C from the ambient temperature 	<ul style="list-style-type: none"> ▪ System is being designed to ensure the maximum temperature difference of 3°C. 	<ul style="list-style-type: none"> ▪ Being complied
		<ul style="list-style-type: none"> ▪ Undertake hot water dispersion modeling along the planned area of discharge. Ensure that this area is with no or least marine species that could be affected based 	<ul style="list-style-type: none"> ▪ Hot water discharge - maximum temperature difference of 3°C from the intake temperature. ▪ Findings of marine ecological survey 	<ul style="list-style-type: none"> ▪ Dispersion modelling has been carried out in approved EIA report and will be again conducted on finalization of 	Being complied

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<p>on the underwater ecology study.</p>	<p>being conducted on regular basis</p>	<p>design details as part of EIA update.</p> <ul style="list-style-type: none"> ▪ Marine ecological survey is being conducted on quarterly basis. 	
		<ul style="list-style-type: none"> ▪ If there will be changes in the location of cooling water discharge location, the DBO Contractor shall conduct confirmatory numerical modeling for brine discharge– both near and far-field, covering all 4 seasons (2 monsoon and 2 inter-monsoon) to ensure the location of discharge will not have significant impact to marine environment. 	<ul style="list-style-type: none"> ▪ Change in locations of discharge. ▪ Hot water discharge - maximum temperature difference of 3°C from the intake temperature. ▪ Findings of marine ecological survey being conducted 	<ul style="list-style-type: none"> ▪ Contractor has indicated that intake and outfall locations will be changed further away from the shoreline into deeper water. ▪ PMDCSC has requested Contractor to remodel for the changed location of the intake and outfall via letter sent on 01 September 2023. ▪ Remodeling will be done as part of EIA update based on approved detail design which is to be prepared by the Contractor 	<ul style="list-style-type: none"> ▪ Being complied
		<ul style="list-style-type: none"> ▪ Ensure that design considers achievement of proper mixing and rapid dilution within a small area around the outfall. 	<ul style="list-style-type: none"> ▪ Outcome of detailed design and proposed modelling 	<ul style="list-style-type: none"> ▪ System is being designed to ensure proper mixing and rapid dilution, though it is yet to be 	<p>Being Complied</p>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<ul style="list-style-type: none"> ▪ Consider in the design of the combined outfall for hot water and treated wastewater to minimize impact to marine ecosystem. 	Same as above	<p>finalized and approved.</p> <ul style="list-style-type: none"> ▪ Same will be confirmed by modelling to be carried out as part of EIA update considering approved detailed design parameters. ▪ Same as above 	<ul style="list-style-type: none"> ▪ Being Complied
3	Location of ambient air quality monitoring stations	<ul style="list-style-type: none"> ▪ Contract documents to include performance guarantee for the facility that emissions comply with applicable standards. ▪ Collect/Conduct meteorological data on daily basis for various seasons of the year to map projected wind 	<ul style="list-style-type: none"> ▪ Compliance of Pre-construction monitoring plan ▪ Findings of ambient air quality reports ▪ Site specific meteorological data including wind rose diagram 	<ul style="list-style-type: none"> ▪ Ambient air quality monitoring stations are same as per mentioned in EMP of approved EIA report. ▪ Monitoring has been carried out for parameter TSP, PM10, PM2.5, NO2 and SO2 for 24 hours @ once in each month. ▪ Online anemometer has been installed at site to monitor wind speed, direction, temperature and 	<ul style="list-style-type: none"> ▪ Complied ▪ Complied

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<p>directions, speeds at any season during plant operations.</p>		<p>humidity. Only on time display of data has been provided and no data logger has been provided for data recording.</p> <ul style="list-style-type: none"> ▪ Wind sock has been installed for ready reference. ▪ However data such as wind speed, wind direction, temperature, humidity and precipitation for ambient air quality monitoring days are being collected from Maldives Meteorological Department and summary of which is included in monthly report. 	
		<ul style="list-style-type: none"> ▪ Design smoke stacks with height that will ensure emissions will have no or minimum impact to surrounding receptors within the direct and indirect impact zones. 	<ul style="list-style-type: none"> ▪ Final design details on stack height, diameter, location, gas temperature, gas velocity, emission rate of each pollutant etc. ▪ Findings of dispersion modelling on GLCs of relevant pollutants 	<ul style="list-style-type: none"> ▪ System is being designed to ensure contractual obligations as mentioned, though it is yet to finalized and approved. ▪ Air dispersion modelling will be carried out 	<ul style="list-style-type: none"> ▪ Being Complied

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
				considering final design details as part of EIA update <ul style="list-style-type: none"> ▪ As per Contractor, the location of the stack is proposed to be shifted by 15-20 m from the location given in the approved EIA report. However, there is no change to the height of the stack. 	
		<ul style="list-style-type: none"> ▪ Undertake air dispersion modeling to show and understand the behavior and movement of components of flue gas from the stacks. 	<ul style="list-style-type: none"> ▪ Same as above 	<ul style="list-style-type: none"> ▪ Same as above 	<ul style="list-style-type: none"> ▪ Being complied
		<ul style="list-style-type: none"> ▪ Based on the dispersion modeling, identify the appropriate sampling locations for ambient air quality in Thilafushi island and other islands nearby, if necessary and practical. 	<ul style="list-style-type: none"> ▪ Same as above 	<ul style="list-style-type: none"> ▪ Air dispersion modelling will be carried out considering final design details as part of EIA update. ▪ Ambient air quality monitoring has been conducted at seven locations for PM₁₀, PM_{2.5}, TSPM, SO₂ and NO₂ as recommended in EIA report on monthly 	<ul style="list-style-type: none"> ▪ Being complied

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<ul style="list-style-type: none"> ▪ Undertake baseline ambient air quality data gathering with due consideration of the direction of flow of smoke from the existing dumpsite 	<ul style="list-style-type: none"> ▪ Results of monitoring of ambient air quality. 	<p>basis (once for 24 hours).</p> <ul style="list-style-type: none"> ▪ Same as above 	<ul style="list-style-type: none"> ▪ Complied
4	Locating proper drainage system around the facility	<ul style="list-style-type: none"> ▪ To prepare and implement wastewater management, dewatering and storm water drainage plan. 	<ul style="list-style-type: none"> ▪ System/plan in place and being followed 	<ul style="list-style-type: none"> ▪ Sewerage treatment plant has been provided and treated wastewater is being discharged into sea. The discharge waste water quality from the plant is tested on a monthly basis. ▪ Dewatering during excavation is carried out with permits from HDC and URA. A sedimentation pond has been commissioned to provide retention time to before discharging to the sea. The discharge water quality from the pond will be tested on monthly basis. 	<ul style="list-style-type: none"> ▪ Being complied

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
				<ul style="list-style-type: none"> <li data-bbox="1325 266 1644 662">▪ No wastewater will be generated from the cooling system of concrete batching plant. However, wastewater generated during washing of transit mixers is being discharged into an open pond for solar evaporation. <li data-bbox="1325 667 1644 862">▪ No disturbance to natural drainage from site construction activities for storm water. <li data-bbox="1325 867 1644 1062">▪ Final drainage plans for the roads, and facilities, as well as runoff, are to be finalized as part of the detail design. 	

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<ul style="list-style-type: none"> ▪ Identify and demarcate drainage lines within and around the WTE site, including approach roads. Ensure that these channels do not disturb or impede natural flow of storm water from the island to the sea. 	<ul style="list-style-type: none"> ▪ System/plan in place and followed 	<ul style="list-style-type: none"> ▪ Final drainage plans for the roads, and facilities, as well as runoff, are to be finalized as part of the detail design. 	<ul style="list-style-type: none"> ▪ Being complied
		<ul style="list-style-type: none"> ▪ Provide cross drainage structures wherever necessary along the new approach roads. 	<ul style="list-style-type: none"> ▪ Same as above 	<ul style="list-style-type: none"> ▪ Same as above 	<ul style="list-style-type: none"> ▪ Being complied
		<ul style="list-style-type: none"> ▪ Integrate the above considerations in the final drainage plan for the project site. 	<ul style="list-style-type: none"> ▪ Same as above 	<ul style="list-style-type: none"> ▪ Same as above 	<ul style="list-style-type: none"> ▪ Being complied

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
5	Physical integrity of proposed project site.	<ul style="list-style-type: none"> ▪ Integrate results of geotechnical study undertaken to the design of project infrastructures. 	<ul style="list-style-type: none"> ▪ To consider findings and recommendations of the geotechnical report in the detailed design. 	<ul style="list-style-type: none"> ▪ Geotechnical report has been approved and all recommendations will be considered during detailed designing which is yet to be finalized and approved. 	<ul style="list-style-type: none"> ▪ Being Complied
		<ul style="list-style-type: none"> ▪ Undertake and include results of climate vulnerability and risk assessment (CVRA) in the design of the project. ▪ Provide site protections based on the risks identified in the CVRA. 	<ul style="list-style-type: none"> ▪ Consider findings and recommendations of CVRA report in the detailed design. 	<ul style="list-style-type: none"> ▪ CVRA will be conducted during the detailed design stage. ▪ PMDCSC has reminded the Contractor of its obligation to prepare a CVRA during the Monthly Meeting in March. 	<ul style="list-style-type: none"> ▪ Being complied

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<ul style="list-style-type: none"> ▪ Coordinate with WAMCO to ensure the stability of the municipal dumpsite. 	<ul style="list-style-type: none"> ▪ Physical condition of the slope of piles of municipal waste dumped adjacent to project site 	<ul style="list-style-type: none"> ▪ The site boundary facing the Eastern side of the dumping site of WAMCO has been shifted away by approx. 20m and a fence has been installed. ▪ The slope of the dump is being leveled by WAMCO and reinforced with concrete waste but not to the level of requirement. ▪ Natural vegetation has started growing on the slope of the stockpile of waste located near the project site boundary. ▪ There are constant fire outbreaks at the waste pile adjacent to the quay wall. WAMCO has been instructed to clear the area with recurring fires and patrol the site regularly. ▪ Communication system is in place to resolve the related 	<ul style="list-style-type: none"> ▪ Being complied during period and is an ongoing process

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
				issue with WAMCO on immediate basis.	
6	Work program and pre-approved plans	<ul style="list-style-type: none"> ▪ Develop the following plans (but not limited to) that shall be included in the final detailed design and implemented during construction stage: <ul style="list-style-type: none"> - Construction Waste Management Plan. - Occupational Health and Safety Plan following international best practices on occupational health and safety such as those in Section 4.2 of IFC EHS Guidelines on Construction and Decommissioning Activities. - Construction Camp Development and Management Plan. - Spill Control and Containment Plan - Marine and Beach Area Construction Work Plan - Erosion Control Plan for pipeline works - Traffic Management Plan including via sea around the construction 	<ul style="list-style-type: none"> ▪ H&S plan, CEMP and relevant HSE plans. 	<ul style="list-style-type: none"> ▪ CEMP and HSE plan is under review and approval is expected in April 2024. ▪ HSE plans as mentioned in the CEMP are in place (refer to Table 10) ▪ Activity wise method statement and SOPs are developed by the Contractor in an ongoing manner, targeting relevant construction and commissioning activities. 	<ul style="list-style-type: none"> ▪ Being complied

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<p>site to ensure easy access and passage of workers and employees of establishments at two sides of the project site.</p>			
		<ul style="list-style-type: none"> ▪ To prepare and implement mitigation measures and emergency response plan including SOPs and checklists during construction phase. 	<ul style="list-style-type: none"> ▪ Same as above 	<ul style="list-style-type: none"> ▪ Same as above 	<ul style="list-style-type: none"> ▪ Being complied
		<ul style="list-style-type: none"> ▪ Develop the following plans or manuals that shall be utilized during operation stage: <ul style="list-style-type: none"> - Operation and Maintenance Manual - Waste Screening Procedure / Plan to ensure all waste inputs to the facility comply with quantity and quality requirements, including accounting of hazardous / halogenated organic components in wastes. - In-house Solid Waste Management Plan. - Occupational Health and Safety Plan following international 	<ul style="list-style-type: none"> ▪ H&S plan, CEMP and relevant HSE plans and other documents as mentioned are in place 	<ul style="list-style-type: none"> ▪ Will be developed before start of operation. 	<ul style="list-style-type: none"> ▪ Being complied as same will be developed before start of operation.

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<p>best practices on occupational health and safety such as those in IFC EHS Guidelines on Waste Management Facilities.</p> <ul style="list-style-type: none"> - Spill Control and Containment Plan. - Emergency and Disaster Preparedness and Response Plan. 			
7	Consents, permits, clearances, no objection certificate (NOC), etc.	<ul style="list-style-type: none"> ▪ Obtain all necessary consents, permits, clearance, NOCs prior to start of civil works. ▪ Ensure the compliance of stipulated conditions 	<ul style="list-style-type: none"> ▪ Copies of necessary consents, permits, clearance, NOCs prior to start of civil works ▪ Compliance report of stipulated conditions 	<ul style="list-style-type: none"> ▪ All consents, permits, clearance, NOCs are in place as per details enclosed in Appendix-1 	<ul style="list-style-type: none"> ▪ Being Complied, as permitting is an ongoing process with renewals and new permits as per progress:
8	Shifting of Utilities	<ul style="list-style-type: none"> ▪ Identify and include locations and operators of these utilities in the detailed design to prevent unnecessary disruption of services during the construction phase. 	<ul style="list-style-type: none"> ▪ As per approved layout plan , likely disruptions is due to live power cable of STELCO passing through the project site. 	<ul style="list-style-type: none"> ▪ Relocation of live cable of STELCO is still pending. PMU has engaged with HDC and STELCO and held meetings regarding the relocation of the cable. ▪ To avoid delay in construction, DBO contractor has laid above ground water 	<ul style="list-style-type: none"> ▪ Being complied

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
				<p>pipeline crossing the live power cable of STELCO for dewatering from excavated area with mitigation measures such as extra spun piles are laid over ground above the cables, and the outfall water pipes run through the spun piles, so as to avoid any damage to the cable below. Cable is located 1m below ground level.</p>	
		<ul style="list-style-type: none"> ▪ Prepare a contingency plan to include actions to be taken in case of unintentional interruption of services, such as the following: <ul style="list-style-type: none"> - In case of water supply disruption, provide temporary water supply source for the affected establishments. - In case of power interruption, provide prior notice to affected establishments. If interruption is 	<ul style="list-style-type: none"> ▪ Same as above 	<ul style="list-style-type: none"> ▪ Same as above 	<ul style="list-style-type: none"> ▪ Being complied

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<p>unscheduled due to unforeseen incidents, provide a standby generator set to serve as temporary power supply to affected establishments.</p> <ul style="list-style-type: none"> ▪ Identify the list of affected utilities and operators and coordinate closely with relevant government departments. 			
9	Locating sites for construction work, camps, areas for stockpile, storage, and disposal	<ul style="list-style-type: none"> ▪ Except disposal sites, all the work sites (camps, storage, stockpiles etc.) will be located within the selected site. ▪ No construction camp shall be located on the beach or overwater. ▪ Material shall be brought to site as and when required, and temporary storage of material (pipe, sand etc.) shall be made near the work site. ▪ No temporary storage shall be located at the lagoon section 	<ul style="list-style-type: none"> ▪ Use of pre-approved sites for construction work camps, areas for stockpile, storage, and disposal 	<ul style="list-style-type: none"> ▪ A site organization plan was submitted in May 2022 and was approved by the PMU before mobilization and pre-construction activities on site were permitted. ▪ All work sites (camps, storage, stockpiles etc.) are located within the boundary of project site ▪ Construction material brought to the site is stored within the project site 	<ul style="list-style-type: none"> ▪ Being complied
		<ul style="list-style-type: none"> ▪ Waste shall be disposed in existing approved disposal sites; any new 	<ul style="list-style-type: none"> ▪ Records of waste generation and disposal as per waste 	<ul style="list-style-type: none"> ▪ Since the beginning of construction, the storage areas have 	<ul style="list-style-type: none"> ▪ Being complied

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		sites shall be developed considering siting guidelines, maintained, and operated accordingly	management plan and procedure, Soil management plan and relevant method of statements for STP, dewatering etc	<p>been clearly indicated as per site organization plan and are utilized accordingly.</p> <ul style="list-style-type: none"> ▪ All type of solid waste is stored at dedicated places within project site and handed over to WAMCO for disposal. Records of generation and disposal are being submitted as part of monthly report. ▪ Requisite facilities such as storage area for excavated soil for temporary storage has been provided. ▪ Sewerage treatment plant has been provided and treated waste water is being discharged into sea. The discharge water from the plant is being tested on monthly basis. ▪ Dewatering during excavation is carried out with permits from HDC and URA. A 	

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
				<p>sedimentation pond has been commissioned to provide retention time before discharging to the sea. The discharge water from the pond will be tested on monthly basis.</p> <ul style="list-style-type: none"> ▪ The compliance is verified through regular site inspections carried out by PMDCSC and PMU. 	
10	Sourcing of construction materials	<ul style="list-style-type: none"> ▪ Obtain construction materials for this project from the licensed quarries acceptable to government. 	<ul style="list-style-type: none"> ▪ Permits and compliance to stipulated condition in case construction material will be sourced from quarries 	<ul style="list-style-type: none"> ▪ Most of the construction material is being/will be imported from overseas, as it is not available locally. Only internationally accepted suppliers are/will be used for supply of construction materials. ▪ The government of Maldives does not maintain a register of licensed parties. Hence, PMU verifies 	<ul style="list-style-type: none"> ▪ Being complied

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
				and approves supplier's information before material approval is given to contractor.	
11		<ul style="list-style-type: none"> ▪ For new borrow sites to borrow fill material and backfill material, prior permission must be obtained from Maldives EPA, and the environmental impacts of the operation should be properly examined and mitigated as necessary 	<ul style="list-style-type: none"> ▪ Clearance/permission from EPA, MOE, Maldives and compliance to stipulated conditions 	<ul style="list-style-type: none"> ▪ As per present estimate, no additional soil will be required for levelling of the project site or for construction. 	<ul style="list-style-type: none"> ▪ Being complied
12		<ul style="list-style-type: none"> ▪ Make efforts to minimize the overall material requirement for the project by adopting various approaches –balanced cut and fill, re-use as much excavated material from this project as possible 	<ul style="list-style-type: none"> ▪ Records of materials procured, used and disposed as waste 	<ul style="list-style-type: none"> ▪ All records of material procured, used and disposed as waste are being kept as part of Daily Progress Report (DPR) and summary of same is being reported in monthly report. ▪ Concrete debris is being stored at site for reuse, if any ▪ Excavated material is being stored on site and used for backfilling work. 	<ul style="list-style-type: none"> ▪ Being complied

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
				<ul style="list-style-type: none"> ▪ The compliance is being verified by regular site inspections carried out by PMDCSC and PMU. 	
		<ul style="list-style-type: none"> ▪ Submit to PMU monthly, documentation (materials quantities with source). 	Records of materials procured and source	<ul style="list-style-type: none"> ▪ All records of material procured, used and disposed as waste are being kept as part of Daily Progress Report (DPR) and summary of same is being reported in monthly report. ▪ Sub-contractor is to be approved before engagement. 	<ul style="list-style-type: none"> ▪ Being complied
13	Delivery route for construction materials and equipment	<ul style="list-style-type: none"> ▪ Identify a separate berth location for loading and unloading construction heavy equipment and raw materials that will not disrupt day-to-day activities in the island. Avoid use of the common ports being used by locals. 	<ul style="list-style-type: none"> ▪ Smooth delivery of all construction related materials, machinery/equipment etc as all will be transported to project site via sea as per dedicated delivery routes provided by maritime authorities. 	<ul style="list-style-type: none"> ▪ A dedicated quay wall is provided to the contractor which includes a 30-meter buffer zone from the quay wall. The existing debris and shipwrecks are to be moved away from this site before bulk 	<ul style="list-style-type: none"> ▪ Being complied

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<ul style="list-style-type: none"> ▪ If no other areas available, execute agreement with WAMCO to use WAMCO's berths/docking ports when delivering heavy equipment and big-sized construction materials to the site. 		<p>materials are brought in, to ensure there are no obstacles during the unloading process. The space was sufficient for materials brought in for ongoing construction activities, but may hinder if large quantities are to be unloaded. Two shipwrecks are removed and there are currently three remaining. This area is exclusively allocated for the use of contractor and will be available throughout the construction period.</p> <ul style="list-style-type: none"> ▪ Private jetty owned by Villa Pvt Ltd is used for unloading of construction materials to be used for batching plant located within project site as same has been engaged as sub-contractor for supply of material for 	

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
				batching plant and its operation. <ul style="list-style-type: none"> ▪ Others except construction materials for batching plant are unloaded by using quay wall. 	
14	Final Detailed Design Components	<ul style="list-style-type: none"> ▪ Ensure the final detailed design will integrate the following mandatory requirements: <ul style="list-style-type: none"> - Use of best practical incineration technology as recommended in the EIA. - Use of stack height recommended in the EIA. If circumstances based on the recommended stack height is to be changed (e.g., change in dimensions of the WTE plant building structure), ensure to use a stack height that is based on a new modeling calculation. - Installation of air pollution control device that will ensure emissions in compliance with the 	<ul style="list-style-type: none"> ▪ Approval of detailed design documents. ▪ Approval of notification of inspection 	<ul style="list-style-type: none"> ▪ The Detailed design is in progress and best practices for incineration and pollution control and management in line with contractual obligations will be applied to ensure implementation of: <ul style="list-style-type: none"> - Adequate Stack height - CEMS - Leachate plant ▪ The capacity of the landfill is sufficient to take the APCr but not the bottom ash which is why the PMDCSC has repeatedly pointed towards the necessity to legitimate the use of bottom ash in construction. 	<ul style="list-style-type: none"> ▪ Complied

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<p>emission standards as indicated in the EIA.</p> <ul style="list-style-type: none"> - Ensure to include installation of a continuous monitoring system (CEMS) as a mandatory requirement in the design. - Appropriate sampling port at the stack for random grab sampling activities. - Leachate treatment plant designed based on (i) maximum expected volume of leachate generated, and (ii) full capacity operation of the WTE plant. - Residual waste landfill designed based on (i) maximum volume of fly ash and bottom ash generation, and (ii) full capacity operation of the WTE plant. - Provision of a sampling port for thermal water (heated cooling water) at appropriate and accessible location along the cooling water line. 		<ul style="list-style-type: none"> ▪ Others as applicable. ▪ Each document of detailed design is to be approved by PMDCSC. ▪ Notification of inspection is to be approved by PMDCSC before start of construction of all activities as per contract. 	

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
15	Additional Baseline Environmental Data Gathering	<ul style="list-style-type: none"> ▪ DBO Contractor shall: <ul style="list-style-type: none"> - Undertake ambient air quality and noise level measurements (monthly), marine water and ground water quality analysis, and marine underwater ecology survey (quarterly) on first year after DBO contractor mobilization, at the identified sampling locations in the EIA report (and any other locations in and around Thilafushi island as may be deemed by the DBO Contractor as important sampling locations). - follow required sampling methodologies, including appropriate averaging time for ambient air quality and noise level measurements as indicated in the WHO standards; and - include results of analyses in the updating of the EIA, 	<ul style="list-style-type: none"> ▪ Results of monthly ambient air quality measurements (TSP, PM₁₀, PM_{2.5}, SO₂, NO₂) ▪ Results of monthly noise level measurements (Leq_{daytime} and Leq_{night-time} in dBA). ▪ Results of quarterly marine and groundwater quality analysis as per parameter mentioned in EIA report. ▪ Results of marine underwater ecology monitoring to be conducted once during pre-construction period and quarterly during construction period (to follow parameters, methodologies and locations used in the first set of surveys in the EIA process). 	<ul style="list-style-type: none"> ▪ Sampling and monitoring are carried out on a regular basis as per details: <ol style="list-style-type: none"> 1. Ambient air quality measurements (TSP, PM₁₀, PM_{2.5}, SO₂, NO₂) monitored at seven locations as mentioned in EIA report (once in a month on 24 hourly basis) 2. Noise level measurements (Leq_{daytime} and Leq_{night-time} in dBA) at five locations as mentioned in EIA report (once in a month on 24 hourly basis). 3. Marine Water quality at seven locations and groundwater quality at eight locations for parameter as mentioned in EIA report. 4. Marine underwater ecology monitoring 	<ul style="list-style-type: none"> ▪ Being Complied

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		and consider these results in the final detailed design of the project as applicable.		<p>to be conducted once during pre-construction period and quarterly during construction period (to follow parameters, methodologies and locations used in the first set of surveys in the EIA process).</p> <ul style="list-style-type: none"> ▪ Sampling and testing are carried out as per method of statement enclosed with CEMP and Pre-construction monitoring plan. 	

C. Implementation of Construction Stage EMP

i. Status of HSE Plans mentioned in CEMP

22. Status of plans as on 31 March 2024 is given in Table 10.

Table 10: Status of HSE Plans mentioned in the CEMP

Sn	Documents	Status	Remarks
CEMP Plans- Category1			
1	Occupational Health and Safety Management	As part of revised H&S plan, it was accepted with comments by PMDCSC	It is in process of revision and targeted to be approved by 20 th April 2024
2	Air Quality Management including fugitive and point source emission	As a part of approved pre-construction monitoring plan and CEMP, environmental baseline monitoring is carried out on a regular basis.	
3	Noise/Vibration Management		
4	Waste Management Plan	Accepted with comments by PMDCSC	
5	Soil Management plan	Accepted by PMDCSC	
6	Traffic Management plan	Accepted by PMDCSC	
7	Stakeholder Engagement Plan	Accepted with comments by PMDCSC	
8	Spill Control and Containment Plan	Accepted with comments by PMDCSC	
9	Grievance Redressal Mechanism Plan	Accepted with comments by PMDCSC	
10	Marine and Beach Area Management Plan	Accepted with comments by PMDCSC	
11	Chemicals and Hazardous Material Management Plan	Accepted with comments by PMDCSC	
12	Emergency Response Plan	Accepted with comments by PMDCSC	
13	Security Management Plan	Accepted by PMDCSC	
14	COVID-19 Management Plan	Accepted with comments by PMDCSC	
15	Construction Camp Development Plan	Accepted with comments by PMDCSC	
16	Public Health, Security and Safety Management Plan	Accepted by PMDCSC	
17	Incident reporting and investigation procedure	Accepted by PMDCSC	
18	Tool and Technique to review the CEMP	Not submitted	Targeted to be approved as part of the revised CEMP by 20 th April 2024
CEMP Plans- Category2			

19	Archeological Findings Management	Exempted from submission	Due to the nature of Thilafushi being a reclaimed land.
20	Flora & Fauna Management	Accepted with comments by PMDCSC	
21	Human Resources Management	Accepted with comments by PMDCSC	
22	Regulatory Compliance Evaluation Procedure	Not submitted	Targeted to be approved by 30 th May 2024
23	Procedure for Corrective & Proactive Actions	Accepted with comments by PMDCSC	
24	Training Procedure and Plan	Accepted by PMDCSC	
25	Infrastructure safety	Exempted from submission	Infrastructure safety is/will be addressed by implementing the matter in the various plans and applying design codes and approved method statements
26	Erosion Control Procedure	Exempted from submission	Erosion control procedures are and will be addressed in relevant construction procedures and method statements
ESMS			
1	ESMS including SOP checklists to be developed and reviewed on a regular basis considering ADB Safeguard Policy Statement 2009, IFC EHS Guidelines, IFC Performance Standards, and international good practices and guidelines (i.e., ISO 9001: 2008 – Quality Management System, ISO 14001: 2015 – Environment Management System, ISO 45001: 2018 – Occupational Health and Safety) Management System).	<ul style="list-style-type: none"> As per contract, no ESMS is required. However, it was mentioned by DBO contractor in approved CEMP. To comply with contractual obligation, revised CEMP will be aligned with ISO 14001 and revised Health & Safety Plan will be aligned with ISO 45001 considering HSE plans mentioned in CEMP and internal documents such as method of statements and SOPs in place. 	Targeted to be approved by 20 th April 2024.

ii. Implementation of Construction Environment Management Plan (CEMP)

23. Table 11 presents the status of the EMP implementation during the construction works which is based on Environmental Management Plan Matrix from the EIA Report which is disclosed in ADB website as well as in the project website.

Table 11: Construction Mitigation Measures Implementation & Compliance

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
	Category of compliance				<i>“Complied”, “Being complied”, “Partially complied”, “Not complied”³</i>
1	Overall project site management	<ul style="list-style-type: none"> ▪ Designate one full time and qualified Environment, Health and Safety (EHS) Manager who will be in charge of overall EMP implementation and other tasks as required in the EIA report. He/she shall be in place from the day of mobilization of DBO contractor. 	<ul style="list-style-type: none"> ▪ Organization chart. ▪ Competency of manpower. 	<ul style="list-style-type: none"> ▪ DBO contractor has hired a full time HSE manager on site. ▪ EPC contractor has also hired one full time HSE manager in addition to one Environment Manager and one H&S manager (Refer Table 2 for details). 	<ul style="list-style-type: none"> ▪ Being complied
		<ul style="list-style-type: none"> ▪ In addition to the EHS 	<ul style="list-style-type: none"> ▪ Organization chart. 	<ul style="list-style-type: none"> ▪ Two H&S inspectors and two environment officers have been hired 	<ul style="list-style-type: none"> ▪ Being complied

³ Complied: Mitigation measures have been implemented, Being complied: Some mitigation measures have been implemented and some are yet to be implemented, Partially complied: There is a gap in compliance and a remedial action is required, Not complied: Mitigation measures have not been implemented

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<p>Manager, designate one qualified trained engineer separately on Environment and H&S and EMP/SEMP implementation for every shift during construction stage who will assist the EHS Manager (either in his/her presence or absence) at all times.</p>	<ul style="list-style-type: none"> ▪ Competency of manpower. 	<p>by EPC contractor on full time basis (Refer Table 2 for details).</p> <ul style="list-style-type: none"> ▪ Requisite additional one H&S Inspector and one Environment officer are yet to be recruited. ▪ Construction work is being conducted mostly in one shift and on SOS basis in second shift. 	
		<ul style="list-style-type: none"> ▪ H&S plan to be aligned with ISO 45001 and CEMP to be aligned with ISO 14001 	<ul style="list-style-type: none"> ▪ H&S plan and CEMP to be approved before implementation. ▪ Details provided in monthly report submitted by DBO contractor. ▪ Findings of environment monitoring, inspection and audits conducted by PMDCSC. 	<ul style="list-style-type: none"> ▪ H&S plan approved in May-22 is under revision to make it align with ISO 45001. ▪ CEMP approved in December 2022 is under revision to make it align with ISO 14001. ▪ Status of HSE plans as mentioned in CEMP are as per given in Table 10. ▪ Additionally, method of statements and SOPs are being/will be developed as internal documents (not approved by PMU/PMDSC) by 	<ul style="list-style-type: none"> ▪ Being complied as Revised H&S plan and CEMP will be finalized for approval by April 20, 2024.

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
				<p>DBO contractor such as method of statements for STP, dewatering, excavation, spun piling works etc. and SOPs such as operation of batching plan, electrical safety etc.</p> <ul style="list-style-type: none"> ▪ PMDCSC is reviewing details submitted by DBO in monthly reports. ▪ Inspections conducted on regular basis by PMU/PMDCSC in line with project manual (refer Table 8 for details). PMDCSC has revised project manual on 31 March 2024 which defines frequency of inspections (twice per month) and audit (once in three months) by using three separate checklists for EMS, OHS and environment. Project manual also includes the recording and reporting of observations made by Site Engineer and Dy Team Leader during walking down the construction site on regular basis. 	
		<ul style="list-style-type: none"> ▪ Coordinate with the PMU on confirmatory surveys determined during design stage that need to be conducted 	<ul style="list-style-type: none"> ▪ Approval of design documents including drawings, method of statements, approval of credential of sub-contractor(s), Notification of Inspection etc before start of any construction activity. 	<ul style="list-style-type: none"> ▪ Online system via Aconex is in place to manage the status of each document submitted, reviewed and approved by PMDCSC/PMU. ▪ Team of qualified and experienced professional have been engaged by PMDCSC to review and approve the designed documents, drawings, method of statements etc submitted by DBO contractor. 	Being complied

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<p>once the DBO Contractor is selected; and complete these studies as required with support of external experts.</p>	<ul style="list-style-type: none"> ▪ Approval of Notification of Inspection before start of any activity by PMDCSC. ▪ Observations made during regular site inspection. 	<ul style="list-style-type: none"> ▪ To ensure compliance, a full-time civil engineer has been deputed at site by PMDCSC in addition to Deputy team leader and local environment safeguard. ▪ Regular inspections and audits are being conducted by PMDCSC to ensure the compliance. 	
2	Marine Traffic	<ul style="list-style-type: none"> ▪ Avoid using the docking ports used by the local people and industries in Thilafushi when transporting construction heavy equipment and raw materials at the site. 	<ul style="list-style-type: none"> ▪ Compliance to CEMP & traffic management plan and security Management Plan. ▪ Complaints, if any received via GRM ▪ Findings of stake holder engagement plan. 	<ul style="list-style-type: none"> ▪ Traffic management plan, Security Management plan, GRM Plan and Stakeholder Engagement plan as part of CEMP are in place. ▪ A dedicated quay wall adjacent to project site is exclusively made available by WAMCO to contractor for unloading men and materials; however, there are challenges in access of all type of vessels and operation of unloading equipment to the quay due to presence of shipwrecks within the footprint of the quay wall designated. ▪ Private jetty owned by Villa Pvt Ltd is used for unloading of construction materials for the batching plant located within project site as same has been engaged as sub-contractor for supply of material for batching plant and its operation. ▪ Others except construction materials for batching plant are being unloaded by using quay wall. 	<ul style="list-style-type: none"> ▪ Being Complied and efforts are being made to make the dedicated quay accessible by removing the shipwrecks.

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<ul style="list-style-type: none"> ▪ Utilize the exclusive docking port area being used by WAMCO 	<ul style="list-style-type: none"> ▪ Same as above 	<ul style="list-style-type: none"> ▪ No complaint or feedback have been received via GRM and Stakeholder engagement (Refer Section X for details) ▪ Same as above 	<ul style="list-style-type: none"> ▪ Same as above.
3	Marine water quality	<ul style="list-style-type: none"> ▪ Implement spoils management plan. 	<ul style="list-style-type: none"> ▪ Compliance to CEMP and plans such as soil management, waste Management Procedure and plan, Marine Beach Area etc. ▪ Compliance to relevant method of statements such as spun piling, excavation work, dewatering plan, STP, batching plan etc 	<ul style="list-style-type: none"> ▪ HSE procedure for working at night and General lifting, unloading and transportation procedure are in place. ▪ Records of unloaded materials are being kept. ▪ Soil management plan, waste Management Procedure and plan, Marine Beach Area Plan etc. are in place. ▪ Internal documents such as Method of statements for spun piling, excavation work, dewatering plan, STP, batching plan etc are in place. ▪ Solid wastes generated, stored and disposed at project site are being reported in Daily Progress Report (DPR) and monthly report submitted 	<ul style="list-style-type: none"> ▪ Being complied ▪ Being complied.

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
			<ul style="list-style-type: none"> ▪ Results of quarterly marine water quality results. ▪ Complaints, if any received via GRM. ▪ Findings of stake holder engagement plan. ▪ Findings of walk downs and inspections conducted by PMDCSC. 	<p>by DBO. However, records of soil excavated and reused are not being reported and kept.</p> <ul style="list-style-type: none"> ▪ STP is in operation and quality of treated waste water discharged into sea is being tested on monthly basis. Permit for operation of STP from URA is in place. ▪ Sedimentation pond has been provided to provide retention time to water from excavated area before discharging into sea. Quality of discharge water is being tested on monthly basis. Requisite permits from URA and HDC have been obtained and renewed as per requirements. However, permit for discharge of water from sedimentation pond into sea has been extended by URA till 23 April 2024 from 25 March 2024 but permit for transporting water to sea via pipeline has not been extended by HDC as it was valid till 25 March 2024. ▪ Marine water quality and marine ecological surveys are also being conducted on quarterly basis. ▪ Observations are being made and recorded by site engineer during walk downs and by local environment safeguard during inspections. ▪ No complaint and feedback have been received via GRM and Stake 	

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
				holder engagement (Refer Section X for details)	
		<ul style="list-style-type: none"> ▪ Reuse excess spoils and materials. 	<ul style="list-style-type: none"> ▪ Same as above 	<ul style="list-style-type: none"> ▪ In addition to details given above, <ol style="list-style-type: none"> 1. Excavated soil is being stored in temporary storage area within project site for reuse. Partly it has already been used for backfilling. However, records of soil excavated and reused are not being reported and kept. 2. Construction concert debris are also being stored within project site for possible reuse. Records of same is being reported in DPR and monthly report. 	<ul style="list-style-type: none"> ▪ Being complied..
		<ul style="list-style-type: none"> ▪ Temporary storage areas for excess spoils prior to disposal should be located as far as possible from the edge of the island or seawalls. 	<ul style="list-style-type: none"> ▪ Same as above 	<ul style="list-style-type: none"> ▪ All temporary storages for spoils are being located within project site and away from edge of the island to the maximum possible extent. ▪ Adequate measures such as impermeable layer on floor and second containment have been provided for storage of hazardous waste. 	<ul style="list-style-type: none"> ▪ Being complied
		<ul style="list-style-type: none"> ▪ Disposal site in designated areas only. 	<ul style="list-style-type: none"> ▪ Same as above 	<ul style="list-style-type: none"> ▪ All type of solid waste generated are being handed over to WAMCO for disposal on regular basis. ▪ However, needles of used syringes are being stored in plastic containers in the health centre on temporary basis. Negotiation with IGMH hospital 	<ul style="list-style-type: none"> ▪ Being complied.

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
				<p>at Male are ongoing for disposal of same as it is not accepted by WAMCO for disposal.</p> <ul style="list-style-type: none"> ▪ Excavated soil is being stored in temporary storage area within project site for reuse. Partly, it has already been used for backfilling 	
		<ul style="list-style-type: none"> ▪ Earthworks during dry season. Avoid earthworks during heavy rainy days, especially during monsoon season, to prevent run-off. 	<ul style="list-style-type: none"> ▪ Same as above 	<ul style="list-style-type: none"> ▪ Efforts are being made to maximum possible extent to avoid rainy days for earthworks. 	<ul style="list-style-type: none"> ▪ Being complied.
		<ul style="list-style-type: none"> ▪ Stockyards are covered when possible and provided with drainage canals around. 	<ul style="list-style-type: none"> ▪ Same as above 	<ul style="list-style-type: none"> • Stockyards in batching plant area are covered with metal sheets from three sides. • Temporary excavated soil storage area has not been covered. • No drainage canal/trench around temporary excavated soil storage area has been provided as mentioned in soil management plan. However, as per DBO/EPC, same is not required as whole rain water and is being percolated and no runoff is discharged into sea. Also as per observations made by PMU and 	<ul style="list-style-type: none"> ▪ Being complied. DBO/EPC has been asked to submit technical justification officially for no requirements of trenches around excavated soil storage yard so that soil management plan may be

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
				PMDCSC, due to high permeability of soil, chances of runoff flowing to sea/lagoon is very unlikely.	modified accordingly.
		<ul style="list-style-type: none"> ▪ Install temporary silt traps or sedimentation basins along drainage leading to the lagoon and sea. 	<ul style="list-style-type: none"> ▪ Same as above 	<ul style="list-style-type: none"> ▪ In addition to details given above, sedimentation pond has been provided as part of the dewatering plan. 	<ul style="list-style-type: none"> ▪ Being complied
		<ul style="list-style-type: none"> ▪ Fuel, other petroleum products, and toxic and hazardous chemicals or substances stored at storage areas away from water drainage and protected by impermeable lining and bunded 110%. 	<ul style="list-style-type: none"> ▪ Compliance to CEMP and plans such as Chemicals and Hazardous Material Management Plan, emergency response etc. ▪ Findings of walk downs and inspections by PMDCSC. 	<ul style="list-style-type: none"> ▪ Overall, dedicated storages for hazardous chemicals and materials are provided with second containment and polythene ground covers as impermeable layer. However: <ol style="list-style-type: none"> 1. A mobile diesel tanker of 5000 liter is being procured and in use for transportation, storage and filling of vehicles, DG sets and other diesel driven machinery and equipment without requisite legal compliance such as registration with transport authority and permission from MNDF. No mapping of hazards associated with it has been done and no mitigation measures in addition to those provided by manufacturer are in place. 	<ul style="list-style-type: none"> ▪ Partially complied as: <ol style="list-style-type: none"> 1. Requisite permits need to be obtained. 2. Second containment needs to be provided.

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
				2. Second containment has not been provided for hazardous chemicals being stored in warehouse on temporary basis before transferring same to dedicated storage area for same.	
		<ul style="list-style-type: none"> ▪ Take precautions to minimize the overuse of water 	<ul style="list-style-type: none"> ▪ Records of water usages ▪ Findings of walk downs and inspections. 	<ul style="list-style-type: none"> ▪ All outlet of water to be used are provided with taps/valves. ▪ No record on water usages for domestic purpose and construction except bill paid to MWSC has been kept and reported. 	<ul style="list-style-type: none"> ▪ Being complied.
		<ul style="list-style-type: none"> ▪ Divert all wash water generated from site into sedimentation ponds prior to discharge to canals. 	<ul style="list-style-type: none"> ▪ Compliance to relevant Method of statements such as excavation work, dewatering plan, batching plant, STP etc ▪ Testing report of discharged water on monthly basis. ▪ Findings of walk downs and inspections. 	<ul style="list-style-type: none"> ▪ All water generated from excavation and construction site is being sent to sedimentation pond before discharge into sea. ▪ Domestic waste water is being treated in STP before discharge into sea. ▪ No waste water is generated from cooling system provided in batching plant. However, make-up water to be used for cooling purpose is being procured via vender. ▪ Waste water generated from washing of transit mixers is being sent to underground open tank for solar evaporation. However, storage capacity of same need to be verified in reference to rate of waste water generated vs rate of solar evaporation. Accordingly DBO contractor has been notified. 	<ul style="list-style-type: none"> ▪ Being complied.

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<ul style="list-style-type: none"> ▪ During excavations, water accumulation in the pits / should be disposed of only after being diverted in sedimentation basin or equivalent and clarified prior to discharge. 	<ul style="list-style-type: none"> ▪ Same as above 	<ul style="list-style-type: none"> ▪ Same as above 	<ul style="list-style-type: none"> ▪ Same as above
		<ul style="list-style-type: none"> ▪ Conduct water quality monitoring at least quarterly or as necessary. 	<ul style="list-style-type: none"> ▪ Reports of marine water quality 	<ul style="list-style-type: none"> ▪ Quarterly water quality monitoring is being conducted at seven locations on quarterly basis. 	<ul style="list-style-type: none"> ▪ Being complied
4	Dust and air pollution	<ul style="list-style-type: none"> ▪ Use of physical controls such as water sprays, covers, compaction, screening, enclosure, windbreakers, binders and/or road surfacing 	<ul style="list-style-type: none"> ▪ Compliance to CEMP & HSE plans mentioned in CEMP and H&S plan ▪ Findings of OHS monitoring plan 	<ul style="list-style-type: none"> ▪ Water spraying is not being conducted. Regarding water spraying in temporary storage area of excavated soil as mentioned in soil management plan, DBO/EPC is of the view that water spray via sprinklers as mentioned in soil management plan is not effective as excavated soil is mainly coarse sand and water to be sprayed will not be retained by surface of stored soil. 	<ul style="list-style-type: none"> ▪ Partially complied. ▪ In view of reported higher values of PM_{2.5}, mitigation measures including wearing of adequate masks need to be reviewed

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<p>to avoid or minimize airborne dust from construction activities and vehicle movements. Undertake water spraying several times of the day or as often as needed especially on windy days / dry seasons.</p>		<p>EPC has been asked to submit technical justification for same.</p> <ul style="list-style-type: none"> ▪ Ambient air quality monitoring at two locations i.e. near area no 12 and near office building within project site (one sample for 24 hrs once in month) within project site has been conducted on 24th March-24. As per details given in section VII, reported values for PM2.5 are 39.97 and 35.45 µg/m³ which exceed the global WHO limit of 15 µg/m³ while reported values of PM10 are 40.11 and 35.54 µg/m³ which are within the global WHO limit of 45 µg/m³. However, the reported values are in the same range as the monitored values at AQ3, AQ2 and ASR2 which are located outside the premises. ▪ Surgical masks have been provided but masks have not been used by most of workers. ▪ OHS monitoring plan is to be submitted for review and approval of PMU. 	<p>and strictly implemented.</p>
		<ul style="list-style-type: none"> ▪ Construction vehicle's speed limited to 30 kilometres per hour (kph). 	<ul style="list-style-type: none"> ▪ Compliance to Traffic management plan ▪ Findings of OHS monitoring plan 	<ul style="list-style-type: none"> ▪ During inspection, speed was always found below 20 km/hr as mentioned in Traffic management plan but no monitoring is being conducted. ▪ OHS monitoring plan is to be submitted for review and approval of PMU. 	<ul style="list-style-type: none"> ▪ Being complied.

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<ul style="list-style-type: none"> ▪ Prohibition of open burning of solid waste. 	<ul style="list-style-type: none"> ▪ Compliance to CEMP and H&S plan 	<ul style="list-style-type: none"> ▪ All solid waste is being collected and stored at dedicated places for disposal at WAMCO dumping site. ▪ No solid waste is being burnt within project site. 	<ul style="list-style-type: none"> ▪ Being complied
		<ul style="list-style-type: none"> ▪ Minimize stockpile height. 	<ul style="list-style-type: none"> ▪ Compliance to Soil management plan. ▪ Findings of OHS monitoring plan 	<ul style="list-style-type: none"> ▪ Height provided to temporary soil stock pile is less than 4 m. 	<ul style="list-style-type: none"> ▪ Being complied. However, in view of reported higher values of PM_{2.5}, mitigation measures need to be reviewed and implemented.
		<ul style="list-style-type: none"> ▪ If dust generation is significant, provide a dust screen of appropriate height 	<ul style="list-style-type: none"> ▪ Same as above 	<ul style="list-style-type: none"> ▪ No dust screen has been provided. 	<ul style="list-style-type: none"> ▪ Not complied. However, in view of reported higher values of PM_{2.5}, mitigation measures need to be reviewed and implemented.
		<ul style="list-style-type: none"> ▪ Workers and staff should be provided with dust masks & instructed to use them on site 	<ul style="list-style-type: none"> ▪ Compliance to H&S plan 	<ul style="list-style-type: none"> ▪ By and large, Masks have not been used by workers. 	<ul style="list-style-type: none"> ▪ Not complied

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<ul style="list-style-type: none"> ▪ Conduct work in stages to reduce dust impacts; clearing and then conducting construction in only a portion of the site at a time. 	<ul style="list-style-type: none"> ▪ Daily Progress reports and monthly reports submitted by DBO. 	<ul style="list-style-type: none"> ▪ Construction activities are mainly confined to excavation and concreting till end of this quarter and as per Table 4, only 11.2% construction has been completed till 31 March 2024. 	<ul style="list-style-type: none"> ▪ Being complied
		<ul style="list-style-type: none"> ▪ Control access to work area, prevent unnecessary movement of vehicles, workers, public trespassing into work areas; limiting soil disturbance will minimize dust generation. 	<ul style="list-style-type: none"> ▪ Compliance to traffic management plan, Security management plan, H&S plan, Public health and safety plan etc. 	<ul style="list-style-type: none"> ▪ Site boundary is established with a dedicated gate for vehicles entry and exit and guardhouses are located at entrance and exit points. ▪ As per Sr no 2 of this table, traffic movement via road is very limited as transportation of men and materials is being carried out via sea. ▪ Access is controlled as per procedure given in security management plan. ▪ Records are being kept for each one coming in and going out. 	<ul style="list-style-type: none"> ▪ Being complied
		<ul style="list-style-type: none"> ▪ Contractor's environmental manager should monitor these activities and act to apply the mitigation if 	<ul style="list-style-type: none"> ▪ Inspections and records ▪ Findings of OHS monitoring plan ▪ Number of complaints received. 	<ul style="list-style-type: none"> ▪ Walk down visits are being made by HSE manager, environment manager and environment officers on daily basis. However, no checklist is in place to record the findings. ▪ OHS monitoring plan is to be submitted for review and approval of PMU. However ambient air quality 	<ul style="list-style-type: none"> ▪ Partially complied as findings of visits need to be recorded via checklist.

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		dust production becomes significant.		monitoring has been conducted in March-2024.	
		<ul style="list-style-type: none"> ▪ Use tarpaulins to cover loose material (soil, sand, aggregate) when transported by trucks 	<ul style="list-style-type: none"> ▪ Compliance to Traffic management plan and soil management plan. 	<ul style="list-style-type: none"> ▪ Construction materials are being transported in jumbo packs containing 1 tonnes of materials while no cover has been provided while transporting excavated soil from excavation site to temporary soil storage area within project site. 	<ul style="list-style-type: none"> ▪ Being complied
		<ul style="list-style-type: none"> ▪ Clean wheels and undercarriage of haul trucks prior to leaving construction site/quarry 	<ul style="list-style-type: none"> ▪ Compliance to traffic management plan ▪ Facility made available for cleaning and washing. ▪ Records of entry and exit of vehicles. 	<ul style="list-style-type: none"> ▪ Transportation of materials via road is very limited as described in above sections. However, no facility has been provided for cleaning of wheels and undercarriage of haul truck used for transportation of materials as per Traffic management plan. ▪ Washing facilities have been provided to clean the motor pans etc in batching plant area. ▪ Records of entry or exit of vehicles are kept. 	<ul style="list-style-type: none"> ▪ Partially complied as facilities need to be provided.
		<ul style="list-style-type: none"> ▪ Stabilize surface soils where loaders, support equipment and vehicles will operate by using water and maintain surface soils in 	<ul style="list-style-type: none"> ▪ Compliance to activities wise method of statements and SOPs. ▪ Approval of notification of inspection. 	<ul style="list-style-type: none"> ▪ In-house system is in place to plan for the site-specific requirements by Area authority, area manager and others before allowing the construction activities to start and to conduct inspections during execution. ▪ Deputy team leader of DBO contractor and Site engineer of PMDCSC deputed on time on full time basis review the planning to 	<ul style="list-style-type: none"> ▪ Being complied

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		a stabilized condition		provide go ahead before start of activities and conduct inspections during execution.	
		<ul style="list-style-type: none"> ▪ Ensure that all the construction equipment, machinery is fitted with pollution control devices, which are operating correctly. 	<ul style="list-style-type: none"> ▪ Results of exhaust emissions monitoring. ▪ Records of preventive maintenance 	<ul style="list-style-type: none"> ▪ In-house facility and system are in place for preventive maintenance of vehicles and equipment and records are being kept. ▪ No facility is available in Maldives for testing emission from exhaust of vehicles and equipment including DG sets. ▪ Fitness check for equipment does not include exhaust emissions. 	<ul style="list-style-type: none"> ▪ Partially complied.
		<ul style="list-style-type: none"> ▪ Ensure that only those vehicles and equipment in good condition, and are in good maintenance are used for project construction 			
		<ul style="list-style-type: none"> ▪ Vehicles / equipment should have a valid permits or licenses issued by relevant 	<ul style="list-style-type: none"> ▪ Vehicle registry at Ministry of Transport and Civil Aviation. ▪ Records of permits and licenses for all vehicles. 	<ul style="list-style-type: none"> ▪ All vehicles are registered according to local regulations and tested for roadworthiness before registration and registration records are maintained. ▪ Process of obtaining registration from Ministry of Transport and Civil Aviation and license from MNDF for 	Partially complied as the tanker has been in operation prior to obtaining registration and license.

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<p>government agency.</p> <ul style="list-style-type: none"> ▪ Maintain record of these permits or licenses of all vehicles at all times for ready inspection at the work sites. 	<ul style="list-style-type: none"> ▪ Records of permits and licenses for all vehicles 	<p>the mobile diesel tanker used for transportation of diesel is currently ongoing.</p> <ul style="list-style-type: none"> ▪ Registration records are maintained ▪ All vehicles except mobile diesel tanker are registered according to local regulations and tested for roadworthiness before registration and registration records are maintained. 	
5	Dust and air pollution (batching plant)	<ul style="list-style-type: none"> ▪ Ensure that batching plant is installed with built-in air pollution and dust control system for fugitive emissions and dust from loading area. 	<ul style="list-style-type: none"> ▪ Approval of design details ▪ Compliance of SOPs for operation of batching plant. ▪ Compliance to CEMP and H&S plan ▪ Results of OHS monitoring. ▪ Complaints, if any received via GRM. ▪ Findings of stake holder engagement plan. Regular inspection and monitoring 	<ul style="list-style-type: none"> ▪ Design details have been approved by PMDCSC. ▪ The batching plant in operation is installed with built-in air pollution and dust control system for fugitive emissions and dust from loading area as per Guidelines for concrete batching plants, 2016 by EPA, Maldives. However, as per guidelines, no emission standards are prescribed. ▪ Villa Pvt Ltd has been engaged as sub-contractor for operation of batching plant and supply of construction materials for same. ▪ Construction materials are being imported and unloaded at private jetty owned by Villa Pvt Ltd and transported via road to project site. Construction materials are being 	<ul style="list-style-type: none"> ▪ Partially complied as OHS monitoring plan is to be prepared for implementation and effective inspection is to be carried out on regular basis.

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
				<p>packed in jumbo packs of 1 tonne and only opened at project site.</p> <ul style="list-style-type: none"> ▪ Construction materials in loose form are being stored in area covered with metal sheets in three sides while same in jumbo packs are being stored in area covered with metal sheet in three sides and curtain in fourth side. ▪ Washing facility is being provided to clean the transit mixer trucks and drums. ▪ Record of real time inventory on daily basis are being kept in Daily Progress Report (DPR). ▪ SOPs for operation of batching plant is in place. ▪ OHS monitoring plan is to be submitted by DBO contractor. However ambient air quality at two locations within project site has been conducted during March-24. ▪ No complaint and feedback have been received via GRM and Stake holder engagement (Refer Section X for details) 	
		<ul style="list-style-type: none"> ▪ Provide dust screen around the components that generate emissions or fugitive dusts. 	<ul style="list-style-type: none"> ▪ Same as above 	<ul style="list-style-type: none"> ▪ Same as above 	<ul style="list-style-type: none"> ▪ Same as above

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<ul style="list-style-type: none"> ▪ Ensure that plant is well operated and maintained at all times according to O&M manual of batching plant (provided by the equipment manufacturer). 	<ul style="list-style-type: none"> ▪ Compliance of SOPs on installation and operation ▪ Regular inspection and monitoring 	<ul style="list-style-type: none"> ▪ Design details have been approved by PMDCSC. ▪ Regular inspection and scheduled maintenance work 	<ul style="list-style-type: none"> ▪ Partially complied as effective inspection is to be carried out on regular basis.
		<ul style="list-style-type: none"> ▪ The concrete loading area is equipped with a leak-proof concrete floor, from which all drainage is collected and treated as necessary prior to discharge. 	<ul style="list-style-type: none"> ▪ Approval of design details ▪ Records of water to be used for washing ▪ Regular inspection 	<ul style="list-style-type: none"> ▪ Design details have been approved by PMDCSC. ▪ All discharges are being drained in RCC tanks provided for washing of mixer trucks and mixer drums. Collected waste water is being put for solar evaporation and is not allowed to be discharged. However, no record has been kept of water used for washing on daily basis. ▪ Regular inspections by PMDCSC are in place. 	<ul style="list-style-type: none"> ▪ Partially complied as record is to be kept on water used on daily basis for washing by providing meter and effective inspection is to be carried out on regular basis.
		<ul style="list-style-type: none"> ▪ Mixer trucks and mixer drums are washed out only in a designated area, which 	<ul style="list-style-type: none"> ▪ Approval of design details ▪ Records of water to be used for washing ▪ Regular inspection 	<ul style="list-style-type: none"> ▪ Design details have been approved by PMDCSC. ▪ Washing area has been provided with sedimentation tank and RCC flooring. Collected wastewater is being put for solar evaporation and is not allowed to be discharged. However, no record 	<ul style="list-style-type: none"> ▪ Partially complied as record is to be kept on water used on daily basis for washing by

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<p>should be equipped with a leak-proof floor, from which drainage is collected and treated as necessary.</p>		<p>has been kept of water used for washing on daily basis.</p> <ul style="list-style-type: none"> ▪ Regular inspections by PMDCSC are in place. 	<p>providing meter and effective inspection is to be carried out on regular basis.</p>
		<ul style="list-style-type: none"> ▪ All chemicals used in concrete preparation are properly stored, whether dry, in powder or granular form, or as liquids, at storage areas away from water drainage and protected by impermeable lining and bunded 110%. Storage facilities should be as specified in the appropriate international standard and 	<ul style="list-style-type: none"> ▪ Approval of design details ▪ Compliance of SOPs on installation, operation and Chemicals and Hazardous Materials Management plan, Emergency Response Plan etc ▪ Inventory of chemicals ▪ Results of OHS monitoring ▪ Regular inspection 	<ul style="list-style-type: none"> ▪ Design details have been approved by PMDCSC. ▪ Chemical Sikaplastic-176 LK is being used and stored within batching plant area which is transported in 1000 liter container. Storage area for containers is provided with impermeable RCC lining but no secondary containment. ▪ For usages, chemical Sikaplastic-176 LK Chemicals is being stored in tank with impermeable RCC lining but without secondary containment. ▪ PPEs such as mask, suits, eye washing station are provided but no spill kit is provided in batching plant area. ▪ Record on real time inventory is not kept. ▪ No OHS monitoring is being carried out. 	<p>Partially complied</p> <ul style="list-style-type: none"> ▪ Secondary containment is to be provided. ▪ Spill kit is to be provided. ▪ Record of real time inventory need to be kept. ▪ OHS monitoring plan is to be prepared. ▪ Effective inspection is to be carried out on regular basis.

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		should include equipment to extract dust and completely contain any spillage from leaks.			
6	Noise pollution	<ul style="list-style-type: none"> ▪ Prepare work schedule and consult with local community and administration. ▪ Maintain low noise levels. Noise level at 	<ul style="list-style-type: none"> ▪ Compliance of Grievance Redressal plan and stakeholder engagement plan. ▪ Records of consultations with local community and administration. ▪ Compliance of method of statement for noise monitoring. 	<ul style="list-style-type: none"> ▪ GRM plan in place and no complaint has been received. However: <ol style="list-style-type: none"> 1. Complaint boxes have been provided in security office at two gates of project premises. But no complaint box has been placed at Public ferry terminal of Thilafushi. 2. Also, no public announcements have been made through local newspapers, community bulletin boards etc and through MoE. 3. GRC has not been constituted. 4. Records kept are not in compliance with GRM plan. 5. No public consultation has been conducted. ▪ Stakeholder engagement plan is in place. However: <ol style="list-style-type: none"> 1. Stake holder consultation with relevant local agencies is being conducted on 18 Feb 2024 as per details given in section IX. ▪ Ambient noise levels are monitored on a monthly basis at five locations to comply with EMP on 24 hourly basis. 	<ul style="list-style-type: none"> ▪ Partially complied Partially complied as

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<p>the boundary of site shall not exceed 70 dB(A) during day and and night unless necessary to carry out construction works.</p>	<ul style="list-style-type: none"> ▪ Results of ambient noise level monitored ▪ Results of OHS monitoring. 	<p>However, two of them (NQ3 and NQ5) are located within project site and all values reported are below 70 dB(A). Refer section VII for details.</p> <ul style="list-style-type: none"> ▪ Inhouse noise level monitoring equipment is available but no workplace noise monitoring is carried out. ▪ No noise level monitoring is being carried out at source and 1 m from equipment/machinery to verify the noise level standards as mentioned in method of statement for noise monitoring, performance of mitigation measures such as enclosures and PPEs provided base on Noise Reduction Rating. ▪ OHS monitoring plan is under preparation. 	<ul style="list-style-type: none"> ▪ OHS monitoring plan is to be prepared. ▪ Work place noise monitoring and noise level monitoring is to be carried out at source and 1 m from noise generating equipment/mac hinery
		<ul style="list-style-type: none"> ▪ When possible, schedule noisy works at nighttime when most establishments in Thilafushi are closed. Minimize any high noise-generating activities during the daytime. 	<ul style="list-style-type: none"> ▪ Same as above 	<ul style="list-style-type: none"> ▪ In addition to above: <ol style="list-style-type: none"> 1. Mainly civil works such as excavations and concreting are being conducted. 2. Construction work is being conducted mostly in one shift and on SOS basis in second shift. 	<p>Same as above.</p>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<ul style="list-style-type: none"> ▪ Use low noise generating equipment. Use modern vehicles and machinery with low noise emissions. Minimize noise from construction equipment by using vehicle silencers, fitting jackhammers with noise-reducing mufflers, and use portable street barriers to minimize sound impact to surrounding sensitive receptor. 	<ul style="list-style-type: none"> ▪ Compliance of SOPs on operation of machinery and equipment ▪ Results of OHS monitoring. 	<ul style="list-style-type: none"> ▪ Mitigation measure provided are confined to manufacturer's instructions only. ▪ PWA, Srilanka has been engaged to conduct fitness test and fitness test reports are in place. However, verifying the fitness for noise emission is not part of scope of work. ▪ No noise level monitoring is being carried out at source and 1 m from equipment/machinery to verify the noise level standards as mentioned in method of statement for noise monitoring, performance of mitigation measures such as enclosures and PPEs provided base on Noise Reduction Rating. ▪ OHS monitoring plan is under preparation. 	Same as above
		<ul style="list-style-type: none"> ▪ Minimize drop heights for construction materials. 	<ul style="list-style-type: none"> ▪ Compliance of activity wise method of statements ▪ Compliance of SOPs on operation of machinery and equipment 	<ul style="list-style-type: none"> ▪ Compliance is being ensured by approval of notification of Inspection by DBO and PMDCSC, issuance of permit to work and regular inspection. 	<ul style="list-style-type: none"> ▪ Being complied

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<ul style="list-style-type: none"> ▪ No use of horns unless necessary. 	<ul style="list-style-type: none"> ▪ Compliance of Traffic management plan. 	<ul style="list-style-type: none"> ▪ Limited traffic movement as per details provided in other sections of this table. ▪ Flag men direct the movement of movable machinery and equipment. 	<ul style="list-style-type: none"> ▪ Being complied
		<ul style="list-style-type: none"> ▪ Avoid loud random noise from sirens, air compression, etc. 	<ul style="list-style-type: none"> ▪ Compliance of activity wise method of statements ▪ Compliance of SOPs on operation of machinery and equipment ▪ Compliance of method of statement for noise monitoring. 	<ul style="list-style-type: none"> ▪ Permit to work and approval of notification of inspections restrict the operation of machinery and equipment needed for execution of particular activity only. ▪ Siren is only used in case of mock drill conducted and during emergency. ▪ Construction work is confined to small area and project site is also not big hence unnecessary operation of any equipment and machinery can be identified during walk downs by construction team and HSE team. 	<ul style="list-style-type: none"> ▪ Being complied
		<ul style="list-style-type: none"> ▪ Avoid using multiple high noise generating equipment and activities simultaneously 	<ul style="list-style-type: none"> ▪ Compliance of SOPs on operation of machinery and equipment ▪ Compliance of method of statement for noise monitoring. 	<ul style="list-style-type: none"> ▪ Permit to work and approval of notification of inspections restrict the operation of machinery and equipment needed for execution of particular activity only. 	<ul style="list-style-type: none"> ▪ Being complied
		<ul style="list-style-type: none"> ▪ Install temporary or portable acoustic barriers around 	<ul style="list-style-type: none"> ▪ Compliance of SOPs on operation of machinery and equipment ▪ Compliance of method of statement for noise monitoring. 	<ul style="list-style-type: none"> ▪ Mitigation measure provided are confined to manufacturer's instructions only. However, enclosures are provided for generator set used on site. 	<ul style="list-style-type: none"> ▪ Being complied

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		stationary construction noise sources.		<ul style="list-style-type: none"> ▪ Fitness check for equipment does not include noise measurements 	
		<ul style="list-style-type: none"> ▪ Warning signs in noise hazard areas. 	<ul style="list-style-type: none"> ▪ Compliance of activity wise method of statements ▪ Compliance of method of statement for noise monitoring ▪ Compliance of CEMP and H&S plan ▪ Compliance of SOPs on operation of machinery and equipment 	<ul style="list-style-type: none"> ▪ Construction site is being barricaded however no warning sign is being provided. ▪ Permit to work system and approval of Notification of inspection is in place to identify hazard, if any. 	<ul style="list-style-type: none"> ▪ same as above
		<ul style="list-style-type: none"> ▪ Identify vibration risk to nearby structures. Take caution working in such areas. 	<ul style="list-style-type: none"> ▪ Compliance of activity wise method of statements. ▪ Compliance of SOPs on operation of machinery and equipment 	<ul style="list-style-type: none"> ▪ No sensitive receptor is located adjacent to project site. ▪ Mainly civil works such as spun piling works, excavations and concreting are being conducted. ▪ Fitness of machinery and equipment is being carried out on regular basis by third party. ▪ Permit to work system and approval of Notification of inspection is in place to identify hazard, if any. 	<ul style="list-style-type: none"> ▪ Being complied
		<ul style="list-style-type: none"> ▪ Conduct noise level monitoring at least every quarter or as necessary. 	<ul style="list-style-type: none"> ▪ Compliance to monitoring plan as per CEMP ▪ Compliance to OHS monitoring plan 	<ul style="list-style-type: none"> ▪ Ambient Noise level (hourly values for 24 hours) is being monitored at five locations on monthly basis and out of which two locations are located in project premises. Refer section VII for details. 	Partially complied as OHS monitoring plan is to be prepared.

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
				<ul style="list-style-type: none"> ▪ However, no source noise level (1 m from source) monitoring is carried out. ▪ OHS monitoring plan is under preparation. 	
7	Aesthetics	<ul style="list-style-type: none"> ▪ Prepare and implement a Construction Waste Management Plan (CWMP) to identify specific steps on handling and disposal of all solid waste from construction activities, including the following: <ol style="list-style-type: none"> 1. Reuse as much waste sand in this project as possible; 2. Finding alternative beneficial uses for any unused 	<ul style="list-style-type: none"> ▪ Compliance of soil management plan, waste management procedure and plan, activity wise method of statements and SOPs. ▪ Inspection and audit conducted by PMDCSC ▪ Monthly report submitted by DBO 	<ul style="list-style-type: none"> ▪ Soil management plan, waste management procedure and plan, activity wise method of statements and SOPs are in place. ▪ Excavated soil is being stored within project site at dedicated place for reuse and partially has been used for refilling. However, no record of excavated soil and reused has been kept in Daily Progress Report. ▪ Sludge generated from STP is also being stored with project premises for possible usages as manure. ▪ Construction debris waste is also being stored at dedicated place for possible usages. However, part of it especially from batching plant has been handed over to WAMCO for disposal. Same is reported in DPR and monthly reports. ▪ Other non-hazardous waste such as kitchen waste, waste from camp and office, wood debris etc is being stored at dedicated places and are being handed over to WAMCO for disposal. Same is reported in DPR and monthly reports. ▪ Hazardous waste such as waste oil, empty containers of hazardous 	<ul style="list-style-type: none"> ▪ Being complied

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<p>sand, for example as infill in other construction works;</p> <p>3. Disposal of debris and bulky solid waste materials after construction stage.</p> <p>4. Minimizing stockpile size.</p> <p>5. Clearing wastes regularly.</p> <p>6. Avoiding stockpiling of excess spoils.</p> <p>7. Covering delivery trucks during transportation</p> <p>8. Cleaning roads.</p> <p>9. Using screening</p>		<p>chemicals etc are being stored at dedicated places and are being handed over to WAMCO for disposal. Same is being reported in DPR and monthly reports.</p> <ul style="list-style-type: none"> ▪ Medical waste generated from health center is being stored at dedicated places. Waste other than needles of used syringes is being handed over to WAMCO for disposal as same is not accepted by WAMCO. Needles of used syringes are being stored separately and discussion are on with IGMH hospital at Male for disposal of same. ▪ WAMCO accepts the waste in mix form for disposal on chargeable basis. This also includes collection from site and transportation to dumping site. ▪ Housekeeping is being done on regular basis and details are being reported in monthly reports. ▪ In-house inspection is being carried out on regular basis. ▪ Local Environment safeguard also conduct inspection on regular basis. 	

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		enclosure shade cloth, temporary walls around constructio n site. 10. Cleaning site regularly. 11. Following the principle of “Reduce, Reuse, Recycle, and Recover”.			
		<ul style="list-style-type: none"> ▪ When applicable, solid wastes from the site shall be returned to the manufacturer of raw materials they were generated from, or dispose as per their specifications. 	<ul style="list-style-type: none"> ▪ Same as above 	<ul style="list-style-type: none"> ▪ It mainly includes scrap metals. At present all are being stored within project site. 	<ul style="list-style-type: none"> ▪ Being complied

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<ul style="list-style-type: none"> ▪ Hazardous waste shall be stabilized, encapsulated, and disposed as per internationally accepted practices. Provision will be made for secure storage of hazardous waste. 	<ul style="list-style-type: none"> ▪ Same as above 	<ul style="list-style-type: none"> ▪ All type of solid waste generated are being collected, stored and disposed of in compliance with waste management plan and collected by WMACO for disposal on regular basis as per details mentioned above. 	<ul style="list-style-type: none"> ▪ Being complied
		<ul style="list-style-type: none"> ▪ Residual and hazardous wastes such as oils, fuels, and lubricants shall be disposed of in approved disposal sites and/or third-party sources approved by Maldives EPA. 	<ul style="list-style-type: none"> ▪ Same as above 	<ul style="list-style-type: none"> ▪ All type of solid waste generated are being collected, stored and disposed of in compliance with waste management plan and collected by WMACO for disposal on regular basis as per details mentioned above. 	<ul style="list-style-type: none"> ▪ Being complied
		<ul style="list-style-type: none"> ▪ Prohibit burning of construction and/or domestic waste; 	<ul style="list-style-type: none"> ▪ In addition to above, Compliance of GRM plan and stakeholder engagement plan. 	<ul style="list-style-type: none"> ▪ All type of solid waste generated are being collected, stored and disposed of in compliance with waste management plan and collected by WMACO for disposal on regular basis as per details mentioned above. 	<ul style="list-style-type: none"> ▪ Being complied.

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<ul style="list-style-type: none"> ▪ Ensure that wastes are not haphazardly thrown in and around the project site; provide proper collection bins, and create awareness to use the dust bins. 	<ul style="list-style-type: none"> ▪ Same as above 	<ul style="list-style-type: none"> ▪ No complaint has been received from public. ▪ Same as above 	<ul style="list-style-type: none"> ▪ Same as above
		<ul style="list-style-type: none"> ▪ Conduct site clearance and restoration to original condition after the completion of construction works. 	<ul style="list-style-type: none"> ▪ Compliance of GRM plan and stakeholder engagement plan. 	<ul style="list-style-type: none"> ▪ Most of the construction activities are confined within the project site which is already fenced with restricted entry. Outside the project site, construction activities mainly include laying pipeline and construction of facilities for water intake and discharge of wastewater. ▪ No complaint has been received from public. 	<ul style="list-style-type: none"> ▪ Same as above
8	Amenities for community	<ul style="list-style-type: none"> ▪ Implement the Traffic Management Plan that will elaborate the following: <ol style="list-style-type: none"> 1. Suitable transportation routes. 	<ul style="list-style-type: none"> ▪ Compliance to CEMP and traffic management plan, security management plan, public health and safety plan, GRM Plan and Stakeholder Engagement plan, activity wise method of 	<ul style="list-style-type: none"> ▪ Traffic management plan, Security management plan, GRM Plan and Stakeholder Engagement plan as part of CEMP is in place. ▪ Minimal movements within the Island as raw materials are directly transported to site via sea. ▪ A dedicated quay wall adjacent to project site is exclusively made 	Partially complied as legal requirements need to be fulfilled for operation of the diesel tanker and adequate hazard mitigation

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<p>2. Safe passage for vehicles and pedestrians.</p> <p>3. Temporary road diversions and for provision of traffic aids if transportation activities cannot be avoided during peak hours.</p> <p>4. Scheduling of material deliveries on low traffic hours, particularly at night time when most establishments in</p>	<p>statements and SOPs etc</p> <ul style="list-style-type: none"> ▪ Complaints, if any received via GRM ▪ Findings of stake holder engagement plan. 	<p>available by WAMCO to contractor for unloading men and materials.</p> <ul style="list-style-type: none"> ▪ Private jetty owned by Villa Pvt Ltd is being used for unloading of construction materials to be used for batching plant located within project site as same has been engaged as sub-contractor for supply of material for batching plant and its operation. ▪ Construction materials unloaded at jetty of Villa Pvt Ltd, located at about 2 km is being transported in jumbo pack of 1 tonne to project site via road. This is confined to only concreting activity. ▪ Others except construction materials for batching plant are being unloaded by using quay wall. ▪ A mobile diesel tanker of 5000 litre is being procured and in use for transportation, storage and filling of vehicles, DG sets and other diesel driven machinery and equipment without requisite legal compliance such as registration with transport authority and permission from MNDF. No mapping of hazards associated with it has been done. ▪ Thilafushi island is an industrial island and has limited road traffic. ▪ No complaint and feedback have been received via GRM and Stakeholder engagement (Refer Section X for details). 	<p>measures should be taken.</p>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		Thilafushi island are already closed.			
		<ul style="list-style-type: none"> ▪ Erect and maintain barricades if required. 	<ul style="list-style-type: none"> ▪ Approval of notification of inspection by PMDCSC and permit to work before start of particular activity in addition as above 	<ul style="list-style-type: none"> ▪ In addition to above: ▪ Most of the construction activities are mainly confined with project site which is already fenced with restricted entry. ▪ Outside the project site, construction activities mainly include laying pipeline and construction of facilities for water intake and discharge of wastewater. However same are yet to be commissioned and mitigation will be implemented on the basis of findings of mapping of risks associated. ▪ Need of barricades will be identified during inspection for approval of notification of inspection by PMDCSC and permit to work to be issued by Area authority/manager of EPC contractor. 	<ul style="list-style-type: none"> ▪ Being complied
		<ul style="list-style-type: none"> ▪ Consult with business and institutions for work schedules. 	<ul style="list-style-type: none"> ▪ Compliance to stakeholder engagement plan. 	<ol style="list-style-type: none"> 1. Stakeholder engagement plan is in place and Stakeholder consultation with relevant local agencies is being conducted on 18 Feb 2024 as per details given in section IX. 2. 	<ul style="list-style-type: none"> ▪ Being complied
		<ul style="list-style-type: none"> ▪ Erect display boards around strategic 	<ul style="list-style-type: none"> ▪ Display boards with details 	<ul style="list-style-type: none"> ▪ Display board is placed at gate to provide information of nature, 	<ul style="list-style-type: none"> ▪ Being complied

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<p>locations about nature, duration of construction and contact for complaints and/or issues about the project.</p>		<p>duration of construction and contact for complaints.</p>	
		<ul style="list-style-type: none"> ▪ Complete quickly any work that is near adjacent establishments . 	<ul style="list-style-type: none"> ▪ Compliance of relevant activity wise method statements and SOPs ▪ Approval of notification of inspection by PMDCSC and permit to work before start of particular activity. 	<ul style="list-style-type: none"> ▪ Need of additional mitigation measures including completion of work quickly is being/will be identified during inspection for approval of notification of inspection by PMDCSC and permit to work to be issued by Area authority/manager of EPC contractor. 	<ul style="list-style-type: none"> ▪ Being complied
		<ul style="list-style-type: none"> ▪ Restore damaged properties and utilities. 	<ul style="list-style-type: none"> ▪ Approval of design details of construction. ▪ Approval of notification of inspection by PMDCSC and permit to work before start of particular activity ▪ Compliance of GRM plan and stakeholder engagement plan. 	<ul style="list-style-type: none"> ▪ Damaged properties and utilities will be restored, if any will be identified during approval of design details and inspection for approval of notification of inspection by PMDCSC. ▪ An underground (at 1 m depth) live power cables of STELCO is passing through the project site and discharge pipeline from dewatering sedimentation pond is passing above the same with adequate protection. Discussion with STELCO and HDC are ongoing for shifting of same. ▪ No compliant has been registered though GRM plan which is being 	<p>Being complied.</p>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
				implemented partially as per details given in other section of this table.	
9	Marine and terrestrial ecology	<ul style="list-style-type: none"> ▪ Implement the Marine and Beach Area Construction Work Plan. 	<ul style="list-style-type: none"> ▪ Compliance of the Marine and Beach Area Management Plan 	<ul style="list-style-type: none"> ▪ The Marine and Beach Area Management Plan is in place. However, CEMP, Spill Control and Containment Plan, Flora and Fauna management plan etc are also in place as complementary plans. 	<ul style="list-style-type: none"> ▪ Being complied
		<ul style="list-style-type: none"> ▪ Implement the Erosion Control Plan for pipeline works. 	<ul style="list-style-type: none"> ▪ Compliance of the activity wise method of statements and SOPs 	<ul style="list-style-type: none"> ▪ Erosion Control Procedures are being addressed in the relevant construction procedures and method statements 	<ul style="list-style-type: none"> ▪ Being complied
		<ul style="list-style-type: none"> ▪ Ensure that all construction activities are conducted strictly within the site footprint (including offices, car parking and other activities that might normally be located in an exterior 	<ul style="list-style-type: none"> ▪ Compliance to approved layout plan, CEMP, method of activity wise method of statements and SOPs ▪ Approval of Notification of Inspection before start of any construction activity. 	<ul style="list-style-type: none"> ▪ All construction activities are conducted within the site boundary except laying of pipelines for water intake and discharges for which adequate permission and permits are/will be being obtained. ▪ Layout plan has been approved by PMDCSC. ▪ PMDCSC is to approve Notification of Inspection before start of any construction activity. 	<ul style="list-style-type: none"> ▪ Being complied

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<p>contractor's area).</p> <ul style="list-style-type: none"> ▪ Prohibit any deliberate killing or harming of animals on or off-site; any hunting or fishing at the site or in nearby areas by site personnel; preventive actions shall be put in place by contractor for protected marine species. 	<ul style="list-style-type: none"> ▪ Compliance with Flora and Fauna management plan 	<ul style="list-style-type: none"> ▪ Thilafushi Island is almost devoid of terrestrial flora and fauna and as per IBAT study, no endangered species has been identified. ▪ No source for poaching as food is cooked in kitchen for everyone staying and/or working at project site and no cooking by workers is allowed within project site. ▪ Camp area is located within project premises and entry is recorded and restricted via two gates where in security guards are being posted. 	<ul style="list-style-type: none"> ▪ Being complied
		<ul style="list-style-type: none"> ▪ Ensure that all construction work or other activities near the site perimeter are conducted with particular care and include measures to reduce noise and dust to 	<ul style="list-style-type: none"> ▪ Same as give in Sr no 4,5 and 6 of this table. 	<ul style="list-style-type: none"> ▪ Same as give in Sr no 4,5 and 6 of this table. 	<ul style="list-style-type: none"> ▪ Same as give in Sr no 4,5 and 6 of this table.

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<p>minimum possible.</p> <ul style="list-style-type: none"> ▪ Create awareness in all site staff & workers on the importance of the marine animals/species and plants around the site and their vulnerability. 	<ul style="list-style-type: none"> ▪ Regular trainings for staff and workers 	<ul style="list-style-type: none"> ▪ No training has been provided. 	<ul style="list-style-type: none"> ▪ Not complied
		<ul style="list-style-type: none"> ▪ To protect site personnel, training should also be provided to enable them to recognize, and deal safely and humanely with all animals that may be encountered. 	<ul style="list-style-type: none"> ▪ Same as above 	<ul style="list-style-type: none"> ▪ Same as above 	<ul style="list-style-type: none"> ▪ Same as above.
		<ul style="list-style-type: none"> ▪ Implement the Spill Control and Containment Plan. 	<ul style="list-style-type: none"> ▪ Compliance with the Spill Control and Containment Plan 	<ul style="list-style-type: none"> ▪ Spill Control and Containment Plan is in place. However, no incident has been reported. ▪ As per observation made during site inspections: <ol style="list-style-type: none"> 1. Only one spill kit near container used for storage of hazardous chemicals is being provided. 	<ul style="list-style-type: none"> ▪ Partially complied and need to: <ol style="list-style-type: none"> 1. provide spill kits at all locations where chances of

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
				<p>However hazardous chemicals including waste are being stored at other locations including construction area, batching plant area etc.</p> <ol style="list-style-type: none"> 2. Only one eye wash station is provided in batching plant area. No eye wash station has been provided near container used for storage of hazardous chemicals. 3. Mask provided as part of Spill kit is not as per document on PPE procedure. 4. No spill kit is being provided in mobile diesel tanker used for bringing, storage and filling of diesel. 	<p>spill are medium to high.</p> <ol style="list-style-type: none"> 2. Need to replace mask to comply with PPE procedure.
		<ul style="list-style-type: none"> ▪ Marine works should be scheduled to occur in the north east monsoon season when the sea conditions are calmer to limit the spread of sediment around this operation 	<ul style="list-style-type: none"> ▪ Approval of Notification of execution plan and notification of inspection. ▪ Permits from relevant local authorities ▪ Approval of notification of inspection by PMDCSC 	<ul style="list-style-type: none"> ▪ Laying of pipelines for discharge of wastewater from STP and from sedimentation pond for dewatering in to sea is only marine works carried out for which permits from HDC and URA have been obtained. ▪ Marine works pending is yet to be started and only confined to construction of intake and outfall structures. ▪ Mentioned aspects will be considered during preparation of method of statement and SOPs for same. Based on available of site-specific details, mapping of environment impacts and risks will be carried out to plan the requisite mitigation measures. 	<ul style="list-style-type: none"> ▪ Being complied

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<ul style="list-style-type: none"> ▪ Conduct the excavation, and deposit the excavated material in a more controlled manner minimizing the area that is disturbed. 	<ul style="list-style-type: none"> ▪ Compliance with soil management plan and method statement for excavation and relevant SOPs. ▪ Approval of notification of inspection by PMDCSC ▪ Findings of regular walkdowns, inspection and audit to be conducted by PMDCSC. 	<ul style="list-style-type: none"> ▪ Notification of Inspection has been raised to PMDCSC for approval before start of excavation works to ensure the compliance of relevant plans and method of statement. ▪ PMDCSC has deputed on full time site engineer is deputed on site for granting approval to Notification of Inspection and for inspections on regular basis. ▪ Excavated material is stored in a designated area and is being re-used for construction work. However: <ol style="list-style-type: none"> 1. no record has been kept for excavated and reused soil. 2. No in-house inspection has been carried out to comply with soil management plan. 	<ul style="list-style-type: none"> ▪ Being complied.
		<ul style="list-style-type: none"> ▪ Avoid the need to re-excavate by choosing right time (calmed sea conditions again), and quickly lowering the pipes into trench and refilling. 	<ul style="list-style-type: none"> ▪ Same as above 	<ul style="list-style-type: none"> ▪ Same as above 	<ul style="list-style-type: none"> ▪ Being complied
		<ul style="list-style-type: none"> ▪ Limit the size of the construction area on the 	<ul style="list-style-type: none"> ▪ Same as above. 	<ul style="list-style-type: none"> ▪ All construction activities are conducted within the site boundary except laying of pipelines for water intake and discharges for which 	<ul style="list-style-type: none"> ▪ Being complied

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<p>beach and to avoid any encroachment outside the specified area.</p> <ul style="list-style-type: none"> ▪ Monitor the turbidity & DO levels due to spread of sediment throughout the trenching operation and work should be stopped if levels exceed pre-determined values as per the guideline below: <ol style="list-style-type: none"> 1. The turbidity of the water is to be measured (ISO 7027) at the edge of the construction zone during trenching and 	<ul style="list-style-type: none"> ▪ Compliance of method of statements for dewatering. ▪ Results of monitoring of discharge water from sedimentation pond for. ▪ Visual inspection of site engineer of PMDCSC. 	<p>adequate permission and permits are/will be being obtained.</p> <ul style="list-style-type: none"> ▪ Sedimentation pond for dewatering activities is being provided to ensure quality of discharge is in line with the requirements. ▪ Requisite permits are in place as per details given in Sr no 3 of this table. ▪ Sample from sedimentation pond is being collected and tested on monthly basis for 14 parameters as prescribed by local regulation. ▪ In absence of limit prescribed for discharge of water from sedimentation pond, same to be complied for specified parameter are being taken from limits prescribed by local regulation for discharge of Sewage Treatment Plant (STP) and control parameters in seawater analyses. While value of TSS is being taken from IFC guidelines for Environment, Health and Safety Guidelines for Construction Material Extraction. As per lab report all parameter were found within limits as per details provided in section VII of report. ▪ Observation, if any made by Site engineer of PMDCSC is being raised 	<ul style="list-style-type: none"> ▪ Being complied

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		backfilling activities; 2. When the turbidity exceeds the minimum of the background turbidity plus 20% or 100 NTU, the trenching is to cease until the turbidity returns to the background level plus 10%.		to DBO contractor with requisite mitigation measures.	
10	Socioeconomic status	<ul style="list-style-type: none"> ▪ Engage the local workforce to the maximum possible extent. 	<ul style="list-style-type: none"> ▪ Compliance of Human resource policies and procedures ▪ Complaints received 	<ul style="list-style-type: none"> ▪ Availability of local workers is limited hence at present, only three workers/staff have been engaged out of about 150 workers/staff. However Human resource policies and procedures are in place. ▪ No complaint received 	<ul style="list-style-type: none"> ▪ Being complied
		<ul style="list-style-type: none"> ▪ Procure construction materials from local market, 	<ul style="list-style-type: none"> ▪ Number of local vendors ▪ Complaints received 	<ul style="list-style-type: none"> ▪ Based on availability, preference is given to locals. All subcontractors engaged are local. ▪ Sub contactors engaged are for supply of construction materials for 	Being complied

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		wherever available.		batching plan and operation of batching plant, security, laboratory for civil works related testing, transportation of laboratory samples, excavation works and General Electric works. ▪ No complaints received	
11	Other amenities for community welfare	<ul style="list-style-type: none"> ▪ Before any excavation work, reconfirm location and nature of existing infrastructure, if any, identified during detailed design stage. ▪ Minimize repeated disturbance to locals by integrating forms of infrastructures such as temporary safe walkways in areas with ongoing excavation works. Provide alternate 	<ul style="list-style-type: none"> ▪ Compliance of method of statement for excavation. ▪ Approval of Notification of Inspection by PMDCSC. ▪ Same as above 	<ul style="list-style-type: none"> ▪ Notification of Inspection is to be approved by site engineer of PMDCSC before start of any excavation work. This need inspection of site to be excavated. ▪ Discussions are ongoing with STECLCO and HDC to re locate the live electrical cable of STELCO which is passing through the project site. Till then adequate mitigation measures are being taken to protect the same ▪ Most of the excavation work is/will be carried out within project site which is fenced with restricted entry. Construction activities outside project site is/will be mainly laying pipelines for intake water and discharge wastewater. ▪ Permits from HDC and URA are in place for discharge of wastewater from STP and dewatering discharge from sedimentation pond. Same will be obtained for construction of facilities for water intake and discharge of wastewater for operation. 	<ul style="list-style-type: none"> ▪ Being complied. ▪ Being complied

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<p>routes in the area if necessary, to allow smooth movement of workers and vehicles in the area.</p>		<ul style="list-style-type: none"> ▪ Notification of Inspection is to be approved by site engineer of PMDCSC before start of any excavation work. This need inspection of site to be excavated. 	
		<ul style="list-style-type: none"> ▪ Inform through continuous meaning consultations with local people about nature, duration and possible impacts of the construction and integrate their concerns. 	<ul style="list-style-type: none"> ▪ Compliance of stakeholder engagement plan. 	<ul style="list-style-type: none"> ▪ Stakeholder consultation conducted 	<ul style="list-style-type: none"> ▪ Being complied
		<ul style="list-style-type: none"> ▪ Promptly relocate infrastructure materials if found to be obstructing or disturbing free movement of local people. 	<ul style="list-style-type: none"> ▪ Compliance of method of statement for excavation. ▪ Approval of Notification of Inspection by PMDCSC ▪ Complaint, if any received ▪ Feedback from public during consultation 	<ul style="list-style-type: none"> ▪ Most of the excavation work is/will be carried out within project site which is fenced with restricted entry. Construction activities outside project site is/will be mainly laying pipelines for intake water and discharge wastewater. ▪ Permissions of HDC for discharge location and from URA for discharge of dewatering during excavation have been obtained and renewed on regular basis. However, permit for 	<ul style="list-style-type: none"> ▪ Partially complied as dewatering location permit from HDC needs to be renewed.

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
				<p>discharge of water from sedimentation pond into sea has been extended by URA till 23 April 2024 from 25 March 2024 but permit for location has not been extended by HDC as it was valid till 25 March 2024.</p> <ul style="list-style-type: none"> ▪ Notification of Inspection is to be approved by site engineer of PMDCSC before start of any excavation work. ▪ No complaints received 	
		<ul style="list-style-type: none"> ▪ Take prior permission from local authority for water use. 	<ul style="list-style-type: none"> ▪ Permit register 	<ul style="list-style-type: none"> ▪ Water is being taken from pipeline of Male Water and Sewage Company on chargeable basis for construction and domestic purposes. 	<ul style="list-style-type: none"> ▪ Being complied
		<ul style="list-style-type: none"> ▪ Restore damaged properties and utilities to pre-work conditions. 	<ul style="list-style-type: none"> ▪ Approval of design details of construction. ▪ Approval of notification of inspection by PMDCSC and permit to work before start of particular activity ▪ Compliance of GRM plan and stakeholder engagement plan. 	<ul style="list-style-type: none"> ▪ Damaged properties and utilities will be restored, if any will be identified during approval of design details and inspection for approval of notification of inspection by PMDCSC. ▪ An underground (at 1 m depth) live power cables of STELCO is passing through the project site and discharge pipeline from dewatering sedimentation pond is passing above the same with adequate protection. Discussion with STELCO and HDC are ongoing for shifting of same. ▪ No compliant has been registered though GRM plan is implemented 	<p>Being complied.</p>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
				partially as per details given in other section of this table.	
		<ul style="list-style-type: none"> ▪ Restrict work force in designated areas. 	<ul style="list-style-type: none"> ▪ Same as given in Sr no 14 of this table. 	<ul style="list-style-type: none"> ▪ Same as given in Sr no 14 of this table. 	<ul style="list-style-type: none"> ▪ Same as given in Sr no 14 of this table
		<ul style="list-style-type: none"> ▪ Identify stockyard areas in consultation with local administration. 	<ul style="list-style-type: none"> ▪ Compliance of soil management plan, waste management procedure and Plan, relevant activity wise method of statements and SOPs ▪ Approved layout plan. ▪ Observations made by site engineer deputed by PMDCSC. 	<ul style="list-style-type: none"> ▪ All construction activities are/shall be mainly confined to fenced project site and all stockyard areas are located within the project site. ▪ No stockyard is envisaged outside project premises. 	<ul style="list-style-type: none"> ▪ Being complied
		<ul style="list-style-type: none"> ▪ Work on private land to require written permission of landowners. 	<ul style="list-style-type: none"> ▪ Approved layout plan. ▪ Approval of notification of inspection by PMDCSC. ▪ Permission of land acquired/to be acquired for usages. 	<ul style="list-style-type: none"> ▪ Most of the excavation work is/will be carried out within project site which is fenced with restricted entry. Construction activities outside project site is/will be mainly confined to laying pipelines for intake water and discharge wastewater. ▪ All construction activities are/will be executed as per approved layout plan and on land owned by HDC and accordingly permissions for usages are/will be obtained. ▪ Site engineer of PMDCSC is to approve notification of inspection before start of main construction activities. 	<ul style="list-style-type: none"> ▪ Being complied

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<ul style="list-style-type: none"> ▪ Prefer small mechanical excavator for excavation works. 	<ul style="list-style-type: none"> ▪ Compliance of method of statements of excavation and relevant SOPs. ▪ Approval of notification of inspection by PMDCSC. 	<ul style="list-style-type: none"> ▪ Excavation for laying the pipelines for wastewater discharge and water intake is/will be carried out as per relevant method of statement and SOPs and after approval of notification of inspection by Site engineer of PMDCSC. Permits from HDC and URA have been obtained for discharge of existing pipeline for discharge of wastewater from STP and sedimentation pond for discharge of water from dewatering. 	<ul style="list-style-type: none"> ▪ Being complied
		<ul style="list-style-type: none"> ▪ Prohibit alcohol and drugs on site. 	<ul style="list-style-type: none"> ▪ Compliance of local regulations 	<ul style="list-style-type: none"> ▪ Maldives as country has a unique approach to alcohol laws that reflect its cultural and religious values. As a predominantly Muslim country, the Maldives adheres to Islamic law, which prohibits the consumption of alcohol by its citizens. This prohibition is rooted in the Islamic belief. 	<ul style="list-style-type: none"> ▪ Being complied
		<ul style="list-style-type: none"> ▪ Prevent excessive noise. 	<ul style="list-style-type: none"> ▪ Same as per no 6 of this table 	<ul style="list-style-type: none"> ▪ Same as per no 6 of this table 	<ul style="list-style-type: none"> ▪ Same as per no 6 of this table
		<ul style="list-style-type: none"> ▪ Code of conduct for workers includes restricting workers in designated areas, no open defecation, no 	<ul style="list-style-type: none"> ▪ Compliance of Human resource polices and procedure, Construction camp development and management plan, waste management procedure and plan. ▪ Records reported in Daily Progress Report 	<ul style="list-style-type: none"> ▪ Most workers and staff stay within camp area located within the project site. ▪ Each one staying in camp area is being provided identity card. ▪ Project site is fenced and entry and exit is allowed via two guarded gates only. 	<ul style="list-style-type: none"> ▪ Being complied

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<p>littering, no firewood collection, no fire except designated places, no trespassing, no residence at construction sites, and no obligation to potentially dangerous work.</p>	<p>(DPR) and monthly report by submitted by DBO.</p> <ul style="list-style-type: none"> ▪ Regular inspection by PMDCSC. 	<ul style="list-style-type: none"> ▪ Food is being cooked in kitchen and provided to all. No cooking is allowed. ▪ Other facilities such as toilets, laundry, medical facilities, drinking water, recreation facilities, housekeeping, pest control etc are being provided in camp area. Toilets are also being provided near construction area within project site. ▪ All type of waste generated is being stored in dedicated area and handed over to WAMCO for disposal. ▪ At time of recruitment, each worker and staff are being informed by code of conduct as per Human resource polices and procedure. ▪ H&S plan is in place to ensure health and safety of workers. ▪ In-house inspections and regular inspections by PMDCSC are being conducted on regular basis. 	
		<ul style="list-style-type: none"> ▪ Follow international best practices on community health and safety such as those in Section 4.3 of IFC Environmental Health and Safety (EHS) Guidelines on 	<ul style="list-style-type: none"> ▪ Compliance to CEMP and all plans as mentioned including Public health and safety plan. ▪ Records reported in Daily Progress Report (DPR) and monthly report by submitted by DBO. ▪ Regular inspection by PMDCSC. 	<ul style="list-style-type: none"> ▪ Mapping of environment impacts and risk to health and safety has been done and on the basis of findings, public health and safety plan has been developed to define the requirements of mitigation measures. ▪ Relevant plans such as traffic management plan, Security management plan, flora and fauna management plan, waste management procedure and plan, emergency response plan and activity wise method of statements on STP, 	<ul style="list-style-type: none"> ▪ Being complied

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<p>Construction and Decommissioning Activities. These requirements are discussed in Section VI of the EIA report.</p>		<p>batching plant, dewatering, excavation etc are in place.</p> <ul style="list-style-type: none"> ▪ Regular monitoring of ambient air quality and noise level in and around project site is being conducted. ▪ Regular monitoring of wastewater discharge from project site is being conducted. ▪ Details of construction activities, real time inventory of construction materials, waste generated, stored and disposed are being reported in DPR and monthly report. ▪ In-house inspections and regular inspections by PMDCSC are being conducted on regular basis. 	
		<ul style="list-style-type: none"> ▪ Maintain a complaint logbook in workers camp and act promptly of complaints. 	<ul style="list-style-type: none"> ▪ Compliance of Grievance Redressal Mechanism plan 	<ul style="list-style-type: none"> ▪ GRM plan in place and details of status of implementation of same are as per given in section X. 2. 	<p>Partially complied as inadequate compliance of GRM plan.</p>
13	Work site and Workers Health and Safety	<ul style="list-style-type: none"> ▪ Comply with labour act of Maldives. 	<ul style="list-style-type: none"> ▪ Compliance of approved H&S plan and CEMP & other plans including HSE Regulatory Procedure ▪ Status of permits ▪ Details provided on health and safety of workers in monthly report 	<ul style="list-style-type: none"> ▪ Applicable provisions of local regulations have been considered in developing all plans as mentioned in Table 10. However, HSE Regulatory procedure is yet to be developed. ▪ All permits applicable are in place. However, a mobile diesel tanker of 5000 liter is being procured and in use for transportation, storage and filling of vehicles, DG sets and other diesel driven machinery and 	<ul style="list-style-type: none"> ▪ Partially complied as: <ol style="list-style-type: none"> 1. registration with transport authority and permission of MNDF for diesel mobile

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
			<ul style="list-style-type: none"> ▪ Regular inspection by PMDCSC 	<p>equipment without requisite legal compliance such as registration with transport authority and permission from MNDF.</p> <ul style="list-style-type: none"> ▪ Requisite details on finding and actions taken training, tool box talk, status of permits including copies of same etc are being provided in monthly report submitted by DBO. ▪ Observations are being made during walk downs and inspections being conducted by PMDCSC. ▪ All wages, leave and overtime is being provided in compliance with local regulations. For example, local employees are being paid pension fund @14% as additional amount. Overtime is being provided @1.5 time on holidays and @1.25 times on working days. 	<p>tanker are to be obtained.</p> <ol style="list-style-type: none"> 2. Document of HSE regulatory compliance procedure is to be developed for implementation.
		<ul style="list-style-type: none"> ▪ Implement the Occupational Health and Safety Plan, which shall follow all occupational health and safety requirements discussed in Section VI of the EIA report. 	<ul style="list-style-type: none"> ▪ Compliance to H&S plan and CEMP & other plans such as emergency response plan, Chemical and hazardous material management plan etc ▪ Compliance of relevant activity wise method of statements and SOPs ▪ Complaints received via GRM ▪ Findings of OHS monitoring 	<ul style="list-style-type: none"> ▪ CEMP and H&S plan are in the process of revision and status of each plan is as per given in Table 10. ▪ Activity wise method of statements such as excavation, spun piling, batching plant, wastewater treatment, dewatering SOPs such as PPE, electrical safety procedure, permit to work procedure etc are in place. ▪ OHS monitoring plan is in process of development. However, during March-24, ambient air quality and noise level have been monitored at two locations for 24 hours. 	<ul style="list-style-type: none"> ▪ Partially complied <ol style="list-style-type: none"> 1. Issues as identified need to be addressed. 2. OHS monitoring plan is to be implemented. 3. Display of do's and don'ts and

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
			<ul style="list-style-type: none"> ▪ Details provided on health and safety of workers in monthly report ▪ Regular inspection by PMDCSC 	<ul style="list-style-type: none"> ▪ No EHS committee has been constituted. ▪ Fire incidents have been reported on regular intervals (e.g. reported on Feb 26 and March 3, 10, 18 and 25). Though reportedly all have been controlled within 30 to 45 minutes by WAMCO and DBO contractor has notified to all stakeholders including WAMCO, PMU, PMDCSC etc ▪ Mock drill has not been conducted on fire fighting. ▪ Temporary scaffolding in use were found unsafe, however same are being certified by scaffolding inspectors and provided with tag. ▪ Eye wash station is located only in batching plant area and same has not been provided near storage of chemical and hazardous storage container. ▪ Secondary containments have not been provided for storage of packed containers of chemicals and hazardous materials stored at other places. ▪ Air exchange rate of container is to verified in compliance with best practice of storage of chemicals and hazardous materials. ▪ Inadequate display of do's and don't and same are displayed in English only which are hard to understand by 	<p>more training on same.</p> <p>4. Record keeping need to be inspected/audited in details.</p>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<ul style="list-style-type: none"> ▪ Provide compulsory health and safety orientation training to all new workers to ensure that they are apprised of Occupational Health and Safety Plan including rules of work, use of personal protective equipment (PPE), preventing injury to fellow workers, etc. 	<ul style="list-style-type: none"> ▪ Compliance of HSE Training Procedure ▪ Training schedule ▪ Details provided in monthly report ▪ Regular inspection by PMDCSC 	<p>most workers and leads to unawareness by most workers.</p> <ul style="list-style-type: none"> ▪ Fire extinguishers were not inspected by third party, though same as inspected by in-house team. ▪ During inspection of records on random basis in compliance with all relevant documents, it is found that same need to be audited in details to verify the compliance. <ul style="list-style-type: none"> ▪ Trainings are conducted on a regular basis as per schedule prepared on monthly basis. ▪ Details of training provided are submitted as part of monthly report. 	<ul style="list-style-type: none"> ▪ Being complied

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<ul style="list-style-type: none"> ▪ Restrict public access to worksites. 	<ul style="list-style-type: none"> ▪ Approved project site and layout plan. 	<ul style="list-style-type: none"> ▪ Site boundary is fenced and only three gates are provided for entry/exit ▪ Out of three gates, two are open for use and two guards at each gate with guardhouses are placed to control and restrict entry. 	<ul style="list-style-type: none"> ▪ Being complied
		<ul style="list-style-type: none"> ▪ Provide PPE to workers and ensure their effective usage. For example, require workers to (i) wear ear plugs while in noise hazard areas, and (ii) wear high visibility clothes or reflectorized vests at all times. 	<ul style="list-style-type: none"> ▪ Compliance to H&S plan, CEMP & other plans such as Risk Assessment Procedure, Chemicals and hazardous materials management plan, emergency response plan, HSE training procedure etc ▪ Activities wise method of statements and SOPs including PPE procedure. ▪ Findings of OHS monitoring plan. ▪ Regular inspection by PMDCSC 	<ul style="list-style-type: none"> ▪ PPEs are being provided as per mapping of hazards being carried within the risk assessment procedure and details are provided in activity wise method of statements and SOPs. ▪ PPEs provided are by and large in compliance with British standards but need to be ensured by detailed inspection and audit. ▪ In-house inspection of condition of PPEs needs to be made more effective as many workers were observed wearing damaged shoes. ▪ In-house supervision of applying PPEs by workers need to be made more effective as many workers were found not wearing all PPEs as required. ▪ Need more training on importance of PPEs and possible consequences due to not wearing. ▪ Permit to work need to be made more specific as it does not provide activity specific requirements of PPEs. ▪ Toolbox talks are being conducted and records of same are being provided in monthly report. 	<ul style="list-style-type: none"> ▪ Partially complied <ol style="list-style-type: none"> 1. OHS monitoring plan is to be implemented. 2. Inspection of conditions of PPEs and supervision on wearing of same need to be made more effective. 3. Need for more training. 4. Record keeping need to be inspected/ audited in detail.

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
				<ul style="list-style-type: none"> ▪ OHS monitoring plan is in process of development. ▪ During inspection of records on random basis in compliance with all relevant documents, it is found that same need to be audited in detail to verify the compliance. 	
		<ul style="list-style-type: none"> ▪ Document procedures to be followed for site activities. 	<ul style="list-style-type: none"> ▪ Same as given in other rows of this aspects 	<ul style="list-style-type: none"> ▪ Same as given in other rows of this aspects 	Same as given in other rows of this aspects
		<ul style="list-style-type: none"> ▪ Maintain accident reports and records. 	<ul style="list-style-type: none"> ▪ Compliance of H&S plan and Incident reporting and investigation procedure. ▪ Medical register as maintained in health center ▪ Incident reporting as part of monthly report. ▪ Regular inspection by PMDCSC 	<ul style="list-style-type: none"> ▪ All accidents are being recorded and reported in compliance with Incident reporting and investigation procedure. ▪ Medical register of type of patient including injured during accident are being reported in monthly report. ▪ During inspection by PMDCSC, it was observed that: <ol style="list-style-type: none"> 1. On further investigation of incident reported during January and February, LTI was reported as NIL though injured person in both incidents was on sick leave for the next day. 2. As per record maintained by the doctor, two accidents were reported in March-24 but same have not been investigated in line with Incident reporting and investigation procedure and are not being reported in the monthly report. 	<ul style="list-style-type: none"> ▪ Partially complied 1. LTI needs to be corrected 2. Reported two accidents need to be investigated for requirements of corrective actions.

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<ul style="list-style-type: none"> ▪ Make first aid kits readily available. 	<ul style="list-style-type: none"> ▪ Compliance to H&S plan, CEMP & other plans such as, emergency response plan, HSE training procedure etc ▪ Activities wise method of statements and SOPs ▪ Regular inspection by PMDCSC 	<ul style="list-style-type: none"> ▪ Health center with full time one MBBS doctor and one nurse on 24x7 basis. ▪ In addition to above general first aid kits are placed at several locations, however Inadequate first aid facility for treatment of electrocuted person as it need to conform British Standard BS 8599-1:2019 and no defibrillator has been procured for CPR. However as per doctor, CPR can be done via conventional method. ▪ Total trained first aiders are nine. 	<ul style="list-style-type: none"> ▪ Being complied
		<ul style="list-style-type: none"> ▪ Maintain hygienic accommodation in work camps. 	<ul style="list-style-type: none"> ▪ Compliance to Construction camp development and management plan. ▪ Complaints received via GRM ▪ Regular inspection by PMDCSC 	<ul style="list-style-type: none"> ▪ Adequate hygienic is being maintained in kitchen, dining hall and accommodations. Improvement is required on the following: <ol style="list-style-type: none"> 1. Regular in-house inspections are inadequate and not in compliance with plan. 2. Issues in workers accommodations such as inadequate personal light, encroachment of corridors, inadequate light within corridor etc. 3. Only one door has been provided in one block of workers accommodation to be used for entry/exit in emergency also. 4. Workers wash their feet and hands before offering prayer outside washrooms which led to wastewater discharge in open area. 	<ul style="list-style-type: none"> ▪ Being complied.

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<ul style="list-style-type: none"> ▪ Ensure uncontaminated water for drinking, cooking and washing. 	<ul style="list-style-type: none"> ▪ Compliance to Construction camp development and management plan. ▪ Monthly report ▪ Complaints received via GRM ▪ Regular inspection by PMDCSC 	<p>5. Drain from AC is being spilled over in open area.</p> <p>6. Issue of electricity safety within rooms as number of sockets are not adequate.</p> <ul style="list-style-type: none"> ▪ During inspection of records on random basis in compliance with all relevant documents, it is found that same need to be audited in detail to verify the compliance. ▪ However, no complaint has been received on subject during present quarter. <ul style="list-style-type: none"> ▪ Water is being supplied by MSWC on chargeable basis via pipeline. ▪ Household RO units are being provided to treat further the water supply from MSWC. Treated water is being used for cooking and drinking. However, staff including supervisors and above are provided bottled water for drinking. ▪ Supply water from MSWC is being used for all purposes other than drinking and cooking. ▪ Samples from water supply line of MSWC, outlet of all household RO units are being tested on monthly basis. Test reports are being provided as part of monthly report. ▪ No complaint has been received on subject during present quarter. 	<ul style="list-style-type: none"> ▪ Being complied

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<ul style="list-style-type: none"> ▪ Ensure clean eating areas. 	<ul style="list-style-type: none"> ▪ Compliance to Construction camp development and management plan. ▪ Complaints received via GRM ▪ Regular inspection by PMDCSC 	<ul style="list-style-type: none"> ▪ Adequate hygienic is maintained in kitchen, dining hall and accommodation. ▪ Records of regular cleaning are being maintained. ▪ No complaint has been received on subject during present quarter. 	<ul style="list-style-type: none"> ▪ Being complied
		<ul style="list-style-type: none"> ▪ Ensure sanitation facilities are readily available. 	<ul style="list-style-type: none"> ▪ Compliance to H&S plan, Construction camp development and management plan etc. ▪ Complaints received via GRM ▪ Regular inspection by PMDCSC 	<ul style="list-style-type: none"> ▪ In compliance with plan, an adequate number of toilets are provided to workers, @1 unit per 15 personals. However for the staff provided attached toilets rooms are being provided. ▪ In addition to above, bio-toilets are provided near construction site including batching plant area though camp area is located with project site. ▪ Records of regular cleaning are being maintained. ▪ No complaint has been received on subject during present quarter. 	<ul style="list-style-type: none"> ▪ Being complied
		<ul style="list-style-type: none"> ▪ Provide medical insurance coverage for workers. 	<ul style="list-style-type: none"> ▪ Compliance to H&S plan and Human Resource Policies and Procedure. ▪ Complaints received via GRM ▪ Regular inspection by PMDCSC 	<ul style="list-style-type: none"> ▪ Personal Mediclaim is same as being provided as part of permit to work provided by Maldivian Govt. No additional insurance has been provided on same account. ▪ Other insurance as third party, group insurance, compensation etc are in place. 	<ul style="list-style-type: none"> ▪ Being complied

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<ul style="list-style-type: none"> ▪ Provide orientation for guest visitors. 	<ul style="list-style-type: none"> ▪ Compliance Security management plan, H&S plan, HSE training procedure etc ▪ Records of visitors 	<ul style="list-style-type: none"> ▪ In compliance with security management plan, visitor is being provided entry/exit by security guards via two gates only. Visitor needs to fill details as per data sheet provided. Also, security guards provide identity card, safety jacket, helmets, safety shoes, in case visitor is to visit the construction site etc at entry gate. ▪ In compliance with HSE training procedure, orientation including HSE is being provided to visitor by HSE staff in office building. ▪ Records are kept. 	<ul style="list-style-type: none"> ▪ Being complied
		<ul style="list-style-type: none"> ▪ Ensure that visitors do not enter hazard areas unescorted. 	<ul style="list-style-type: none"> ▪ Same as above. 	<ul style="list-style-type: none"> ▪ In continuation to above, HSE team make sure that: <ol style="list-style-type: none"> 1. Visitor is made aware about the hazardous associated with the construction site. 2. Visitor is accompanied by a member of HSE team and/or construction team. 	<ul style="list-style-type: none"> ▪ Being complied
		<ul style="list-style-type: none"> ▪ Ensure moving equipment is outfitted with audible backup alarms. 	<p>Compliance to H&S plan, General Lifting, Unloading and Transportation Procedure etc</p> <ul style="list-style-type: none"> ▪ 	<ul style="list-style-type: none"> ▪ In compliance with documents in place, equipment are being fitted with all accessories provided by manufactures. ▪ Checklists of in-house inspection are in place. 	<ul style="list-style-type: none"> ▪ Being complied
		<ul style="list-style-type: none"> ▪ Chemical and material storage areas need to be marked 	<ul style="list-style-type: none"> ▪ Compliance of H&S plan, Chemicals and hazardous material management plan, emergency response 	<ol style="list-style-type: none"> 1. Overall, dedicated storages for hazardous chemicals and materials are provided with second containment and polythene ground 	<ul style="list-style-type: none"> ▪ Partially complied

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		clearly. Display MSDS, train staff on storage and handling.	<p>plan, activity wise relevant method of statements and SOPs</p> <ul style="list-style-type: none"> ▪ Regular inspection by PMDCSC. 	<p>covers as impermeable layer. However:</p> <ol style="list-style-type: none"> 2. A mobile diesel tanker of 5000 liter is being procured and in use for transportation, storage and filling of vehicles, DG sets and other diesel driven machinery and equipment without requisite legal compliance such as registration with transport authority and permission from MNDF. No mapping of hazards associated with it has been done and no mitigation measures in addition to those provided by manufacturer are in place. 3. Second containment has not been provided for hazardous chemicals being stored in warehouse on temporary basis before transferring same to dedicated storage area for same. 4. Chemical Sikaplastic-176 LK is being used and stored within batching plant area which is transported in 1000 liter container. Storage area for containers is provided with impermeable RCC lining but no secondary containment. 5. For usages, chemical Sikaplastic-176 LK Chemicals is being stored in tank with impermeable RCC lining but without secondary containment. 	

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
				<ul style="list-style-type: none"> ▪ MSDS are available. However, record on real time inventory is not kept. ▪ Display of do's and don'ts are in English only which is hard to understand by workers. ▪ Staff is trained on how to use PPEs, Spill Kit and fire extinguisher but have inadequate understanding on hazards associated with each chemical and specific requirement, if any to deal with same. ▪ Others as per given in above row for implementation of occupational health and safety plan. 	
		<ul style="list-style-type: none"> ▪ Hearing protection equipment enforced in noisy environment. 	<ul style="list-style-type: none"> ▪ Compliance to H&S plan, and method of statement of noise monitoring ▪ Findings of OHS monitoring plan 	<ul style="list-style-type: none"> ▪ Workers are provided with hearing protection equipment when working in a loud environment as per permit work issued. However: No system is in place to monitor noise level within workplace and noise level emitted by equipment/machinery. ▪ OHS monitoring plan is in process of development. 	<ul style="list-style-type: none"> ▪ Partially complied
		<ul style="list-style-type: none"> ▪ Conduct of daily toolbox talks to reiterate repeatedly all the above measures and 	<ul style="list-style-type: none"> ▪ Compliance to H&S plan ▪ Records of daily toolbox talks 	<ul style="list-style-type: none"> ▪ Daily toolbox talks are conducted and records are kept. 	<ul style="list-style-type: none"> ▪ Being complied

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<p>prioritize safety briefings; leanings from previous incidents, their causes and risks, and other safety procedures as may be identified.</p>			
		<ul style="list-style-type: none"> ▪ Conduct periodic safety audit, identify and remove potential hazards. 	<ul style="list-style-type: none"> ▪ Compliance to H&S plan and CEMP 	<ul style="list-style-type: none"> ▪ In-house inspections are being carried out by EPC contractor and records of findings and action taken are being kept in on line tracker. ▪ DBO has engaged Ramboll on periodic inspections on monthly basis and audits on quarterly basis and record of findings with action taken reports are kept. ▪ Findings of inspections and audits carried out by EPC and DBO contractor are reported in monthly report for review of PMDCSC/PMU. ▪ PMDCSC is also conducting inspections via walk downs by site engineer and regular inspections by local environment safeguard. Record of findings with action taken reports are kept. ▪ As per revised project manual, PMDCSC shall conduct inspections 	<ul style="list-style-type: none"> ▪ Being complied

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<ul style="list-style-type: none"> ▪ For works in the marine environment, ensure that: <ol style="list-style-type: none"> 1. all persons engaged in the marine construction are competent swimmers. 2. Lifejackets are provided to workers and worn at all times. 3. Properly functioning ship-to-shore communications are provided. 4. No work during 	<ul style="list-style-type: none"> ▪ Compliance to H&S plan, CEMP, relevant method of statements and SOPs, ▪ Approval of design details by PMDCSC and permits from URA and HDC. ▪ Approval of Notification of approval by PMDCSC. 	<p>via walk downs by site engineer and regular inspections (twice in month) by local environment safeguard and audit by international environment safeguard by using checklists from April-24 onwards.</p> <ul style="list-style-type: none"> ▪ EHS committee is not in place. ▪ Most of the construction activities are mainly confined with project site which is already fenced with restricted entry. ▪ Laying the pipelines for wastewater discharge into sea is carried out as per relevant method of statement and SOPs and after approval of notification of inspection by Site engineer of PMDCSC. Permits from HDC and URA has been obtained for discharge of existing pipeline for discharge of wastewater from STP and sedimentation pond for discharge of water from de-watering ▪ Outside the project site, proposed construction activities mainly include laying of pipelines and construction of facilities for water intake from sea and discharge of wastewater into sea. However same are in design stage and yet to be commissioned and mitigation will be implemented on the basis of findings of mapping of risks associated. 	<ul style="list-style-type: none"> ▪ Being complied

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<p>rough sea conditions.</p> <p>5. Emergency rescue team is available at all times at the site during the marine work (such as rescue boat with divers).</p> <p>6. Provide caution & information boards (traffic, safety, information etc.)</p>			
		<ul style="list-style-type: none"> ▪ Do not allow unauthorized / public entry into work sites / facilities 	<ul style="list-style-type: none"> ▪ Compliance to Security management plan, H&S plan, Public health and safety plan etc. 	<ul style="list-style-type: none"> ▪ Site boundary is established with dedicated two Gates for visitor's entry and exit and guardhouses are located at entrance and exit points. ▪ Access is controlled as per procedure given in security management plan. ▪ Records are being kept for visitors. 	<ul style="list-style-type: none"> ▪ Being complied
		<ul style="list-style-type: none"> ▪ Undertake all necessary public safety measures, precautions 	<ul style="list-style-type: none"> ▪ Same as given in Sr no 11 for Other amenities for community welfare 	<ul style="list-style-type: none"> ▪ Same as given in Sr no 11 for Other amenities for community welfare 	<ul style="list-style-type: none"> ▪ Same as given in Sr no 11 for Other amenities for community welfare

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<ul style="list-style-type: none"> ▪ Ensure proper maintenance and cleanliness of the site and facilities 	<ul style="list-style-type: none"> ▪ Records of preventive maintenance ▪ Fitness of equipment/machinery ▪ Records of housekeeping conducted within project site. 	<ul style="list-style-type: none"> ▪ In-house facility and system are in place for preventive maintenance of vehicles and equipment and records are being kept. ▪ In-house checklists are in place to inspect conditions of vehicles and equipment visually are in place and records of inspection are kept. ▪ PWA, Sri Lanka has been engaged to conduct fitness check of equipment and machinery on regular basis. However, fitness check for exhaust emission and noise level emission has not been carried out. ▪ Housekeeping within project site is conducted on regular basis and records are reported in monthly report. 	<ul style="list-style-type: none"> ▪ Being complied.
		<ul style="list-style-type: none"> ▪ Demarcate assembly area for emergencies 	<ul style="list-style-type: none"> ▪ Compliance of H&S plan and Emergency response plan. 	<ul style="list-style-type: none"> ▪ There are two designated assembly areas provided almost in one direction i.e. one in front of administrative building second one near gate no-1. 	<ul style="list-style-type: none"> ▪ Being complied
		<ul style="list-style-type: none"> ▪ Provide medical aid facilities (first aid, doctor on call etc.,) 	<ul style="list-style-type: none"> ▪ Compliance to H&S plan, CEMP ▪ Record of medical register provided as part of monthly report. ▪ Regular inspection by PMDCSC 	<ul style="list-style-type: none"> ▪ Medical first aid facilities are provided which include full time MBBS doctor and nurse with all first aid facilities except defibrillator for Cardiopulmonary resuscitation (CPR). However, it will be done as per conventional method, if required. ▪ In case of requirement of further treatment, patient is being referred to IGMH hospital, Male. A speed boat is available on 24x7 basis. 	<ul style="list-style-type: none"> ▪ Being complied

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
14	Labor Camps	<ul style="list-style-type: none"> ▪ Avoid establishing labour camps by employing local workers as far as possible. ▪ In unavoidable cases, establish camp within the site; and implement the Construction Camp Development and Management Plan (CCDMP). ▪ Follow the layout plan included in the CCMP. 	<ul style="list-style-type: none"> ▪ Compliance of Construction camp development and management plan. 	<ul style="list-style-type: none"> ▪ Camp has been established within camp site in compliance with construction camp development and management plan which is developed considering details given in CCDMP and a guidance note by IFC and the EBRD on worker's accommodation and standards and local regulations. ▪ Camp is developed in phases considering all workers and supervisory staff including subcontractors. ▪ As present, about 152 workers and staff are staying in camp area. Only workers of Villa Pvt Ltd is not staying as accommodations for them have been provided by subcontractor in its premises located in same islands. 	<ul style="list-style-type: none"> ▪ Being complied
		<ul style="list-style-type: none"> ▪ The CCDMP will consider all construction camp requirements discussed in Section VI of the EIA report, 	<ul style="list-style-type: none"> ▪ Compliance of Construction camp development and management plan, waste management procedure and plan, method of statement for STP, emergency 	<ul style="list-style-type: none"> ▪ Camp is located more than 50 m from seashore and storage area and solid waste dumping site of WAMCO. ▪ STP is being in operation and treated wastewater is being tested on monthly basis before discharge into sea. 	Partially complied and need to address the following: <ul style="list-style-type: none"> ▪ Regular in-house inspections in compliance with

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<p>which, among others, are the following:</p> <ol style="list-style-type: none"> 1. The camp, if possible in Thilafushi Island, is at least 50 m away from water bodies. 2. Clear separation of the workers living areas from material storage areas and work sites with fencing and separate entry and exit 3. Provision of proper liquid waste and solid waste collection, 	<p>response plan, H&S plan, GRM Plan etc Findings of inspection and audits conducted by PMDCSC</p> <ul style="list-style-type: none"> ▪ Complaints, if any received via GRM. 	<ul style="list-style-type: none"> ▪ Solid waste is being collected and stored before handing over to WAMCO for disposal. ▪ Potable ROs are being provided to drinking water supply points for workers and drinking water quality is monitored on monthly basis. However, for supervisor staff, bottled water is being provided for drinking. ▪ Toilets are being provided as per plan. However, at present, no female worker is being engaged. ▪ Recreation facilities such as indoor games, TV, gymnasium etc. are in place separately for workers and staff. ▪ Health centre is being provided all necessary first aid facilities with one full time MBBS doctor and qualified male nurse ▪ Mainly Turkish food to is cooked in kitchen and provided in separate dining hall for staff and workers. Food is mainly Same food is served to all. However, for 33 personnel (mainly from India, Bangladesh and Srilanka) out of 152 personnel, food is being brought from outside due to food habits. ▪ Housekeeping is carried out on regular basis and records are being kept. ▪ Following observations are made during inspections: 	<p>plan by using checklists.</p> <ul style="list-style-type: none"> ▪ Attend the issues/findings on priority basis. ▪ Provide more awareness of workers via training on camp development and management plan and internal GRM. ▪ Ensure availability of adequate communication skills with workers.

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<p>treatment and disposal system.</p> <p>4. Provision of drinking water, water for other uses, and sanitation facilities (e.g. separate toilets for men and women).</p> <p>5. Liveability at the highest standards possible at all times; living quarters provided with standard materials, space, and proper lighting and ventilation.</p>		<ol style="list-style-type: none"> 1. Regular inspections as per plan on weekly and monthly basis have not been carried out. 2. Inadequate provision of lights and sockets inside the workers accommodation 3. Inadequate housekeeping inside workers accommodations. 4. Approaching corridor for worker accommodation is being allowed to store various items by workers. 5. Only one gate has been provided in one block of accommodation which is also being designated as emergency exist gate; 6. Water from AC is being drained in open area. 7. No separate arrangement is made for washing hand and feet before offering prayer and due to which workers are washing hand and feet outside the washroom due to religious belief leading; etc 8. Camp manager is the only person responsible for management of camp area but he has communication issue as he has poor understanding for languages other than Turkish. Most of the workers belong to Afghanistan, India, Sri Lanka and Bangladesh. <ul style="list-style-type: none"> ▪ No complaints have been received in this quarter. 	

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		6. Fire safety, medical facilities.			

D. Implementation of Health & Safety COVID-19 Plan







24. Appendix 14 of EIA (July 2020) is on Standard Operating Procedure in Response to 2019 Corona Virus Disease prepared by the PMU, MoCCEE as required by ADB in its advisory note on protecting the safety and wellbeing of workers and communities from COVID-19. This has been referred to in the preparation of the Health & Safety (H&S) COVID-19 Plan by the DBO Contractor. The DBO Contractor's Health & Safety COVID-19 Plan has been prepared, finalized and approved with comments by PMU/PMDSC.
25. In March 2022, the government lifted most of the COVID-19 restrictions such as the mandatory use of facial masks. However, measures identified in the COVID-19 plan are in place in project sites and workplaces. Common measures are provision of wash stations, use of facial masks in confined workplaces, use of personal protective equipment, screening of workers, information/posters on COVID-19 at the worksites etc.







E. Key Site Observations and Action Taken


26. Details of findings/observations based on weekly site walk down reports, inspection reports, etc. are given in Table 12 with specific details on status in line with reports enclosed as Appendix-2. However, major Key issues identified for actions are listed as per given below (refer Table 30 for details):
 - a) Regulatory compliance - Submission of Regulatory compliance procedure, obtain requisite permit/registration for diesel mobile tanker, renewal of location permit from HDC for dewatering and to verify the adequacy of capacity of sedimentation pond provided in batching plant area in reference to solar evaporation rate and waste water generated during washing of transit mixer etc.
 - b) Status of HSE plans- Revision of CEMP and Health and Safety plan, Submission of OHS monitoring plan, Submission of Regulatory Compliance Procedure, revision of relevant HSE document in case any change is envisaged before implementing the changes.
 - c) Inadequacy in implementation of HSE documents.
 - d) Risk due to presence of live electrical cables of STELCO (passing through project site) and presence of shipwrecks in sea adjacent to quay wall.
 - e) Smoke emissions and fire risk from the existing waste dump site of WAMCO.
 - f) Appointment of Public Awareness consultant by PMU and public consultations.
 - g) Training to be provided to all key personal of DBO contractor and PMU by PMDCSC; etc

⁴ <https://www.adb.org/sites/default/files/publication/614811/safety-well-beingworkers-communities-covid-19.pdf>.

Table 12: Site Observations and Current Status

Aspect	Site Observation / Finding	Site photographs	Action to be taken	Current status	Close out photo
<p>Runoff water / soil erosion</p>	<p>Lack of drainage system to handle surface runoff which might affect foundation integrity and backfilling performance.</p> <p>09/01/2024 Ref: F0010</p>		<p>Provided bund wall around the excavated process area to handle surface runoff.</p>	<p>Runoff water is not entering into excavated area.</p> <p>Closed date: 15th January 2024</p>	
<p>Excavation Safety</p>	<p>Unsafe exposed slope at bunker excavation area.</p> <p>09/01/2024 Ref: F0011</p>		<p>To properly trim and protect the rectified slope.</p>	<p>The slope has been trimmed and also additional plastic sheets and green mesh net were provided to prevent collapse of the soil.</p> <p>Closed Date: 15th January 2024</p>	
<p>Clinic left open unattended.</p>	<p>The Clinic left open unattended. Needs to be locked when the doctor/nurse is not present.</p> <p>09/01/2024 Ref: F0012</p>		<p>The doctor to be notified and contact number to be made visible for emergency contact.</p>	<p>The doctor was informed that the clinic would be locked when they are not in the clinic. The contact number was displayed at the door for emergency attending.</p> <p>Closed Date: 15th January 2024</p>	

Aspect	Site Observation / Finding	Site photographs	Action to be taken	Current status	Close out photo
Scaffolding Safety	Scaffolding access/platform without proper tagging to verify its safety. 03/03/2024 Ref: F0013		EPC to ensure temporary scaffolding access/platform is equipped with proper tagging and verification of its safety on display.	Scaffolding was inspected and approved by certified inspector, tags were placed with signature and approval of conformity for safe use. Scaffolder inspector was Mohammed Mustafa E. M. Closed Date: 18 th March 2024	
Electrical Safety	The electrical distribution panel is exposed near road. 03/03/2024 Ref: F0014		To be barricaded and sufficient signage to be put in place.	Shifted distribution panel from the roadside to a safe place. Closed Date: 04 th March 2024	
Fire Safety	Need sufficient firefighting equipment and signage at work yard. 03/03/2024 Ref: F0015		Firefighting equipment and safety signage to be placed.	Provided adequate fire extinguishers along with signage at the carpentry yard and steel yard.	

Aspect	Site Observation / Finding	Site photographs	Action to be taken	Current status	Close out photo
Emergency Response Plan	Require revision of Emergency Respond Plan for cases occurred in Bunker. To ensure tools and equipment to extract injured people is available.		EPC to respond with corrective action, tools, and equipment to be made available.	<p>MDV-AAK-HSEXX-XX-PL-XXX-0001 Rescue Plan for Bunker Area has been submitted for information to ACONEX on 09.03.2024. By strengthening and making necessary revisions to the existing man basket, it will be made usable in the emergency rescue plan and will be kept ready for use.</p> <p>A certified man basket to be purchased for lifting operations and rescue plan.</p> <p>Closed Date: 24th March 2024</p>	

F. Project Construction related Accidents and Incidents

27. Table 14 and 14 below presents details of work-related incidents reported from the project pre-construction and construction activities.

Table 13: Details of Construction related incidents (reporting period)

Date of occurrence of incident	Description of incident	Consequence of incidents	Action taken by contractor	Present status
23 rd January 2024 [09:05] At main bunker area	While driving the drum roller into the excavated bunker area the driver was unable to shift the gear, resulting in uncontrolled speed and collision with the concrete pile cap foundation.	Driver was thrown out and struck the foundation resulting in minor scratch injuries and back pain. Roller drums were bent. Damage to the foundation.	<ul style="list-style-type: none"> • Injured person received first aid treatment from the doctor on site and was transported to IGMH for further diagnosis. He remained on sick leave for next day. • Provide separate access for pedestrians and equipment • Implement an equipment inspection system and inspect all the plant and equipment before operating 	All hazards and risk associated with the equipment and surroundings have been mitigated.
10 th February 2024 [11:30] At Batching plant	Hand slipped while using a drill to fix nails onto a sharp metal channel on the ceiling of the staff accommodation building.	Skin laceration injury to the right middle finger.	<ul style="list-style-type: none"> • Injured person got treatment by in-house doctor in health center and remained on sick leave for next day. • PPE training for all workers • Warning letter issued to the permit issuer 	All hazards and risk associated have been mitigated by providing more training on usages of PPEs.

Table 14: Construction related incidents

Particulars	Number of cases (previous reporting period)	Number of cases (this reporting period)	Cumulative up to end of this reporting period
Minor / first aid cases	0	1	1
Major accidents	0	0	0
Fatal accidents	0	0	0
Accidents (only damage to assets, does not involve personnel injuries)	2	0	2
Near miss cases	2	1	3
Total	4	2	6

G. Unanticipated Impacts

28. No unanticipated environmental impacts were encountered during the pre-construction/design stage.

VII. ENVIRONMENTAL MONITORING

A. Monitoring Activities - Proposed and Conducted

29. Considering the findings of the EIA study report (July 2020), environment baseline monitoring is carried out as per details given in CEMP during construction.
30. Environmental monitoring of ambient air quality, marine water quality, groundwater quality, ambient noise levels, wastewater quality from the discharge point of the WWTP/STP, and water quality proposed to be used for construction and camp and marine ecology survey have been carried out as per details provided in Table 15. Sampling and testing have been carried out based on the method of statement enclosed as Appendix of the CEMP.
31. Ambient air quality, ambient noise monitoring and illumination level have been carried out during March-23 as part of OHS monitoring plan. However detailed OHS monitoring plan is still under preparation.

Table 15: Additional Baseline Data Gathering During Construction Stage

Assessment	Parameters	Location	Frequency	Status
Ambient air quality	TSP, PM10, PM2.5, NO2 and SO2	Total of 7 monitoring locations (Refer to Figure 3) <ul style="list-style-type: none"> ▪ AQ1 (downwind direction of the proposed project site) ▪ AQ2 (crosswind direction of the plume) ▪ AQ3 (crosswind direction of the smoke plume from the existing dump site at Thilafushi. ▪ AQ4 (Villingili as a control site) ▪ ASR2 ▪ ASR3 ▪ ASR5 	Monthly sampling	Ambient air quality samplings were undertaken on the following dates: <ol style="list-style-type: none"> 1) 23-28 January 2024 2) 11-14 February 2024 3) 17-24 March 2024
Ambient noise level	Leq _{daytime} and Leq _{nighttime}	Total of 5 monitoring locations (Refer to Figure 4)	Monthly sampling	Noise level sampling was undertaken on the following dates: <ol style="list-style-type: none"> 1) 17-18 January 2024 2) 18-19 February 2024 3) 17-24 March 2024
OHS monitoring	1. Ambient air quality for TSP, PM10, PM2.5, NO2 and SO2	1. Ambient air quality has been monitored at two locations (Refer to Figure 3) once for 24 hours .	Will be conducted as per OHS plan which is under preparation	<ol style="list-style-type: none"> 1. 23-24 March 2024 2. 9 March 2024 3. 6 March 2024

Assessment	Parameters	Location	Frequency	Status
	<p>2. Noise level for Leq_{daytime} and Leq_{nighttime}</p> <p>3. Illumination level in Lux</p>	<p>2. Noise level has been monitored at two locations once for 24 hours which are same as NQ3 and NQ5 for which has been done on monthly basis as per EMP of EIA (refer to Figure 4)</p> <p>3. At various locations within project site.</p>		
Marine water quality	Heavy metals (As, Cr ⁺⁶ , Cu, Ni, Pb, Zn, Hg, Cd), nitrite, pH, turbidity, and BOD ₅ etc.	Marine water samples to be collected from seven sampling stations - SW1, SW2, SW3, SW4, SW5, SW6, and SW7 (Refer Figure 45)	Quarterly sampling	Marine water samples were collected from seven sampling stations - SW1, SW2, SW3, SW4, SW5, SW6, and SW7 on 6 th February 2024.
Groundwater quality	Oil and grease, fecal coliform, presence of petroleum, pH, Heavy metals (As, Cr ⁺⁶ , Cu, Ni, Pb, Zn, Hg, Cd), etc	<ul style="list-style-type: none"> ▪ Water samples to be collected from the eight monitoring locations (Refer Figure 56) ▪ For each location, the sample was collected from mid-water level 	Quarterly sampling	<ul style="list-style-type: none"> ▪ Groundwater Samples were collected from seven sampling stations - GW1, GW2, GW3, GW4, GW6, GW7 and GW8 on 6th February 2024. GW5 did not have any water for collection.
Water quality proposed to be used for construction and other activities	pH, EC, TSS, fecal coliform, total coliform, aerobic plate count, Fe, Cd, As, Pb, Hg, Nitrate,etc.	<ul style="list-style-type: none"> ▪ Supply line of Male Water and Sewerage Company Supply network at project site. 	Monthly sampling	<ul style="list-style-type: none"> ▪ Grab sample was collected on 13 January 2024, 6 February 2024, and 4 March 2024. ▪ Parameter have been revised in compliance with supply water quality standard as prescribed by URA from August 2023 onwards.
Treated wastewater quality from WWTP/STP to be discharged into sea	pH, COD, BOD ₅ , heavy metals, EC,etc	<ul style="list-style-type: none"> ▪ At discharge point from the WWTP/STP to the receiving body of water 	Monthly sampling	<ul style="list-style-type: none"> ▪ Grab sample was collected on 13 January 2024, 06 February and 04 March 2024 ▪ Parameters have been revised in compliance with

Assessment	Parameters	Location	Frequency	Status
				National Waste Water Quality Guidelines 2007 and IFC General EHS Guidelines from August 2023 onwards.
Discharge water quality from dewatering	Fecal Coliform, pH, Total Dissolved Solids, Dissolved Oxygen, Turbidity, Total Hydrocarbon, Electrical Conductivity, Salinity, Hydrogen Sulphide, Oil & Grease, Ammonia, Nitrites and Phosphates	As discharge point of retention pond into sea	Monthly sampling	Grab sample was collected on 13 January, 6 February and 04 March 2024
Marine ecology survey	Live coral and fish	In and around locations (M8, M9 and M10) at 5 and 10 m depth as referred in EIA and CEMP	Once During the Pre – Construction Phase & Quarterly During the Construction Phase	Survey was conducted on 3 February 2024

B. Monitoring Results

i. Ambient Air Quality

32. As shown in Table 16, there were three sampling events during this reporting period- 1) 23-28 January 2024, 2) 11-14 February 2024, and 3) 17-24 March 2024. Measurements of parameter such as PM₁₀, PM_{2.5}, SO₂, NO₂, and TSP were done by using air quality monitoring station-based online sensor technology by AirQoon Sensor. Parameters measured with sensor devices consist of the averages of instantaneous measurements taken at 1-minute intervals and reported on hourly and 24 hourly basis.
33. Ambient air quality sampling was conducted at seven locations: 6 locations at Thilafushi (AQ1, AQ2, and AQ3 identified as baseline stations in the EIA and the ASR2, ASR3 and ASR5 based on the AERMOD study in the EIA), and one location at Villingili (AQ4) as control station. Figure 3 shows the ambient air quality sampling stations. Table 16 gives the description of the sampling stations while Table 17 shows the results of ambient air quality sampling in April 2023, May 2023, and June 2023. Detailed reports on ambient air quality sampling conducted are given in Appendix 3.

Figure 3: Ambient Air Quality Sampling Stations



Table 16: Description of Ambient Air Quality Sampling Stations

Location	Description	Distance to Project Site (WtE facility construction) meter
AQ1	Represents dense industrial area	650
AQ2	Represents dense industrial area	1,000
AQ3	Represents dense industrial area	500
ASR2	Represents dense industrial area	700
ASR3	Represents dense industrial area	500
ASR5	Represents dense industrial area	1,000
AQ4	Represents residential area with moderate urbanisation	4,500

Table 17: Results of Ambient Air Quality Sampling, January, February and March 2024

Parameters	Ambient Air Quality																					WHO Air Quality Standards
	AQ1			AQ2			AQ3			AQ4			ASR2			ASR3			ASR5			
	Jan	Feb	Mar ch	Jan	Feb	Mar ch	Jan	Feb	Mar ch	Jan	Feb	Mar ch	Jan	Feb	Mar ch	Jan	Feb	Mar ch	Jan	Feb	Mar ch	
PM ₁₀ (µg/m ³)	34.2	23.2	25.3	44.8	23.6	36.6	38.1	26.9	46.8	49.9	37.1	25.6	35.5	35.4	35.5	30.6	28.0	27.6	21.7	23.4	21.7	45
PM _{2.5} (µg/m ³)	29.3	20.9	25.1	37.2	22.5	26.5	36.5	25.4	46.6	25.6	35.7	25.6	35.5	29.0	35.5	27.6	27.1	27.6	21.4	23.1	21.7	15
SO ₂ (µg/m ³)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.8	ND	ND	ND	ND	40
NO ₂ (µg/m ³)	ND	1.5	ND	ND	ND	ND	ND	1.8	ND	ND	4.5	ND	ND	ND	ND	28.4	1.7	ND	21.7	1.5	ND	25
TSP (µg/m ³)	46.6	74.1	47.8	72.1	18.1	69.3	69.3	74.1	88.7	48.5	10.5	48.5	67.3	51.3	67.3	ND*	28.2	52.3	ND*	18.8	41.1	-
Monitoring dates: January (23-28 January 2024) February (11-14 February 2024) March (17-24 March 2024) Averaging time is 24 hours																						

*TSP values were not recorded due to an error in measurement

34. From Table 17, results of ambient air quality conducted during this reporting period show that levels of PM_{2.5} at all locations including the project site are above the WHO air quality guidelines. Levels of PM₁₀ are also higher than the WHO guidelines at AQ3 in March and AQ4 in January. NO₂ levels are higher than the guideline at ASR3 for the month of January.
35. In the EIA (July 2020), ambient air quality monitoring was conducted in four locations (AQ1, AQ2, AQ3 and AQ4). Monitoring at AQ1 was conducted from 25-31 March 2019, at AQ2 from 20-25 August 2019, at AQ3 from 19-25 March 2019 and at AQ5 from 3-9 March 2019 by using online Aeroqual series 500 monitors and sensors.
36. Variations in the ambient air quality results compared to the baseline measurements in the EIA (July 2020) may be attributed to the microclimate of the monitoring locations that may have background pollution sources as Thilafushi is an industrial site where various types of industrial works are conducted in addition to the local activities, and meteorological conditions at the time of sampling. According to Maldives Meteorological Service, shift of seasonal winds brings aerosols from the Himalayan foothills across the Bay of Bengal to Maldives. This is commonly observed between December and March and results in lower air quality and poor visibility.
37. Male and Hulhumale are located in the E-N quadrant of the Thilafushi island. Based on the meteorology of the area, more specific to monthly variations, easterly winds are predominant from December to February. In March, it is a combination of easterly and NW winds, while westerly winds are predominant for the rest of the year. Two monsoon seasons are observed in Maldives: The Northeast (*Iruvai*) and the Southwest (*Hulhangu*) monsoon. The southwest monsoon lasts from May to September and the northeast monsoon occurs from December to February. The transition period of southwest monsoon, which is the driest part of the year, occurs between March and April while that of northeast monsoon occurs between October and November.

ii. Noise level monitoring

38. Ambient noise level measurements were conducted from, 17-18 January 2024, 18-19 February 2024, and 17-24 March 2024, at five sampling stations identified in the EIA (July 2020). These are NQ1 to NQ5 (refer to Table 18 for description of the sampling stations and Figure 4 for location map). Thilafushi is considered an industrial area and the EPA has no noise level standards, thus, results of ambient noise level measurements were referred to the WB-IFC EHS Guidelines April 2007 (Table 1.7.1) of 70 dBA for both daytime and night-time. Hourly noise levels were measured during daytime and night-time using a handheld instrument. Results of noise sampling are presented in Table 18.

Table 18: Description of Noise Sampling Stations

Station Identifier	Location	Description and rationale
NQ1	4°10'26.4 N 73°28'59.9 E	The station was selected as it represents a major industrial location of the island and is also located close to the harbour. The location lies north of the proposed facility on the opposite side of the lagoon.
NQ2	4°10'56.6 N 73°26'53.3 E	The station was selected as it represents a major industrial location of the island. The location lies east of the proposed facility on the opposite side of the lagoon. The location has various industrial activities in its proximity

NQ3	4°10'58.3 N 73°26'09.6 E	This station was selected as it is located near the boundary of the proposed WTE facility.
NQ4	4°10'57.3 N 73°25'59.4 E	This station was selected as it is located west of proposed WTE facility. The area has less development and less activity during the daytime.
NQ5	4°10'57.3 N 73°26'14.4 E	This station was selected as it is located at the proposed facility

Figure 4: Noise Sampling Stations



Table 19: Results of Ambient Noise Level Measurements

Station	Measured from 17-18 January 2024		Measured from 18-19 February 2024		Measured from 9-10 March 2024	
	Noise level (dBA) daytime	Noise level (dBA) night-time	Noise level (dBA) daytime	Noise level (dBA) night-time	Noise level (dBA) daytime	Noise level (dBA) night-time
NQ1	60	55	61	52	61	54
NQ2	56	49	56	47	55	46
NQ3	62	61	57	59	53	50
NQ4	66	55	61	52	55	43
NQ5	49	43	54	47	56	64
WHO Guidelines Value for Noise Levels Measured Out of Doors (One Hour LAeqin dBA) Source: Guidelines for Community Noise. WHO. 1999	70	70	70	70	70	70

39. Measurements of noise levels are conducted for duration of 5 minutes in one hour at each location and Leq values are reported on hourly basis for 24 hours. Considering the hourly Leq values, daytime Leq (from 7 hrs to 22 hrs) and night time Leq (from 22 hrs to 7 hrs) are calculated.
 40. Results of ambient noise levels were found to be within the applicable standards for commercial and industrial areas during the reporting period i.e., from January to March 2024. Compared to the ambient noise levels measured on 25 August 2019 in the same sampling stations from the EIA (July 2020), monitored noise levels were found in same range, however variations in the results may be attributed to the commercial and industrial activities at the time of measurements.
- iii. OHS monitoring**
41. Air quality monitoring and noise level monitoring as a part of OHS monitoring was conducted at two locations within the project site. Illumination levels were monitored at seven locations within the project site. Description of the sites are given in Table 20 below.
 42. As per details given in Table 20 and Figure 3, ambient air quality monitoring within the site was also carried out during March at two locations within the project site. Levels of PM 2.5 were found higher than the WHO standards for ambient air quality at both sites. However, as per ambient air quality data at all seven locations, average value of PM2.5 during January to March 2023 within study area was 25.9 µg/m³ while same for this quarter (January to March 2024) is 28.8 µg/m³. Also, 98 percentile value of PM2.5 during January to March 2023 within study area was 46.64 µg/m³ while same for this quarter is 42.84 µg/m³. It is to be noted that construction activities have been started from May 2023. Hence, variation in concentration level is mainly due to change in wind pattern and seasonal and local activities. Also, 8 hourly permissible limits by OSHA for respirable dust and total dust exposure limit for workers are 5 mg/m³ and 10 mg/m³ respectively.

43. Illumination levels in LUX at various location during night within project site were monitored and results are given in Table 23. Detailed report is enclosed as Appendix- 3.
44. As per table given in Table 18 and Figure 4, two of the Noise Sampling Stations (NQ3 and NQ5) are located within the project site, therefore, noise level measurements from these two locations have been considered as a part of OHS noise monitoring as well as ambient noise monitoring. For the purpose of OHS monitoring, noise levels have been calculated for 8 hours to be compared with ILO noise standards. Monitored noise levels for 8 hour periods are in compliance with the ILO noise standard of 85 dBA.

Table 20: Description of OHS Monitoring Stations (Air quality, Noise and Illumination levels)

Monitoring	Location	Description
Air Quality	Near Area 12	Within the construction site
Air Quality	Office Area	At the office area
Noise	NQ3	Near the process area
Noise	NQ5	Near the material storage area
Illumination	L1	Bunker area
Illumination	L2	Near gate 3
Illumination	L3	Near sedimentation pond
Illumination	L4	Near concrete storage area of batching plant
Illumination	L5	Near process area of batching plant
Illumination	L6	Near steel storage area
Illumination	L7	Near work area of steel storage

Figure 5: Ambient Air Quality Sampling Stations within Project Site



Table 21 Results of OHS Air Quality Monitoring within the site

Parameters	OHS Air Quality Monitoring within the site	
	Near area 12	Near office
	March	March
PM ₁₀ (µg/m ³)	40.1	35.5
PM _{2.5} (µg/m ³)	39.97	35.5
SO ₂ (µg/m ³)	ND	ND
NO ₂ (µg/m ³)	ND	ND
TSP (µg/m ³)	75.2	68.2
Monitoring dates: January (23-28 January 2024) February (11-14 February 2024) March (17-24 March 2024) Averaging time is 24 hours		

Table 22 Results of OHS Illumination Monitoring within the site

Locations	OHS Illumination Monitoring within the site	Type of workplace	IFC Minimum limits for workplace illumination intensity
L1- Bunker area	68.1	Medium precision work	•Outdoor non-working areas – 20 lux
L2 – Gateway to office building	20.4	Simple orientation and temporary visits	•Simple orientation and temporary visits (machine storage, garage, warehouse) – 50 lux
L3 – Sedimentation pond area	104.4	Medium precision work	•Workspace with occasional visual tasks (corridors, stairways, lobby, elevator, auditorium) – 100 lux
L4- Concrete storage area of batching plant	70.8	Simple orientation and temporary visits	•Medium precision work (simple assembly, rough machine works, welding, packing, etc.) – 200 lux
L5 – Process area of batching plant	101.7	Medium precision work	•Precision work (reading, moderately difficult assembly, sorting, checking, medium bench and machine works, etc, offices) – 500 lux
L6 – Steel storage area	120.4	Simple orientation and temporary visits	•High precision work (difficult assembly, sewing, colour inspection, fine sorting etc) – 1000-3000 lux
L7 – Working area of steel storage	94.2	Medium precision work	

Table 23 Results of OHS Noise Monitoring within the site

Sn	Duration	8 hourly Leq dB(A)	
		NQ3	NQ5
1	7 a.m. to 2.00 pm	54.4	55.1
2	3 p.m. to 10.00 pm	52.2	62.2
3	10 p.m. to 6.00 a.m.	50.1	65.3

iv. Marine Water Quality

45. For the additional baseline data gathering, marine water quality sampling was done on 06 February 2024 from the same seven locations identified in the EIA (July 2020) given in Figure 5 below. Laboratory analysis of marine water was done by the Bureau Veritas Laboratory, Sri Lanka for the following parameters - heavy metals (As, Cr, Cu, Ni, Pb, Zn, Hg, Cd), total nitrogen, nitrites, pH, turbidity, five-day biochemical oxygen demand (BOD)₅ etc (Table 24). The samples were brought to Sri Lanka and delivered to the laboratory within 24 hours from the field sampling. All the samples are kept in ice boxes to maintain the appropriate temperature and to conserve the samples. In-situ recording of pH, dissolved oxygen (DO), and electrical conductivity (EC) for each sample was conducted by using a handheld Hach SensION +MM156 water quality measurement meter. These results show compliance to the Maldivian Marine Monitoring Standards [Reference: Great Barrier Reef Marine Park Authority (2009) Outlook Report 2009]. Laboratory test results of marine water samples are given in Appendix 3

Figure 5: Marine Water Quality Sampling Stations

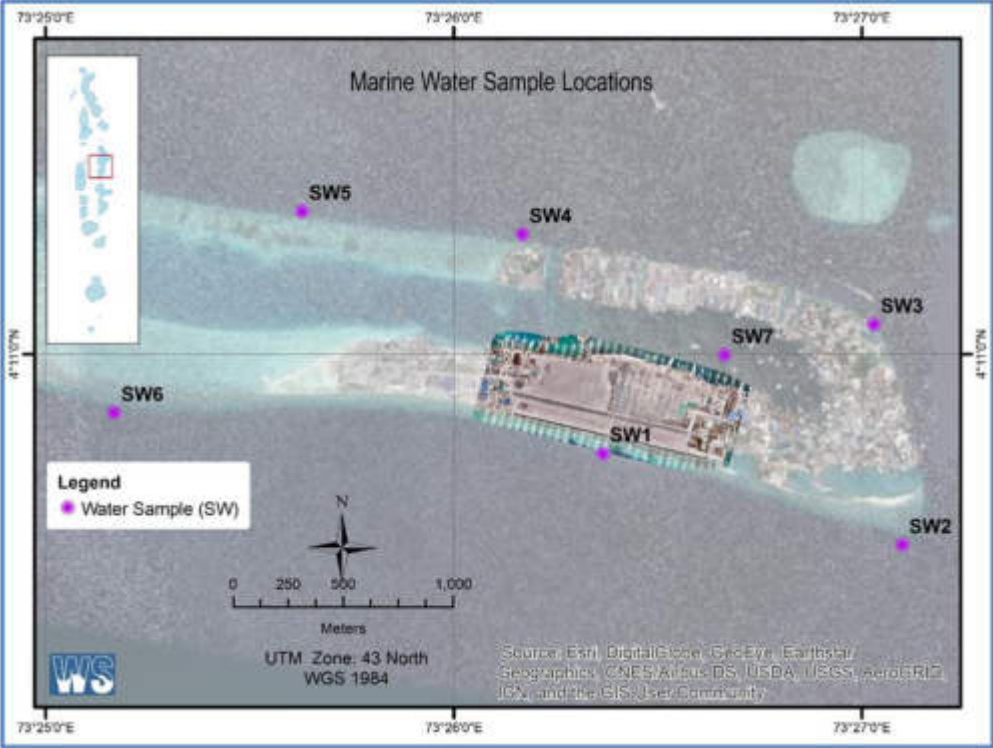


Table 24: Results of Marine Water Quality Sampling, February 2024

Parameters	Date of sampling: 6 th February 2024							Unit	Approved Marine water quality standard of Maldives EPA
	SW1	SW2	SW3	SW4	SW5	SW6	SW7		
Temperature indoor/laboratory	27.8	27.8	27.8	27.8	27.8	27.8	27.8	°C	18-32
Salinity	36	33	35	35	36	35	36	%	
TSS	82	28	37	26	44	37	43	mg/L	
Oil & Grease	ND	ND	ND	ND	ND	ND	ND	mg/l	
Feacal Coliform	ND	ND	ND	ND	ND	ND	ND	MPN/100 ml	
Nitrite (as NO ₂)	2.2	1.1	1.6	1.6	2	1.8	2	mg/L	None proposed
pH at 24°C	7.3	7	7	7.4	7.4	7.5	7.4	-	8-8.3
COD	55	46	47	45	53	46	57	mg/L	
BOD ₅ at 20 °C	20	15	19	16	19	14	20	mg/L	<2mg/L
Turbidity	2.7	2.5	3	2.8	3	3	3	NTU	3 – 5 NTU (max)
Electrical Conductivity at 25°C	61,200	50,560	54,400	53,520	55,500	55,140	57,300	µS/cm	48994-62350
Total inorganic Nitrogen	5.7	5.1	5.9	5.4	5.9	5.4	6.1	mg/L	None proposed
Total Phosphates (as PO ₄ ³⁻)	0.9	0.8	5.9	0.8	0.9	0.7	0.9	mg/L	1
Sulfide	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/l	NA
Ammonia	2.6	2.3	2.5	2.2	2.6	2.2	2.7	mg/l	
Arsenic	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	mg/L	NA
Cadmium	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	mg/L	NA
Lead	<0.014	<0.017	0.018	0.016	0.02	0.012	0.023	mg/L	NA
Hexavalent Chromium (asCr ⁶⁺)*	0.005	<0.005	0.005	<0.005	<0.005	0.005	<0.005	mg/L	NA
Total Chromium	0.01	0.005	0.03	0.022	0.028	0.032	0.03	mg/L	NA
Mercury	<0.0005	0.001	0.001	<0.0005	<0.0005	0.0013	<0.0005	mg/L	NA
Nickel	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	mg/L	NA
Zinc	0.038	0.038	0.033	0.03	0.036	0.021	0.042	mg/L	NA
Copper	0.019	0.016	0.011	0.01	0.014	0.012	0.016	mg/L	NA

46. As per Table 1924, values ranged for EC from 50,560 $\mu\text{S}/\text{cm}$ to 61,200 $\mu\text{S}/\text{cm}$, for nitrite from 1.1 mg/L to 2.2 mg/L, and for total inorganic nitrogen from 5.1 mg/L to 6.1 mg/L. While pH values ranged from 7.0 to 7.5. Also, BOD₅ values ranged from 14 mg/L to 20 mg/L. while COD values ranged from 45 mg/L to 57 mg/l. Levels of heavy metals in all the sampling stations were found to be low to below the detection limit.
47. From the EIA (July 2020), samples were collected from the same locations on 3 July 2018. Values of temperature (24.2°C), nitrate (0.3 mg/L to 0.5 mg/L), oil & grease (less than 2 mg/L), salinity (36 ppt to 37 ppt), free ammonia (ND to 0.05 mg/L), and BOD₅ (ND to 1 mg/L) were similarly within the prescribed standards. The pH values ranged from 8.2 to 8.4 which is slightly higher than the limit of 8.3 in all the sampling stations except in SW7. Heavy metals, except for Zn (ND to 0.008 mg/L for SW2, SW3, SW6 & SW7), were tested to be below the detection limit. Variations in the results of marine water quality (Table 24) compared to the results from the EIA (July 2020) may be attributed to the environmental conditions at the time of sampling.

v. Groundwater Quality

48. Environmental monitoring of groundwater quality for the construction period was conducted on 6th February 2024. Water samples were collected from the eight monitoring stations identified in the EIA (July 2020) except at GW5 (refer to Figure 6 for locations). Due to non-accessibility of location GW5, sampling could not be carried out. For each location, the sample was collected from mid-water level and brought for laboratory testing in Sri Lanka. General sampling procedure involves washing the glass sampling bottles with water from the sampling points. For microbial tests, samples were collected in sterile glass bottles and tested in the laboratory of Male' Water and Sewerage Company (MWSC). Table 25 presents the analytical results of groundwater quality with detailed test results given in Appendix 3.
49. Results from Table 27 show that levels of heavy metals were found below detection limit except at GW6 while other parameters are: Electrical conductivity (266 $\mu\text{S}/\text{cm}$ at GW8 to 48,930 $\mu\text{S}/\text{cm}$ at GW2), pH (7.3 at GW2 and GW6 to 8.2 at GW3 and GW4), nitrate (1.7 mg/l at GW8 and 8.4 mg/l at GW4) etc. While PAH were reported ND at all locations. As use of ground water in Thilafushi is not permissible except in toilet flushing tanks there is no specific standard for ground water quality. Wells closer to the sea show high conductivity and wells near dumpsite show higher contamination of nitrates.
50. Ground water quality is not akin to drinking water standards as the island is originally reclaimed using waste and various sites have industrial activities. Water treatment will be required if groundwater in Thilafushi is to be used as drinking water.
51. From the EIA (July 2020), samples were collected in the same sampling stations on 2 April 2019. Values of PAH, oil & grease, and heavy metals were found to be below the detection limit while for other parameters are: TDS (794 mg/L in GW1 to 12,946 mg/L in GW3), electrical conductivity (1.39 mS/cm in GW1 to 25 mS/cm in GW6), total coliform (4 MPN/100 ml in GW8 to >2,420 MPN/100 ml in GW1, GW3, GW5, and GW7), pH (7.1 in GW5 to 8.0 in GW4), chloride (183 mg/L in GW1 to 6,325 mg/L in GW6), and nitrate (1.7 mg/L in GW1 to 34.5 mg/L in GW6).

Figure 6: Groundwater Sampling Stations



Table 25: Groundwater Quality Results, February 2024

Parameters	Results of Groundwater Quality Sampling								Unit
	Date of Sampling: 6 th February 2024								
	GW1	GW2	GW3	GW4	GW5	GW6	GW7	GW8	
Turbidity	1.9	0.9	0	0.9	-	32	1.4	1.1	NTU
pH	7.4	7.3	8.2	8.2	-	7.3	7.9	7.9	-
Iron	ND	ND	ND	ND	-	ND	ND	ND	mg/L
Manganese (as Mn)	ND	ND	ND	ND	-	ND	ND	ND	mg/L
Arsenic (as As)	ND	ND	ND	-	-	ND	ND	ND	mg/L
TSS	11	105	20	68	-	51	6	5	mg/L
Electrical Conductivity at 25 °C	405	48,930	2,107	16,640	-	8,340	361.5	266	µS/cm
Fecal Coliform	ND	ND	ND	ND	-	ND	ND	ND	MPN/100 ml
Oil and Grease	ND	ND	ND	ND	-	1	ND	1	mg/l
Nitrate (as NO ⁻³)	3.1	16	4.5	8.4	-	5	2.5	1.7	mg/l
Cadmium (as Cd)	ND	ND	ND	ND	-	ND	ND	ND	mg/L
Lead (as Pb)	ND	ND	ND	ND	-	0.004	ND	ND	mg/L
Mercury (as Hg)	ND	ND	ND	ND	-	ND	ND	ND	mg/L
Total Phosphates (as PO ₄ ³⁻)	0.12	3.6	1	ND	-	1.8	0.1	ND	mg/L
Chlorides	57.6	244.2	81.9	123	-	134.5	48.3	45.3	mg/L
Polycyclic Aromatic Hydrocarbons (PAH)									
Naphthalene	ND	ND	ND	ND	-	ND	ND	ND	µg/l
Benzo[a] anthracene	ND	ND	ND	ND	-	ND	ND	ND	µg/l
Acenaphthylene	ND	ND	ND	ND	-	ND	ND	ND	µg/l
Acenaphthene	ND	ND	ND	ND	-	ND	ND	ND	µg/l
Fluorene	ND	ND	ND	ND	-	ND	ND	ND	µg/l
Phenanthrene	ND	ND	ND	ND	-	ND	ND	ND	µg/l
Pyrene	ND	ND	ND	ND	-	ND	ND	ND	µg/l
Chrysene	ND	ND	ND	ND	-	ND	ND	ND	µg/l
Benzo [b]fluoranthene	ND	ND	ND	ND	-	ND	ND	ND	µg/l
Benzo[k]fluoranthene	ND	ND	ND	ND	-	ND	ND	ND	µg/l
Dibenzo [a,h]anthracene	ND	ND	ND	ND	-	ND	ND	ND	µg/l
Benzo[g,h,i]perylene	ND	ND	ND	ND	-	ND	ND	ND	µg/l
Benzo[j]fluoranthene	ND	ND	ND	ND	-	ND	ND	ND	µg/l
Benzo[a]pyrene	ND	ND	ND	ND	-	ND	ND	ND	µg/l
Benzo[e]pyrene	ND	ND	ND	ND	-	ND	ND	ND	µg/l
Indenol [1,2,3-cd] pyrene	ND	ND	ND	ND	-	ND	ND	ND	µg/l

vi. Water quality proposed to be used for construction and camp

52. One grab sample during each month of quarter from January – March 2024 was collected from the supply line network of MWSC (Male Water and Sewerage Company) at the project site. Samples were analyzed for limited parameter as per details given in Table 26 and findings of same are well within the acceptable limits. Detailed report is enclosed as Appendix3.

Table 26: Water quality for domestic supply of water used in construction camp during January- March -24

Test Parameter	Unit	Results			Acceptable Limits* Supply Water Quality Standards (5 December 2022) from the Utility Regulatory Authority
		4 March 2024	6 February 2024	4 March 2024	
Date of sampling		4 March 2024	6 February 2024	4 March 2024	
Physical Appearance		Clear	Clear	Clear	-
pH	--	7.8	7.1	7.8	6.5-8.5
Turbidity	NTU	ND	ND	ND	< 1.0
Residual Free Chlorine	mg/l	<0.01	<0.01	<0.01	-
Electrical Conductivity	µs/cm	450	576.1	50	<1000
Total Hardness	mg/l	10	14	10	
Total Suspended Solids	mg/L	1	1	1	5-750
Total Dissolved Solids	mg/L	300	327	300	5-750
Iron as Fe	mg/L	ND	ND	ND	< 0.3
Hydrogen Sulphide	mg/L	<0.01	<0.01	<0.01	-
Ammonia	Mg/l	<0.1	<0.1	<0.1	-
Nitrate (as NO3-)	mg/L	ND	ND	ND	<50
Chloride (as Cl-)	mg/L	38.7	41.8	38.7	< 200
Fecal Coliform	MPN/100m 	ND	ND	ND	0/100 ml
Total Coliform	MPN/100m 	ND	ND	ND	0/100 ml
E.Coli	MPN/100m 	ND	ND	ND	0/100 ml

vii. Treated Wastewater Quality from WWTP/STP discharged into Sea

53. One grab sample of treated wastewater was collected during each month of quarter from January to March 2024 from discharge point of WWTP/STP in operation at the project site and analyzed for limited parameter as per details given in Table 27
54. Quality of treated wastewater of three samples is well within the acceptable limits prescribed by IFC General EHS Guidelines. However, quality of treated wastewater of all three samples is also well within limits prescribed by URA. Detailed report is enclosed as Appendix3.

Table 27: Treated Wastewater Quality from WWTP/STP during January, February and March – 2024

Parameters	Unit	Results			Acceptable Limits National Wastewater Quality Guidelines URA (August 2023)	Acceptable limits as per IFC General EHS Guidelines 2007
		January 2024	February 2024	March 2024		
Total coliform	MPN/ ml	9	12	10.5	-	400
Fecal coliforms	Org/ml	ND	ND	ND	100	
E.coli	Org/ml	ND	ND	ND	1	
Total suspended solids	mg/L	23	24	20	30	50
Residual free Chlorine	mg/L	<0.01	<0.01	<0.01		
Temperature	°C	28.1	28.1	28.1		-
Physical Appearance		ND	ND	ND		
pH at 25°C	--	6	6.2	6.6	5-9.5	6-9
Nitrate (as NO ₃ -)	mg/L	4.3	5.9	4.5		-
Ammonia –N	mg/L	3.5	3.5	3.5	10	
Ortho Phosphates	mg/L	0.7	0.7	0.7	10	2
Surfactants	mg/l	0.6	0.7	0.6		
Soap, oil and grease	mg/L	01	ND	ND	5	10
Electrical Conductivity	µs/cm	801	838	823	---	-
Chemical Oxygen Demand	mg/L	40	41	40	50	125
Biological Oxygen Demand 20°C	mg/L	14	13	16	40	30
Dissolved Oxygen	mg/L	6	6.2	6.0		-
Total nitrogen	mg/L	9.1	7.8	7.8	15	10
Sum of metals (Pb, Cr, Ni, Cd, Se, As,Fe, Al,Sb, Cu, Mn,Hg)	mg/l	0.12	0.15	0.12	-	
Acute Toxicity	mg/l	ND	ND	ND	0	

viii. Discharge water quality from de-watering

55. One grab sample of discharge water from dewatering was collected during each month of this quarter from discharge point of retention pond and analyzed for limited parameter to comply with requirements of local regulations as per details given in Table 28. However, no limit for discharge quality has been prescribed by local regulations. Detailed report is enclosed as Appendix3.

Table 28: Discharge Water Quality from Dewatering during January, February and March – 2024

Parameters	Unit	Results			
		January 2024	February 2024	March 2024	Limits
Fecal Coliform	MPN/100ml	ND	ND	ND	100
pH	pH	6.9	7.4	8.8	6.5-8.5
Temperature	°C	27.8	27.8	27.8	18-32
Total Dissolved Solids	mg/l	27,200	26,300	31,000	EC*0.67
Total Suspended Solids	mg/l	6	6	4	50
Dissolved Oxygen	mg/l	6.8	6.8	6.3	6.5-8.0
Turbidity	NTU	1.6	1.3	1.6	<5
Total Hydrocarbon	ppm	<0.1	<0.1	<0.1	10
Electrical Conductivity	us/CM	46,960	42,940	46,560	<= Sea Water EC Value
Salinity	ppm	3.8	3.7	3.7	3.2-4.2%
Hydrogen Sulphide	mg/l	<0.01	<0.01	<0.01	0.5
Oil& Grease	mg/l	<1	<01	1.6	5
Ammonia	mg/l	1.8	1.6	1.0	5
Nitrate (as NO ₃ ⁻)	mg/	5.54	4.8	2.1	10
Phosphates	mg/l	0.21	0.21	0.1	2

ix. Marine ecology assessment survey

56. As part of site environmental baseline monitoring , 4th marine ecological survey for reef benthic cover and fish population was conducted on 03rd February 2024 at locations M10 (This location has been identified in the EIA report as a potential alternative for the discharge of brine water and waste water.), M9 (This location was identified as an alternative for brine discharge and wastewater outfall) and M8 (The site is the location that will be used for discharge of waste water from the brine outfall as described in the EIA) as shown in Figure 6.

Figure 7: Underwater Marine Survey Locations (M8, M9 and M10)



57. A standard approach, established by the Maldives EIA community and approved by the Environmental Protection Agency (EPA), was employed to study benthic cover and fish populations. The survey employed GPS locations, transects surveys conducted at two depths: 5m and 10m at each station (M8, M9 and M10 – as detailed in an earlier report). The methods followed were those outlined by Hodgson et.al (2006) in Reef Check Instruction Manual: A Guide to Reef Check Coral Reef Monitoring. Three transects of 20 m length were laid, one after the other along the reef, ensuring the transect falls to the specific depth. A quadrant of size 0.5 x 0.5 m was laid sequentially on the transect, and photo images were taken with the quadrant in the center. Details of findings of survey are as per given in Appendix-4

VIII. TRAINING AND CAPACITY BUILDING ACTIVITIES

58. Details of DBO/EPC Contractor-driven trainings are given in Table 30 and photos are shown in Appendix 6.

Table 30: Training and Capacity building activities conducted

No	Date	Training Activity	Training Objective	Venue and Duration	Target Group	Number of participants (male, female)
1	07.01.24	Chemical Handling Training	Hazards of chemicals, Entry route of chemicals, Control measures MSDS, PPE, Training	WtE Site Thilafushi, 1hr	Site Workers	4, Male
2	08.01.24	Working at Height Training	What is working at Height, hazards, Risk Assessment, Training, Fall prevention, PPE, Supervision	WtE Site Thilafushi, 1hr	Subcontractor VHPL	9, Male
3	11.01.24	Noise Awareness Training	What is Noise, Source of Noise, Noise Protection, PPE	WtE Site Thilafushi, 1hrs	Site Workers	19, Male
4	14.01.24	Food Safety Handling	HACCP, Hydenic, Pest control, Temperature Control, First in First Out Procedure	WtE Site Thilafushi, 1hrs	Site Workers	8, Male
5	04.02.2024	Working at Height Training	What is working at height, hazards, Risk Assessment, Training, Fall prevention, PPE, Supervision, Inspection of PPE	WtE Site Thilafushi, 1hrs	Staff and Workers	66, Male
6	07.02.2024	Lifting and Rigging	Crane Hazards, Lifting Hazards, Planning, Competent Personals, Inspection, Load Capacity, Rigging and Slings, Training	WtE Site Thilafushi, 1hrs	Workers	9, Male

No	Date	Training Activity	Training Objective	Venue and Duration	Target Group	Number of participants (male, female)
7	10.02.2024	Use of Fire Extinguisher	Demonstrate how to use a Fire Extinguisher to extinguish the fire	WtE Site Thailafushi, 1hrs	Staff and Workers	66, Male
8	12.02.2024	PPE Awareness	Hierarchy of Controls, PPE controls, Type of PPE, Care about PPE and Training	WtE Site Thailafushi, 1hrs	Workers	4, Male
9	14.02.2024	PTW Refresh Training	PTW Procedure, Roles and Responsibility, PTW Authorization Procedure, Supporting documents RA and SOP	WtE Site Thailafushi, 1hrs	PTW Holders and Area Authority	6, male
10	19.02.2024	Driving Safety	Safe defensive driving, Driving Hazards, Blind Spot, Fatigue and Inspection and Maintenance	WtE Site Thailafushi, 1hrs	Drivers and Operators	4, Male
11	19.02.2024	Spillage Response Training	Containment of spillage, Cleanup process, Compliance with regulations, MSDS, Environmental Protection and Safety of Employees	WtE Site Thailafushi, 1hrs	Staff and Workers	55, Male
12	25.02.2024	Waste Management	Segregation of wastes as per classifications, Compliance with Regulations, Safe disposal of waste	WtE Site Thailafushi, 1hrs	Staff	4, Male
13	04.03.24	Manual Handling	Manual Handling Assessment, Lifting Technique, Awkward postures, Hazards, Control Measures, PPE	WtE Site Thilafushi, 1 hrs	Site Workers	21, Male

No	Date	Training Activity	Training Objective	Venue and Duration	Target Group	Number of participants (male, female)
14	04.03.24	PPE Awareness	Hierarchy of Controls, PPE controls , Type of PPE, Care about PPE and Training	WtE Site Thilafushi, 1 hrs	Workers	21, Male
15	05.03.24	Power and Hand Tools	Power tools hazards, Control Measures, PPE, Inspection, Colour Coding systems, Training	WtE Site Thilafushi, 1 hrs	Workers	21, Male
16	06.03.24	Working at Height	What is working at height, hazards, Risk Assessment, Training, Fall prevention, PPE, Supervision, Inspection of PPE	WtE Site Thilafushi, 1 hrs	Workers	21, Male
17	14.03.24	Security Management	Security officer Roles and Responsibilities, Incident Reporting, Checking and Inspecting at the Gate	WtE Site Thilafushi, 1 hrs	Security Officer	7, Male

59. Table 29 provides details of training plan to be conducted by DBO contractor during April, 2024. PMDSC has submitted revised project manual to PMU on 31st March 2024 and need bases trainings shall be conducted on line and off line (at site) to staff of DBO contractor and PMU.

Table 29: Training and Capacity building activities to be conducted by DBO/ EPC contractor during April, 2024

No	Date	Training Activity	Training Objective	Venue and Duration	Target Group
1	April-24	06.04.2024	Emergency Response Training	Types of Emergency, Roles and Responsibility, Emergency Rescue Equipment, Evacuation Route, Communication, Assembly Point, Head Count	WtE Site Thilafushi, 1hrs
2	April-24	08.04.2024	Safe Lifting and Rigging Training	Crane Hazards, Lifting Hazards, Planning, Competent Personals,	WtE Site Thilafushi, 1hrs

No	Date	Training Activity	Training Objective	Venue and Duration	Target Group
				Inspection, Load Capacity, Rigging and Slings, Training	
3	April-24	16.04.2024	Safe Driving Safety	Safe Depence driving, Driving Hazards, Blind Spot, Fatigue and Inspection and Maintenance	WtE Site Thailafushi, 1hrs
4	April-24	20.04.2024	Noise Awareness Training	What is Noise, How to reduce noise , Exposure hours, PPE , Training	WtE Site Thailafushi, 1hrs
5	April-24	28.04.2024	Working at Height	What is working at height, hazards, Risk Assessment, Training, Fall prevention, PPE, Supervision, Inspection of PPE	WtE Site Thailafushi, 1hrs

IX. PUBLIC CONSULTATION

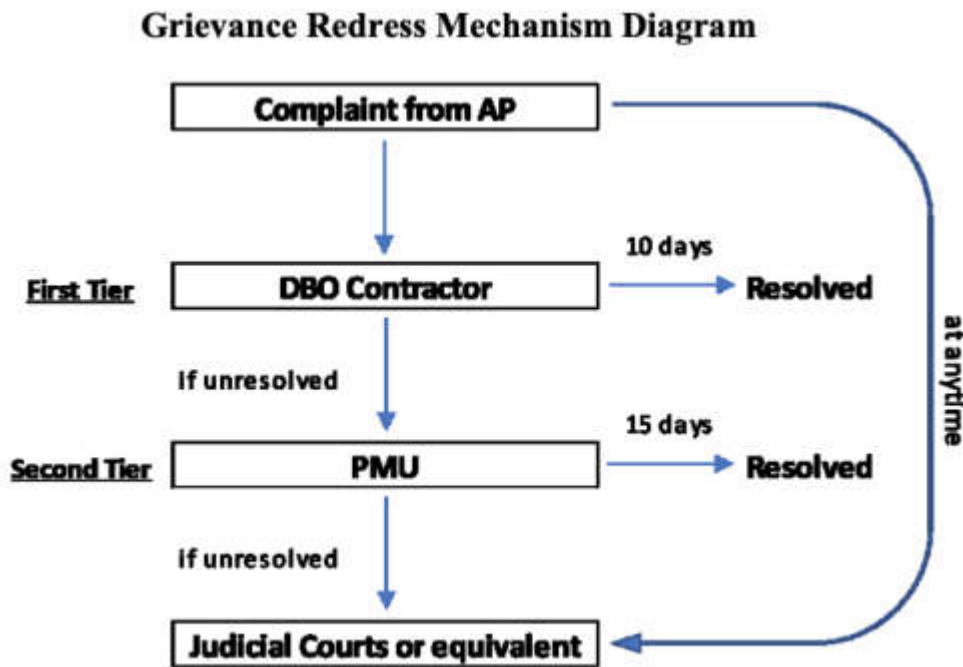
60. The PMU will be supported by a Public Awareness Consultant (PAC) a consulting firm that will help to generate awareness and strengthen skills in waste collection, segregation, composting, recycling, and O&M targeting the poor and the women, including community awareness campaign for strengthening disaster risk reduction and climate change readiness. The PAC will be responsible for the information, education, and communications initiatives and public awareness on waste-to-energy. The recruitment of PAC is ongoing and the bidder's technical evaluation report has been sent to ADB for no objection. PAC consultant is estimated to be finalized in next quarter.
61. Public awareness and communications activities of the project during this period are given below:
 - On 29th February 2024, an awareness session regarding waste disposal was carried out by MoCCEE for Primary Health Care students at Maldives National University. The session covered information on current waste management practices as well as the impacts of improper waste disposal and the concept of safe waste disposal.
 - EPC contractor carried out a stakeholder engagement session on 18th February 2024 for representatives from WAMCO, Maldives Police Service and Maldives National Defense Force. Participants were provided with information about the project as well as a site tour. Detailed information including a list of participants is attached in Appendix 5.

X. GRIEVANCE REDRESS MECHANISM

A. Grievance Redress Mechanism

62. Project level grievance redress mechanism (GRM) has been established for the Project and is shown in Figure 8 below. Grievance Redress Committees are also in place at the PMU levels. The PMU (MoCCEE) has approved and published the GRM (July 2022) on its website and released the government notification of the same on 30 March 2023.
63. Aside from the project GRM, the DBO contractor has also setup an internal and external GRM to receive and address grievances/complaints from its staff/workers and public. However, GRM plan has been accepted with comments.
64. The DBO Contractor/EPC Contractor has installed sign boards on the GRM at the project site, which include details of focal persons, and contact phone numbers. GRM boxes with complaint forms are also provided at the entry gates of the project site.

Figure 8: Grievance Redress Mechanism Flow Chart



65. As per the system in place, a GRC for each tier in the GRM has been established. In the 1st tier, the grievances will be handled by the GRC under the Thilafushi DBO Contractor which is composed of the Contractor's Project Manager, Contractor's Resident Engineer, Contractor's Environmental/H&S Officer, and one representative from the PMDSC. At the 2nd tier, grievances will be dealt with by the GRC consisting of the Project Manager/Director of PMU, Environment and Social Safeguard Specialist of PMU, Civil Engineer of PMU and IEC Specialist of PMU.
66. Inadequate compliance of GRM plan which mainly includes:

- a. Public announcements need to be made through local newspapers, community bulletin boards, through the MoE. Also, through the social media, websites, newsletters to reach a broader audience;
- b. Complaint box need to be placed at public jetty of Thilafushi;
- c. GRM materials is to be translated in local language for public and workers;
- d. Record keeping of all steps defined as GRM resolution procedure need to be maintained;
- e. GRC need to be constituted; etc

B. Complaints Received

67. No complaint has been received for this reporting period from public. However, Table 30 provides details of complaints from ex-staff of EPC contractor based on details made available by EPC and DBO contractor. However, details of chronology of communications are as per given below:
- a. Complaint was received with attachments on 11 January 2024 by GRM officer of EPC Contractor
 - b. On 12 Jan, 2024 complaint was registered and acknowledgement was sent to complainant by GRM officer of EPC Contractor.
 - c. On 22 Jan, 2024 complainant escalated level and sent email to Project Manager of DBO contractor due to lack of response.
 - d. On 22 Jan, 2024 GRM officer of EPC contractor sent registration details of complaint to complainant.
 - e. On 29 Jan,2024 GRM officer of EPC contractor sent reply as “AAJV disputes the claims made by former employee and thus would like to inform that the matter to be resolved through the legal system in the employee’s home country since employee has flown back. Please note that all due rights of have been paid and settled upon his resignation.”
 - f. On 29 Jan,2024 complainant sent an email to GRM officer of EPC contractor showing disagreement with response.
 - g. On Feb 1, Project Manager of DBO contractor sent reply to complainant repeating the same reply as sent by EPC contractor on 29 Jan, 2024.
 - h. No communication was received further from complainant.

Table 30: Details of Complaints received and Status

S n	Grievance Register Reference no	Type of Grievance	Date of receipt	Complainant name	Mode of communication	Subject /Nature of Complaint	Grievance Dealing Parties/ Department	Date of Acknowledged	Action Taken	Status/Pending/ Completed	Feedback from Complainant	Reason for delay Grievance solution
1	BP-AJ-GR/2024 /1	Wages	11-Jan-24	ex-employee of EPC who resigned and relieved before 11 Jan 2024	email	Missing Payment of wages	GRM officer and HR Department of EPC	12-Jan-24	As per details given above.	Completed as no response received from employee for the latest email sent by DBO contractor since February 1, 2024.	Not available	Not available

XI. FINDINGS & RECOMMENDATIONS

A. Findings and Recommendations

68. The environmental clearance from the EPA has been extended until 31 December 2021. There is no need to apply or renew as the site clearance and levelling works started on 28 December 2021 by the contractor and EPA has been informed.
69. The revised CEMP and H&S plan will be aligned with ISO14001 and ISO 45001 by 20th April, 2024 and in lieu of same, ESMS is not required to be developed. However, document on Regulatory Compliance procedure is to be submitted for approval.
70. To ensure implementation of various plans including CEMP and H&S plan, effective supervision and record keeping need to be improved.
71. OHS monitoring has been conducted, however, OHS monitoring plan is still under preparation.
72. PMDCSC has modified project manual to have more effective supervision on HSE aspects by introducing quarterly inspections by international environmental safeguard expert in addition to regular monthly inspections and walk downs by the local environment safeguard expert, deputy team leader and site engineer.
73. Fluctuation and vacancy of HSE expert positions is an ongoing problem all parties involved in the project are facing leading to challenges and discontinuity. PMU's social and environmental safeguards specialist Ms. Fathimath Yamna Mohamed replaced Dr. Ibrahim Mohamed on 28th March 2024 as Dr. Ibrahim left PMU on 15th March, 2024.
74. The site boundary is established with security measures in place including provision of ID cards, guard posts and CCTV placement.
75. All staff are provided with basic PPE.
76. Permits to work are issued prior to the start of each activity.
77. A full-time doctor and nursing staff are available on site at all times. Basic first aid and medicine are stocked at the doctor's office. The contractor also has a dedicated speed boat in the event that emergency transport to a hospital is required.
78. The project site, including office, kitchen, laundry, recreation rooms and general areas are clean and well maintained.
79. Fire extinguishers are placed at several locations on site but not inspected by third party.
80. Additional site mobilization, baseline data gathering on ambient air quality, ambient noise level, & marine water quality including HSE trainings and Construction activities such as spun piling works, excavation works and concreting were conducted during this reporting period. Table 31 and Table 32 present key issues identified in previous quarter and key issues identified and proposed remedial actions based on findings for this quarter respectively.

Table 31: Status of Key Issues identified in previous QEMR (October to December-23)

No	Key Issue / Concern	Remedial/Corrective Measures	Target date	Implementation Responsibility	Monitoring responsibility	Status of implementation from last reporting period on pending issues identified
1	Inadequacy observed on status of documents, implementation, practices, monitoring, records keeping, training etc.	<ul style="list-style-type: none"> ▪ PMDCSC shall have more effective inspections via walk downs, site inspections and audits by having specific details on role and responsibility of team, on schedule of site walk down, inspections and audits etc. ▪ PMDCSC to monitor training provided by DBO/EPC and to impart training to all key personal including Project Manager, Environmental Manager, and all key personnel including but not limited to professional engineers, site supervisors etc. on need basis ▪ Include a dedicated PMDCSC OHS representative on site to enable efficient monitoring and implement efficient corrective measures 	31 st March 2024	PMDCSC	PMU	<ul style="list-style-type: none"> ▪ PMDCSC has submitted revised Project Manual to PMU on 31st March 2024 which has detailed schedule of inspections & audits including walkdowns. Same will be implemented from April 1, 2024. ▪ PMU is still reviewing the proposal from PMDCSC for the deputation of full time OHS expert on site.

No	Key Issue / Concern	Remedial/Corrective Measures	Target date	Implementation Responsibility	Monitoring responsibility	Status of implementation from last reporting period on pending issues identified
		<ul style="list-style-type: none"> ▪ Revise project manual by PMDCSC to have more effective supervision and inspection 				
2		<ul style="list-style-type: none"> ▪ DBO contractor to ensure regular inspections, supervision and monitoring of implementation of CEMP and H&S plan by HSE professionals. ▪ DBO contractor to recruit remaining HSE personnel as per contract i.e. three environment officers and one H&S inspector. ▪ CEMP and H&S plan are to be revised. 	31 st March 2024	DBO contractor	PMU/ PMDCSC	<ul style="list-style-type: none"> ▪ Regular inspections of construction activities on site by the HSE deputed by contractor, however adequate recordkeeping is to be maintained. ▪ Inspections as per checklists are to be carried out as per procedure given in respective plan. ▪ Remaining personnel are to be recruited when more shifts are required. As per contract, one environment and one HSE officer is required per shift. ▪ CEMP and HSE plan is under review and approval is expected in April 2024. However, status of other plans is as per Table 10.

No	Key Issue / Concern	Remedial/Corrective Measures	Target date	Implementation Responsibility	Monitoring responsibility	Status of implementation from last reporting period on pending issues identified
3	Submission of pending HSE plans	<ul style="list-style-type: none"> ▪ To get pending documents as referred in Table-10 for review and approval PMDCSC need to facilitate and follow up with DBO contractor 	31 st March 2024	DBO contractor	PMDSC /PMU	<ul style="list-style-type: none"> ▪ In continuation to above, contractor agreed during EHS workshop on 16 and 17 April 2024, to submit document on Regulatory Compliance procedure for approval.
4	OHS monitoring	<ul style="list-style-type: none"> ▪ Plan for OHS monitoring need to be in place and DBO contractor is preparing the same. ▪ Need to conduct ambient air quality and noise level on site. DBO contractor agreed to conduct the same in the month of March 	31 st March 2024	DBO contractor	PMDSC /PMU	<ul style="list-style-type: none"> ▪ OHS monitoring plan is still under development. ▪ However, during March-24, as per details given in Table 15, ambient air quality and noise monitoring at two locations and illumination level monitoring during night were conducted within the project site.
5	Smoke emissions and fire risk from the existing waste dump site of WAMCO	<ul style="list-style-type: none"> ▪ PMU to follow up with WAMCO and ensure that risk is managed, and an emergency response plan is put in place. 	Immediately	PMU	MOCCEE	<ul style="list-style-type: none"> ▪ PMU visited the site with WAMCO and requested that the waste pile with recurring fires is cleared and patrolling of the area is carried out until the area can be cleared.

No	Key Issue / Concern	Remedial/Corrective Measures	Target date	Implementation Responsibility	Monitoring responsibility	Status of implementation from last reporting period on pending issues identified
		<ul style="list-style-type: none"> ▪ DBO to review and update existing emergency plan, if any based-on observations/ findings made during incident 	Immediately	DBO	PMDSC /PMU	<ul style="list-style-type: none"> ▪ Findings were reviewed during weekly HSE meeting and with PMU and it was decided that there is no need on immediate basis to update the existing emergency response plan. However, contractor will pursue with PMU and WAMCO for corrective measures.
6	Risk due to presence of live electrical cables of STELCO (passing through project site)	<ul style="list-style-type: none"> ▪ PMU to follow up with HDC and STELCO for realignment and ensure that risk is managed, and an emergency response plan is put in place. 	Immediately	PMU	MOCCEE	<ul style="list-style-type: none"> ▪ PMU has discussed with HDC and STELCO regarding cable realignment. The contract for relocation between HDC and STELCO has not been signed yet. PMU shall keep following with HDC and STELCO.
7	Public consultation as part of stake holder engagement needs to be conducted	<ul style="list-style-type: none"> ▪ DBO is planning to conduct in February 2024. 	29 th February 2024	DBO contractor	PMU	<ul style="list-style-type: none"> ▪ Public consultation is yet to be conducted. However, DBO agreed to conduct public consultation in next quarter.

No	Key Issue / Concern	Remedial/Corrective Measures	Target date	Implementation Responsibility	Monitoring responsibility	Status of implementation from last reporting period on pending issues identified
						<ul style="list-style-type: none"> ▪ Contractor carried out a stakeholder engagement session on 18th February 2024 for representatives from WAMCO, Maldives Police Service and Maldives National Defense Force.
8	Appointment of Public Awareness consultant by PMU	<ul style="list-style-type: none"> ▪ Speed up the hiring process (final bid evaluation and contract signing). ▪ Until consultants are hired, PMU to conduct public awareness 	31st March 2024	PMU	PMU	<ul style="list-style-type: none"> ▪ Will be appointed in next quarter

Table 32: Key Issues identified and Proposed Remedial Measures

No	Key Issue / Concern	Remedial / Corrective Measures	Target Dates
1	Regulatory compliance	Submission of Regulatory compliance procedure for approval and implementation as part of CEMP	20 th July 2024
		Obtain registration from transport authority and permit from MNDF and others, if any for mobile diesel tanker of 5000 liter	31 st December 2024
		Renewal of permit from HDC for location of pipeline for discharge of dewatering into sea.	4 th June 2024
		Verify the adequacy of capacity of sedimentation pond provided for collection and solar evaporation of wastewater generated from washing of transit mixer and others in batching plant area (considering solar evaporation rate and amount of wastewater generated during operation of batching plant) to ensure that no overflow is drained outside.	1 st May 2024
2	Status of HSE documents	Revision of CEMP and Health and safety plan	CEMP- 8 th May 2024 HSMP - 12 th May 2024
		Submission of Regulatory compliance procedure for approval as part of CEMP	20 th July 2024
		Submission of OHS monitoring plan for approval	31 st July 2024
		Relevant HSE documents need to be revised/modified and PMDCSC/PMU need to be notified in advance in case there is any change made in monitoring parameter and/or agreed mitigation measures. For example: 1. Parameters for which quality of treated wastewater and discharge water for de-watering tested for this quarter are not aligned with the relevant method of statement and SOPs 2. Water spray for dust suppression as mentioned in soil management plan.	8 th May 2024 31 st July 2024
3		Contracts prepared and signed by all staff	1 st June 2024

No	Key Issue / Concern	Remedial / Corrective Measures	Target Dates
	Implementation of HSE documents	Ensure compliance of GRM plan including creating awareness among workers and public and constitution of GRC	30 th June 2024
		Constitution of EHS committee	10 th July 2024
4	Smoke emissions and fire risk from the existing waste dump site of WAMCO	Review and update existing emergency plan, if any based-on observations/ findings made in view of fire incidents reported on Feb 26 and March 3, 10, 18 and 25.	15 th July 2024
5	Consultation as per stakeholder engagement plan and GRM	Consultation as per stakeholder engagement plan and GRM	30 th June 2024
6	Storage areas for hazardous chemicals	Secondary containment to be provided at all areas where hazardous materials are stored	10 th July 2024
		Spill kits to be provided at all storage areas	1 st June 2024
		Records of real time inventory to be maintained	1 st July 2024
7	Clean wheels and undercarriage of haul trucks prior to leaving construction site/quarry	Facilities need to be provided.	15 th July 2024
8	Worker health and safety	Provision of adequate mitigation measures for dust and noise as mentioned in EMP including masks for workers in compliance with the personal protective equipment procedure	5 th June 2024

No	Key Issue / Concern	Remedial / Corrective Measures	Target Dates
			31 st July 2024
9	Training of workers	Create awareness in all site staff & workers on the importance of the marine animals/species and plants around the site and their vulnerability.	15 th July 2024
10	Drainage plans to be finalised	Preparation of a drainage plan	30 th August 2024
11	Climate vulnerability and risk assessment (CVRA) study	Project specific CRVA is to be carried out and accordingly mitigation measures are to be included in the design.	31 st July 2024

Environmental Monitoring Report

PUBLIC

Project Number: 51077-003
Quarterly Report (January - March 2024)
May 2024

Maldives: Greater Male Waste-to-Energy Project

Part B: Appendices

This environmental monitoring report is a document of the borrower. The views expressed herein do not necessarily represent those of ADB's Board of Directors, Management, or Staff, and may be preliminary in nature. Your attention is directed to the "terms of use" section of ADB's website.

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Appendix 1: Status of permits applicable during construction and copies of permits obtained during reporting period

PERMITS

Project Name: DESIGN. BUILD AND OPERATE OF A WASTE TO ENERGY FACILITY AT K. THILAFUSHI ISLAND
 Project Manager Name: Mr. CIVAN

Completed	29
Not Started	9
In progress	1
total	39

No	Agency/Authority	Permit	Planned Submission Date	Actual Submission Date	Expected Approved Date	Actual Approved Date	Status	Progress/Comments	Permit Requirements	Focal Point
1a	HDC	Construction Permit (Main Building)	2/18/2023		3/4/2023		Not Started	<ul style="list-style-type: none"> ~ First, layout of facility to be submitted ~ Each building drawings can be submitted seperately for permitting ~ 7 to 14 days of approval 	<ul style="list-style-type: none"> ~ Final Layout ~ Structural Drawings ~ Architectural Drawings ◦ 2 Authorized Architect and 2 Authorized Engineer signature will be 	HDC Hussain Ziyath Director - Planning and Development 778 87 41 ziyath@hdc.com.mv
1b	HDC	Construction Permit (Other Buildings)	5/15/2023		5/29/2023		Not Started	<ul style="list-style-type: none"> ~ Each building drawings can be submitted seperately for permitting ~ 7 to 14 days of approval 	<ul style="list-style-type: none"> ~ Final Layout ~ Structural Drawings ~ Architectural Drawings ◦ 2 Authorized Architect and 2 Authorized Engineer signature will be required 	
2	HDC	Boundary fencing permit	4/26/2022	5/22/2022	5/29/2022	6/7/2022	Completed	<ul style="list-style-type: none"> • Submitted for HDC approval on 22.05.2022 • Submission No: HDC(161)-MNS/H14/2022/00049 Issued. 	<ul style="list-style-type: none"> • Site Handover Form • Fence Design 	
3	EPA	Environmental Clearance	1/31/2023		2/14/2023		Not Started	<ul style="list-style-type: none"> • An addendum will be issued for EIA report after design is completed 	<ul style="list-style-type: none"> • Additional Baseline Data reports to be submitted 	Musab Sabree Assistant Engineer 9838806 musab.sabree@epa.gov.mv
4	URA	Dewatering Permit for Exavation of Banker	4/15/2023		4/29/2023	5/25/2023	Completed		<ul style="list-style-type: none"> • Water Quality Test Report • Site Plan • Foundation Plan+Section • Construction Permit • EIA Decision Statement • Pump Details • Road Closure Permit • Work Schedule 	Water & Sewerage Mohamed Shujuan Assistant Oceanographic Observer 7772026 mohamed.shujuan@ura.gov.mv
5	STELCO	Approval for grid connectivity (Temporary Power Connection)	4/3/2022	4/5/2022	17.05.2022	5/15/2022	Completed		<ul style="list-style-type: none"> • Reg. Copy of Land (Site Handover Document) • Agreement • Stamp of Ministry • Registration copy of company • Panel board approval (if necessary) 	Hussain Ageel Naseer Assistant Service Engineer 744 74 17 Hussain.AgeelNaseer@stelco.com.mv
6	STELCO	Approval for grid connectivity (Permanent Power Connection)	12/31/2024		1/14/2025		Not Started	<ul style="list-style-type: none"> • Request for clarification submitted. 	<ul style="list-style-type: none"> • Single Line Diagram • STELCO approval for equipments to be used • Load calculations • URA approval ◦ Licensed URA Engineer signature will be required. 	

7	URA	Approval for Power Supply	12/31/2024		1/14/2025		Not Started	-	-	URA - Power/Energy Ahmed Jazlaan Assistant Engineer 970 74 72 ahmed.jazlaan@ura.gov.mv
8	MWSC	Water Supply and Sewerage (Temporary Connection)	4/3/2022	4/5/2022	5/26/2022	6/8/2022	Completed	<p>Water Connection Temporary water connection completed. (400 m far away from site boundary)</p> <p>Excavation permit obtained from HDC on 14.06.2022 to start piping work from water meter to the site boundaries. HDC(161)-MNS/H2/2022/00393</p> <p>Permit approved. Works will start by 07.08.2022</p> <p>Sewerage Connection Design works are going on for temporary discharge line. EIA Addendum and URA approval will be obtained before installation of the temporary sewerage connection.</p>	<ul style="list-style-type: none"> • Reg. Copy of Land (Site Handover Document) • Stamp of Ministry • Registration copy of company 	Ahmed Hamad Customer Relation Manager 995 63 43 ahmed.hamad@mwsc.com.mv
9	MWSC	Water Supply and Sewerage (Permanent Connection)	12/31/2024		1/14/2025		Not Started	-	-	
10	HDC	Agreement to commit to the safety measure around the construction area	2/18/2023		3/4/2023		Not Started	-	-	HDC (Online Submission)
11	MNDF	No Objection from FRS (Fire Rescue Services Department) (Temporary)	2/7/2023		2/21/2023		Not Started	-	-	MNDF Fire Rescue Services Department Colonel Abdulla Zuhury a.zuhury@mndf.gov.mv.
12	MNDF	No Objection from FRS (Fire Rescue Services Department) (Permanent)	1/1/2025		1/15/2025		Not Started	-	-	MNDF Fire Rescue Services Department Colonel Abdulla Zuhury a.zuhury@mndf.gov.mv.
13	Ministry of Defence	Fire protection system for Office and Accommodation		1/2/2023		15/02/2023	Completed	-	-	Ahmad Shan Mansoor Permanent Secretary
14	Ministry of Defence	Fire protection system for Kitchen and Worker Accommodation		4/23/2023		5/7/2023	Completed	-	-	Hassan Zameel duputy Minister
15	HDC	Excavation Permit (LAYING SEWAGE PIPE)				2/20/2023	Completed	-	-	ADAM AZMEE
16	HDC	Excavation Permit (Laying water pipe from water meter to site boundary)				8/3/2023	Completed	-	-	ADAM AZMEE
17	HDC	Laying water discharging pipe from site boundary to the sea				6/22/2023	Completed	-	-	
18	HDC	Road closing permit (LAYING SEWAGE WATER PIPE FROM UNDER THE ROAD)				19/02/2023	Completed	-	-	Ahmed

19	URA	SEWAGE TREATMENT PLANT (THILAFUSHI WASTE TO ENERGY PROJECT)		6/3/2023	12/4/2023	12/4/2023	Completed	Please also note that you will be required to submit the monthly wastewater test results to URA	-	Aminath Mohamed Direcor Secretariat@ura.gov.mv +9603332488
20	HDC	Partial Construction Permit for Spun Piles (ERQ – Table 5.17 – Item 1- Construction Permit)		15/3/2023	10/4/2023	5/11/2023	Completed		1) Site Organization Plan 2) WtE Building Facade 3) WtE Building Plan & Section 4) Geotechnical Evaluation Report 5) WtE Building Spun Piles Layout	
21	MNHPI	foundation systems of WtE Building		16/04/2023		5/4/2023	Completed			
22	URA	Cable Approval		25/01/2023		5/8/2023	Completed			
23	URA	Grid Code		2/4/2023			In Progress			
24	HDC	Exavation permit for WtE Bunker & Process building				7/31/2023	Completed			
25	URA	Dewatering Permit for Exavation of Banker		8/20/2023		8/20/2023	Completed			
26	HDC	Exavation permit for WtE Bunker & Process building				8/26/2023	Completed			
27	URA	Dewatering Permit for Exavation of Banker		9/18/2023		9/21/2023	Completed			
28	HDC	Exavation permit for WtE Bunker & Process building		9/18/2023		9/24/2023	Completed			
29	HDC	Dewatering Location Permit		10/2/2023		10/15/2023	Completed			
30	HDC	Exavation permit for WtE Bunker & Process building		10/11/2023		10/18/2023	Completed			
31	URA	Dewatering Permit for Exavation of Banker		10/22/2023		10/23/2023	Completed			
34	HDC	Exavation permit for WtE Bunker & Process building		11/3/2023		11/9/2023	Completed			
33	HDC	Dewatering Location Permit		11/8/2023		11/20/2023	Completed			
35	URA	Dewatering Permit for Exavation of Banker		11/19/2023		11/21/2023	Completed			
36	HDC	Exavation permit for WtE Bunker & Process building		11/26/2023		12/3/2023	Completed			
37	HDC	Exavation permit for WtE Bunker & Process building		12/17/2023		12/25/2023	Completed			
39	URA	Dewatering Permit for Exavation of Banker		12/18/2023		12/24/2023	Completed			
40	URA	Dewatering Permit for Exavation of Banker		1/23/2024		1/24/2024	Completed			

485-LR/438/2024/6 : ٤٨٥-لر/٤٣٨/٢٠٢٤/٦

٤٨٥-لر/٤٣٨/٢٠٢٤/٦ : ٤٨٥-لر/٤٣٨/٢٠٢٤/٦

DEWATERING PERMIT

S7-S01 : ٤٨٥-لر/٤٣٨/٢٠٢٤/٦ : ٤٨٥-لر/٤٣٨/٢٠٢٤/٦

Work Site: Waste to Energy Facility S7-S01

٤٨٥-لر/٤٣٨/٢٠٢٤/٦ : ٤٨٥-لر/٤٣٨/٢٠٢٤/٦

Owner of the work: MCCEE

٤٨٥-لر/٤٣٨/٢٠٢٤/٦ : ٤٨٥-لر/٤٣٨/٢٠٢٤/٦

Contractor: Alke Alkatas' Joint Venture Pvt. Ltd.

Application Form no: DW24009

٤٨٥-لر/٤٣٨/٢٠٢٤/٦ : ٤٨٥-لر/٤٣٨/٢٠٢٤/٦

Permit Duration: 28 Days

٤٨٥-لر/٤٣٨/٢٠٢٤/٦ : ٤٨٥-لر/٤٣٨/٢٠٢٤/٦

Start Date: 24.01.2024 12PM

٤٨٥-لر/٤٣٨/٢٠٢٤/٦ : ٤٨٥-لر/٤٣٨/٢٠٢٤/٦

End Date: 21.02.2024 12PM

٤٨٥-لر/٤٣٨/٢٠٢٤/٦ : ٤٨٥-لر/٤٣٨/٢٠٢٤/٦

Issued Date: 24.01.2024

٤٨٥-لر/٤٣٨/٢٠٢٤/٦ : ٤٨٥-لر/٤٣٨/٢٠٢٤/٦

٤٨٥-لر/٤٣٨/٢٠٢٤/٦ : ٤٨٥-لر/٤٣٨/٢٠٢٤/٦



٤٨٥-لر/٤٣٨/٢٠٢٤/٦ : ٤٨٥-لر/٤٣٨/٢٠٢٤/٦

ayub.ahmad@aawte.com

From: civan.kalafat@aawte.com <civan.kalafat@aawte.com>

Sent: Tuesday, January 23, 2024 9:48 AM

To: Gamero Sutil, Javier <jgamero@urbaser.com>; Garcia Padin, Carlos <cgarciap@urbaser.com>; Arunachalam, Sathiyaraj <sarunachalam@urbaser.com>; Thomas, Roshan <rthomas@urbaser.com>; Raymond Lee <rlee@ramboll.com>; Jane Lim <JNLM@ramboll.com>

Cc: senolbeken@alkatas.com.tr <senolbeken@alkatas.com.tr>; 'burak.ozdemir' <burak.ozdemir@aawte.com>; hikmet.buluttekin@aawte.com <hikmet.buluttekin@aawte.com>; 'Sahin Keles' <sahin.keles@aawte.com>; sedat.cot@aawte.com <sedat.cot@aawte.com>; dhamu@aawte.com <dhamu@aawte.com>; sujith@aawte.com <sujith@aawte.com>; rajesh@aawte.com <rajesh@aawte.com>; hakan.kork@aawte.com <hakan.kork@aawte.com>

Subject: FW: WTE facility batching plant works

CAUTION!: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Dear All

Please find below the authorization email of HDC regarding the operation of the batching plant at night time (After 18:00hrs).

Best regards,
Civan Kalafat

From: Ahmed Fuad <ahmed.fuad@hdc.mv>
Sent: Monday, January 22, 2024 6:49 PM
To: clamp.engineering@outlook.com <clamp.engineering@outlook.com>
Cc: Thilafushi Operations <thilafushioperations@hdc.mv>; T&G Property Management <tgpropertymanagement@hdc.mv>; Municipal <municipal@hdc.mv>; Amjad Waheed <amjad.waheed@hdc.mv>; Mohamed Athif <Mohamed.Athif@hdc.mv>; athif@outlook.com <athif@outlook.com>; Rilwan Farhath <rilwan.farhath@hdc.mv>; Ahmed Samee Easa <ahmed.samee@hdc.mv>
Subject: WTE facility batching plant works

Dear Athif,

Working within your designated boundary area, including night shifts after 18:00hrs, does not require additional authorization from Thilafushi Operation.

Best regards,
Ahmed Fuad
OPERATIONS OFFICER
9900353

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**Appendix 2: Site Inspection Reports by PMDCSC
from January – March 2024, including Site
Inspection Photos**

PERMITS



Site Inspection Report

No.: SI-23-31

by the Employer's Representative

Dates / Time of the Visit	Conducted by [ER]	Signature
3 rd , 15 th , 16 th , 17 th , 25 th , 30 th January 2024 09:00 hrs – 17:00 Hrs	Nahee Nazim Deputy Team Leader Fichtner / REM	

General Observations

Sn	Particulars	Details / Remarks	Reference
1	Change in construction methodology with reference to same given in EIA report, if any	-	-
2	Not anticipated/accounted project specific activity (ies) and impacts observed which were not considered in EIA study report, if any, either on site or adjacent by the Contractor or other stakeholders.	-	-
3	Any activity or sign observed within and adjacent to project site which may lead to soil and ground & marine water contamination	Presence of Shipwrecks adjacent to quay wall and movement of speed boats, ships (medium and large) on the route and adjacent to quay wall of island . Leachate and run off water from waste dumping site of WAMCO adjacent to project site. Waste disposed by others adjacent to project site.	-
4	Total number of man power at project as per attendance register on date of visit a) ER Representative b) DBO Representative c) HO Management Team d) EPC Contractor Direct Staff e) EPC Contractor Indirect Staff f) EPC Contractor Direct Site Workers g) Security (Gage) h) ELS (Spun pile contractor)	Total of 107 workers deployed. 1 1 5 33 20 42 7 5	-
5	Others, if any	Presence of 350 KVA DG, and additional generators placed around the site, conditional approval from URA has been obtained via email.	-

Progress Observations

No.	Particulars	Details / Remarks	Reference
1	Temporary facilities	Work on the temporary facilities on going. Staff accommodation buildings still under construction. Fencing, guard houses, CCTV systems, storage facilities, kitchen, laundry, toilets, gym as well as the waste water treatment plant are in operation, new entrance gate installed and guard house under construction.	
2	Site Preparation	Spun piles for ground improvement has been. Sheetpiling work around the bunker area has been completed, and daily monitoring of sheet piles for any movement is ongoing. Concrete batching plant is operational. Lean concrete work and pile caps concrete work for the spun pile caps is continuing.	-
3	Excavation & Dewatering	Excavation work for the bunker and the main process building has been completed. Well point dewatering system around the bunker area has been setup and continuous dewatering works is ongoing.	-

Environmental Observations

Sn	Particulars	Details / Remarks	Reference
1	Status of adequacy of compliance of CEMP and ESMS including SOPs in place applicable to construction activities visited on the basis of assessment made on randomly basis, on site or adjacent. ¹	However, for construction phase, various plans and SOPs as part of ESMS as mentioned in CEMP are yet to be finalized. Implementation of the said plans is an ongoing process and efforts are in place to implement the CEMP.	-
2	Status of adequacy of environment monitoring as envisaged in CEMP on the basis of assessment made on randomly basis.	Being conducted as scheduled.	-
3	Status of adequacy of level of understanding of environment hazards and corresponding designed mitigation measures of construction team including supervisors and workers on site or adjacent on the basis of assessment made on randomly basis.	Toolbox talks are being conducted on a daily basis. Training is conducted monthly as per requirement for the month. Implementation of CEMP, H&S plan and other management plans is ongoing.	
4	Status of adequacy of record keeping including data reported in monthly environment report on the basis of assessment made on randomly basis.	Site activities are captured on the Daily Progress Reports prepared by the EPC and digital copies of the report are kept on record on the ACONEX project management system and shared with all stakeholders.	-

¹aspects includes (but not limited to) solid wastes (hazardous and non-hazardous including construction, plastic, E-waste, battery and bio-medical) management, Storage and handling of construction materials, waste water (from domestic and construction activities and run off due to rain) management, Air emission (from mainly DG sets, diesel driven machinery and equipment, Raw mix plant, fugitive, vehicular movement, etc.) management, management of construction noise level etc.

Health and Safety Observation

Sn	Aspects	Details / Remarks	Reference
Labour - health, safety and welfare			
1	Status of adequacy of HSE /Occupational Health and Safety management plan and ESMS including SOPs applicable to construction activities visited on the basis of randomly assessment made. ²	No formal documented plan was in place and practices in place, SOPs are in place for specific work activities and is an ongoing process. However following observations were made: <ul style="list-style-type: none"> Impacts/risks to workers due to presence of dumping site have not been identified No risk management and monitoring plan was in place to deal with air pollutants emitting from dumping site, however the need for air quality monitoring within the site area has been suggested by ADB HSE expert and it was agreed to work on implementing this by EPC. Documents on subject were under process of finalization for getting approval of ER/PMU for construction phase. Presence of live electrical cable supplying electricity to project from STELCO runs within the site boundary. 	-
2	Status of adequacy of HSE monitoring as envisaged in CEMP, HSE Plan, ESMS & SOPs etc.	Documents on subject as part of CEMP, HSE Plan and SOPs as part of ESMS are being prepared and submitted for approval of ER/PMU, HSE monitoring and audits are conducted by the EPC as well as DBO. Implementation of the CEMP and HSE plans is ongoing. SOP's are in place for all ongoing construction work and is an ongoing process as work progress on site.	-
3	Status of adequacy of on-site Emergency Preparedness and Response on the basis of randomly assessment made (emergency response team, safety committee, fire fighting, mock drills, assembly point, evacuation, accident/incident reporting etc.)	SOPs on subject is in place and drills have been conducted on site. However regular drills and training is required on a regularly basis as work force increases. Assembly point established and inadequate safety signage were in place however no safety committee is in place. Adequate medical aid facilities (e.g. availability of stretcher and medicine, medical evacuation etc) at health center located within project site and full time qualified doctor and nurse has been posted. System in place needs improvement to meet the requirements as the workforce increases.	-
4	Status of adequacy of workers accommodations including fresh water for drinking & others, hygienic with reference to waste water and domestic solid waste management and other welfare facilities (e.g. Kitchen/food, medical, toilets, recreation, shelters, spray of mosquitoes and odour repellent etc.) maintained at project site on the basis of randomly assessment made.	Worker's accommodations including toilets are operational, and deemed sufficient for the current workers on site. Fresh water supply is from MWSC utility pipeline and drinking water filters are being used, along with bottled drinking water. Waste collection bins have been placed and collected to the main waste collection area and handed over to WAMCO for disposal. A gym and recreational area has been completed and is in use. Designated smoking areas and shelters have been established. Waste water treatment plant is operational.	-
5	Status of adequacy of housekeeping within project site on the basis of randomly assessment made.	Site is kept generally clean and organized. Designated persons assigned for cleaning and logs kept for toilets. Designated waste collection area is established, waste bins are installed through out site camp area.	-
6	Status of adequacy of security management(availability of adequate number of security guards, fencing of project site, procedure(s) to allow entry for visitors and workers etc. understanding of role of security guards as per contract) of project site on the basis of randomly assessment made.	Gates in place, and visitors register in form of loose sheets, a proper register is to be maintained. Security guards in place at both entry points to the site. CCTV system is installed. Adequate lighting is provided around the site. CCTV monitor should be provided for the security guard room.	-
7	Status of adequacy of handling of workers complaint(s) received on HSE, human resources and welfare aspects as per complaint register kept at site on the basis of randomly assessment made.	Boxes placed for for internal grievance redress mechanism at several places within the site area. Notices and forms are in several languages.	-

²e.g assessment of activity wise associated hazards, work permit, PPEs, first aid, tool box talk, barricading, COVID-19, electrical safety etc.

8	Status of adequacy of record keeping including data reported in monthly HSE report on the basis of randomly assessment made.	Site activities are captured on the Daily Progress Reports prepared by the EPC and digital copies of the report are kept on record.	-
Community- health, safety and welfare			
9	Status of adequacy of Community Health and Safety plan and ESMS including SOPS on the basis of randomly assessment made (mainly during transportation of men, materials and machinery, influx of workers from other places, contamination of air, land and marine water and ecology, if any etc.)	Pre-construction environment baseline monitoring is being carried out as per CEMP on regular basis. However, for construction phase, various plans and SOPs as part of ESMS mentioned in CEMP and H&S plan are yet to be finalized for approval from ER/PMU, several rounds of review and comments have been shared by the ER with the DBO contractor on the documents that are being prepared. Even though the process of developing the documents, measures are taken to implement these as an ongoing process.	-
10	Status of adequacy of off-site Emergency Preparedness and Response on the basis of randomly assessment made (e.g. response team, mock drills, mutual aids, evacuation plan, accident/incident reporting etc.)	No documented system was in place for pre-construction phase and as per verbal discussion with DBO and EPC contractor. However, plan and SOPs on subject are under process of finalization for getting approval of ER/PMU for construction phase. Regular training and drills are being conducted on site and records are kept.	-
12	Status of adequacy of handling of community complaint(s) received on Environment, HSE and welfare aspects on the basis of randomly assessment made.	Grievance Redressal Mechanism Plan on subject is yet to be approved by ER/PMU. However, system in place was not adequate, and needs improvement to comply with ADB requirements. To comply with contract's obligations, community engagement plan is yet to be submitted for getting approval of ER/PMU. The site being in the industrial area no complaints were received this month.	-

Site Photos



Photo 01 03/01/24 – Pile cap concrete works on going, pile cap reinforcement placed.



Photo 02 03/01/24 – Bunker area pile concrete works in progress.

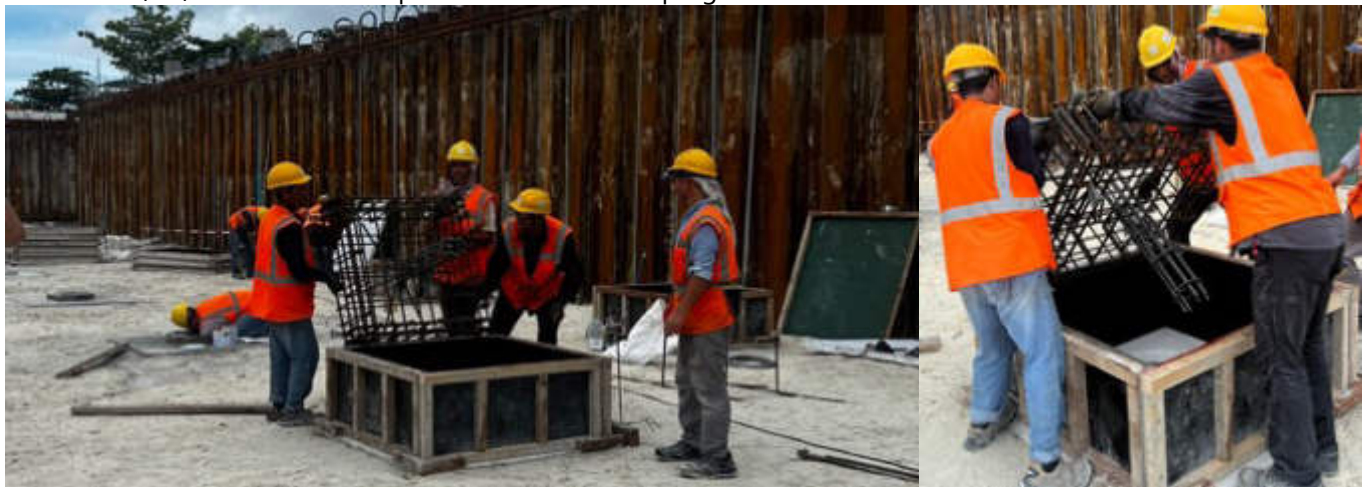


Photo 03 03/01/24 - Bunker area pile concrete works in progress.



Photo 04 03/01/24 – Bunker area seen here, the safety tape and barrication around the excavation needs to be improved.



Photo 05 03/01/24 – Mr. Zameel from MOE, accompanied by Mr. Sofi and the site team.



Photo 06 03/01/24 – Scaffolding materials delivered to site.

DESIGN-BUILD AND OPERATE A WASTE TO ENERGY FACILITY IN K. THILAFUSHI HSE STATISTICS BOARD		DESIGN-BUILD AND OPERATE A WASTE TO ENERGY FACILITY IN K. THILAFUSHI HSE STATISTICS BOARD		DESIGN-BUILD AND OPERATE A WASTE TO ENERGY FACILITY IN K. THILAFUSHI HSE STATISTICS BOARD	
PROJECT COMMENCEMENT DATE:	0 2 0 3 2 2	PROJECT COMMENCEMENT DATE:	0 2 0 3 2 2	PROJECT COMMENCEMENT DATE:	0 2 0 3 2 2
TODAY DATE:	0 3 0 1 2 4	TODAY DATE:	1 5 0 1 2 4	TODAY DATE:	3 0 0 1 2 4
TOTAL MANPOWER AT SITE:	1 0 8	TOTAL MANPOWER AT SITE:	1 2 8	TOTAL MANPOWER AT SITE:	1 1 8
TOTAL SAFE MAN-HOURS COMPLETED WITHOUT LTI:	1 3 6 9 4 8	TOTAL SAFE MAN-HOURS COMPLETED WITHOUT LTI:	1 4 1 1 4 2	TOTAL SAFE MAN-HOURS COMPLETED WITHOUT LTI:	1 4 7 1 4 5
LTI-FREE DAYS COMPLETED:	6 7 3	LTI-FREE DAYS COMPLETED:	6 8 5	LTI-FREE DAYS COMPLETED:	7 0 0

Photo 07 03/01/24 and 15/01/21 and 30/01/23 – HSE statistics board at the EPC site office updated daily.



Photo 08 15/01/24 – Ms. Fathina, Mr. Maximillian and Mr. Javier of the ER team with Mr. Latheef from MOE.



Photo 09 15/01/24 – Backfilling and compaction work on going in the bunker area where the pile cap concrete works have been completed.



Photo 10 15/01/24 – *Backfilling and compaction work on going in the bunker.*



Photo 11 15/01/24 – *Geomesh layer placed after first layer of soil is compacted.*



Photo 12 15/01/24 – *Leachate pit in the bunker area, needs further excavation work in this area.*



Photo 13 15/01/24 – Members of the ER with Mr. Latheef inside the bunker area.



Photo 14 15/01/24 – Main process area, made ready for lean concrete of pile caps where the pile cutting has been completed.



Photo 15 15/01/24 – Concrete batching plant material storage area, kept covered from wind and rain.



Photo 16 15/01/24 – Concrete batching plant material tipping area, kept covered from wind and rain.



Photo 17 15/01/24 – Construction work for the batching plant support facilities ongoing.



Photo 18 15/01/24 – Spill control kit kept near the chemical storage container.



Photo 19 15/01/24 – Waste collection area kept generally clean, and labels placed on the bins, regularly cleared out.



Photo 20 15/01/24 – Staff accommodation building is nearly completed, MNDF fire safety inspections carried out.



Photo 21 15/01/24 – Emergency alarm placed around the construction camp and clear assembly points established.



Photo 22 15/01/24 – Inside the new staff accommodation building.



Photo 23 15/01/24 – Drinking water fountain kept inside the workers camp in an effort to reduce plastic bottles.



Photo 24 15/01/24 – Water storage tank on site workers camp and the toilet facility seen here.



Photo 25 15/01/24 – Cooking gas storage area near the kitchen, the piping system has been re-routed and painted with valves made more accessible.



Photo 26 15/01/24 – Waste water treatment plant is operational and well maintained and monitored monthly.



Photo 27 15/01/24 – Main kitchen is kept clean and organized.



Photo 28 15/01/24 – Gas stoves are used in the kitchen and gas is piped from outside storage to the stoves.



Photo 29 15/01/24 – Food storage is kept clean and organized with meats and vegetables in different freezers.



Photo 30 15/01/24 – Food storage is kept clean and organized.



Photo 31 15/01/24 – Waste cooking oil is collected and disposed of to WAMCO.



Photo 32 15/01/24 – Grievance and redress box placed in the mess hall, with escape plan and quick contacts on notice board.



Photo 33 15/01/24 – Fly traps placed in several places in the construction camp for pest control.



Photo 34 15/01/24 – Doctors clinic is manned all the time and medicines kept on hand.

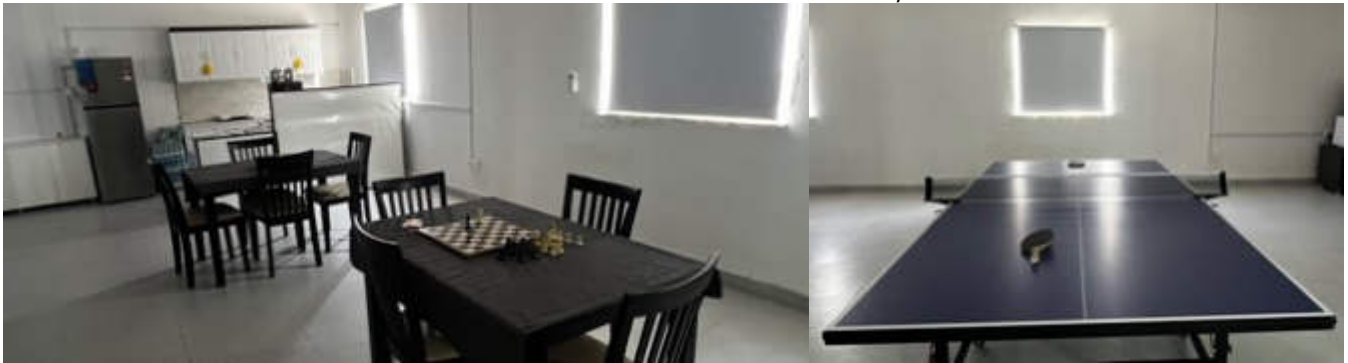


Photo 35 15/01/24 – Recreation room setup with several board games, table tennis and television.



Photo 36 15/01/24 – ADB representative, Mr. Achyutha, together with Dr. Ibrahim on site visit.



Photo 37 15/01/24 – ADB representative, Mr. Achyutha, together with Dr. Ibrahim, Ms. Rifga and site team.



Photo 38 15/01/24 – The shipwrecks are yet to be removed, needs to be addressed urgently.



Photo 39 15/01/24 – The EPC office HSE department has all the logs kept on file, real time weather monitoring station on site and monitored from office, and air quality monitoring device kept on site .



Photo 40 15/01/24 – Concrete testing lab is operational on site.



Photo 41 15/01/24 – Concrete test cubes kept in curing tank, tested cubes collected and kept for disposal.



Photo 42 17/01/24 – Concrete batching plant support facilities under construction.



Photo 43 17/01/24 – Dewatering sedimentation pit is kept clean and guard placed at all times.



Photo 44 30/01/24 – Lean concrete work is on going in the bunker area.



Photo 45 30/01/24 – Lean concrete work is on going in the bunker area.



Photo 46 30/01/24 – Backfilling work is ongoing in part of the bunker area.



Photo 46 30/01/24 – Leachate pit area, lean concrete and backfilling works in progress.



Photo 47 17/01/24 – Bunker area top view, backfilling work and pile cap concrete works in progress.



Photo 48 17/01/24 – Main process building area top view, backfilling work and pile cap concrete works in progress.



Photo 49 17/01/24 – Dewatering sedimentation pit, continuous dewatering is ongoing until foundation is complete.



Photo 50 17/01/24 – Concrete batching plant area, batching plant is operational.



Photo 51 17/01/24 – Construction camp, with office area. 2 new accommodation buildings under construction.

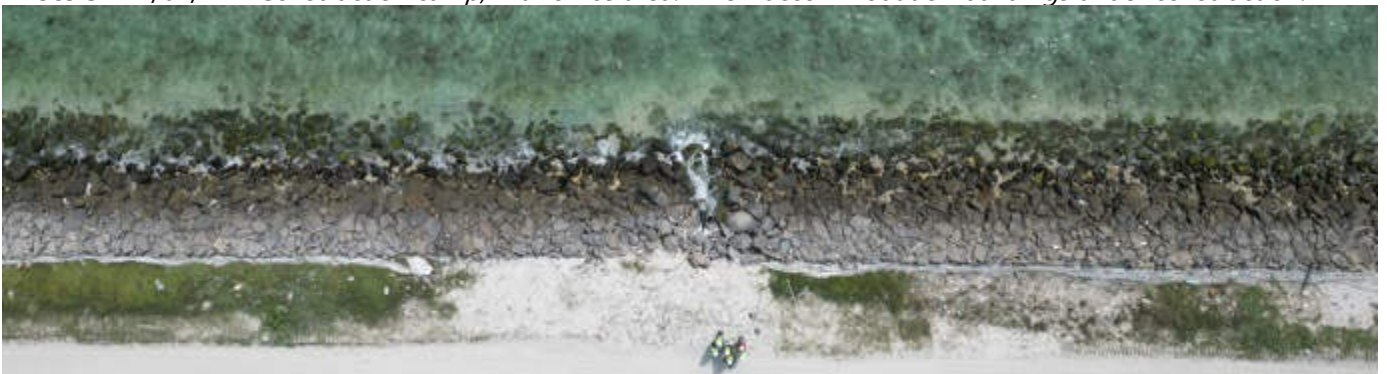


Photo 52 17/01/24 – Dewatering outfall location, no visible plume or disturbance seen.



Photo 53 25/01/24 – Lean concrete works completed in part of the bunker



Photo 54 25/01/24 – Shipwreck at the ramp area is yet to be removed, a lot of waste has gathered in this area.



Photo 55 25/01/24 – WAMCO landfill very close to quaywall and risk of spill over into the lagoon is there.



Photo 56 25/01/24 – WAMCO waste bales kept close to the site boundary, risk of fire is there.



Photo 56 30/01/24 – Backfilling and lean concrete works continue in the bunker area.



Photo 57 30/01/24 – Overall construction area view, backfilling and pile cap concrete works continue in the main process building area.



Greater Male' Waste-to-Energy Project

Greater Male Waste to Energy Project

Site Weekly Report

by the Employer's Representative

Week from	Week to	Prepared by	Signature	Checked by	Signature
31.12.2023	6.1.2024	Sofi bin Ismail		Naahee Nazim	

Progress Review

The works performed during the Reporting Week are as follows:

- Dewatering work for Bunker area continues.
- Bunker - Compaction FDT test conducted.
- Bunker - 24 nos. pilecaps concreted.
- Bunker - Pilecaps reinforcement bar and formwork preparation.
- Process Area - Compaction FDT test conducted.
- Process Area - Pilecaps reinforcement bar and formwork preparation.
- Process Area - 15 nos. pilecaps concreted.
- Turbine (Second Phase Area) - Spun pile cutting work.

Attachment:

Site Daily Logs

Site Photos

The below figure provides an overview of fixed photo locations and angles where photos are taken from in each Reporting Week.

Photos 1 to 5 will include photos according to the map, the remaining photos are taken from elsewhere and are not exactly from the same location and angle in every Weekly Report.



OVERALL - POINT ONE



OVERALL - POINT TWO



5



OVERALL - POINT FIVE

6



BUNKER PILECAPS CONCRETING WORK.

7



MAIN PROCESS BUILDING & TURBINE (SECOND PHASE) PILECAPS PREPARATION.

8



COMPLETED 24 NOS. PILECAPS AT BUNKER

FICHTNER

Site Log

Date: 12/31/2023 Site: Greater Male WTE Site Representative: Sofi bin Ismail

Sunday

Time on site: Time off site: Completed by:

Weather:

Total	Civil	Process
0	0	0

0	0	0
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Note : Enter this information when it is available, at least once per week as a minimum

Workers on Site

Site Activities, Contractors Involved, Major Deliveries, Testing, Inspections

Safety Audits/Safety Walkarounds

Safety and Environmental Incidences

Compliance to Design and construction methods, approved materials

Major Quality Issues

Site Instructions Issued

Verbal communication

Meetings

When	Who	What
N/A	N/A	N/A

Comments

FICHTNER

Site Log

Date 1/1/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail

Monday

Time on site: Time off site: Completed by:

Weather:

	Total	Civil	Process
Workers on Site	0	0	0

Note : Enter this information when it is available, at least once per week as a minimum

Site Activities, Contractors Involved, Major Deliveries, Testing, Inspections

OFF-DAY NEW YEAR HOLIDAY

Safety Audits/Safety Walkarounds

N/A

Safety and Environmental Incidences

N/A

Compliance to Design and construction methods, approved materials

N/A

Major Quality Issues

N/A

Site Instructions Issued

N/A

Verbal communication

N/A

Meetings	When	Who	What
	N/A		

Comments

N/A

FICHTNER

Site Log

Date: 1/2/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail
 Tuesday
 Time on site: Time off site: Completed by:

Weather:

	Total	Civil	Process	
Workers on Site	42	42	0	<i>Note : Enter this information when it is available, at least once per week as a minimum</i>

Site Activities, Contractors Involved, Major Deliveries, Testing, Inspections

1) Dewatering of bunker area continue.
 2) Bunker - 12 nos. pilecap concrete casting BU-001, BU-002, BU-003, BU-004, BU-016, BU-017, BU-021, BU-022, BU-026 BU,027, BU-030 & BU-031. Inspection of reinforcement bar, formwork and concrete completed.
 3) Turbine (second phase) - Spun pile cutting for FR-01, FR-02, FR-03, FR-04, FR-05, FR-08, FR-09, FR-10 & FR-11.

Safety Audits/Safety Walkarounds

Safety and Environmental Incidences

Compliance to Design and construction methods, approved materials

Major Quality Issues

Site Instructions Issued

Verbal communication

Received sheet pile monitoring data, deflection data (18mm) within design tolerance (33mm).
 Concreting work - informed DBO & EPC point of improvemet to be made:
 i) Concrete vibration during pouring work needed an improvement. To conduct training to concrete workers on vibration method.
 ii) Checklist to be signed off prior to concreting work.

Meetings

When	Who	What
N/A		

Comments

FICHTNER

Site Log

Date 1/3/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail
 Wednesday
 Time on site: Time off site: Completed by:

Weather:

	Total	Civil	Process	
Workers on Site	43	43	0	<i>Note : Enter this information when it is available, at least once per week as a minimum</i>

Site Activities, Contractors Involved, Major Deliveries, Testing, Inspections

- 1) Dewatering of bunker area continue.
- 2) Bunker - 12 nos. pilecap concrete casting BU-005, BU-006, BU-007, BU-008, BU-034, BU-035, BU-038, BU-039, BU-042 BU,043, BU-046 & BU-047. Inspection of reinforcement bar, formwork and concrete completed.
- 3) Turbine (second phase) - Spun pile cutting for FR-06, FR-07, FR-12, FR-13, FR-14, FR-15, FR-16, FR-17 & FR-17.
- 4) Process Area - Compaction test FDT at SP-235, SP-236, SP-237, SP-238, SP-239, SP-240, SP-247, SP-248, SP-249, SP-250, SP-251 & SP-252.
- 5) Process Area - Leancon preparation at SP-235, SP-236, SP-237, SP-238, SP-239, SP-240, SP-247, SP-248, SP-249, SP-250, SP-251 & SP-252.

Safety Audits/Safety Walkarounds

Safety and Environmental Incidences

Compliance to Design and construction methods, approved materials

Major Quality Issues

Site Instructions Issued

Verbal communication

	When	Who	What
Meetings	<input type="text" value="N/A"/>		

Comments

FICHTNER

Site Log

Date: 1/4/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail
 Thursday
 Time on site: Time off site: Completed by:

Weather:

Total Civil Process

43	43	0
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Note : Enter this information when it is available, at least once per week as a minimum

Workers on Site

**Site Activities,
Contractors
Involved, Major
Deliveries,
Testing,
Inspections**

1) Dewatering of bunker area continue.
 2) Bunker - 24 nos. casted pilecaps curing.
 3) Process Area - Pilecap formwork installation at SP-235, SP-236, SP-237, SP-238, SP-239, SP-240, SP-247, SP-248, SP-249, SP-250, SP-251 & SP-252.
 4) Process Area - Leancon work at SP-235, SP-236, SP-237, SP-238, SP-239, SP-240, SP-247, SP-248, SP-249, SP-250, SP-251 & SP-252.

**Safety
Audits/Safety
Walkarounds**

**Safety and
Environmental
Incidences**

**Compliance to
Design and
construction
methods,
approved
materials**

**Major Quality
Issues**

**Site Instructions
Issued**

**Verbal
communication**

Setting new benchmark on bottom of sheetpile for deviation monitoring.

Meetings

When	Who	What
N/A		

Comments

FICHTNER

Site Log

Date: 1/5/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail
 Friday
 Time on site: Time off site: Completed by:

Weather:

	Total	Civil	Process
Workers on Site	<input type="text"/>	<input type="text"/>	<input type="text"/>

Note : Enter this information when it is available, at least once per week as a minimum

Site Activities, Contractors Involved, Major Deliveries, Testing, Inspections

OFF DAY (FRIDAY)

Safety Audits/Safety Walkarounds

N/A

Safety and Environmental Incidences

N/A

Compliance to Design and construction methods, approved materials

N/A

Major Quality Issues

N/A

Site Instructions Issued

N/A

Verbal communication

N/A

Meetings

When	Who	What
N/A		

Comments

N/A

FICHTNER

Site Log

Date: 1/6/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail
 Saturday
 Time on site: Time off site: Completed by:

Weather:

Total	Civil	Process

Workers on Site

Note : Enter this information when it is available, at least once per week as a minimum

**Site Activities,
Contractors
Involved, Major
Deliveries,
Testing,
Inspections**

1) Dewatering of bunker area continue.
 2) Bunker - 24 nos. casted pilecaps curing work.
 3) Bunker - Compaction test FDT carried out on BU-009, BU-010, BU-011, BU-012, BU-018, BU-023, BU-028, BU-032, BU-036, BU-040, BU-044, BU-048, BU-050, BU-051, BU-052, BU-053, BU-054, BU-056, BU-057, BU-060 & BU-061. The result is acceptable.
 4) Process Area - Pilecap concreting work at SP-033, SP-034, SP-035, SP-036, SP-037, SP-038, SP-040, SP-041, SP-042, SP-043, SP-044, SP-045, SP-046, SP-047 & SP-048.
 5) Process Area -Compaction test FDT at SP-223, SP-224, SP-225, SP-226, SP-227 & SP-228. Result acceptable.

**Safety
Audits/Safety
Walkarounds**

N/A

**Safety and
Environmental
Incidences**

N/A

**Compliance to
Design and
construction
methods,
approved
materials**

N/A

**Major Quality
Issues**

N/A

**Site Instructions
Issued**

N/A

**Verbal
communication**

Notified the DBO & EPC that on Tuesday 9th January 2024, FIT will do audit on Contractor's Documents as stipulated in DBO contract section 5.6 table 5-16 (List of documents to be kept onsite).

Meetings

When	Who	What
N/A		

Comments

N/A



Greater Male' Waste-to-Energy Project

Greater Male Waste to Energy Project

Site Weekly Report

by the Employer's Representative

Week from	Week to	Prepared by	Signature	Checked by	Signature
7.1.2024	13.1.2024	Sofi bin Ismail		Naahee Nazim	

Progress Review

The works performed during the Reporting Week are as follows:

- Dewatering work for Bunker area continues.
- Bunker - Compaction FDT test conducted.
- Bunker - Pilecaps reinforcement bar and formwork preparation.
- Bunker - 18 nos. pilecaps concreted.
- Bunker - Preparation for structural filling.
- Process Area - Compaction FDT test conducted.
- Process Area - Pilecaps reinforcement bar and formwork preparation.
- Process Area - 46 nos. pilecaps concreted.

Attachment:

Site Daily Logs

Site Photos

The below figure provides an overview of fixed photo locations and angles where photos are taken from in each Reporting Week.

Photos 1 to 5 will include photos according to the map, the remaining photos are taken from elsewhere and are not exactly from the same location and angle in every Weekly Report.



OVERALL - POINT ONE



OVERALL - POINT TWO

3



OVERALL - POINT THREE

4



OVERALL - POINT FOUR



OVERALL - POINT FIVE



BUNKER PILECAPS CONCRETING WORK.



MAIN PROCESS BUILDING & TURBINE (SECOND PHASE) PILECAPS PREPARATION.



COMPLETED 18 NOS. PILECAPS AT BUNKER & 46 NOS. AT PROCESS BUILDING

FICHTNER

Site Log

Date: 1/7/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail
 Sunday
 Time on site: Time off site: Completed by:

Weather:

Total	Civil	Process
43	43	0

Note : Enter this information when it is available, at least once per week as a minimum

Workers on Site

Site Activities, Contractors Involved, Major Deliveries, Testing, Inspections

1) Dewatering of bunker area continue.
 2) Bunker - Lean concrete casting on BU-009, BU-010, BU-011, BU-012, BU-018, BU-023, BU-028, BU-032, BU-036, BU-040, BU-044, BU-048, BU-050, BU-051, BU-052, BU-053, BU-056 & BU-057.
 3) Process Area - Pilecap concreting work at SP-021, SP-022, SP-023, SP-024, SP-025, SP-026, SP-027, SP-028, SP-029, SP-030, SP-031 & SP-032.
 4) Process Area -Compaction test FDT at SP-200, SP-201, SP-202, SP-259, SP-203, SP-204, SP-211, SP-212, SP-213, SP-214, SP-215, SP-216, SP-235 & SP-249. Result acceptable.
 5) Process Area - Lean concrete casting on SP-223, SP-224, SP-225, SP-226, SP-227 & SP-228.

Safety Audits/Safety Walkarounds

N/A

Safety and Environmental Incidences

N/A

Compliance to Design and construction methods, approved materials

N/A

Major Quality Issues

N/A

Site Instructions Issued

N/A

Verbal communication

Received sheet pile monitoring data, maximum deflection data (9mm) within design tolerance (33mm).

Meetings

When	Who	What
N/A	N/A	N/A

Comments

N/A

FICHTNER

Site Log

Date 1/8/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail
 Monday
 Time on site: Time off site: Completed by:

Weather:

	Total	Civil	Process	
Workers on Site	0	0	0	<i>Note : Enter this information when it is available, at least once per week as a minimum</i>

Site Activities, Contractors Involved, Major Deliveries, Testing, Inspections

1) Dewatering of bunker area continue.
 2) Process Area - Pilecap concreting work at SP-009, SP-010, SP-011, SP-012, SP-013, SP-014, SP-015, SP-016, SP-017, SP-018, SP-019, SP-020
 3) Process Area -Compaction test FDT at SP-146, SP-147, SP-148, SP-156, SP-157, SP-158, SP-159, SP-160, SP-161, SP-169, SP-170, SP-171, SP-172, SP-173, SP-174, SP-178, SP-179, SP-180, SP-188, SP-189, SP-190, SP-191, SP-19 & SP-193. Five to redo, the rest OK.
 4) Process Area - Lean concrete casting on SP-200, SP-201, SP-202, SP-259, SP- 203, SP-204, SP-211, SP-212, SP-213, SP-214, SP-215, SP-216, SP-235 & SP-249.

Safety Audits/Safety Walkarounds

Safety and Environmental Incidences

Compliance to Design and construction methods, approved materials

Major Quality Issues

Site Instructions Issued

Verbal communication Received sheet pile monitoring data, maximum deflection data (7mm) within design tolerance (33mm).
 Highlight that the slope at Bunker need protection to ensure slope integrity is intact. EPC to protect the slope accordingly.

	When	Who	What
Meetings	<input type="text" value="N/A"/>		

Comments

FICHTNER

Site Log

Date: 1/9/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail
 Tuesday
 Time on site: 7:00 Time off site: 18:00 Completed by: Sofi Bin Ismail

Weather: Sunny

	Total	Civil	Process	
Workers on Site	46	46	0	<i>Note : Enter this information when it is available, at least once per week as a minimum</i>

Site Activities, Contractors Involved, Major Deliveries, Testing, Inspections

- 1) Dewatering of bunker area continue.
- 2) Bunker - Compaction test FDT at BU-037, BU-041, BU-045, BU-049, BU-063, BU-065, BU-066 & BU-067. Result acceptable.
- 3) Process Area - Pilecap concreting work at SP-001, SP-003, SP-005, SP-006, SP-007 & SP-008.
- 4) Process Area -Compaction test FDT at SP-120, SP-121, SP-122, SP-123, SP-124, SP-125, SP-133, SP-134, SP-135, SP-143, SP-144, SP-145. Result acceptable.
- 5) Process Area - Lean concrete casting on SP-148, SP-156, SP-157, SP-158, SP-159, SP-160, SP-169, SP-170, SP-171, SP-172, SP-173, SP-174, SP-178, SP-179, SP-180, SP-188, SP-189, SP-190 & SP-191.

Safety Audits/Safety Walkarounds N/A

Safety and Environmental Incidences N/A

Compliance to Design and construction methods, approved materials N/A

Major Quality Issues N/A

Site Instructions Issued N/A

Verbal communication Received sheet pile monitoring data, deflection data (10mm) within design tolerance (33mm).

	When	Who	What
Meetings	10:00	FIT, URB, AAJV	Introduction to Monthly Audit on Contractor's Documents to be kept on site as stipulated in DBO contract Section 5.6 specifically Table 5-16.
			DBO to ensure all the required documents to be recorded for FIT audit next week.

Comments N/A

FICHTNER

Site Log

Date 1/10/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail
 Wednesday
 Time on site: 7:00 Time off site: 18:00 Completed by: Sofi Bin Ismail

Weather: Sunny

	Total	Civil	Process	
Workers on Site	46	46	0	<i>Note : Enter this information when it is available, at least once per week as a minimum</i>

Site Activities, Contractors Involved, Major Deliveries, Testing, Inspections

1) Dewatering of bunker area continue.
 2) Bunker - Pilecap concreting work at BU-011, BU-012, BU-050, BU-051, BU-052, BU-053, BU-056 & BU-057.

Safety Audits/Safety Walkarounds N/A

Safety and Environmental Incidences N/A

Compliance to Design and construction methods, approved materials N/A

Major Quality Issues N/A

Site Instructions Issued N/A

Verbal communication

Received sheet pile monitoring data, deflection data (10mm) within design tolerance (33mm).
 Informed EPC that additional manpower added for temporary facility work (warehouse, workers accommodation, etc) will not improve productivity for contract work. Require additional manpower for contract work (bunker, process area, etc) to achieve the work program.

	When	Who	What
Meetings	N/A		

Comments N/A

FICHTNER

Site Log

Date: 1/11/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail
 Thursday
 Time on site: Time off site: Completed by:

Weather:

Total	Civil	Process
46	46	0

Note : Enter this information when it is available, at least once per week as a minimum

Workers on Site

**Site Activities,
Contractors
Involved, Major
Deliveries,
Testing,
Inspections**

- 1) Dewatering of bunker area continue.
- 2) Bunker - Pilecap concreting work at BU-009, BU-010, BU-018, BU-023, BU-028, BU-032, BU-036, BU-040, BU-044 & BU-048.
- 3) Bunker - Lean concrete casting at BU-037, BU-041, BU-045, BU-049, BU-063, BU-065, BU-066 & BU-067.
- 4) Process Area - Pilecap concreting work at SP-223, SP-224, SP-225, SP-266, SP-227, SP-228, SP-236, SP-237, SP-238, SP-239, SP-240, SP-247, SP-248, SP-250, SP-251 & SP-252.
- 5) Process Area - Lean concrete casting on SP-120, SP-121, SP-122, SP-123, SP-124, SP-133, SP-134, SP-143, SP-144 & SP-145.
- 6) 350 tons of aggregate for structural backfilling work delivered to site by jumbo bag.

**Safety
Audits/Safety
Walkarounds**

**Safety and
Environmental
Incidences**

**Compliance to
Design and
construction
methods,
approved
materials**

**Major Quality
Issues**

**Site Instructions
Issued**

**Verbal
communication**

Received sheet pile monitoring data, deflection data (10mm) within design tolerance (33mm).
 Advice EPC that the process area need a drainage system to manage surface runoff for cases of heavy rain.

Meetings

When	Who	What
<input type="text" value="N/A"/>		

Comments

FICHTNER

Site Log

Date: 1/12/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail

Friday

Time on site: Time off site: Completed by:

Weather:

Total Civil Process

Workers on Site

<input type="text"/>	<input type="text"/>	<input type="text"/>
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Note : Enter this information when it is available, at least once per week as a minimum

Site Activities, Contractors Involved, Major Deliveries, Testing, Inspections

Safety Audits/Safety Walkarounds

Safety and Environmental Incidences

Compliance to Design and construction methods, approved materials

Major Quality Issues

Site Instructions Issued

Verbal communication

Meetings

When	Who	What
<input type="text" value="N/A"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>

Comments

FICHTNER

Site Log

Date: 1/13/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail
 Saturday
 Time on site: Time off site: Completed by:

Weather:

Total	Civil	Process
51	51	0

Note : Enter this information when it is available, at least once per week as a minimum

Workers on Site

**Site Activities,
Contractors
Involved, Major
Deliveries,
Testing,
Inspections**

1) Dewatering of bunker area continue.
 2) Bunker - Formwork installation for BU-037, BU-041, BU-045, BU-049, BU-063, BU-065, BU-066 & BU-067.
 3) Process Area - Rectification of compacted ground affect from heavy rain on 12/1/2024

**Safety
Audits/Safety
Walkarounds**

Water sampling at camp site, discharged WWTP, drinking water and dewatering discharge water.

**Safety and
Environmental
Incidences**

N/A

**Compliance to
Design and
construction
methods,
approved
materials**

N/A

**Major Quality
Issues**

N/A

**Site Instructions
Issued**

N/A

**Verbal
communication**

Received sheet pile monitoring data, deflection data (15mm) within design tolerance (33mm).

Meetings

When	Who	What
N/A		

Comments

N/A



Greater Male' Waste-to-Energy Project

Greater Male Waste to Energy Project

Site Weekly Report

by the Employer's Representative

Week from	Week to	Prepared by	Signature	Checked by	Signature
14.1.2024	20.1.2024	Sofi bin Ismail		Naahee Nazim	

Progress Review

The works performed during the Reporting Week are as follows:

- Dewatering work for Bunker area continues.
- Bunker - Compaction FDT test conducted for pilecaps & first layer.
- Bunker - Spun pile cutting.
- Bunker - 29 nos. pilecaps concreted. To date, completed 71 of 104 pilecaps at Bunker.
- Bunker - First layer backfilling at Area 1.
- Bunker - Geogrid laying work at Area 1.
- Bunker - Second layer backfilling at Area 1.
- Process Area - Compaction FDT test conducted for pilecaps & base layer.
- Process Area - Pilecaps reinforcement bar and formwork preparation.
- Process Area - 19 nos. pilecaps concreted. To date, completed 75 of 247 pilecaps at Process Area.

Attachment:

Site Daily Logs

Site Photos

The below figure provides an overview of fixed photo locations and angles where photos are taken from in each Reporting Week.

Photos 1 to 5 will include photos according to the map, the remaining photos are taken from elsewhere and are not exactly from the same location and angle in every Weekly Report.



OVERALL - POINT ONE



OVERALL - POINT TWO



5

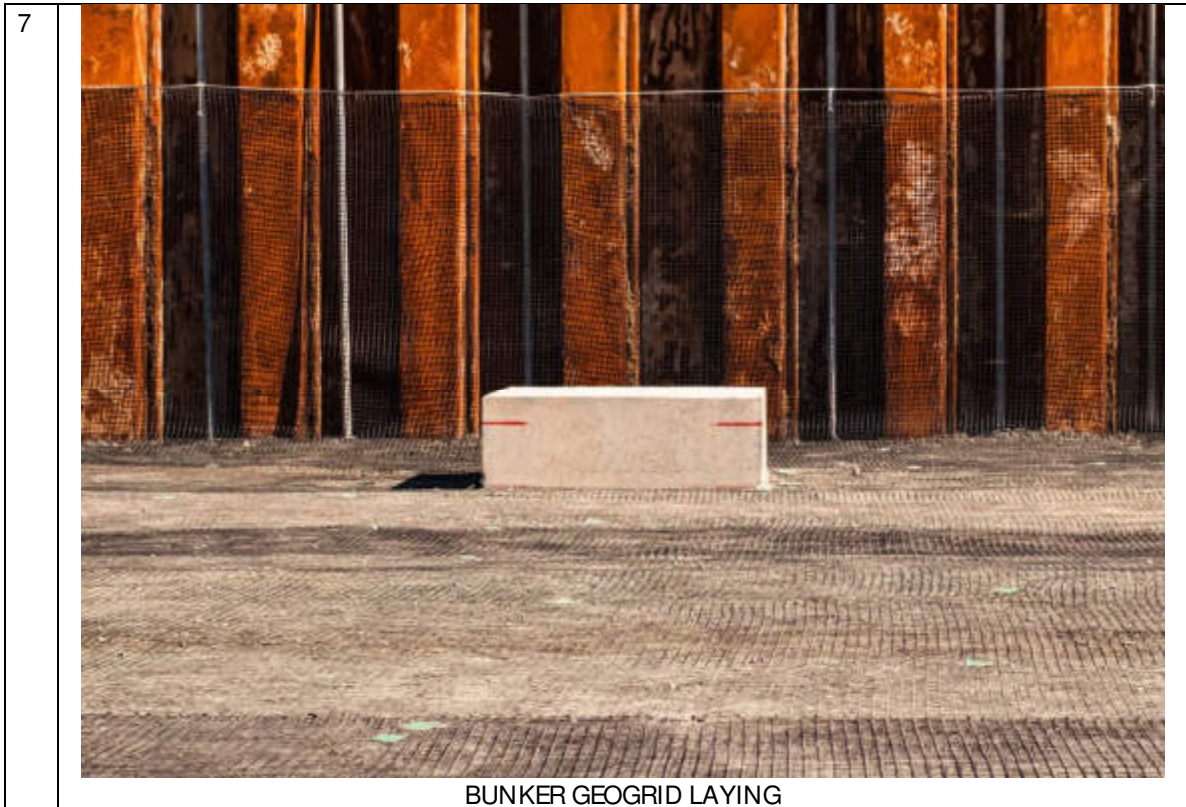


OVERALL - POINT FIVE

6



BUNKER FIRST LAYER BACKFILLING & COMPACTION.



FICHTNER

Site Log

Date: 1/14/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail

Sunday

Time on site: Time off site: Completed by:

Weather:

Total	Civil	Process
51	51	0

51	51	0
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Note : Enter this information when it is available, at least once per week as a minimum

Workers on Site

Site Activities,

Contractors

Involved, Major

Deliveries,

Testing,

Inspections

- 1) Dewatering of bunker area continue.
- 2) Bunker - Pilecap concreting work at BU-037, BU-041, BU-045, BU-049, BU-063, BU-065, BU-066 & BU-067.
- 3) Bunker - First layer compaction test FDT at Area 1, result acceptable.
- 4) Bunker - Pilecap compaction test FDT at BU-054, BU-068, BU-081, BU-082, BU-083, BU-084, BU-085, BU-086, BU-087, BU-088, BU-089, BU-090, BU-091, BU-092, BU-093, BU-094, BU-095, BU-096, BU-097, BU-098, BU-099, BU-100, BU-101 & BU-102. Result acceptable.
- 5) Bunker - First layer backfilling at Area 1.

Safety Audits/Safety Walkarounds

N/A

Safety and Environmental Incidences

N/A

Compliance to Design and construction methods, approved materials

N/A

Major Quality Issues

N/A

Site Instructions Issued

N/A

Verbal communication

Received sheet pile monitoring data, maximum deflection data (10mm) within design tolerance (33mm).
 Advised the DBO that without the foundation IFC drawing, progress work will be impacted by February 2024.

	When	Who	What
Meetings	N/A	N/A	N/A

Comments

FICHTNER

Site Log

Date 1/15/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail
 Monday
 Time on site: Time off site: Completed by:

Weather:

	Total	Civil	Process	
Workers on Site	0	0	0	<i>Note : Enter this information when it is available, at least once per week as a minimum</i>

Site Activities, Contractors Involved, Major Deliveries, Testing, Inspections

1) Dewatering of bunker area continue.
 2) Bunker - Lean concreting work at BU-054, BU-081, BU-082, BU-083, BU-084, BU-085, BU-086, BU-088, BU-089, BU-090, BU-091, BU-092, BU-093, BU-094, BU-095, BU-096, BU-097, BU-098, BU-099, BU-100 & BU-102.
 3) Bunker - First layer backfilling at Area 1.
 4) Process Area - Pilecap compaction test FDT at SP-107, SP-108, SP-109, SP-110, SP-111, SP-112, SP-113, SP-126, SP-136, SP-146, SP-147, SP-149, SP-161, SP-162, SP-175, SP-,181, SP-192 & SP-193.

Safety Audits/Safety Walkarounds

Safety and Environmental Incidences

Compliance to Design and construction methods, approved materials

Major Quality Issues

Site Instructions Issued

Verbal communication

	When	Who	What
Meetings	<input type="text" value="N/A"/>		

Comments

FICHTNER

Site Log

Date: 1/16/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail
 Tuesday
 Time on site: Time off site: Completed by:

Weather:

	Total	Civil	Process
Workers on Site	51	51	0

Note : Enter this information when it is available, at least once per week as a minimum

Site Activities, Contractors Involved, Major Deliveries, Testing, Inspections

- 1) Dewatering of bunker area continue.
- 2) Bunker - First layer backfilling at Area 1.
- 3) Process Area - Pilecap compaction test FDT at SP-002, SP-004, SP-088, SP-089, SP-090, SP-101 SP-102, SP-103 & SP-104.
- 4) Process Area - Lean concreting work at SP-107, SP-108, SP-109, SP-110, SP-112, SP-113, SP-126, SP-136, SP-146, SP-147, SP-149, SP-161, SP-162, SP-175, SP-,181, SP-192, SP-193.

Safety Audits/Safety Walkarounds

Safety and Environmental Incidences

Compliance to Design and construction methods, approved materials

Major Quality Issues

Site Instructions Issued

Verbal communication

Meetings	When	Who	What
	<input type="text" value="N/A"/>		

Comments

FICHTNER

Site Log

Date 1/17/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail
 Wednesday
 Time on site: 7:00 Time off site: 18:00 Completed by: Sofi Bin Ismail

Weather: Sunny

	Total	Civil	Process	
Workers on Site	0	0	0	<i>Note : Enter this information when it is available, at least once per week as a minimum</i>

Site Activities, Contractors Involved, Major Deliveries, Testing, Inspections

- 1) Dewatering of bunker area continue.
- 2) Bunker - First layer backfilling at Area 1.
- 3) Process Area - Pilecap compaction test FDT at SP-163, SP-176, SP-182, SP-194, SP-205, SP-217, SP-229, SP-241 & SP-253.
- 4) Process Area - Lean concreting work at SP-002, SP-004, SP-088, SP-090, SP-101, SP-102 & SP-103.
- 5) Process Area - Spun pile cutting at SP-194, SP-205, SP-217, SP-220, SP-241 & SP-253.

Safety Audits/Safety Walkarounds

Noise Monitoring at NQ1, NQ2, NQ3, NQ4 and NQ5.

Safety and Environmental Incidences

N/A

Compliance to Design and construction methods, approved materials

N/A

Major Quality Issues

N/A

Site Instructions Issued

N/A

Verbal communication

Received sheet pile monitoring data, deflection data (12mm) within design tolerance (33mm).
 Informed DBO that they need to look into detail design for stormwater and septic tank system. Might impact slab work if the invert level of both overflow pipe and septic tank pipe is not define.

Meetings

When	Who	What
N/A		

Comments

N/A

FICHTNER

Site Log

Date: 1/18/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail
 Thursday
 Time on site: Time off site: Completed by:

Weather:

Total	Civil	Process
51	51	0

Note : Enter this information when it is available, at least once per week as a minimum

Workers on Site

**Site Activities,
Contractors
Involved, Major
Deliveries,
Testing,
Inspections**

- 1) Dewatering of bunker area continue.
- 2) Bunker - Pilecap concreting work at BU-054, BU-081, BU-082, BU-083, BU-084, BU-085, BU-086, BU-088, BU-089, BU-090, BU-091, BU-092, BU-093, BU-094, BU-095, BU-096, BU-097, BU-098, BU-099, BU-100 & BU-102.
- 3) Bunker - Lean concreting work at BU-059, BU-062, BU-068, BU-080, BU-087 & BU-101.
- 4) Bunker - First layer backfilling at Area 1.
- 5) Bunker - Material inspection and preparation for geogrid to be use between first and second layer. Geogrid laying on first layer.
- 6) Process Area - Pilecap compaction test FDT at SP-111.
- 7) Process Area - Lean concreting work at SP-125 & SP-135.
- 8) Process Area - Spun pile cutting at SP-163, SP-176 & SP-182.
- 9) Process Area - First layer compaction test FDT at Area 1.

**Safety
Audits/Safety
Walkarounds**

Noise Monitoring at NQ1, NQ2, NQ3, NQ4 & NQ5

**Safety and
Environmental
Incidences**

N/A

**Compliance to
Design and
construction
methods,
approved
materials**

N/A

**Major Quality
Issues**

N/A

**Site Instructions
Issued**

N/A

**Verbal
communication**

Received sheet pile monitoring data, deflection data (11mm) within design tolerance (33mm).

Meetings

When	Who	What
N/A		

Comments

N/A

FICHTNER

Site Log

Date: 1/19/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail

Friday

Time on site: Time off site: Completed by:

Weather:

Total Civil Process

Workers on Site

<input type="text"/>	<input type="text"/>	<input type="text"/>
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Note : Enter this information when it is available, at least once per week as a minimum

Site Activities,
Contractors
Involved, Major
Deliveries,
Testing,
Inspections

OFF DAY (FRIDAY)

Safety
Audits/Safety
Walkarounds

N/A

Safety and
Environmental
Incidences

N/A

Compliance to
Design and
construction
methods,
approved
materials

N/A

Major Quality
Issues

N/A

Site Instructions
Issued

N/A

Verbal
communication

N/A

Meetings

When	Who	What
N/A		

Comments

N/A

FICHTNER

Site Log

Date: 1/20/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail

Saturday

Time on site: Time off site: Completed by:

Weather:

Total	Civil	Process
50	50	0

Workers on Site

Note : Enter this information when it is available, at least once per week as a minimum

**Site Activities,
Contractors
Involved, Major
Deliveries,
Testing,
Inspections**

- 1) Dewatering of bunker area continue.
- 2) Bunker - Spun pile cutting at BU-014 & BU-015.
- 3) Bunker - Second layer backfilling at Area 1.
- 4) Bunker - Geogrid laying work at Area 1.
- 5) Process Area - Pilecap compaction test FDT at SP-089 & SP-104.
- 6) Process Area - Pilecap concreting work at SP-200, SP-201, SP-202, SP-203, SP-204, SP-211, SP-212, SP-213, SP-214, SP-215, SP-216, SP-235, SP-249 & SP-259.

**Safety
Audits/Safety
Walkarounds**

Inspection of sheetpile conditions and fitness sign at Bunker area.

**Safety and
Environmental
Incidences**

N/A

**Compliance to
Design and
construction
methods,
approved
materials**

N/A

**Major Quality
Issues**

N/A

**Site Instructions
Issued**

N/A

**Verbal
communication**

Received sheet pile monitoring data, deflection data (18mm) within design tolerance (33mm).

Meetings

When	Who	What
N/A		

Comments

N/A



Greater Male' Waste-to-Energy Project

Greater Male Waste to Energy Project

Site Weekly Report

by the Employer's Representative

Week from	Week to	Prepared by	Signature	Checked by	Signature
21.1.2024	27.1.2024	Sofi bin Ismail		Naahee Nazim	

Progress Review

The works performed during the Reporting Week are as follows:

- Dewatering work for Bunker area continues.
- Bunker - Compaction FDT test conducted for pilecaps, first layer & second layer at Area 1 & Area 2.
- Bunker - Lean concreting work at Area 1 below Slab level.
- Bunker - 8 nos. pilecaps concreted. To date, completed 79 of 104 pilecaps at Bunker.
- Bunker - First layer backfilling at Area 1 & Area 2.
- Bunker - Geogrid laying work at Area 1.
- Bunker - Second layer backfilling at Area 1.
- Process Area - Compaction FDT test conducted for pilecaps & base layer.
- Process Area - Pilecaps reinforcement bar and formwork preparation.
- Process Area - 46 nos. pilecaps concreted. To date, completed 121 of 247 pilecaps at Process Area.

Attachment:

Site Daily Logs

Site Photos

The below figure provides an overview of fixed photo locations and angles where photos are taken from in each Reporting Week.

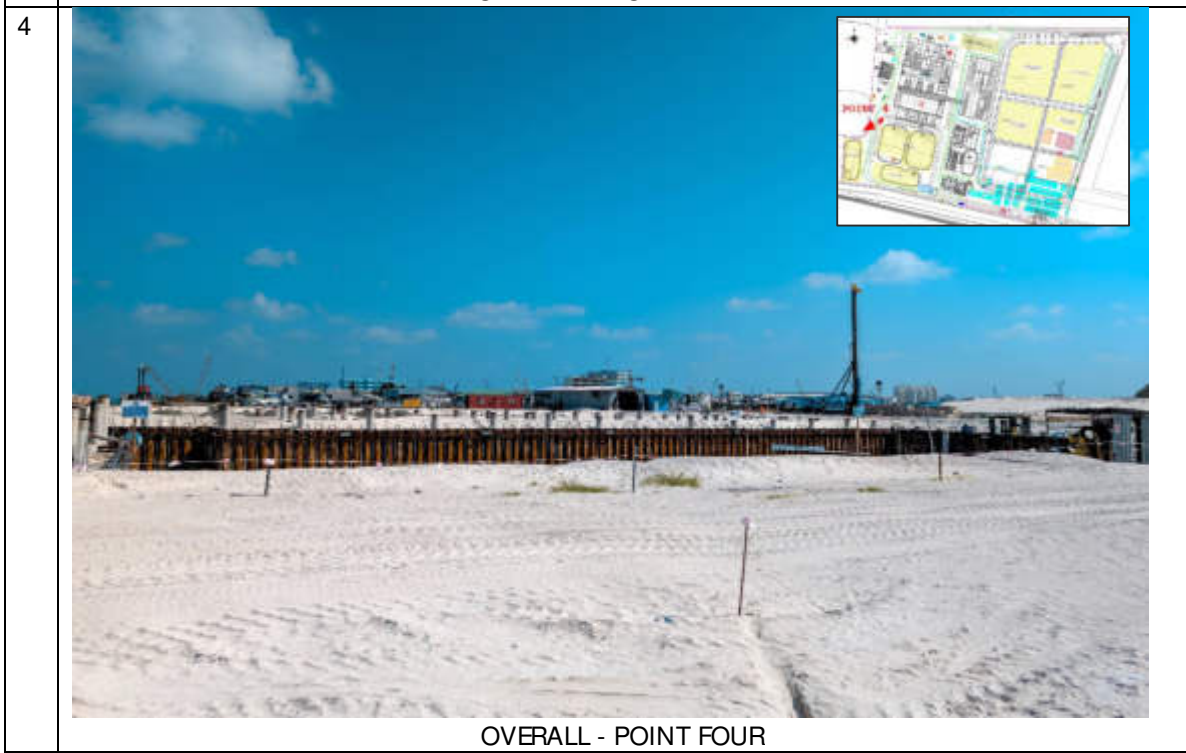
Photos 1 to 5 will include photos according to the map, the remaining photos are taken from elsewhere and are not exactly from the same location and angle in every Weekly Report.



OVERALL - POINT ONE



OVERALL - POINT TWO



5



OVERALL - POINT FIVE

6



BUNKER AREA 2 FIRST LAYER BACKFILLING.

7



BUNKER AREA 1 COMPLETED LEAN CONCRETE

8



COMPLETED 8 NOS. PILECAPS AT BUNKER & 46 NOS. AT PROCESS BUILDING

FICHTNER

Site Log

Date: 1/21/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail

Sunday

Time on site: Time off site: Completed by:

Weather:

Total	Civil	Process
50	50	0

50	50	0
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Note : Enter this information when it is available, at least once per week as a minimum

Workers on Site

**Site Activities,
Contractors
Involved, Major
Deliveries,
Testing,
Inspections**

1) Dewatering of bunker area continue.
2) Bunker - Pilecap concreting work at BU-059, BU-062, BU-068, BU-080, BU-087 & BU-101.
3) Bunker - Second layer backfilling at Area 1.
4) Bunker - Geogrid laying work at Area 1.

**Safety
Audits/Safety
Walkarounds**

N/A

**Safety and
Environmental
Incidences**

N/A

**Compliance to
Design and
construction
methods,
approved
materials**

N/A

**Major Quality
Issues**

N/A

**Site Instructions
Issued**

N/A

**Verbal
communication**

Received sheet pile monitoring data, maximum deflection data (18mm) within design tolerance (33mm).

Meetings

When	Who	What
N/A	N/A	N/A

Comments

N/A

FICHTNER

Site Log

Date 1/22/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail
 Monday
 Time on site: Time off site: Completed by:

Weather:

	Total	Civil	Process	
Workers on Site	0	0	0	<i>Note : Enter this information when it is available, at least once per week as a minimum</i>

Site Activities, Contractors Involved, Major Deliveries, Testing, Inspections

- 1) Dewatering of bunker area continue.
- 2) Bunker - Second layer compaction test FDT at Area 1.
- 3) Process Area - Spun pile cutting works at SP-056, SP-069, SP-082, SP-095, SP-105, SP-114, SP-127, SP-137 & SP-150.
- 4) Process Area - Pilecap concreting work at SP-169, SP-170, SP-171, SP-178, SP-179, SP-180, SP-181, SP-188, SP-189, SP-190, SP-191, SP-192 & SP-193.

Safety Audits/Safety Walkarounds

Safety and Environmental Incidences

Compliance to Design and construction methods, approved materials

Major Quality Issues

Site Instructions Issued

Verbal communication Received sheet pile monitoring data, maximum deflection data (12mm) within design tolerance (33mm). Discussion on planned leancon work tomorrow of expected 60m3 concreting work. Advice DBO & EPC to ensure sufficient workers, PPE, tools and machinaries. Joint inspection to be conducted prior to start of work.

Meetings

When	Who	What
<input type="text" value="N/A"/>		

Comments

FICHTNER

Site Log

Date 1/23/2024 **Site:** Greater Male WTE **Site Representative:** Sofi bin Ismail
 Tuesday
Time on site: 7:00 **Time off site:** 18:00 **Completed by:** Sofi Bin Ismail

Weather: Sunny

	Total	Civil	Process	
Workers on Site	52	52	0	<i>Note : Enter this information when it is available, at least once per week as a minimum</i>

Site Activities, Contractors Involved, Major Deliveries, Testing, Inspections

- 1) Dewatering of bunker area continue.
- 2) Bunker - Lean concreting work below slab level at Area 1. Total of 64.3m3, start from 5:30pm and completed by 10:30pm.
- 3) Process Area - Pilecap concreting work at SP-002, SP-004, SP-088, SP-107, SP-108, SP-120, SP-121, SP-143, SP-144, SP-156 & SP-157.
- 4) Process Area - Lean concreting work at SP-089, SP-104 & SP-111.

Safety Audits/Safety Walkarounds N/A

Safety and Environmental Incidences N/A

Compliance to Design and construction methods, approved materials N/A

Major Quality Issues N/A

Site Instructions Issued N/A

Verbal communication

Received sheet pile monitoring data, deflection data (12mm) within design tolerance (33mm).

Based from the leancon productivity, it is advicable for slab concreting work:

- 1) Need more concrete truck to ensure smooth transfer from batching plant to site.
- 2) To use concrete pump instead of crane.
- 3) Manpower rotation and standby to be in-place.

Meetings

When	Who	What
N/A		

Comments N/A

FICHTNER

Site Log

Date 1/24/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail
 Wednesday
 Time on site: 7:00 Time off site: 18:00 Completed by: Sofi Bin Ismail

Weather: Sunny

	Total	Civil	Process	
Workers on Site	52	52	0	<i>Note : Enter this information when it is available, at least once per week as a minimum</i>

Site Activities, Contractors Involved, Major Deliveries, Testing, Inspections

1) Dewatering of bunker area continue.
 2) Bunker - Pilecap concreting work at BU-014 & BU-015.
 3) Bunker - Base layer compaction test FDT at Area 2.
 4) Process Area - Pilecap concreting work at SP-158, SP-159, SP-160, SP-161, SP-162, SP-172, SP-173, SP-174 & SP-175.

Safety Audits/Safety Walkarounds

Safety walkarounds between FIT, URB & AAJV. Few finding for quick improvement:
 1) AAJV to decide the plan for excess soil management.
 2) To ensure power cable from generator set is sufficient. Current cable is not sufficient and causing frequent breakdown.

Safety and Environmental Incidences

N/A

Compliance to Design and construction methods, approved materials

N/A

Major Quality Issues

N/A

Site Instructions Issued

N/A

Verbal communication

Received sheet pile monitoring data, deflection data (16mm) within design tolerance (33mm).

Meetings

When	Who	What
N/A		

Comments

N/A

FICHTNER

Site Log

Date: 1/25/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail
 Thursday
 Time on site: Time off site: Completed by:

Weather:

Total	Civil	Process
0	0	0

Note : Enter this information when it is available, at least once per week as a minimum

Workers on Site

**Site Activities,
Contractors
Involved, Major
Deliveries,
Testing,
Inspections**

1) Dewatering of bunker area continue.
 2) Bunker - First layer backfilling work at Area 2.
 3) Bunker - First layer compaction test FDT at Area 2.
 4) Process Area - Pilecap concreting work at SP-122, SP-123, SP-124, SP-125, SP-126, SP-133, SP-134, SP-135, SP-136, SP-145, SP-146, SP-147 & SP-148.

**Safety
Audits/Safety
Walkarounds**

N/A

**Safety and
Environmental
Incidences**

N/A

**Compliance to
Design and
construction
methods,
approved
materials**

N/A

**Major Quality
Issues**

N/A

**Site Instructions
Issued**

N/A

**Verbal
communication**

Received sheet pile monitoring data, deflection data (15mm) within design tolerance (33mm).
 Advice DBO & EPC to include training for work at height (WaH) and lifting work for month of February 2024.

Meetings

When	Who	What
N/A		

Comments

N/A

FICHTNER

Site Log

Date: 1/26/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail

Friday

Time on site: Time off site: Completed by:

Weather:

Total Civil Process

Workers on Site

<input type="text"/>	<input type="text"/>	<input type="text"/>
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Note : Enter this information when it is available, at least once per week as a minimum

Site Activities,
Contractors
Involved, Major
Deliveries,
Testing,
Inspections

OFF DAY (FRIDAY)

Safety
Audits/Safety
Walkarounds

N/A

Safety and
Environmental
Incidences

N/A

Compliance to
Design and
construction
methods,
approved
materials

N/A

Major Quality
Issues

N/A

Site Instructions
Issued

N/A

Verbal
communication

N/A

Meetings

When	Who	What
N/A		

Comments

N/A

FICHTNER

Site Log

Date: 1/27/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail
 Saturday
 Time on site: Time off site: Completed by:

Weather:

Total	Civil	Process
0	0	0

Note : Enter this information when it is available, at least once per week as a minimum

Workers on Site

**Site Activities,
Contractors
Involved, Major
Deliveries,
Testing,
Inspections**

- 1) Dewatering of bunker area continue.
- 2) Bunker - First layer backfilling work at Area 2.
- 3) Bunker - First layer compaction test FDT at Area 2.
- 4) Process Area - Pilecap concreting work at SP-089, SP-090, SP-101, SP-102, SP-103, SP-104, SP-109, SP-110, SP-111, SP-112 & SP-113.

**Safety
Audits/Safety
Walkarounds**

**Safety and
Environmental
Incidences**

**Compliance to
Design and
construction
methods,
approved
materials**

**Major Quality
Issues**

**Site Instructions
Issued**

**Verbal
communication**

Received sheet pile monitoring data, deflection data (12mm) within design tolerance (33mm).

Meetings

When	Who	What
<input type="text" value="N/A"/>		

Comments



Site Inspection Report

No.: SI-24-02

by the Employer's Representative

Dates / Time of the Visit	Conducted by [ER]	Signature
13 th , 27 th February 2024 09:00 hrs – 17:00 Hrs	Nahee Nazim Deputy Team Leader Fichtner / REM	

General Observations

Sn	Particulars	Details / Remarks	Reference
1	Change in construction methodology with reference to same given in EIA report, if any	-	-
2	Not anticipated/accounted project specific activity (ies) and impacts observed which were not considered in EIA study report, if any, either on site or adjacent by the Contractor or other stakeholders.	Long term impacts of working close to the landfill has been discussed, and the DBO is working on a plan to monitor the air quality around the campsite and mitigation measures to be taken based on the findings once the monitoring starts. Expected to start late Q1 or early Q2 of 2024.	Photo 18
3	Any activity or sign observed within and adjacent to project site which may lead to soil and ground & marine water contamination	Presence of Shipwrecks adjacent to quay wall and movement of speed boats, ships (medium and large) on the route and adjacent to quay wall of island . Leachate and run off water from waste dumping site of WAMCO adjacent to project site.	Photo 8,9,18
4	Total number of man power at project as per attendance register on date of visit a) ER Representative b) DBO Representative c) HO Management Team d) EPC Contractor Direct Staff e) EPC Contractor Indirect Staff f) EPC Contractor Direct Site Workers g) Security (Gage) h) ELS (Spun pile contractor)	Total of 107 workers deployed. 1 1 5 33 20 42 7 5	-
5	Others, if any	-	-

Progress Observations

No.	Particulars	Details / Remarks	Reference
1	Temporary facilities	New staff and accommodation buildings have been completed, new storage tents have been completed. Reinforcement work yard has been completed.	Photo 1,13,18
2	Site Preparation	Daily monitoring of sheet piles for any movement is ongoing in the bunker area.. Concrete batching plant is operational. Backfilling, compaction, geotextile installation is on going. Pile cap concrete works and lean concrete work is continuing.	Photo 3,4,5,6,14,15,16,17
3	Excavation & Dewatering	Excavation work for the bunker and the main process building has been completed. The ramp at the bunker area has been completed. Well point dewatering system around the bunker area has been setup and continuous dewatering works is ongoing. Monthly monitoring of the discharge water is carried out.	Photo 2,20,22

Environmental Observations

Sn	Particulars	Details / Remarks	Reference
1	Status of adequacy of compliance of CEMP and ESMS including SOPs in place applicable to construction activities visited on the basis of assessment made on randomly basis, on site or adjacent. ¹	For construction phase, various plans and SOPs as part of ESMS as mentioned in CEMP are in the process of final approval. All documents are currently approved with comments. Implementation of the said plans is an ongoing process and efforts are in place to implement the CEMP. All site works are carried out after approval of method statements.	-
2	Status of adequacy of environment monitoring as envisaged in CEMP on the basis of assessment made on randomly basis.	Being conducted as scheduled. Monthly monitoring of ambient air quality, noise levels and water quality is ongoing. The data is collected, for ambient air and noise level, however the contractor is yet to submit the reports for the month of January and February as they in the process of changing the sub contractor assigned to this work.	-
3	Status of adequacy of level of understanding of environment hazards and corresponding designed mitigation measures of construction team including supervisors and workers on site or adjacent on the basis of assessment made on randomly basis.	Toolbox talks are being conducted on a daily basis. Training is conducted monthly as per requirement for the month. Implementation of CEMP, H&S plan and other management plans is ongoing.	-
4	Status of adequacy of record keeping including data reported in monthly environment report on the basis of assessment made on randomly basis.	Site activities are captured on the Daily Progress Reports prepared by the EPC and digital copies of the report are kept on record on the ACONEX project management system and shared with all stakeholders.	-

¹aspects includes (but not limited to) solid wastes (hazardous and non-hazardous including construction, plastic, E-waste, battery and bio-medical) management, Storage and handling of construction materials, waste water (from domestic and construction activities and run off due to rain) management, Air emission (from mainly DG sets, diesel driven machinery and equipment, Raw mix plant, fugitive, vehicular movement, etc.) management, management of construction noise level etc.

Health and Safety Observation

Sn	Aspects	Details / Remarks	Reference
Labour - health, safety and welfare			
1	Status of adequacy of HSE /Occupational Health and Safety management plan and ESMS including SOPs applicable to construction activities visited on the basis of randomly assessment made. ²	SOPS are in place for specific work activities and is an ongoing process. However following observations were made: <ul style="list-style-type: none"> Impacts/risks to workers due to presence of dumping site have not been identified, but a plan to monitor air quality is being prepared by the DBO. Documents on subject were under process of finalization for getting approval of ER/PMU for construction phase. All HSE documents are "Approved with comments" at this stage. Presence of live electrical cable supplying electricity to project from STELCO runs within the site boundary. HDC and Stelco have been informed of the matter and the cable is to be re-routed at the earliest. Planning works is in progress between stakeholders. 	-
2	Status of adequacy of HSE monitoring as envisaged in CEMP, HSE Plan, ESMS & SOPs etc.	Documents on subject as part of CEMP, HSE Plan and SOPs as part of ESMS have been prepared and submitted for approval of ER. All HSE related documents are "Approved" or "Approved with comments" and the final revisions are being worked on by the EPC/DBO HSE team. HSE monitoring and audits are conducted by the EPC as well as Rambol on behalf of the DBO. Implementation of the CEMP and HSE plans is ongoing. SOP's are in place for all ongoing construction work and is an ongoing process as work progress on site.	-
3	Status of adequacy of on-site Emergency Preparedness and Response on the basis of randomly assessment made (emergency response team, safety committee, fire fighting, mock drills, assembly point, evacuation, accident/incident reporting etc.)	SOPs on subject is in place and drills have been conducted on site. Training program is prepared on a monthly basis as well as drills are being conducted by the HSE team on site. Assembly point established and inadequate safety signage were in place however no safety committee is in place. Adequate medical aid facilities (e.g. availability of stretcher and medicine, medical evacuation etc) at health center located within project site and full time qualified doctor and nurse has been posted.	-
4	Status of adequacy of workers accommodations including fresh water for drinking & others, hygienic with reference to waste water and domestic solid waste management and other welfare facilities (e.g. Kitchen/food, medical, toilets, recreation, shelters, spray of mosquitoes and odour repellent etc.) maintained at project site on the basis of randomly assessment made.	Worker's accommodations including toilets are operational, and deemed sufficient for the current workers on site. Fresh water supply is from MWSC utility pipeline and drinking water filters are being used, along with bottled drinking water. Waste collection bins have been placed and collected to the main waste collection area and handed over to WAMCO for disposal. A gym and recreational area has been completed and is in use. Designated smoking areas and shelters have been established. Waste water treatment plant is operational.	-
5	Status of adequacy of housekeeping within project site on the basis of randomly assessment made.	Site is kept generally clean and organized. Scheduled mass house-keeping is being conducted monthly. Designated persons assigned for cleaning and logs kept for toilets. Designated waste collection area is established, waste bins are installed through out site camp area. All waste produced is logged and recorded.	-
6	Status of adequacy of security management(availability of adequate number of security guards, fencing of project site, procedure(s) to allow entry for visitors and workers etc. understanding of role of security guards as per contract) of project site on the basis of randomly assessment made.	Gates in place, and visitors register in form of loose sheets, a proper register is to be maintained. Security guards in place at the 3 entry points to the site. CCTV system is installed. Adequate lighting is provided around the site.	-
7	Status of adequacy of handling of workers complaint(s) received on HSE, human resources and welfare aspects as per complaint register kept at site on the basis of randomly assessment made.	Boxes placed for for internal grievance redress mechanism at several places within the site area. No grievance record has been submitted to the ER however it is noted that several such complaints have been dealt with by the EPC at tier 1 level. Notices and forms are in several languages.	-

²e.g assessment of activity wise associated hazards, work permit, PPEs, first aid, tool box talk, barricading, COVID-19, electrical safety etc.

8	Status of adequacy of record keeping including data reported in monthly HSE report on the basis of randomly assessment made.	Site activities are captured on the Daily Progress Reports prepared by the EPC and digital copies of the report are kept and digital record is shared with all parties.	-
Community- health, safety and welfare			
9	Status of adequacy of Community Health and Safety plan and ESMS including SOPS on the basis of randomly assessment made (mainly during transportation of men, materials and machinery, influx of workers from other places, contamination of air, land and marine water and ecology, if any etc.)	Pre-construction environment baseline monitoring is being carried out as per CEMP on regular basis. However, for construction phase, various plans and SOPs as part of ESMS mentioned in CEMP and H&S plan are yet to be finalized for approval from ER/PMU, several rounds of review and comments have been shared by the ER with the DBO contractor on the documents that are being prepared. Even though the process of developing the documents, measures are taken to implement these as an ongoing process.	-
10	Status of adequacy of off-site Emergency Preparedness and Response on the basis of randomly assessment made (e.g. response team, mock drills, mutual aids, evacuation plan, accident/incident reporting etc.)	No documented system was in place for pre-construction phase and as per verbal discussion with DBO and EPC contractor. However, plan and SOPs on subject are under process of finalization for getting approval of ER/PMU for construction phase. Regular training and drills are being conducted on site and records are kept.	-
12	Status of adequacy of handling of community complaint(s) received on Environment, HSE and welfare aspects on the basis of randomly assessment made.	To comply with contract's obligations, community engagement plan is yet to be submitted for getting approval of ER/PMU. The site being in the industrial area no complaints were received this month.	-

Site Photos



Photo 01 13/02/24 – Main process building area work is currently



Photo 02 13/02/24 – *Dedicated pedestrian walk way to access bunker area established for workers safety.*



Photo 03 13/02/24 - Bunker area backfilling and geotextile installation in progress



Photo 04 13/02/24 – Bunker area, part of the lean concrete for the foundation has been completed, and curing ongoing.



Photo 05 13/02/24 – Main process area, pile cap concrete works completed where possible and backfilling works in progress.



Photo 06 13/02/24 – Bunker area preparation for pile caps cast and curing on going for part of the bunker.



Photo 07 27/02/24 – Excavated Sand stockpile on site.



Photo 08 27/02/24 – Shipwreck 1 in the lagoon adjacent to site. HDC (landowner) has been requested to remove these at the earliest.



Photo 09 27/02/24 – Shipwreck 2 in the lagoon adjacent to site HDC (landowner) has been requested to remove.



Photo 10 27/02/24 – DAB team members on site with the team members from DBO, EPC, PMU, PMDSC during the site walk about.



Photo 11 27/02/24 – DAB team members on site with the team members from DBO, EPC, PMU, PMDSC during the site walk about.



Photo 12 27/02/24 – DAB team members on site with the team members from DBO, EPC, PMU, PMDSC during the site walk about.

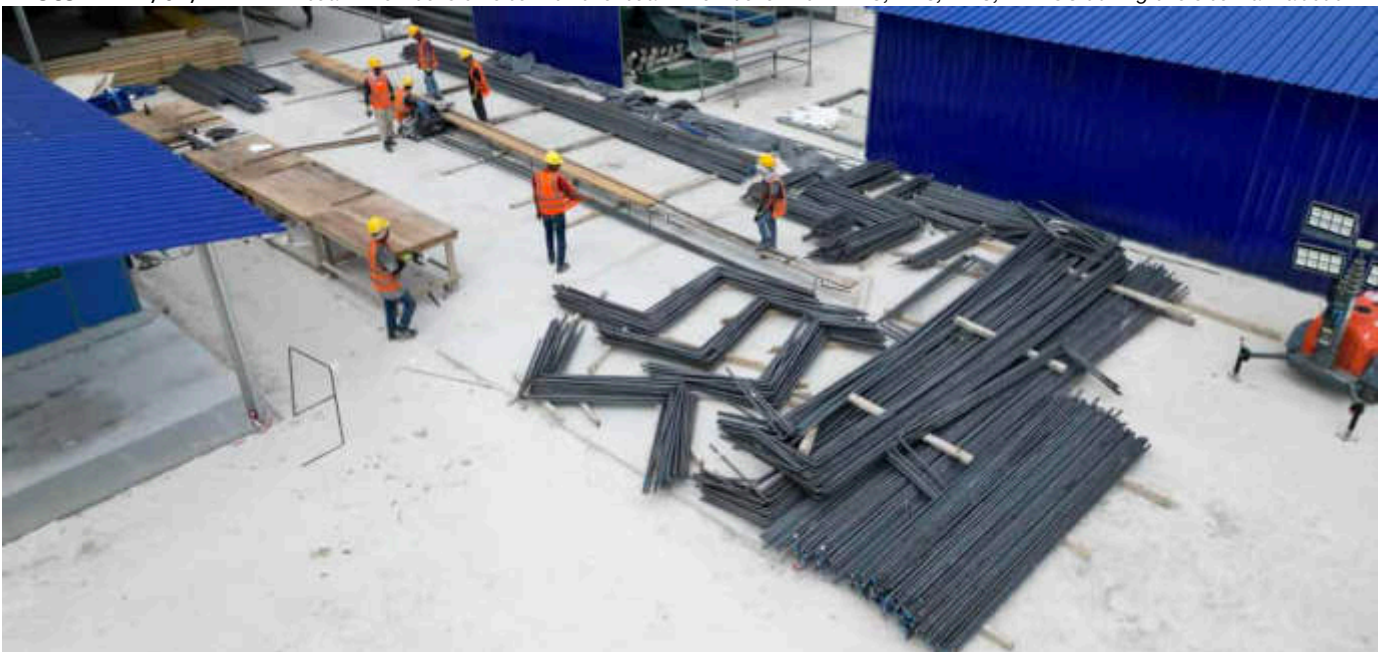


Photo 13 27/02/24 – Bar bending works ongoing for the bunker area foundation works.



Photo 14 27/02/24 – Main process building area, spun pile installation completed, pile cap concrete works completed, excavation completed, backfilling and compaction works on going in preparation for lean concrete.



Photo 15 27/02/24 – DAB team members on site with the team members from DBO, EPC, PMU, PMDSC during the site walk about at the leachate pit area in the waste bunker area.

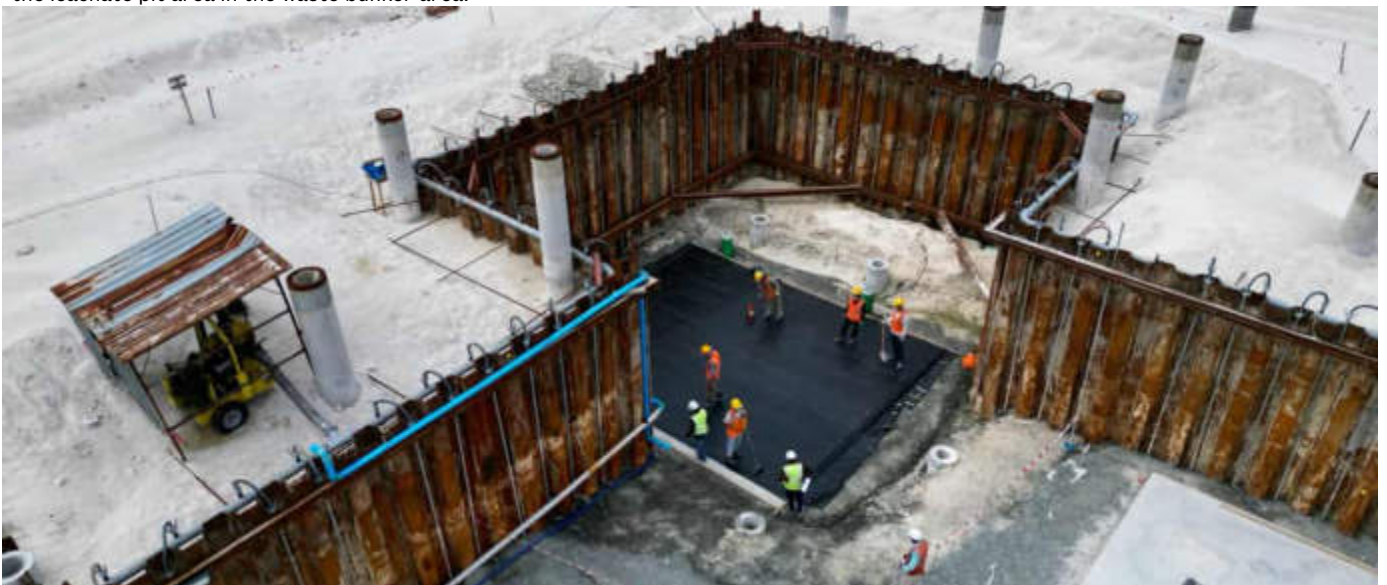


Photo 16 27/02/24 – Leachate pit area waterproofing layer on top of the lean concrete being laid in preparation of foundation slab works.



Photo 17 27/02/24 – Waste bunker area, lean concrete works completed, and curing ongoing (right side), waterproofing layer completed (left side)



Photo 18 27/02/24 – WAMCO landfill (right side) adjacent to the site, with 20m buffer zone for safety incase of falling objects.



Photo 19 27/02/24 – DAB team members on site with the team members from DBO, EPC, PMU, PMDSC during the site walk about, showing the main ongoing construction area in the background.



Photo 20 27/02/24 – Waste bunker area, sheet piling completed, excavation completed, continuous dewatering ongoing, spun pile installation completed, pile cap concrete works completed, backfilling and compaction completed, lean concrete work completed. Water proofing layer installation works in progress, leachate pit (bottom left corner) water proofing layer completed. Concrete works will start from the leachate pit.

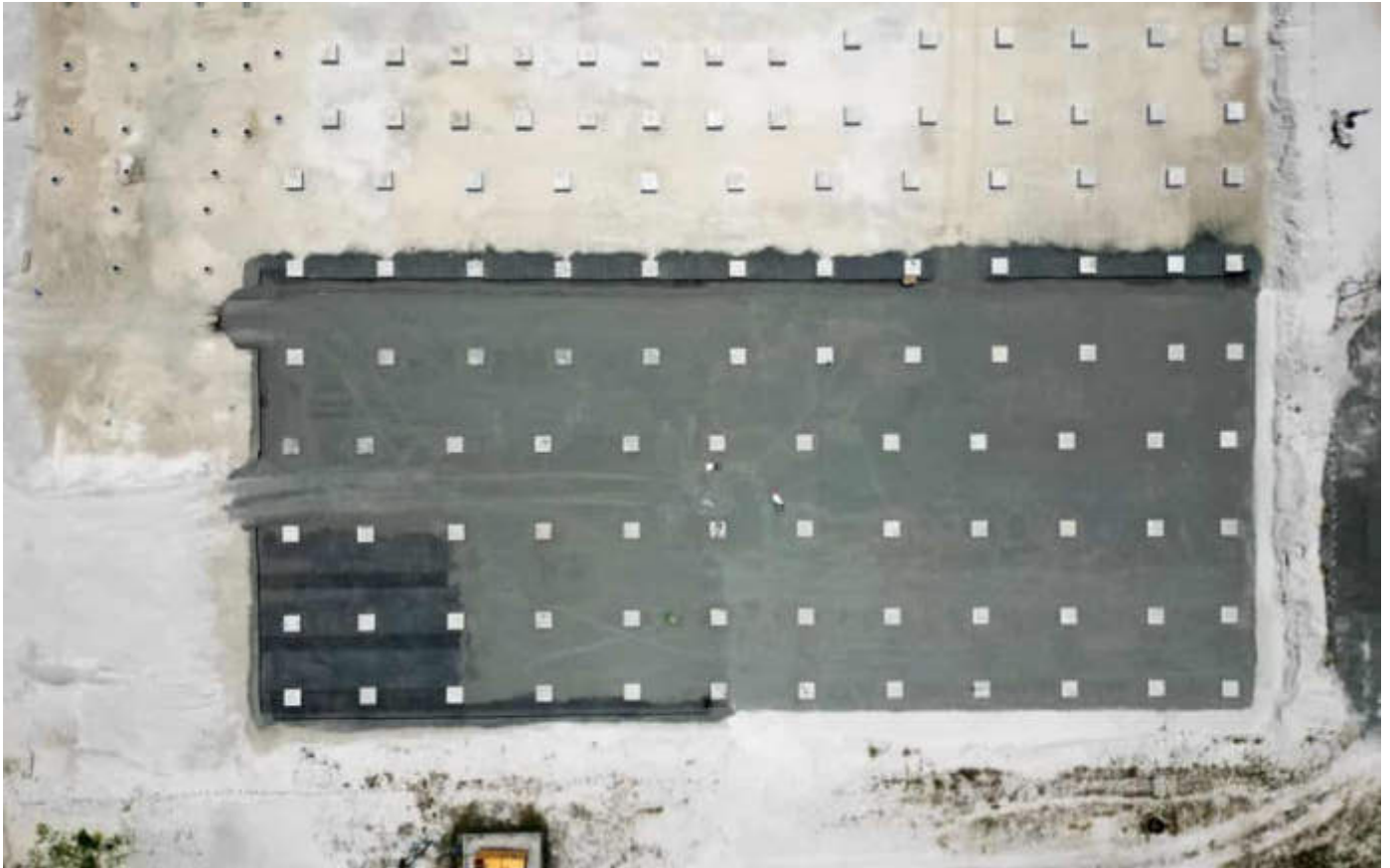


Photo 21 27/02/24 – Main process building area, spun pile installation completed, pile cap concrete works completed, excavation completed, backfilling and compaction works on going in preparation for lean concrete.



Photo 22 27/02/24 – Dewatering sedimentation pit, continuous dewatering will continue until bunker area concrete works have been completed. Water quality tests are done on a monthly basis to ensure that the environmental safeguards are complied.

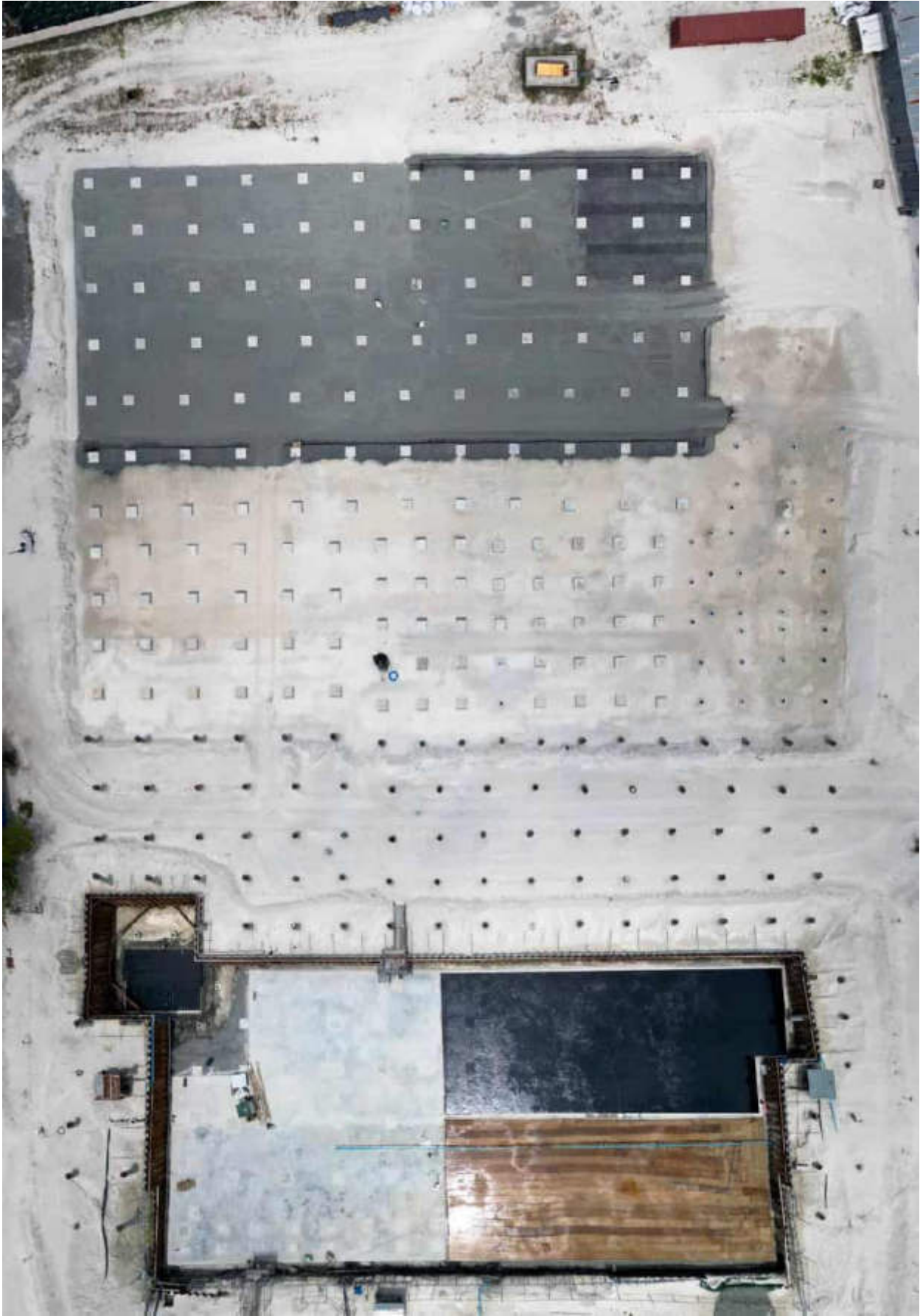


Photo 23 27/02/24 – Overall construction site, showing waste bunker area(bottom) and the main process building area (top)



Greater Male' Waste-to-Energy Project

Greater Male Waste to Energy Project

Site Weekly Report

by the Employer's Representative

Week from	Week to	Prepared by	Signature	Checked by	Signature
28.1.2024	3.2.2024	Sofi bin Ismail		Naahee Nazim	

Progress Review

The works performed during the Reporting Week are as follows:

- Dewatering work for Bunker area continues.
- Bunker - Compaction FDT test conducted for pilecaps, first layer & second layer at Area 2 & Area 3.
- Bunker - 4 nos. pilecaps concreted. To date, completed 83 of 104 pilecaps at Bunker.
- Bunker - First layer backfilling at Area 2 & Area 3.
- Bunker - Geogrid laying work at Area 2 & Area 3.
- Bunker - Second layer backfilling at Area 2 & Area 3.
- Process Area - Compaction FDT test conducted for pilecaps & base layer.
- Process Area - Pilecaps reinforcement bar and formwork preparation.
- Process Area - 11 nos. pilecaps concreted. To date, completed 132 of 247 pilecaps at Process Area.

Attachment:

Site Daily Logs

Site Photos

The below figure provides an overview of fixed photo locations and angles where photos are taken from in each Reporting Week.

Photos 1 to 5 will include photos according to the map, the remaining photos are taken from elsewhere and are not exactly from the same location and angle in every Weekly Report.







OVERALL - POINT FIVE



BUNKER AREA 2 & AREA 3 FIRST LAYER BACKFILLING.

7



BUNKER AREA 1 COMPLETED LEAN CONCRETE

8



COMPLETED 4 NOS. PILECAPS AT BUNKER & 11 NOS. AT PROCESS BUILDING

FICHTNER

Site Log

Date: 1/28/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail
 Sunday
 Time on site: Time off site: Completed by:

Weather:

Total	Civil	Process
50	50	0

Note : Enter this information when it is available, at least once per week as a minimum

Workers on Site

**Site Activities,
Contractors
Involved, Major
Deliveries,
Testing,
Inspections**

- 1) Dewatering of bunker area continue.
- 2) Bunker - First layer backfilling work at Area 2.
- 3) Bunker - First layer compaction test FDT at Area 2.
- 4) Bunker - Geogrid laying work at Area 2.
- 5) Bunker - Second layer backfilling work at Area 2

**Safety
Audits/Safety
Walkarounds**

**Safety and
Environmental
Incidences**

**Compliance to
Design and
construction
methods,
approved
materials**

**Major Quality
Issues**

**Site Instructions
Issued**

**Verbal
communication**

Received sheet pile monitoring data, maximum deflection data (15mm) within design tolerance (33mm).
 Request for temporary tower crane details which to be placed at completed bunker. To evaluate the tie-in point and load impact on the bunker structure.

Meetings

When	Who	What
4:00pm	FIT, URB, AAJV	Coordination meeting for 1 month look ahead
		1) Bunker foundation work
		2) Bunker wall sequences
		3) Material dateline

Comments

FICHTNER

Site Log

Date 1/29/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail
 Monday
 Time on site: Time off site: Completed by:

Weather:

	Total	Civil	Process	
Workers on Site	50	50	0	<i>Note : Enter this information when it is available, at least once per week as a minimum</i>

Site Activities, Contractors Involved, Major Deliveries, Testing, Inspections

1) Dewatering of bunker area continue.
 2) Bunker - Second layer compaction test FDT at Area 2.
 3) Process Area - Base layer compaction test FDT at M1-M10 to MD-MF
 4) Process Area - Lean concreting work at SP-163, SP-176, SP-182, SP-194, SP-205, SP-217, SP-229, SP-241 & SP-253.

Safety Audits/Safety Walkarounds

Safety and Environmental Incidences

Compliance to Design and construction methods, approved materials

Major Quality Issues

Site Instructions Issued

Verbal communication Received sheet pile monitoring data, maximum deflection data (14mm) within design tolerance (33mm).

	When	Who	What
Meetings	<input type="text" value="N/A"/>		

Comments

FICHTNER

Site Log

Date: 1/30/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail
 Tuesday
 Time on site: Time off site: Completed by:

Weather:

Total	Civil	Process
0	0	0

Note : Enter this information when it is available, at least once per week as a minimum

Workers on Site

**Site Activities,
Contractors
Involved, Major
Deliveries,
Testing,
Inspections**

- 1) Dewatering of bunker area continue.
- 2) Bunker - Base layer backfilling work at Area 3.
- 3) Bunker - Base layer compaction test FDT at Area 3.
- 4) Bunker - Lean concreting work at BU-055, BU-058, BU-060 & BU-061.
- 5) Bunker - Lean concreting work at Bunker Sump -4.5m.

Safety Audits/Safety Walkarounds

Safety and Environmental Incidences

Compliance to Design and construction methods, approved materials

Major Quality Issues

Site Instructions Issued

Verbal communication

Meetings	When	Who	What
	<input type="text" value="N/A"/>		

Comments

FICHTNER

Site Log

Date 1/31/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail
 Wednesday
 Time on site: Time off site: Completed by:

Weather:

	Total	Civil	Process	
Workers on Site	0	0	0	<i>Note : Enter this information when it is available, at least once per week as a minimum</i>

Site Activities, Contractors Involved, Major Deliveries, Testing, Inspections

1) Dewatering of bunker area continue.
 2) Bunker - Pilecap concreting work at BU-055, BU-058, BU-060 & BU-061.
 3) Process Area - Lean concreting work at SP-217, SP-205 & SP-182.

Safety Audits/Safety Walkarounds

Safety and Environmental Incidences

Compliance to Design and construction methods, approved materials

Major Quality Issues

Site Instructions Issued

Verbal communication

	When	Who	What
Meetings	<input type="text" value="N/A"/>		

Comments

FICHTNER

Site Log

Date: 2/1/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail
 Thursday
 Time on site: Time off site: Completed by:

Weather:

Total	Civil	Process
46	46	0

Note : Enter this information when it is available, at least once per week as a minimum

Workers on Site

**Site Activities,
Contractors
Involved, Major
Deliveries,
Testing,
Inspections**

- 1) Dewatering of bunker area continue.
- 2) Bunker - Second layer backfilling work at Area 3.
- 3) Bunker - Second layer compaction test FDT at Area 3.
- 4) Process Area - Pilecap base compaction test FDT at SP-105, SP-114, SP-127 & SP-137.

**Safety
Audits/Safety
Walkarounds**

N/A

**Safety and
Environmental
Incidences**

N/A

**Compliance to
Design and
construction
methods,
approved
materials**

N/A

**Major Quality
Issues**

N/A

**Site Instructions
Issued**

N/A

**Verbal
communication**

Received sheet pile monitoring data, deflection data (11mm) within design tolerance (33mm).

Meetings

When	Who	What
N/A		

Comments

N/A

FICHTNER

Site Log

Date: 2/2/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail

Friday

Time on site: Time off site: Completed by:

Weather:

Total Civil Process

Workers on Site

<input type="text"/>	<input type="text"/>	<input type="text"/>
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Note : Enter this information when it is available, at least once per week as a minimum

Site Activities, Contractors Involved, Major Deliveries, Testing, Inspections

Safety Audits/Safety Walkarounds

Safety and Environmental Incidences

Compliance to Design and construction methods, approved materials

Major Quality Issues

Site Instructions Issued

Verbal communication

Meetings	When	Who	What
	<input type="text" value="N/A"/>	<input type="text"/>	<input type="text"/>
	<input type="text"/>	<input type="text"/>	<input type="text"/>
	<input type="text"/>	<input type="text"/>	<input type="text"/>
	<input type="text"/>	<input type="text"/>	<input type="text"/>

Comments

FICHTNER

Site Log

Date: 2/3/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail
 Saturday
 Time on site: Time off site: Completed by:

Weather:

Total	Civil	Process
0	0	0

Note : Enter this information when it is available, at least once per week as a minimum

Workers on Site

**Site Activities,
Contractors
Involved, Major
Deliveries,
Testing,
Inspections**

- 1) Dewatering of bunker area continue.
- 2) Bunker - Second layer backfilling work at Area 3.
- 3) Bunker - Second layer compaction test FDT at Area 3.
- 4) Bunker - Geogrid layer installation at Area 3
- 5) Process Area - Lean concreting work at SP-105, SP-114, SP-127 & SP-137.

**Safety
Audits/Safety
Walkarounds**

Marine underwater ecological survey was conducted at south side.

**Safety and
Environmental
Incidences**

N/A

**Compliance to
Design and
construction
methods,
approved
materials**

N/A

**Major Quality
Issues**

N/A

**Site Instructions
Issued**

N/A

**Verbal
communication**

Received sheet pile monitoring data, deflection data (12mm) within design tolerance (33mm).

Meetings

When	Who	What
N/A		

Comments

N/A



Greater Male' Waste-to-Energy Project

Greater Male Waste to Energy Project

Site Weekly Report

by the Employer's Representative

Week from	Week to	Prepared by	Signature	Checked by	Signature
4.2.2024	10.2.2024	Sofi bin Ismail		Naahee Nazim	

Progress Review

The works performed during the Reporting Week are as follows:

- Dewatering work for Bunker area continues.
- Bunker - Compaction FDT test conducted for second layer at Area 3.
- Bunker - 0 nos. pilecaps concreted. To date, completed 83 of 104 pilecaps at Bunker.
- Bunker - First layer backfilling at Area 3.
- Bunker - Geogrid laying work at Area 3.
- Bunker - Second layer backfilling at Area 3.
- Bunker - Lean concrete below bunker slab at Area 2 completed.
- Process Area - Compaction FDT test conducted for pilecaps & base layer.
- Process Area - Pilecaps reinforcement bar and formwork preparation.
- Process Area - 14 nos. pilecaps concreted. To date, completed 146 of 247 pilecaps at Process Area.

Attachment:

Site Daily Logs

Site Photos

The below figure provides an overview of fixed photo locations and angles where photos are taken from in each Reporting Week.

Photos 1 to 5 will include photos according to the map, the remaining photos are taken from elsewhere and are not exactly from the same location and angle in every Weekly Report.





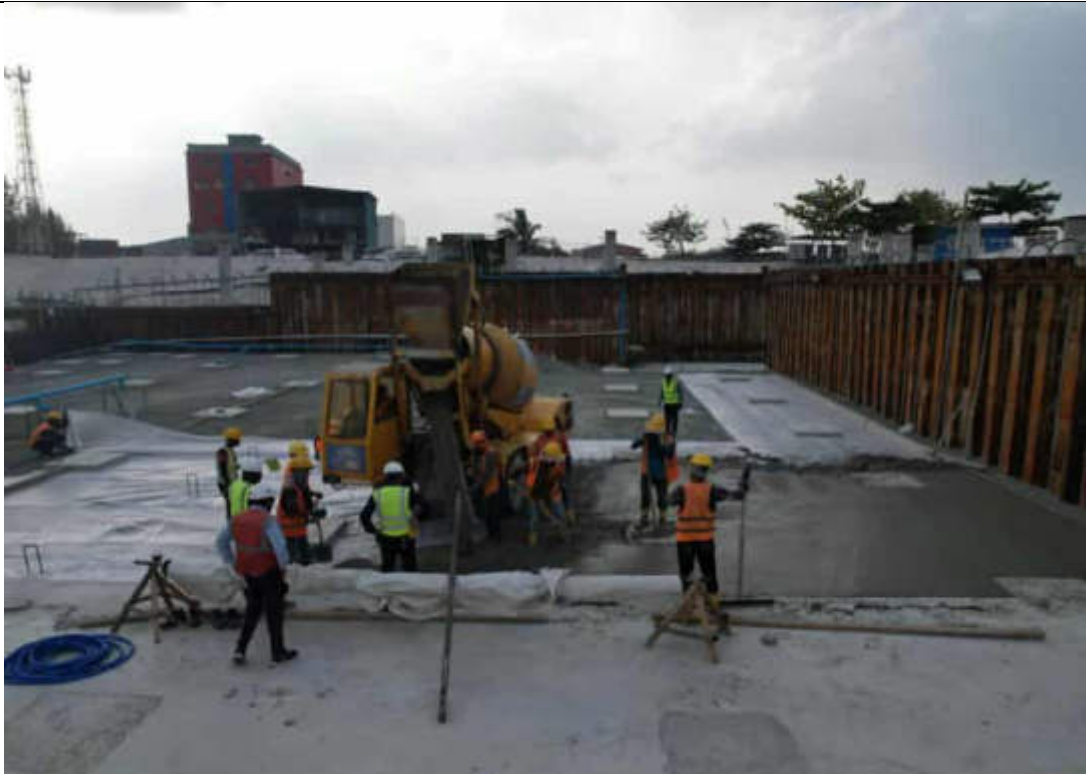


OVERALL - POINT FIVE



BUNKER AREA 3 SECOND LAYER BACKFILLING.

7



BUNKER AREA 2 COMPLETED LEAN CONCRETE

8



COMPLETED 0 NOS. PILECAPS AT BUNKER & 14 NOS. AT PROCESS BUILDING

FICHTNER

Site Log

Date: 04/02/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail
 Sunday
 Time on site: Time off site: Completed by:

Weather:

Total	Civil	Process
48	48	0

Note : Enter this information when it is available, at least once per week as a minimum

Workers on Site

**Site Activities,
Contractors
Involved, Major
Deliveries,
Testing,
Inspections**

- 1) Dewatering of bunker area continue.
- 2) Bunker - Second layer backfilling work at Area 3.
- 3) Bunker - Second layer compaction test FDT at Area 3.
- 4) Bunker - Geogrid layer installation at Area 3
- 5) Granular filling material delivery - 350 tonne

**Safety
Audits/Safety
Walkarounds**

N/A

**Safety and
Environmental
Incidences**

N/A

**Compliance to
Design and
construction
methods,
approved
materials**

N/A

**Major Quality
Issues**

N/A

**Site Instructions
Issued**

N/A

**Verbal
communication**

Received sheet pile monitoring data, maximum deflection data (6mm) within design tolerance (33mm).
Remind DBO that delay material delivery will affect dateline for bunker slab.

Meetings

When	Who	What
4:00pm	FIT, URB, AAJV	Coordination meeting for 1 month look ahead
		1) Bunker foundation work
		2) Bunker wall sequences
		3) Material dateline

Comments

N/A

FICHTNER

Site Log

Date 05/02/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail
 Monday
 Time on site: Time off site: Completed by:

Weather:

	Total	Civil	Process	
Workers on Site	50	50	0	<i>Note : Enter this information when it is available, at least once per week as a minimum</i>

Site Activities, Contractors Involved, Major Deliveries, Testing, Inspections

1) Dewatering of bunker area continue.
 2) Bunker - Second layer backfilling work at Area 3.
 3) Bunker - Second layer compaction test FDT at Area 3.
 4) Bunker - Geogrid layer installation at Area 3

Safety Audits/Safety Walkarounds

Safety and Environmental Incidences

Compliance to Design and construction methods, approved materials

Major Quality Issues

Site Instructions Issued

Verbal communication

Received sheet pile monitoring data, maximum deflection data (6mm) within design tolerance (33mm).

	When	Who	What
Meetings	<input type="text" value="N/A"/>		

Comments

FICHTNER

Site Log

Date: 06/02/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail
 Tuesday
 Time on site: Time off site: Completed by:

Weather:

	Total	Civil	Process	
Workers on Site	0	0	0	<i>Note : Enter this information when it is available, at least once per week as a minimum</i>

Site Activities, Contractors Involved, Major Deliveries, Testing, Inspections

- 1) Dewatering of bunker area continue.
- 2) Bunker - Second layer backfilling work at Area 3.
- 3) Bunker - Second layer compaction test FDT at Area 3.
- 4) Process Area - Preparation for base layer backfilling

Safety Audits/Safety Walkarounds

Water sampling from camp, site, discharge water, drinking water and dewatering discharge water.
 Ground water and marine water quality monitoring was conducted.

Safety and Environmental Incidences

N/A

Compliance to Design and construction methods, approved materials

N/A

Major Quality Issues

N/A

Site Instructions Issued

N/A

Verbal communication

Received sheet pile monitoring data, deflection data (5mm) within design tolerance (33mm).

Meetings

When	Who	What
N/A		

Comments

N/A

FICHTNER

Site Log

Date 07/02/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail
 Wednesday
 Time on site: Time off site: Completed by:

Weather:

	Total	Civil	Process	
Workers on Site	0	0	0	<i>Note : Enter this information when it is available, at least once per week as a minimum</i>

Site Activities, Contractors Involved, Major Deliveries, Testing, Inspections

1) Dewatering of bunker area continue.
 2) Process Area - Preparation for base layer backfilling.
 3) Process Area - Formwork installation for pilecap at SP-194, SP-205, SP-217, SP-229, SP-241 & SP-253.

Safety Audits/Safety Walkarounds

Safety and Environmental Incidences

Compliance to Design and construction methods, approved materials

Major Quality Issues

Site Instructions Issued

Verbal communication

Received sheet pile monitoring data, deflection data (12mm) within design tolerance (33mm).

	When	Who	What
Meetings	4:00pm	FIT, URB, AAJV	Request for AAJV to update the material delivery status.
			Define affected activity due to late material delivery.

Comments

FICHTNER

Site Log

Date: 08/02/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail
 Thursday
 Time on site: Time off site: Completed by:

Weather:

Total	Civil	Process
0	0	0

Note : Enter this information when it is available, at least once per week as a minimum

Workers on Site

**Site Activities,
Contractors
Involved, Major
Deliveries,
Testing,
Inspections**

1) Dewatering of bunker area continue.
 2) Process Area - Backfilling work for base layer
 3) Process Area - Pilecap concrete casting at SP-194, SP-205, SP-217, SP-229, SP-241 & SP-253.

**Safety
Audits/Safety
Walkarounds**

N/A

**Safety and
Environmental
Incidences**

N/A

**Compliance to
Design and
construction
methods,
approved
materials**

N/A

**Major Quality
Issues**

N/A

**Site Instructions
Issued**

N/A

**Verbal
communication**

Received sheet pile monitoring data, deflection data (7mm) within design tolerance (33mm).

Meetings

When	Who	What
N/A		

Comments

N/A

FICHTNER

Site Log

Date 09/02/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail

Friday

Time on site: Time off site: Completed by:

Weather:

Total Civil Process

Workers on Site

<input type="text"/>	<input type="text"/>	<input type="text"/>
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Note : Enter this information when it is available, at least once per week as a minimum

Site Activities, Contractors Involved, Major Deliveries, Testing, Inspections

Safety Audits/Safety Walkarounds

Safety and Environmental Incidences

Compliance to Design and construction methods, approved materials

Major Quality Issues

Site Instructions Issued

Verbal communication

Meetings	When	Who	What
	<input type="text" value="N/A"/>	<input type="text"/>	<input type="text"/>
	<input type="text"/>	<input type="text"/>	<input type="text"/>
	<input type="text"/>	<input type="text"/>	<input type="text"/>
	<input type="text"/>	<input type="text"/>	<input type="text"/>

Comments

FICHTNER

Site Log

Date: 10/02/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail

Saturday

Time on site: Time off site: Completed by:

Weather:

Total	Civil	Process
0	0	0

Workers on Site

Note : Enter this information when it is available, at least once per week as a minimum

Site Activities, Contractors Involved, Major Deliveries, Testing, Inspections

- 1) Dewatering of bunker area continue.
- 2) Bunker - Lean concrete below slab at Area 2 completed.
- 3) Process Area - Backfilling work for base layer.
- 4) Process Area - Pilecap concrete casting at SP-039, SP-105, SP-114, SP-127, SP-137, SP-163, SP-176 & SP-182.
- 5) Material delivery - Granular filling material - 325 tonne.

Safety Audits/Safety Walkarounds

N/A

Safety and Environmental Incidences

N/A

Compliance to Design and construction methods, approved materials

N/A

Major Quality Issues

N/A

Site Instructions Issued

N/A

Verbal communication

Received sheet pile monitoring data, deflection data (12mm) within design tolerance (33mm).

Meetings

When	Who	What
N/A		

Comments

N/A



Greater Male' Waste-to-Energy Project

Greater Male Waste to Energy Project

Site Weekly Report

by the Employer's Representative

Week from	Week to	Prepared by	Signature	Checked by	Signature
11.2.2024	17.2.2024	Sofi bin Ismail		Naahee Nazim	

Progress Review

The works performed during the Reporting Week are as follows:

- Dewatering work for Bunker area continues.
- Bunker - Compaction FDT test conducted for pilecap at Area 4.
- Bunker - 17 nos. pilecaps concreted. To date, completed 100 of 104 pilecaps at Bunker.
- Bunker - Lean concrete below bunker slab at Area 3 completed.
- Process Area - Compaction FDT test conducted for pilecaps & base layer.
- Process Area - Pilecaps reinforcement bar and formwork preparation.
- Process Area - 14 nos. pilecaps concreted. To date, completed 160 of 247 pilecaps at Process Area.

Attachment:

Site Daily Logs

Site Photos

The below figure provides an overview of fixed photo locations and angles where photos are taken from in each Reporting Week.

Photos 1 to 5 will include photos according to the map, the remaining photos are taken from elsewhere and are not exactly from the same location and angle in every Weekly Report.

1



OVERALL - POINT ONE

2



OVERALL - POINT TWO

3



OVERALL - POINT THREE

4



OVERALL - POINT FOUR



7



BUNKER AREA 4 COMPLETED PILECAPS.

8



COMPLETED 17 NOS. PILECAPS AT BUNKER & 14 NOS. AT PROCESS BUILDING

9



GEOGRID INSTALLATION AT PROCESS AREA.

10



REINFORCEMENT BAR ARRIVED ON SITE

Site Log



Date: 11/02/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail

Sunday

Time on site: 7:00 Time off site: 18:00 Completed by: Sofi Bin Ismail

Weather: Sunny

Total Civil Process

0	0	0
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Note: Enter this information when it is available, at least once per week as a minimum

Workers on Site

Site Activities, Contractors Involved, Major Deliveries, Testing, Inspections

- 1) Dewatering of bunker area continue.
- 2) Bunker - Lean concrete below slab at Area 3 completed.
- 3) Process Area - Backfilling work for base layer.
- 4) Material delivery - Reinforcement bar - 136 tonne.

Safety Audits/Safety Walkarounds

Air quality monitoring at ASR3 & ASR5 was started.

Safety and Environmental Incidences

N/A

Compliance to Design and construction methods, approved materials

N/A

Major Quality Issues

N/A

Site Instructions Issued

N/A

Verbal communication

Received sheet pile monitoring data, maximum deflection data (9mm) within design tolerance (33mm).

Meetings

When	Who	What
N/A		

Comments

N/A

FICHTNER

Site Log

Date 12/02/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail
 Monday
 Time on site: Time off site: Completed by:

Weather:

	Total	Civil	Process	
Workers on Site	0	0	0	<i>Note : Enter this information when it is available, at least once per week as a minimum</i>

Site Activities, Contractors Involved, Major Deliveries, Testing, Inspections

- 1) Dewatering of bunker area continue.
- 2) Bunker - Excavation bunker Area 4 (Ramp area) started.
- 3) Process Area - Compaction test FDT at M1-M10.
- 4) Material delivery - Reinforcement bar - 138 tonne.
- 5) Material delivery - Granular material for backfilling - 350 tonne.

Safety Audits/Safety Walkarounds

Safety and Environmental Incidences

Compliance to Design and construction methods, approved materials

Major Quality Issues

Site Instructions Issued

Verbal communication

	When	Who	What
Meetings	N/A		

Comments

FICHTNER

Site Log

Date: 13/02/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail
 Tuesday
 Time on site: Time off site: Completed by:

Weather:

	Total	Civil	Process	
Workers on Site	0	0	0	<i>Note : Enter this information when it is available, at least once per week as a minimum</i>

Site Activities, Contractors Involved, Major Deliveries, Testing, Inspections

- 1) Dewatering of bunker area continue.
- 2) Bunker - Excavation bunker Area 4 (Ramp area) completed.
- 3) Process Area - Backfilling & compaction work at M1-M10.
- 4) Material delivery - Reinforcement bar - 138 tonne.

Safety Audits/Safety Walkarounds

Safety and Environmental Incidences

Compliance to Design and construction methods, approved materials

Major Quality Issues

Site Instructions Issued

Verbal communication

	When	Who	What
Meetings	<input type="text" value="N/A"/>		

Comments

FICHTNER

Site Log

Date 14/02/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail
 Wednesday
 Time on site: Time off site: Completed by:

Weather:

	Total	Civil	Process	
Workers on Site	0	0	0	<i>Note : Enter this information when it is available, at least once per week as a minimum</i>

Site Activities, Contractors Involved, Major Deliveries, Testing, Inspections

1) Dewatering of bunker area continue.
 2) Bunker - Pilecap base compaction test FDT at BU-019, BU-20, BU-024, BU-25, BU-029, BU-033, BU-069, BU-070, BU-071, BU-072, BU-073, BU-074, BU-075, BU-076, BU-077, BU-078 & BU-079.
 3) Process Area - Geogrid installation at M5-M10.
 4) Material delivery - Reinforcement bar - 140 tonne.

Safety Audits/Safety Walkarounds

Safety and Environmental Incidences

Compliance to Design and construction methods, approved materials

Major Quality Issues

Site Instructions Issued

Verbal communication Received sheet pile monitoring data, deflection data (11mm) within design tolerance (33mm).

Meetings

When	Who	What
<input type="text" value="N/A"/>		

Comments

FICHTNER

Site Log

Date: 15/02/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail
 Thursday
 Time on site: Time off site: Completed by:

Weather:

Total	Civil	Process
57	57	0

Note : Enter this information when it is available, at least once per week as a minimum

Workers on Site

**Site Activities,
Contractors
Involved, Major
Deliveries,
Testing,
Inspections**

1) Dewatering of bunker area continue.
 2) Bunker - Pilecap lean concrete at BU-019, BU-20, BU-024, BU-25, BU-029, BU-033, BU-069, BU-070, BU-071, BU-072, BU-073, BU-074, BU-075, BU-076, BU-077, BU-078 & BU-079.
 3) Process Area - Geogrid installation at M5-M10.

**Safety
Audits/Safety
Walkarounds**

Inspection of sheetpile around bunker area.

**Safety and
Environmental
Incidences**

N/A

**Compliance to
Design and
construction
methods,
approved
materials**

N/A

**Major Quality
Issues**

N/A

**Site Instructions
Issued**

N/A

**Verbal
communication**

Received sheet pile monitoring data, deflection data (11mm) within design tolerance (33mm).
 Notify DBO that require designer feedback for crane platform where EPC intent to park for concreting work. This is to verify that the sheetpile can sustain crane load accordingly. EPC to provide design calculation for crane platform.

Meetings

When	Who	What
4:00pm	FIT, URB, AAJV	Discussion on one month look ahead schedule.
		AAJV update status of material delivery.
		Still outstanding few material to be delivered
		Noted the additional of 7 manpower, more will mobilize by next week.

Comments

N/A

FICHTNER

Site Log

Date: 16/02/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail

Friday

Time on site: Time off site: Completed by:

Weather:

Total Civil Process

Workers on Site

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Note : Enter this information when it is available, at least once per week as a minimum

Site Activities, Contractors Involved, Major Deliveries, Testing, Inspections

OFF DAY (FRIDAY)

Safety Audits/Safety Walkarounds

Safety and Environmental Incidences

Compliance to Design and construction methods, approved materials

Major Quality Issues

Site Instructions Issued

Verbal communication

	When	Who	What
Meetings	<input type="text" value="N/A"/>		

Comments

FICHTNER

Site Log

Date: 17/02/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail
 Saturday
 Time on site: Time off site: Completed by:

Weather:

Total	Civil	Process
<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>

Workers on Site Note : Enter this information when it is available, at least once per week as a minimum

**Site Activities,
Contractors
Involved, Major
Deliveries,
Testing,
Inspections**

1) Dewatering of bunker area continue.
 2) Bunker - Pilecap concreting work at BU-019, BU-20, BU-024, BU-25, BU-029, BU-033, BU-069, BU-070, BU-071, BU-072, BU-073, BU-074, BU-075, BU-076, BU-077, BU-078 & BU-079.
 3) Process Area - Geogrid installation at M5-M10.

**Safety
Audits/Safety
Walkarounds**

**Safety and
Environmental
Incidences**

**Compliance to
Design and
construction
methods,
approved
materials**

**Major Quality
Issues**

**Site Instructions
Issued**

**Verbal
communication**

Received sheet pile monitoring data, deflection data (10mm) within design tolerance (33mm).
 Received design calculation verifying that the sheetpile is able to sustain load from crane activities. Allow EPC to proceed with pilecap concreting work accordingly.

Meetings

When	Who	What
<input type="text" value="N/A"/>		
<input type="text"/>		
<input type="text"/>		
<input type="text"/>		

Comments



Greater Male' Waste-to-Energy Project

Greater Male Waste to Energy Project

Site Weekly Report

by the Employer's Representative

Week from	Week to	Prepared by	Signature	Checked by	Signature
18.2.2024	24.2.2024	Sofi bin Ismail		Naahee Nazim	

Progress Review

The works performed during the Reporting Week are as follows:

- Dewatering work for Bunker area continues.
- Bunker - Compaction FDT test conducted for first layer structural backfilling work at Area 4.
- Bunker - Geogrid installation at Area 4 completed.
- Bunker - Second layer structural backfilling in progress.
- Bunker - 0 nos. pilecaps concreted. To date, completed 100 of 104 pilecaps at Bunker.
- Process Area - Compaction FDT test conducted for first layer M1-M10.
- Process Area - Backfilling work second layer for M1-M10 in progress.
- Process Area - 0 nos. pilecaps concreted. To date, completed 146 of 247 pilecaps at Process Area.

Attachment:

Site Daily Logs

Site Photos

The below figure provides an overview of fixed photo locations and angles where photos are taken from in each Reporting Week.

Photos 1 to 5 will include photos according to the map, the remaining photos are taken from elsewhere and are not exactly from the same location and angle in every Weekly Report.

1



OVERALL - POINT ONE

2



OVERALL - POINT TWO

3



OVERALL - POINT THREE

4



OVERALL - POINT FOUR



OVERALL - POINT FIVE



BUNKER AREA 4 LEAN SECOND LAYER BACKFILLING.

7



GEOGRID INSTALLATION AT PROCESS AREA M1-M10.

8



BACKFILLING SECOND LAYER PROCESS AREA AT M1-M10

9



REINFORCEMENT BAR FABRICATION FOR BUNKER SLAB IN PROGRESS.

10



PREPARATION OF LAYDOWN AREA IN PROGRESS.

11



STAKEHOLDERS ENGAGEMENT VISIT.

FICHTNER

Site Log

Date: 18/02/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail

Sunday

Time on site: Time off site: Completed by:

Weather:

Total Civil Process

73	73	0
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Note : Enter this information when it is available, at least once per week as a minimum

Workers on Site

**Site Activities,
Contractors
Involved, Major
Deliveries,
Testing,
Inspections**

- 1) Dewatering of bunker area continue.
- 2) Bunker - Backfilling work for Area 4.
- 3) Process Area - Geogrid installation at M5-M10 and continue backfilling work.
- 4) Stakeholders Engagement Meeting with Maldives Police Service, Maldives National Defence Force & WAMCO.

**Safety
Audits/Safety
Walkarounds**

Air quality monitoring at AQ3 & AQ4 was completed.
Air quality monitoring at AQ22 was started.
Noise monitoring at NQ1, NQ2, NQ3, NQ4 and NQ5 was started.

**Safety and
Environmental
Incidences**

N/A

**Compliance to
Design and
construction
methods,
approved
materials**

N/A

**Major Quality
Issues**

N/A

**Site Instructions
Issued**

N/A

**Verbal
communication**

Received sheet pile monitoring data, maximum deflection data (6mm) within design tolerance (33mm).

Meetings

When	Who	What
4:00pm	FIT, URB, AAJV	Weekly progress monitoring discussion
		a) Additional manpower for civil work bunker and process area are in-placed.
		b) Reinforcement bar for bunker arrived. Material inspection conducted.
		c) Bunker slab concreting sequence finalized. Review details of work required prior to casting work

Comments

N/A

FICHTNER

Site Log

Date 19/02/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail
 Monday
 Time on site: Time off site: Completed by:

Weather:

	Total	Civil	Process	
Workers on Site	73	73	0	<i>Note : Enter this information when it is available, at least once per week as a minimum</i>

Site Activities, Contractors Involved, Major Deliveries, Testing, Inspections

- 1) Dewatering of bunker area continue.
- 2) Bunker - Backfilling work for Area 4.
- 3) Process Area - Continue second layer of structural backfilling work at M5-M10.
- 4) Process Area - Geogrid installation at M1-M5.
- 5) Material Inspection - Fosroc Conplast X400 concrete SRC additive.

Safety Audits/Safety Walkarounds

Air quality monitoring at AQ22 was completed.
 Noise monitoring at NQ1, NQ2, NQ3, NQ4 and NQ5 was completed.

Safety and Environmental Incidences

N/A

Compliance to Design and construction methods, approved materials

N/A

Major Quality Issues

N/A

Site Instructions Issued

N/A

Verbal communication

Received sheet pile monitoring data, maximum deflection data (4mm) within design tolerance (33mm).
 Informed EPC to update and rectify the predecessor and successor of each WBS item in mitigation schedule. Impact analysis will be more accurate with correct linkage of each activities.

Meetings

When	Who	What
N/A		

Comments

N/A

FICHTNER

Site Log

Date 20/02/2024 **Site:** Greater Male WTE **Site Representative:** Sofi bin Ismail
 Tuesday
Time on site: **Time off site:** **Completed by:**

Weather:

	Total	Civil	Process	
Workers on Site	0	0	0	<i>Note : Enter this information when it is available, at least once per week as a minimum</i>

Site Activities, Contractors Involved, Major Deliveries, Testing, Inspections

- 1) Dewatering of bunker area continue.
- 2) Bunker - Area 4 base layer compaction test FDT.
- 3) Process Area - Continue second layer of structural backfilling work at M1-M10.

Safety Audits/Safety Walkrounds

Audit on Site Clinic. Based from the medical record cases for months of January & February 2024, high number of cases are related to skin rash which the doctor informed it is due to the workers lack of hygiene effort (ie. Not showering after work & not using clean cloth and sock). Based on these record, ER recommend the EPC to conduct hygiene awareness talk with all workers during weekly toolbox meeting.

Safety and Environmental Incidences

N/A

Compliance to Design and construction methods, approved materials

N/A

Major Quality Issues

N/A

Site Instructions Issued

N/A

Verbal communication

Received sheet pile monitoring data, deflection data (4mm) within design tolerance (33mm).
 Remind EPC to complete the as-built information for completed pilecaps for record.
 Reject NOI for trial mix, request to complete the design mix and finalize the form for additive recording mechanism.

Meetings

When	Who	What
N/A		

Comments

N/A

FICHTNER

Site Log

Date 21/02/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail
 Wednesday
 Time on site: Time off site: Completed by:

Weather:

	Total	Civil	Process	
Workers on Site	0	0	0	<i>Note : Enter this information when it is available, at least once per week as a minimum</i>

Site Activities, Contractors Involved, Major Deliveries, Testing, Inspections

- 1) Dewatering of bunker area continue.
- 2) Bunker - Area 4 1st layer backfilling work in progress. 1st layer compaction test FDT conducted.
- 3) Process Area - Continue second layer of structural backfilling work at M1-M10.
- 4) Material Inspection - Geotextile OXIGEO PP350GSM & Geomembrane OXIPLUS SBS. Request copy of the PO & cert.

Safety Audits/Safety Walkarounds

Safety and Environmental Incidences

Compliance to Design and construction methods, approved materials

Major Quality Issues

Site Instructions Issued

Verbal communication

	When	Who	What
Meetings	10:00am	FIT, URB, AAJV	Weekly Safety Committee Meeting
			a) Highlight to conduct hygiene awareness campaign

Comments

FICHTNER

Site Log

Date: 22/02/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail
 Thursday
 Time on site: Time off site: Completed by:

Weather:

Total	Civil	Process
73	73	0

Note : Enter this information when it is available, at least once per week as a minimum

Workers on Site

**Site Activities,
Contractors
Involved, Major
Deliveries,
Testing,
Inspections**

- 1) Dewatering of bunker area continue.
- 2) Bunker - Area 4 geogrid installation work completed.
- 3) Bunker - Area 4 second layer backfilling work in progress.
- 4) Process Area - Continue second layer of structural backfilling work at M1-M10.
- 5) Concrete Trial Mix for SRC type concrete. Two design mix was conducted.

**Safety
Audits/Safety
Walkarounds**

N/A

**Safety and
Environmental
Incidences**

N/A

**Compliance to
Design and
construction
methods,
approved
materials**

N/A

**Major Quality
Issues**

N/A

**Site Instructions
Issued**

N/A

**Verbal
communication**

Received sheet pile monitoring data, deflection data (8mm) within design tolerance (33mm).

Meetings

When	Who	What
N/A		

Comments

N/A

FICHTNER

Site Log

Date: 23/02/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail

Friday

Time on site: Time off site: Completed by:

Weather:

Total Civil Process

Workers on Site

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Note : Enter this information when it is available, at least once per week as a minimum

Site Activities, Contractors Involved, Major Deliveries, Testing, Inspections

OFF DAY (FRIDAY)

Safety Audits/Safety Walkarounds

Safety and Environmental Incidences

Compliance to Design and construction methods, approved materials

Major Quality Issues

Site Instructions Issued

Verbal communication

	When	Who	What
Meetings	<input type="text" value="N/A"/>		

Comments

FICHTNER

Site Log

Date: 24/02/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail
 Saturday
 Time on site: Time off site: Completed by:

Weather:

Total	Civil	Process
0	0	0

Note : Enter this information when it is available, at least once per week as a minimum

Workers on Site

**Site Activities,
Contractors
Involved, Major
Deliveries,
Testing,
Inspections**

- 1) Dewatering of bunker area continue.
- 2) Bunker - Area 4 second layer backfilling work in progress.
- 3) Bunker - Reinforcement bar fabrication for bunker slab in progress.
- 4) Process Area - Continue second layer of structural backfilling work at M1-M10.

**Safety
Audits/Safety
Walkarounds**

Weekly Toolbox Meeting - Conduct hygiene awareness talk to workers.

**Safety and
Environmental
Incidences**

N/A

**Compliance to
Design and
construction
methods,
approved
materials**

N/A

**Major Quality
Issues**

N/A

**Site Instructions
Issued**

N/A

**Verbal
communication**

Received sheet pile monitoring data, deflection data (11mm) within design tolerance (33mm).

Meetings

When	Who	What
N/A		

Comments

N/A



Greater Male' Waste-to-Energy Project

Greater Male Waste to Energy Project

Site Weekly Report

by the Employer's Representative

Week from	Week to	Prepared by	Signature	Checked by	Signature
25.2.2024	2.3.2024	Sofi bin Ismail		Naahee Nazim	

Progress Review

The works performed during the Reporting Week are as follows:

- Dewatering work for Bunker area continues.
- Bunker - Lean concreting work at Area 4.
- Bunker - Waterproofing membrane installation at Leachate Area completed.
- Bunker - Reinforcement bar and formwork installation at Leachate Area in progress.
- Bunker - Waterproofing membrane installation at Area 1 in progress.
- Process Area - Backfilling work second layer for M1-M10 in progress.
- Temporary laydown area preparation in progress.

Attachment:

Site Daily Logs

Site Photos

The below figure provides an overview of fixed photo locations and angles where photos are taken from in each Reporting Week.

Photos 1 to 5 will include photos according to the map, the remaining photos are taken from elsewhere and are not exactly from the same location and angle in every Weekly Report.

FICHTNER

1



OVERALL - POINT ONE

2



OVERALL - POINT TWO



OVERALL - POINT THREE



OVERALL - POINT FOUR

5



OVERALL - POINT FIVE

6



BUNKER AREA - WATERPROOFING MEMBRANE AT AREA 1 & LEACHATE AREA.

7



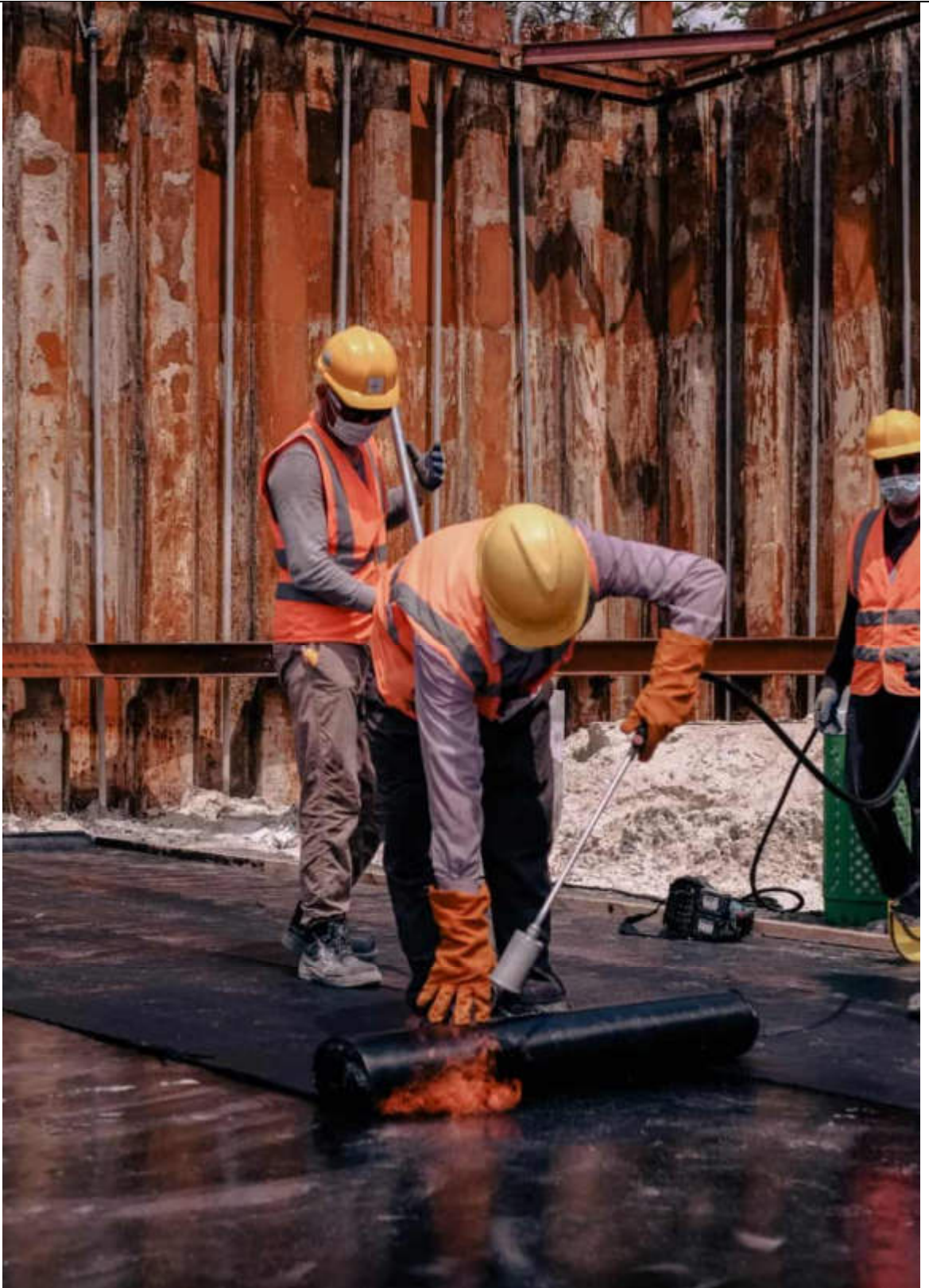
BACKFILLING SECOND LAYER AT PROCESS AREA M1-M10.

8



FORM WORK & REINFORCEMENT BAR AT LEACHATE AREA (BUNKER).

9



WATERPROOFING MEMBRANE INSTALLATION AT BUNKER.

10



SURFACE CLEANING PRIOR TO WATERPROOFING MEMBRANE INSTALLATION.

11



PRIMER APPLICATION BEFORE WATERPROOFING MEMBRANE

FICHTNER

Site Log

Date: 25/02/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail

Sunday

Time on site: Time off site: Completed by:

Weather:

Total Civil Process

73	73	0
----	----	---

Note : Enter this information when it is available, at least once per week as a minimum

Workers on Site

**Site Activities,
Contractors
Involved, Major
Deliveries,
Testing,
Inspections**

- 1) Dewatering of bunker area continue.
- 2) Bunker - Area 4 lean concreting work.
- 3) Bunker - Reinforcement bar fabrication for bunker slab in progress.
- 4) Process Area - Continue second layer of structural backfilling work at M1-M10.
- 5) Temporary laydown area preparation.

**Safety
Audits/Safety
Walkarounds**

**Safety and
Environmental
Incidences**

**Compliance to
Design and
construction
methods,
approved
materials**

**Major Quality
Issues**

**Site Instructions
Issued**

**Verbal
communication**

Received sheet pile monitoring data, maximum deflection data (11mm) within design tolerance (33mm).

Meetings

When	Who	What
4:00pm	FIT, URB, AAJV	Weekly progress monitoring discussion
		a) To ensure concrete pump is in working condition.
		b) Bunker slab concreting to use pump. Crane is not allowed as involve high m3.
		c) To rectify successor and predecessor in mitigation plan.

Comments

FICHTNER

Site Log

Date 26/02/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail
 Monday
 Time on site: Time off site: Completed by:

Weather:

	Total	Civil	Process	
Workers on Site	73	73	0	<i>Note : Enter this information when it is available, at least once per week as a minimum</i>

Site Activities, Contractors Involved, Major Deliveries, Testing, Inspections

- 1) Dewatering of bunker area continue.
- 2) Bunker - Application of waterproofing primer at Leachate Area.
- 3) Bunker - Reinforcement bar fabrication for bunker slab in progress.
- 4) Bunker - Surface cleaning for Area 1.
- 5) Process Area - Continue second layer of structural backfilling work at M1-M10.
- 6) Temporary laydown area preparation.

Safety Audits/Safety Walkarounds

Safety and Environmental Incidences

Compliance to Design and construction methods, approved materials

Major Quality Issues

Site Instructions Issued

Verbal communication

Received sheet pile monitoring data, maximum deflection data (9mm) within design tolerance (33mm).
 Reminded the EPC that waterproofing testing requirement. To ensure testing tools is available before concreting work.

	When	Who	What
Meetings	<input type="text" value="N/A"/>		

Comments

FICHTNER

Site Log

Date: 27/02/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail
 Tuesday
 Time on site: Time off site: Completed by:

Weather:

	Total	Civil	Process	
Workers on Site	0	0	0	<i>Note : Enter this information when it is available, at least once per week as a minimum</i>

Site Activities, Contractors Involved, Major Deliveries, Testing, Inspections

- 1) Dewatering of bunker area continue.
- 2) Bunker - Application of waterproofing membrane at Leachate Area.
- 3) Bunker - Reinforcement bar fabrication for bunker slab in progress.
- 4) Bunker - Application of waterproofing primer for Area 1.
- 5) Bunker - Application of waterproofing membrane for Area 1.
- 6) Process Area - Continue second layer of structural backfilling work at M1-M10.
- 7) Temporary laydown area preparation.

Safety Audits/Safety Walkarounds

Safety and Environmental Incidences

Compliance to Design and construction methods, approved materials

Major Quality Issues

Site Instructions Issued

Verbal communication

	When	Who	What
Meetings	N/A		

Comments

FICHTNER

Site Log

Date 28/02/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail

Wednesday

Time on site: Time off site: Completed by:

Weather:

	Total	Civil	Process	
Workers on Site	0	0	0	<i>Note : Enter this information when it is available, at least once per week as a minimum</i>

Site Activities, Contractors Involved, Major Deliveries, Testing, Inspections

- 1) Dewatering of bunker area continue.
- 2) Bunker - Inspection of waterproofing membrane at Leachate Area.
- 3) Bunker - Reinforcement bar fabrication for bunker slab in progress.
- 4) Bunker - Application of waterproofing primer for Area 1.
- 5) Bunker - Application of waterproofing membrane for Area 1.
- 6) Process Area - Continue second layer of structural backfilling work at M1-M10.
- 7) Temporary laydown area preparation.

Safety Audits/Safety Walkarounds

Safety and Environmental Incidences

Compliance to Design and construction methods, approved materials

Major Quality Issues

Site Instructions Issued

Verbal communication Received sheet pile monitoring data, deflection data (6mm) within design tolerance (33mm).

	When	Who	What
Meetings	<input type="text" value="N/A"/>		

Comments

FICHTNER

Site Log

Date: 29/02/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail
 Thursday
 Time on site: Time off site: Completed by:

Weather:

Total	Civil	Process
0	0	0

Note : Enter this information when it is available, at least once per week as a minimum

Workers on Site

**Site Activities,
Contractors
Involved, Major
Deliveries,
Testing,
Inspections**

- 1) Dewatering of bunker area continue.
- 2) Bunker - Geotextile installation to protect waterproof membrane at Leachate Area.
- 3) Bunker - Reinforcement bar fabrication for bunker slab in progress.
- 4) Bunker - Application of waterproofing membrane for Area 1.
- 5) Process Area - Continue second layer of structural backfilling work at M1-M10.
- 6) Temporary laydown area preparation.

**Safety
Audits/Safety
Walkarounds**

N/A

**Safety and
Environmental
Incidences**

N/A

**Compliance to
Design and
construction
methods,
approved
materials**

N/A

**Major Quality
Issues**

N/A

**Site Instructions
Issued**

N/A

**Verbal
communication**

Received sheet pile monitoring data, deflection data (7mm) within design tolerance (33mm).

Meetings

When	Who	What
N/A		

Comments

N/A

FICHTNER

Site Log

Date: 01/03/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail

Friday

Time on site: Time off site: Completed by:

Weather:

Total Civil Process

Workers on Site

--	--	--

Note : Enter this information when it is available, at least once per week as a minimum

Site Activities, Contractors Involved, Major Deliveries, Testing, Inspections

OFF DAY (FRIDAY)

Safety Audits/Safety Walkarounds

Safety and Environmental Incidences

Compliance to Design and construction methods, approved materials

Major Quality Issues

Site Instructions Issued

Verbal communication

	When	Who	What
Meetings	<input type="text" value="N/A"/>		

Comments

FICHTNER

Site Log

Date: 02/03/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail

Saturday

Time on site: Time off site: Completed by:

Weather:

Total	Civil	Process
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0	0	0
---	---	---

Note : Enter this information when it is available, at least once per week as a minimum

Workers on Site

**Site Activities,
Contractors
Involved, Major
Deliveries,
Testing,
Inspections**

- 1) Dewatering of bunker area continue.
- 2) Bunker - Reinforcement bar and formwork installation for slab at Leachate Area.
- 3) Bunker - Reinforcement bar fabrication for bunker slab in progress.
- 4) Bunker - Application of waterproofing membrane for Area 1.
- 5) Process Area - Continue second layer of structural backfilling work at M1-M10.
- 6) Temporary laydown area preparation.

**Safety
Audits/Safety
Walkarounds**

Discussion on Emergency Respond Plan for cases in Bunker area. Few items to be rectify and updated. To discuss further on the ERP for Bunker.

**Safety and
Environmental
Incidences**

N/A

**Compliance to
Design and
construction
methods,
approved
materials**

N/A

**Major Quality
Issues**

N/A

**Site Instructions
Issued**

N/A

**Verbal
communication**

Received sheet pile monitoring data, deflection data (10mm) within design tolerance (33mm).

Meetings

When	Who	What
N/A		

Comments

N/A

Environmental Monitoring Report

PUBLIC

Project Number: 51077-003
Quarterly Report (January - March 2024)
May 2024

Maldives: Greater Male Waste-to-Energy Project

Part C: Appendices

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Site Inspection Report

No.: SI-24-03

by the Employer's Representative

Dates / Time of the Visit	Conducted by [ER]	Signature	Conducted by [ER]	Signature
06 th , 27 th March 2024 09:00 hrs – 17:00 Hrs	Nahee Nazim Deputy Team Leader Fichtner / REM		Mariyam Rifga Environmental Safeguard Fichtner / REM	

General Observations

Sn	Particulars	Details / Remarks	Reference
1	Change in construction methodology with reference to same given in EIA report, if any	-	-
2	Not anticipated/accounted project specific activity (ies) and impacts observed which were not considered in EIA study report, if any, either on site or adjacent by the Contractor or other stakeholders.	Long term impacts of working close to the landfill has been discussed, and the DBO is working on a plan to monitor the air quality around the campsite and mitigation measures to be taken based on the findings once the monitoring starts. Expected to start late Q1 or early Q2 of 2024.	-
3	Any activity or sign observed within and adjacent to project site which may lead to soil and ground & marine water contamination	Presence of Shipwrecks adjacent to quay wall and movement of speed boats, ships (medium and large) on the route and adjacent to quay wall of island . Leachate and run off water from waste dumping site of WAMCO adjacent to project site.	Photo 19, 20
4	Total number of man power at project as per attendance register on date of visit a) ER Representative b) DBO Representative c) HO Management Team d) EPC Contractor Direct Staff e) EPC Contractor Indirect Staff f) EPC Contractor Direct Site Workers g) Security (Gage) h) ELS (Concrete Laboratory) i) Villa Company (Batching Plant)	Total of 159 workers deployed by the DBO/EPC. 1 1 0 38 25 78 7 4 6	-
5	Others, if any	-	-

Progress Observations

No.	Particulars	Details / Remarks	Reference
1	Temporary facilities	New staff and accommodation buildings have been completed, new storage tents have been completed. Reinforcement work yard has been completed.	-
2	Site Preparation	Daily monitoring of sheet piles for any movement is ongoing in the bunker area.. Concrete batching plant is operational. Backfilling, compaction, geotextile installation is on going. Pile cap concrete works and lean concrete work is continuing.	Photo 24
3	Excavation & Dewatering	Excavation work for the bunker and the main process building has been completed. The ramp at the bunker area has been completed. Well point dewatering system around the bunker area has been setup and continuous dewatering works is ongoing. Monthly monitoring of the discharge water is carried out.	Photo 10

Environmental Observations

Sn	Particulars	Details / Remarks	Reference
1	Status of adequacy of compliance of CEMP and ESMS including SOPs in place applicable to construction activities visited on the basis of assessment made on randomly basis, on site or adjacent. ¹	For construction phase, various plans and SOPs as part of ESMS as mentioned in CEMP are in the process of final approval. All documents are currently approved with comments. Implementation of the said plans is an ongoing process and efforts are in place to implement the CEMP. All site works are carried out after approval of method statements.	-
2	Status of adequacy of environment monitoring as envisaged in CEMP on the basis of assessment made on randomly basis.	Being conducted as scheduled. Monthly monitoring of ambient air quality, noise levels and water quality is ongoing. The data is collected, for ambient air and noise level, however the contractor is yet to submit the reports for the month of January and February as they in the process of changing the sub contractor assigned to this work.	-
3	Status of adequacy of level of understanding of environment hazards and corresponding designed mitigation measures of construction team including supervisors and workers on site or adjacent on the basis of assessment made on randomly basis.	Toolbox talks are being conducted on a daily basis. Training is conducted monthly as per requirement for the month. Implementation of CEMP, H&S plan and other management plans is ongoing.	-
4	Status of adequacy of record keeping including data reported in monthly environment report on the basis of assessment made on randomly basis.	Site activities are captured on the Daily Progress Reports prepared by the EPC and digital copies of the report are kept on record on the ACONEX project management system and shared with all stakeholders.	-

¹aspects includes (but not limited to) solid wastes (hazardous and non-hazardous including construction, plastic, E-waste, battery and bio-medical) management, Storage and handling of construction materials, waste water (from domestic and construction activities and run off due to rain) management, Air emission (from mainly DG sets, diesel driven machinery and equipment, Raw mix plant, fugitive, vehicular movement, etc.) management, management of construction noise level etc.

Health and Safety Observation

Sn	Aspects	Details / Remarks	Reference
Labour - health, safety and welfare			
1	Status of adequacy of HSE /Occupational Health and Safety management plan and ESMS including SOPs applicable to construction activities visited on the basis of randomly assessment made. ²	SOPS are in place for specific work activities and is an ongoing process. However following observations were made: <ul style="list-style-type: none"> Impacts/risks to workers due to presence of dumping site have not been identified, but a plan to monitor air quality is being prepared by the DBO. Documents on subject were under process of finalization for getting approval of ER/PMU for construction phase. All HSE documents are "Approved with comments" at this stage. Presence of live electrical cable supplying electricity to project from STELCO runs within the site boundary. HDC and Stelco have been informed of the matter and the cable is to be re-routed at the earliest. Planning works is in progress between stakeholders. 	-
2	Status of adequacy of HSE monitoring as envisaged in CEMP, HSE Plan, ESMS & SOPs etc.	Documents on subject as part of CEMP, HSE Plan and SOPs as part of ESMS have been prepared and submitted for approval of ER. All HSE related documents are "Approved" or "Approved with comments" and the final revisions are being worked on by the EPC/DBO HSE team. HSE monitoring and audits are conducted by the EPC as well as Rambol on behalf of the DBO. Implementation of the CEMP and HSE plans is ongoing. SOP's are in place for all ongoing construction work and is an ongoing process as work progress on site.	-
3	Status of adequacy of on-site Emergency Preparedness and Response on the basis of randomly assessment made (emergency response team, safety committee, fire fighting, mock drills, assembly point, evacuation, accident/incident reporting etc.)	SOPs on subject is in place and drills have been conducted on site. Training program is prepared on a monthly basis as well as drills are being conducted by the HSE team on site. Assembly point established and inadequate safety signage were in place however no safety committee is in place. Adequate medical aid facilities (e.g. availability of stretcher and medicine, medical evacuation etc) at health center located within project site and full time qualified doctor and nurse has been posted.	-
4	Status of adequacy of workers accommodations including fresh water for drinking & others, hygienic with reference to waste water and domestic solid waste management and other welfare facilities (e.g. Kitchen/food, medical, toilets, recreation, shelters, spray of mosquitoes and odour repellent etc.) maintained at project site on the basis of randomly assessment made.	Worker's accommodations including toilets are operational, and deemed sufficient for the current workers on site. Fresh water supply is from MWSC utility pipeline and drinking water filters are being used, along with bottled drinking water. Waste collection bins have been placed and collected to the main waste collection area and handed over to WAMCO for disposal. A gym and recreational area has been completed and is in use. Designated smoking areas and shelters have been established. Waste water treatment plant is operational.	-
5	Status of adequacy of housekeeping within project site on the basis of randomly assessment made.	Site is kept generally clean and organized. Scheduled mass house-keeping is being conducted monthly. Designated persons assigned for cleaning and logs kept for toilets. Designated waste collection area is established, waste bins are installed through out site camp area. All waste produced is logged and recorded.	-
6	Status of adequacy of security management(availability of adequate number of security guards, fencing of project site, procedure(s) to allow entry for visitors and workers etc. understanding of role of security guards as per contract) of project site on the basis of randomly assessment made.	Gates in place, and visitors register in form of loose sheets, a proper register is to be maintained. Security guards in place at the 3 entry points to the site. CCTV system is installed. Adequate lighting is provided around the site.	Photo 18
7	Status of adequacy of handling of workers complaint(s) received on HSE, human resources and welfare aspects as per complaint register kept at site on the basis of randomly assessment made.	Boxes placed for for internal grievance redress mechanism at several places within the site area. No grievance record has been submitted to the ER however it is noted that several such complaints have been dealt with by the EPC at tier 1 level. Notices and forms are in several languages.	-

²e.g assessment of activity wise associated hazards, work permit, PPEs, first aid, tool box talk, barricading, COVID-19, electrical safety etc.

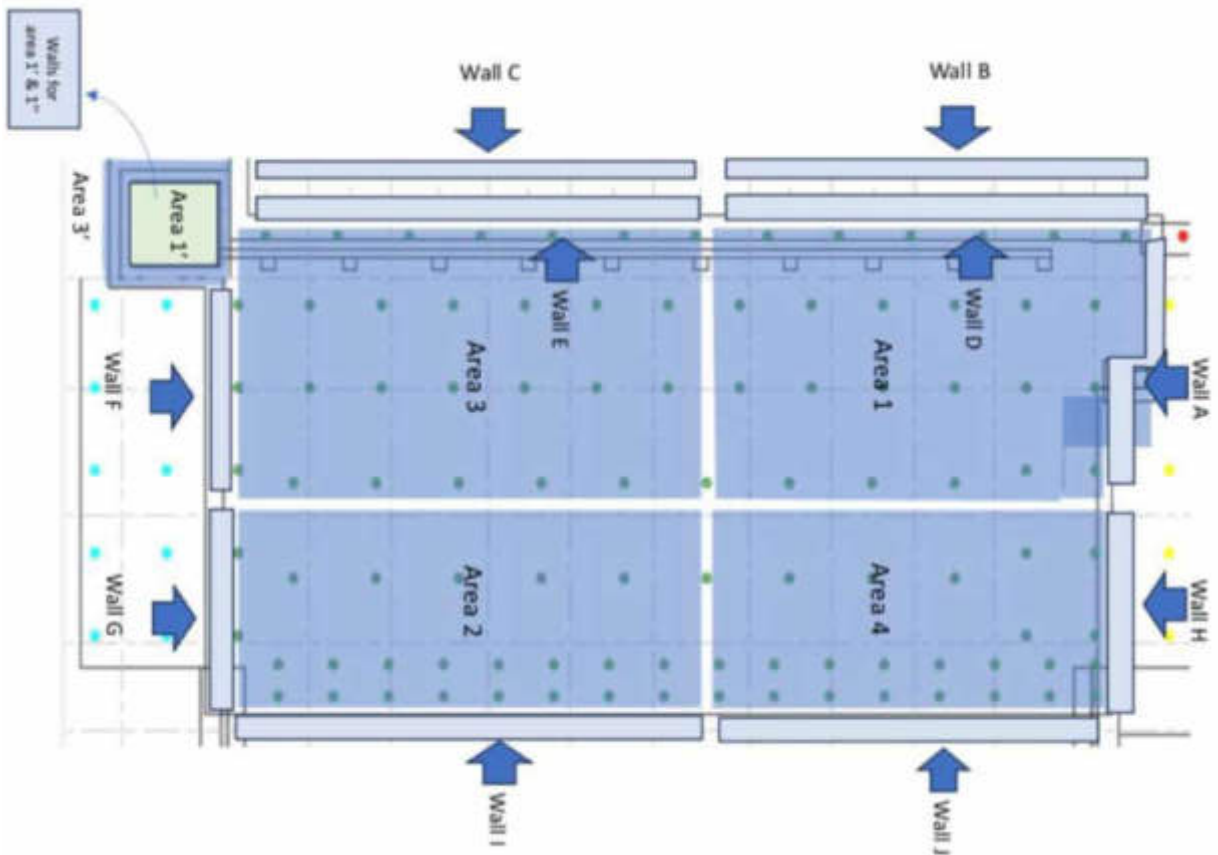
8	Status of adequacy of record keeping including data reported in monthly HSE report on the basis of randomly assessment made.	Site activities are captured on the Daily Progress Reports prepared by the EPC and digital copies of the report are kept and digital record is shared with all parties.	-
Community- health, safety and welfare			
9	Status of adequacy of Community Health and Safety plan and ESMS including SOPS on the basis of randomly assessment made (mainly during transportation of men, materials and machinery, influx of workers from other places, contamination of air, land and marine water and ecology, if any etc.)	Pre-construction environment baseline monitoring is being carried out as per CEMP on regular basis. However, for construction phase, various plans and SOPs as part of ESMS mentioned in CEMP and H&S plan are yet to be finalized for approval from ER/PMU, several rounds of review and comments have been shared by the ER with the DBO contractor on the documents that are being prepared. Even though the process of developing the documents, measures are taken to implement these as an ongoing process.	-
10	Status of adequacy of off-site Emergency Preparedness and Response on the basis of randomly assessment made (e.g. response team, mock drills, mutual aids, evacuation plan, accident/incident reporting etc.)	Plans and SOPs on subject are under process of finalization for getting approval of ER/PMU for construction phase. Regular training and drills are being conducted on site and records are kept.	-
12	Status of adequacy of handling of community complaint(s) received on Environment, HSE and welfare aspects on the basis of randomly assessment made.	To comply with contract's obligations, community engagement plan is yet to be submitted for getting approval of ER/PMU. The site being in the industrial area no complaints were received this month.	-

As the checklist for OHS and EMS was at finalization stage, some aspects of checklist was noted as a trial in this visit. A thorough inspection of checklist will be done in April 2024 inspections.

HSE Checklist

Sn	Aspects	Details / Remarks	Reference
Status of construction activities on site:			
1	Completed Activities	Spun pile driving works have been completed for the main process building and the bunker area.	Photo 24
2	Works in progress	Foundation slab work in the bunker area. Backfilling and compaction in the main process building area.	Photo 2-9, 23, 24
3	New activities	Preparation and installation of the reinforcement and formwork for the bunker wall has started.	Photo 4, 7, 8, 17, 23, 24
Status of Permits:			
1	Excavation permit	Excavation permit is granted by HDC and is valid until the end of works.	-
2	Dewatering permit	Dewatering permit is granted by EPA and is in place and valid until 23/04/24.	-
Work related:			
1	No. of shifts per day	Work is progressing in 2 shifts per day(day and night shift) this will continue till end of the month of ramadan.	-
2	Working hours per shift	8hrs + 2hrs Overtime	-
3	Working hour records	Collected and logged by the time keeper	-
4	Overtime work records	No overtime work has been done for the reporting period.	-
Construction Camp Area			
1	Accommodation occupancy	51 rooms out of total 79 rooms are occupied.	-
Complaints recieved			
1	Staff complaints	No complaints recorded for the reporting period.	-
2	External complaints	No complaints recorded for the reporting period.	-

Bunker area work area designations



Site Photos / Observations



Photo 01 06/03/24 – Site visit conducted by PMU – Project Director – Mr. Murthaza and Project Manager – Mr. Zameel



Photo 02 06/03/24 – *Bunker Area 1 reinforcement installation work for the bunker bottom slab continues*

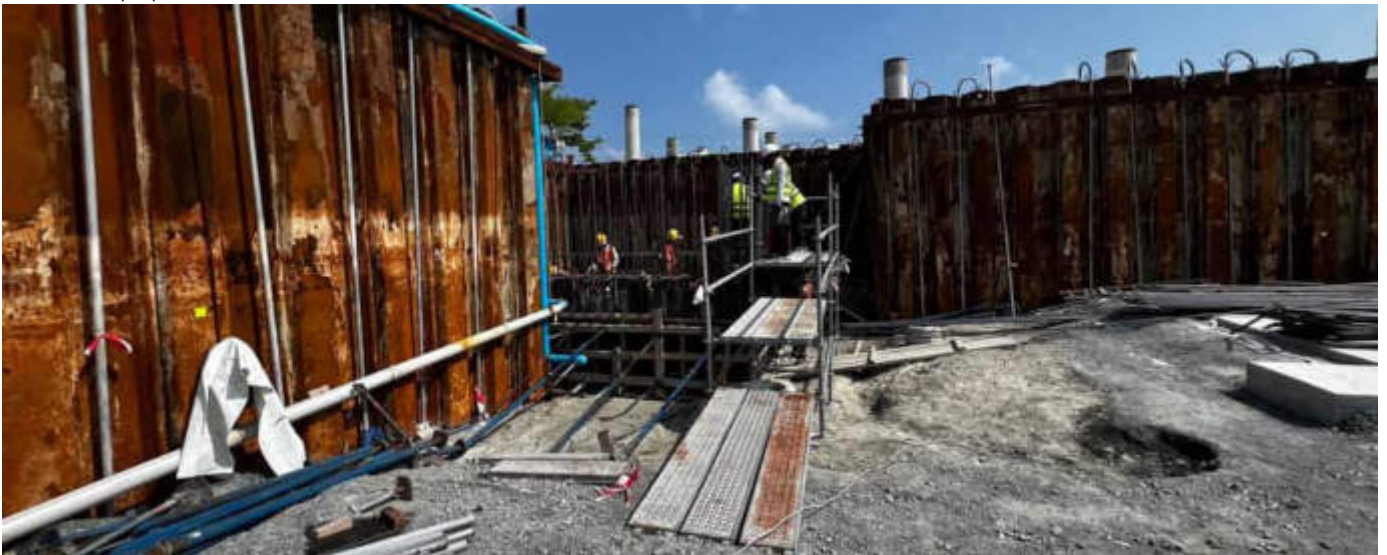


Photo 03 06/03/24 – *Safe working platforms are in place with adequate railings and safety measures are in place within the bunker area.*



Photo 04 06/03/24 – *Leachate pit area (Area 1) reinforcement installation work is in progress.*



Photo 05 06/03/24 – Ramboll staff conducting HSE inspection on site.



Photo 06 06/03/24 – Bunker Area 4 geomembrane installation work is in progress.



Photo 07 06/03/24 – Reinforcement installation work in the Bunker Area 1 and Area 3 continues.



Photo 08 06/03/24 – Reinforcement installation work in the bunker leachate pit (Area 1) continues.



Photo 09 06/03/24 – Sathya from DBO conducting inspection of the geomembrane installation in the bunker area.



Photo 10 06/03/24 – Dewatering works continues and the sedimentation pit is clean and water quality tests are carried out at the outfall monthly.



Photo 11 06/03/24 – Concrete mixer vehicles have been delivered to site, but registration process is yet to be completed.



Photo 12 06/03/24 – Concrete batching plant is operational and operated by the subcontractor Villa Pvt. Ltd.



Photo 13 06/03/24 – Lightning conductor is on site and is to be installed on top of the batching plant silos.



Photo 14 06/03/24 – HSE statistics board at the EPC site office.



Photo 15 27/03/24 – ER team members Asiyath -Civil Engineer and Rifga – Environmental Safeguard with Roshan - DBO Environmental Health and Safety Manager



Photo 16 27/03/24 – Asiyath and Rifga during the site walkabout.



Photo 17 27/03/24 – Overall bunker construction area. Reinforcement installation works continues.



Photo 18 27/03/24 – Main entrance gate to work site, security guard posts in place and manned, CCTV is operational, Signboards are placed around the gate and construction site safety instructions are in place, including vehicle speed limits etc.

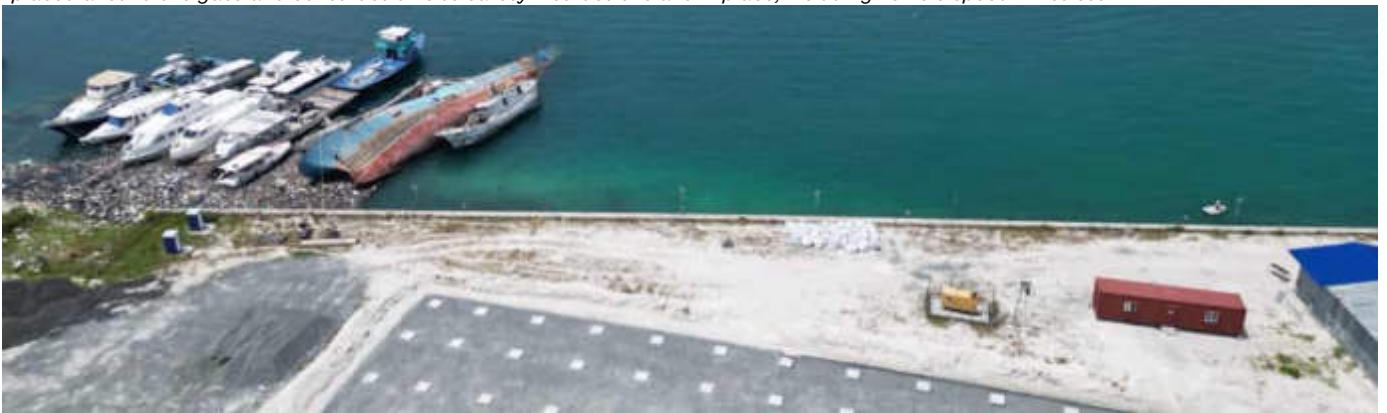


Photo 19 27/03/24 – The shipwrecks just outside the quaywall remain and is yet to be removed by HDC.



Photo 20 27/03/24 – The shipwrecks just outside the quaywall remain and is yet to be removed by HDC.



Photo 21 27/03/24 – PMDSC (ER) team members – Mariyam Rifqa, Sofi Ismail, Asiyath Ibrahim and Nahee Nazim during site visit.



Photo 22 27/03/24 – Signboards near worksite was in English, with graphics indicating the message.

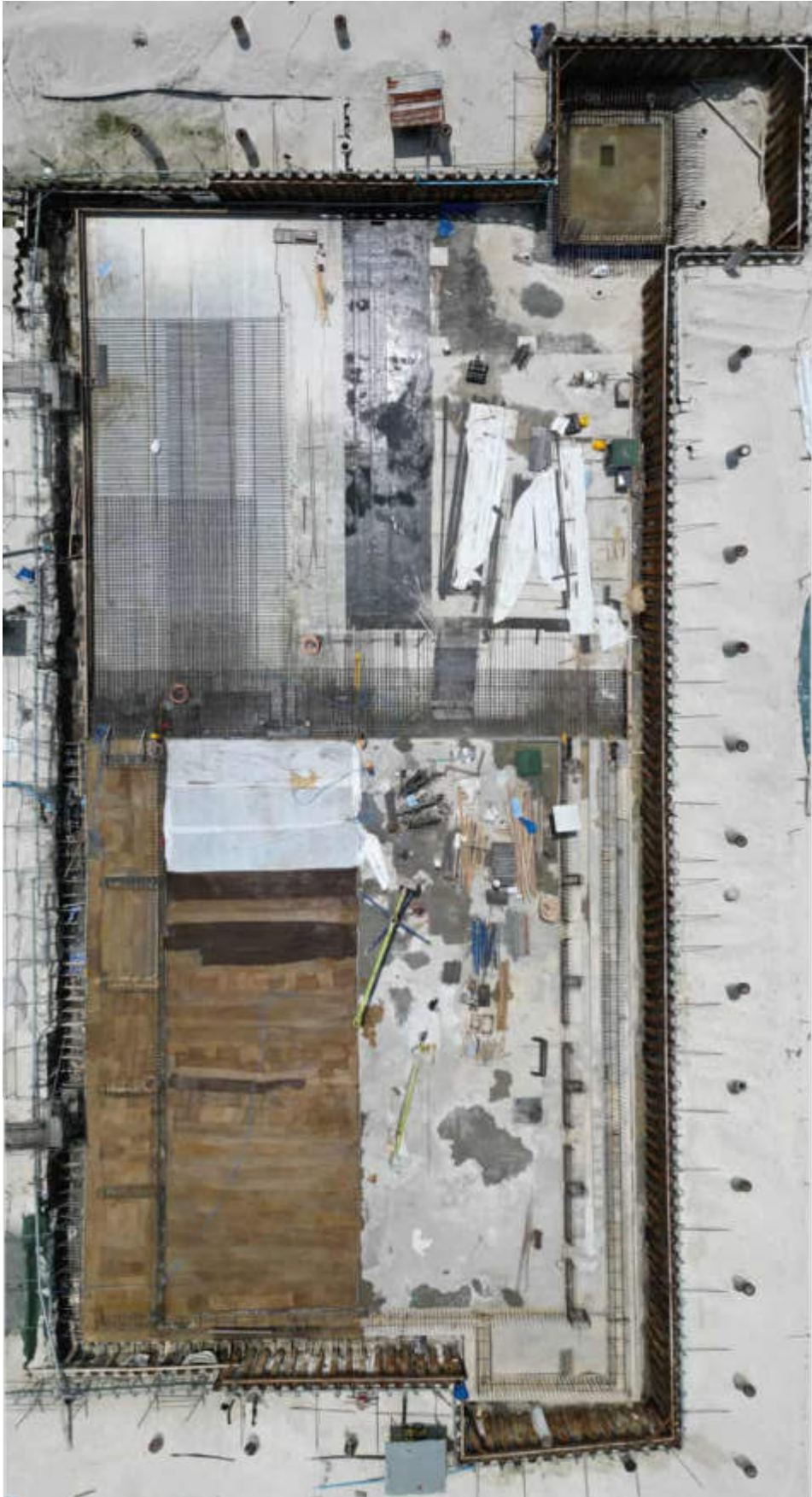


Photo 23 27/03/24 – Bunker area aerial view.

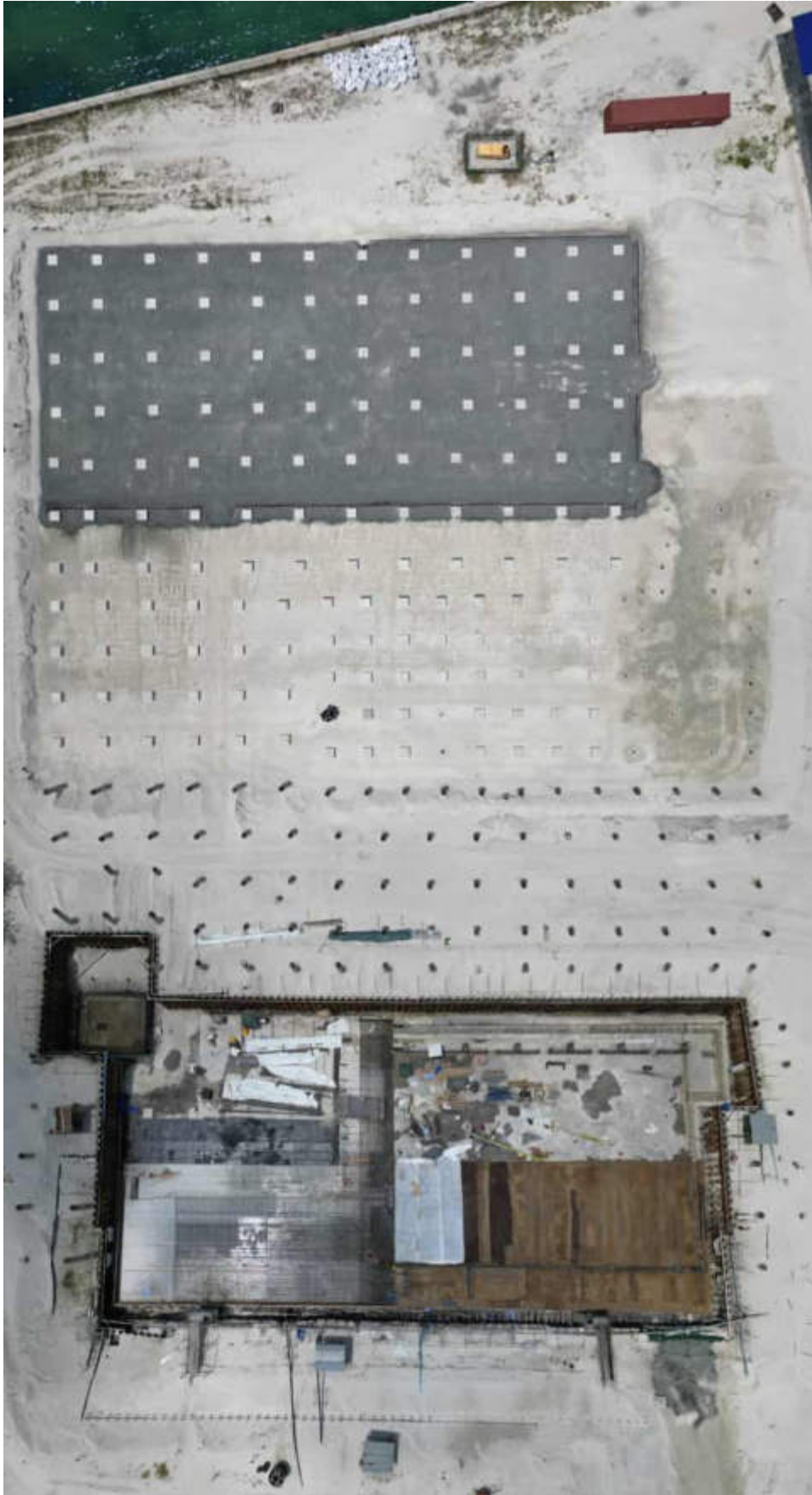


Photo 24 27/03/24 – Overall construction site, showing waste bunker area(bottom) and the main process building area (top)



Greater Male' Waste-to-Energy Project

Greater Male Waste to Energy Project

Site Weekly Report

by the Employer's Representative

Week from	Week to	Prepared by	Signature	Checked by	Signature
3.3.2024	9.3.2024	Sofi bin Ismail		Naahee Nazim	

Progress Review

The works performed during the Reporting Week are as follows:

- Dewatering work for Bunker area continues.
- Bunker - Reinforcement bar and formwork installation at Leachate Area completed.
- Bunker - Earthing cable & water stop installation at Leachate Area completed.
- Bunker - Concrete casting of slab at Leachate Area completed.
- Bunker - Waterproofing membrane installation at Area 1 in progress.
- Bunker - Geotextile layer installation at Area 1 in progress.
- Bunker - Reinforcement bar & formwork at Area 1 in progress.
- Process Area - Backfilling work second layer for M1-M10 completed.
- Temporary laydown area preparation in progress.

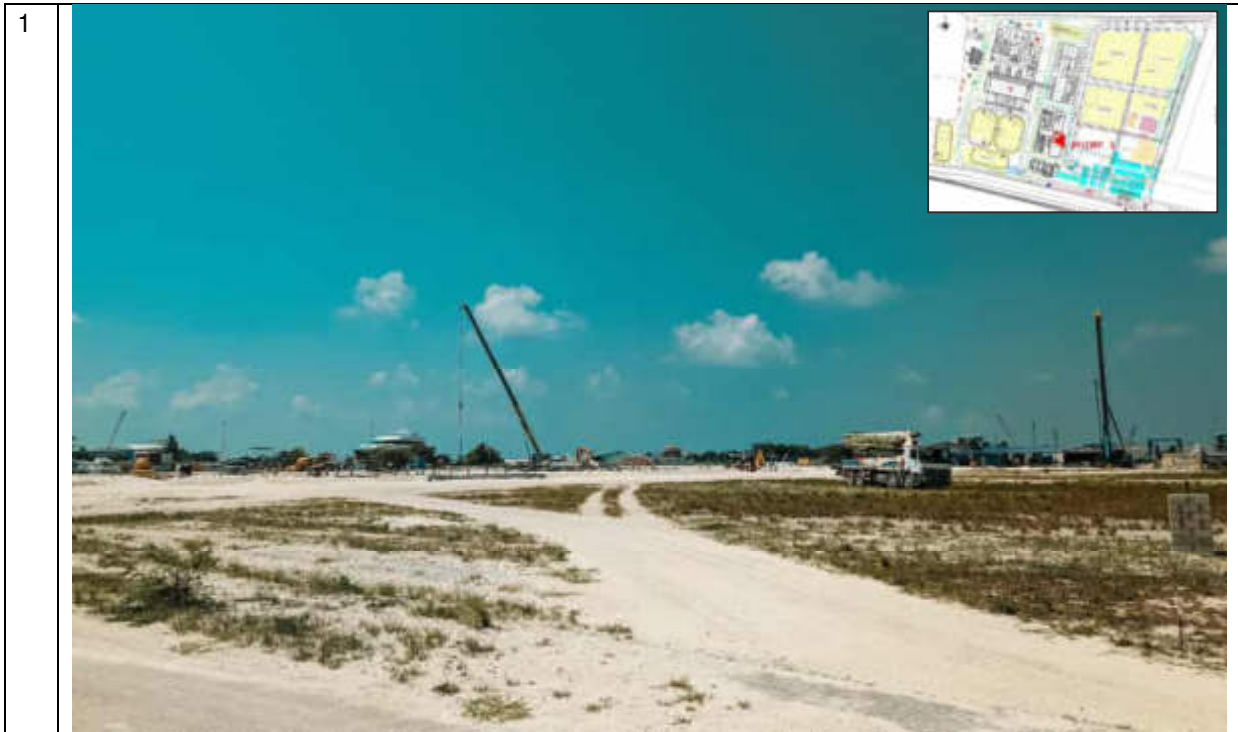
Attachment:

Site Daily Logs

Site Photos

The below figure provides an overview of fixed photo locations and angles where photos are taken from in each Reporting Week.

Photos 1 to 5 will include photos according to the map, the remaining photos are taken from elsewhere and are not exactly from the same location and angle in every Weekly Report.



OVERALL - POINT ONE



OVERALL - POINT TWO



OVERALL - POINT THREE



OVERALL - POINT FOUR

5



OVERALL - POINT FIVE

6



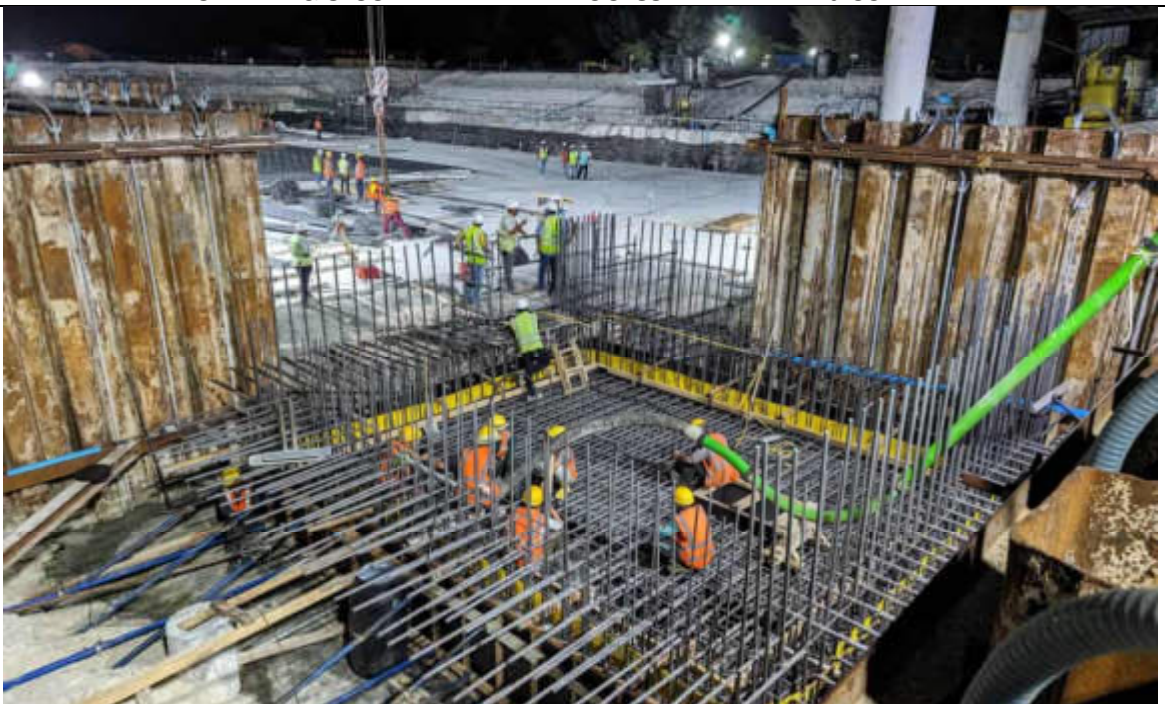
BUNKER AREA - REINFORCEMENT BAR & FORMWORK AT AREA 1 IN PROGRESS.

7



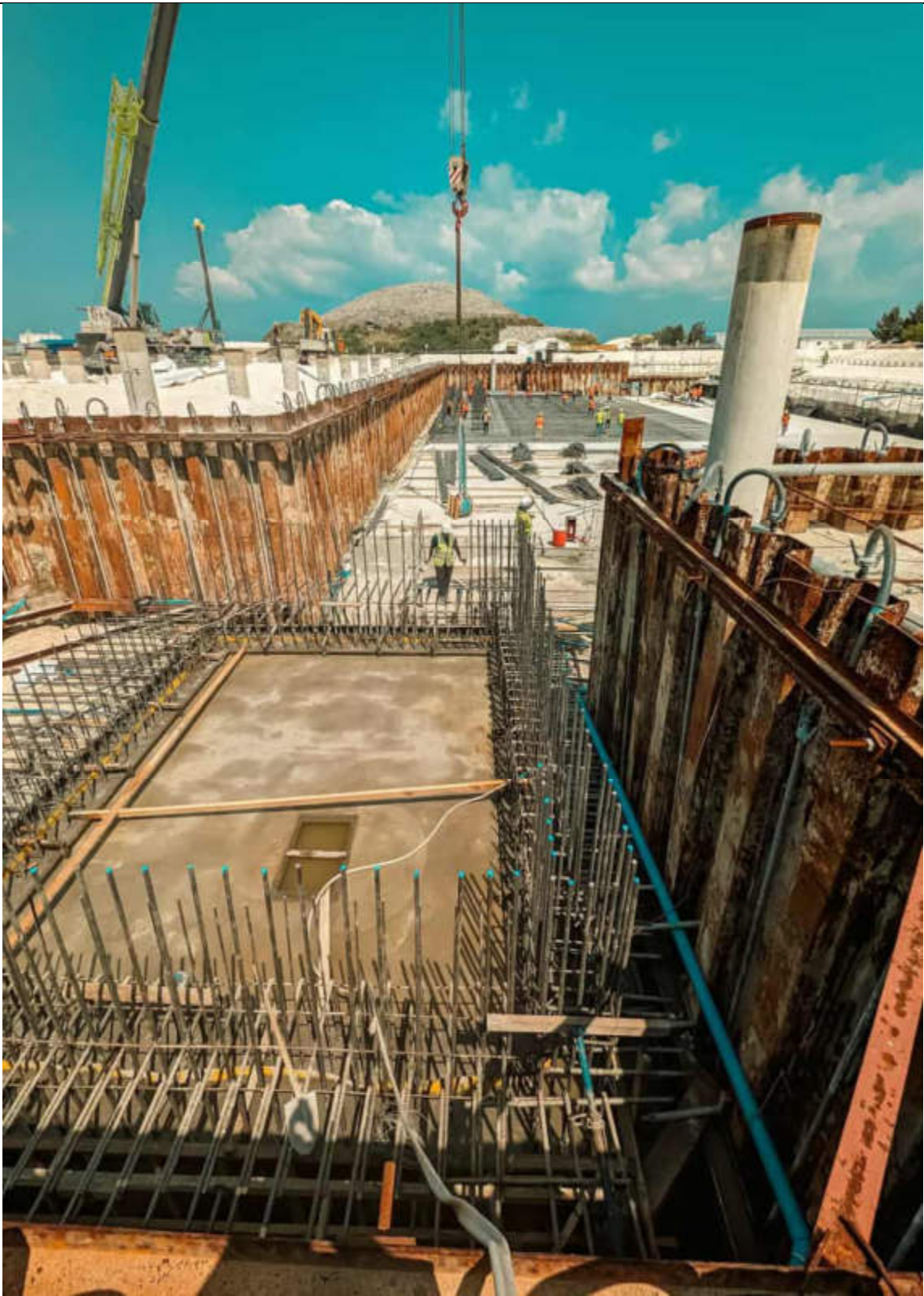
BACKFILLING SECOND LAYER AT PROCESS AREA M1-M10 COMPLETED.

8



SLAB CONCRETING WORK AT LEACHATE AREA (BUNKER).

9



COMPLETED LEACHATE AREA - BASE SLAB.

10



REINFORCEMENT BAR & FORM WORK AT AREA 1 INSTALLATION.

11



EARTHING CABLE AND WATERSTOP INSTALLATION AT LEACHATE AREA.

FICHTNER

Site Log

Date: 03/03/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail

Sunday

Time on site: Time off site: Completed by:

Weather:

Total Civil Process

73	73	0
----	----	---

Note : Enter this information when it is available, at least once per week as a minimum

Workers on Site

**Site Activities,
Contractors
Involved, Major
Deliveries,
Testing,
Inspections**

- 1) Dewatering of bunker area continue.
- 2) Bunker - Reinforcement bar and formwork installation for slab at Leachate Area.
- 3) Bunker - Application of geotextile layer for Area 1.
- 4) Bunker - Application of waterproofing membrane for Area 1.
- 5) Process Area - Continue second layer of structural backfilling work at M1-M10.
- 6) Temporary laydown area preparation.

**Safety
Audits/Safety
Walkarounds**

Safety walkarounds. Highlighted few critical finding for the Contractor to rectify:
 a) To have competent person to verifying temporary staging/platform readiness and tagging.
 b) To update ERP complying to risk assesment at Bunker Area. To have appropriate measure for emergency escape and recovery.

**Safety and
Environmental
Incidences**

N/A

**Compliance to
Design and
construction
methods,
approved
materials**

N/A

**Major Quality
Issues**

N/A

**Site Instructions
Issued**

N/A

**Verbal
communication**

Received sheet pile monitoring data, maximum deflection data (7mm) within design tolerance (33mm).

Meetings

When	Who	What
4:00pm	FIT, URB, AAJV	Weekly progress monitoring discussion
		a) To develop monthly material requirement complying to schedule.
		b) Highlight reinforcement bar, formwork & concreting work requirement.
		c) Briefing on Ramadhan schedule and shift arrangement.

Comments

N/A

FICHTNER

Site Log

Date 04/03/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail
 Monday
 Time on site: Time off site: Completed by:

Weather:

	Total	Civil	Process	
Workers on Site	73	73	0	<i>Note : Enter this information when it is available, at least once per week as a minimum</i>

Site Activities, Contractors Involved, Major Deliveries, Testing, Inspections

- 1) Dewatering of bunker area continue.
- 2) Bunker - Reinforcement bar and formwork installation for slab at Leachate Area.
- 3) Bunker - Application of geotextile layer for Area 1.
- 4) Bunker - Reinforcement bar and formwork installation for slab at Area 1.
- 5) Temporary laydown area preparation.

Safety Audits/Safety Walkarounds Water sampling for construction, camp, discharge water of WWTP, drinking water and dewatering water for the construction stage monitoring.

Safety and Environmental Incidences N/A

Compliance to Design and construction methods, approved materials N/A

Major Quality Issues N/A

Site Instructions Issued N/A

Verbal communication Received sheet pile monitoring data, maximum deflection data (7mm) within design tolerance (33mm).

	When	Who	What
Meetings	N/A		

Comments N/A

FICHTNER

Site Log

Date: 05/03/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail
 Tuesday
 Time on site: Time off site: Completed by:

Weather:

	Total	Civil	Process
Workers on Site	0	0	0

Note : Enter this information when it is available, at least once per week as a minimum

Site Activities, Contractors Involved, Major Deliveries, Testing, Inspections

- 1) Dewatering of bunker area continue.
- 2) Bunker - Reinforcement bar and formwork installation for slab at Leachate Area.
- 3) Bunker - Application of geotextile layer for Area 1.
- 4) Bunker - Reinforcement bar and formwork installation for slab at Area 1.
- 5) Temporary laydown area preparation.

Safety Audits/Safety Walkarounds

Safety and Environmental Incidences

Compliance to Design and construction methods, approved materials

Major Quality Issues

Site Instructions Issued

Verbal communication

Meetings	When	Who	What
	<input type="text" value="N/A"/>		

Comments

FICHTNER

Site Log

Date 06/03/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail
 Wednesday
 Time on site: Time off site: Completed by:

Weather:

	Total	Civil	Process	
Workers on Site	0	0	0	<i>Note : Enter this information when it is available, at least once per week as a minimum</i>

Site Activities, Contractors Involved, Major Deliveries, Testing, Inspections

- 1) Dewatering of bunker area continue.
- 2) Bunker - Reinforcement bar and formwork installation for slab at Leachate Area.
- 3) Bunker - Application of geotextile layer for Area 1.
- 4) Bunker - Reinforcement bar and formwork installation for slab at Area 1.
- 5) Material Delivery - 15 tonne of SRC Cement delivered to site.

Safety Audits/Safety Walkarounds

Safety and Environmental Incidences

Compliance to Design and construction methods, approved materials

Major Quality Issues

Site Instructions Issued

Verbal communication
 Received sheet pile monitoring data, deflection data (12mm) within design tolerance (33mm).
 Explain to DBO & AAJV the concrete cover and reinforcement bar requirement as per BS8666, BS8110 & BS7973.

	When	Who	What
Meetings	<input type="text" value="N/A"/>		

Comments

FICHTNER

Site Log

Date: 07/03/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail
 Thursday
 Time on site: Time off site: Completed by:

Weather:

Total	Civil	Process
0	0	0

Note : Enter this information when it is available, at least once per week as a minimum

Workers on Site

**Site Activities,
Contractors
Involved, Major
Deliveries,
Testing,
Inspections**

1) Dewatering of bunker area continue.
 2) Bunker - Reinforcement bar and formwork installation for slab at Leachate Area.
 3) Bunker - Earthing Cable and Water Stop installation for slab at Leachate Area.
 4) Bunker - Reinforcement bar and formwork installation for slab at Area 1.

**Safety
Audits/Safety
Walkarounds**

N/A

**Safety and
Environmental
Incidents**

N/A

**Compliance to
Design and
construction
methods,
approved
materials**

N/A

**Major Quality
Issues**

N/A

**Site Instructions
Issued**

N/A

**Verbal
communication**

Received sheet pile monitoring data, deflection data (12mm) within design tolerance (33mm).

Meetings

When	Who	What
N/A		

Comments

N/A

FICHTNER

Site Log

Date: 08/03/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail

Friday

Time on site: Time off site: Completed by:

Weather:

Total Civil Process

Workers on Site

--	--	--

Note : Enter this information when it is available, at least once per week as a minimum

Site Activities, Contractors Involved, Major Deliveries, Testing, Inspections

OFF DAY (FRIDAY)

Safety Audits/Safety Walkarounds

Safety and Environmental Incidences

Compliance to Design and construction methods, approved materials

Major Quality Issues

Site Instructions Issued

Verbal communication

Meetings	When	Who	What
	<input type="text" value="N/A"/>		

Comments

FICHTNER

Site Log

Date: 09/03/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail

Saturday

Time on site: Time off site: Completed by:

Weather:

Total Civil Process

0	0	0
---	---	---

Note : Enter this information when it is available, at least once per week as a minimum

Workers on Site

**Site Activities,
Contractors
Involved, Major
Deliveries,
Testing,
Inspections**

- 1) Dewatering of bunker area continue.
- 2) Bunker - Reinforcement bar and formwork installation for slab at Leachate Area.
- 3) Bunker - Earthing Cable and Water Stop installation for slab at Leachate Area.
- 4) Bunker - Concreting the Leachate Area including the kicker. Started at 7:30pm finished at 1:00am.
- 5) Bunker - Reinforcement bar and formwork installation for slab at Area 1.

**Safety
Audits/Safety
Walkarounds**

N/A

**Safety and
Environmental
Incidences**

N/A

**Compliance to
Design and
construction
methods,
approved
materials**

N/A

**Major Quality
Issues**

N/A

**Site Instructions
Issued**

N/A

**Verbal
communication**

Received sheet pile monitoring data, deflection data (12mm) within design tolerance (33mm).
Discussion with URB & AAJV on the timeline & dateline to finalize the OSH Monitoring Plan.

Meetings

When	Who	What
N/A		

Comments

N/A



Greater Male' Waste-to-Energy Project

Greater Male Waste to Energy Project

Site Weekly Report

by the Employer's Representative

Week from	Week to	Prepared by	Signature	Checked by	Signature
10.3.2024	16.3.2024	Sofi bin Ismail		Naahee Nazim	

Progress Review

The works performed during the Reporting Week are as follows:

- Dewatering work for Bunker area continues.
- Bunker - Concrete curing at Leachate Area in progress.
- Bunker - Formwork & reinforcement bar at Area 1 completed.
- Bunker - Waterstop & earthing cable installation at Area 1 completed.
- Bunker - Concreting work at Area 1 started.
- Bunker - Waterproofing membrane installation at Area 2 & Area 4 completed.

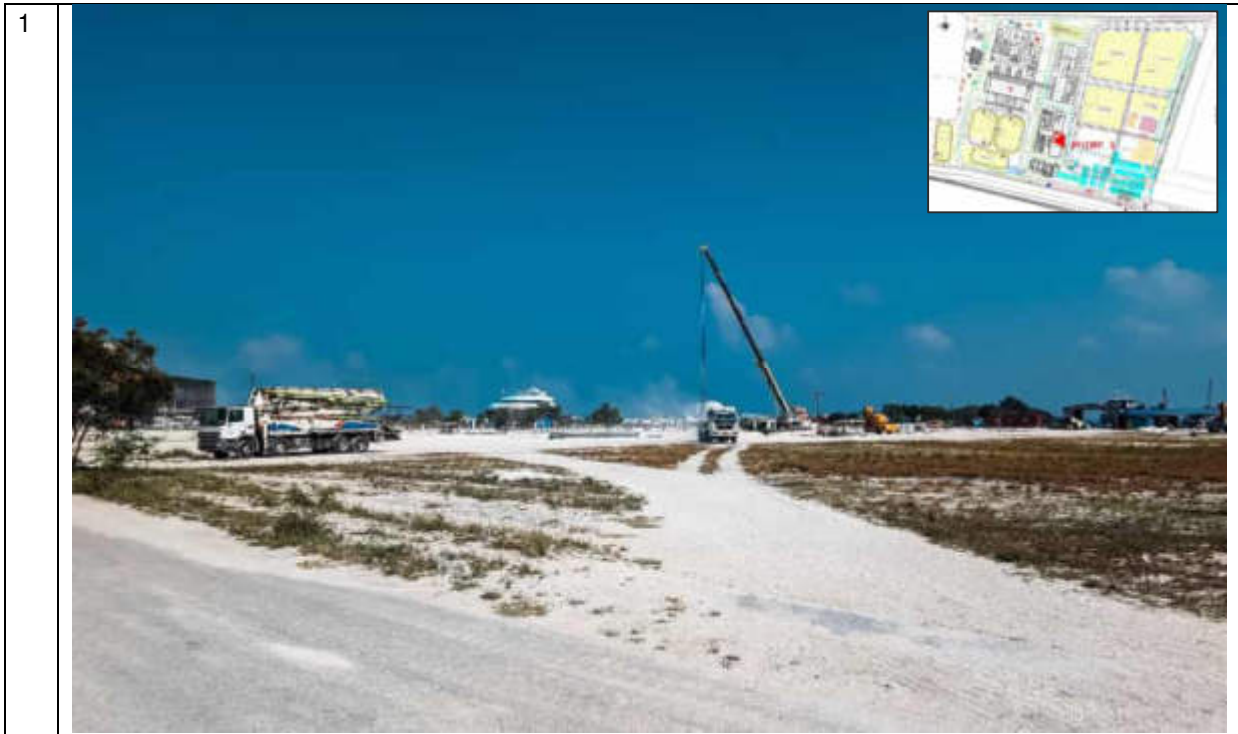
Attachment:

Site Daily Logs

Site Photos

The below figure provides an overview of fixed photo locations and angles where photos are taken from in each Reporting Week.

Photos 1 to 5 will include photos according to the map, the remaining photos are taken from elsewhere and are not exactly from the same location and angle in every Weekly Report.



OVERALL - POINT ONE



OVERALL - POINT TWO

3



OVERALL - POINT THREE

4



OVERALL - POINT FOUR

5



OVERALL - POINT FIVE

6



BUNKER AREA - CONCRETING WORK AT AREA 1 IN PROGRESS.

7



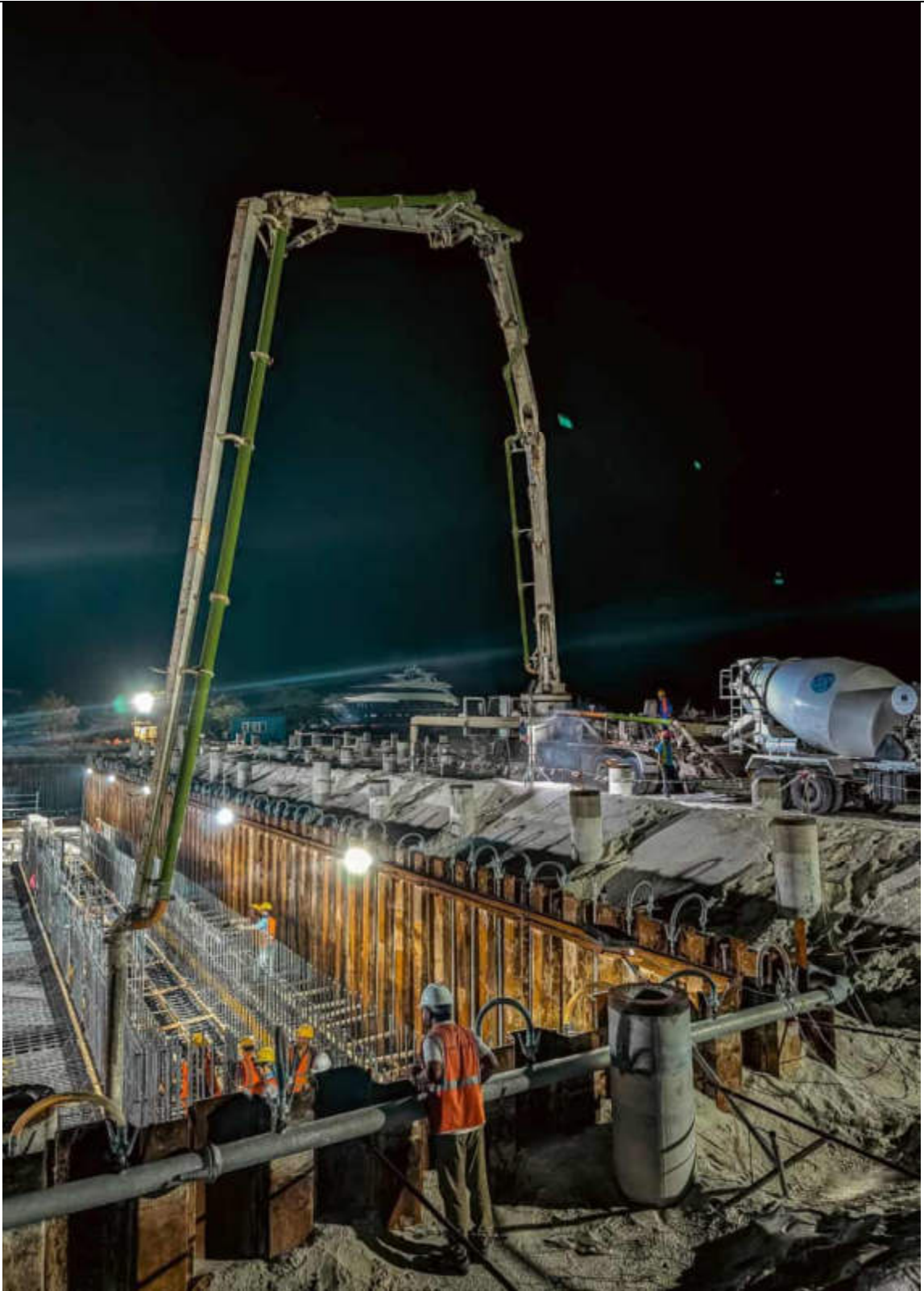
AD-HOCK TRAINING ON CONCRETING WORK TO COMPLY WITH PROJECT SPEC.

8



REINFORCEMENT BAR TIE WIRE HAS BEEN IMPROVED.

9



BUNKER AREA 1 - SLAB CONCRETING WORK IN PROGRESS.

FICHTNER

Site Log

Date: 10/03/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail

Sunday

Time on site: Time off site: Completed by:

Weather:

Total	Civil	Process
73	73	0

Workers on Site

Note : Enter this information when it is available, at least once per week as a minimum

**Site Activities,
Contractors
Involved, Major
Deliveries,
Testing,
Inspections**

- 1) Dewatering of bunker area continue.
- 2) Bunker - Reinforcement bar and formwork installation for slab at Area 1.
- 3) Bunker - Waterstop installation for slab at Area 1.
- 4) Bunker - Surface cleaning and application of primer for waterproofing membrane at Area 2.
- 5) Material delivery - Aggregate 19.557 tonne.
- 6) Material delivery - Sand 26.77 + 22.524 + 23.706 tonne.
- 7) Material delivery - Cement 23.27 + 15.733 + 7.493 + 8.673 tonne.

**Safety
Audits/Safety
Walkarounds**

Noise level monitoring at 5 location (NQ1, NQ2, NQ3, NQ4 & NQ5) was completed.

**Safety and
Environmental
Incidences**

N/A

**Compliance to
Design and
construction
methods,
approved
materials**

N/A

**Major Quality
Issues**

N/A

**Site Instructions
Issued**

N/A

**Verbal
communication**

Received sheet pile monitoring data, maximum deflection data (12mm) within design tolerance (33mm).

Meetings	When	Who	What
	4:00pm	FIT, URB, AAJV	Weekly progress monitoring discussion
			a) Discuss on lesson learned on concreting work at leachate area.
			b) Notify DBO & AAJV that ER will conduct training about concreting work on 12/3/24
			c) Material available on site available until mid April. Need more material (rebar, cement, etc)

Comments

N/A

FICHTNER

Site Log

Date: 11/03/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail
 Monday
 Time on site: Time off site: Completed by:

Weather:

	Total	Civil	Process	
Workers on Site	73	73	0	<i>Note : Enter this information when it is available, at least once per week as a minimum</i>

Site Activities, Contractors Involved, Major Deliveries, Testing, Inspections

1) Dewatering of bunker area continue.
 2) Bunker - Reinforcement bar and formwork installation for slab at Area 1.
 3) Bunker - Waterstop installation for slab at Area 1.
 4) Bunker - Waterproofing membrane installation at Area 2.

Safety Audits/Safety Walkarounds

Safety and Environmental Incidences

Compliance to Design and construction methods, approved materials

Major Quality Issues

Site Instructions Issued

Verbal communication

	When	Who	What
Meetings	<input type="text" value="N/A"/>		

Comments

FICHTNER

Site Log

Date: 12/03/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail
 Tuesday
 Time on site: Time off site: Completed by:

Weather:

	Total	Civil	Process	
Workers on Site	0	0	0	<i>Note : Enter this information when it is available, at least once per week as a minimum</i>

Site Activities, Contractors Involved, Major Deliveries, Testing, Inspections

- 1) Dewatering of bunker area continue.
- 2) Bunker - Reinforcement bar and formwork installation for slab at Area 1.
- 3) Bunker - Waterstop & earthing cable installation for slab at Area 1.
- 4) Bunker - Geotextile installation at Area 2.
- 5) Material delivery - Aggregate 23.405 + 23.434 tonne.
- 6) Material delivery - Cement 8.062 + 15.208 + 7.586 + 7.801 + 15.681 + 7.516 tonne.
- 7) Material delivery - SRC cement 15.401 + 7.767 + 16.232 + 7.758 tonne.

Safety Audits/Safety Walkrounds

Reminded the action required based on issued Outstanding List specifically on issue pertaining certified scaffolder inspector and ERP for Bunker. Review and discuss on draft ERP for Bunker prepared by AAJV together with DBO.

Safety and Environmental Incidences

N/A

Compliance to Design and construction methods, approved materials

N/A

Major Quality Issues

N/A

Site Instructions Issued

N/A

Verbal communication

Received sheet pile monitoring data, deflection data (13mm) within design tolerance (33mm).

	When	Who	What
Meetings	3:00PM	URB, AAJV	Ad-hock training on concreting work which cover reinforcement bar, formwork and other accessories installation workmanship according to BS8110-1, BS7973-1, BS5975 & BS8666.
			The focus to align project specification requirement, improve workmanship and avoid double work.

Comments

N/A

FICHTNER

Site Log

Date 13/03/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail

Wednesday

Time on site: Time off site: Completed by:

Weather:

	Total	Civil	Process	
Workers on Site	0	0	0	<i>Note : Enter this information when it is available, at least once per week as a minimum</i>

Site Activities, Contractors Involved, Major Deliveries, Testing, Inspections

1) Dewatering of bunker area continue.
 2) Bunker - Reinforcement bar and formwork installation for slab at Area 1.
 3) Bunker - Waterstop & earthing cable installation for slab at Area 1.
 4) Bunker - Inspection of reinforcement bar and formwork at Area 1. Several rectification required.
 5) Bunker - Surface cleaning and primer for waterproofing membrane at Area 4.
 6) Material delivery - Aggregate 25.802 tonne.
 7) Material delivery - Sand 25.93 + 25.65 + 25.34 + 27.39 + 23.586 tonne.

Safety Audits/Safety Walkarounds

Checking requirement for night work since two shift has started. Light lux requirement for working area complied. Permit to work in place.
 Need improvement on engineer rotation for night shift.

Safety and Environmental Incidences

N/A

Compliance to Design and construction methods, approved materials

N/A

Major Quality Issues

N/A

Site Instructions Issued

N/A

Verbal communication

Received sheet pile monitoring data, deflection data (13mm) within design tolerance (33mm).

Meetings

When	Who	What
N/A		

Comments

N/A

FICHTNER

Site Log

Date: 14/03/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail
 Thursday
 Time on site: Time off site: Completed by:

Weather:

Total	Civil	Process
0	0	0

Workers on Site Note : Enter this information when it is available, at least once per week as a minimum

Site Activities, Contractors Involved, Major Deliveries, Testing, Inspections

- 1) Dewatering of bunker area continue.
- 2) Bunker - Reinforcement bar and formwork installation for slab at Area 1.
- 3) Bunker - Waterstop & earthing cable installation for slab at Area 1.
- 4) Bunker - Inspection of reinforcement bar and formwork at Area 1. Several rectification required.
- 5) Bunker - Waterproofing membrane installation at Area 4.

Safety Audits/Safety Walkarounds

Safety and Environmental Incidences

Compliance to Design and construction methods, approved materials

Major Quality Issues

Site Instructions Issued

Verbal communication

Meetings

When	Who	What
N/A		

Comments

FICHTNER

Site Log

Date: 15/03/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail

Friday

Time on site: Time off site: Completed by:

Weather:

Total Civil Process

--	--	--

Note : Enter this information when it is available, at least once per week as a minimum

Workers on Site

Site Activities, Contractors Involved, Major Deliveries, Testing, Inspections

- 1) Dewatering of bunker area continue.
- 2) Bunker - Reinforcement bar and formwork installation for slab at Area 1.
- 3) Bunker - Waterstop & earthing cable installation for slab at Area 1.
- 4) Bunker - Waterproofing membrane installation at Area 4.

Safety Audits/Safety Walkarounds

Safety and Environmental Incidences

Compliance to Design and construction methods, approved materials

Major Quality Issues

Site Instructions Issued

Verbal communication

	When	Who	What
Meetings	<input type="text" value="N/A"/>		

Comments

FICHTNER

Site Log

Date: 16/03/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail

Saturday

Time on site: Time off site: Completed by:

Weather:

Total Civil Process

0	0	0
---	---	---

Note : Enter this information when it is available, at least once per week as a minimum

Workers on Site

**Site Activities,
Contractors
Involved, Major
Deliveries,
Testing,
Inspections**

- 1) Dewatering of bunker area continue.
- 2) Bunker - Reinforcement bar and formwork installation for slab at Area 1.
- 3) Bunker - Waterstop & earthing cable installation for slab at Area 1.
- 4) Bunker - Inspection of reinforcement bar and formwork at Area 1. Allow to proceed concreting.
- 5) Bunker - Concrete casting for slab at Area 1 begin at 8:00pm.

**Safety
Audits/Safety
Walkarounds**

N/A

**Safety and
Environmental
Incidents**

N/A

**Compliance to
Design and
construction
methods,
approved
materials**

N/A

**Major Quality
Issues**

N/A

**Site Instructions
Issued**

N/A

**Verbal
communication**

Received sheet pile monitoring data, deflection data (13mm) within design tolerance (33mm).
Discussion with URB & AAJV on updates of OSH monitoring plan. Also advice DBO & AAJV to prepare process mapping on compliance to project requirement. By doing this, we can be clear on what specific item/issues which require improvement.

Meetings

When	Who	What
N/A		

Comments

N/A



Greater Male' Waste-to-Energy Project

Greater Male Waste to Energy Project

Site Weekly Report

by the Employer's Representative

Week from	Week to	Prepared by	Signature	Checked by	Signature
17.3.2024	23.3.2024	Sofi bin Ismail		Naahee Nazim	

Progress Review

The works performed during the Reporting Week are as follows:

- Dewatering work for Bunker area continues.
- Bunker - Foundation slab concreting work Area 1 completed.
- Bunker - Reinforcement bar and formwork at Area 4 in progress.
- Bunker - Waterproofing membrane installation at Area 2 completed.
- Bunker - Waterproofing membrane installation at Leachate area in progress.

Attachment:

Site Daily Logs

Site Photos

The below figure provides an overview of fixed photo locations and angles where photos are taken from in each Reporting Week.

Photos 1 to 5 will include photos according to the map, the remaining photos are taken from elsewhere and are not exactly from the same location and angle in every Weekly Report.



OVERALL - POINT ONE



OVERALL - POINT TWO

3



OVERALL - POINT THREE

4



OVERALL - POINT FOUR

5



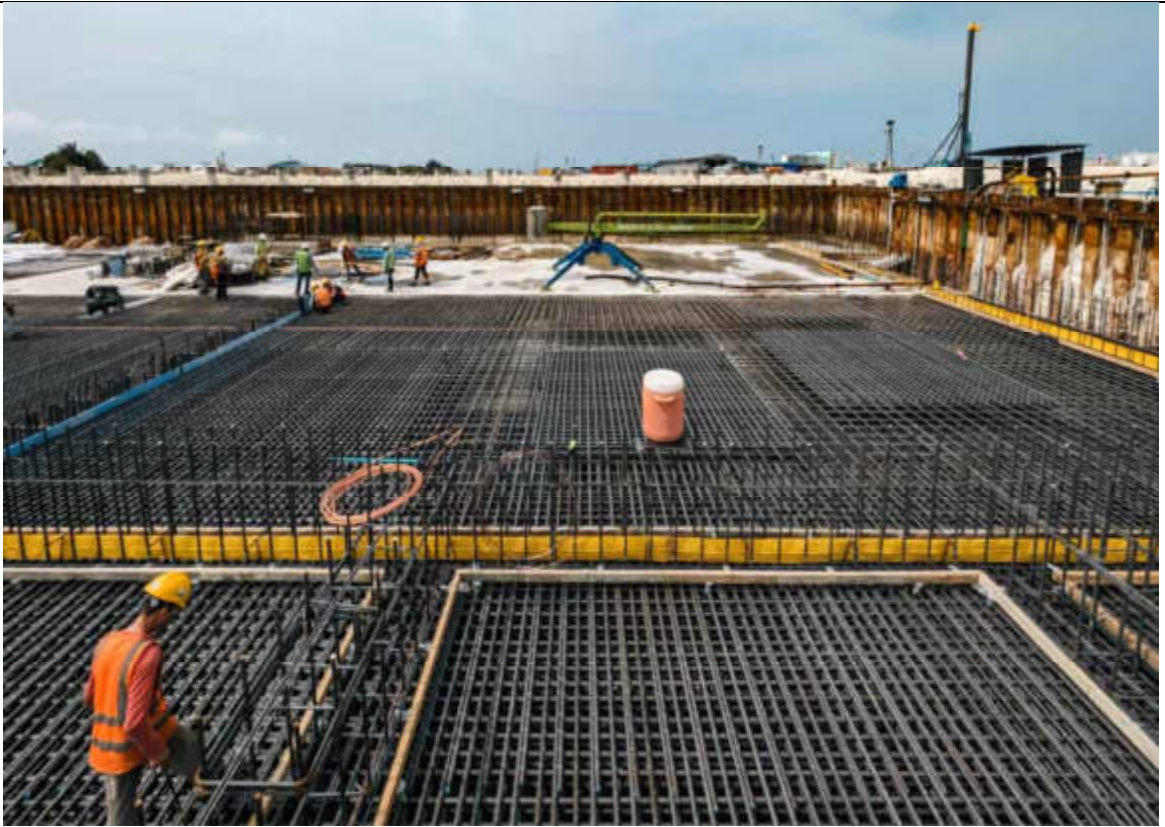
OVERALL - POINT FIVE

6



BUNKER AREA - AREA 1 FOUNDATION SLAB COMPLETED.

7



FORMWORK & REINFORCEMENT BAR IN PROGRESS AT AREA 4

8



REINFORCEMENT BAR & FORMWORK WORKMANSHIP HAS BEEN IMPROVED.

FICHTNER

Site Log

Date: 17/03/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail

Sunday

Time on site: Time off site: Completed by:

Weather:

Total	Civil	Process
78	78	0

Workers on Site

Note : Enter this information when it is available, at least once per week as a minimum

**Site Activities,
Contractors
Involved, Major
Deliveries,
Testing,
Inspections**

- 1) Dewatering of bunker area continue.
- 2) Bunker - Concrete casting for bunker slab Area 1 completed at 1:00am (18/3/24)
- 3) Material delivery - Sand 23.586 + 25.0 + 25.0 + 25.0 + 25.0 tonne.
- 4) Material delivery - Aggregate 25.802 + 24.198 tonne.
- 5) Material delivery - SRC cement 7.83 + 7.67 tonne.

**Safety
Audits/Safety
Walkarounds**

Air quality monitoring at AQ2 started.

**Safety and
Environmental
Incidences**

N/A

**Compliance to
Design and
construction
methods,
approved
materials**

N/A

**Major Quality
Issues**

N/A

**Site Instructions
Issued**

N/A

**Verbal
communication**

Received sheet pile monitoring data, maximum deflection data (13mm) within design tolerance (33mm).

Meetings

When	Who	What
4:00pm	FIT, URB, AAJV	Weekly progress monitoring discussion
		a) Highlight that ER request to call for discussion on Wednesday on issues at Area 1.
		b) Record and track the progress of Area 1 for assessment.
		c) List of improvement to be discuss on Wednesday.

Comments

N/A

FICHTNER

Site Log

Date 18/03/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail
 Monday
 Time on site: Time off site: Completed by:

Weather:

	Total	Civil	Process	
Workers on Site	78	78	0	<i>Note : Enter this information when it is available, at least once per week as a minimum</i>

Site Activities, Contractors Involved, Major Deliveries, Testing, Inspections

- 1) Dewatering of bunker area continue.
- 2) Bunker - Reinforcement bar and formwork installation for slab at Area 4.
- 3) Bunker - Geotextile installation at Area 4.
- 4) Bunker - Waterproofing membrane installation at Area 4.
- 5) Bunker - Surface cleaning and primer application at Area 2.
- 6) Material delivery - Aggregate 21.526 + 25.0 + 24.732 + 25.268 tonne.

Safety Audits/Safety Walkarounds

Safety and Environmental Incidences

Compliance to Design and construction methods, approved materials

Major Quality Issues

Site Instructions Issued

Verbal communication Received sheet pile monitoring data, maximum deflection data (8mm) within design tolerance (33mm).

	When	Who	What
Meetings	<input type="text" value="N/A"/>		

Comments

FICHTNER

Site Log

Date: 19/03/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail
 Tuesday
 Time on site: Time off site: Completed by:

Weather:

	Total	Civil	Process	
Workers on Site	0	0	0	<i>Note : Enter this information when it is available, at least once per week as a minimum</i>

Site Activities, Contractors Involved, Major Deliveries, Testing, Inspections

- 1) Dewatering of bunker area continue.
- 2) Bunker - Reinforcement bar and formwork installation for slab at Area 4.
- 3) Bunker - Waterproofing membrane joint integrity test was conducted at Area 4, Result 100% pass.
- 4) Bunker - Surface cleaning and primer application at Area 2
- 5) Bunker - Striking off formwork Leachate area. Inspection of post concreting was conducted.
- 6) Material delivery - Aggregate 21.526 + 25.0 + 24.732 + 25.268 tonne.

Safety Audits/Safety Walkarounds

Safety and Environmental Incidences

Compliance to Design and construction methods, approved materials

Major Quality Issues

Site Instructions Issued

Verbal communication

	When	Who	What
Meetings	<input type="text" value="N/A"/>		

Comments

FICHTNER

Site Log

Date 20/03/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail

Wednesday

Time on site: Time off site: Completed by:

Weather:

	Total	Civil	Process	
Workers on Site	0	0	0	<i>Note : Enter this information when it is available, at least once per week as a minimum</i>

Site Activities, Contractors Involved, Major Deliveries, Testing, Inspections

- 1) Dewatering of bunker area continue.
- 2) Bunker - Reinforcement bar and formwork installation for slab at Area 4.
- 3) Bunker - Surface cleaning and primer application at Area 2.
- 4) Bunker - Waterproofing membrane application at Leachate Area.
- 5) Material delivery - Aggregate 23.371 + 23.747 + 23.738 tonne.
- 6) Material delivery - Sand 25.0 tonne.

Safety Audits/Safety Walkarounds

Interview and review competency level of the scaffolding inspector. Advice to set up recording and tracing of tagging to be use on site.

Safety and Environmental Incidences

N/A

Compliance to Design and construction methods, approved materials

N/A

Major Quality Issues

N/A

Site Instructions Issued

N/A

Verbal communication

Received sheet pile monitoring data, deflection data (8mm) within design tolerance (33mm).

	When	Who	What
Meetings	11:00am	ER, URB, AAJV, RAM	MEETING ON BUNKER FOUNDATION PLAN AND REQUIREMENT
			A) ER highlighted the issues pick up from the concreting work at Area 1.
			B) ER informed that there are several requirement for URB & AAJV to comply prior to next concreting work. Those includes batching plan improvement, machinaries and equipments.
			C) To conduct structural assessment of the completed Area 1.

Comments

N/A

FICHTNER

Site Log

Date: 21/03/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail
 Thursday
 Time on site: Time off site: Completed by:

Weather:

Total	Civil	Process
0	0	0

Note : Enter this information when it is available, at least once per week as a minimum

Workers on Site

**Site Activities,
Contractors
Involved, Major
Deliveries,
Testing,
Inspections**

- 1) Dewatering of bunker area continue.
- 2) Bunker - Reinforcement bar and formwork installation for slab at Area 4.
- 3) Bunker - Waterstop and earthing cable installation for slab at Area 4.
- 4) Bunker - Waterproofing membrane application at Area 2.
- 5) Material delivery - Aggregate 23.371 + 23.747 + 23.738 tonne.
- 6) Material delivery - Sand 16.419 + 18.879 tonne.
- 7) Material delivery - Cement 7.96 tonne.

**Safety
Audits/Safety
Walkarounds**

Air quality monitoring at AQ1 & ASR2 was conducted.

**Safety and
Environmental
Incidences**

N/A

**Compliance to
Design and
construction
methods,
approved
materials**

N/A

**Major Quality
Issues**

N/A

**Site Instructions
Issued**

N/A

**Verbal
communication**

Received sheet pile monitoring data, deflection data (9mm) within design tolerance (33mm).

Meetings

When	Who	What
N/A		

Comments

N/A

FICHTNER

Site Log

Date: 22/03/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail

Friday

Time on site: Time off site: Completed by:

Weather:

Total Civil Process

--	--	--

Note : Enter this information when it is available, at least once per week as a minimum

Workers on Site

Site Activities, Contractors Involved, Major Deliveries, Testing, Inspections

- 1) Dewatering of bunker area continue.
- 2) Bunker - Reinforcement bar and formwork installation for slab at Area 4.
- 3) Bunker - Waterstop and earthing cable installation for slab at Area 4.
- 4) Bunker - Waterproofing membrane application at Area 2.
- 5) Material delivery - Cement 398 tonne.

Safety Audits/Safety Walkarounds

N/A

Safety and Environmental Incidences

N/A

Compliance to Design and construction methods, approved materials

N/A

Major Quality Issues

N/A

Site Instructions Issued

N/A

Verbal communication

N/A

	When	Who	What
Meetings	N/A		

Comments

N/A

FICHTNER

Site Log

Date: 23/03/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail
 Saturday
 Time on site: Time off site: Completed by:

Weather:

Total	Civil	Process
0	0	0

Workers on Site Note : Enter this information when it is available, at least once per week as a minimum

Site Activities, Contractors Involved, Major Deliveries, Testing, Inspections

- 1) Dewatering of bunker area continue.
- 2) Bunker - Reinforcement bar and formwork installation for slab at Area 4.
- 3) Bunker - Waterstop and earthing cable installation for slab at Area 4.
- 4) Bunker - Waterproofing membrane at Leachate Area.
- 5) Material delivery - Sand 20.008 + 25.043 + 24.936 + 25.977 + 27.986 + 24.755 + 22.259 tonne.

Safety Audits/Safety Walkarounds

Safety and Environmental Incidences

Compliance to Design and construction methods, approved materials

Major Quality Issues

Site Instructions Issued

Verbal communication

Received sheet pile monitoring data, deflection data (8mm) within design tolerance (33mm).
 Checking fitness of batching plant and machinaries readiness for next concreting work.

Meetings

When	Who	What
N/A		

Comments



Greater Male' Waste-to-Energy Project

Greater Male Waste to Energy Project

Site Weekly Report

by the Employer's Representative

Week from	Week to	Prepared by	Signature	Checked by	Signature
24.3.2024	30.3.2024	Sofi bin Ismail		Naahee Nazim	

Progress Review

The works performed during the Reporting Week are as follows:

- Dewatering work for Bunker area continues.
- Bunker - Foundation slab concreting work Area 4 completed.
- Bunker - Reinforcement bar and formwork at Area 2 in progress.
- Bunker - Earthing & waterstop installation at Area 2 in progress.
- Bunker - Reinforcement bar and formwork at for Wall D in progress.
- Bunker - Waterproofing membrane installation at Leachate area in progress.

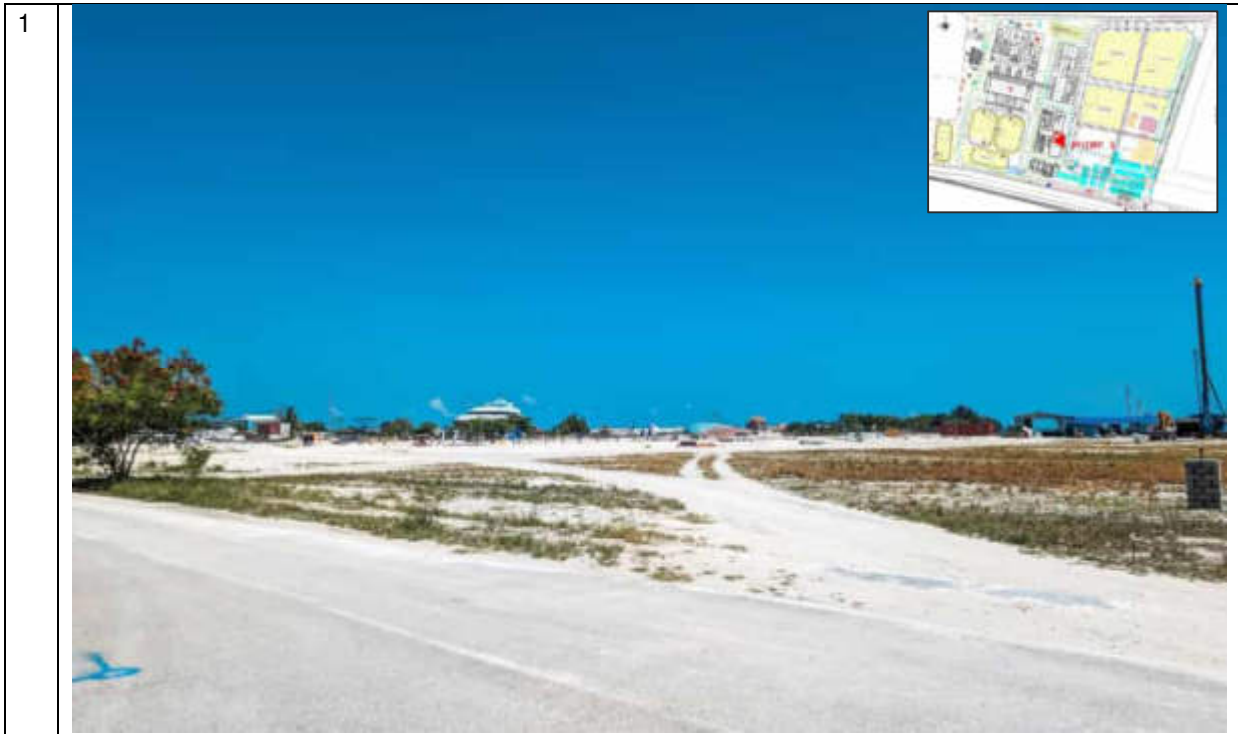
Attachment:

Site Daily Logs

Site Photos

The below figure provides an overview of fixed photo locations and angles where photos are taken from in each Reporting Week.

Photos 1 to 5 will include photos according to the map, the remaining photos are taken from elsewhere and are not exactly from the same location and angle in every Weekly Report.



OVERALL - POINT ONE



OVERALL - POINT TWO

3



OVERALL - POINT THREE

4



OVERALL - POINT FOUR

5



OVERALL - POINT FIVE

6



BUNKER AREA - AREA 4 FOUNDATION SLAB COMPLETED.

7



FORMWORK & REINFORCEMENT BAR IN PROGRESS AT AREA 2

FICHTNER

Site Log

Date: 24/03/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail
 Sunday
 Time on site: Time off site: Completed by:

Weather:

Total	Civil	Process
78	78	0

Note : Enter this information when it is available, at least once per week as a minimum

Workers on Site

**Site Activities,
Contractors
Involved, Major
Deliveries,
Testing,
Inspections**

- 1) Dewatering of bunker area continue.
- 2) Bunker - Reinforcement bar and formwork installation for slab at Area 4.
- 3) Bunker - Waterstop and earthing cable installation for slab at Area 4.
- 4) Bunker - Waterproofing membrane at Leachate Area.
- 5) Material delivery - Concrete Admixture Sikaplast 10 drum.
- 6) Material delivery - Aggregate 25.068 + 24.718 + 24.25 tonne.
- 7) Material delivery - Sand 25.515 tonne.

**Safety
Audits/Safety
Walkarounds**

Air quality monitoring at AQ1, AQ2, AQ3, AQ4, ASR2, ASR3 & ASR5 was completed.

**Safety and
Environmental
Incidences**

N/A

**Compliance to
Design and
construction
methods,
approved
materials**

N/A

**Major Quality
Issues**

N/A

**Site Instructions
Issued**

N/A

**Verbal
communication**

Received sheet pile monitoring data, maximum deflection data (8mm) within design tolerance (33mm).

When	Who	What
2:00pm	FIT, URB, AAJV	Weekly progress monitoring discussion
		a) Discuss readiness of Bunker Area concrete casting.
		b) AAJV informed that the concrete pump truck is fixed. Additional vibrator in place.
		c) AAJV informed that the batching plant has improved. Inspection can be done tomorrow.

Comments

N/A

FICHTNER

Site Log

Date 25/03/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail
 Monday
 Time on site: Time off site: Completed by:

Weather:

	Total	Civil	Process	
Workers on Site	78	78	0	<i>Note : Enter this information when it is available, at least once per week as a minimum</i>

Site Activities, Contractors Involved, Major Deliveries, Testing, Inspections

1) Dewatering of bunker area continue.
 2) Bunker - Reinforcement bar and formwork installation for slab at Area 4.
 3) Bunker - Waterstop and earthing cable installation for slab at Area 4.
 4) Bunker - Reinforcement bar and formwork installation for slab at Area 2.

Safety Audits/Safety Walkarounds

Safety and Environmental Incidences

Compliance to Design and construction methods, approved materials

Major Quality Issues

Site Instructions Issued

Verbal communication

Received sheet pile monitoring data, maximum deflection data (10mm) within design tolerance (33mm).

Meetings

When	Who	What
<input type="text" value="N/A"/>		

Comments

FICHTNER

Site Log

Date: 26/03/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail
 Tuesday
 Time on site: 8:30 Time off site: 22:00 Completed by: Sofi Bin Ismail

Weather: Sunny

	Total	Civil	Process	
Workers on Site	0	0	0	<i>Note : Enter this information when it is available, at least once per week as a minimum</i>

Site Activities, Contractors Involved, Major Deliveries, Testing, Inspections

- 1) Dewatering of bunker area continue.
- 2) Bunker - Concrete casting work for foundation slab at Area 4. Started at 4:30pm and completed at 1:30am.
- 3) Bunker - Waterstop and earthing cable installation for slab at Area 2.
- 4) Bunker - Reinforcement bar and formwork installation for slab at Area 2.
- 5) Bunker - Installation of protective board at Leachate Area.
- 6) Material delivery - Aggregate 25.0 + 27.182 tonne.

Safety Audits/Safety Walkarounds N/A

Safety and Environmental Incidences N/A

Compliance to Design and construction methods, approved materials N/A

Major Quality Issues N/A

Site Instructions Issued N/A

Verbal communication
Received sheet pile monitoring data, deflection data (8mm) within design tolerance (33mm).

	When	Who	What
Meetings	N/A		

Comments N/A

FICHTNER

Site Log

Date 27/03/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail
 Wednesday
 Time on site: Time off site: Completed by:

Weather:

	Total	Civil	Process	
Workers on Site	0	0	0	<i>Note : Enter this information when it is available, at least once per week as a minimum</i>

Site Activities, Contractors Involved, Major Deliveries, Testing, Inspections

1) Dewatering of bunker area continue.
 2) Bunker - Waterstop and earthing cable installation for slab at Area 2.
 3) Bunker - Reinforcement bar and formwork installation for slab at Area 2.
 4) Bunker - Structural backfilling at Leachate Area.
 5) Material delivery - Aggregate 23.752 + 23.89 + 20.358 tonne.
 6) Material delivery - Sand 4.174 + 26.0 tonne.

Safety Audits/Safety Walkarounds

Safety and Environmental Incidences

Compliance to Design and construction methods, approved materials

Major Quality Issues

Site Instructions Issued

Verbal communication Received sheet pile monitoring data, deflection data (10mm) within design tolerance (33mm).

Meetings

When	Who	What
<input type="text" value="N/A"/>		

Comments

FICHTNER

Site Log

Date: 28/03/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail
 Thursday
 Time on site: Time off site: Completed by:

Weather:

Total	Civil	Process
0	0	0

Workers on Site Note : Enter this information when it is available, at least once per week as a minimum

Site Activities, Contractors Involved, Major Deliveries, Testing, Inspections

- 1) Dewatering of bunker area continue.
- 2) Bunker - Waterstop and earthing cable installation for slab at Area 2.
- 3) Bunker - Reinforcement bar and formwork installation for slab at Area 2.
- 4) Bunker - Reinforcement bar and formwork installation for wall at Wall D.
- 5) Bunker - Structural backfilling at Leachate Area.

Safety Audits/Safety Walkarounds

Safety and Environmental Incidences

Compliance to Design and construction methods, approved materials

Major Quality Issues

Site Instructions Issued

Verbal communication

Meetings

When	Who	What
N/A		

Comments

FICHTNER

Site Log

Date: 29/03/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail

Friday

Time on site: Time off site: Completed by:

Weather:

Total Civil Process

--	--	--

Note : Enter this information when it is available, at least once per week as a minimum

Workers on Site

Site Activities, Contractors Involved, Major Deliveries, Testing, Inspections

- 1) Dewatering of bunker area continue.
- 2) Bunker - Waterstop and earthing cable installation for slab at Area 2.
- 3) Bunker - Reinforcement bar and formwork installation for slab at Area 2.
- 4) Bunker - Reinforcement bar and formwork installation for wall at Wall D.
- 5) Bunker - Structural backfilling for pilecaps at BU-13, BU-64, BU-103 & BU-104.

Safety Audits/Safety Walkarounds

Safety and Environmental Incidences

Compliance to Design and construction methods, approved materials

Major Quality Issues

Site Instructions Issued

Verbal communication

	When	Who	What
Meetings	<input type="text" value="N/A"/>		

Comments

FICHTNER

Site Log

Date: 30/03/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail

Saturday

Time on site: Time off site: Completed by:

Weather:

Total	Civil	Process
0	0	0

Workers on Site

Note : Enter this information when it is available, at least once per week as a minimum

**Site Activities,
Contractors
Involved, Major
Deliveries,
Testing,
Inspections**

- 1) Dewatering of bunker area continue.
- 2) Bunker - Waterstop and earthing cable installation for slab at Area 2.
- 3) Bunker - Reinforcement bar and formwork installation for slab at Area 2.
- 4) Bunker - Reinforcement bar and formwork installation for wall at Wall D.
- 5) Bunker - Pilecap compaction test FDT was completed on BU-13, BU-64, BU-103 & BU-104.
- 6) Bunker - Pilecap lean concreting work at BU-13, BU-64, BU-103 & BU-104.

**Safety
Audits/Safety
Walkarounds**

Air quality monitoring at AQ4 & ASR5.

**Safety and
Environmental
Incidents**

N/A

**Compliance to
Design and
construction
methods,
approved
materials**

N/A

**Major Quality
Issues**

N/A

**Site Instructions
Issued**

N/A

**Verbal
communication**

Received sheet pile monitoring data, deflection data (11mm) within design tolerance (33mm).

Meetings

When	Who	What
N/A		

Comments

N/A

**Appendix 3: Results of Monitoring (Air Quality,
Noise, Water and Wastewater Quality and
Illumination level)**

Ambient Air Quality

Report Preparation By:

Environ Project & Consultancy Pvt. Ltd

1103-1104, Ganesh Glory, Jagat pure Road,
Gota, S.G. Highway Ahmedabad 382445

Customer Name/Address

Alke Alkatas Joint Venture Pvt Ltd

H. H. Moomiyaage, 5A Asaree Hingun K. Male 20265
MALDIVES



Thilafushi Island, MALDIVES 2024

Name of Project: WtE Energy Facility Project

Order No: EN-M/2207/417_01

Test report: Ambient Air Monitoring Jan-24

Duration: 28.01.2024-31.01.2024



TABLE OF CONTENTS

1) Purpose of monitoring	3
2) Methods Used for Calibration	4
3) Sampling Methodology.....	7
4) Sampling Location.....	8
5) Legal framework.....	9
6) Results.....	11
7) Assessment.....	25

1) Purpose of Monitoring

The purpose of monitoring, as outlined in the provided details, is to assess and evaluate the air quality in the vicinity of the sensitive receptors affected by The Greater Malé Waste to Energy Project. The report aims to ascertain the levels of various air pollutants, including PM10, PM2.5, NO2, SO2, and TSP (Total Suspended Particulates), to gauge the potential environmental impact of the project on the surrounding area.

By conducting comprehensive air quality monitoring, the report seeks to provide valuable insights into the concentration levels of these pollutants, which are crucial for understanding their potential effects on human health and the environment. Additionally, the data collected will serve as a basis for assessing compliance with regulatory standards and guidelines related to air quality management.

Assessment of Air Quality: The primary objective of monitoring is to assess the quality of air in the vicinity of sensitive receptors impacted by The Greater Malé Waste to Energy Project.

Evaluation of Pollutants: The monitoring aims to evaluate the concentration levels of specific air pollutants, including:

- PM10 (Particulate Matter with a diameter of 10 micrometers or less)
- PM2.5 (Particulate Matter with a diameter of 2.5 micrometers or less)
- NO2 (Nitrogen Dioxide)
- SO2 (Sulfur Dioxide) & TSP (Total Suspended Particulates)

Compliance Legal Framework: The data collected through monitoring serves as a basis for assessing compliance with relevant regulatory standards and guidelines governing air quality management.

Decision Support: The monitoring efforts aim to provide stakeholders with accurate and reliable data to support informed decision-making processes related to the project's operations and environmental management.

Environmental Risk Mitigation: By identifying pollutant levels and potential risks, the monitoring facilitates the implementation of appropriate mitigation measures to minimize adverse impacts on public health and the environment.

Environmental Responsibility: Ultimately, the purpose of monitoring is to ensure that the Greater Malé Waste to Energy Project operates in an environmentally responsible manner, mitigating potential harm to air quality and associated ecosystems.

Overall, the purpose of this monitoring effort is to support informed decision-making processes, mitigate potential risks to public health and the environment, and ensure that the Greater Malé Waste to Energy Project operates in an environmentally responsible manner.



2) Methods Used for Monitoring

The air quality monitoring stations employed sensor-based technology to assess PM10, PM2.5, TSP, SO2, and NO2 parameters. These stations utilize 'air sensor' technology, a classification recognized by the US EPA, which encompasses non-regulatory instruments characterized by their affordability, portability, capability to measure multiple pollutants simultaneously, and ease of operation compared to traditional regulatory stations. Unlike reference measurement methods reliant on skilled operators for instrument maintenance and calibration, air sensors comprise hardware and software set operable without human intervention, enabling untrained users to monitor air pollution effectively, without necessitating specialized technical expertise.

Sensor specifications that are used for measurement study are shown below:

Parameter		Unit	Value
SO2	Sensitivity	nA/ppm at 2ppm SO ₂	275 to 520
	Range	ppm limit of performance warranty	100
	Linearity	error at 100ppm SO ₂ , linear at zero and 10ppm SO ₂	0 to -2
NO2	Sensitivity	nA/ppm at 2ppm NO ₂	-200 to -650
	Range	ppm NO ₂ limit of performance warranty	20
	Linearity	ppb error at full scale, linear at zero and 20ppm	
Particles (PM ₁₀ , PM _{2.5} and TSP)	Mass concentration precision	%	5
	Mass concentration range	µg/m ³	0 to 1000
Temperature	Typ. temperature accuracy	°C	0.45
	Operating temperature range	°C	-10 to 50
	Response time (τ63%)	s	<60
Humidity	Typ. relative humidity accuracy	%RH	4.5
	Operating relative humidity range	%RH	0 to 100
	Response time (τ63%)	s	20
All	Temperature Range	°C	-30 to 50
	Humidity Range	% RH	5 to 99

Ensuring the precision of these affordable sensors is paramount when assessing air quality. Through an intelligent calibration process, these low-cost sensors are refined and provide accurate readings comparable to those obtained from reference stations. The Smart Calibration Algorithm comprises operational steps outlined in the accompanying figure.



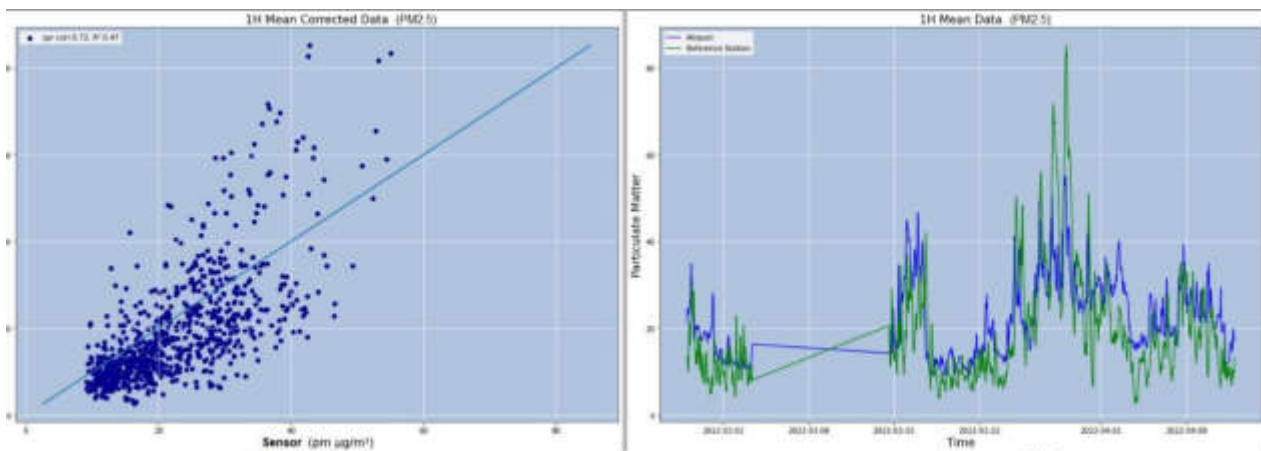
Sensor Units were calibrated using reference stations for a period before the deployment. The calibration process for particle matter and gas pollutants measurement is explained below.

Description	Methodology	
	NO ₂ -SO ₂ -O ₃	PM ₁₀ -PM _{2.5} -TSP
Installation	Near Reference Station (3/4 meters)	Near Reference Station (3/4 meters)
Pre-Test	Quality Check in zero air conditions	Quality Check in zero air conditions
Co-Located Period	4-5 weeks	8 weeks
Sampling Period	30 seconds. Hourly mean is used because the reference station measurements are hourly.	60 seconds. Hourly mean is used because the reference station measurements are hourly.
Validation	Cross-validation is used. Also, some ranges of measurement are eliminated, where the reference station is not available.	Cross-validation is used. Also, some ranges of measurement are eliminated, where the reference station is not available.
Calibration Procedure	is obtained via R ² and spearman correlation	is obtained via R ² and spearman correlation

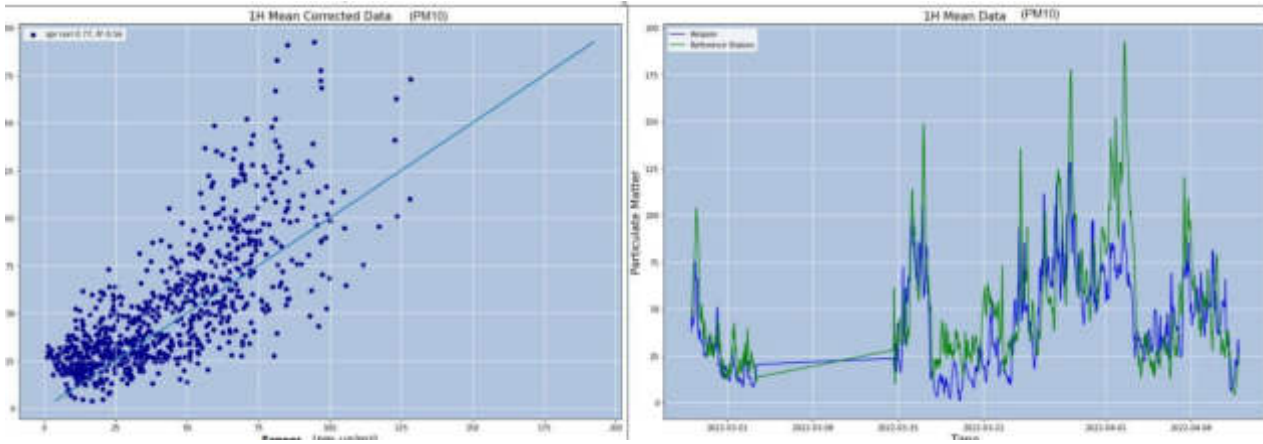
Calibration Result for PM

The corrected measurement results after the Smart Calibration Process are shown in the figures below. The correlation between Sensor Unit's PM_{2.5} measurements between Reference Station's PM_{2.5} measurements for hourly and daily mean of data is 0.73 given by the client, and the correlation between Sensor Unit's PM₁₀ measurements between Reference Station's PM₁₀ measurements for hourly and daily mean of data is 0.77 observed by the client.

Calibration Graph of PM2.5

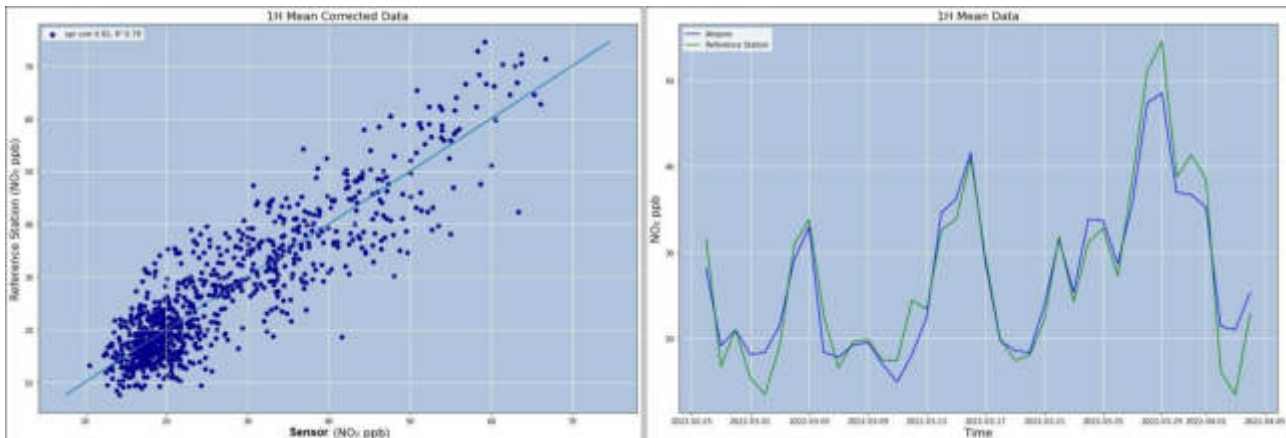


Calibration Graph of PM₁₀



Calibration Result for Gases

The corrected measurement results after the Smart Calibration Process are shown in the figures below. The correlation between Sensor Unit's NO₂ measurements between Reference Station's NO₂ measurements for hourly and daily mean of data is respectively 0.823, 0.898 observed by the client



**Appendix 4: Marine ecology survey report
conducted in February 2024**

Environmental monitoring Report Pre-Construction–Construction Stage
WtE Facility at Thilafushi

Marine Ecology (February 2024)

Prepared by: Mahmood Riyaz



16th February 2024

Table of contents

Table of contents	2
List of Tables	2
1. INTRODUCTION	3
2. MARINE ECOLOGICAL SURVEY	4
2.1 Data analysis	5
2.2 Results	5
2.3 Fish surveys	11
Annex 1. Marine ecology survey ; Fish census data	14
Fish Census data M8	14
Fish Census data M9	15
Fish Census data M10	16

List of Tables

Table 1: Substrate categories and the codes.	5
Table 2: Summary of fish census for three site ordered as Rare, Common and Abundant for three site.	12

List of Figures

Figure 1: Underwater Marine Survey Locations M8,M9 and M10 for construction stage Monitoring February 2024	4
Figure 2. Waste water outfall pipe installed at M8 discharging from temporary waste water plant (April 2023).	6
Figure 3: Photos Taken from Site 8 (M8) (3rd February 2024) at 5m depth	7
Figure 4: Photos Taken from Site 8 (M8) (3rd February 2024) at 10m depth	7
Figure 5: Average benthic cover and their standard error for M8 at both 5 and 10m depth 3rd February 2024	7
Figure 6: Photos Taken from Site 9 (M9) (3rd February 2024) at 5m depth	8
Figure 7: Overall view of the site at 5m depth October 2023 (top) and February 2024 (bottom)	8
Figure 8: Photos Taken from Site 9 (M9) (3rd February 2024) at 10m depth	9
Figure 9: Average benthic cover and their standard error for M9 at both 5 and 10m depth 3rd February 2024	9
Figure 11: Photos Taken from Site 10 (M10) (3rd February 2024) at 5m depth	10
Figure 12: Photos Taken from Site 10 (M10) (3rd February 2024) at 10m depth	10
Figure 13: Average benthic cover and their standard error for M9 at both 5 and 10m depth, 3rd February 2024	11
Figure 14: Fish Families Total occurrence at each depth Chromis dimidiata and Odonus niger are the most abundant species at 5m and 10m depth in	12

1. INTRODUCTION

This is the environmental monitoring report of marine ecology result conducted in February 2024 prepared as part of the construction stage monitoring of the waste to energy (WtE) facility at Thilafushi, Maldives. Environmental monitoring is a contractual requirement of the DBO in the Environmental Impact Assessment report prepared for the project. This report presents results of the marine ecology assessments and environmental monitoring conducted on 3rd February 2024 as part the requirements of the EIA monitoring and the Project Environmental Management Plan that is being developed to meet the anticipated environment impacts, health and safety, as well as to ensure the sustainability of the Project.

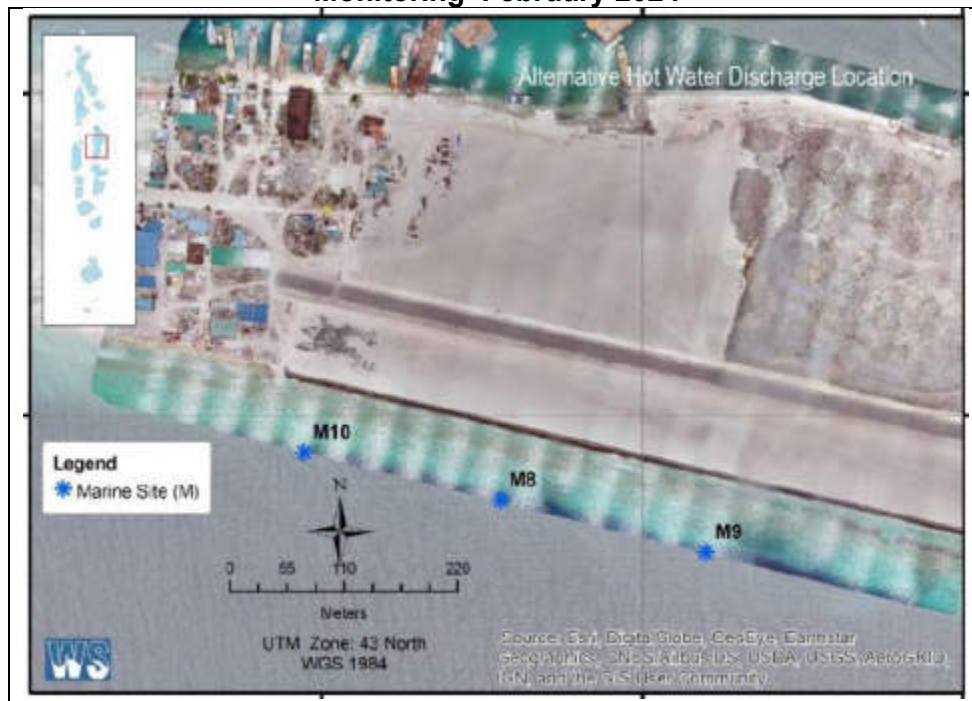
2. MARINE ECOLOGICAL SURVEY

For the construction site environmental monitoring reef benthic 3rd survey was conducted 03rd February 2024 in locations M10, M9 and M8 **Figure 1**. The purpose of the marine survey was to continue monitoring changes to the conditions established in the Environmental Impact Assessment (EIA) during August and September 2018. A re-evaluation of the baseline was established in June 2022, and the first monitoring survey was conducted on 24th December 2022 and the following report is based on the 5th survey conducted on 3rd February 2024.

A standard approach, established by the Maldives EIA community and approved by the Environmental Protection Agency (EPA), was employed to study benthic cover and fish populations. The survey employed GPS locations, transects surveys conducted at two depths: 5m and 10m at each station (M8, M9 and M10 – as detailed in an earlier report). The methods followed were those outlined by Hodgson et.al (2006) in Reef Check Instruction Manual: A Guide to Reef Check Coral Reef Monitoring.

Three transects of 20 m length were laid, one after the other along the reef, ensuring the transect falls to the specific depth. A quadrat of size 0.5 x 0.5 m was laid sequentially on the transect, and photo images were taken with the quadrat in the center. This way, every transect would have at least 10 images, resulting in around 60 images from each depth.

Figure 1: Underwater Marine Survey Locations M8,M9 and M10 for construction stage Monitoring February 2024



2.1 Data analysis

The data collected in February 2024 was analyzed using CoralNet (an online resource for benthic images analysis - <https://coralnet.ucsd.edu/>), which utilizes artificial intelligence for automatic classification. Analysis was conducted using CPCe (Coral Point Count of Excel Extension)¹. CPCe involves randomly placing points over the quadrat space on the image, but in this case, the points are identified by humans. Twenty-five points were randomly placed on the entire photo image. The points were then classified under the following categories, as listed in Table 1

Table 1: Substrate categories and the codes.

Category	Code
CORALLINACEAE (CO)	CO
ROCK (R)	R
CORAL RUBBLE (CR)	CR
MACRO ALAGE (MA)	MA
TURF ALAGE (TUR)	TUR
SPONGE (SP)	SP
SAND AND SILT (S)	S
TUNICATE (TU)	TU
BLEACHED CORAL (BLC)	BLC
UNKOWN (UN)	UN
ZOANTHARIAN (ZO)	ZO
SOFT CORAL (SC)	SC
CORAL (C)	C
SEAGRASS (SG)	SG
INVERTEBRATES (INV)	INV

2.2 Results

The following presents findings and observations from under marine ecological surveys conducted at the monitoring location at Thilafushi reef.

Status of Site M8: The site is the location that will be used for discharge of waste water from the brine outfall as described in the EIA. Waste water discharge pipe for the temporary plant is already installed and discharging treated waste water into the water (see photos of discharge pipe **Figure 2**). The survey conducted in April 2023 reported coral cover around 28-25%. The recent survey in February 2024 shows slight increase in shallow water (at 5m depth) coral cover of 29-42% while the coral cover at 10m varied between 21% and 25%. This may be due to extensive sedimentation that was produced from the ongoing Thilafushi Phase II reclamation project. Thilafushi reclamation project started in September 2023 and it is going to continue for over two years during which Thilafushi Phase II and Phase three will be reclaimed. Sedimentation that was observed in the October monitoring seems to have washed away at both 5 and 10m depth due to prevailing story condition during December 2023 and January 2024. The dominant benthic cover is rock about 53-52% in the 5 and 10 m transact respectively. Sand and silt cover is about

¹ Kohler, K.E., Gill, S.M., 2006. Coral Point Count with Excel Extension (CPCe): A Visual Basic program for the determination of coral and substrate coverage using random point count methodology. *Computers and Geosciences* 32, 1259–1269.

3.6% at 5m depth and from 5% to 13 % at 10m depth. This is lower than what was recorded in October survey. Macro algae cover was around 4-4.3% at 5m and 10m depth respectively. Most of the live coral was massive and sub-massive corals.

Fish diversity was highest for one species of Balistidae, *Odonus niger*. Pomacentridae *Chromis dimidiata*, *Chromis weberi* and *Pseudanthias evansi* from Serranidae are abundant at 10m depth while at 5m depth *Odonus niger* is abundant. , while Acanthuridae *Ctenochaetus striatus* and *Hemitaurichthys zoster* are common at 5m depth. Abundant means More than 40 individual on average at each 20 m transect. Photographs of the transect quadrats are shown in Figure 4. Benthic composition of M8 at both 5 and 10m depth is in Figure 5.

Figure 2. Waste water outfall pipe installed at M8 discharging from temporary waste water plant (April 2023).

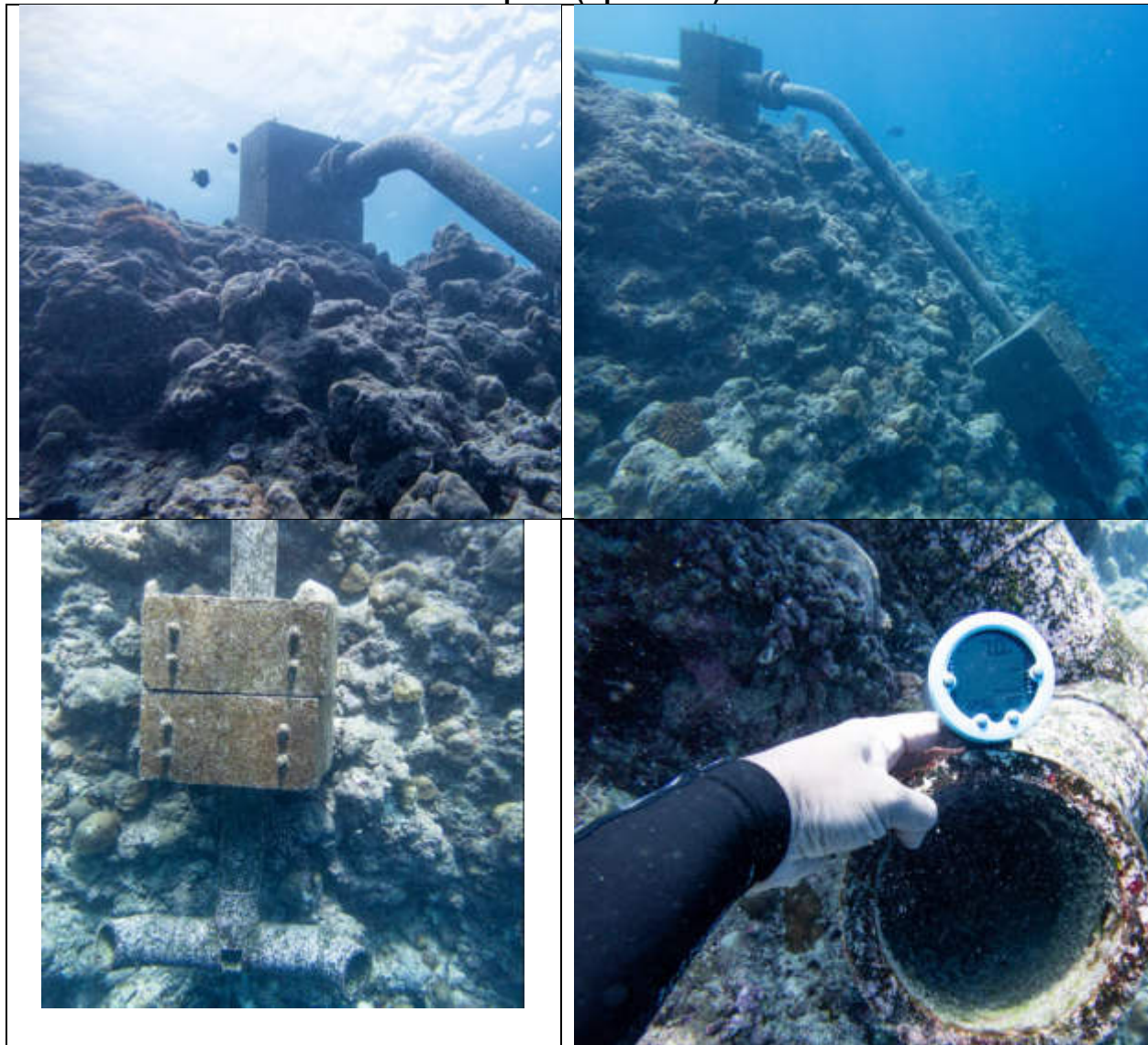


Figure 3: Photos Taken from Site 8 (M8) (3rd February 2024) at 5m depth

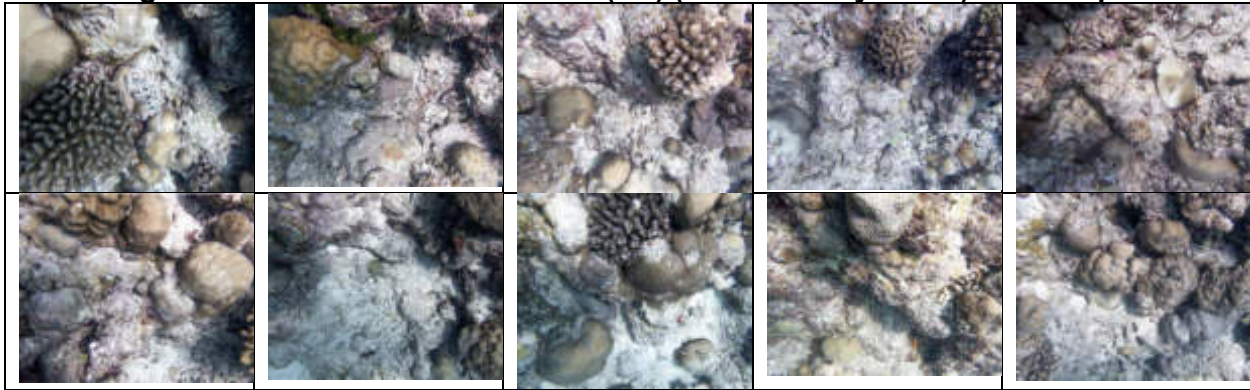


Figure 4: Photos Taken from Site 8 (M8) (3rd February 2024) at 10m depth

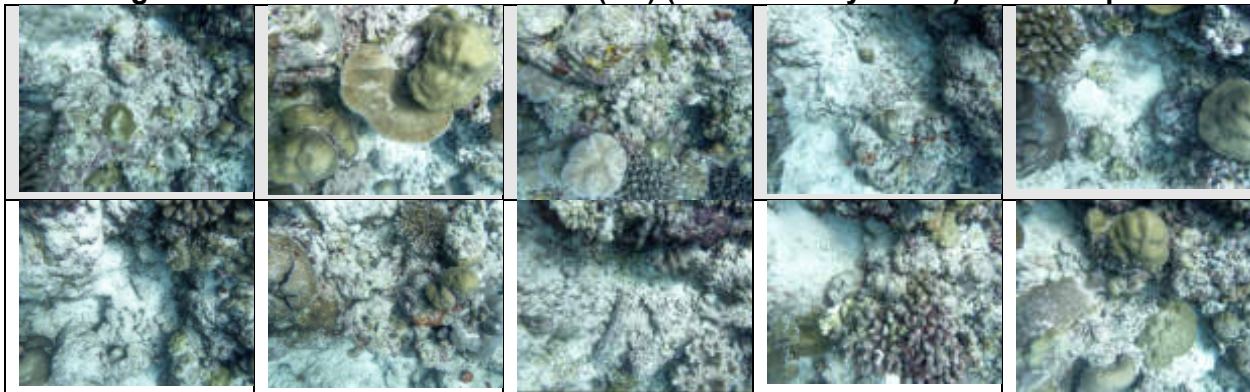
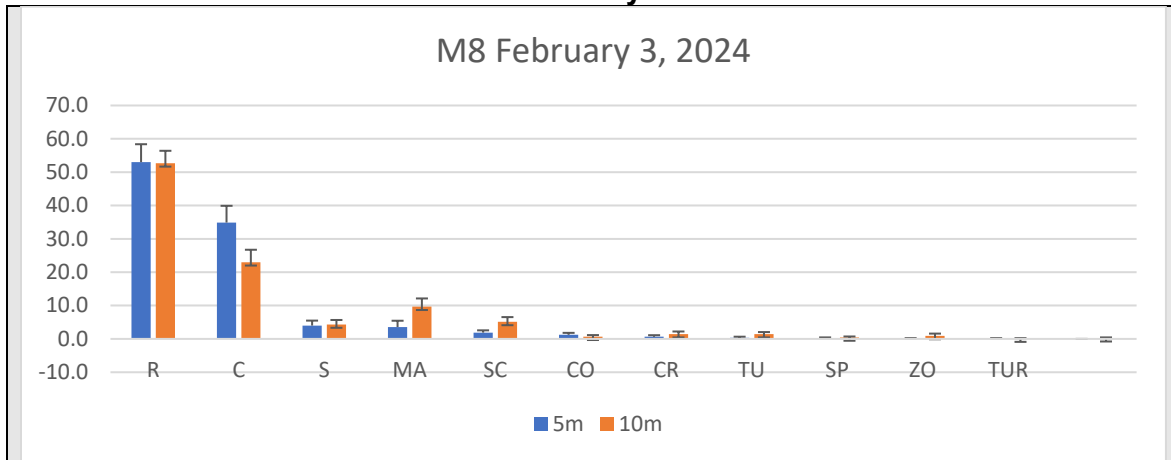


Figure 5: Average benthic cover and their standard error for M8 at both 5 and 10m depth 3rd February 2024



Status of Site M9: This location was identified as an alternative for brine discharge and wastewater outfall. This is close to the WtE site at the southern reef of Thilafushi Island. Substrate cover was qualitatively similar to the results obtained in the past surveys. Like Site 8, the highest substrate cover was rock, some 51.2-51.42% at 5m and 10m depth respectively, followed by live coral. Live coral cover was 36-31%. Sand and silt cover was around 4-7%, higher than the last survey.

Like M8 M9 extensive sedimentation that has been seen in the October was survey not observed during the survey in February. It seems that the stormy weather condition prevailed during December 2023 and January 2024 has cleaned up the reef from sediments to a large extent. Also the reclamation of Thilafushi Phase II has been shifted to north and north eastern part of Thiafushi therefore, impact of sedimentation is less.

With regards to fish Balistidae *Odonus niger* is the most abundant fish at both 5 and 10m depth. Pomacentridae *Chromis weberi*, Serranidae *Pseudanthias evansi* and *Pseudanthias squamipinnis* were abundant at 10m depth only. Labridae *Thalassoma amblycephalum* and Pomacentridae *Chromis dimidiata* are common at 5m depth only. Pomacentridae *Pomacentrus philippinus* was the only common species found at 10m depth at this site. Photographs of the transect quadrats are shown in Figure 6 and Figure 7. Benthic composition of M9 at both 5 and 10m depth is in Figure 8.

Figure 6: Photos Taken from Site 9 (M9) (3rd February 2024) at 5m depth

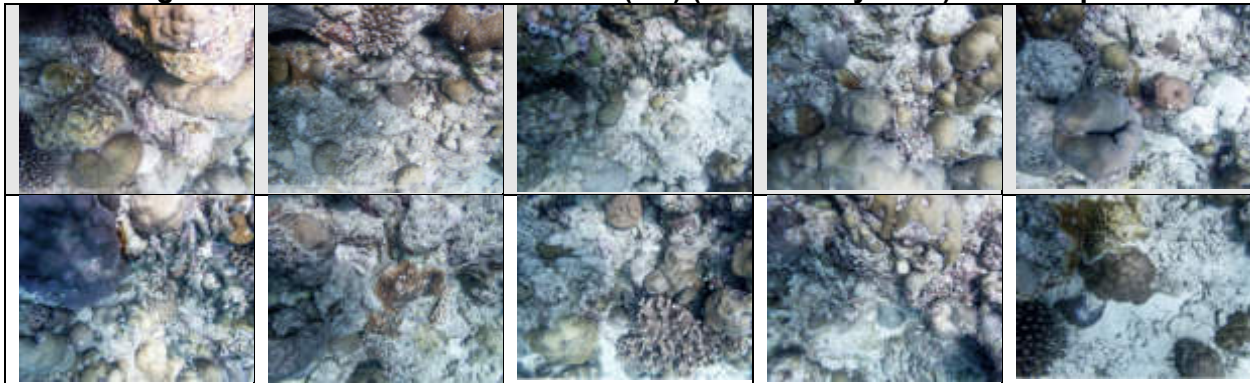


Figure 7: Overall view of the site at 5m depth October 2023 (top) and February 2024 (bottom)





Figure 8: Photos Taken from Site 9 (M9) (3rd February 2024) at 10m depth

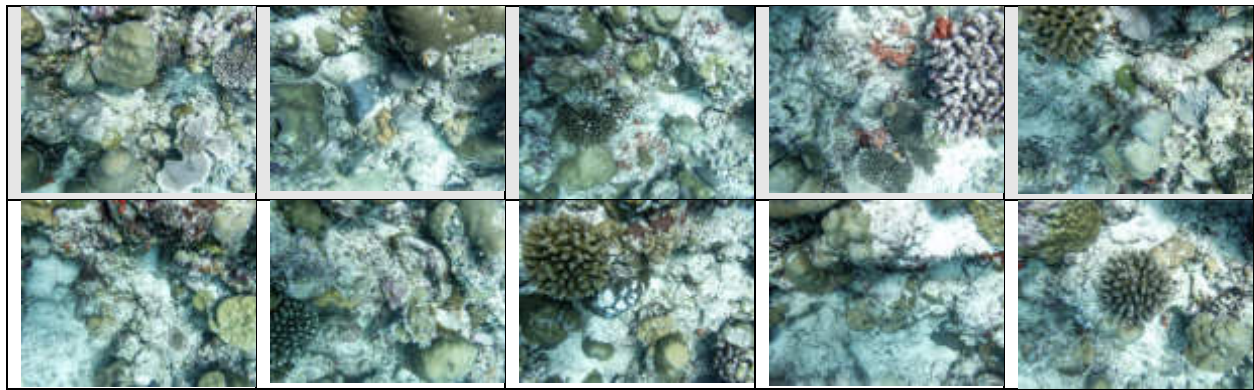
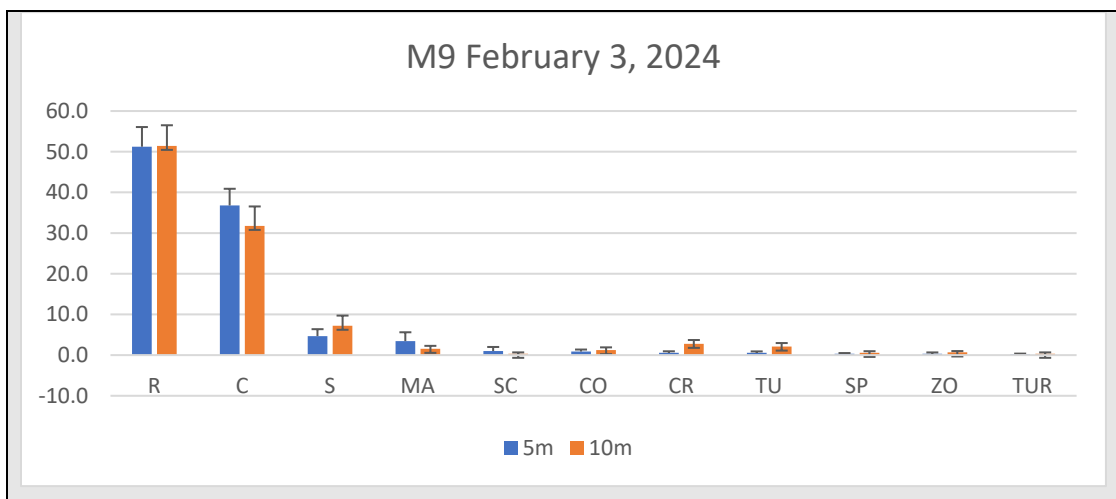


Figure 9: Average benthic cover and their standard error for M9 at both 5 and 10m depth 3rd February 2024



Status of Site M10: This location has been identified in the EIA report as a potential alternative for the discharge of brine water and waste water. The location is very close to the WtE facility and

it is on the southern reef of Thilafushi Island. Coral cover in Site M10 is 37-.26% at 5m and 10m depth respectively and coral rock cover at 5m depth is higher than 10m depth between 51 and 43% respectively, while sand and silt cover at this site is very high reaching almost 13% at 10m depth. This is the closest site to the ongoing Thilafushi phase II reclamation project. Silt content is extremely high at 10m while at 5m it is relatively lower, this may be due the inability of silt to settle at shallow water due to strong wave and current action. Mirco Algae and rubble cover on the substrates are lower at 5m than 10m at 5 depth micro algae cover does not exceeds 1.4% of substrate.

Disposed PVC pipes

The large number of PVC pipe cut pieces that was found in October 2023 were not seen during the February 2024 survey. The pipes might have drifted down the slope or it has been cleared, but most likely it has been drifted due to the strong current and wave action

With regard to fish three species *Odonus niger* and Labridae *Labroides dimidiatus* and Pomacentridae *Chromis dimidiata* were abundant at both 5m and 10 m depth while , Pomacentridae *Chromis weberi* was abundant at 5m depth only while common at 10m depth. Chaetodontidae *Hemitaurichthys zoster* and Labridae *Thalassoma amblycephalum* were the only common species found at 5m depth on this site. Photographs of the transect quadrats are shown in Figure 11 and Figure 12. Benthic composition of M10 at both 5 and 10m depth is in the graph in Figure 13 .

Figure 10: Photos Taken from Site 10 (M10) (3rd February 2024) at 5m depth

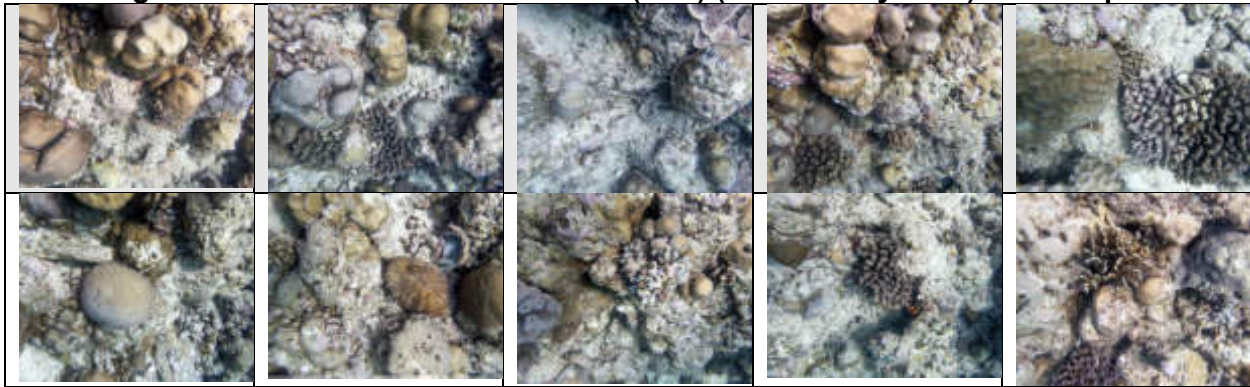


Figure 11: Photos Taken from Site 10 (M10) (3rd February 2024) at 10m depth

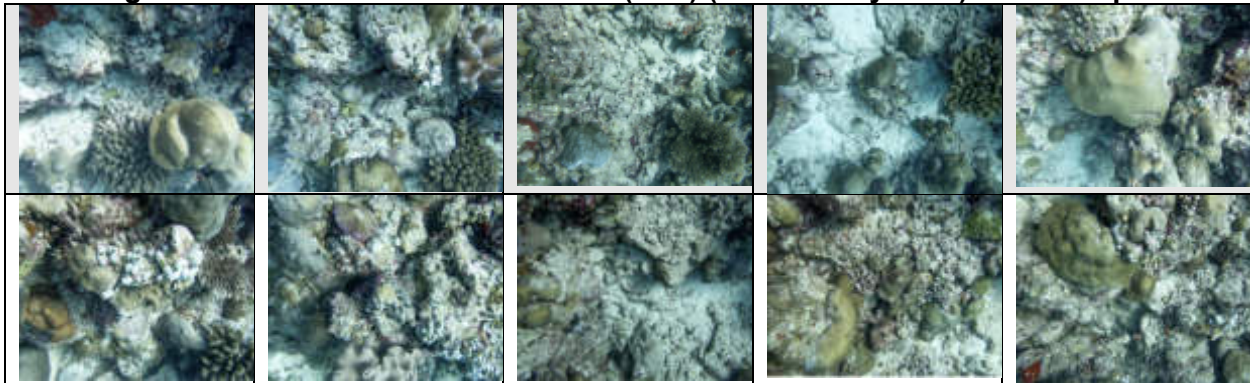
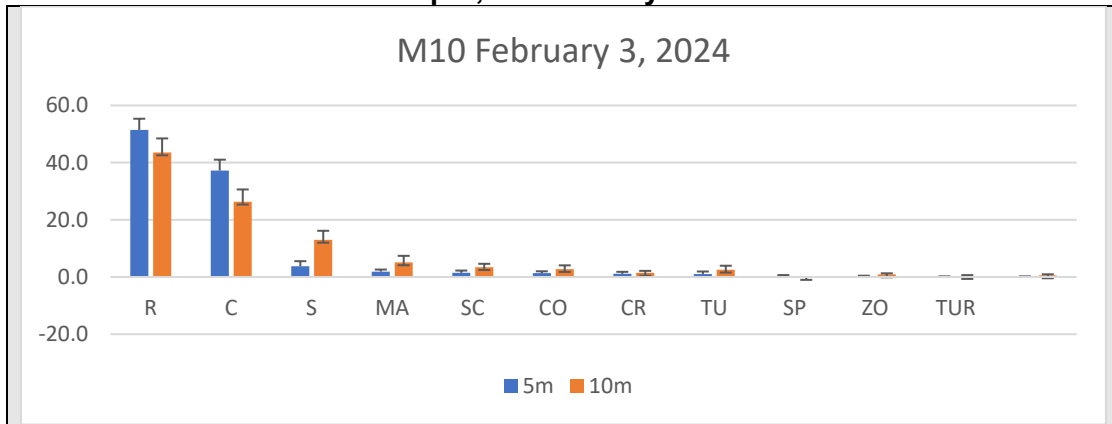


Figure 12: Average benthic cover and their standard error for M9 at both 5 and 10m depth, 3rd February 2024



2.3 Fish surveys

To ensure that the fish were not disturbed while data on substrate was being collected, a visual assessment of the fish was performed after the transect was laid. As previously mentioned, at each transect and at each depth (5m and 10m), three transects of 20m length were observed. The counts were estimated in the field and the average count of each depth was taken as the mean abundance. The mean abundance was then categorized into three arbitrary scales: "Rare" (no fish to 20 fish), "Common" (20-40 fish), and "Abundant" (counts over 40 fish).

Summaries of the data collected at each site (combining both depths) are provided in **Table 2**. The majority of the fish observed were considered rare. However, there were instances where Balistidae, and Pomacentridae are abundant. When examining the data at the species *Odonus niger* and *Chromis dimidiata* by depth are most common species at 5m depth. In Figure 14 fish families total occurrence at each depth is provided and the list is provided in the Appendix.

Annex 1. Marine ecology survey ; Fish census data

Fish Census data M8

Family	Species	Aundance 10m	Abundance 5m
Acanthuridae	<i>Ctenochaetus striatus</i>	Rare	Common
Acanthuridae	<i>Acanthurus leucosternon</i>	Rare	Rare
Acanthuridae	<i>Acanthurus lineatus</i>	Rare	Rare
Acanthuridae	<i>Naso brevirostris</i>	Rare	Rare
Balistidae	<i>Odonus niger</i>	Abundant	Abundant
Balistidae	<i>Melichthys indicus</i>	Rare	Rare
Balistidae	<i>Sufflamen bursa</i>	Rare	Rare
Balistidae	<i>Balistapus undulatus</i>	Rare	Rare
Chaetodontidae	<i>Forcipiger flavissimus</i>	Rare	Rare
Chaetodontidae	<i>Chaetodon guttattissimus</i>	Rare	Rare
Chaetodontidae	<i>Chaetodon kleinii</i>	Rare	Rare
Chaetodontidae	<i>Hemitaurichthys zoster</i>	Rare	Common
Chaetodontidae	<i>Chaetodon trifasciatus</i>	Rare	Rare
Chaetodontidae	<i>Gomphosus caeruleus</i>	Rare	Rare
Cirrhitidae	<i>Cirrhitichthys oxycephalus</i>	Rare	Rare
Gobiidae	<i>Eviota sebreei</i>	Rare	Rare
Gobiidae	<i>Eviota sigillata</i>	Rare	Rare
Haemulidae	<i>Plectorhincus vittatus</i>	Rare	Rare
Holocentridae	<i>Myripristis pralinia</i>	Rare	Rare
Labridae	<i>Thalassoma hardwicke</i>	Rare	Rare
Labridae	<i>Thalassoma amblycephalum</i>	Rare	Rare
Labridae	<i>Pseudocheilinus hexataenia</i>	Rare	Rare
Labridae	<i>Labroides dimidiatus</i>	Rare	Rare
Nemipteridae	<i>Scolopsis bilineata</i>	Rare	Rare
Pomacanthidae	<i>Centropyge multispinis</i>	Rare	Rare
Pomacentridae	<i>Chromis dimidiata</i>	Abundant	Rare
Pomacentridae	<i>Pomacentrus philippinus</i>	Rare	Rare
Pomacentridae	<i>Chromis weberi</i>	Abundant	Rare
Scaridae	<i>Cetoscarus bicolor</i>	Rare	Rare
Serranidae	<i>Cephalopholis nigripinnis</i>	Rare	Rare
Serranidae	<i>Cephalopholis argus</i>	Rare	Rare
Serranidae	<i>Pseudanthias evansi</i>	Abundant	Rare
Zanclidae	<i>Zanclus cornutus</i>	Rare	Rare


Fish Census data M9

Family	Species	Aundance 10m	Abundance 5m
Acanthuridae	<i>Ctenochaetus striatus</i>	Rare	Rare
Acanthuridae	<i>Acanthurus leucosternon</i>	Rare	Rare
Acanthuridae	<i>Zebrasoma desjardinii</i>	Rare	Rare
Acanthuridae	<i>Naso brevirostris</i>	Rare	Rare
Acanthuridae	<i>Acanthurus thompsoni</i>	Rare	Rare
Balistidae	<i>Odonus niger</i>	Abundant	Abundant
Balistidae	<i>Melichthys indicus</i>	Rare	Rare
Balistidae	<i>Rhinecanthus rectangulus</i>	Rare	Rare
Balistidae	<i>Sufflamen bursa</i>	Rare	Rare
Balistidae	<i>Balistapus undulatus</i>	Rare	Rare
Balistidae	<i>Balistoides viridescens</i>	Rare	Rare
Chaetodontidae	<i>Forcipiger flavissimus</i>	Rare	Rare
Chaetodontidae	<i>Chaetodon kleinii</i>	Rare	Rare
Chaetodontidae	<i>Chaetodon guttatissimus</i>	Rare	Rare
Cirrhitidae	<i>Cirrhitichthys oxycephalus</i>	Rare	Rare
Gobiidae	<i>Eviota sebreei</i>	Rare	Rare
Gobiidae	<i>Eviota sigillata</i>	Rare	Rare
Gobiidae	<i>Ptereleotris evides</i>	Rare	Rare
Labridae	<i>Thalassoma hardwicke</i>	Rare	Rare
Labridae	<i>Thalassoma amblycephalum</i>	Rare	Common
Labridae	<i>Labroides dimidiatus</i>	Rare	Abundant
Lutjanidae	<i>Aphareus furca</i>	Rare	Rare
Microdemidae	<i>Ptereleotris evides</i>	Rare	Rare
Pomacanthidae	<i>Centropyge multispinis</i>	Rare	Rare
Pomacentridae	<i>Chromis dimidiata</i>	Rare	Common
Pomacentridae	<i>Pomacentrus philippinus</i>	Common	Rare
Pomacentridae	<i>Chromis weberi</i>	Abundant	Rare
Pomacentridae	<i>Amphiprion nigripes</i>	Rare	Rare
Pomacentridae	<i>Dascyllus trimaculatus</i>	Rare	Rare
Scaridae	<i>Chlorurus sordidus</i>	Rare	Rare
Pomacentridae	<i>Pomacentrus caeruleus</i>	Rare	Rare
Serranidae	<i>Cephalopholis argus</i>	Rare	Rare
Serranidae	<i>Pseudanthias evansi</i>	Abundant	Rare
Serranidae	<i>Pseudanthias squamipinnis</i>	Abundant	Rare
Zanclidae	<i>Zanclus cornutus</i>	Rare	Rare

Fish Census data M10

Family	Species	Aundance 10m	Abundance 5m
Acanthuridae	<i>Ctenochaetus striatus</i>	Rare	Rare
Acanthuridae	<i>Acanthurus leucosternon</i>	Rare	Rare
Acanthuridae	<i>Naso brevirostris</i>	Rare	Rare
Balistidae	<i>Odonus niger</i>	Abundant	Rare
Balistidae	<i>Melichthys indicus</i>	Rare	Rare
Balistidae	<i>Rhinecanthus rectangulus</i>	Rare	Rare
Balistidae	<i>Sufflamen bursa</i>	Rare	Rare
Balistidae	<i>Balistapus undulatus</i>	Rare	Rare
Carangidae	<i>Caranx melampygus</i>	Rare	Rare
Chaetodontidae	<i>Forcipiger flavissimus</i>	Rare	Rare
Chaetodontidae	<i>Chaetodon guttatissimus</i>	Rare	Rare
Chaetodontidae	<i>Chaetodon auriga</i>	Rare	Rare
Chaetodontidae	<i>Hemitaurichthys zoster</i>	Rare	Common
Chaetodontidae	<i>Chaetodon kleinii</i>	Rare	Rare
Cirrhitidae	<i>Cirrhitichthys oxycephalus</i>	Rare	Rare
Gobiidae	<i>Eviota sebreei</i>	Rare	Rare
Gobiidae	<i>Eviota sigillata</i>	Rare	Rare
Holocentridae	<i>Myripristis vittata</i>	Rare	Rare
Holocentridae	<i>Sargocentron spiniferum</i>	Rare	Rare
Labridae	<i>Thalassoma hardwicke</i>	Rare	Rare
Labridae	<i>Thalassoma amblycephalum</i>	Rare	Common
Labridae	<i>Pseudocheilinus hexataenia</i>	Rare	Rare
Microdesmidae	<i>Ptereleotris evides</i>	Rare	Rare
Labridae	<i>Labroides dimidiatus</i>	Abundant	Abundant
Muraenidae	<i>Gymnothorax javanicus</i>	Rare	Rare
Pomacanthidae	<i>Centropyge multispinis</i>	Rare	Rare
Pomacentridae	<i>Chromis dimidiata</i>	Abundant	Abundant
Pomacentridae	<i>Chromis weberi</i>	Common	Abundant
Pomacentridae	<i>Plectroglyphidodon lacrymatus</i>	Rare	Rare
Pomacentridae	<i>Pomacentrus philippinus</i>	Rare	Rare
Serranidae	<i>Cephalopholis argus</i>	Rare	Rare
Serranidae	<i>Pseudanthias evansi</i>	Abundant	Rare
Zanclidae	<i>Zanclus cornutus</i>	Rare	Rare

**Appendix 5: MOM of stakeholder consultation held
on Feb 18 2024**

	Greater Male Waste To Energy Project Minutes of Meeting Stakeholders Engagement Meeting	Revision
		00
		18/03/2024
		1 of 1

Date & Time: Sunday 18th of February.

Time: 10:00 (CET)

Location: Contractor Office Building in Thilafushi Site

Attendees:

- | | |
|------------------------|----------------------------|
| • CIVAN KALAFAT | AAJV |
| • SOFI ISMAIL | FIT |
| • SEDAT COT | AAJV |
| • SUJITH SUDHAKARAN | AAJV |
| • MD. AYUB. AHMED | AAJV |
| • DHAMOTHARAN K | AAJV |
| • ROSHAN THOMAS | URB |
| • CPT MOHMAED SAWAAD | MNDF |
| • CHIEF ANI ABU RAHMAN | POLICE |
| • SHAFEE ADAM | WAMCO |
| • MOHAMED SHAAN | WAMCO |
| • SHOAIB ABDULLA | POLICE |
| • MOHAMED MABROOK | SOCIAL REPRESENTATIVE AAJV |

Agenda Item	Description Responsibility
1.	<p>The parties have gathered to discuss on the Stakeholder Engagement of the project to the following subjects.</p> <p>Minutes of Meeting</p> <ul style="list-style-type: none"> • A general introduction of the project to all the stakeholders in the meeting. • A briefing of role & responsibilities to all the stakeholders • Explaining how the Grievances Redress Mechanism works • An overview of HSE activities • site tour
2	<p>Minutes recorded.</p> <ul style="list-style-type: none"> • An active participation was there from all the attendees. • There were not much of the concerns raised by any of the attendees. • WAMCO team was informed about the fire and the waste being falling in sea and settling down the coastline near the security gate no – 03 • WAMCO mentioned they are preparing the emergency team and surveillance of their peripheral area will be increased so as to keep an eye on the fire on the accumulated waste near the fencing.

**Greater Male’ Waste to Energy Project
Stakeholder Engagement Meeting
18th Feb 2024**

MEETING INFORMATION

Meeting Date	18 th February 2024 (Sunday)
Time	0900 hrs – 1100 hrs
Location	K. Thilafushi, AAJV Office Meeting Room (Project Site)
Reference	BP-AJ/ST/M/2024/01

ATTENDEES

1. WAMCO
2. Ministry of Environment (MOE)
3. Urbaser SA
4. Alke Alkatas JV
5. Brook and Partners

AGENDA














No.	Item	Organization	Time
1	Participant Introductions	All	0900-0910
2	Project Introduction	Brook and Partners	0910-1000
3	Project Status	Brook and Partners	
4	Stakeholder Engagement	Brook and Partners	
5	Grievance Redress Mechanism	Brook and Partners	
6	HSE Activities Overview	AAJV HSE Team	
7	Construction Activities Overview	AAJV Construction Team	
8	Site tour	AAJV	1000-1100

END

STAKEHOLDER ENGAGEMENT MEETING

Date	18/02/2024	Duration	2 hrs
Location	WTE Project Meeting Room		
Meeting Agenda	* About Project, status, * Project Beneficiary to stake holders public. * URM.		

ATTENDEES

SI #	NAME	COMPANY	DESIGNATION	SIGNATURE
1	DHAMOTHARAKIC	AAJU	HS. Manager	
2	CPT Mohamed Sawad	MNDF	second squadron operations officer	
3	Roshan Thomas	URB	EHS Manager	
4	Civan Kalafat	AAJU	Project Man.	
5	chief, Anil Ab Rahman	Police	incharge	
6	Sedat COT	AAJU	HSE Manager	
7	Sujith (Sudhakar)	AAJU	ENVY. MANAGER	
8	MD. AYUB AHMAD	AAJU	D.C.C.	
9	SOPH ISMAIL	FIT	SS	
10	SHAFIQE ADAM	WAMCO	GM - LEGAL	
11	Mohammed Sufyan	WAMCO	GM - Central Ofc.	
12	SHUAIB ABDULLA	POLICE	Sargent	
13	Mohamed Malbruke	Brook & Partners	Social Rep	

Appendix 6: Other Site Photos (from Contractor)

 <p>alke A K A T A Ş İNSAAT VE TAHHÜT A.Ş.</p>	<p>ENVIRONMENTAL MONTHLY REPORT JANUARY 2024</p>	<p>Document No</p>	<p>MDV-AAK-CEMPX- XX-RP-XXX-0007-000</p>
		<p>Rev. No / Date</p>	<p>O / 1.02.2024</p>
		<p>Page No:</p>	<p>26/33</p>

6 PICTURES OF SAPMLING FOR ENVIRONMENTAL MONITORING

7.1 AMBIENT AIR MONITORING IN JANUARY 2024



	ENVIRONMENTAL MONTHLY REPORT JANUARY 2024	Document No	MDV-AAK-CEMPX- XX-RP-XXX-0007-000
		Rev. No / Date	O / 1.02.2024
		Page No:	27/33

7.2 NOISE MONITORING IN JANUARY 2024



 <p>alke AKAŞ İNSAAT VE TAHHÜT A.Ş.</p>	ENVIRONMENTAL MONTHLY REPORT JANUARY 2024	Document No	MDV-AAK-CEMPX- XX-RP-XXX-0007-000
		Rev. No / Date	O / 1.02.2024
		Page No:	28/33

7.3 WATER SAMPLING IN JANUARY 2024



Dewatering Discharge



STP



Drinking Water



Water for Construction and Camp

	ENVIRONMENTAL MONTHLY REPORT JANUARY 2024	Document No	MDV-AAK-CEMPX- XX-RP-XXX-0007-000
		Rev. No / Date	O / 1.02.2024
		Page No:	29/33

7.4 CONDITION CAMP CONSTRUCTION AND DISPOSAL AREA CONSTRUCTIONS

The construction for new accommodations for staff and workers has been continued.



The wastes send it to WAMCO in weekly basis from temporary waste storage.



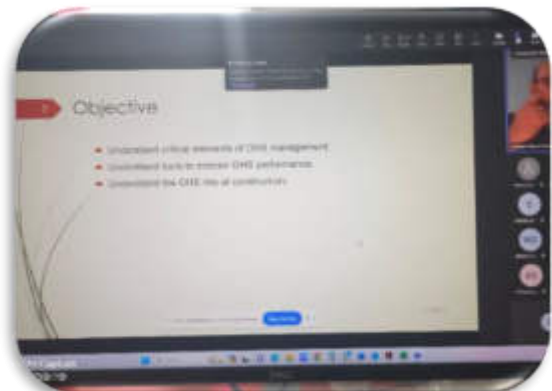
2. HSE INDUCTION

6 AAJV personnel, 9 subcontractor personnel, 5 MoE and ER personnel, 9 HDC visitors were provided HSE Induction



3. TRAINING

- On 7th January Chemical Handling Training conducted
- On 8th January Working at Height Training was conducted for the Villa Subcontractor
- On 11th January Noise Awareness Training Conducted
- On 14th January Food Safety and Handling Training conducted for Kitchen Staff
- On 31st OHS Assessment Training Provided by Mr. Sandip from ADB Independent Auditor



4.TOOLBOX TALK

This month 93 no's Toolbox was conducted including subcontractor

The topic was covered below as

- Manual Handling
- Excavation Safety
- Health and Hygiene
- Slip, Trip & Fall Hazards
- Working at height
- Adverse weather condition
- Emergency Response
- Safe use of a ladder
- Electrical Hazards
- Power Tools and Hand Tools Safety
- Hot Work
- Chemical Handling
- Housekeeping
- PPE
- Lifting Hazards
- Welding, Cutting and Grinding Safety
- Formworks, & Concrete works
- Noise
- Safe Driving of plant and equipment
- Batching Plant Operation



5. DBO HSE MANAGEMENT MEETING

● On the 3rd, 10th and 24th of January, the DDO HSE Management Meeting was Conducted and the following topics were discussed

- HSE Statistics
- HSE Activities
- HSE Induction and Training
- Incident / Accident Observation Status
- Plan, SOP and Risk Assessment
- Tool Box Talk
- Site Activity
- Security Management
- Plant & Equipment & Subcontractor Compliance
- PTW System
- HSE Training Schedule
- Construction Permit & HSE Documents Approval
- HSE Inspection tracker
- Night Work Shift Procedure
- HR Procedure
- HSE Documentation

- Environmental Monitoring for Construction Stage
- Any Other New Activity



6. SAFETY COMMITTEE MEETING

- On the 29th January Safety Committee meeting was conducted with MoE, ER, DBO and AAJV. Discussing setting out key performance benchmarks indicator and ADB HSE inspection checklist to be implemented at the site level



7. INTERNAL HSE MEETING

On the 8th of January AAJV, Internal weekly HSE was conducted and the following topics were discussed

- HSE Observation
- Improvement of PTW Systems
- Comply with Plant and equipment
- Comply with PPE
- Inspect Excavation at Buker Area
- Batching Plant Operation
- Risk Assessment and SOP



8. ADB / MOE / VISIT

- On the 15th of January MoE and the Employer Representative visited the site
- On the 16th of January ADB mission representative visited the site



9. MNDF / HDC VISIT

- On the 16th January MNDF was Inspected the new accommodation building for approvals
- On the 27th January HDC representatives visited the site



10. DBO WEEKLY HSE INSPECTION

On the 25th January Weekly HSE Inspection was carried out by Ramboll, The HSE inspection report will be received from the Ramboll



11. INTERNAL HSE INSPECTION

- Fire Extinguisher Inspection Carried out
- PPE inspection carried out
- Full Body Safety Harness Inspection carried out
- ladder inspection carried out
- Hand and Power tools inspection carried out
- Heavy Equipment Inspection carried out
- Permit Audit
- Lifting Equipment Inspection

- Overall Site Inspection
- Camp Inspection
- Smoke Detector Inspection
- Chemical Storage Inspection
- Warehouse Inspection



Fire Extinguisher Inspection



Power tools Inspection



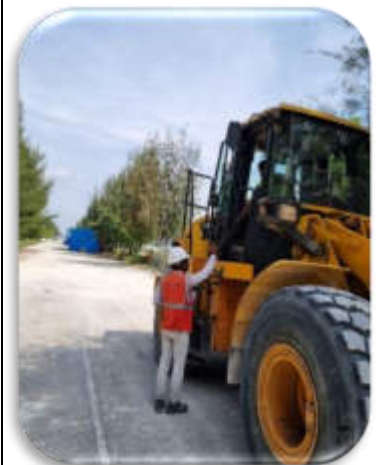
Hand tools Inspection



Ladder Inspection



Harness Inspection



Plant and Equipment Inspection



Plant and Equipment Inspection



PPE Inspection



PPE Inspection



Chemical Storage Inspection



Chemical Storage Inspection



Warehouse Inspection



Lifting slings Inspection



Lifting slings Inspection



Smoke Detector Inspection



Camp, Clinic and Security Inspection



Camp, Clinic and Security Inspection



PTW Audit

12. HSE AUDIT

- On the 28th of January, an Internal HSE Audit was carried out on the HSE Training Procedure, and Soil Management Plan
- On the 29th of January, an External Audit was conducted by Ramboll on the Public Health Safety Plan, Emergency Response Plan, Incident Reporting Procedure, Grievance Redress Mechanism

Audit reports will be prepared for further follow-up action



13. HOUSEKEEPING

- There were 5 mass housekeeping carried out
- Housekeeping is carried out daily basis



14. GOOD PRACTICE / IMPROVEMENT



Provided tool lanyard on the Welding Machine to prevent falling objects



Provided tool lanyard on the grinding machine



Provided tool lanyard on the hand tools

	ENVIRONMENTAL MONTHLY REPORT FEBRUARY 2024	Document No	MDV-AAK-CEMPX- XX-RP-XXX-0007-000
		Rev. No / Date	03.03.2024
		Page No:	36/118

1 TRAINING

Chemicals & Hazardous Management & Spill Management was given as per MDV-AAK-HSEXX-XX-PL-MGT-0012 Chemical and Hazardous Material Management Plan / MDV-AAK-HSEXX-XX-PL-MGT-0010 Spill Control & Containment Plan and Training Schedule for February. (29.10.2024)

Training subjects are:

- Chemical Waste Disposal
- Effects if the Chemicals and Hazardous Materials to the Environment.
- Chemical Handling
- PPE Requirements While Working with Chemicals.
- Spill Management



2 PICTURES OF SAPMLING FOR ENVIRONMENTAL MONITORING

7.1 AMBIENT AIR MONITORING IN FEBRUARY



	ENVIRONMENTAL MONTHLY REPORT FEBRUARY 2024	Document No	MDV-AAK-CEMPX- XX-RP-XXX-0007-000
		Rev. No / Date	03.03.2024
		Page No:	37/118

7.2 NOISE MONITORING IN FEBRUARY 2024



7.3 WATER FOR CONSTRUCTION AND WASTEWATER TREATMENT



Drinking Water Sampling



STP Effluent Sampling

	ENVIRONMENTAL MONTHLY REPORT FEBRUARY 2024	Document No	MDV-AAK-CEMPX- XX-RP-XXX-0007-000
		Rev. No / Date	03.03.2024
		Page No:	38/118



**Dewatering Effluent Sampling
Supply Water for Camp And**



Construction Sampling



Groundwater Sampling



Marine Water Sampling

2. HSE INDUCTION

23 AAJV personnel, 6 subcontractor personnel, 4 MoE and ER personnel, and 18 visitors were provided HSE Induction



3. TRAINING

- Working at height Training Conducted
- Lifting and Rigging Training Conducted
- How to use of Fire Extinguisher
- PPE Awareness training conducted
- PTW Refresh training conducted
- Driving Safety training conducted
- Spillage Response training conducted
- Waste Management training conducted





4. TOOLBOX TALK

This month 74 no's Toolbox was conducted including subcontractor

The topic was covered below as

- Manual Handling
- Excavation Safety
- Slip, Trip & Fall Hazards
- Working at height
- Adverse weather condition
- Emergency Response
- Electrical Hazards
- Power Tools and Hand Tools Safety
- Hot Work
- Chemical Handling/Waterproofing works
- Housekeeping
- PPE
- Lifting and Rigging Hazards
- Welding, Cutting and Grinding Safety
- Formworks, & Concrete works
- Noise
- Safe Driving of plant and equipment
- Batching Plant Operation



5. DBO HSE MANAGEMENT MEETING

- On the 7th, 14th and 21st of February, the DDO HSE Management Meeting was Conducted and the following topics were discussed
 - HSE Statistics
 - HSE Activities
 - HSE Induction and Training
 - Incident / Accident Observation Status

- Plan, SOP and Risk Assessment
- Tool Box Talk
- Site Activity
- Security Management
- Plant & Equipment & Subcontractor Compliance
- PTW System
- HSE Training Schedule
- Construction Permit & HSE Documents Approval
- HSE Inspection tracker
- Night Work Shift Procedure
- HR Procedure
- HSE Documentation
- Environmental Monitoring for Construction Stage
- Any Other New Activity



6. STAKEHOLDER ENGAGEMENT MEETING

On 18th Feb A stakeholder engagement meeting was conducted with WAMCO, STELCO, MNDF and Local Police



7. MOE / DBO MANAGEMENT VISIT

- On the 20th Japan Fund for Joint Crediting Mechanism, (JFJCM) representative visited the site
- On the 26th DBO Management team visited the site
- On the 27th MoE, ER and DBO Management team visited the site



8. DBO WEEKLY HSE INSPECTION

On the 5th of February Weekly HSE Inspection was carried out by Ramboll,



9. INTERNAL HSE INSPECTION

- Fire Extinguisher Inspection Carried out
- PPE inspection carried out
- Full Body Safety Harness Inspection carried out
- ladder inspection carried out
- Hand and Power tools inspection carried out
- Heavy Equipment Inspection carried out
- Permit Audit

- Lifting Equipment Inspection
- Overall Site Inspection
- Camp Inspection
- Smoke Detector Inspection
- Chemical Storage Inspection
- Warehouse Inspection



Fire Extinguisher Inspection



Power tools Inspection



Hand tools Inspection



Ladder Inspection



Harness Inspection



Plant and Equipment Inspection



Plant and Equipment Inspection by Third party



PPE Inspection



PPE Inspection



Chemical Storage Inspection



Chemical Storage Inspection



Warehouse Inspection



Lifting slings Inspection by Third Party



Lifting slings Inspection



Smoke Detector Inspection



Camp, Clinic and Security Inspection



Camp, Clinic and Security Inspection



PTW Audit

10. HSE AUDIT

- On the 29th of January, an External Audit was conducted by Ramboll on the Public Health Safety Plan, Emergency Response Plan, Incident Reporting Procedure, and Grievance Redress Mechanism, The Audit Report has not yet been received for the follow-up closeout action.
- On the 24th of Feb an Internal HSE Audit was carried out on the Chemical Management Plan, and Traffic Management Plan

Audit reports will be prepared for further follow-up action



11. HOUSEKEEPING

- There were 5 mass housekeeping carried out
- Housekeeping is carried out daily basis



12. GOOD PRACTICE / IMPROVEMENT



Provided training on how to use a fire extinguisher



Provided training on how to use a fire extinguisher



Working at Height Campaign Conducted

	ENVIRONMENTAL MONTHLY REPORT March 2024	Document No	MDV-AAK-CEMPX- XX-RP-XXX-0007-000
		Rev. No / Date	03.04.2024
		Page No:	26/34

6 TRAINING

Chemicals & Hazardous Management & Spill Management was given as per MDV-AAK-HSEXX-XX-PL-MGT-0012 Chemical and Hazardous Material Management Plan / MDV-AAK-HSEXX-XX-PL-MGT-0010 Spill Control & Containment Plan and Training Schedule for March. (31.03.2024)

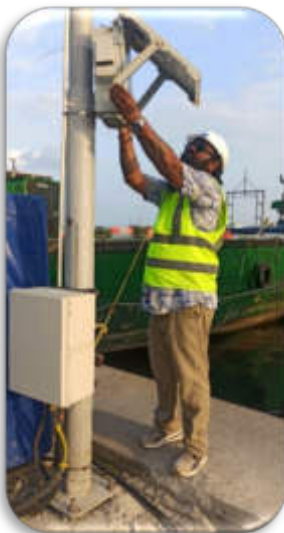
Training subjects are: (Refreshment Training – 31-03-2024)

- Chemical Handling
- Chemical Storing
- Potential Health Hazards
- PPE Requirements While Working with Chemicals.
- Proper disposal method.



7 PICTURES OF SAPMLING FOR ENVIRONMENTAL MONITORING

7.1 AMBIENT AIR MONITORING



	ENVIRONMENTAL MONTHLY REPORT March 2024	Document No	MDV-AAK-CEMPX- XX-RP-XXX-0007-000
		Rev. No / Date	03.04.2024
		Page No:	27/34



AIR MONITORING CONDUCTED SITE

7.2 NOISE MONITORING



	ENVIRONMENTAL MONTHLY REPORT March 2024	Document No	MDV-AAK-CEMPX- XX-RP-XXX-0007-000
		Rev. No / Date	03.04.2024
		Page No:	28/34

7.3 WATER FOR CONSTRUCTION AND WASTEWATER TREATMENT



Drinking Water Sampling



STP Effluent Sampling



Dewatering Effluent Sampling



Supply Water for Camp And Construction Sampling

 ALKE ALKATAŞ İNŞAAT VE TAHHÜT A.Ş.	ENVIRONMENTAL MONTHLY REPORT March 2024	Document No	MDV-AAK-CEMPX- XX-RP-XXX-0007-000
		Rev. No / Date	03.04.2024
		Page No:	29/34




7.4 CONDITION CAMP CONSTRUCTION AND DISPOSAL AREA CONSTRUCTIONS



The construction of new accommodation has been continued.









APPENDIX: 4 OBSERVATION / NCR CLOSEOUT REPORT

	Revision 2	Outstanding Work List Greater Male Waste to Energy Project	FICHTNER 4169A01-830-01
	Issue Date: March 2024		

	Date identified 3.3.2024
	Observation Ref. F0013
Issue	
Scaffolding access/platform without proper tagging to verify its safety. EPC to ensure temporary scaffolding access/platform is equipped with proper tagging and verification of its safety on display.	
Contractor Work Status	
Scaffolds got inspected and approved by certified inspector, tags were placed with signature and approval of conformity for safe use. Scaffolders inspector is Mohammed Mustafa E. M.	
STATUS	TARGET TO CLOSE DATE CLOSED: 18.03.2024
	VERIFIED BY:
	

	Location	Batching Plant
	Date identified	3.3.2024
	Observation Ref.	F0014
	Issue	
	The electrical distribution panel is exposed near road. To be barricaded and sufficient signage is required.	
	Contractor Work Status	
Shifted distribution panel from the roadside to a safe place		
STATUS	TARGET TO CLOSE	DATE CLOSED:
	04.03.2024	VERIFIED BY:
	Location	Work yard
	Date Identified	3.3.2024

	Observation Ref. F0015
	Issue
	Need sufficient firefighting equipment and signage at the work yard.
	Contractor Work Status
Placed adequate fire extinguishers along with signage at the carpentry yard and steel yards	
STATUS	TARGET TO CLOSE DATE CLOSED:
	4.3.2024 VERIFIED BY:
	Location Work yard
	Date identified 3.3.2024
	Observation Ref. F0016
	Issue
	Require revision of Emergency Respond Plan for cases occurred in Bunker. To ensure tools and equipment to extract injured people is available. Critical . EPC to respond with corrective action within two weeks from 3.3.2024. ER will issue stop work for failure to comply with the requirement.
Contractor Work Status	

	<p>MDV-AAK-HSEXX-XX-PL-XXX-0001 Rescue Plan for Bunker Area has submitted for information to ACONEX at 09.03.2024.</p> <p>By strengthening and making necessary revisions to the existing man basket, it will be made usable in the emergency rescue plan and will be kept ready for use after the approval of the ER representative.</p> <p>(18.03.2024)</p> <p>Also, another certified man basket will purchase for lifting operations and rescue plan. (24.03.2024) (Refer the attachments for certification)</p>	
<p style="text-align: center;">STATUS</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>Before</p> </div> <div style="text-align: center;">  <p>After</p> </div> </div> <div style="margin-top: 20px; text-align: center;">  <p>New man basket</p> </div>	<p>TARGET TO CLOSE</p> <p>24.03.2024</p>	<p>DATE CLOSED:</p> <p>VERIFIED BY:</p>

Environmental Monitoring Report

PUBLIC

Project Number: 51077-003
Quarterly Report (January - March 2024)
May 2024

Maldives: Greater Male Waste-to-Energy Project

Part D: Appendices

This environmental monitoring report is a document of the borrower. The views expressed herein do not necessarily represent those of ADB's Board of Directors, Management, or Staff, and may be preliminary in nature. Your attention is directed to the "terms of use" section of ADB's website.

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3) Sampling Methodology

This section elucidates the practical implementation of the measurement procedures outlined previously. Preliminary preparations encompass crucial calibration processes, both at the factory and in the field. Factory calibrations, typically provided by sensor manufacturers, ensure baseline accuracy. Conversely, field calibrations involve real-world comparison measurements at reference stations. In our case, calibration factors derived from a month-long comparison at a designated reference station within the Turkish air quality monitoring network were employed to refine sensor accuracy.

During the actual measurement phase, meticulous organization and execution are paramount. Utilizing four distinct sets of devices - AQ2, ASR2, AQ1, ASR3, AQ3, ASR5, and AQ4 - measurements are systematically conducted over two days. Sampling point selection is informed by macro-scale assessments as per the ESIA report, followed by on-site visits to pinpoint optimal micro-scale locations for device placement. Measurements are executed within a height range of 1.5 to 4 meters above ground level, ensuring representative sampling. Each sampling point undergoes a comprehensive 24-hour measurement cycle, with sensor devices capturing parameter averages derived from instantaneous readings taken at 1-minute intervals.

Following the measurement phase, post-measurement values are extracted directly from the sensor-equipped air quality measuring devices, facilitating data analysis and interpretation.



4) Sampling Location

A preconstruction baseline environmental assessment was carried out to evaluate ambient air quality at seven designated locations, including six sites within Thilafushi (specifically, AQ1, AQ2, and AQ3 as delineated in the Environmental Impact Assessment [EIA], along with ASR 2, ASR3, and ASR5 recommended for monitoring in the EIA Report), and one location situated in Villingili (designated as AQ4).

Sampling Point Coordinates and Sampling dates:

No	Location	Description	Distance to Source (meters)
1	AQ1	Represents dense industrial area	650
2	AQ2	Represents a dense industrial area	1000
3	AQ3	Represents a dense industrial area	500
4	ASR2	Represents a dense industrial area	700
5	ASR3	Represents a dense industrial area	500
6	ASR5	Represents a dense industrial area	1000
7	AQ4	Represents dense housing and Population area	4500

Sampling Points on Satellite



5) Legal frame work

Within the context of the project's objectives, a comprehensive assessment was undertaken to monitor emissions of particle matter (PM10-PM2.5), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), and total suspended particulates (TSP). It's imperative to note that the Maldives currently lacks a national air quality policy, necessitating reliance on established international standards for evaluation purposes.

To ensure rigorous evaluation, several authoritative bodies and frameworks were consulted. The World Health Organization (WHO) plays a pivotal role in establishing global guidelines for air quality management. These guidelines, delineated in the "Air quality guidelines for particulate matter, ozone, nitrogen dioxide, and sulfur dioxide" document, provide crucial limit values that serve as benchmarks for assessing air quality.

Moreover, the European Union (EU) has instituted directives to regulate air pollution and protect public health. Notably, the EU Council Directive 2008/50/EC sets forth health-based standards and objectives for various pollutants present in ambient air. Compliance with these directives is crucial for ensuring air quality within EU member states and aligning with international best practices.

Germany, recognized for its stringent environmental regulations, has implemented the Technical Instructions on Air Quality Control (Technische Anleitung Zur Reinhaltung der Luft), commonly referred to as the TA Luft. This regulatory framework establishes limit values aimed at safeguarding both public health and the environment from the deleterious effects of air pollution. These limit values are meticulously determined to protect against harmful emissions and mitigate the potential impact on surrounding communities and ecosystems.

To facilitate a comprehensive evaluation process, a comparative analysis was conducted, juxtaposing the established limit values from WHO guidelines, EU directives, and the TA Luft against the specific parameters selected for the modeling study. This comparative assessment ensures adherence to recognized international standards and provides a robust foundation for evaluating the potential environmental impact of the project's emissions.



Limit Values Stipulated in the International Legislation

Pollutant	Averaging Period	TA Luft	EU	WHO Ambient Air Quality Guideline Value	Project Standards
Particular Matter <10 μm (PM ₁₀)	24 hours	50 $\mu\text{g}/\text{m}^3$	50 $\mu\text{g}/\text{m}^3$	45 $\mu\text{g}/\text{m}^3$	45 $\mu\text{g}/\text{m}^3$
	1-year	40 $\mu\text{g}/\text{m}^3$	40 $\mu\text{g}/\text{m}^3$	15 $\mu\text{g}/\text{m}^3$	15 $\mu\text{g}/\text{m}^3$
Particular Matter <2.5 μm (PM _{2.5})	24 hours	-	-	15 (not to be exceeded more than 3-4 times a year)	15
	1-year	-	20	5	5
Nitrogen Dioxide (NO _x)	1-hour	200 $\mu\text{g}/\text{m}^3$	200 $\mu\text{g}/\text{m}^3$	-	200 $\mu\text{g}/\text{m}^3$
	24 hours	-	-	25 $\mu\text{g}/\text{m}^3$	25 $\mu\text{g}/\text{m}^3$
	1-year	40 $\mu\text{g}/\text{m}^3$	40 $\mu\text{g}/\text{m}^3$	10 $\mu\text{g}/\text{m}^3$	10 $\mu\text{g}/\text{m}^3$
Sulphur Dioxide (SO ₂)	1-hour	350 $\mu\text{g}/\text{m}^3$	350 $\mu\text{g}/\text{m}^3$	-	350 $\mu\text{g}/\text{m}^3$
	24 hours	125 $\mu\text{g}/\text{m}^3$	125 $\mu\text{g}/\text{m}^3$	40 $\mu\text{g}/\text{m}^3$	40 $\mu\text{g}/\text{m}^3$
	1-year	50 $\mu\text{g}/\text{m}^3$	-	-	50 $\mu\text{g}/\text{m}^3$
TSP*	-	-	-	-	-

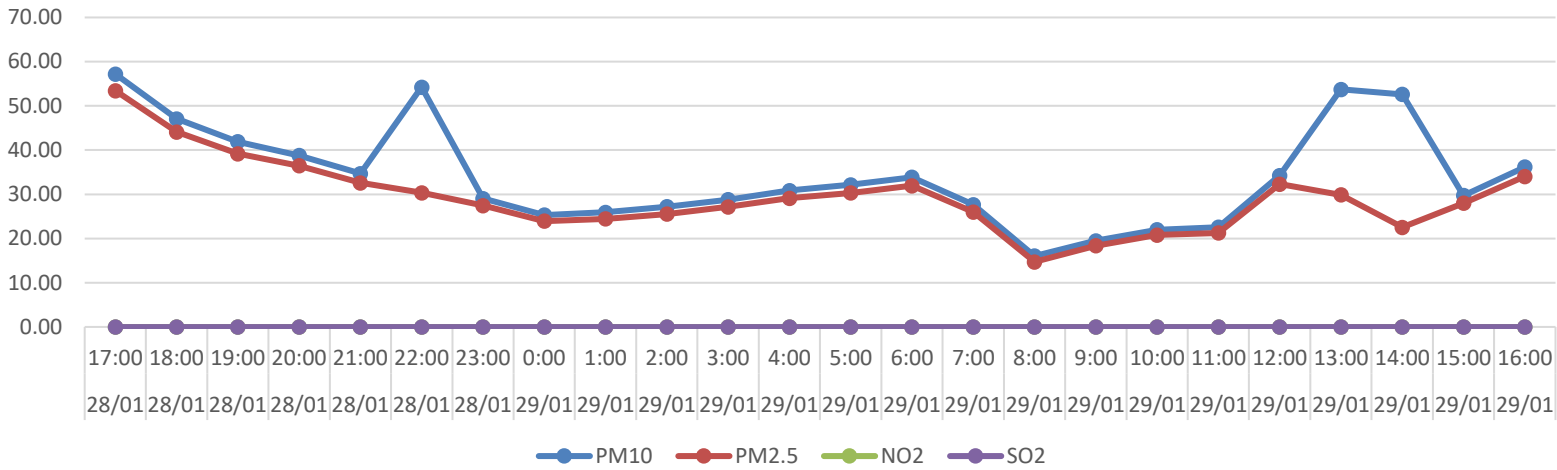
*There is no limit value for TSP.

6) Results:

Measurement Results for Location 1

Device Code: 222								
Location	Sampling Date	Air Quality Results ($\mu\text{g}/\text{m}^3$)					Ambient Conditions	
		PM ₁₀	PM _{2.5}	NO ₂	SO ₂	TSP	Humidity (%)	Temperature (°C)
AQ1	1/28/2024 17:00	57.18	53.44	0.00	0.00	86.25	86.31	33.13
	1/28/2024 18:00	47.05	44.09	0.00	0.00	70.81	70.87	33.66
	1/28/2024 19:00	41.87	39.16	0.00	0.00	62.84	62.90	33.07
	1/28/2024 20:00	38.77	36.45	0.00	0.00	58.19	58.25	33.03
	1/28/2024 21:00	34.68	32.58	0.00	0.00	51.91	51.97	32.94
	1/28/2024 22:00	54.20	30.35	0.00	0.00	48.26	48.32	32.81
	1/28/2024 23:00	29.04	27.44	0.00	0.00	43.36	43.42	32.73
	1/29/2024 0:00	25.31	23.94	0.00	0.00	37.64	37.70	32.60
	1/29/2024 1:00	25.93	24.46	0.00	0.00	38.56	38.62	32.39
	1/29/2024 2:00	27.19	25.55	0.00	0.00	40.44	40.50	32.26
	1/29/2024 3:00	28.79	27.17	0.00	0.00	42.96	43.02	32.17
	1/29/2024 4:00	30.85	29.12	0.00	0.00	46.13	46.19	32.01
	1/29/2024 5:00	32.17	30.30	0.00	0.00	48.10	48.16	32.11
	1/29/2024 6:00	33.84	31.95	0.00	0.00	50.71	50.77	32.16
	1/29/2024 7:00	27.68	26.02	0.00	0.00	41.20	41.26	32.24
	1/29/2024 8:00	16.07	14.72	0.00	0.00	23.18	23.24	29.65
	1/29/2024 9:00	19.51	18.38	0.00	0.00	28.69	28.75	32.38
	1/29/2024 10:00	22.00	20.80	0.00	0.00	32.56	32.62	35.67
	1/29/2024 11:00	22.58	21.29	0.00	0.00	33.42	33.48	37.45
	1/29/2024 12:00	34.26	32.31	0.00	0.00	51.34	51.40	38.91
1/29/2024 13:00	53.70	29.88	0.00	0.00	47.29	47.35	41.41	
1/29/2024 14:00	52.60	22.53	0.00	0.00	35.78	35.84	35.00	
1/29/2024 15:00	29.73	28.01	0.00	0.00	44.36	44.42	32.23	
1/29/2024 16:00	36.16	34.02	0.00	0.00	54.21	54.27	29.83	
Hourly Limit Values	TA Luft	-	-	200	350	-	-	-
	EU	-	-	200	350	-	-	-
	WHO Ambient Air Quality Guideline Value	-	-	-	-	-	-	-
Daily Limit Values	24 hour Average	34.21	29.33	0.00	0.00	46.59	46.65	33.41
	Daily Limit Values	50	-	-	125	-	-	-
	EU	50	-	-	125	-	-	-
Daily Limit Values	WHO Ambient Air Quality Guideline Value	45	15	25	40	-	-	-

Result of AQ1 Location

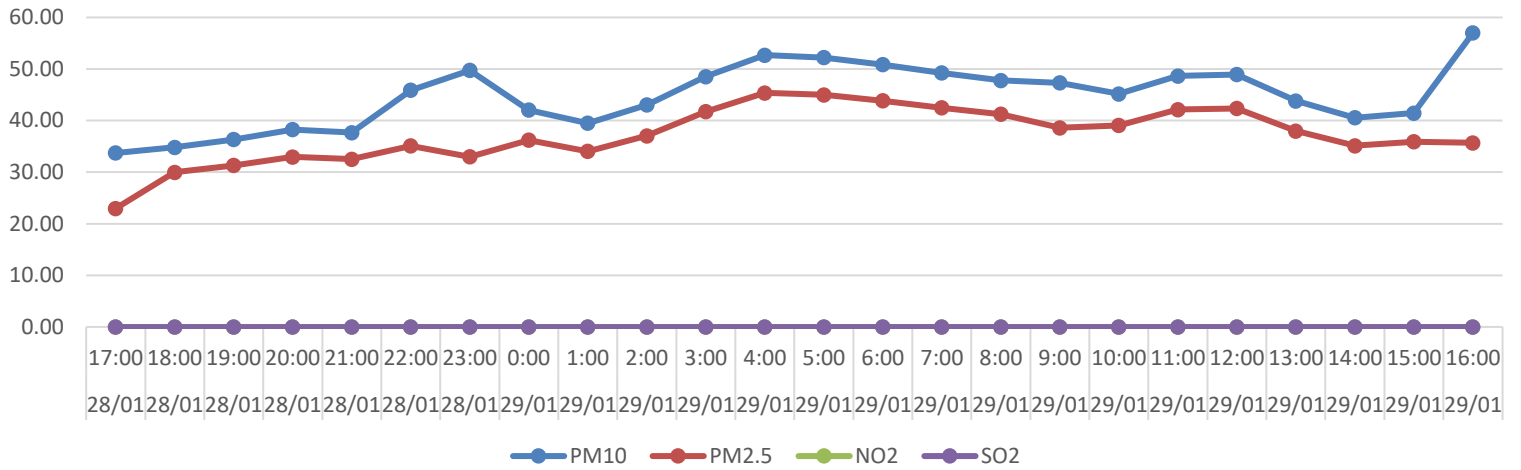


GPCB Schedule II Auditor | NABL Accredited Laboratory

Measurement Results for Location 2

Device Code: 224								
Location	Sampling Date	Results (µg/m ³)					Ambient Conditions	
		PM ₁₀	PM _{2.5}	NO ₂	SO ₂	TSP (24 Hours Average)	Humidity (%)	Temperature (°C)
AQ2	1/28/2024 17:00	33.72	22.98	0.00	0.00	55.28	83.56	27.00
	1/28/2024 18:00	34.82	29.99	0.00	0.00	57.09	79.62	27.29
	1/28/2024 19:00	36.34	31.32	0.00	0.00	59.58	82.25	27.08
	1/28/2024 20:00	38.27	32.96	0.00	0.00	62.72	84.58	27.21
	1/28/2024 21:00	37.66	32.52	0.00	0.00	61.80	86.47	27.26
	1/28/2024 22:00	45.87	35.10	0.00	0.00	66.80	88.45	27.07
	1/28/2024 23:00	49.73	32.98	0.00	0.00	81.59	89.36	26.90
	1/29/2024 0:00	42.05	36.22	0.00	0.00	68.92	89.03	26.74
	1/29/2024 1:00	39.49	34.03	0.00	0.00	64.74	84.48	26.80
	1/29/2024 2:00	43.04	37.04	0.00	0.00	70.54	83.75	26.86
	1/29/2024 3:00	48.52	41.71	0.00	0.00	79.47	82.00	27.00
	1/29/2024 4:00	52.66	45.35	0.00	0.00	86.31	81.95	27.07
	1/29/2024 5:00	52.20	44.99	0.00	0.00	85.59	82.84	26.96
	1/29/2024 6:00	50.84	43.83	0.00	0.00	83.37	81.47	26.98
	1/29/2024 7:00	49.22	42.48	0.00	0.00	80.75	81.02	27.56
	1/29/2024 8:00	47.78	41.23	0.00	0.00	78.36	72.57	29.80
	1/29/2024 9:00	47.29	38.60	0.00	0.00	77.58	67.34	31.12
	1/29/2024 10:00	45.17	39.06	0.00	0.00	74.14	62.54	32.54
	1/29/2024 11:00	48.65	42.14	0.00	0.00	79.89	61.17	33.58
	1/29/2024 12:00	48.92	42.34	0.00	0.00	80.32	58.34	34.96
1/29/2024 13:00	43.81	37.97	0.00	0.00	71.97	51.42	36.48	
1/29/2024 14:00	40.56	35.12	0.00	0.00	66.60	50.25	37.61	
1/29/2024 15:00	41.44	35.91	0.00	0.00	68.06	53.18	36.52	
1/29/2024 16:00	56.98	35.69	0.00	0.00	67.64	54.85	36.44	
Hourly Limit Values	TA Luft	-	-	200	350	-	-	-
	EU	-	-	200	350	-	-	-
	WHO Ambient Air Quality Guideline Value	-	-	-	-	-	-	-
Average		44.79	37.15	0.00	0.00	72.05	74.69	29.78
Daily Limit Values	TA Luft	50	-	-	125	-	-	-
	EU	50	-	-	125	-	-	-
	WHO Ambient Air Quality Guideline Value	45	15	25	40	-	-	-

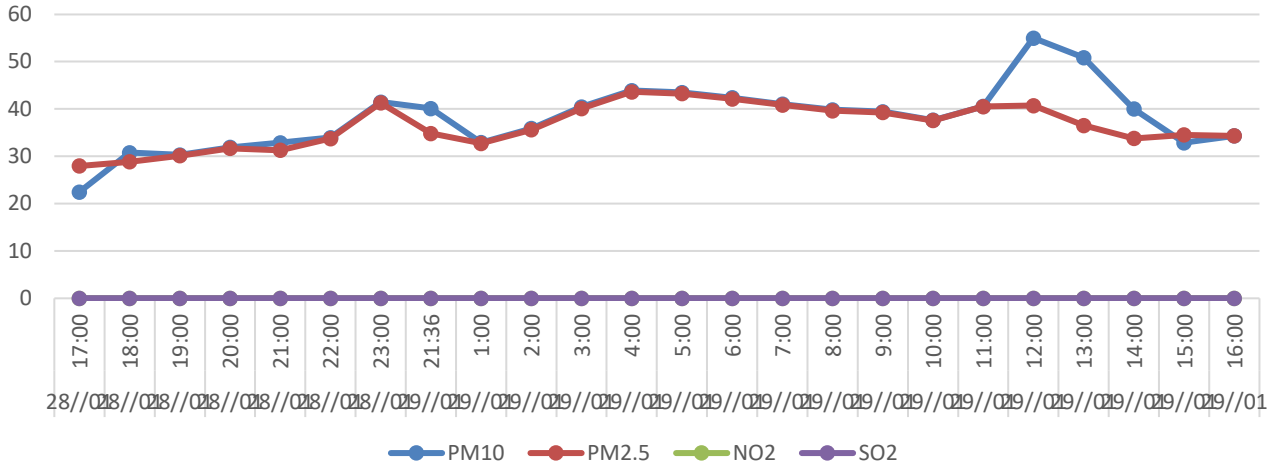
Result of AQ2 Location



Measurement Results for Location 3

Device Code: 222								
Location	Sampling Date	Results ($\mu\text{g}/\text{m}^3$)					Ambient Conditions	
		PM ₁₀	PM _{2.5}	NO ₂	SO ₂	TSP (24 Hours Average)	Humidity (%)	Temperature (°C)
AQ3	1/29/2024 17:00	22.45	27.95	0	0	53.15	84.76	25.96
	1/29/2024 18:00	30.76	28.84	0	0	54.89	80.82	26.24
	1/29/2024 19:00	30.28	30.12	0	0	57.29	83.45	26.04
	1/29/2024 20:00	31.89	31.69	0	0	60.31	85.78	26.16
	1/29/2024 21:00	32.87	31.27	0	0	59.42	87.67	26.21
	1/29/2024 22:00	33.95	33.75	0	0	64.23	89.65	26.03
	1/29/2024 23:00	41.44	41.29	0	0	78.45	90.56	25.87
	1/30/2024 0:00	40.11	34.83	0	0	66.27	90.23	25.71
	1/30/2024 1:00	32.91	32.72	0	0	62.25	85.68	25.77
	1/30/2024 2:00	35.87	35.62	0	0	67.83	84.95	25.83
	1/30/2024 3:00	40.43	40.11	0	0	76.41	83.2	25.96
	1/30/2024 4:00	43.88	43.61	0	0	82.99	83.15	26.03
	1/30/2024 5:00	43.5	43.26	0	0	82.3	84.04	25.92
	1/30/2024 6:00	42.37	42.14	0	0	80.16	82.67	25.94
	1/30/2024 7:00	41.02	40.85	0	0	77.64	82.22	26.5
	1/30/2024 8:00	39.82	39.64	0	0	75.35	73.77	28.65
	1/30/2024 9:00	39.41	39.27	0	0	74.6	68.54	29.92
	1/30/2024 10:00	37.64	37.56	0	0	71.29	63.74	31.29
	1/30/2024 11:00	40.54	40.52	0	0	76.82	62.37	32.29
	1/30/2024 12:00	54.98	40.71	0	0	77.23	59.54	33.62
1/30/2024 13:00	50.87	36.51	0	0	69.2	52.62	35.08	
1/30/2024 14:00	39.99	33.77	0	0	64.04	51.45	36.16	
1/30/2024 15:00	32.88	34.53	0	0	65.44	54.38	35.12	
1/30/2024 16:00	34.32	34.32	0	0	65.04	56.05	35.04	
Hourly Limit Values	TA Luft	-	-	200	350	-	-	-
	EU	-	-	200	350	-	-	-
	WHO Ambient Air Quality Guideline Value	-	-	-	-	-	-	-
24 Hours Average		38.09	36.45	0.00	0.00	69.28	75.89	28.64
Daily Limit Values	TA Luft	50	-	-	-	-	-	-
	EU	50	-	-	-	-	-	-
	WHO Ambient Air Quality Guideline Value	45	15	25	40	-	-	-

Result of AQ3 Location



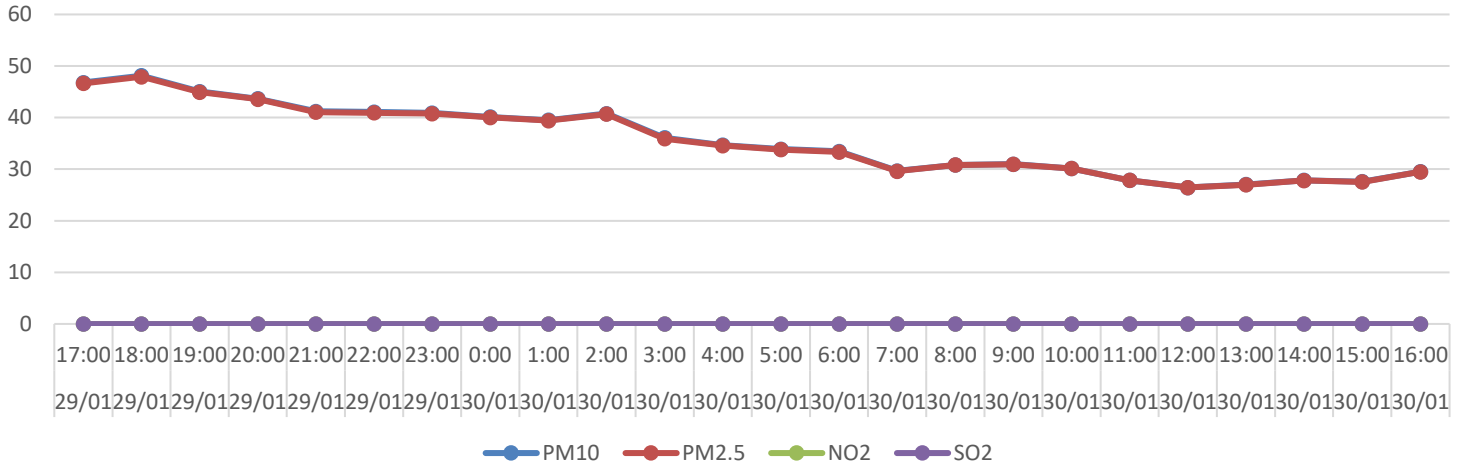
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Measurement Results for Location 4

Measurement Results for Location 4 Device Code: 223								
Location	Sampling Date	Results (µg/m³)					Ambient Conditions	
		PM ₁₀	PM _{2.5}	NO ₂	SO ₂	TSP (24 Hours Average)	Humidity (%)	Temperature (°C)
ASR2	1/29/2024 17:00	46.78	46.63	0	0	88.56	72.89	29.89
	1/29/2024 18:00	48.1	47.89	0	0	91.04	79.32	27.96
	1/29/2024 19:00	45.05	44.91	0	0	85.29	82.28	26.98
	1/29/2024 20:00	43.66	43.56	0	0	82.69	84.06	26.74
	1/29/2024 21:00	41.2	41.03	0	0	77.99	85.36	26.67
	1/29/2024 22:00	41.07	40.93	0	0	77.75	84.87	26.63
	1/29/2024 23:00	40.88	40.77	0	0	77.42	85.18	26.36
	1/30/2024 0:00	40.13	40.01	0	0	75.97	87.07	26.22
	1/30/2024 1:00	39.51	39.41	0	0	74.81	87.42	26.11
	1/30/2024 2:00	40.78	40.67	0	0	77.22	86.29	26.03
	1/30/2024 3:00	36.1	35.91	0	0	68.3	87.29	25.93
	1/30/2024 4:00	34.66	34.58	0	0	65.64	85.64	25.88
	1/30/2024 5:00	33.88	33.8	0	0	64.16	87.32	25.82
	1/30/2024 6:00	33.45	33.33	0	0	63.32	87.86	25.82
	1/30/2024 7:00	29.67	29.61	0	0	56.19	83.64	26.84
	1/30/2024 8:00	30.82	30.82	0	0	58.41	75.53	29.29
	1/30/2024 9:00	30.97	30.93	0	0	58.68	70.54	30.63
	1/30/2024 10:00	30.14	30.12	0	0	57.12	73.19	29.95
	1/30/2024 11:00	27.83	27.83	0	0	52.75	71.5	30.49
	1/30/2024 12:00	26.43	26.43	0	0	50.1	63.91	32.97
1/30/2024 13:00	27.02	26.98	0	0	51.19	63.17	32.93	
Hourly Limit Values	TA Luft	-	-	200	350	-	-	-
	EU	-	-	200	350	-	-	-
	WHO Ambient Air Quality Guideline Value	-	-	-	-	-	-	-
	24 Hours Average	35.54	35.46	0.00	0.00	67.31	78.25	28.46
Daily Limit Values	TA Luft	50	-	-	125			
	EU	50	-	-	125			
	WHO Ambient Air Quality Guideline Value	45	15	25	40			

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Result of ASR 2 Location

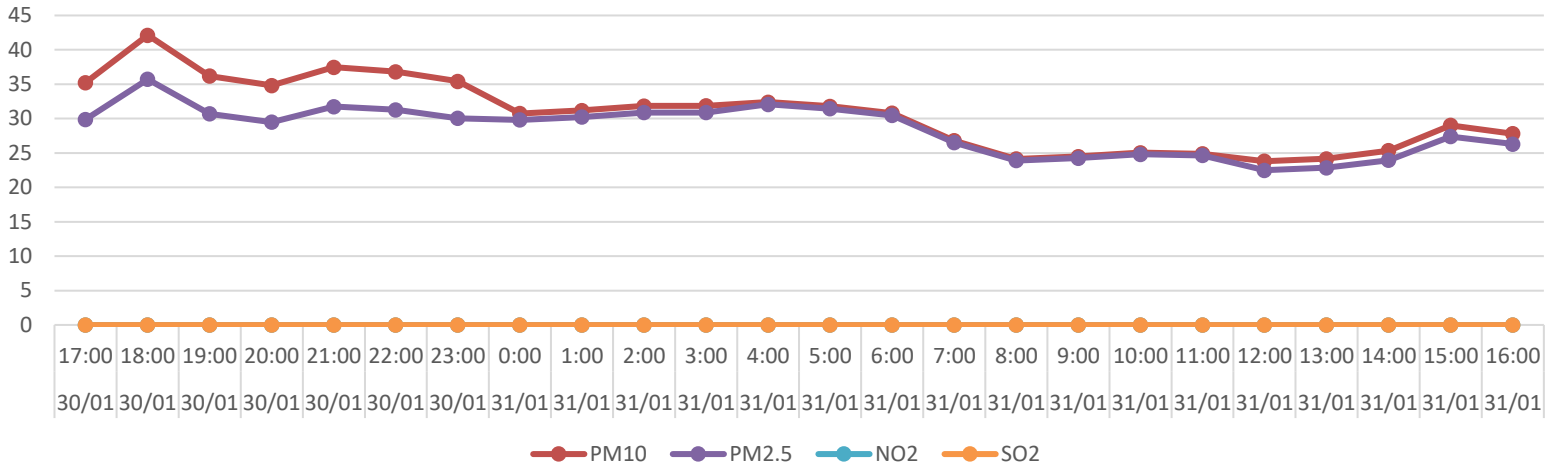


Measurement Results for Location 5

Device Code: AIRS-1								
Location	Sampling Date	Results (µg/m³)					Ambient Conditions	
		PM ₁₀	PM _{2.5}	NO ₂	SO ₂	TSP (24 Hours Average)	Humidity (%)	Temperature (°C)
ASR3	1/30/2024 17:00	35.22	29.28	29.87	0.00	0.00	55.59	71.76
	1/30/2024 18:00	42.10	35.01	35.71	0.00	0.00	66.45	77.43
	1/30/2024 19:00	36.18	30.08	30.68	0.00	0.00	57.12	82.67
	1/30/2024 20:00	34.81	28.90	29.48	0.00	0.00	54.91	84.21
	1/30/2024 21:00	37.46	31.11	31.73	0.00	0.00	59.09	85.77
	1/30/2024 22:00	36.82	30.65	31.26	0.00	0.00	58.14	86.53
	1/30/2024 23:00	35.40	29.46	30.05	0.00	0.00	55.89	85.75
	1/31/2024 0:00	30.73	29.22	29.80	0.00	0.00	55.44	86.13
	1/31/2024 1:00	31.19	29.63	30.22	0.00	0.00	56.25	85.76
	1/31/2024 2:00	31.84	30.26	30.87	0.00	0.00	57.43	87.11
	1/31/2024 3:00	31.85	30.28	30.89	0.00	0.00	57.46	86.44
	1/31/2024 4:00	32.38	30.82	32.05	0.00	0.00	58.44	86.31
	1/31/2024 5:00	31.79	30.22	31.43	0.00	0.00	57.34	86.60
	1/31/2024 6:00	30.78	29.28	30.45	0.00	0.00	55.53	85.26
	1/31/2024 7:00	26.80	25.48	26.50	0.00	0.00	48.33	81.50
	1/31/2024 8:00	24.14	22.99	23.91	0.00	0.00	43.58	64.84
	1/31/2024 9:00	24.48	23.31	24.24	0.00	0.00	44.18	59.75
	1/31/2024 10:00	25.04	23.85	24.80	0.00	0.00	45.20	57.37
	1/31/2024 11:00	24.89	23.70	24.65	0.00	0.00	44.92	59.77
	1/31/2024 12:00	23.80	21.61	22.47	0.00	0.00	41.00	60.23
1/31/2024 13:00	24.17	21.97	22.85	0.00	0.00	41.63	61.28	
1/31/2024 14:00	25.33	23.03	23.95	0.00	0.00	43.66	59.82	
1/31/2024 15:00	29.02	26.33	27.38	0.00	0.00	49.97	61.66	
1/31/2024 16:00	27.81	25.28	26.29	0.00	0.00	47.90	62.71	
Hourly Limit Values	TA Luft	-	-	200	200	-	-	-
	EU	-	-	200	350	-	-	-
	WHO Ambient Air Quality Guideline Value	-	-	-	-	-	-	-
Average	24 hours Average	30.58	27.57	28.40	0.00	0.00	52.31	75.28
Daily Limit Values	TA Luft	50	-	-	125	-	-	-
	EU	50	-	-	125	-	-	-
	WHO Ambient Air Quality Guideline Value	45	15	25	40	-	-	-

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Result of ASR3 Location

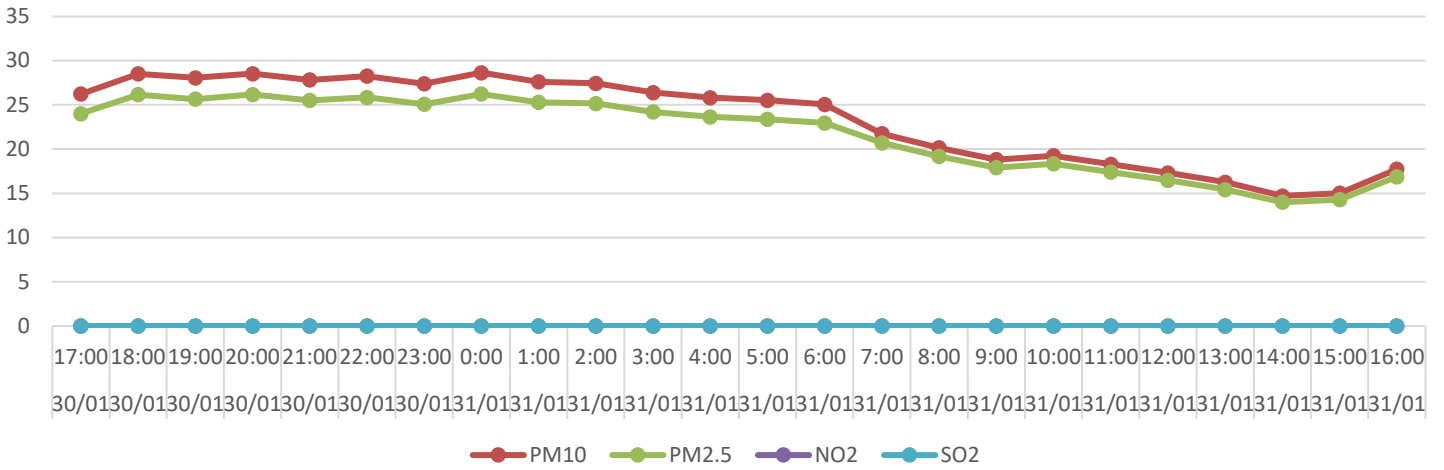


Measurement Results for Location 6

Device Code: 223								
Location	Sampling Date	Results (µg/m³)					Ambient Conditions	
		PM ₁₀	PM _{2.5}	NO ₂	SO ₂	TSP (24 Hours Average)	Humidity (%)	Temperature (°C)
ASR5	1/30/2024 17:00	24.06	22.07	24.00	0.00	0.00	45.56	65.99
	1/30/2024 18:00	26.15	23.99	26.14	0.00	0.00	49.56	72.18
	1/30/2024 19:00	25.73	23.61	25.65	0.00	0.00	48.72	77.84
	1/30/2024 20:00	26.17	24.01	26.17	0.00	0.00	49.59	78.29
	1/30/2024 21:00	25.52	23.41	25.50	0.00	0.00	48.35	79.04
	1/30/2024 22:00	25.91	23.77	25.84	0.00	0.00	49.06	79.42
	1/30/2024 23:00	25.11	23.04	25.07	0.00	0.00	47.57	81.09
	1/31/2024 0:00	26.27	24.10	26.23	0.00	0.00	49.76	84.13
	1/31/2024 1:00	25.32	23.23	25.29	0.00	0.00	47.97	81.65
	1/31/2024 2:00	25.16	23.08	25.16	0.00	0.00	47.68	83.51
	1/31/2024 3:00	24.20	25.41	24.19	0.00	0.00	45.86	83.03
	1/31/2024 4:00	23.68	24.86	23.64	0.00	0.00	44.85	83.20
	1/31/2024 5:00	23.41	24.58	23.37	0.00	0.00	44.34	83.44
	1/31/2024 6:00	22.97	24.12	22.95	0.00	0.00	43.52	82.71
	1/31/2024 7:00	20.71	21.75	20.71	0.00	0.00	39.25	81.12
	1/31/2024 8:00	19.19	20.15	19.17	0.00	0.00	36.36	65.60
	1/31/2024 9:00	17.91	18.81	17.91	0.00	0.00	33.94	62.33
	1/31/2024 10:00	18.33	19.25	18.33	0.00	0.00	34.73	62.08
	1/31/2024 11:00	17.42	18.29	17.40	0.00	0.00	33.00	66.53
	1/31/2024 12:00	16.48	17.30	16.47	0.00	0.00	31.22	67.69
1/31/2024 13:00	15.48	16.25	15.43	0.00	0.00	29.30	65.68	
1/31/2024 14:00	14.00	14.70	14.00	0.00	0.00	26.54	65.26	
1/31/2024 15:00	14.29	15.00	14.29	0.00	0.00	27.09	61.67	
1/31/2024 16:00	16.88	17.72	16.88	0.00	0.00	31.98	62.29	
Hourly Limit Values	TA Luft	-	-	200	350	-	-	-
	EU	-	-	200	350	-	-	-
	WHO Ambient Air Quality Guideline Value	-	-	-	-	-	-	-
Average	24 Hours Average	21.68	21.35	21.66	0.00	0.00	41.08	73.99
Daily Limit Values	TA Luft	50	-	-	125	-	-	-
	EU	50	-	-	125	-	-	-
	WHO Ambient Air Quality Guideline Value	45	15	25	40	-	-	-

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Result of ASR5

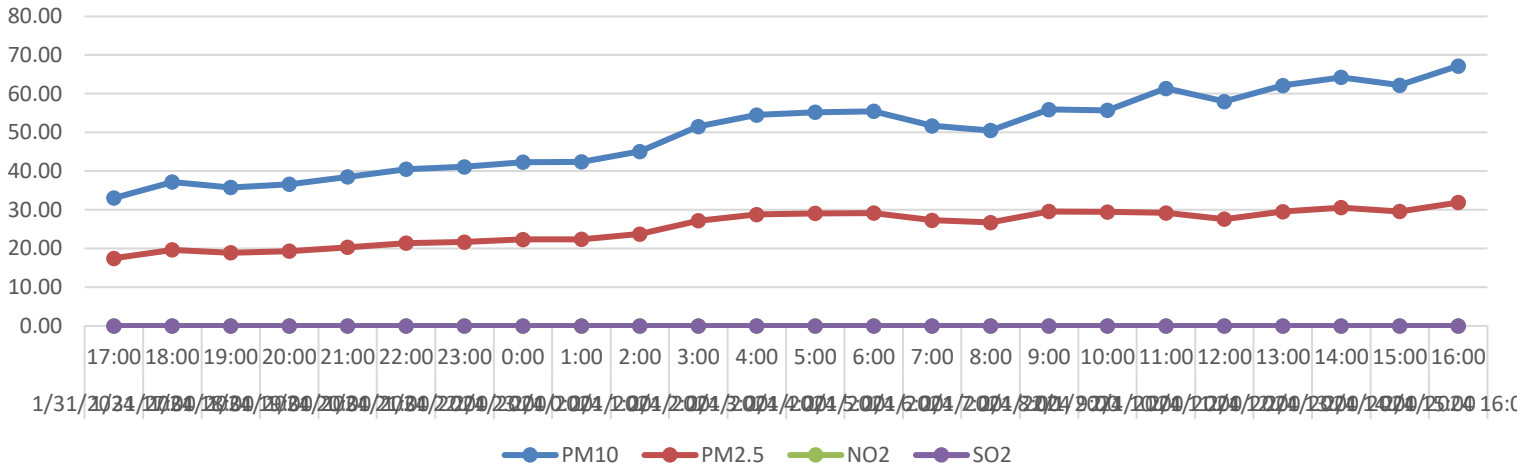


Measurement Results for Location 7

Device Code: 224								
Location	Sampling Date	Results (µg/m³)					Ambient Conditions	
		PM10	PM2.5	NO2	SO2	TSP (24 Hours Average)	Humidity (%)	Temperature (°C)
AQ4	1/31/2024 17:00	33.06	17.49	0.00	0.00	33.15	67.04	29.97
	1/31/2024 18:00	37.20	19.68	0.00	0.00	37.30	70.97	28.24
	1/31/2024 19:00	35.80	18.93	0.00	0.00	35.90	76.63	26.93
	1/31/2024 20:00	36.61	19.35	0.00	0.00	36.70	78.46	26.7
	1/31/2024 21:00	38.52	20.36	0.00	0.00	38.61	80.02	26.5
	1/31/2024 22:00	40.52	21.43	0.00	0.00	40.63	81.66	26.24
	1/31/2024 23:00	41.15	21.71	0.00	0.00	41.23	82.11	26.16
	2/1/2024 0:00	42.32	22.37	0.00	0.00	42.42	82.13	26.18
	2/1/2024 1:00	42.39	22.40	0.00	0.00	42.48	81.55	26.22
	2/1/2024 2:00	45.10	23.79	0.00	0.00	45.17	83.05	26.02
	2/1/2024 3:00	51.56	27.20	0.00	0.00	51.65	81.68	26.17
	2/1/2024 4:00	54.51	28.81	0.00	0.00	54.65	80.48	26.24
	2/1/2024 5:00	55.21	29.12	0.00	0.00	55.31	80.93	26.06
	2/1/2024 6:00	55.45	29.17	0.00	0.00	55.50	81.53	25.99
	2/1/2024 7:00	51.71	27.34	0.00	0.00	51.84	77.2	26.91
	2/1/2024 8:00	50.52	26.73	0.00	0.00	50.67	62.22	31.8
	2/1/2024 9:00	55.94	29.59	0.00	0.00	56.09	59.27	32.91
	2/1/2024 10:00	55.72	29.48	0.00	0.00	55.88	60.55	32.7
	2/1/2024 11:00	61.38	29.22	0.00	0.00	55.40	60.01	33.1
	2/1/2024 12:00	58.00	27.62	0.00	0.00	52.34	57.37	33.99
2/1/2024 13:00	62.12	29.57	0.00	0.00	56.05	57.95	33.94	
2/1/2024 14:00	64.24	30.59	0.00	0.00	57.98	61.79	32.45	
2/1/2024 15:00	62.22	29.60	0.00	0.00	56.15	62.34	32.14	
2/1/2024 16:00	67.16	31.92	0.00	0.00	60.57	59.63	33.1	
Hourly Limit Values	TA Luft	-	-	200	350	-	-	-
	EU	-	-	200	350	-	-	-
	WHO Ambient Air Quality Guideline Value	-	-	-	-	-	-	-
Average	24 hours Average	49.93	25.56	0.00	0.00	48.49	71.94	29.03
Daily Limit Values	TA Luft	50	-	-	125	-	-	-
	EU	50	-	-	125	-	-	-
	WHO Ambient Air Quality Guideline Value	45	15	25	40	-	-	-

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Result of AQ4



7) Assessment

In conclusion, the ambient air monitoring study conducted aimed to comprehensively assess air pollutants and their impact on ambient air quality. The results obtained were meticulously evaluated against the stringent standards set forth by the TA LUFT, EU Council Directive 2008/50/EC, and WHO limit values. This comprehensive assessment forms the basis of the report presented here.

Following the analysis of air quality measurement studies, it is encouraging to note that the background air quality values observed have demonstrated compliance with established air quality standards. This indicates that the ambient air quality within the monitored areas meets or exceeds the regulatory thresholds set forth by authoritative bodies. Such compliance is indicative of effective environmental management practices and underscores the importance of continued vigilance in monitoring and mitigating air pollution for the protection of public health and the environment.



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Thilafushi Island, MALDIVES 2024

Name of Project: WtE Energy Facility Project

Order No: EN-M/2207/417_01

Test report: Ambient Air Monitoring

Duration: 05.02.2024-20.02.2024



TABLE OF CONTENTS

1) Purpose of monitoring.....	3
2) Methods Used for Calibration.....	4
3) Sampling Methodology	7
4) Sampling Location	8
5) Legal framework	9
6) Results	11
7) Assessment	25



1) Purpose of Monitoring

The purpose of monitoring, as outlined in the provided details, is to assess and evaluate the air quality in the vicinity of the sensitive receptors affected by The Greater Malé Waste to Energy Project. The report aims to ascertain the levels of various air pollutants, including PM10, PM2.5, NO2, SO2, and TSP (Total Suspended Particulates), to gauge the potential environmental impact of the project on the surrounding area.

By conducting comprehensive air quality monitoring, the report seeks to provide valuable insights into the concentration levels of these pollutants, which are crucial for understanding their potential effects on human health and the environment. Additionally, the data collected will serve as a basis for assessing compliance with regulatory standards and guidelines related to air quality management.

Assessment of Air Quality: The primary objective of monitoring is to assess the quality of air in the vicinity of sensitive receptors impacted by The Greater Malé Waste to Energy Project.

Evaluation of Pollutants: The monitoring aims to evaluate the concentration levels of specific air pollutants, including:

PM10 (Particulate Matter with a diameter of 10 micrometers or less)

PM2.5 (Particulate Matter with a diameter of 2.5 micrometers or less)

NO2 (Nitrogen Dioxide)

SO2 (Sulfur Dioxide) & TSP (Total Suspended Particulates)

Compliance Legal Framework: The data collected through monitoring serves as a basis for assessing compliance with relevant regulatory standards and guidelines governing air quality management.

Decision Support: The monitoring efforts aim to provide stakeholders with accurate and reliable data to support informed decision-making processes related to the project's operations and environmental management.

Environmental Risk Mitigation: By identifying pollutant levels and potential risks, the monitoring facilitates the implementation of appropriate mitigation measures to minimize adverse impacts on public health and the environment.

Environmental Responsibility: Ultimately, the purpose of monitoring is to ensure that the Greater Malé Waste to Energy Project operates in an environmentally responsible manner, mitigating potential harm to air quality and associated ecosystems.

Overall, the purpose of this monitoring effort is to support informed decision-making processes, mitigate potential risks to public health and the environment, and ensure that the Greater Malé Waste to Energy Project operates in an environmentally responsible manner.



2) Methods Used for Monitoring

The air quality monitoring stations employed sensor-based technology to assess PM₁₀, PM_{2.5}, TSP, SO₂, and NO₂ parameters. These stations utilize 'air sensor' technology, a classification recognized by the US EPA, which encompasses non-regulatory instruments characterized by their affordability, portability, capability to measure multiple pollutants simultaneously, and ease of operation compared to traditional regulatory stations. Unlike reference measurement methods reliant on skilled operators for instrument maintenance and calibration, air sensors comprise hardware and software set operable without human intervention, enabling untrained users to monitor air pollution effectively, without necessitating specialized technical expertise.

Sensor specifications that are used for measurement study are shown below:

Parameter		Unit	Value
SO ₂	Sensitivity	nA/ppm at 2ppm SO ₂	275 to 520
	Range	ppm limit of performance warranty	100
	Linearity	error at 100ppm SO ₂ , linear at zero and 10ppm SO ₂	0 to -2
NO ₂	Sensitivity	nA/ppm at 2ppm NO ₂	-200 to -650
	Range	ppm NO ₂ limit of performance warranty	20
	Linearity	ppb error at full scale, linear at zero and 20ppm	
Particles (PM ₁₀ , PM _{2.5} and TSP)	Mass concentration precision	%	5
	Mass concentration range	µg/m ³	0 to 1000
Temperature	Typ. temperature accuracy	°C	0.45
	Operating temperature range	°C	-10 to 50
	Response time (τ63%)	s	<60
Humidity	Typ. relative humidity accuracy	%RH	4.5
	Operating relative humidity range	%RH	0 to 100
	Response time (τ63%)	s	20
All	Temperature Range	°C	-30 to 50
	Humidity Range	% RH	5 to 99

Ensuring the precision of these affordable sensors is paramount when assessing air quality. Through an intelligent calibration process, these low-cost sensors are refined and provide accurate readings comparable to those obtained from reference stations. The Smart Calibration Algorithm comprises operational steps outlined in the accompanying figure.



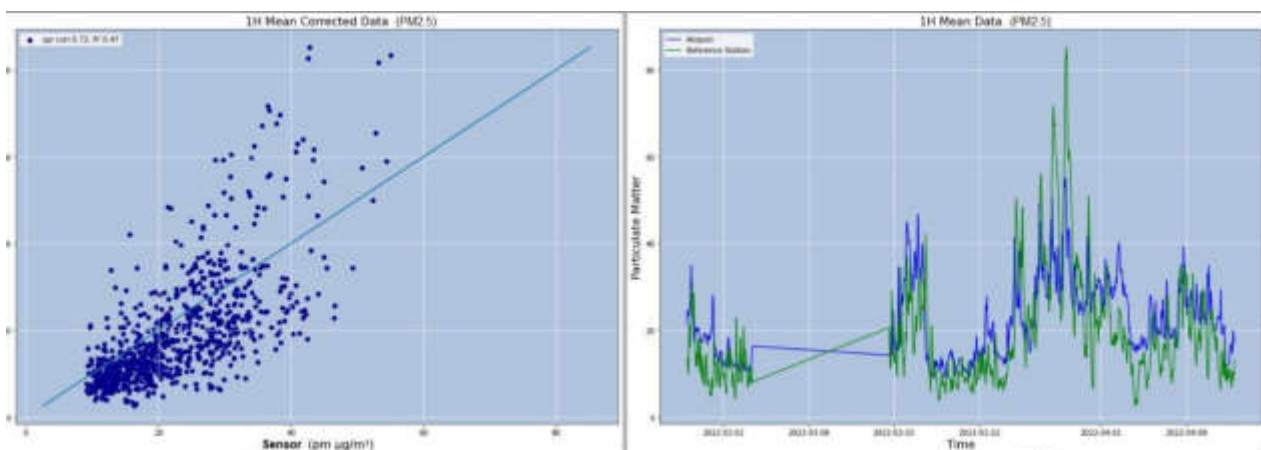
Sensor Units were calibrated using reference stations for a period before the deployment. The calibration process for particle matter and gas pollutants measurement is explained below.

Description	Methodology	
	NO ₂ -SO ₂ -O ₃	PM ₁₀ -PM _{2.5} -TSP
Installation	Near Reference Station (3/4 meters)	Near Reference Station (3/4 meters)
Pre-Test	Quality Check in zero air conditions	Quality Check in zero air conditions
Co-Located Period	4-5 weeks	8 weeks
Sampling Period	30 seconds. Hourly mean is used because the reference station measurements are hourly.	60 seconds. Hourly mean is used because the reference station measurements are hourly.
Validation	Cross-validation is used. Also, some ranges of measurement are eliminated, where the reference station is not available.	Cross-validation is used. Also, some ranges of measurement are eliminated, where the reference station is not available.
Calibration Procedure	is obtained via R ² and spearman correlation	is obtained via R ² and spearman correlation

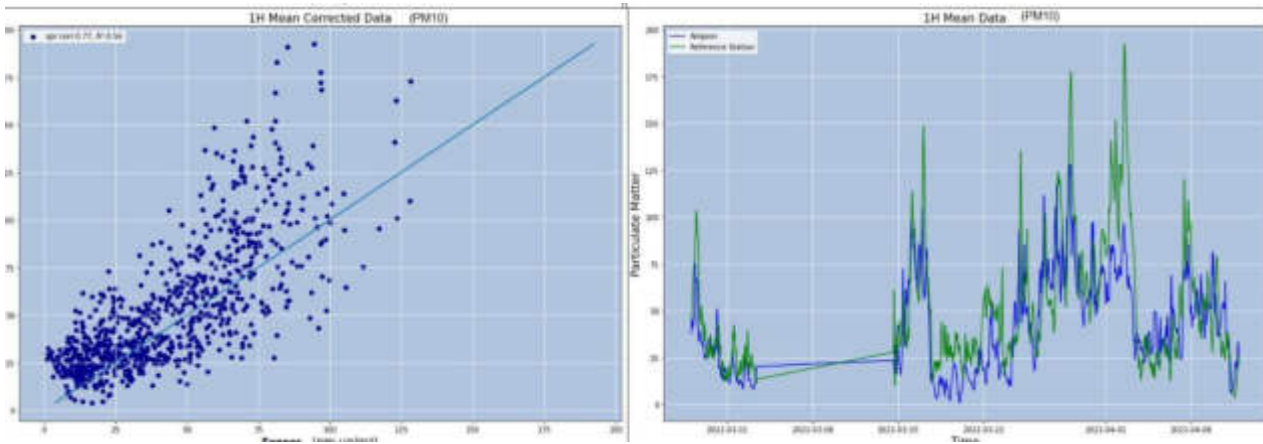
Calibration Result for PM

The corrected measurement results after the Smart Calibration Process are shown in the figures below. The correlation between Sensor Unit's PM_{2.5} measurements between Reference Station's PM_{2.5} measurements for hourly and daily mean of data is 0.73 given by the client, and the correlation between Sensor Unit's PM₁₀ measurements between Reference Station's PM₁₀ measurements for hourly and daily mean of data is 0.77 observed by the client.

Calibration Graph of PM2.5

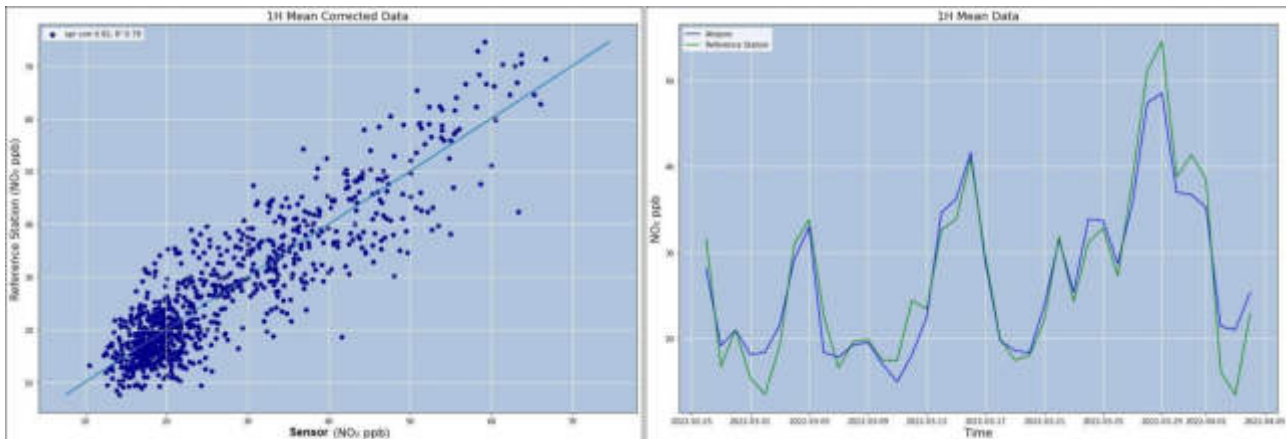


Calibration Graph of PM₁₀



Calibration Result for Gases

The corrected measurement results after the Smart Calibration Process are shown in the figures below. The correlation between Sensor Unit's NO₂ measurements between Reference Station's NO₂ measurements for hourly and daily mean of data is respectively 0.823, 0.898 observed by the client



3) Sampling Methodology

This section elucidates the practical implementation of the measurement procedures outlined previously. Preliminary preparations encompass crucial calibration processes, both at the factory and in the field. Factory calibrations, typically provided by sensor manufacturers, ensure baseline accuracy. Conversely, field calibrations involve real-world comparison measurements at reference stations. In our case, calibration factors derived from a month-long comparison at a designated reference station within the Turkish air quality monitoring network were employed to refine sensor accuracy.

During the actual measurement phase, meticulous organization and execution are paramount. Utilizing four distinct sets of devices - AQ2, ASR2, AQ1, ASR3, AQ3, ASR5, and AQ4 - measurements are systematically conducted over two days. Sampling point selection is informed by macro-scale assessments as per the ESIA report, followed by on-site visits to pinpoint optimal micro-scale locations for device placement. Measurements are executed within a height range of 1.5 to 4 meters above ground level, ensuring representative sampling. Each sampling point undergoes a comprehensive 24-hour measurement cycle, with sensor devices capturing parameter averages derived from instantaneous readings taken at 1-minute intervals.

Following the measurement phase, post-measurement values are extracted directly from the sensor-equipped air quality measuring devices, facilitating data analysis and interpretation.



4) Sampling Location

A preconstruction baseline environmental assessment was carried out to evaluate ambient air quality at seven designated locations, including six sites within Thilafushi (specifically, AQ1, AQ2, and AQ3 as delineated in the Environmental Impact Assessment [EIA], along with ASR 2, ASR3, and ASR5 recommended for monitoring in the EIA Report), and one location situated in Villingili (designated as AQ4).

Sampling Point Coordinates and Sampling dates:

No	Location	Description	Distance to Source (meters)
1	AQ1	Represents dense industrial area	650
2	AQ2	Represents a dense industrial area	1000
3	AQ3	Represents a dense industrial area	500
4	ASR2	Represents a dense industrial area	700
5	ASR3	Represents a dense industrial area	500
6	ASR5	Represents a dense industrial area	1000
7	AQ4	Represents dense housing and Population area	4500

Sampling Points on Satellite



5) Legal frame work

Within the context of the project's objectives, a comprehensive assessment was undertaken to monitor emissions of particle matter (PM10-PM2.5), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), and total suspended particulates (TSP). It's imperative to note that the Maldives currently lacks a national air quality policy, necessitating reliance on established international standards for evaluation purposes.

To ensure rigorous evaluation, several authoritative bodies and frameworks were consulted. The World Health Organization (WHO) plays a pivotal role in establishing global guidelines for air quality management. These guidelines, delineated in the "Air quality guidelines for particulate matter, ozone, nitrogen dioxide, and sulfur dioxide" document, provide crucial limit values that serve as benchmarks for assessing air quality.

Moreover, the European Union (EU) has instituted directives to regulate air pollution and protect public health. Notably, the EU Council Directive 2008/50/EC sets forth health-based standards and objectives for various pollutants present in ambient air. Compliance with these directives is crucial for ensuring air quality within EU member states and aligning with international best practices.

Germany, recognized for its stringent environmental regulations, has implemented the Technical Instructions on Air Quality Control (Technische Anleitung Zur Reinhaltung der Luft), commonly referred to as the TA Luft. This regulatory framework establishes limit values aimed at safeguarding both public health and the environment from the deleterious effects of air pollution. These limit values are meticulously determined to protect against harmful emissions and mitigate the potential impact on surrounding communities and ecosystems.

To facilitate a comprehensive evaluation process, a comparative analysis was conducted, juxtaposing the established limit values from WHO guidelines, EU directives, and the TA Luft against the specific parameters selected for the modeling study. This comparative assessment ensures adherence to recognized international standards and provides a robust foundation for evaluating the potential environmental impact of the project's emissions.



Limit Values Stipulated in the International Legislation

Pollutant	Averaging Period	TA Luft	EU	WHO Ambient Air Quality Guideline Value	Project Standards
Particular Matter <10 μm (PM ₁₀)	24 hours	50 $\mu\text{g}/\text{m}^3$	50 $\mu\text{g}/\text{m}^3$	45 $\mu\text{g}/\text{m}^3$	45 $\mu\text{g}/\text{m}^3$
	1-year	40 $\mu\text{g}/\text{m}^3$	40 $\mu\text{g}/\text{m}^3$	15 $\mu\text{g}/\text{m}^3$	15 $\mu\text{g}/\text{m}^3$
Particular Matter <2.5 μm (PM _{2.5})	24 hours	-	-	15 (not to be exceeded more than 3-4 times a year)	15
	1-year	-	20	5	5
Nitrogen Dioxide (NO _x)	1-hour	200 $\mu\text{g}/\text{m}^3$	200 $\mu\text{g}/\text{m}^3$	-	200 $\mu\text{g}/\text{m}^3$
	24 hours	-	-	25 $\mu\text{g}/\text{m}^3$	25 $\mu\text{g}/\text{m}^3$
	1-year	40 $\mu\text{g}/\text{m}^3$	40 $\mu\text{g}/\text{m}^3$	10 $\mu\text{g}/\text{m}^3$	10 $\mu\text{g}/\text{m}^3$
Sulphur Dioxide (SO ₂)	1-hour	350 $\mu\text{g}/\text{m}^3$	350 $\mu\text{g}/\text{m}^3$	-	350 $\mu\text{g}/\text{m}^3$
	24 hours	125 $\mu\text{g}/\text{m}^3$	125 $\mu\text{g}/\text{m}^3$	40 $\mu\text{g}/\text{m}^3$	40 $\mu\text{g}/\text{m}^3$
	1-year	50 $\mu\text{g}/\text{m}^3$	-	-	50 $\mu\text{g}/\text{m}^3$
TSP*	-	-	-	-	-

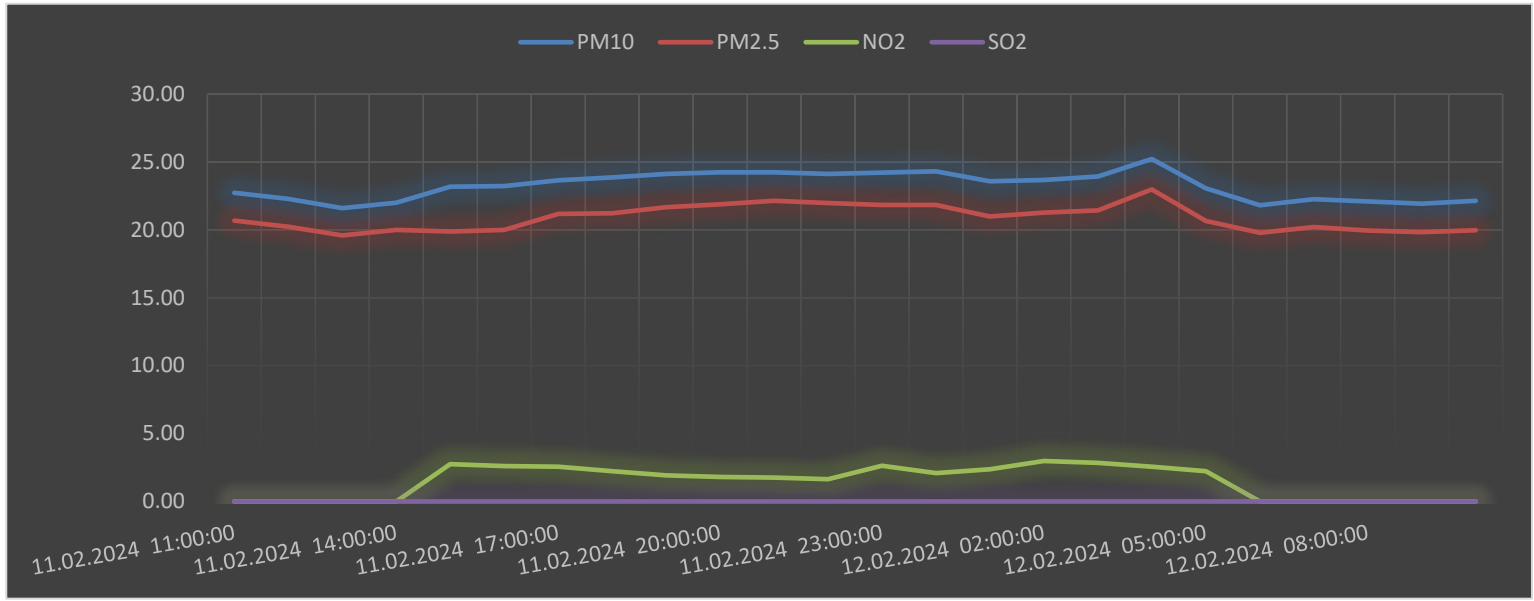
*There is no limit value for TSP.



6) Results:

Measurement Results for Location 1

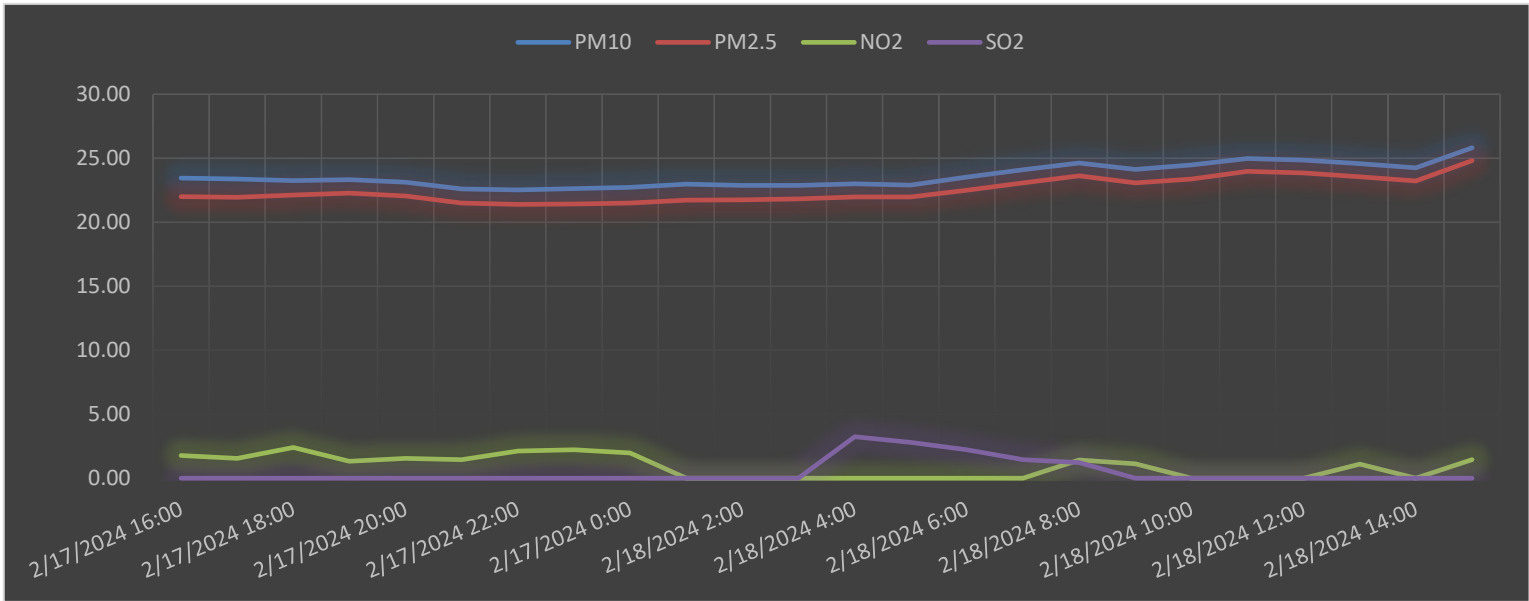
Device Code: 222								
Location	Sampling Date	Air Quality Results ($\mu\text{g}/\text{m}^3$)					Ambient Conditions	
		PM ₁₀	PM _{2.5}	NO ₂	SO ₂	TSP	Humidity (%)	Temperature (°C)
AQ1	2024/02/11 11:00:00	22.72	20.67	0.00	0.00	7.84	99.77	25.36
	2024/02/11 12:00:00	22.28	20.24	0.00	0.00	6.68	97.79	25.82
	2024/02/11 13:00:00	21.60	19.59	0.00	0.00	13.21	99.16	26.14
	2024/02/11 14:00:00	22.01	20.00	0.00	0.00	16.14	95.85	26.47
	2024/02/11 15:00:00	23.17	19.88	2.75	0.00	16.07	95.39	26.71
	2024/02/11 16:00:00	23.22	19.99	2.60	0.00	14.75	94.51	26.77
	2024/02/11 17:00:00	23.66	21.17	2.56	0.00	12.59	93.25	26.78
	2024/02/11 18:00:00	23.87	21.22	2.24	0.00	12.30	91.90	26.93
	2024/02/11 19:00:00	24.13	21.66	1.92	0.00	13.07	88.77	27.79
	2024/02/11 20:00:00	24.23	21.87	1.81	0.00	189.07	82.33	29.37
	2024/02/11 21:00:00	24.24	22.13	1.76	0.00	273.13	77.31	30.94
	2024/02/11 22:00:00	24.13	21.98	1.64	0.00	168.13	72.87	32.36
	2024/02/11 23:00:00	24.21	21.84	2.62	0.00	14.44	70.99	33.11
	2024/02/12 0:00:00	24.32	21.84	2.08	0.00	38.23	67.84	33.71
	2024/02/12 1:00:00	23.57	20.98	2.38	0.00	80.08	67.79	33.76
	2024/02/12 2:00:00	23.67	21.26	2.98	0.00	7.84	99.77	25.36
	2024/02/12 3:00:00	23.93	21.43	2.84	0.00	6.68	97.79	25.82
	2024/02/12 4:00:00	25.22	22.98	2.55	0.00	13.21	99.16	26.14
	2024/02/12 5:00:00	23.05	20.65	2.23	0.00	16.14	95.85	26.47
	2024/02/12 6:00:00	21.81	19.79	0.00	0.00	16.07	95.39	26.71
	2024/02/12 7:00:00	22.25	20.20	0.00	0.00	14.75	94.51	26.77
	2024/02/12 8:00:00	22.10	19.95	0.00	0.00	12.59	93.25	26.78
2024/02/12 9:00:00	21.93	19.83	0.00	0.00	12.30	91.90	26.93	
2024/02/12 10:00:00	22.13	19.98	0.00	0.00	13.07	88.77	27.79	
Hourly Limit Values	TA Luft	-	-	200	350	-	-	-
	EU	-	-	200	350	-	-	-
	WHO Ambient Air Quality Guideline Value	-	-	-	-	-	-	-
24 hour Average		23.23	20.88	1.46	0.00	74.14	87.01	28.34
Daily Limit Values	Daily Limit Values	50	-	-	125	-	-	-
	EU	50	-	-	125	-	-	-
	WHO Ambient Air Quality Guideline Value	45	15	25	40	-	-	-



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Measurement Results for Location 2

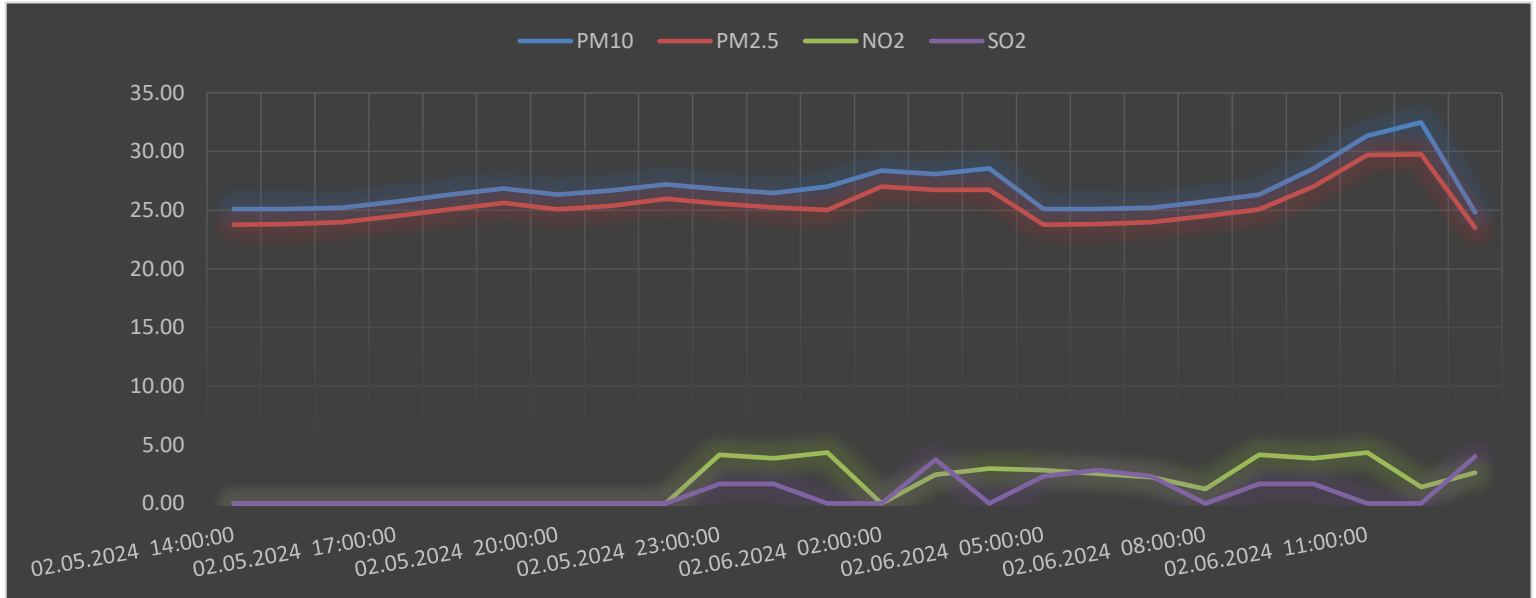
Device Code: 224								
Location	Sampling Date	Results ($\mu\text{g}/\text{m}^3$)					Ambient Conditions	
		PM ₁₀	PM _{2.5}	NO ₂	SO ₂	TSP (24 Hours Average)	Humidity (%)	Temperature (°C)
AQ2	2/17/2024 16:00	23.45	21.99	1.76	0.00	17.36	92.81	27.25
	2/17/2024 17:00	23.38	21.95	1.54	0.00	19.08	91.90	27.22
	2/17/2024 18:00	23.24	22.11	2.40	0.00	20.40	92.18	27.07
	2/17/2024 19:00	23.31	22.26	1.32	0.00	20.56	91.91	27.03
	2/17/2024 20:00	23.12	22.05	1.55	0.00	17.47	91.94	27.12
	2/17/2024 21:00	22.59	21.49	1.45	0.00	17.95	92.41	27.16
	2/17/2024 22:00	22.52	21.39	2.13	0.00	17.86	92.76	27.14
	2/17/2024 23:00	22.62	21.43	2.23	0.00	19.18	93.14	27.10
	2/17/2024 0:00	22.73	21.50	1.97	0.00	19.73	94.42	27.05
	2/18/2024 1:00	22.97	21.72	0.00	0.00	18.95	95.40	27.10
	2/18/2024 2:00	22.88	21.75	0.00	0.00	18.69	95.74	27.02
	2/18/2024 3:00	22.88	21.82	0.00	0.00	18.77	94.25	27.41
	2/18/2024 4:00	22.99	21.97	0.00	3.24	18.00	89.55	28.62
	2/18/2024 5:00	22.90	21.98	0.00	2.80	18.13	86.09	29.33
	2/18/2024 6:00	23.51	22.50	0.00	2.23	15.39	83.41	29.54
	2/18/2024 7:00	24.09	23.08	0.00	1.45	14.79	80.66	30.09
	2/18/2024 8:00	24.63	23.62	1.43	1.23	14.65	79.02	30.49
	2/18/2024 9:00	24.11	23.08	1.13	0.00	15.70	79.80	30.60
	2/18/2024 10:00	24.46	23.38	0.00	0.00	17.03	80.02	30.83
	2/18/2024 11:00	24.98	23.98	0.00	0.00	18.48	81.78	30.46
2/18/2024 12:00	24.85	23.84	0.00	0.00	18.76	85.54	29.26	
2/18/2024 13:00	24.57	23.55	1.10	0.00	18.00	89.38	28.50	
2/18/2024 14:00	24.24	23.23	0.00	0.00	19.54	91.82	27.91	
2/18/2024 15:00	25.81	24.81	1.45	0.00	20.44	93.56	27.53	
Hourly Limit Values	TA Luft	-	-	200	350	-	-	-
	EU	-	-	200	350	-	-	-
	WHO Ambient Air Quality Guideline Value	-	-	-	-	-	-	-
Average		23.62	22.52	0.89	0.46	18.12	89.15	28.29
Daily Limit Values	TA Luft	50	-	-	125	-	-	-
	EU	50	-	-	125	-	-	-
	WHO Ambient Air Quality Guideline Value	45	15	25	40	-	-	-



Measurement Results for Location 3

Device Code: 222								
Location	Sampling Date	Results ($\mu\text{g}/\text{m}^3$)					Ambient Conditions	
		PM ₁₀	PM _{2.5}	NO ₂	SO ₂	TSP (24 Hours Average)	Humidity (%)	Temperature (°C)
AQ3	2/5/24 14:00	25.10	23.75	0.00	0.00	80.19	73.05	31.24
	2/5/24 15:00	25.10	23.82	0.00	0.00	79.00	76.93	30.12
	2/5/24 16:00	25.21	23.97	0.00	0.00	80.10	80.88	29.12
	2/5/24 17:00	25.73	24.50	0.00	0.00	81.67	83.67	28.43
	2/5/24 18:00	26.31	25.08	0.00	0.00	81.91	85.32	27.97
	2/12/24 22:00	26.85	25.62	0.00	0.00	86.86	86.93	27.76
	2/5/24 20:00	26.33	25.08	0.00	0.00	87.26	87.65	27.55
	2/5/24 21:00	26.68	25.38	0.00	0.00	86.86	88.54	27.49
	2/5/24 22:00	27.20	25.98	0.00	0.00	85.17	86.80	27.51
	2/5/24 23:00	26.79	25.55	4.16	1.66	79.70	85.38	27.51
	2/5/24 0:00	26.46	25.23	3.86	1.67	74.94	86.28	27.47
	2/6/24 1:00	27.00	25.01	4.34	0.00	62.57	83.98	27.39
	2/6/24 2:00	28.38	27.01	0.00	0.00	59.02	83.96	27.45
	2/6/24 3:00	28.08	26.74	2.46	3.73	57.54	85.77	27.19
	2/6/24 4:00	28.56	26.73	2.98	0.00	59.03	87.05	27.09
	2/6/24 5:00	25.10	23.75	2.84	2.31	56.68	86.74	27.17
	2/6/24 6:00	25.10	23.82	2.55	2.85	56.15	85.12	27.46
	2/6/24 7:00	25.21	23.97	2.23	2.33	53.10	80.93	28.51
	2/6/24 8:00	25.73	24.50	1.23	0.00	50.84	74.08	30.07
	2/6/24 9:00	26.31	25.08	4.16	1.66	48.80	71.75	31.11
2/6/24 10:00	28.52	27.01	3.86	1.67	46.29	72.71	31.12	
2/6/24 11:00	31.35	29.71	4.34	0.00	39.39	71.46	31.51	
2/6/24 12:00	32.48	29.76	1.40	0.00	40.52	73.76	30.49	
2/6/24 13:00	24.81	23.49	2.62	4.01	39.26	73.76	30.64	
Hourly Limit Values	TA Luft	-	-	200	350	-	-	-
	EU	-	-	200	350	-	-	-
	WHO Ambient Air Quality Guideline Value	-	-	-	-	-	-	-
24 Hours Average		26.85	25.44	1.79	0.91	64.81	81.05	28.81
Daily Limit Values	TA Luft	50	-	-	-	-	-	-
	EU	50	-	-	-	-	-	-
	WHO Ambient Air Quality Guideline Value	45	15	25	40	-	-	-



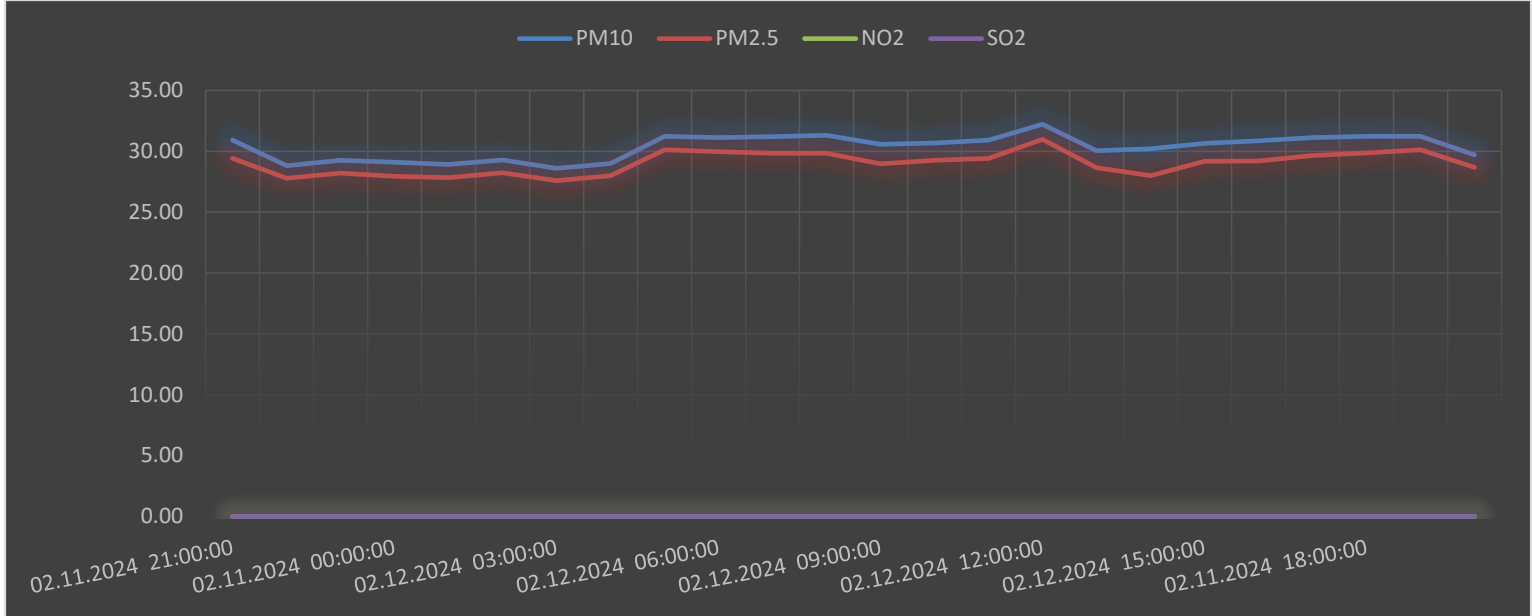


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Measurement Results for Location 4

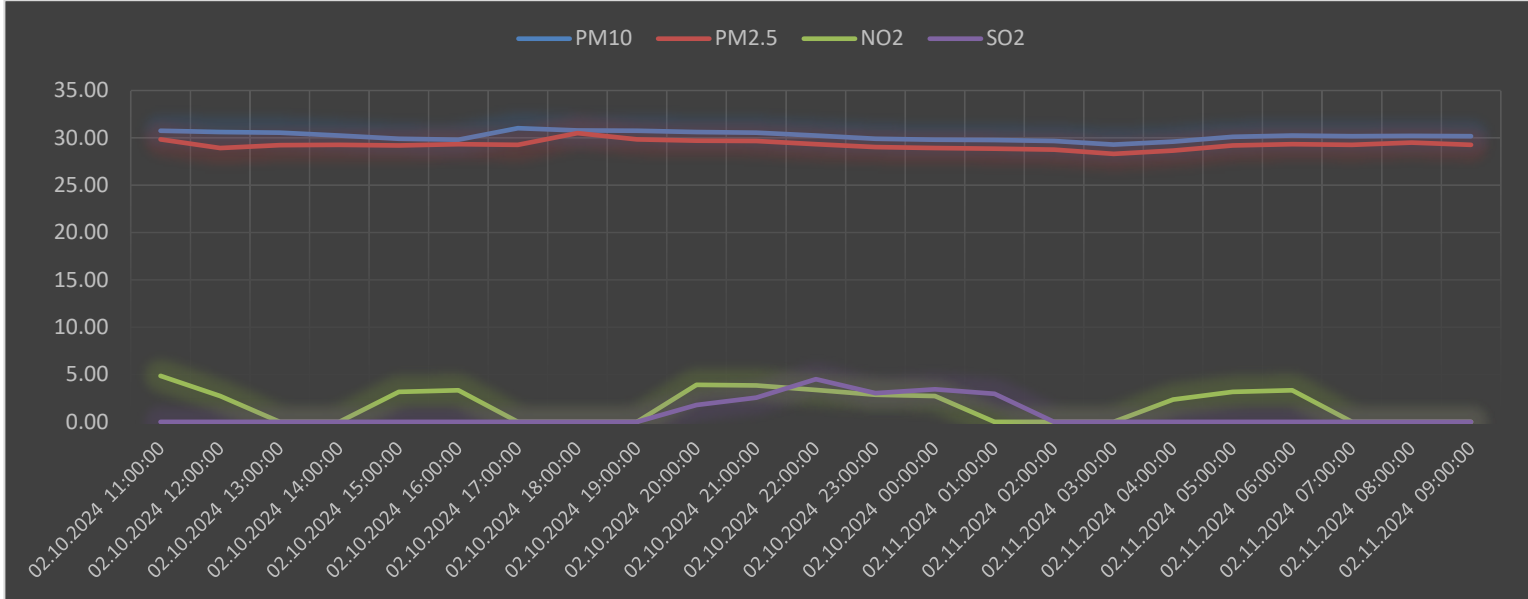
Measurement Results for Location 4 Device Code: 223								
Location	Sampling Date	Results (µg/m ³)					Ambient Conditions	
		PM ₁₀	PM _{2.5}	NO ₂	SO ₂	TSP (24 Hours Average)	Humidity (%)	Temperature (°C)
ASR2	2/11/24 21:00	30.93	29.43	0.00	0.00	8.06	99.68	25.45
	2/11/24 22:00	28.81	27.79	0.00	0.00	6.68	97.79	25.82
	2/11/24 23:00	29.25	28.20	0.00	0.00	13.21	99.16	26.14
	2/11/24 0:00	29.10	27.95	0.00	0.00	16.14	95.85	26.47
	2/12/24 01:00	28.93	27.83	0.00	0.00	16.07	95.39	26.71
	2/12/24 02:00	29.28	28.24	0.00	0.00	14.75	94.51	26.77
	2/12/24 03:00	28.60	27.59	0.00	0.00	12.59	93.25	26.78
	2/12/24 04:00	29.01	28.00	0.00	0.00	12.30	91.90	26.93
	2/12/24 05:00	31.24	30.13	0.00	0.00	13.07	88.77	27.79
	2/12/24 06:00	31.13	29.98	0.00	0.00	189.07	82.33	29.37
	2/12/24 07:00	31.21	29.84	0.00	0.00	273.13	77.31	30.94
	2/12/24 08:00	31.32	29.84	0.00	0.00	168.35	72.87	32.36
	2/12/24 09:00	30.57	28.98	0.00	0.00	14.44	70.99	33.11
	2/12/24 10:00	30.67	29.26	0.00	0.00	38.15	67.84	33.71
	2/12/24 11:00	30.93	29.43	0.00	0.00	80.08	67.79	33.76
	2/12/24 12:00	32.22	30.98	0.00	0.00	47.30	73.65	31.76
	2/12/24 13:00	30.05	28.65	0.00	0.00	30.86	75.90	30.99
	2/12/24 14:00	30.22	27.99	0.00	0.00	9.73	78.66	30.11
	2/12/24 15:00	30.66	29.17	0.00	0.00	9.72	81.16	29.36
	2/11/24 16:00	30.87	29.22	0.00	0.00	8.06	99.68	25.45
2/11/24 17:00	31.13	29.66	0.00	0.00				
2/11/24 18:00	31.23	29.87	0.00	0.00				
2/11/24 19:00	31.24	30.13	0.00	0.00				
2/11/24 20:00	29.72	28.67	0.00	0.00	6.68	97.79	25.82	
Hourly Limit Values	TA Luft	-	-	200	350	-	-	-
	EU	-	-	200	350	-	-	-
	WHO Ambient Air Quality Guideline Value	-	-	-	-	-	-	-
	24 Hours Average	30.35	29.03	0.00	0.00	51.25	84.46	29.18
Daily Limit Values	TA Luft	50	-	-	125			
	EU	50	-	-	125			
	WHO Ambient Air Quality Guideline Value	45	15	25	40			





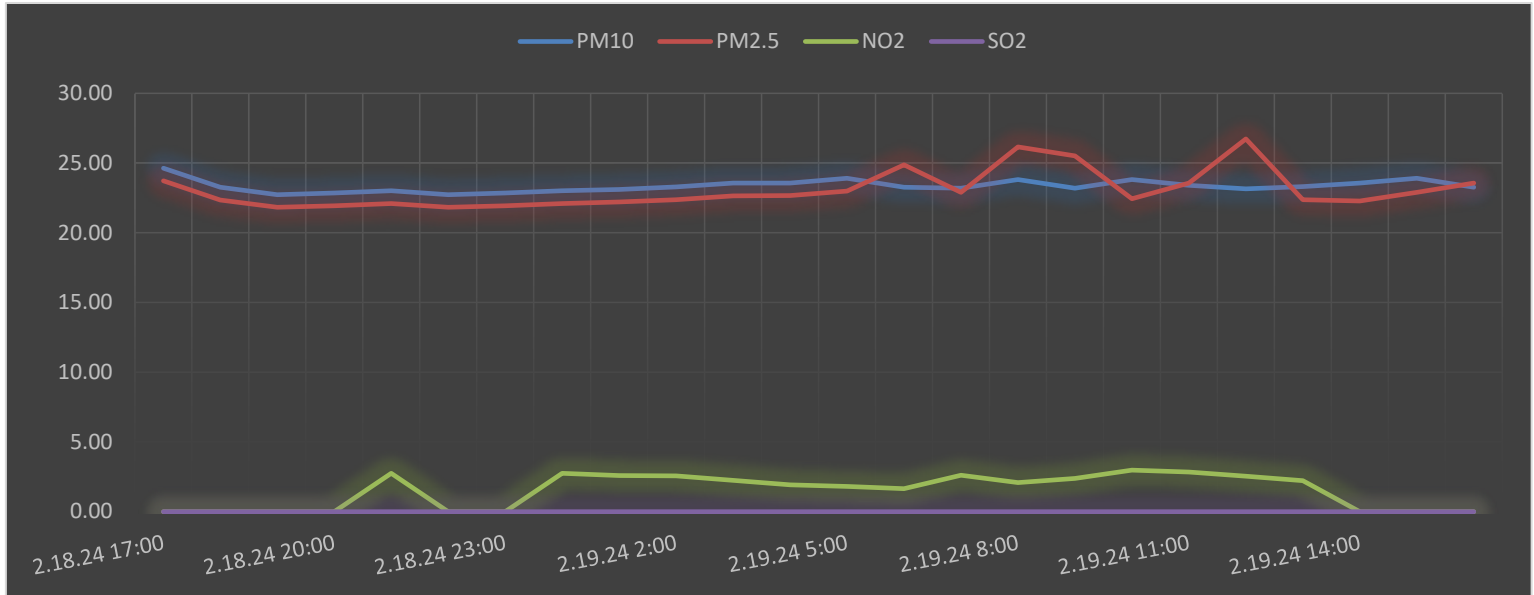
Measurement Results for Location 5

Device Code: AIRS-1								
Location	Sampling Date	Results (µg/m³)					Ambient Conditions	
		PM ₁₀	PM _{2.5}	NO ₂	SO ₂	TSP (24 Hours Average)	Humidity (%)	Temperature (°C)
ASR3	2/10/24 11:00	30.75	29.84	4.86	0.00	31.99	57.34	36.99
	2/10/24 12:00	30.61	28.91	2.75	0.00	29.97	55.94	37.50
	2/10/24 13:00	30.56	29.23	0.00	0.00	30.13	59.45	35.94
	2/10/24 14:00	30.24	29.28	0.00	0.00	32.46	68.70	32.70
	2/10/24 15:00	29.92	29.21	3.18	0.00	33.40	76.26	30.57
	2/10/24 16:00	29.81	29.33	3.35	0.00	35.07	81.73	29.06
	2/10/24 17:00	31.02	29.26	0.00	0.00	37.36	84.27	28.63
	2/10/24 18:00	30.77	30.50	0.00	0.00	38.56	85.58	28.44
	2/10/24 19:00	30.75	29.85	0.00	0.00	39.00	85.69	28.48
	2/10/24 20:00	30.61	29.70	3.91	1.78	37.01	84.27	28.43
	2/10/24 21:00	30.56	29.66	3.84	2.56	34.98	83.76	28.41
	2/10/24 22:00	30.24	29.34	3.36	4.51	30.40	83.31	28.26
	2/10/24 23:00	29.92	29.02	2.88	3.04	28.37	82.96	28.03
	2/10/24 0:00	29.81	28.91	2.72	3.45	26.37	83.65	27.96
	2/11/24 1:00	29.76	28.86	0.00	2.98	25.71	84.75	27.88
	2/11/24 2:00	29.67	28.74	0.00	0.00	25.63	85.58	27.81
	2/11/24 3:00	29.29	28.31	0.00	0.00	25.05	86.16	27.75
	2/11/24 4:00	29.59	28.66	2.37	0.00	25.66	84.08	28.09
	2/11/24 5:00	30.12	29.21	3.18	0.00	25.13	81.17	28.89
	2/11/24 6:00	30.23	29.33	3.35	0.00	24.74	74.38	30.52
2/11/24 7:00	30.16	29.26	0.00	0.00	21.37	69.96	32.39	
2/11/24 8:00	30.20	29.50	0.00	0.00	18.81	67.16	33.26	
2/11/24 9:00	30.18	29.28	0.00	0.00	16.79	64.24	34.14	
2/11/24 10:00	41.54	28.33	0.00	0.00	15.87	63.60	34.12	
Hourly Limit Values	TA Luft	-	-	200	200	-	-	-
	EU	-	-	200	350	-	-	-
	WHO Ambient Air Quality Guideline Value	-	-	-	-	-	-	-
Average	24 hours Average	28.00	27.10	1.66	0.76	28.19	75.89	30.74
Daily Limit Values	TA Luft	50	-	-	125	-	-	-
	EU	50	-	-	125	-	-	-
	WHO Ambient Air Quality Guideline Value	45	15	25	40	-	-	-



Measurement Results for Location 6

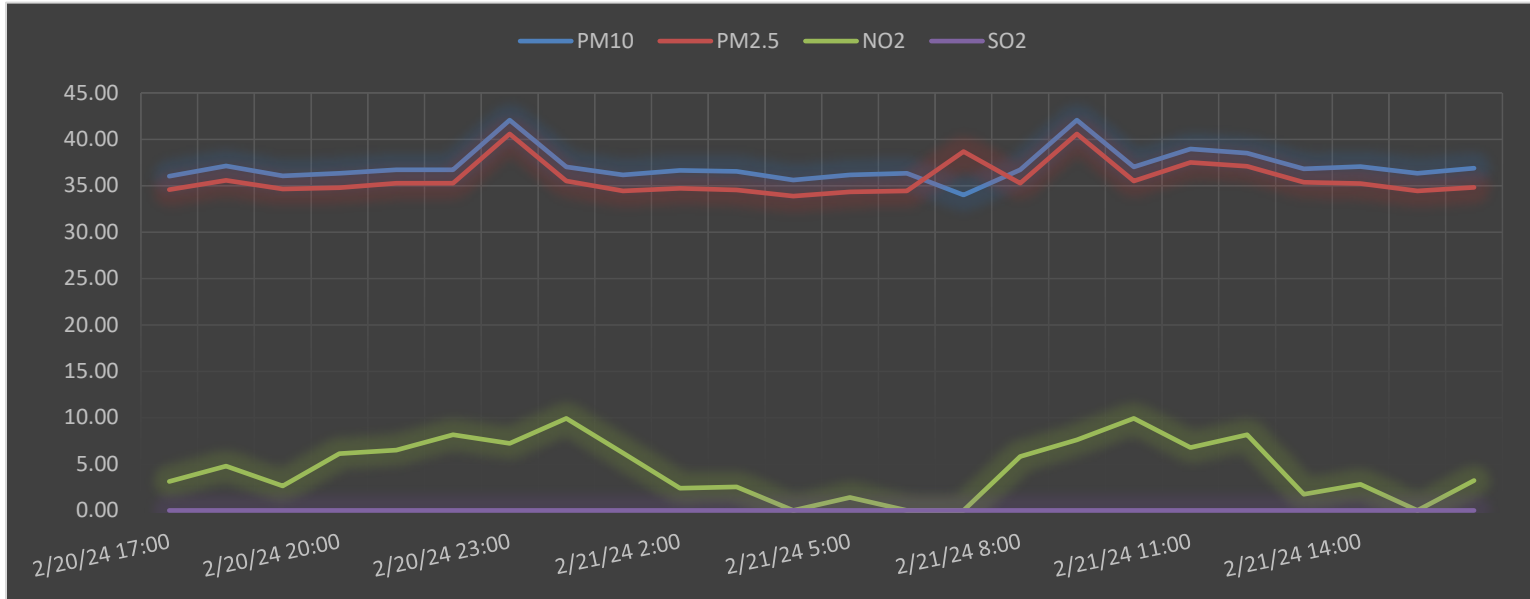
Device Code: 223								
Location	Sampling Date	Results (µg/m³)					Ambient Conditions	
		PM ₁₀	PM _{2.5}	NO ₂	SO ₂	TSP (24 Hours Average)	Humidity (%)	Temperature (°C)
ASR5	2/18/24 17:00	24.63	23.73	0.00	0.00	20.77	93.87	27.43
	2/18/24 18:00	23.26	22.35	0.00	0.00	20.36	94.08	27.34
	2/18/24 19:00	22.73	21.83	0.00	0.00	19.97	94.42	27.31
	2/18/24 20:00	22.85	21.94	0.00	0.00	19.55	94.92	27.36
	2/18/24 21:00	23.01	22.10	2.75	0.00	21.71	94.57	27.34
	2/18/24 22:00	22.73	21.83	0.00	0.00	21.54	94.48	27.28
	2/18/24 23:00	22.85	21.94	0.00	0.00	18.81	93.30	27.26
	2/18/24 0:00	23.01	22.10	2.75	0.00	17.45	90.92	27.34
	2/19/24 1:00	23.10	22.20	2.60	0.00	18.92	92.92	27.25
	2/19/24 2:00	23.28	22.38	2.56	0.00	18.89	92.74	27.24
	2/19/24 3:00	23.56	22.65	2.24	0.00	19.55	93.30	27.19
	2/19/24 4:00	23.57	22.67	1.92	0.00	19.61	92.92	27.44
	2/19/24 5:00	23.91	23.00	1.81	0.00	19.78	88.05	28.67
	2/19/24 6:00	23.27	24.88	1.64	0.00	19.50	81.84	30.28
	2/19/24 7:00	23.19	22.89	2.62	0.00	18.67	81.02	30.27
	2/19/24 8:00	23.82	26.15	2.08	0.00	16.87	77.25	30.95
	2/19/24 9:00	23.19	25.51	2.38	0.00	16.79	77.05	30.99
	2/19/24 10:00	23.82	22.45	2.98	0.00	17.26	76.22	31.08
	2/19/24 11:00	23.41	23.56	2.84	0.00	17.59	78.27	31.05
	2/19/24 12:00	23.16	26.73	2.55	0.00	17.11	81.91	30.50
2/19/24 13:00	23.31	22.37	2.23	0.00	16.98	86.38	29.15	
2/19/24 14:00	23.57	22.28	0.00	0.00	16.57	87.45	28.31	
2/19/24 15:00	23.91	22.91	0.00	0.00	17.17	88.48	27.70	
2/19/24 16:00	23.27	23.56	0.00	0.00	17.09	88.21	27.55	
Hourly Limit Values	TA Luft	-	-	200	350	-	-	-
	EU	-	-	200	350	-	-	-
	WHO Ambient Air Quality Guideline Value	-	-	-	-	-	-	-
Average	24 Hours Average	23.35	23.08	1.50	0.00	18.77	88.21	28.47
Daily Limit Values	TA Luft	50	-	-	125	-	-	-
	EU	50	-	-	125	-	-	-
	WHO Ambient Air Quality Guideline Value	45	15	25	40	-	-	-



Measurement Results for Location 7

Device Code: 224								
Location	Sampling Date	Results ($\mu\text{g}/\text{m}^3$)					Ambient Conditions	
		PM ₁₀	PM _{2.5}	NO ₂	SO ₂	TSP (24 Hours Average)	Humidity (%)	Temperature (°C)
AQ4	2/20/24 17:00	36.03	34.57	3.13	0.00	13.02	90.82	27.25
	2/20/24 18:00	37.12	35.56	4.79	0.00	13.87	92.77	26.87
	2/20/24 19:00	36.07	34.63	2.63	0.00	14.80	93.43	26.84
	2/20/24 20:00	36.33	34.80	6.11	0.00	14.51	93.55	26.77
	2/20/24 21:00	36.73	35.27	6.50	0.00	14.36	94.50	26.78
	2/20/24 22:00	36.73	35.27	8.17	0.00	9.71	94.16	27.12
	2/20/24 23:00	42.07	40.58	7.24	0.00	6.09	97.97	26.69
	2/20/24 0:00	37.03	35.51	9.92	0.00	5.51	98.45	26.53
	2/21/24 1:00	36.18	34.45	6.20	0.00	3.11	96.41	26.51
	2/21/24 2:00	36.63	34.72	2.40	0.00	2.49	95.07	26.48
	2/21/24 3:00	36.54	34.53	2.54	0.00	2.04	94.88	26.47
	2/21/24 4:00	35.62	33.88	0.00	0.00	3.54	92.90	26.63
	2/21/24 5:00	36.16	34.35	1.38	0.00	5.75	92.68	27.16
	2/21/24 6:00	36.34	34.44	0.00	0.00	4.74	89.73	28.21
	2/21/24 7:00	34.00	38.67	0.00	0.00	7.50	85.74	29.17
	2/21/24 8:00	36.73	35.27	5.80	0.00	8.58	62.02	27.59
	2/21/24 9:00	42.07	40.58	7.60	0.00	13.03	65.90	25.27
	2/21/24 10:00	37.03	35.51	9.92	0.00	15.50	69.55	25.12
	2/21/24 11:00	38.97	37.52	6.78	0.00	15.85	64.79	24.70
	2/21/24 12:00	38.51	37.11	8.17	0.00	16.05	67.42	24.25
2/21/24 13:00	36.83	35.36	1.74	0.00	16.29	66.60	24.14	
2/21/24 14:00	37.07	35.24	2.82	0.00	16.08	67.38	23.91	
2/21/24 15:00	36.34	34.44	0.00	0.00	14.90	77.90	24.10	
2/21/24 16:00	36.88	34.83	3.23	0.00	15.12	87.52	25.04	
Hourly Limit Values	TA Luft	-	-	200	350		-	-
	EU	-	-	200	350		-	-
	WHO Ambient Air Quality Guideline Value	-	-	-	-		-	-
Average	24 hours Average	37.08	35.71	4.46	0.00	10.52	84.67	26.23
Daily Limit Values	TA Luft	50	-	-	125		-	-
	EU	50	-	-	125		-	-
	WHO Ambient Air Quality Guideline Value	45	15	25	40		-	-





7) Assessment

In conclusion, the ambient air monitoring study conducted aimed to comprehensively assess air pollutants and their impact on ambient air quality. The results obtained were meticulously evaluated against the stringent standards set forth by the TA LUFT, EU Council Directive 2008/50/EC, and WHO limit values. This comprehensive assessment forms the basis of the report presented here.

Following the analysis of air quality measurement studies, it is encouraging to note that the background air quality values observed have demonstrated compliance with established air quality standards. This indicates that the ambient air quality within the monitored areas meets or exceeds the regulatory thresholds set forth by authoritative bodies. Such compliance is indicative of effective environmental management practices and underscores the importance of continued vigilance in monitoring and mitigating air pollution for the protection of public health and the environment.



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Thilafushi Island, MALDIVES 2024

Name of Project: WtE Energy Facility Project

Order No: EN-M/2207/417_01

Test report: Ambient Air Monitoring

Duration: 27.03.2024-02.04.2024



TABLE OF CONTENTS

1) Purpose of monitoring	3
2) Methods Used for Calibration	4
3) Sampling Methodology.....	7
4) Sampling Location.....	8
5) Legal framework.....	9
6) Results.....	11
7) Assessment.....	25



1) Purpose of Monitoring

The purpose of monitoring, as outlined in the provided details, is to assess and evaluate the air quality in the vicinity of the sensitive receptors affected by The Greater Malé Waste to Energy Project. The report aims to ascertain the levels of various air pollutants, including PM10, PM2.5, NO2, SO2, and TSP (Total Suspended Particulates), to gauge the potential environmental impact of the project on the surrounding area.

By conducting comprehensive air quality monitoring, the report seeks to provide valuable insights into the concentration levels of these pollutants, which are crucial for understanding their potential effects on human health and the environment. Additionally, the data collected will serve as a basis for assessing compliance with regulatory standards and guidelines related to air quality management.

Assessment of Air Quality: The primary objective of monitoring is to assess the quality of air in the vicinity of sensitive receptors impacted by The Greater Malé Waste to Energy Project.

Evaluation of Pollutants: The monitoring aims to evaluate the concentration levels of specific air pollutants, including:

- PM10 (Particulate Matter with a diameter of 10 micrometers or less)
- PM2.5 (Particulate Matter with a diameter of 2.5 micrometers or less)
- NO2 (Nitrogen Dioxide)
- SO2 (Sulfur Dioxide) & TSP (Total Suspended Particulates)

Compliance Legal Framework: The data collected through monitoring serves as a basis for assessing compliance with relevant regulatory standards and guidelines governing air quality management.

Decision Support: The monitoring efforts aim to provide stakeholders with accurate and reliable data to support informed decision-making processes related to the project's operations and environmental management.

Environmental Risk Mitigation: By identifying pollutant levels and potential risks, the monitoring facilitates the implementation of appropriate mitigation measures to minimize adverse impacts on public health and the environment.

Environmental Responsibility: Ultimately, the purpose of monitoring is to ensure that the Greater Malé Waste to Energy Project operates in an environmentally responsible manner, mitigating potential harm to air quality and associated ecosystems.

Overall, the purpose of this monitoring effort is to support informed decision-making processes, mitigate potential risks to public health and the environment, and ensure that the Greater Malé Waste to Energy Project operates in an environmentally responsible manner.



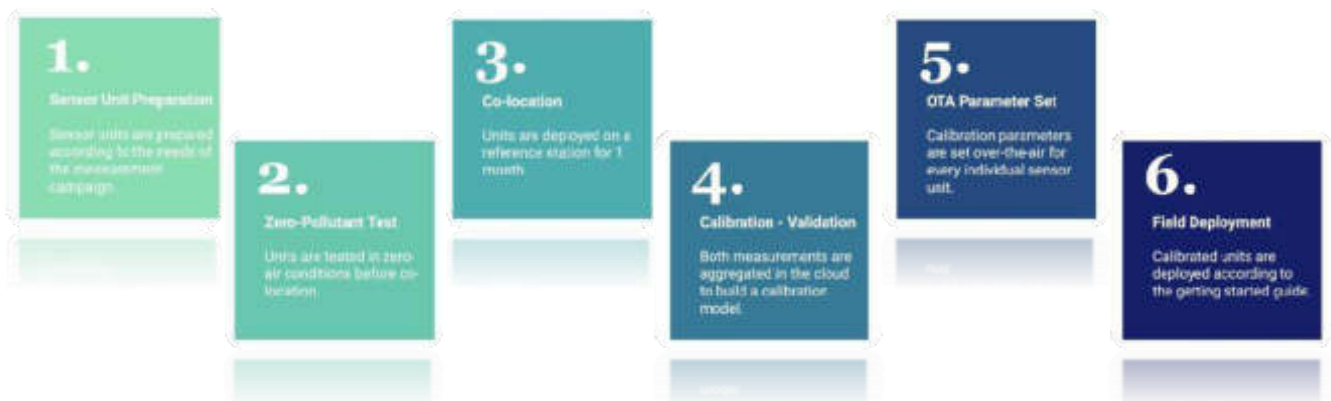
2) Methods Used for Monitoring

The air quality monitoring stations employed sensor-based technology to assess PM10, PM2.5, TSP, SO2, and NO2 parameters. These stations utilize 'air sensor' technology, a classification recognized by the US EPA, which encompasses non-regulatory instruments characterized by their affordability, portability, capability to measure multiple pollutants simultaneously, and ease of operation compared to traditional regulatory stations. Unlike reference measurement methods reliant on skilled operators for instrument maintenance and calibration, air sensors comprise hardware and software set operable without human intervention, enabling untrained users to monitor air pollution effectively, without necessitating specialized technical expertise.

Sensor specifications that are used for measurement study are shown below:

Parameter		Unit	Value
SO2	Sensitivity	nA/ppm at 2ppm SO ₂	275 to 520
	Range	ppm limit of performance warranty	100
	Linearity	error at 100ppm SO ₂ , linear at zero and 10ppm SO ₂	0 to -2
NO2	Sensitivity	nA/ppm at 2ppm NO ₂	-200 to -650
	Range	ppm NO ₂ limit of performance warranty	20
	Linearity	ppb error at full scale, linear at zero and 20ppm	
Particles (PM ₁₀ , PM _{2.5} and TSP)	Mass concentration precision	%	5
	Mass concentration range	µg/m ³	0 to 1000
Temperature	Typ. temperature accuracy	°C	0.45
	Operating temperature range	°C	-10 to 50
	Response time (τ63%)	s	<60
Humidity	Typ. relative humidity accuracy	%RH	4.5
	Operating relative humidity range	%RH	0 to 100
	Response time (τ63%)	s	20
All	Temperature Range	°C	-30 to 50
	Humidity Range	% RH	5 to 99

Ensuring the precision of these affordable sensors is paramount when assessing air quality. Through an intelligent calibration process, these low-cost sensors are refined and provide accurate readings comparable to those obtained from reference stations. The Smart Calibration Algorithm comprises operational steps outlined in the accompanying figure.



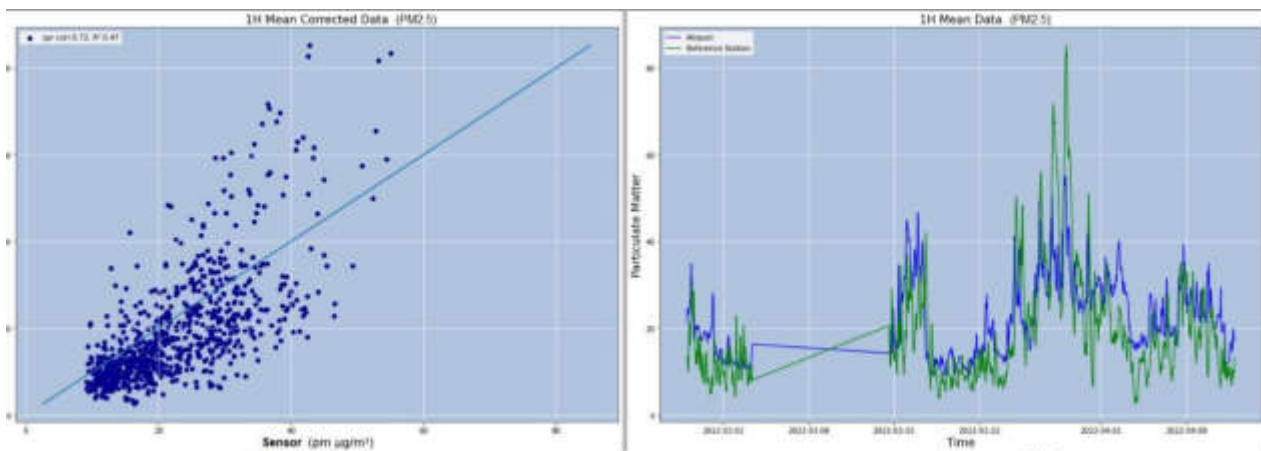
Sensor Units were calibrated using reference stations for a period before the deployment. The calibration process for particle matter and gas pollutants measurement is explained below.

Description	Methodology	
	NO ₂ -SO ₂ -O ₃	PM ₁₀ -PM _{2.5} -TSP
Installation	Near Reference Station (3/4 meters)	Near Reference Station (3/4 meters)
Pre-Test	Quality Check in zero air conditions	Quality Check in zero air conditions
Co-Located Period	4-5 weeks	8 weeks
Sampling Period	30 seconds. Hourly mean is used because the reference station measurements are hourly.	60 seconds. Hourly mean is used because the reference station measurements are hourly.
Validation	Cross-validation is used. Also, some ranges of measurement are eliminated, where the reference station is not available.	Cross-validation is used. Also, some ranges of measurement are eliminated, where the reference station is not available.
Calibration Procedure	is obtained via R ² and spearman correlation	is obtained via R ² and spearman correlation

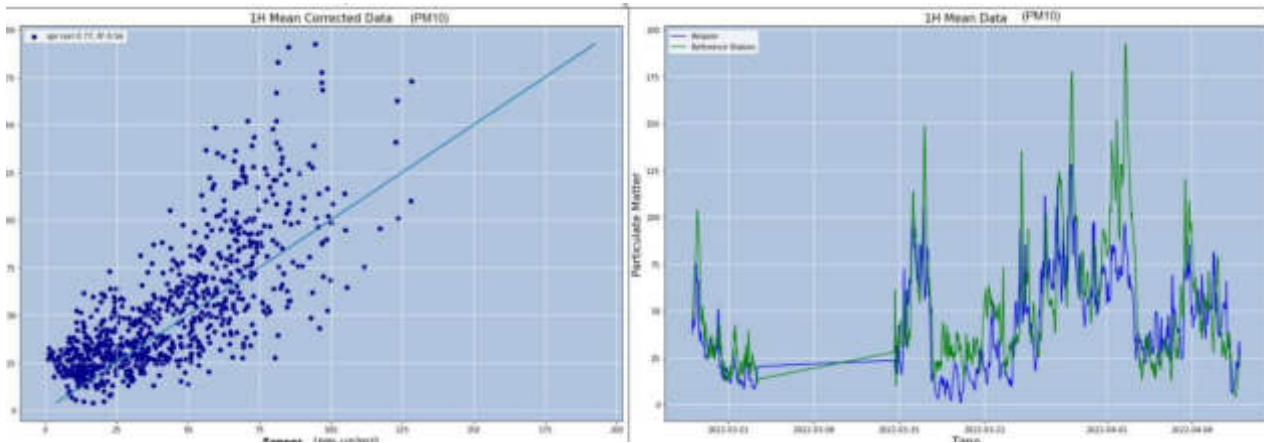
Calibration Result for PM

The corrected measurement results after the Smart Calibration Process are shown in the figures below. The correlation between Sensor Unit's PM_{2.5} measurements between Reference Station's PM_{2.5} measurements for hourly and daily mean of data is 0.73 given by the client, and the correlation between Sensor Unit's PM₁₀ measurements between Reference Station's PM₁₀ measurements for hourly and daily mean of data is 0.77 observed by the client.

Calibration Graph of PM2.5

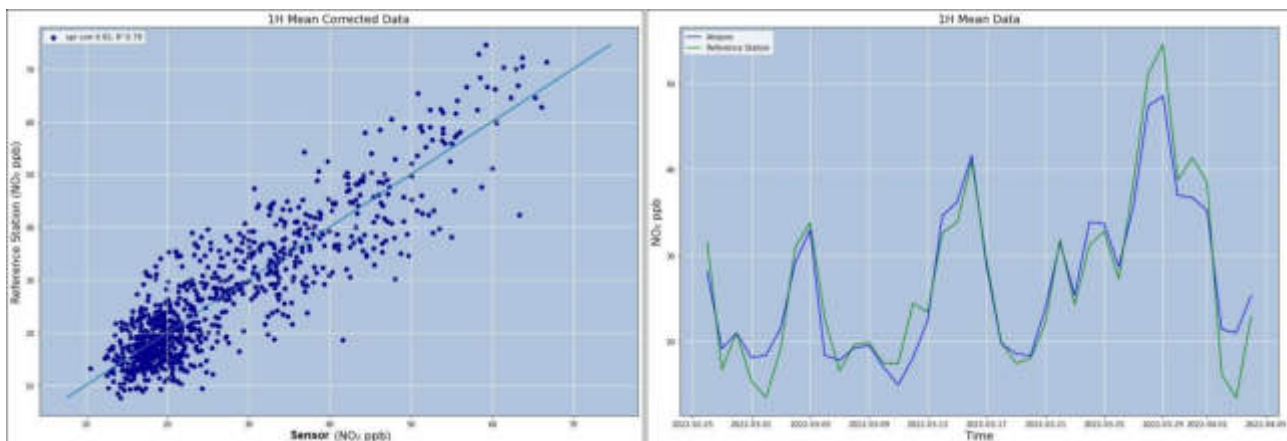


Calibration Graph of PM₁₀



Calibration Result for Gases

The corrected measurement results after the Smart Calibration Process are shown in the figures below. The correlation between Sensor Unit's NO₂ measurements between Reference Station's NO₂ measurements for hourly and daily mean of data is respectively 0.823, 0.898 observed by the client



3) Sampling Methodology

This section elucidates the practical implementation of the measurement procedures outlined previously. Preliminary preparations encompass crucial calibration processes, both at the factory and in the field. Factory calibrations, typically provided by sensor manufacturers, ensure baseline accuracy. Conversely, field calibrations involve real-world comparison measurements at reference stations. In our case, calibration factors derived from a month-long comparison at a designated reference station within the Turkish air quality monitoring network were employed to refine sensor accuracy.

During the actual measurement phase, meticulous organization and execution are paramount. Utilizing four distinct sets of devices - AQ2, ASR2, AQ1, ASR3, AQ3, ASR5, and AQ4 - measurements are systematically conducted over two days. Sampling point selection is informed by macro-scale assessments as per the ESIA report, followed by on-site visits to pinpoint optimal micro-scale locations for device placement. Measurements are executed within a height range of 1.5 to 4 meters above ground level, ensuring representative sampling. Each sampling point undergoes a comprehensive 24-hour measurement cycle, with sensor devices capturing parameter averages derived from instantaneous readings taken at 1-minute intervals.

Following the measurement phase, post-measurement values are extracted directly from the sensor-equipped air quality measuring devices, facilitating data analysis and interpretation.



4) Sampling Location

A preconstruction baseline environmental assessment was carried out to evaluate ambient air quality at seven designated locations, including six sites within Thilafushi (specifically, AQ1, AQ2, and AQ3 as delineated in the Environmental Impact Assessment [EIA], along with ASR 2, ASR3, and ASR5 recommended for monitoring in the EIA Report), and one location situated in Villingili (designated as AQ4).

Sampling Point Coordinates and Sampling dates:

No	Location	Description	Distance to Source (meters)
1	AQ1	Represents dense industrial area	650
2	AQ2	Represents a dense industrial area	1000
3	AQ3	Represents a dense industrial area	500
4	ASR2	Represents a dense industrial area	700
5	ASR3	Represents a dense industrial area	500
6	ASR5	Represents a dense industrial area	1000
7	AQ4	Represents dense housing and Population area	4500

Sampling Points on Satellite



5) Legal frame work

Within the context of the project's objectives, a comprehensive assessment was undertaken to monitor emissions of particle matter (PM10-PM2.5), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), and total suspended particulates (TSP). It's imperative to note that the Maldives currently lacks a national air quality policy, necessitating reliance on established international standards for evaluation purposes.

To ensure rigorous evaluation, several authoritative bodies and frameworks were consulted. The World Health Organization (WHO) plays a pivotal role in establishing global guidelines for air quality management. These guidelines, delineated in the "Air quality guidelines for particulate matter, ozone, nitrogen dioxide, and sulfur dioxide" document, provide crucial limit values that serve as benchmarks for assessing air quality.

Moreover, the European Union (EU) has instituted directives to regulate air pollution and protect public health. Notably, the EU Council Directive 2008/50/EC sets forth health-based standards and objectives for various pollutants present in ambient air. Compliance with these directives is crucial for ensuring air quality within EU member states and aligning with international best practices.

Germany, recognized for its stringent environmental regulations, has implemented the Technical Instructions on Air Quality Control (Technische Anleitung Zur Reinhaltung der Luft), commonly referred to as the TA Luft. This regulatory framework establishes limit values aimed at safeguarding both public health and the environment from the deleterious effects of air pollution. These limit values are meticulously determined to protect against harmful emissions and mitigate the potential impact on surrounding communities and ecosystems.

To facilitate a comprehensive evaluation process, a comparative analysis was conducted, juxtaposing the established limit values from WHO guidelines, EU directives, and the TA Luft against the specific parameters selected for the modeling study. This comparative assessment ensures adherence to recognized international standards and provides a robust foundation for evaluating the potential environmental impact of the project's emissions.



Limit Values Stipulated in the International Legislation

Pollutant	Averaging Period	TA Luft	EU	WHO Ambient Air Quality Guideline Value	Project Standards
Particular Matter <10 μm (PM ₁₀)	24 hours	50 $\mu\text{g}/\text{m}^3$	50 $\mu\text{g}/\text{m}^3$	45 $\mu\text{g}/\text{m}^3$	45 $\mu\text{g}/\text{m}^3$
	1-year	40 $\mu\text{g}/\text{m}^3$	40 $\mu\text{g}/\text{m}^3$	15 $\mu\text{g}/\text{m}^3$	15 $\mu\text{g}/\text{m}^3$
Particular Matter <2.5 μm (PM _{2.5})	24 hours	-	-	15 (not to be exceeded more than 3-4 times a year)	15
	1-year	-	20	5	5
Nitrogen Dioxide (NO _x)	1-hour	200 $\mu\text{g}/\text{m}^3$	200 $\mu\text{g}/\text{m}^3$	-	200 $\mu\text{g}/\text{m}^3$
	24 hours	-	-	25 $\mu\text{g}/\text{m}^3$	25 $\mu\text{g}/\text{m}^3$
	1-year	40 $\mu\text{g}/\text{m}^3$	40 $\mu\text{g}/\text{m}^3$	10 $\mu\text{g}/\text{m}^3$	10 $\mu\text{g}/\text{m}^3$
Sulphur Dioxide (SO ₂)	1-hour	350 $\mu\text{g}/\text{m}^3$	350 $\mu\text{g}/\text{m}^3$	-	350 $\mu\text{g}/\text{m}^3$
	24 hours	125 $\mu\text{g}/\text{m}^3$	125 $\mu\text{g}/\text{m}^3$	40 $\mu\text{g}/\text{m}^3$	40 $\mu\text{g}/\text{m}^3$
	1-year	50 $\mu\text{g}/\text{m}^3$	-	-	50 $\mu\text{g}/\text{m}^3$
TSP*	-	-	-	-	-

*There is no limit value for TSP.



6) Results:

Measurement Results for Location 1

Device Code: 222								
Location	Sampling Date	Air Quality Results ($\mu\text{g}/\text{m}^3$)					Ambient Conditions	
		PM ₁₀	PM _{2.5}	NO ₂	SO ₂	TSP	Humidity (%)	Temperature (°C)
AQ1	2024-3-27 17:00:00	46.34	45.79	0.00	0.00	87.48	78.49	26.85
	2024-3-27 18:00:00	38.13	37.78	0.00	0.00	72.04	81.55	27.28
	2024-3-27 19:00:00	33.93	33.56	0.00	0.00	64.07	84.54	26.80
	2024-3-27 20:00:00	31.42	31.23	0.00	0.00	59.42	84.43	26.77
	2024-3-27 21:00:00	28.10	27.92	0.00	0.00	53.14	84.54	26.69
	2024-3-27 22:00:00	26.16	26.01	0.00	0.00	49.49	84.09	26.59
	2024-3-27 23:00:00	23.53	23.51	0.00	0.00	44.59	85.78	26.52
	2024-3-28 00:00:00	20.51	20.51	0.00	0.00	38.87	85.70	26.42
	2024-3-28 01:00:00	21.01	20.96	0.00	0.00	39.79	87.15	26.25
	2024-3-28 02:00:00	22.03	21.89	0.00	0.00	41.67	86.43	26.14
	2024-3-28 03:00:00	23.33	23.28	0.00	0.00	44.19	87.59	26.07
	2024-3-28 04:00:00	25.00	24.95	0.00	0.00	47.36	87.99	25.94
	2024-3-28 05:00:00	26.07	25.96	0.00	0.00	49.33	87.41	26.02
	2024-3-28 06:00:00	27.42	27.38	0.00	0.00	51.94	86.64	26.06
	2024-3-28 07:00:00	22.43	22.30	0.00	0.00	42.43	87.24	26.13
	2024-3-28 08:00:00	13.02	12.61	0.00	0.00	24.41	92.43	24.03
	2024-3-28 09:00:00	15.81	15.75	0.00	0.00	29.92	85.81	26.24
	2024-3-28 10:00:00	17.83	17.82	0.00	0.00	33.79	78.51	28.91
	2024-3-28 11:00:00	18.30	18.24	0.00	0.00	34.65	72.17	30.35
	2024-3-28 12:00:00	27.76	27.69	0.00	0.00	52.57	70.05	31.53
2024-3-28 13:00:00	25.60	25.60	0.00	0.00	48.52	63.15	33.56	
2024-3-28 14:00:00	19.64	19.31	0.00	0.00	37.01	79.65	28.36	
2024-3-28 15:00:00	24.09	24.00	0.00	0.00	45.59	95.80	180.07	
2024-3-28 16:00:00	29.30	29.15	0.00	0.00	55.44	93.40	24.17	
Hourly Limit Values	TA Luft	-	-	200	350	-	-	-
	EU	-	-	200	350	-	-	-
	WHO Ambient Air Quality Guideline Value	-	-	-	-	-	-	-
24 hour Average		25.28	25.13	0.00	0.00	47.82	83.77	33.49
Daily Limit Values	Daily Limit Values	50	-	-	125	-	-	-
	EU	50	-	-	125	-	-	-
	WHO Ambient Air Quality Guideline Value	45	15	25	40	-	-	-

Result of AQ1

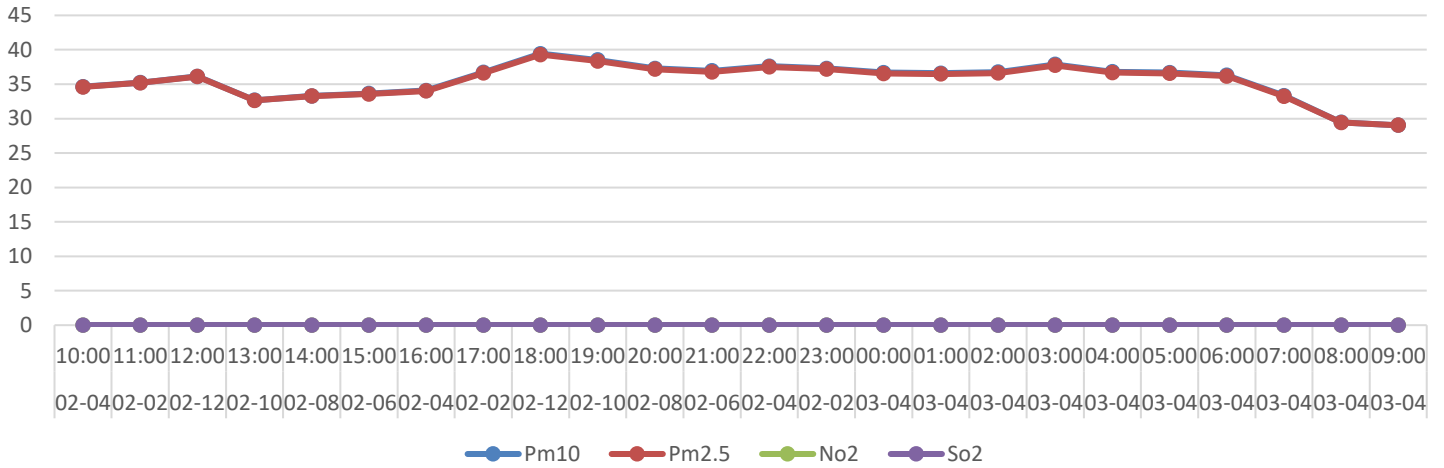


Figure 2 Measurement Graphs for Location AQ1

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Measurement Results for Location 2

Device Code: 224								
Location	Sampling Date	Results ($\mu\text{g}/\text{m}^3$)					Ambient Conditions	
		PM ₁₀	PM _{2.5}	NO ₂	SO ₂	TSP (24 Hours Average)	Humidity (%)	Temperature (°C)
AQ2	2024-3-17 17:00:00	28.10	27.95	0.00	0.00	53.15	84.76	25.96
	2024-3-17 18:00:00	29.02	28.84	0.00	0.00	54.89	80.82	26.24
	2024-3-17 19:00:00	30.28	30.12	0.00	0.00	57.29	83.45	26.04
	2024-3-17 20:00:00	31.89	31.69	0.00	0.00	60.31	85.78	26.16
	2024-3-17 21:00:00	31.38	31.27	0.00	0.00	59.42	87.67	26.21
	2024-3-17 22:00:00	33.95	33.75	0.00	0.00	64.23	89.65	26.03
	2024-3-17 23:00:00	41.44	41.29	0.00	0.00	78.45	90.56	25.87
	2024-3-18 00:00:00	35.04	34.83	0.00	0.00	66.27	90.23	25.71
	2024-3-18 01:00:00	32.91	32.72	0.00	0.00	62.25	85.68	25.77
	2024-3-18 02:00:00	35.87	35.62	0.00	0.00	67.83	84.95	25.83
	2024-3-18 03:00:00	40.43	40.11	0.00	0.00	76.41	83.20	25.96
	2024-3-18 04:00:00	43.88	43.61	0.00	0.00	82.99	83.15	26.03
	2024-3-18 05:00:00	43.50	43.26	0.00	0.00	82.30	84.04	25.92
	2024-3-18 06:00:00	42.37	42.14	0.00	0.00	80.16	82.67	25.94
	2024-3-18 07:00:00	41.02	40.85	0.00	0.00	77.64	82.22	26.50
	2024-3-18 08:00:00	39.82	39.64	0.00	0.00	75.35	73.77	28.65
	2024-3-18 09:00:00	39.41	39.27	0.00	0.00	74.60	68.54	29.92
	2024-3-18 10:00:00	37.64	37.56	0.00	0.00	71.29	63.74	31.29
	2024-3-18 11:00:00	40.54	40.52	0.00	0.00	76.82	62.37	32.29
	2024-3-18 12:00:00	40.77	40.71	0.00	0.00	77.23	59.54	33.62
2024-3-18 13:00:00	36.51	36.51	0.00	0.00	69.20	52.62	35.08	
2024-3-18 14:00:00	33.80	33.77	0.00	0.00	64.04	51.45	36.16	
2024-3-18 15:00:00	34.53	34.53	0.00	0.00	65.44	54.38	35.12	
2024-3-18 16:00:00	34.32	34.32	0.00	0.00	65.04	56.05	35.04	
Hourly Limit Values	TA Luft	-	-	200	350	-	-	-
	EU	-	-	200	350	-	-	-
	WHO Ambient Air Quality Guideline Value	-	-	-	-	-	-	-
Average		36.60	36.45	0.00	0.00	69.28	75.89	28.64
Daily Limit Values	TA Luft	50	-	-	125	-	-	-
	EU	50	-	-	125	-	-	-
	WHO Ambient Air Quality Guideline Value	45	15	25	40	-	-	-

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Result of AQ2

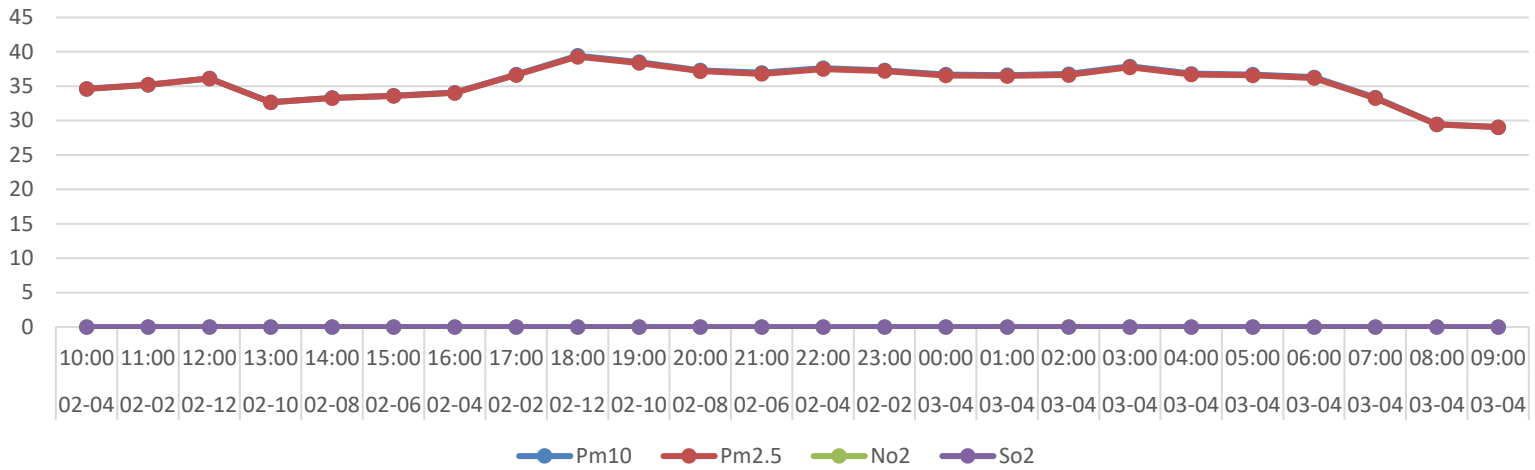


Figure 3 Measurement Graphs for Location AQ2

Measurement Results for Location 3

Device Code: 222								
Location	Sampling Date	Results (µg/m³)					Ambient Conditions	
		PM ₁₀	PM _{2.5}	NO ₂	SO ₂	TSP (24 Hours Average)	Humidity (%)	Temperature (°C)
AQ3	2024-3-18 17:00:00	39.68	39.61	0.00	0.00	75.16	62.70	32.56
	2024-3-18 18:00:00	42.05	41.71	0.00	0.00	79.49	73.66	29.14
	2024-3-18 19:00:00	45.11	44.83	0.00	0.00	85.32	78.54	27.83
	2024-3-18 20:00:00	45.73	45.57	0.00	0.00	86.57	79.97	27.47
	2024-3-18 21:00:00	47.18	46.79	0.00	0.00	89.17	79.93	27.24
	2024-3-18 22:00:00	47.93	47.70	0.00	0.00	90.70	80.67	27.01
	2024-3-18 23:00:00	49.18	48.91	0.00	0.00	93.05	82.84	26.64
	2024-3-19 00:00:00	49.60	49.25	0.00	0.00	93.78	82.71	26.45
	2024-3-19 01:00:00	49.56	49.24	0.00	0.00	93.74	81.85	26.27
	2024-3-19 02:00:00	51.37	51.01	0.00	0.00	97.13	83.83	25.95
	2024-3-19 03:00:00	53.10	52.74	0.00	0.00	100.41	86.27	25.74
	2024-3-19 04:00:00	54.29	53.94	0.00	0.00	102.68	85.82	25.65
	2024-3-19 05:00:00	55.56	55.23	0.00	0.00	105.12	85.65	25.66
	2024-3-19 06:00:00	55.69	55.38	0.00	0.00	105.36	86.50	25.61
	2024-3-19 07:00:00	52.24	52.02	0.00	0.00	98.88	84.18	26.38
	2024-3-19 08:00:00	43.59	43.56	0.00	0.00	82.61	68.79	30.52
	2024-3-19 09:00:00	39.81	39.80	0.00	0.00	75.45	58.37	33.89
	2024-3-19 10:00:00	41.22	41.22	0.00	0.00	78.12	57.31	34.74
	2024-3-19 11:00:00	49.37	49.35	0.00	0.00	93.55	58.78	34.27
	2024-3-19 12:00:00	40.13	40.12	0.00	0.00	76.04	59.48	34.14
2024-3-19 13:00:00	41.78	41.76	0.00	0.00	79.17	59.84	34.07	
2024-3-19 14:00:00	42.93	42.86	0.00	0.00	81.33	60.48	33.66	
2024-3-19 15:00:00	42.78	42.71	0.00	0.00	81.04	61.28	33.29	
2024-3-19 16:00:00	44.22	44.09	0.00	0.00	83.74	64.04	32.57	
Hourly Limit Values	TA Luft	-	-	200	350	-	-	-
	EU	-	-	200	350	-	-	-
	WHO Ambient Air Quality Guideline Value	-	-	-	-	-	-	-
24 Hours Average		46.84	46.64	0.00	0.00	88.65	73.48	29.45
Daily Limit Values	TA Luft	50	-	-	-	-	-	-
	EU	50	-	-	-	-	-	-
	WHO Ambient Air Quality Guideline Value	45	15	25	40	-	-	-

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Result of AQ3

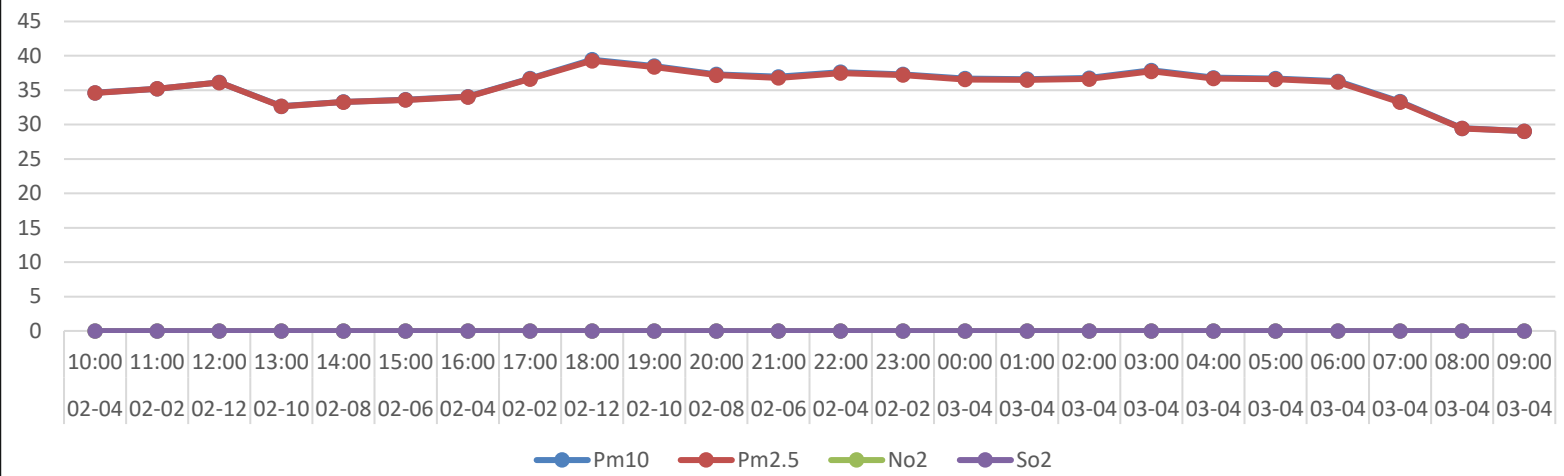


Figure 4 Measurement Graphs for Location AQ3

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Measurement Results for Location 4

Measurement Results for Location 4 Device Code: 223								
Location	Sampling Date	Results ($\mu\text{g}/\text{m}^3$)					Ambient Conditions	
		PM ₁₀	PM _{2.5}	NO ₂	SO ₂	TSP (24 Hours Average)	Humidity (%)	Temperature (°C)
ASR2	2024-3-19 17:00:00	46.78	46.63	0.00	0.00	88.56	72.89	29.89
	2024-3-19 18:00:00	48.10	47.89	0.00	0.00	91.04	79.32	27.96
	2024-3-19 19:00:00	45.05	44.91	0.00	0.00	85.29	82.28	26.98
	2024-3-19 20:00:00	43.66	43.56	0.00	0.00	82.69	84.06	26.74
	2024-3-19 21:00:00	41.20	41.03	0.00	0.00	77.99	85.36	26.67
	2024-3-19 22:00:00	41.07	40.93	0.00	0.00	77.75	84.87	26.63
	2024-3-19 23:00:00	40.88	40.77	0.00	0.00	77.42	85.18	26.36
	2024-3-20 00:00:00	40.13	40.01	0.00	0.00	75.97	87.07	26.22
	2024-3-20 01:00:00	39.51	39.41	0.00	0.00	74.81	87.42	26.11
	2024-3-20 02:00:00	40.78	40.67	0.00	0.00	77.22	86.29	26.03
	2024-3-20 03:00:00	36.10	35.91	0.00	0.00	68.30	87.29	25.93
	2024-3-20 04:00:00	34.66	34.58	0.00	0.00	65.64	85.64	25.88
	2024-3-20 05:00:00	33.88	33.80	0.00	0.00	64.16	87.32	25.82
	2024-3-20 06:00:00	33.45	33.33	0.00	0.00	63.32	87.86	25.82
	2024-3-20 07:00:00	29.67	29.61	0.00	0.00	56.19	83.64	26.84
	2024-3-20 08:00:00	30.82	30.82	0.00	0.00	58.41	75.53	29.29
	2024-3-20 09:00:00	30.97	30.93	0.00	0.00	58.68	70.54	30.63
	2024-3-20 10:00:00	30.14	30.12	0.00	0.00	57.12	73.19	29.95
	2024-3-20 11:00:00	27.83	27.83	0.00	0.00	52.75	71.50	30.49
	2024-3-20 12:00:00	26.43	26.43	0.00	0.00	50.10	63.91	32.97
2024-3-20 13:00:00	27.02	26.98	0.00	0.00	51.19	63.17	32.93	
	2024-3-20 14:00:00	27.83	27.80	0.00	0.00	52.73	64.02	32.46
	2024-3-20 15:00:00	27.60	27.53	0.00	0.00	52.27	65.31	32.19
	2024-3-20 16:00:00	29.51	29.48	0.00	0.00	55.91	64.33	32.17
Hourly Limit Values	TA Luft	-	-	200	350	-	-	-
	EU	-	-	200	350	-	-	-
	WHO Ambient Air Quality Guideline Value	-	-	-	-	-	-	-
	24 Hours Average	35.54	35.46	0.00	0.00	67.31	78.25	28.46
Daily Limit Values	TA Luft	50	-	-	125	-	-	-
	EU	50	-	-	125	-	-	-
	WHO Ambient Air Quality Guideline Value	45	15	25	40	-	-	-

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Result of ASR2

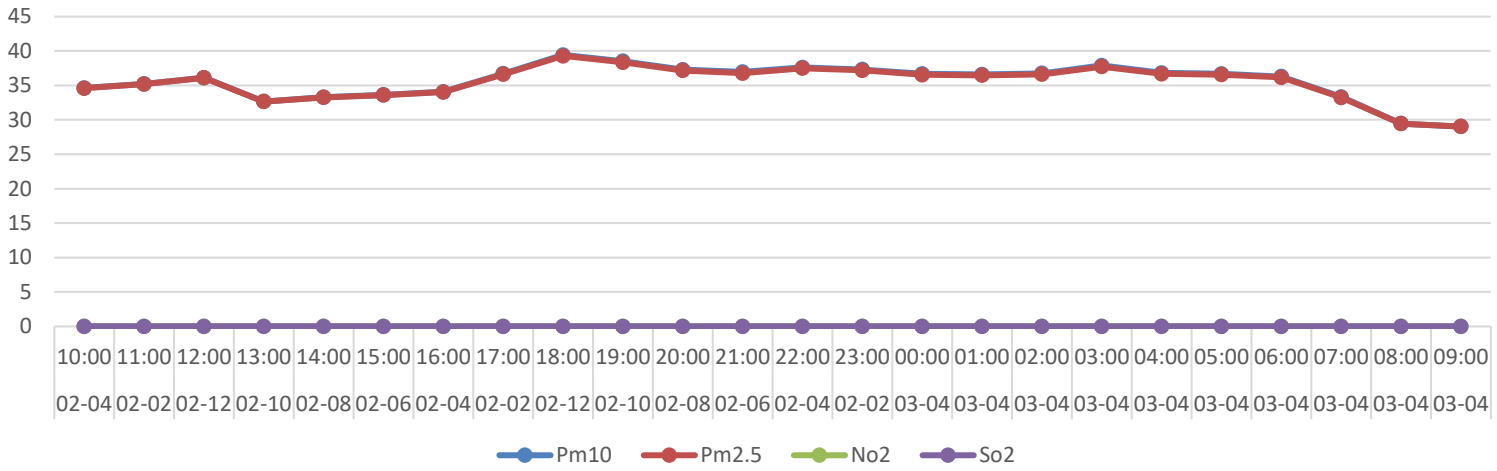


Figure 5 Measurement Graphs for Location ASR2

Measurement Results for Location 5

Device Code: AIRS-1								
Location	Sampling Date	Results (µg/m³)					Ambient Conditions	
		PM ₁₀	PM _{2.5}	NO ₂	SO ₂	TSP (24 Hours Average)	Humidity (%)	Temperature (°C)
ASR3	2024-3-20 17:00:00	29.35	29.28	0.00	0.00	55.59	71.76	29.60
	2024-3-20 18:00:00	35.08	35.01	0.00	0.00	66.45	77.43	27.94
	2024-3-20 19:00:00	30.15	30.08	0.00	0.00	57.12	82.67	27.05
	2024-3-20 20:00:00	29.01	28.90	0.00	0.00	54.91	84.21	26.77
	2024-3-20 21:00:00	31.22	31.11	0.00	0.00	59.09	85.77	26.63
	2024-3-20 22:00:00	30.68	30.65	0.00	0.00	58.14	86.53	26.57
	2024-3-20 23:00:00	29.50	29.44	0.00	0.00	55.89	85.75	26.64
	2024-3-21 00:00:00	29.26	29.21	0.00	0.00	55.44	86.13	26.42
	2024-3-21 01:00:00	29.71	29.62	0.00	0.00	56.25	85.76	26.24
	2024-3-21 02:00:00	30.31	30.26	0.00	0.00	57.43	87.11	25.99
	2024-3-21 03:00:00	30.33	30.28	0.00	0.00	57.46	86.44	25.91
	2024-3-21 04:00:00	30.85	30.82	0.00	0.00	58.44	86.31	25.76
	2024-3-21 05:00:00	30.28	30.22	0.00	0.00	57.34	86.60	25.66
	2024-3-21 06:00:00	29.31	29.28	0.00	0.00	55.53	85.26	25.78
	2024-3-21 07:00:00	25.52	25.48	0.00	0.00	48.33	81.50	26.91
	2024-3-21 08:00:00	22.99	22.99	0.00	0.00	43.58	64.84	31.68
	2024-3-21 09:00:00	23.31	23.31	0.00	0.00	44.18	59.75	33.21
	2024-3-21 10:00:00	23.85	23.85	0.00	0.00	45.20	57.37	34.12
	2024-3-21 11:00:00	23.70	23.70	0.00	0.00	44.92	59.77	33.11
	2024-3-21 12:00:00	21.64	21.61	0.00	0.00	41.00	60.23	33.28
2024-3-21 13:00:00	21.97	21.97	0.00	0.00	41.63	61.28	32.62	
2024-3-21 14:00:00	23.03	23.03	0.00	0.00	43.66	59.82	32.80	
2024-3-21 15:00:00	26.38	26.33	0.00	0.00	49.97	61.66	32.11	
2024-3-21 16:00:00	25.28	25.28	0.00	0.00	47.90	62.71	31.63	
Hourly Limit Values	TA Luft	-	-	200	200	-	-	-
	EU	-	-	200	350	-	-	-
	WHO Ambient Air Quality Guideline Value	-	-	-	-	-	-	-
Average	24 hours Average	27.61	27.57	0.00	0.00	52.31	75.28	28.93
Daily Limit Values	TA Luft	50	-	-	125	-	-	-
	EU	50	-	-	125	-	-	-
	WHO Ambient Air Quality Guideline Value	45	15	25	40	-	-	-

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Result of ASR3

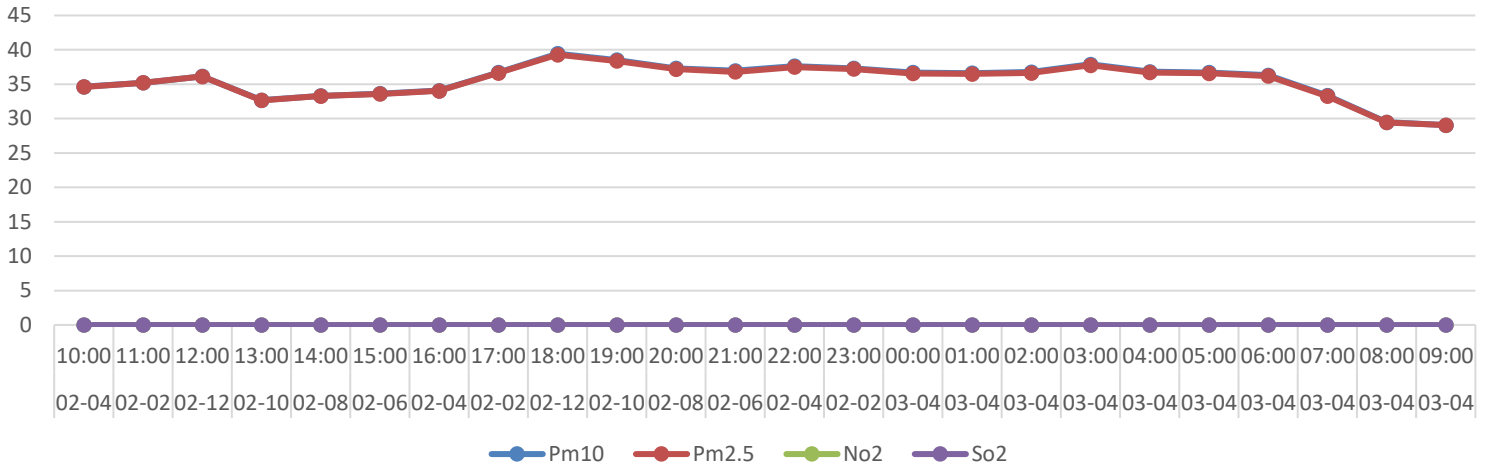


Figure 6 Measurement Graphs for Location ASR3

Measurement Results for Location 6

Device Code: 223								
Location	Sampling Date	Results (µg/m³)					Ambient Conditions	
		PM ₁₀	PM _{2.5}	NO ₂	SO ₂	TSP (24 Hours Average)	Humidity (%)	Temperature (°C)
ASR5	2024-3-20 17:00:00	24.06	24.10	0.00	0.00	45.56	65.99	30.76
	2024-3-20 18:00:00	26.25	25.18	0.00	0.00	49.56	72.18	28.66
	2024-3-20 19:00:00	25.63	24.65	0.00	0.00	48.72	77.84	27.22
	2024-3-20 20:00:00	26.17	26.17	0.00	0.00	49.59	78.29	26.95
	2024-3-20 21:00:00	25.42	25.40	0.00	0.00	48.35	79.04	26.75
	2024-3-20 22:00:00	25.71	25.74	0.00	0.00	49.06	79.42	26.68
	2024-3-20 23:00:00	25.11	25.17	0.00	0.00	47.57	81.09	26.43
	2024-3-21 00:00:00	26.26	26.33	0.00	0.00	49.76	84.13	26.01
	2024-3-21 01:00:00	25.32	25.49	0.00	0.00	47.97	81.65	25.98
	2024-3-21 02:00:00	25.16	25.16	0.00	0.00	47.68	83.51	25.74
	2024-3-21 03:00:00	24.20	24.19	0.00	0.00	45.86	83.03	25.69
	2024-3-21 04:00:00	23.68	23.64	0.00	0.00	44.85	83.20	25.54
	2024-3-21 05:00:00	23.43	23.37	0.00	0.00	44.34	83.44	25.45
	2024-3-21 06:00:00	22.96	22.95	0.00	0.00	43.52	82.71	25.48
	2024-3-21 07:00:00	20.71	20.71	0.00	0.00	39.25	81.12	26.22
	2024-3-21 08:00:00	19.18	19.17	0.00	0.00	36.36	65.60	30.44
	2024-3-21 09:00:00	17.91	17.91	0.00	0.00	33.94	62.33	31.41
	2024-3-21 10:00:00	18.33	18.33	0.00	0.00	34.73	62.08	31.37
	2024-3-21 11:00:00	17.42	17.40	0.00	0.00	33.00	66.53	29.69
	2024-3-21 12:00:00	16.48	16.47	0.00	0.00	31.22	67.69	29.70
2024-3-21 13:00:00	15.48	15.43	0.00	0.00	29.30	65.68	30.02	
2024-3-21 14:00:00	14.00	14.00	0.00	0.00	26.54	65.26	30.49	
2024-3-21 15:00:00	14.29	14.29	0.00	0.00	27.09	61.67	31.32	
2024-3-21 16:00:00	16.88	16.88	0.00	0.00	31.98	62.29	31.17	
Hourly Limit Values	TA Luft	-	-	200	350	-	-	-
	EU	-	-	200	350	-	-	-
	WHO Ambient Air Quality Guideline Value	-	-	-	-	-	-	-
Average	24 Hours Average	21.68	21.66	0.00	0.00	41.08	73.99	28.13
Daily Limit Values	TA Luft	50	-	-	125	-	-	-
	EU	50	-	-	125	-	-	-
	WHO Ambient Air Quality Guideline Value	45	15	25	40	-	-	-

Result of ASR5

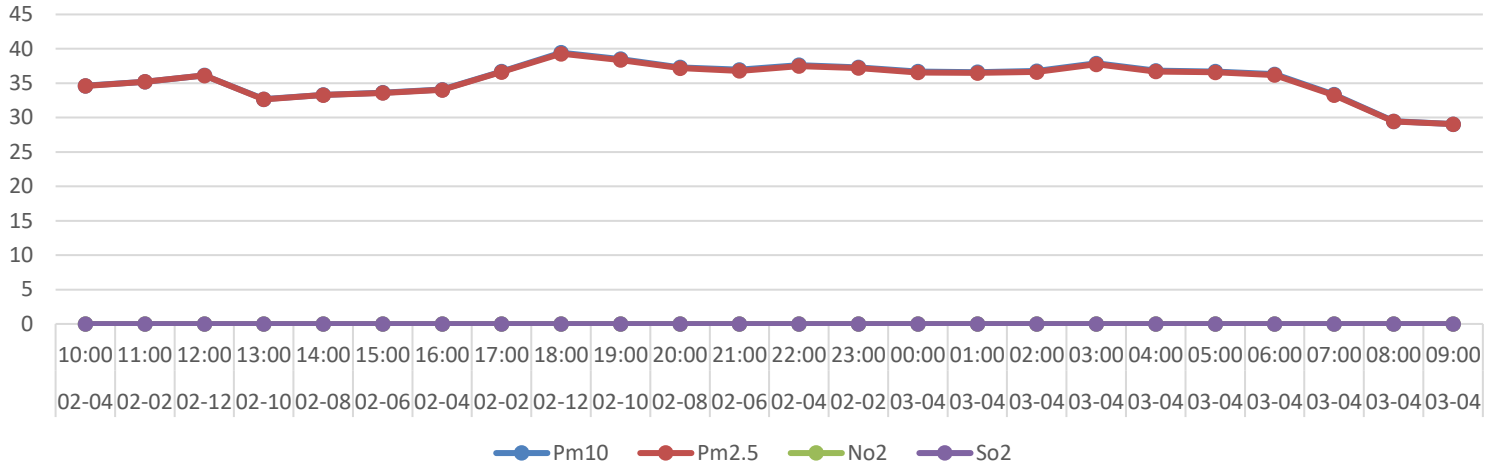


Figure 7 Measurement Graphs for Location ASR5

Measurement Results for Location 7

Device Code: 224								
Location	Sampling Date	Results (µg/m³)					Ambient Conditions	
		PM ₁₀	PM _{2.5}	NO ₂	SO ₂	TSP (24 Hours Average)	Humidity (%)	Temperature (°C)
AQ4	2024-3-21 17:00:00	15.49	17.49	0.00	0.00	33.15	67.04	29.97
	2024-3-21 18:00:00	16.68	18.68	0.00	0.00	37.30	70.97	28.24
	2024-3-21 19:00:00	17.94	19.93	0.00	0.00	35.90	76.63	26.93
	2024-3-21 20:00:00	18.37	19.35	0.00	0.00	36.70	78.46	26.70
	2024-3-21 21:00:00	20.28	20.36	0.00	0.00	38.61	80.02	26.50
	2024-3-21 22:00:00	21.48	21.43	0.00	0.00	40.63	81.66	26.24
	2024-3-21 23:00:00	21.77	21.71	0.00	0.00	41.23	82.11	26.16
	2024-3-22 00:00:00	22.39	22.37	0.00	0.00	42.42	82.13	26.18
	2024-3-22 01:00:00	22.43	22.40	0.00	0.00	42.48	81.55	26.22
	2024-3-22 02:00:00	23.86	25.79	0.00	0.00	45.17	83.05	26.02
	2024-3-22 03:00:00	26.28	27.20	0.00	0.00	51.65	81.68	26.17
	2024-3-22 04:00:00	28.84	28.81	0.00	0.00	54.65	80.48	26.24
	2024-3-22 05:00:00	29.21	29.12	0.00	0.00	55.31	80.93	26.06
	2024-3-22 06:00:00	29.34	29.17	0.00	0.00	55.50	81.53	25.99
	2024-3-22 07:00:00	26.36	27.34	0.00	0.00	51.84	77.20	26.91
	2024-3-22 08:00:00	26.73	24.73	0.00	0.00	50.67	62.22	31.80
	2024-3-22 09:00:00	29.60	29.59	0.00	0.00	56.09	59.27	32.91
	2024-3-22 10:00:00	29.48	29.48	0.00	0.00	55.88	60.55	32.70
	2024-3-22 11:00:00	22.23	29.22	0.00	0.00	55.40	60.01	33.10
	2024-3-22 12:00:00	27.62	27.62	0.00	0.00	52.34	57.37	33.99
2024-3-22 13:00:00	29.58	28.57	0.00	0.00	56.05	57.95	33.94	
2024-3-22 14:00:00	30.59	30.59	0.00	0.00	57.98	61.79	32.45	
2024-3-22 15:00:00	29.63	29.60	0.00	0.00	56.15	62.34	32.14	
2024-3-22 16:00:00	31.98	31.92	0.00	0.00	60.57	59.63	33.10	
Hourly Limit Values	TA Luft	-	-	200	350	-	-	-
	EU	-	-	200	350	-	-	-
	WHO Ambient Air Quality Guideline Value	-	-	-	-	-	-	-
Average	24 hours Average	25.59	25.56	0.00	0.00	48.49	71.94	29.03
Daily Limit Values	TA Luft	50	-	-	125	-	-	-
	EU	50	-	-	125	-	-	-
	WHO Ambient Air Quality Guideline Value	45	15	25	45	-	-	-



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Result of AQ4

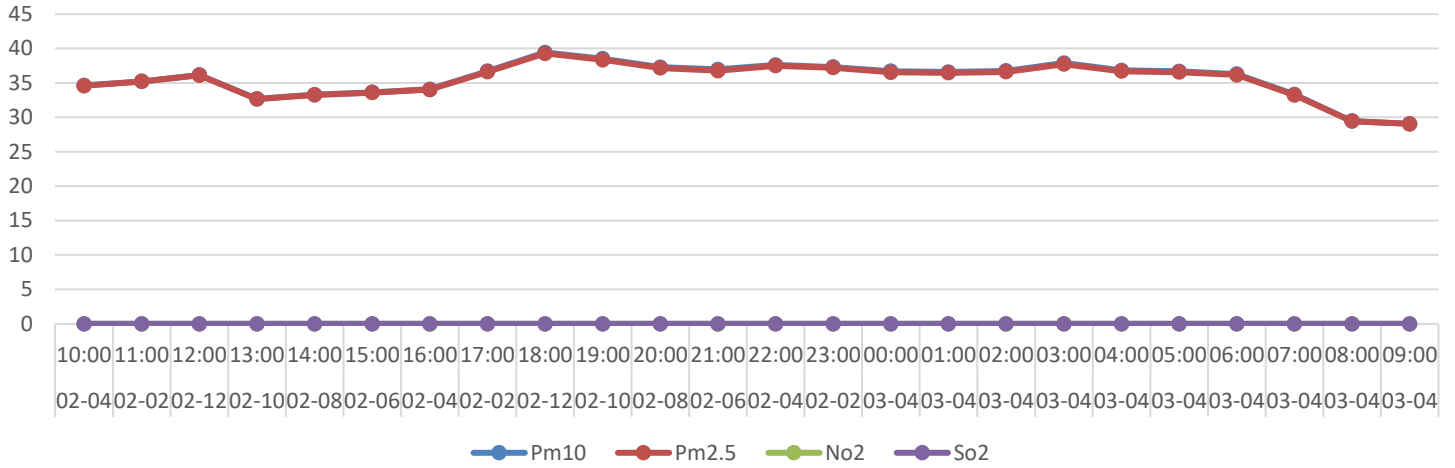
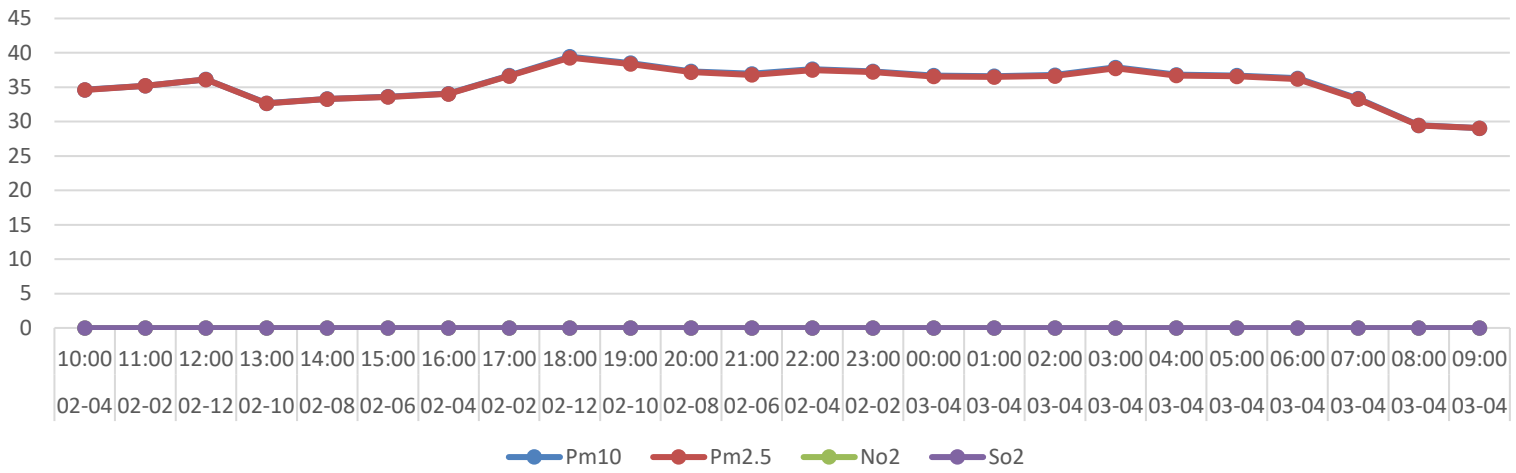


Figure 8 Measurement Graphs for Location AQ4

Measurement Results for Location 8

Device Code: 224								
Location	Sampling Date	Results (µg/m³)					Ambient Conditions	
		PM ₁₀	PM _{2.5}	NO ₂	SO ₂	TSP (24 Hours Average)	Humidity (%)	Temperature (°C)
Nr. Area 12	2024-3-23 10:00:00	35.40	35.38	0.00	0.00	65.42	70.02	31.06
	2024-3-23 11:00:00	40.52	40.49	0.00	0.00	74.66	67.83	31.60
	2024-3-23 12:00:00	37.91	37.88	0.00	0.00	70.87	64.35	32.90
	2024-3-23 13:00:00	36.92	36.91	0.00	0.00	68.89	62.24	33.44
	2024-3-23 14:00:00	35.59	35.48	0.00	0.00	65.84	67.39	31.68
	2024-3-23 15:00:00	36.57	36.52	0.00	0.00	67.88	73.19	30.22
	2024-3-23 16:00:00	37.87	37.77	0.00	0.00	70.68	72.74	29.98
	2024-3-23 17:00:00	39.75	39.64	0.00	0.00	74.31	72.75	29.56
	2024-3-23 18:00:00	41.87	41.72	0.00	0.00	77.96	77.54	27.87
	2024-3-23 19:00:00	42.48	42.26	0.00	0.00	79.24	81.90	26.95
	2024-3-23 20:00:00	42.39	42.22	0.00	0.00	79.18	84.03	26.64
	2024-3-23 21:00:00	41.36	41.18	0.00	0.00	77.41	85.89	26.54
	2024-3-23 22:00:00	41.25	41.03	0.00	0.00	77.26	87.06	26.42
	2024-3-23 23:00:00	43.73	43.55	0.00	0.00	82.32	86.84	26.38
	2024-3-23 00:00:00	41.73	41.56	0.00	0.00	78.70	87.39	26.19
	2024-3-23 01:00:00	41.45	41.24	0.00	0.00	77.61	86.24	26.10
	2024-3-23 02:00:00	41.17	40.96	0.00	0.00	77.31	86.22	26.00
	2024-3-23 03:00:00	43.93	43.68	0.00	0.00	82.59	85.87	25.95
	2024-3-23 04:00:00	42.52	42.33	0.00	0.00	80.53	85.32	25.90
	2024-3-23 05:00:00	42.27	42.08	0.00	0.00	80.16	85.66	25.80
	2024-3-23 06:00:00	42.39	42.17	0.00	0.00	80.24	85.37	25.82
	2024-3-23 07:00:00	40.03	39.86	0.00	0.00	76.03	84.98	26.10
	2024-3-23 08:00:00	37.80	37.73	0.00	0.00	71.74	74.16	28.95
	2024-3-23 09:00:00	35.77	35.73	0.00	0.00	68.21	66.55	31.27
Hourly Limit Values	TA Luft	-	-	200	350	-	-	-
	EU	-	-	200	350	-	-	-
	WHO Ambient Air Quality Guideline Value	-	-	-	-	-	-	-
Average	24 hours Average	40.11	39.97	0.00	0.00	75.21	78.40	28.31
Daily Limit Values	TA Luft	50	-	-	125	-	-	-
	EU	50	-	-	125	-	-	-
	WHO Ambient Air Quality Guideline Value	45	15	25	40	-	-	-

Result of Nr. area 12



Measurement Results for Location 9

Device Code: 224								
Location	Sampling Date	Results (µg/m³)					Ambient Conditions	
		PM ₁₀	PM _{2.5}	NO ₂	SO ₂	TSP (24 Hours Average)	Humidity (%)	Temperature (°C)
AAJV OFFICE	2024-3-24 10:00:00	34.63	34.59	0.00	0.00	65.90	64.11	31.93
	2024-3-24 11:00:00	35.21	35.20	0.00	0.00	67.17	64.40	32.02
	2024-3-24 12:00:00	36.13	36.11	0.00	0.00	68.86	61.95	33.00
	2024-3-24 13:00:00	32.67	32.65	0.00	0.00	62.49	59.15	33.53
	2024-3-24 14:00:00	33.29	33.26	0.00	0.00	63.21	58.58	33.78
	2024-3-24 15:00:00	33.63	33.58	0.00	0.00	63.72	59.60	33.30
	2024-3-24 16:00:00	34.07	34.02	0.00	0.00	64.58	61.78	32.74
	2024-3-24 17:00:00	36.70	36.61	0.00	0.00	69.58	64.23	31.73
	2024-3-24 18:00:00	39.43	39.28	0.00	0.00	74.78	72.42	29.14
	2024-3-24 19:00:00	38.51	38.36	0.00	0.00	73.43	78.13	27.61
	2024-3-24 20:00:00	37.29	37.17	0.00	0.00	71.39	80.57	27.10
	2024-3-24 21:00:00	36.95	36.78	0.00	0.00	70.87	80.81	26.92
	2024-3-24 22:00:00	37.61	37.49	0.00	0.00	72.11	81.97	26.74
	2024-3-24 23:00:00	37.30	37.20	0.00	0.00	71.79	82.58	26.63
	2024-3-24 00:00:00	36.69	36.54	0.00	0.00	70.61	84.10	26.33
	2024-3-24 01:00:00	36.59	36.47	0.00	0.00	70.51	83.07	26.19
	2024-3-24 02:00:00	36.75	36.61	0.00	0.00	70.83	84.38	25.93
	2024-3-24 03:00:00	37.88	37.73	0.00	0.00	73.09	85.40	25.80
	2024-3-24 04:00:00	36.81	36.69	0.00	0.00	71.32	84.65	25.69
	2024-3-24 05:00:00	36.68	36.57	0.00	0.00	71.15	85.08	25.58
2024-3-24 06:00:00	36.29	36.17	0.00	0.00	70.60	84.91	25.59	
2024-3-24 07:00:00	33.33	33.24	0.00	0.00	65.06	83.73	25.99	
2024-3-24 08:00:00	29.45	29.44	0.00	0.00	57.54	70.66	29.54	
2024-3-24 09:00:00	29.04	29.04	0.00	0.00	56.11	60.85	32.62	
Hourly Limit Values	TA Luft	-	-	200	350	-	-	-
	EU	-	-	200	350	-	-	-
	WHO Ambient Air Quality Guideline Value	-	-	-	-	-	-	-
Average	24 hours Average	35.54	35.45	0.00	0.00	68.20	74.05	28.98
Daily Limit Values	TA Luft	50	-	-	125	-	-	-
	EU	50	-	-	125	-	-	-
	WHO Ambient Air Quality Guideline Value	45	15	25	40	-	-	-

Result of AAJV Office

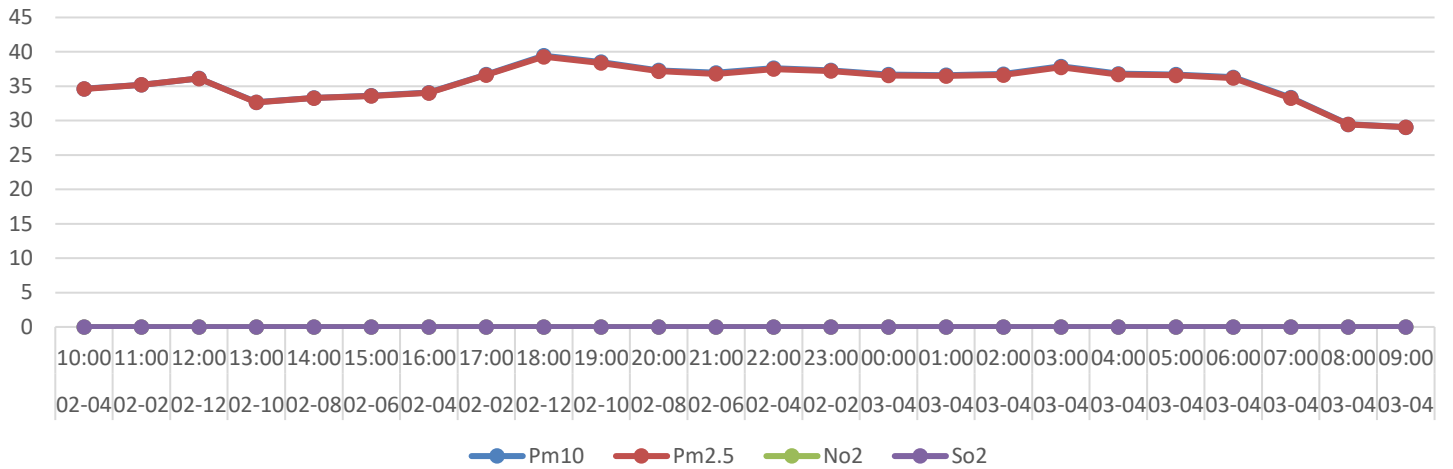


Figure 9 Measurement Graphs for Location AAJV Office

7) Assessment

In conclusion, the ambient air monitoring study conducted aimed to comprehensively assess air pollutants and their impact on ambient air quality. The results obtained were meticulously evaluated against the stringent standards set forth by the TA LUFT, EU Council Directive 2008/50/EC, and WHO limit values. This comprehensive assessment forms the basis of the report presented here.

Following the analysis of air quality measurement studies, it is encouraging to note that the background air quality values observed have demonstrated compliance with established air quality standards. This indicates that the ambient air quality within the monitored areas meets or exceeds the regulatory thresholds set forth by authoritative bodies. Such compliance is indicative of effective environmental management practices and underscores the importance of continued vigilance in monitoring and mitigating air pollution for the protection of public health and the environment.



APPENDIX :7 OCCUPATIONAL HEALTH MONITORING

OCCUPATIONAL AIR MONITORING – TWO LOCATIONS (1.NEAR AREA 12 - 2.OFFICE AREA)



Parameters	2024	
	March	
	Nr. Area 12	Near Office
PM ₁₀	40.11	35.54
PM _{2.5}	39.97	35.45
NO ₂	0.00	0.00
SO ₂	0.00	0.00
TSP	75.21	68.20

Ambient Noise Level

Environmental monitoring Report Pre-Construction–Stage WtE Facility
at Thilafushi

Noise Level Measurements (January 2024)

Prepared by: Mahmood Riyaz



27th January 2024

Table of contents

Table of contents	2
List of Tables	2
List of Figures	2
1. INTRODUCTION	3
2. NOISE LEVEL	3
2.1 Results	4
Annex 1. Noise level Hourly recorded	7

List of Tables

Table 1: Locations selected for Ambient Noise Level Measurements	3
Table 2: Noise measurement records in (dBA), 15-16 February 2023 Thilafushi	5

List of Figures

Figure 1: Ambient noise level sampling locations	4
Figure 2. Graph showing the Ambient noise level recorded	6

1. INTRODUCTION

This is the ambient noise level monitoring report prepared as part of the pre-construction environmental monitoring of the waste to energy (WtE) facility at Thilafushi, Maldives. This report presents methodologies and results of the ambient noise level measurements conducted to fulfill the requirements of the EIA and the Project Environmental Management Plan that is being developed to meet the anticipated environment impacts, health and safety, as well as to ensure the sustainability of the Project.

2. NOISE LEVEL

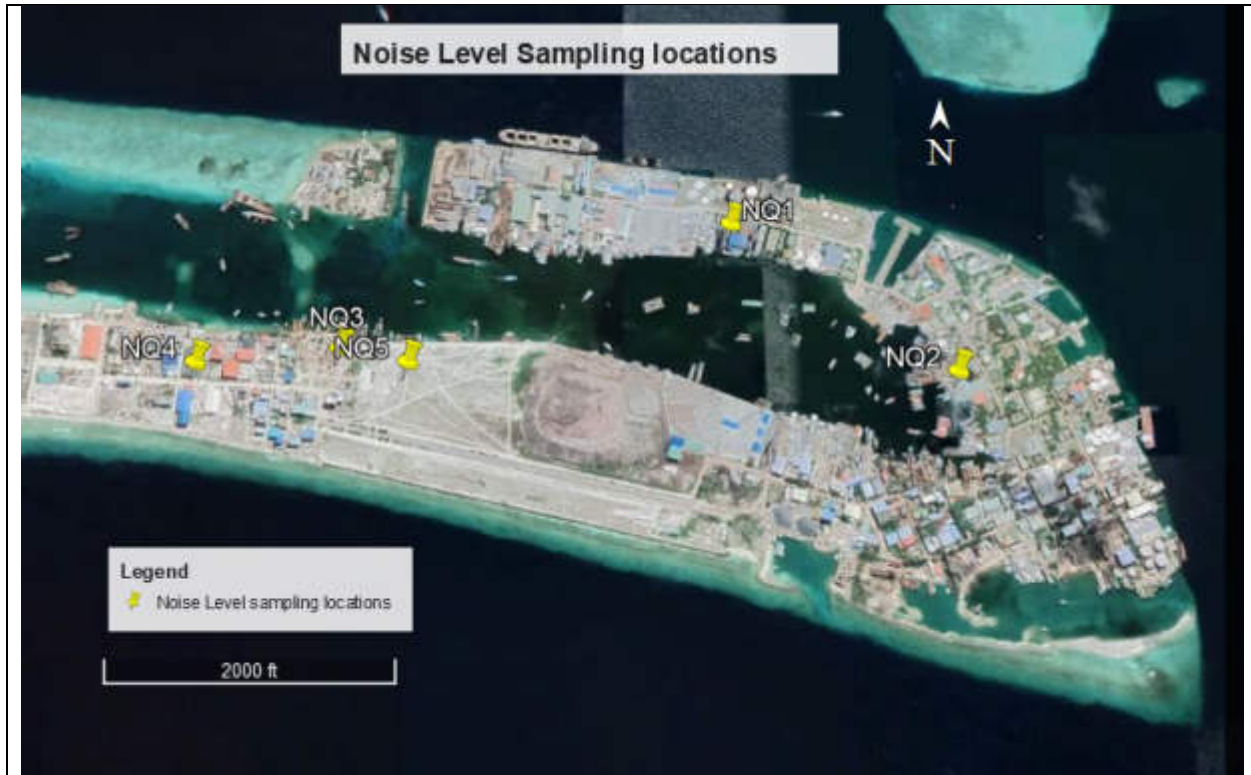
As part of the pre-construction monitoring of Thilafushi Waste to Energy facility, ambient noise levels measurements were repeated at the same five locations used in the EIA report. Ambient noise level measurement was done using a handheld sound level meter (ET-958 Professional Sound Level Meter) Measurements are recorded in NQ1, and NQ2 NQ3, NQ4 and NQ5 from 17th January 2024 13: 00 to 18th January 2024 13:00 continuously for 24 hours. Table 1 summarizes the explanation on the selection of baseline monitoring stations given in the EIA report. Figure 1 is the map that shows the sampling locations. Graph showing the noise levels in five locations is in Figure 2

At each station hourly 7-8 readings are recorded for a duration of 30-50seconds at each location. Average of ambient noise level in dB(A) was recorded and the average noise of each location is calculated Table 2. Ambient noise levels recorded with the EIA levels presented in the EIA report is given in Table 2

Table 1: Locations selected for Ambient Noise Level Measurements

Station name	Geographic Coordinates	Reason for selection
NQ1	4°10'26.4 N, 73°28'59.9 E	Included in the original EIA
NQ2	4°10'56.6 N, 73°26'53.3 E	Included in the original EIA
NQ3	4°10'58.3 N, 73°26'09.6 E	Included in the original EIA
NQ4	4°10'57.3 N, 73°25'59.4 E	Included in the original EIA
NQ5	4°10'57.3 N, 73°26'14.4 E	Included in the original EIA

Figure 1: Ambient noise level sampling locations

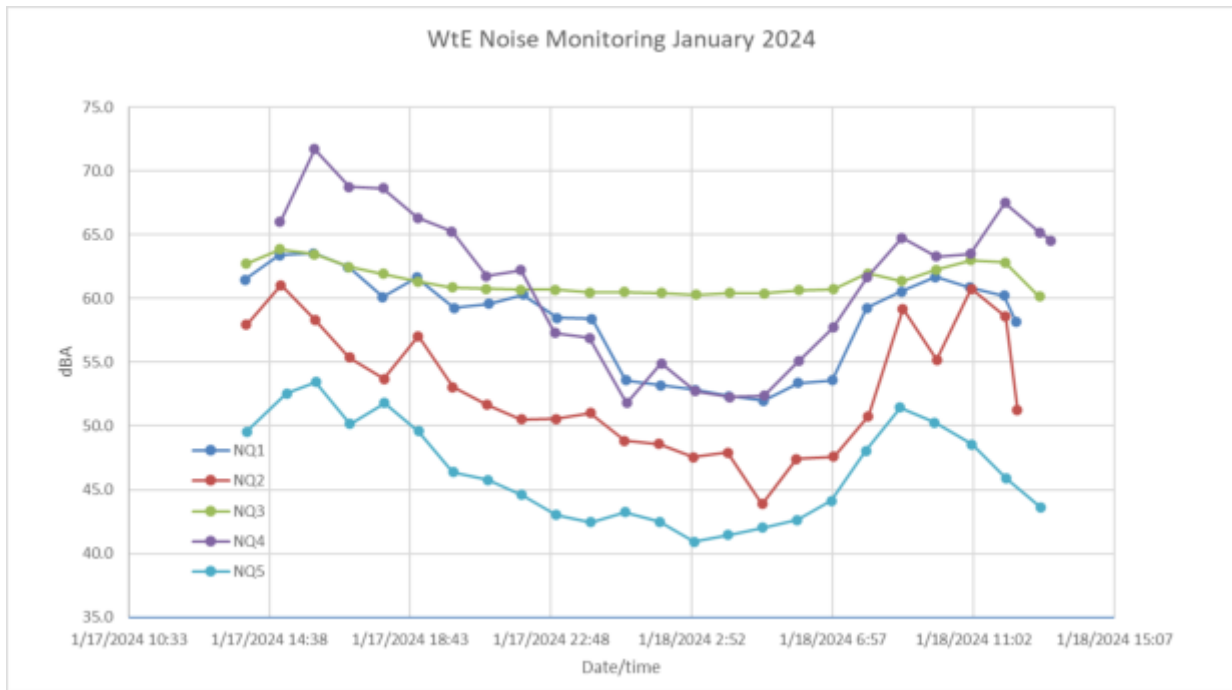


2.1 Results

Table 2: Noise measurement records in (dBA), 17-18 January 2024 Thilafushi


NQ1		NQ2		NQ3		NQ4		NQ5	
Date and time)	dB(A)	Date/time	dB(A)	Date/time	dB(A)	Date/time	dB(A)	Date/time	dB(A)
1/17/2024 13:56	61.5	1/17/2024 13:58	58.0	1/17/2024 13:57	62.7	1/17/2024 14:57	66.0	1/17/2024 13:59	49.5
1/17/2024 14:55	63.4	1/17/2024 14:58	61.0	1/17/2024 14:57	63.9	1/17/2024 15:56	71.7	1/17/2024 15:09	52.5
1/17/2024 15:55	63.5	1/17/2024 15:58	58.3	1/17/2024 15:57	63.5	1/17/2024 16:56	68.8	1/17/2024 15:58	53.4
1/17/2024 16:55	62.5	1/17/2024 16:57	55.4	1/17/2024 16:56	62.5	1/17/2024 17:56	68.7	1/17/2024 16:58	50.1
1/17/2024 17:55	60.1	1/17/2024 17:57	53.7	1/17/2024 17:56	61.9	1/17/2024 18:56	66.3	1/17/2024 17:58	51.8
1/17/2024 18:55	61.6	1/17/2024 18:57	57.0	1/17/2024 18:56	61.3	1/17/2024 19:55	65.3	1/17/2024 18:58	49.6
1/17/2024 19:59	59.3	1/17/2024 19:57	53.0	1/17/2024 19:56	60.9	1/17/2024 20:55	61.8	1/17/2024 19:58	46.4
1/17/2024 20:59	59.6	1/17/2024 20:56	51.7	1/17/2024 20:55	60.8	1/17/2024 21:55	62.2	1/17/2024 20:57	45.8
1/17/2024 21:59	60.3	1/17/2024 21:56	50.5	1/17/2024 21:55	60.7	1/17/2024 22:55	57.3	1/17/2024 21:57	44.6
1/17/2024 22:59	58.5	1/17/2024 22:56	50.5	1/17/2024 22:55	60.7	1/17/2024 23:55	56.9	1/17/2024 22:57	43.0
1/17/2024 23:58	58.4	1/17/2024 23:56	51.0	1/17/2024 23:55	60.5	1/18/2024 0:59	51.8	1/17/2024 23:57	42.4
1/18/2024 0:58	53.6	1/18/2024 0:56	48.8	1/18/2024 0:55	60.5	1/18/2024 1:59	54.9	1/18/2024 0:57	43.2
1/18/2024 1:58	53.2	1/18/2024 1:55	48.6	1/18/2024 1:59	60.4	1/18/2024 2:59	52.7	1/18/2024 1:56	42.5
1/18/2024 2:58	52.8	1/18/2024 2:55	47.6	1/18/2024 2:59	60.3	1/18/2024 3:59	52.3	1/18/2024 2:56	40.9
1/18/2024 3:58	52.3	1/18/2024 3:55	47.9	1/18/2024 3:59	60.4	1/18/2024 4:59	52.4	1/18/2024 3:56	41.4
1/18/2024 4:57	52.0	1/18/2024 4:55	43.9	1/18/2024 4:59	60.4	1/18/2024 5:58	55.1	1/18/2024 4:56	42.0
1/18/2024 5:57	53.4	1/18/2024 5:55	47.4	1/18/2024 5:59	60.6	1/18/2024 6:58	57.7	1/18/2024 5:55	42.6
1/18/2024 6:57	53.6	1/18/2024 6:59	47.6	1/18/2024 6:58	60.7	1/18/2024 7:58	61.7	1/18/2024 6:55	44.1
1/18/2024 7:57	59.2	1/18/2024 7:59	50.8	1/18/2024 7:58	62.0	1/18/2024 8:58	64.7	1/18/2024 7:55	48.0
1/18/2024 8:57	60.5	1/18/2024 8:59	59.2	1/18/2024 8:58	61.4	1/18/2024 9:57	63.3	1/18/2024 8:55	51.5
1/18/2024 9:56	61.7	1/18/2024 9:59	55.2	1/18/2024 9:58	62.3	1/18/2024 10:57	63.5	1/18/2024 9:55	50.3
1/18/2024 10:56	60.9	1/18/2024 10:58	60.8	1/18/2024 10:58	63.0	1/18/2024 11:57	67.5	1/18/2024 10:59	48.5
1/18/2024 11:56	60.2	1/18/2024 11:58	58.6	1/18/2024 11:57	62.8	1/18/2024 12:57	65.2	1/18/2024 11:59	45.9
1/18/2024 12:16	58.2	1/18/2024 12:18	51.3	1/18/2024 12:57	60.2	1/18/2024 13:17	64.5	1/18/2024 12:59	43.6
Average dB(A)	58.3		52.8		61.4		61.3		46.4
Daytime	60.4		55.7		62.1		65.6		49.0
Night time	55.4		48.8		60.5		55.3		42.9
WHO guideline for ambient noise level		70							

Figure 2. Graph showing the Ambient noise level recorded



There are no designated national standards for ambient noise level in outdoor industrial area in the Maldives. Compared to WHO and ADB specified noise level standards for outdoors industrial and commercial area the noise level in Thilafushi island and the subproject area is below the noise level standards. The results show that in all the stations ambient noise level are below threshold levels specified by the WHO standards. However, noise level in station 4 exceeded the threshold level up to 71dB at around 15:56 PM on 17th January 2024.

Annex 1. Noise level Hourly recorded

			
Thilafushi WtE Project Environmental Monitoring (Ambient Noise level)			
Client	ALAKJV WtE	Station No	NQ1 Thilafushi
Location	4°10'26.4 N, 73°28'59.9 E	Consultant	Mahmood Riyaz
Technician	Hussain Fazeel	Weather :Fine weagher prevailed across the coluntry	Temperature:29.4°C
Start time	1/17/2024 13:56		Wind 5-15 mph N/NE
End time	1/18/2024 12:16		
Date/time	dBa	Remarks	noise level
1/17/2024 13:56	61.5	Conversation	
1/17/2024 14:55	63.4	Conversation	
1/17/2024 15:55	63.5	Conversation	
1/17/2024 16:55	62.5	Conversation	
1/17/2024 17:55	60.1	Conversation	
1/17/2024 18:55	61.6	Conversation	
1/17/2024 19:59	59.3	Quiet Office	
1/17/2024 20:59	59.6	Quiet Office	
1/17/2024 21:59	60.3	Conversation	
1/17/2024 22:59	58.5	Quiet Office	
1/17/2024 23:58	58.4	Quiet Office	
1/18/2024 0:58	53.6	Quiet Office	
1/18/2024 1:58	53.2	Quiet Office	
1/18/2024 2:58	52.8	Quiet Office	
1/18/2024 3:58	52.3	Quiet Office	
1/18/2024 4:57	52.0	Quiet Office	
1/18/2024 5:57	53.4	Quiet Office	
1/18/2024 6:57	53.6	Quiet Office	
1/18/2024 7:57	59.2	Quiet Office	
1/18/2024 8:57	60.5	Conversation	
1/18/2024 9:56	61.7	Conversation	
1/18/2024 10:56	60.9	Conversation	
1/18/2024 11:56	60.2	Conversation	
1/18/2024 12:16	58.2	Quiet Office	
Average	58.3		
Day time avr	60.4		
Night time average	55.4		

Thilafushi WtE Project Environmental Monitoring (Ambient Noise level)

Client	ALAKJV WtE	Station No	NQ2 Thilafushi
Location	4°10'56.6 N, 73°26'53.3 E	Consultant	Mahmood Riyaz
Technician	Hussain Fazeel	Weather :Fine weagher prevailed across the coluntry	Temperature:29.4°C
Start time	1/17/2024 13:58		Wind 5-15 mph N/NE
End time	1/18/2024 12:18		

Date/time	dBA	Remarks noise level
1/17/2024 13:58	58.0	Quiet Office
1/17/2024 14:58	61.0	Conversation
1/17/2024 15:58	58.3	Quiet Office
1/17/2024 16:57	55.4	Quiet Office
1/17/2024 17:57	53.7	Quiet Office
1/17/2024 18:57	57.0	Quiet Office
1/17/2024 19:57	53.0	Quiet Office
1/17/2024 20:56	51.7	Quiet Office
1/17/2024 21:56	50.5	Quiet Office
1/17/2024 22:56	50.5	Quiet Office
1/17/2024 23:56	51.0	Quiet Office
1/18/2024 0:56	48.8	Quiet Library
1/18/2024 1:55	48.6	Quiet Library
1/18/2024 2:55	47.6	Quiet Library
1/18/2024 3:55	47.9	Quiet Library
1/18/2024 4:55	43.9	Quiet Library
1/18/2024 5:55	47.4	Quiet Library
1/18/2024 6:59	47.6	Quiet Library
1/18/2024 7:59	50.8	Quiet Office
1/18/2024 8:59	59.2	Quiet Office
1/18/2024 9:59	55.2	Quiet Office
1/18/2024 10:58	60.8	Conversation
1/18/2024 11:58	58.6	Quiet Office
1/18/2024 12:18	51.3	Quiet Office

Average	52.8
Day time avr	55.7
Night time average	48.8

Thilafushi WtE Project Environmental Monitoring (Ambient Noise level)

Client	ALAKJV WtE	Station No	NQ3 Thilafushi
Location	4°10'58.3 N, 73°26'09.6 E	Consultant	Mahmood Riyaz
Technician	Hussain Fazeel	Weather :Fine weagher prevailed across the coluntry	Temperature:29.4°C
Start time	1/17/2024 13:57		Wind 5-15 mph N/NE
End time	1/18/2024 12:57		

Date/time	dBa	Remarks	Noise level
1/17/2024 13:57	62.7	Conversation	
1/17/2024 14:57	63.9	Conversation	
1/17/2024 15:57	63.5	Conversation	
1/17/2024 16:56	62.5	Conversation	
1/17/2024 17:56	61.9	Conversation	
1/17/2024 18:56	61.3	Conversation	
1/17/2024 19:56	60.9	Conversation	
1/17/2024 20:55	60.8	Conversation	
1/17/2024 21:55	60.7	Conversation	
1/17/2024 22:55	60.7	Conversation	
1/17/2024 23:55	60.5	Conversation	
1/18/2024 0:55	60.5	Conversation	
1/18/2024 1:59	60.4	Conversation	
1/18/2024 2:59	60.3	Conversation	
1/18/2024 3:59	60.4	Conversation	
1/18/2024 4:59	60.4	Conversation	
1/18/2024 5:59	60.6	Conversation	
1/18/2024 6:58	60.7	Conversation	
1/18/2024 7:58	62.0	Conversation	
1/18/2024 8:58	61.4	Conversation	
1/18/2024 9:58	62.3	Conversation	
1/18/2024 10:58	63.0	Conversation	
1/18/2024 11:57	62.8	Conversation	
1/18/2024 12:57	60.2	Conversation	
Average	61.4		
Day time avr	62.1		
Night time average	60.5		

Thilafushi WtE Project Environmental Monitoring (Ambient Noise level)

Client	ALAKJV WtE	Station No	NQ4 Thilafushi
Location	4°10'57.3 N,73°25'59.4 E	Consultant	Mahmood Riyaz
Technician	Hussain Fazeel	Weather :Fine weagher prevailed across the coluntry	Temperature:29.4°C
Start time	1/17/2024 14:57		Wind 5-15 mph N/NE
End time	1/18/2024 13:17		

Date/time	dba	Remarks	Noise level
1/17/2024 14:57	66.0	Conversation	
1/17/2024 15:56	71.7	Restaurent	
1/17/2024 16:56	68.8	Conversation	
1/17/2024 17:56	68.7	Conversation	
1/17/2024 18:56	66.3	Conversation	
1/17/2024 19:55	65.3	Conversation	
1/17/2024 20:55	61.8	Conversation	
1/17/2024 21:55	62.2	Conversation	
1/17/2024 22:55	57.3	Quiet Office	
1/17/2024 23:55	56.9	Quiet Office	
1/18/2024 0:59	51.8	Quiet Office	
1/18/2024 1:59	54.9	Quiet Office	
1/18/2024 2:59	52.7	Quiet Office	
1/18/2024 3:59	52.3	Quiet Office	
1/18/2024 4:59	52.4	Quiet Office	
1/18/2024 5:58	55.1	Quiet Office	
1/18/2024 6:58	57.7	Quiet Office	
1/18/2024 7:58	61.7	Conversation	
1/18/2024 8:58	64.7	Conversation	
1/18/2024 9:57	63.3	Conversation	
1/18/2024 10:57	63.5	Conversation	
1/18/2024 11:57	67.5	Conversation	
1/18/2024 12:57	65.2	Conversation	
1/18/2024 13:17	64.5	Conversation	
Average	61.3		
Day time avr	65.6		
Night time average	55.3		

Thilafushi WtE Project Environmental Monitoring (Ambient Noise level)

Client	ALAKJV WtE	Station No	NQ5 Thilafushi
Location	4°10'57.3 N, 73°26'14.4 E	Consultant	Mahmood Riyaz
Technician	Hussain Fazeel	Weather :Fine weagher prevailed across the coluntry	Temperature:29.4°C
Start time	1/17/2024 13:59		Wind 5-15 mph N/NE
End time	1/18/2024 12:59		

Date/time	dba	Remarks Noise level
1/17/2024 13:59	49.5	Quiet Library
1/17/2024 15:09	52.5	Quiet Office
1/17/2024 15:58	53.4	Quiet Office
1/17/2024 16:58	50.1	Quiet Office
1/17/2024 17:58	51.8	Quiet Office
1/17/2024 18:58	49.6	Quiet Library
1/17/2024 19:58	46.4	Quiet Library
1/17/2024 20:57	45.8	Quiet Library
1/17/2024 21:57	44.6	Quiet Library
1/17/2024 22:57	43.0	Quiet Library
1/17/2024 23:57	42.4	Quiet Library
1/18/2024 0:57	43.2	Quiet Library
1/18/2024 1:56	42.5	Quiet Library
1/18/2024 2:56	40.9	Quiet Library
1/18/2024 3:56	41.4	Quiet Library
1/18/2024 4:56	42.0	Quiet Library
1/18/2024 5:55	42.6	Quiet Library
1/18/2024 6:55	44.1	Quiet Library
1/18/2024 7:55	48.0	Quiet Library
1/18/2024 8:55	51.5	Quiet Office
1/18/2024 9:55	50.3	Quiet Office
1/18/2024 10:59	48.5	Quiet Library
1/18/2024 11:59	45.9	Quiet Library
1/18/2024 12:59	43.6	Quiet Library
Average	46.4	
Day time avr	49.0	
Night time average	42.9	

Environmental monitoring Report Pre-Construction–Stage WtE Facility
at Thilafushi

Noise Level Measurements (February 2024)

Prepared by: Mahmood Riyaz



25th February 2024

Table of contents

Table of contents	2
List of Tables	2
List of Figures	2
1. INTRODUCTION	3
2. NOISE LEVEL	3
2.1 Results	4
Annex 1. Noise level Hourly recorded	7

List of Tables

Table 1: Locations selected for Ambient Noise Level Measurements	3
Table 2: Noise measurement records in (dBA), 15-16 February 2023 Thilafushi	5

List of Figures

Figure 1: Ambient noise level sampling locations	4
Figure 2. Graph showing the Ambient noise level recorded	6

1. INTRODUCTION

This is the ambient noise level monitoring report prepared as part of the pre-construction environmental monitoring of the waste to energy (WtE) facility at Thilafushi, Maldives. This report presents methodologies and results of the ambient noise level measurements conducted to fulfill the requirements of the EIA and the Project Environmental Management Plan that is being developed to meet the anticipated environment impacts, health and safety, as well as to ensure the sustainability of the Project.

2. NOISE LEVEL

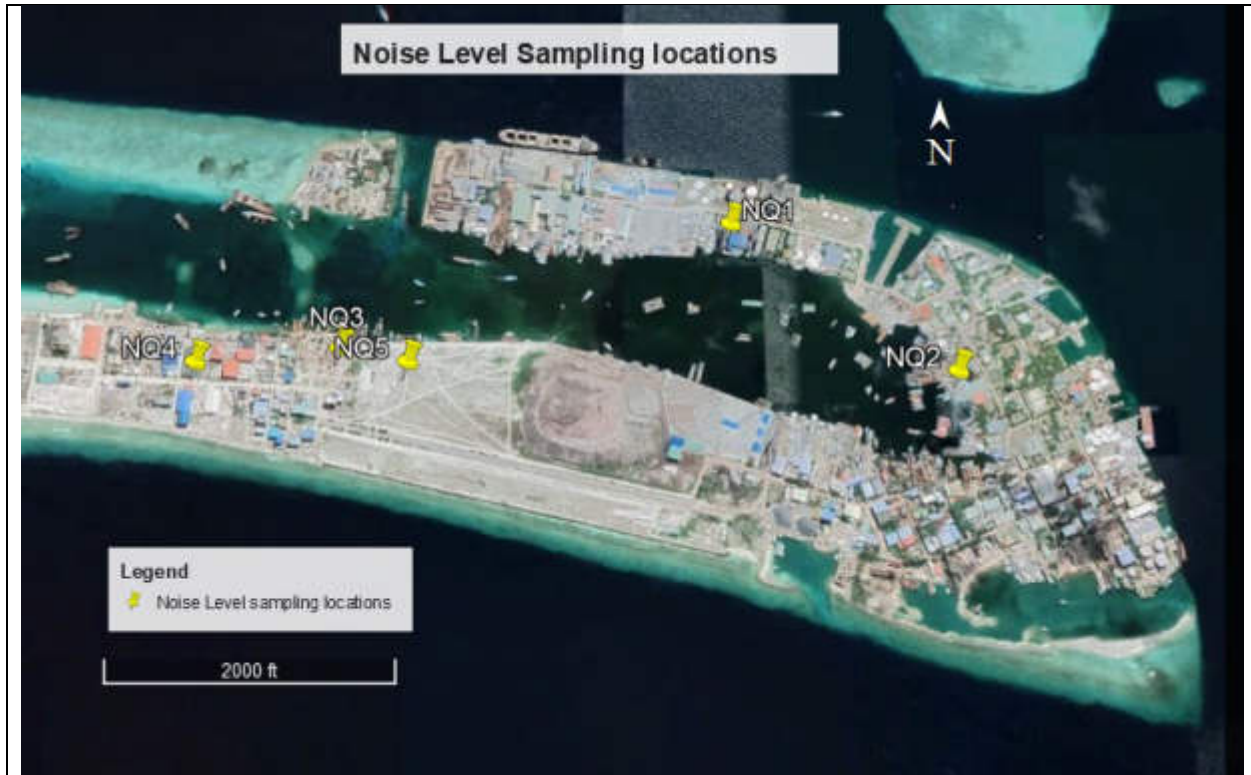
As part of the pre-construction monitoring of Thilafushi Waste to Energy facility, ambient noise levels measurements were repeated at the same five locations used in the EIA report. Ambient noise level measurement was done using a handheld sound level meter (ET-958 Professional Sound Level Meter) Measurements are recorded in NQ1, and NQ2 NQ3, NQ4 and NQ5 from 18th February 2024 13: 00 to 19th February 2024 13:00 continuously for 24 hours. Table 1 summarizes the explanation on the selection of baseline monitoring stations given in the EIA report. Figure 1 is the map that shows the sampling locations. Graph showing the noise levels in five locations is in Figure 2

At each station hourly 7-8 readings are recorded for a duration of 30-50seconds at each location. Average of ambient noise level in dB(A) was recorded and the average noise of each location is calculated Table 2. Ambient noise levels recorded with the EIA levels presented in the EIA report is given in Table 2

Table 1: Locations selected for Ambient Noise Level Measurements

Station name	Geographic Coordinates	Reason for selection
NQ1	4°10'26.4 N, 73°28'59.9 E	Included in the original EIA
NQ2	4°10'56.6 N, 73°26'53.3 E	Included in the original EIA
NQ3	4°10'58.3 N, 73°26'09.6 E	Included in the original EIA
NQ4	4°10'57.3 N, 73°25'59.4 E	Included in the original EIA
NQ5	4°10'57.3 N, 73°26'14.4 E	Included in the original EIA

Figure 1: Ambient noise level sampling locations

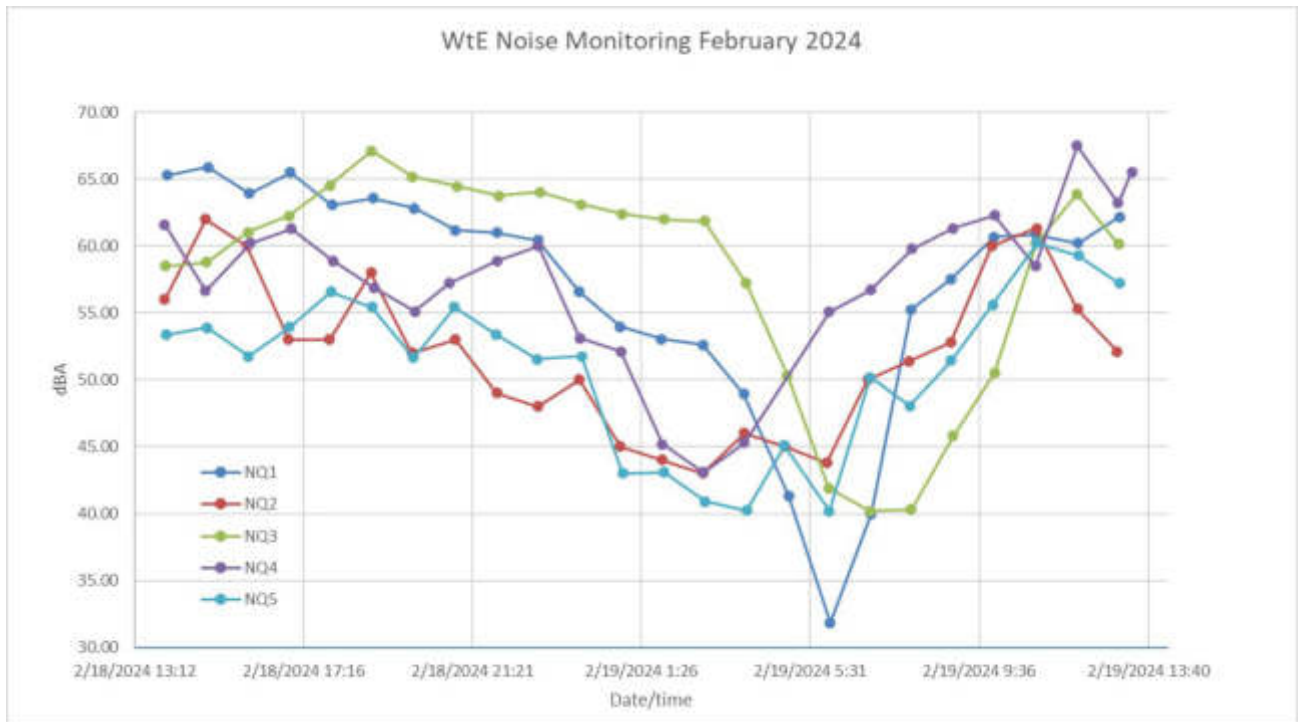


2.1 Results

Table 2: Noise measurement records in (dBA), 18-19 February 2024 Thilafushi

NQ1		NQ2		NQ3		NQ4		NQ5	
Date and time)	dB(A)	Date/time	dB(A)	Date/time	dB(A)	Date/time	dB(A)	Date/time	dB(A)
2/18/2024 13:58	65.29	2/18/2024 13:55	56.0	2/18/2024 13:56	58.5	2/18/2024 13:55	61.6	2/18/2024 13:57	53.4
2/18/2024 14:58	65.88	2/18/2024 14:55	62.0	2/18/2024 14:56	58.8	2/18/2024 14:55	56.7	2/18/2024 14:57	53.9
2/18/2024 15:58	63.93	2/18/2024 15:55	60.0	2/18/2024 15:56	61.0	2/18/2024 15:59	60.2	2/18/2024 15:56	51.8
2/18/2024 16:58	65.49	2/18/2024 16:54	53.0	2/18/2024 16:55	62.2	2/18/2024 16:59	61.3	2/18/2024 16:56	53.9
2/18/2024 17:57	63.08	2/18/2024 17:54	53.0	2/18/2024 17:55	64.5	2/18/2024 17:59	58.9	2/18/2024 17:56	56.6
2/18/2024 18:57	63.55	2/18/2024 18:54	58.0	2/18/2024 18:55	67.1	2/18/2024 18:58	56.9	2/18/2024 18:56	55.4
2/18/2024 19:57	62.80	2/18/2024 19:54	52.0	2/18/2024 19:55	65.2	2/18/2024 19:58	55.1	2/18/2024 19:55	51.6
2/18/2024 20:57	61.18	2/18/2024 20:56	53.0	2/18/2024 20:59	64.5	2/18/2024 20:48	57.2	2/18/2024 20:55	55.4
2/18/2024 21:56	60.98	2/18/2024 21:56	49.0	2/18/2024 21:59	63.7	2/18/2024 21:57	58.9	2/18/2024 21:55	53.4
2/18/2024 22:56	60.42	2/18/2024 22:56	48.0	2/18/2024 22:59	64.0	2/18/2024 22:57	60.0	2/18/2024 22:55	51.5
2/18/2024 23:56	56.56	2/18/2024 23:56	50.0	2/18/2024 23:59	63.1	2/18/2024 23:57	53.1	2/18/2024 23:59	51.8
2/19/2024 0:55	53.97	2/19/2024 0:56	45.0	2/19/2024 0:58	62.4	2/19/2024 0:56	52.1	2/19/2024 0:59	43.0
2/19/2024 1:55	53.06	2/19/2024 1:55	44.0	2/19/2024 1:58	62.0	2/19/2024 1:56	45.2	2/19/2024 1:59	43.1
2/19/2024 2:55	52.61	2/19/2024 2:55	43.0	2/19/2024 2:58	61.9	2/19/2024 2:56	43.1	2/19/2024 2:59	40.9
2/19/2024 3:55	48.94	2/19/2024 3:55	46.0	2/19/2024 3:58	57.2	2/19/2024 3:55	45.3	2/19/2024 3:58	40.3
2/19/2024 4:59	41.34	2/19/2024 4:55	45.0	2/19/2024 4:57	50.3	2/19/2024 5:58	55.1	2/19/2024 4:53	45.1
2/19/2024 5:59	31.86	2/19/2024 5:55	43.8	2/19/2024 5:57	41.9	2/19/2024 6:58	56.7	2/19/2024 5:58	40.2
2/19/2024 6:59	40.00	2/19/2024 6:54	50.0	2/19/2024 6:57	40.2	2/19/2024 7:58	59.8	2/19/2024 6:58	50.2
2/19/2024 7:57	55.2	2/19/2024 7:54	51.4	2/19/2024 7:57	40.3	2/19/2024 8:58	61.3	2/19/2024 7:55	48.0
2/19/2024 8:55	57.5	2/19/2024 8:54	52.8	2/19/2024 8:57	45.8	2/19/2024 9:57	62.3	2/19/2024 8:55	51.5
2/19/2024 9:57	60.7	2/19/2024 9:54	60.0	2/19/2024 9:58	50.5	2/19/2024 10:57	58.5	2/19/2024 9:55	55.6
2/19/2024 10:57	60.9	2/19/2024 10:58	61.3	2/19/2024 10:58	60.2	2/19/2024 11:57	67.5	2/19/2024 10:59	60.2
2/19/2024 11:59	60.2	2/19/2024 11:58	55.3	2/19/2024 11:57	63.9	2/19/2024 12:57	63.2	2/19/2024 11:59	59.3
2/19/2024 12:59	62.2	2/19/2024 12:55	52.1	2/19/2024 12:57	60.2	2/19/2024 13:17	65.5	2/19/2024 12:59	57.2
Average dB(A)	57.0		51.8		57.9		57.3		51.0
Daytime	60.5		55.5		57.0		60.6		54.2
Night time	52.1		46.7		59.1		52.7		46.5
WHO guideline for ambient noise level		70							

Figure 2. Graph showing the Ambient noise level recorded



There are no designated national standards for ambient noise level in outdoor industrial area in the Maldives. Compared to WHO and ADB specified noise level standards for outdoors industrial and commercial area the noise level in Thilafushi island and the subproject area is below the noise level standards. The results show that in all the stations ambient noise level are below threshold levels specified by the WHO standards.

Annex 1. Noise level Hourly recorded



Thilafushi WtE Project Environmental Monitoring (Ambient Noise level)

Client	ALAKJV WtE	Station No	NQ1 Thilafushi
Location	4°10'26.4 N, 73°28'59.9 E	Consultant	Mahmood Riyaz
Technician	Hussain Fazeel	Weather :Isolated showers mainly fine weather	Temperature:31.8°C
Start time	2/18/2024 13:58		Wind 10-20mph N/NE
End time	2/19/2024 12:59		

Date/time	dBA	Remarks noise level
2/18/2024 13:58	65.29	Conversation
2/18/2024 14:58	65.88	Conversation
2/18/2024 15:58	63.93	Conversation
2/18/2024 16:58	65.49	Conversation
2/18/2024 17:57	63.08	Conversation
2/18/2024 18:57	63.55	Conversation
2/18/2024 19:57	62.80	Conversation
2/18/2024 20:57	61.18	Conversation
2/18/2024 21:56	60.98	Conversation
2/18/2024 22:56	60.42	Conversation
2/18/2024 23:56	56.56	Quiet Office
2/19/2024 0:55	53.97	Quiet Office
2/19/2024 1:55	53.06	Quiet Office
2/19/2024 2:55	52.61	Quiet Office
2/19/2024 3:55	48.94	Quiet Library
2/19/2024 4:59	41.34	Quiet Library
2/19/2024 5:59	31.86	Whisper
2/19/2024 6:59	40.00	Quiet Library
2/19/2024 7:57	55.2	Quiet Office
2/19/2024 8:55	57.5	Quiet Office
2/19/2024 9:57	60.7	Conversation
2/19/2024 10:57	60.9	Conversation
2/19/2024 11:59	60.2	Conversation
2/19/2024 12:59	62.2	Conversation

Average	57.0
Day time avr	60.5
Night time average	52.1



Thilafushi WtE Project Environmental Monitoring (Ambient Noise level)

Client	ALAKJV WtE	Station No	NQ2 Thilafushi
Location	4°10'56.6 N, 73°26'53.3 E	Consultant	Mahmood Riyaz
Technician	Hussain Fazeel	Weather :Isolated showers mainly fine weather	Temperature:31.8°C
Start time	2/18/2024 13:55		Wind 10-20mph N/NE
End time	2/19/2024 12:55		

Date/time	dBa	Remarks noise level
2/18/2024 13:55	56.0	Quiet Office
2/18/2024 14:55	62.0	Conversation
2/18/2024 15:55	60.0	Conversation
2/18/2024 16:54	53.0	Quiet Office
2/18/2024 17:54	53.0	Quiet Office
2/18/2024 18:54	58.0	Quiet Office
2/18/2024 19:54	52.0	Quiet Office
2/18/2024 20:56	53.0	Quiet Office
2/18/2024 21:56	49.0	Quiet Library
2/18/2024 22:56	48.0	Quiet Library
2/18/2024 23:56	50.0	Quiet Office
2/19/2024 0:56	45.0	Quiet Library
2/19/2024 1:55	44.0	Quiet Library
2/19/2024 2:55	43.0	Quiet Library
2/19/2024 3:55	46.0	Quiet Library
2/19/2024 4:55	45.0	Quiet Library
2/19/2024 5:55	43.8	Quiet Library
2/19/2024 6:54	50.0	Quiet Office
2/19/2024 7:54	51.4	Quiet Office
2/19/2024 8:54	52.8	Quiet Office
2/19/2024 9:54	60.0	Conversation
2/19/2024 10:58	61.3	Conversation
2/19/2024 11:58	55.3	Quiet Office
2/19/2024 12:55	52.1	Quiet Office

Average 51.8
 Day time avr 55.5
 Night time average 46.7

Thilafushi WtE Project Environmental Monitoring (Ambient Noise level)

Client	ALAKJV WtE	Station No	NQ3 Thilafushi
Location	4°10'58.3 N, 73°26'09.6 E	Consultant	Mahmood Riyaz
Technician	Hussain Fazeel	Weather :Isolated showers mainly fine weather	Temperature:31.8°C
Start time	2/18/2024 13:56		Wind 10-20mph N/NE
End time	2/19/2024 12:57		

Date/time	dBA	Remarks Noise level
2/18/2024 13:56	58.5	Quiet Office
2/18/2024 14:56	58.8	Quiet Office
2/18/2024 15:56	61.0	Conversation
2/18/2024 16:55	62.2	Conversation
2/18/2024 17:55	64.5	Conversation
2/18/2024 18:55	67.1	Conversation
2/18/2024 19:55	65.2	Conversation
2/18/2024 20:59	64.5	Conversation
2/18/2024 21:59	63.7	Conversation
2/18/2024 22:59	64.0	Conversation
2/18/2024 23:59	63.1	Conversation
2/19/2024 0:58	62.4	Conversation
2/19/2024 1:58	62.0	Conversation
2/19/2024 2:58	61.9	Conversation
2/19/2024 3:58	57.2	Quiet Office
2/19/2024 4:57	50.3	Quiet Office
2/19/2024 5:57	41.9	Quiet Library
2/19/2024 6:57	40.2	Quiet Library
2/19/2024 7:57	40.3	Quiet Library
2/19/2024 8:57	45.8	Quiet Library
2/19/2024 9:58	50.5	Quiet Office
2/19/2024 10:58	60.2	Conversation
2/19/2024 11:57	63.9	Conversation
2/19/2024 12:57	60.2	Conversation

Average 57.9
Day time avr 57.0
Night time average 59.1

Thilafushi WtE Project Environmental Monitoring (Ambient Noise level)

Client	ALAKJV WtE	Station No	NQ4 Thilafushi
Location	4°10'57.3 N,73°25'59.4 E	Consultant	Mahmood Riyaz
Technician	Hussain Fazeel	Weather :Isolated showers mainly fine weather	Temperature:31.8°C
Start time	2/18/2024 13:55		Wind 10-20mph N/NE
End time	2/19/2024 13:17		

Date/time	dBA	Remarks Noise level
2/18/2024 13:55	61.6	Conversation
2/18/2024 14:55	56.7	Quiet Office
2/18/2024 15:59	60.2	Conversation
2/18/2024 16:59	61.3	Conversation
2/18/2024 17:59	58.9	Quiet Office
2/18/2024 18:58	56.9	Quiet Office
2/18/2024 19:58	55.1	Quiet Office
2/18/2024 20:48	57.2	Quiet Office
2/18/2024 21:57	58.9	Quiet Office
2/18/2024 22:57	60.0	Conversation
2/18/2024 23:57	53.1	Quiet Office
2/19/2024 0:56	52.1	Quiet Office
2/19/2024 1:56	45.2	Quiet Library
2/19/2024 2:56	43.1	Quiet Library
2/19/2024 3:55	45.3	Quiet Library
2/19/2024 5:58	55.1	Quiet Office
2/19/2024 6:58	56.7	Quiet Office
2/19/2024 7:58	59.8	Quiet Office
2/19/2024 8:58	61.3	Conversation
2/19/2024 9:57	62.3	Conversation
2/19/2024 10:57	58.5	Quiet Office
2/19/2024 11:57	67.5	Conversation
2/19/2024 12:57	63.2	Conversation
2/19/2024 13:17	65.5	Conversation

Average 57.3
Day time avr 60.6
Night time average 52.7

Thilafushi WtE Project Environmental Monitoring (Ambient Noise level)

Client	ALAKJV WtE	Station No	NQ5 Thilafushi
Location	4°10'57.3 N, 73°26'14.4 E	Consultant	Mahmood Riyaz
Technician	Hussain Fazeel	Weather :Isolated showers mainly fine weather	Temperature:31.8°C
Start time	2/18/2024 13:57		Wind 10-20mph N/NE
End time	2/19/2024 12:59		

Date/time	dB(A)	Remarks Noise level
2/18/2024 13:57	53.4	Quiet Office
2/18/2024 14:57	53.9	Quiet Office
2/18/2024 15:56	51.8	Quiet Office
2/18/2024 16:56	53.9	Quiet Office
2/18/2024 17:56	56.6	Quiet Office
2/18/2024 18:56	55.4	Quiet Office
2/18/2024 19:55	51.6	Quiet Office
2/18/2024 20:55	55.4	Quiet Office
2/18/2024 21:55	53.4	Quiet Office
2/18/2024 22:55	51.5	Quiet Office
2/18/2024 23:59	51.8	Quiet Office
2/19/2024 0:59	43.0	Quiet Library
2/19/2024 1:59	43.1	Quiet Library
2/19/2024 2:59	40.9	Quiet Library
2/19/2024 3:58	40.3	Quiet Library
2/19/2024 4:53	45.1	Quiet Library
2/19/2024 5:58	40.2	Quiet Library
2/19/2024 6:58	50.2	Quiet Office
2/19/2024 7:55	48.0	Quiet Library
2/19/2024 8:55	51.5	Quiet Office
2/19/2024 9:55	55.6	Quiet Office
2/19/2024 10:59	60.2	Conversation
2/19/2024 11:59	59.3	Quiet Office
2/19/2024 12:59	57.2	Quiet Office

Average 51.0
 Day time avr 54.2
 Night time average 46.5

Environmental monitoring Report Pre-Construction–Stage WtE Facility
at Thilafushi

Noise Level Measurements (March 2024)

Prepared by: Mahmood Riyaz



27th March 2024

Table of contents

Table of contents	2
List of Tables	2
List of Figures	2
1. INTRODUCTION	3
2. NOISE LEVEL	3
2.1 Results	4
Annex 1. Noise level Hourly recorded	7

List of Tables

Table 1: Locations selected for Ambient Noise Level Measurements	3
Table 2: Noise measurement records in (dBA), 9-10 March 2024 Thilafushi	5

List of Figures

Figure 1: Ambient noise level sampling locations	4
Figure 2. Graph showing the Ambient noise level recorded	6

1. INTRODUCTION

This is the ambient noise level monitoring report prepared as part of the pre-construction environmental monitoring of the waste to energy (WtE) facility at Thilafushi, Maldives. This report presents methodologies and results of the ambient noise level measurements conducted to fulfill the requirements of the EIA and the Project Environmental Management Plan that is being developed to meet the anticipated environment impacts, health and safety, as well as to ensure the sustainability of the Project.

2. NOISE LEVEL

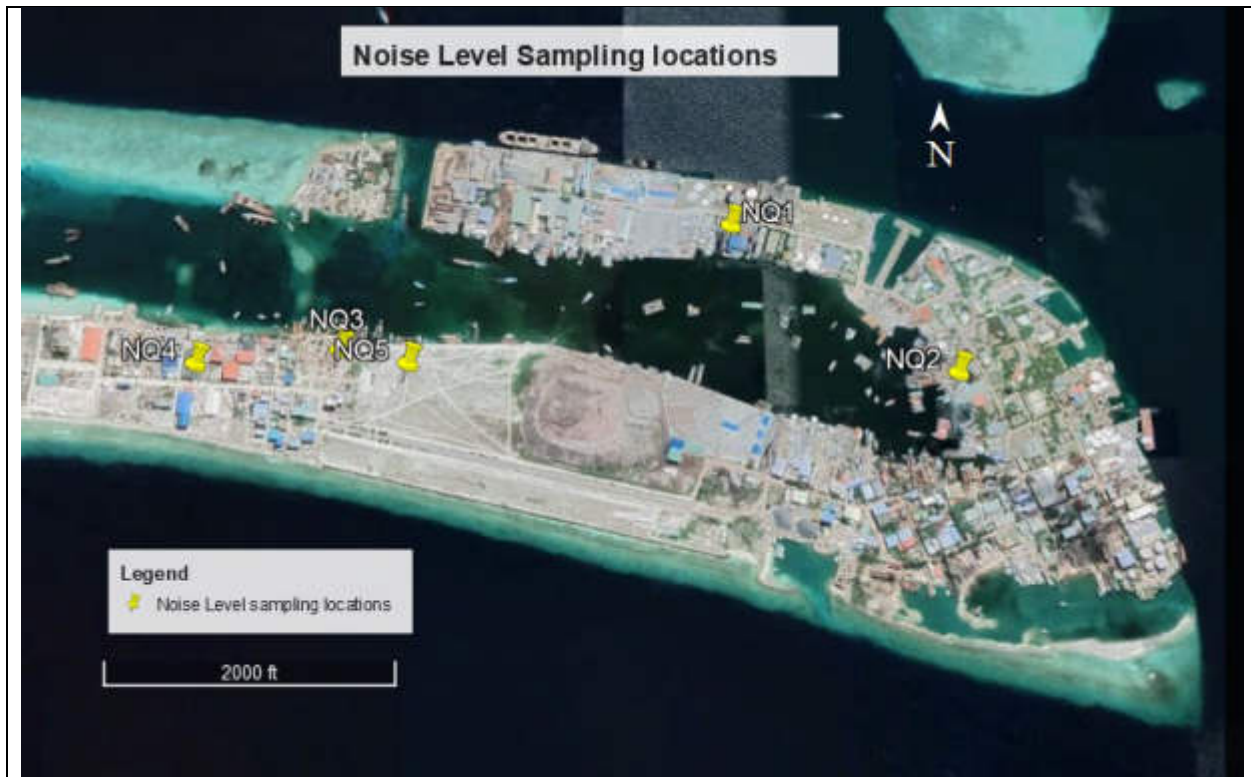
As part of the pre-construction monitoring of Thilafushi Waste to Energy facility, ambient noise levels measurements were repeated at the same five locations used in the EIA report. Ambient noise level measurement was done using a handheld sound level meter (ET-958 Professional Sound Level Meter) Measurements are recorded in NQ1, and NQ2 NQ3, NQ4 and NQ5 from 9th March 2024 13: 00 to 10th March 2024 13:00 continuously for 24 hours. Table 1 summarizes the explanation on the selection of baseline monitoring stations given in the EIA report. Figure 1 is the map that shows the sampling locations. Graph showing the noise levels in five locations is in Figure 2

At each station hourly 7-8 readings are recorded for a duration of 30-50seconds at each location. Average of ambient noise level in dB(A) was recorded and the average noise of each location is calculated Table 2. Ambient noise levels recorded with the EIA levels presented in the EIA report is given in Table 2

Table 1: Locations selected for Ambient Noise Level Measurements

Station name	Geographic Coordinates	Reason for selection
NQ1	4°10'26.4 N, 73°28'59.9 E	Included in the original EIA
NQ2	4°10'56.6 N, 73°26'53.3 E	Included in the original EIA
NQ3	4°10'58.3 N, 73°26'09.6 E	Included in the original EIA
NQ4	4°10'57.3 N, 73°25'59.4 E	Included in the original EIA
NQ5	4°10'57.3 N, 73°26'14.4 E	Included in the original EIA

Figure 1: Ambient noise level sampling locations



2.1 Results

Table 2: Noise measurement records in (dBA), 9-10 March 2024 Thilafushi

NQ1		NQ2		NQ3		NQ4		NQ5	
Date and time)	dB(A)	Date/time	dB(A)	Date/time	dB(A)	Date/time	dB(A)	Date/time	dB(A)
3/9/2024 13:57	66.0	3/9/2024 13:58	63.6	3/9/2024 13:59	59.8	3/9/2024 13:58	62.3	3/9/2024 13:56	55.1
3/9/2024 14:56	62.6	3/9/2024 14:58	52.7	3/9/2024 14:59	54.3	3/9/2024 14:58	58.4	3/9/2024 14:55	53.5
3/9/2024 15:56	60.7	3/9/2024 15:58	57.5	3/9/2024 15:59	53.0	3/9/2024 15:58	58.9	3/9/2024 15:55	54.6
3/9/2024 16:56	59.1	3/9/2024 16:57	54.7	3/9/2024 16:59	51.5	3/9/2024 16:58	62.3	3/9/2024 16:55	56.5
3/9/2024 17:56	61.9	3/9/2024 17:57	54.4	3/9/2024 17:58	52.5	3/9/2024 17:58	60.1	3/9/2024 17:55	55.7
3/9/2024 18:55	62.4	3/9/2024 18:57	54.6	3/9/2024 18:58	51.0	3/9/2024 18:57	54.3	3/9/2024 18:59	60.9
3/9/2024 19:55	57.0	3/9/2024 19:57	52.1	3/9/2024 19:58	50.8	3/9/2024 19:57	48.2	3/9/2024 19:59	60.4
3/9/2024 20:55	58.0	3/9/2024 20:57	49.6	3/9/2024 20:58	51.6	3/9/2024 20:57	49.6	3/9/2024 20:59	63.2
3/9/2024 21:55	59.1	3/9/2024 21:56	49.2	3/9/2024 21:58	51.8	3/9/2024 21:57	45.1	3/9/2024 21:59	68.7
3/9/2024 22:55	52.7	3/9/2024 22:56	49.7	3/9/2024 22:57	52.0	3/9/2024 22:57	43.5	3/9/2024 22:59	68.7
3/9/2024 23:59	51.6	3/9/2024 23:56	48.6	3/9/2024 23:57	51.6	3/9/2024 23:56	41.3	3/9/2024 23:58	68.8
3/10/2024 0:59	54.5	3/10/2024 0:56	45.7	3/10/2024 0:57	50.7	3/10/2024 0:56	42.4	3/10/2024 0:58	67.5
3/10/2024 1:59	52.4	3/10/2024 1:56	40.1	3/10/2024 1:57	50.4	3/10/2024 1:56	41.1	3/10/2024 1:58	64.6
3/10/2024 2:59	53.2	3/10/2024 2:55	43.3	3/10/2024 2:57	49.1	3/10/2024 2:56	42.1	3/10/2024 2:58	59.4
3/10/2024 3:59	51.6	3/10/2024 3:55	40.8	3/10/2024 3:56	47.0	3/10/2024 3:56	41.0	3/10/2024 3:58	60.1
3/10/2024 4:58	52.4	3/10/2024 4:55	44.3	3/10/2024 4:56	46.3	3/10/2024 4:55	41.9	3/10/2024 4:57	59.3
3/10/2024 5:58	54.6	3/10/2024 5:55	45.9	3/10/2024 5:56	50.3	3/10/2024 5:55	41.4	3/10/2024 5:57	59.3
3/10/2024 6:58	54.5	3/10/2024 6:59	46.2	3/10/2024 6:56	46.3	3/10/2024 6:55	42.2	3/10/2024 6:57	59.4
3/10/2024 7:58	58.1	3/10/2024 7:59	52.2	3/10/2024 7:55	51.1	3/10/2024 7:55	50.7	3/10/2024 7:57	54.6
3/10/2024 8:58	60.6	3/10/2024 8:59	55.2	3/10/2024 8:55	54.8	3/10/2024 8:59	57.9	3/10/2024 8:57	52.2
3/10/2024 9:57	62.1	3/10/2024 9:59	54.3	3/10/2024 9:55	51.9	3/10/2024 9:59	53.7	3/10/2024 9:56	52.0
3/10/2024 10:57	61.3	3/10/2024 10:59	56.9	3/10/2024 10:55	51.3	3/10/2024 10:59	54.2	3/10/2024 10:56	54.7
3/10/2024 11:57	62.7	3/10/2024 11:58	55.7	3/10/2024 11:55	54.0	3/10/2024 11:59	55.6	3/10/2024 11:56	55.0
3/10/2024 12:57	58.2	3/10/2024 12:58	54.2	3/10/2024 12:54	52.7	3/10/2024 12:59	47.2	3/10/2024 12:56	52.5
Average dB(A)	57.8		50.9		51.5		49.8		59.0
Daytime	60.5		54.6		52.5		54.7		55.5
Night time	54.0		45.7		50.1		42.9		64.0
WHO guideline for ambient noise level		70							

Annex 1. Noise level Hourly recorded



Thilafushi WtE Project Environmental Monitoring (Ambient Noise level)

Client	ALAKJV WtE	Station No	NQ1 Thilafushi
Location	4°10'26.4 N, 73°28'59.9 E	Consultant	Mahmood Riyaz
Technician	Hussain Fazeel	Fine weather over the country, NW-N wind	Temperature:30.8°C
Start time	3/9/2024 13:57		Wind 5-15mph NW/N
End time	3/10/2024 12:57		

Date/time	dB(A)	Remarks noise level
3/9/2024 13:57	66.0	Conversation
3/9/2024 14:56	62.6	Conversation
3/9/2024 15:56	60.7	Conversation
3/9/2024 16:56	59.1	Quiet Office
3/9/2024 17:56	61.9	Conversation
3/9/2024 18:55	62.4	Conversation
3/9/2024 19:55	57.0	Quiet Office
3/9/2024 20:55	58.0	Quiet Office
3/9/2024 21:55	59.1	Quiet Office
3/9/2024 22:55	52.7	Quiet Office
3/9/2024 23:59	51.6	Quiet Office
3/10/2024 0:59	54.5	Quiet Office
3/10/2024 1:59	52.4	Quiet Office
3/10/2024 2:59	53.2	Quiet Office
3/10/2024 3:59	51.6	Quiet Office
3/10/2024 4:58	52.4	Quiet Office
3/10/2024 5:58	54.6	Quiet Office
3/10/2024 6:58	54.5	Quiet Office
3/10/2024 7:58	58.1	Quiet Office
3/10/2024 8:58	60.6	Conversation
3/10/2024 9:57	62.1	Conversation
3/10/2024 10:57	61.3	Conversation
3/10/2024 11:57	62.7	Conversation
3/10/2024 12:57	58.2	Quiet Office
3/10/2024 13:32	59.4	
Average	57.8	
Day time avr	60.5	
Night time average	54.0	



Thilafushi WtE Project Environmental Monitoring (Ambient Noise level)

Client	ALAKJV WtE	Station No	NQ2 Thilafushi
Location	4°10'56.6 N, 73°26'53.3 E	Consultant	Mahmood Riyaz
Technician	Hussain Fazeel	Fine weather over the country, NW-N wind	Temperature:30.8°C
Start time	3/9/2024 13:58		Wind 5-15mph NW/N
End time	3/10/2024 12:58		

Date/time	dB(A)	Remarks noise level
3/9/2024 13:58	63.6	Conversation
3/9/2024 14:58	52.7	Quiet Office
3/9/2024 15:58	57.5	Quiet Office
3/9/2024 16:57	54.7	Quiet Office
3/9/2024 17:57	54.4	Quiet Office
3/9/2024 18:57	54.6	Quiet Office
3/9/2024 19:57	52.1	Quiet Office
3/9/2024 20:57	49.6	Quiet Library
3/9/2024 21:56	49.2	Quiet Library
3/9/2024 22:56	49.7	Quiet Library
3/9/2024 23:56	48.6	Quiet Library
3/10/2024 0:56	45.7	Quiet Library
3/10/2024 1:56	40.1	Quiet Library
3/10/2024 2:55	43.3	Quiet Library
3/10/2024 3:55	40.8	Quiet Library
3/10/2024 4:55	44.3	Quiet Library
3/10/2024 5:55	45.9	Quiet Library
3/10/2024 6:59	46.2	Quiet Library
3/10/2024 7:59	52.2	Quiet Office
3/10/2024 8:59	55.2	Quiet Office
3/10/2024 9:59	54.3	Quiet Office
3/10/2024 10:59	56.9	Quiet Office
3/10/2024 11:58	55.7	Quiet Office
3/10/2024 12:58	54.2	Quiet Office

Average 50.9
 Day time avr 54.6
 Night time average 45.7

Thilafushi WtE Project Environmental Monitoring (Ambient Noise level)

Client	ALAKJV WtE	Station No	NQ3 Thilafushi
Location	4°10'58.3 N, 73°26'09.6 E	Consultant	Mahmood Riyaz
Technician	Hussain Fazeel	Fine weather over the country, NW-N wind	Temperature:30.8°C
Start time	3/9/2024 13:59		Wind 5-15mph NW/N
End time	3/10/2024 12:54		

Date/time	dBA	Remarks Noise level
3/9/2024 13:59	59.8	Quiet Office
3/9/2024 14:59	54.3	Quiet Office
3/9/2024 15:59	53.0	Quiet Office
3/9/2024 16:59	51.5	Quiet Office
3/9/2024 17:58	52.5	Quiet Office
3/9/2024 18:58	51.0	Quiet Office
3/9/2024 19:58	50.8	Quiet Office
3/9/2024 20:58	51.6	Quiet Office
3/9/2024 21:58	51.8	Quiet Office
3/9/2024 22:57	52.0	Quiet Office
3/9/2024 23:57	51.6	Quiet Office
3/10/2024 0:57	50.7	Quiet Office
3/10/2024 1:57	50.4	Quiet Office
3/10/2024 2:57	49.1	Quiet Library
3/10/2024 3:56	47.0	Quiet Library
3/10/2024 4:56	46.3	Quiet Library
3/10/2024 5:56	50.3	Quiet Office
3/10/2024 6:56	46.3	Quiet Library
3/10/2024 7:55	51.1	Quiet Office
3/10/2024 8:55	54.8	Quiet Office
3/10/2024 9:55	51.9	Quiet Office
3/10/2024 10:55	51.3	Quiet Office
3/10/2024 11:55	54.0	Quiet Office
3/10/2024 12:54	52.7	Quiet Office

Average 51.5
Day time avr 52.5
Night time average 50.1

Thilafushi WtE Project Environmental Monitoring (Ambient Noise level)

Client	ALAKJV WtE	Station No	NQ4 Thilafushi
Location	4°10'57.3 N,73°25'59.4 E	Consultant	Mahmood Riyaz
Technician	Hussain Fazeel	Fine weather over the country, NW-N wind	Temperature:30.8°C
Start time	3/9/2024 13:58		Wind 5-15mph NW/N
End time	3/10/2024 12:59		

Date/time	dBA	Remarks Noise level
3/9/2024 13:58	62.3	Conversation
3/9/2024 14:58	58.4	Quiet Office
3/9/2024 15:58	58.9	Quiet Office
3/9/2024 16:58	62.3	Conversation
3/9/2024 17:58	60.1	Conversation
3/9/2024 18:57	54.3	Quiet Office
3/9/2024 19:57	48.2	Quiet Library
3/9/2024 20:57	49.6	Quiet Library
3/9/2024 21:57	45.1	Quiet Library
3/9/2024 22:57	43.5	Quiet Library
3/9/2024 23:56	41.3	Quiet Library
3/10/2024 0:56	42.4	Quiet Library
3/10/2024 1:56	41.1	Quiet Library
3/10/2024 2:56	42.1	Quiet Library
3/10/2024 3:56	41.0	Quiet Library
3/10/2024 4:55	41.9	Quiet Library
3/10/2024 5:55	41.4	Quiet Library
3/10/2024 6:55	42.2	Quiet Library
3/10/2024 7:55	50.7	Quiet Office
3/10/2024 8:59	57.9	Quiet Office
3/10/2024 9:59	53.7	Quiet Office
3/10/2024 10:59	54.2	Quiet Office
3/10/2024 11:59	55.6	Quiet Office
3/10/2024 12:59	47.2	Quiet Library

Average 49.8
Day time avr 54.7
Night time average 42.9



Thilafushi WtE Project Environmental Monitoring (Ambient Noise level)

Client	ALAKJV WtE	Station No	NQ5 Thilafushi
Location	4°10'57.3 N, 73°26'14.4 E	Consultant	Mahmood Riyaz
Technician	Hussain Fazeel	Fine weather over the country, NW-N wind	Temperature:30.8°C
Start time	3/9/2024 13:56		Wind 5-15mph NW/N
End time	3/10/2024 12:56		

Date/time	dBA	Remarks Noise level
3/9/2024 13:56	55.1	Quiet Office
3/9/2024 14:55	53.5	Quiet Office
3/9/2024 15:55	54.6	Quiet Office
3/9/2024 16:55	56.5	Quiet Office
3/9/2024 17:55	55.7	Quiet Office
3/9/2024 18:59	60.9	Conversation
3/9/2024 19:59	60.4	Conversation
3/9/2024 20:59	63.2	Conversation
3/9/2024 21:59	68.7	Conversation
3/9/2024 22:59	68.7	Conversation
3/9/2024 23:58	68.8	Conversation
3/10/2024 0:58	67.5	Conversation
3/10/2024 1:58	64.6	Conversation
3/10/2024 2:58	59.4	Quiet Office
3/10/2024 3:58	60.1	Conversation
3/10/2024 4:57	59.3	Quiet Office
3/10/2024 5:57	59.3	Quiet Office
3/10/2024 6:57	59.4	Quiet Office
3/10/2024 7:57	54.6	Quiet Office
3/10/2024 8:57	52.2	Quiet Office
3/10/2024 9:56	52.0	Quiet Office
3/10/2024 10:56	54.7	Quiet Office
3/10/2024 11:56	55.0	Quiet Office
3/10/2024 12:56	52.5	Quiet Office

Average 59.0
 Day time avr 55.5
 Night time average 64.0

NOISE MONITORING - AT SITE LOCATION NQ AND NQ5



Thilafushi WtE Project Environmental Monitoring (Ambient Noise level)

Client	ALAKJV WtE	Station No	NQ3 Thilafushi
Location	4°10'58.3 N, 73°26'09.6 E	Consultant	Mahmood Riyaz
Technician	Hussain Fazeel	Fine weather over the country, NW-N wind	Temperature:30.8°C
Start time	3/9/2024 13:59		Wind 5-15mph NW/N
End time	3/10/2024 12:54		

Date/time	dBA	Remarks Noise level
3/9/2024 13:59	59.8	Quiet Office
3/9/2024 14:59	54.3	Quiet Office
3/9/2024 15:59	53.0	Quiet Office
3/9/2024 16:59	51.5	Quiet Office
3/9/2024 17:58	52.5	Quiet Office
3/9/2024 18:58	51.0	Quiet Office
3/9/2024 19:58	50.8	Quiet Office
3/9/2024 20:58	51.6	Quiet Office
3/9/2024 21:58	51.8	Quiet Office
3/9/2024 22:57	52.0	Quiet Office
3/9/2024 23:57	51.6	Quiet Office
3/10/2024 0:57	50.7	Quiet Office
3/10/2024 1:57	50.4	Quiet Office
3/10/2024 2:57	49.1	Quiet Library
3/10/2024 3:56	47.0	Quiet Library
3/10/2024 4:56	46.3	Quiet Library
3/10/2024 5:56	50.3	Quiet Office
3/10/2024 6:56	46.3	Quiet Library
3/10/2024 7:55	51.1	Quiet Office
3/10/2024 8:55	54.8	Quiet Office
3/10/2024 9:55	51.9	Quiet Office
3/10/2024 10:55	51.3	Quiet Office
3/10/2024 11:55	54.0	Quiet Office
3/10/2024 12:54	52.7	Quiet Office

Average 51.5
 Day time avr 52.5
 Night time average 50.1

Thilafushi WtE Project Environmental Monitoring (Ambient Noise level)

Client	ALAKJV WtE	Station No	NQ5 Thilafushi
Location	4°10'57.3 N, 73°26'14.4 E	Consultant	Mahmood Riyaz
Technician	Hussain Fazeel	Fine weather over the country, NW-N wind	Temperature:30.8°C
Start time	3/9/2024 13:56		Wind 5-15mph NW/N
End time	3/10/2024 12:56		

Date/time	dBA	Remarks Noise level
3/9/2024 13:56	55.1	Quiet Office
3/9/2024 14:55	53.5	Quiet Office
3/9/2024 15:55	54.6	Quiet Office
3/9/2024 16:55	56.5	Quiet Office
3/9/2024 17:55	55.7	Quiet Office
3/9/2024 18:59	60.9	Conversation
3/9/2024 19:59	60.4	Conversation
3/9/2024 20:59	63.2	Conversation
3/9/2024 21:59	68.7	Conversation
3/9/2024 22:59	68.7	Conversation
3/9/2024 23:58	68.8	Conversation
3/10/2024 0:58	67.5	Conversation
3/10/2024 1:58	64.6	Conversation
3/10/2024 2:58	59.4	Quiet Office
3/10/2024 3:58	60.1	Conversation
3/10/2024 4:57	59.3	Quiet Office
3/10/2024 5:57	59.3	Quiet Office
3/10/2024 6:57	59.4	Quiet Office
3/10/2024 7:57	54.6	Quiet Office
3/10/2024 8:57	52.2	Quiet Office
3/10/2024 9:56	52.0	Quiet Office
3/10/2024 10:56	54.7	Quiet Office
3/10/2024 11:56	55.0	Quiet Office
3/10/2024 12:56	52.5	Quiet Office

Average	59.0
Day time avr	55.5
Night time average	64.0

Groundwater Quality

TEST REPORT



Report No: (7423)053-6930

Code Name: AAJV

Feb 14, 2024

Page 12 of 47

Customer: Alke Alkatas Joint Venture (Pvt) Ltd
Address : H.H. Moomiyaage, 5A, Asaree Hingun. 20265 Male, Republic of Maldives
Date of Sample Received: Feb 07, 2024
Date of Testing Started: Feb 07, 2024
Date of Testing Completed: Feb 14, 2024
Sample Description: **Sample Received as:**

A water sample contained in 2 sealed glass bottles

Sample Identified by the Client as:
GW 01

Date of Sample Collection: 02.06.2024

Sample Drawn By BVCPS NO

Photo of the Submitted Samples



TEST REPORT



Report No: (7423)053-6930

Feb 14, 2024

Code Name: AAJV

Page 13 of 47

TEST RESULTS

No.	Parameters	Results	Referencerange **	LOQ	Unit	Test Method
1	Turbidity	1.9	Max. 1	0.1 NTU	NTU	APHA 23rd ed: 2017 :2130 B
2	Nitrate (as NO ₃ ⁻)*	3.1	Max. 50	0.1 mg/l	mg/L	APHA 23rd ed: 2017: 4500 -NO ₃ -B
3	Iron (as Fe)	ND	Max. 0.3	0.005 mg/l	mg/L	APHA 23rd ed: 2017: 3125 B(ICP-MS)
4	Manganese (as Mn) *	ND	Max. 0.1	0.001 mg/l	mg/L	
5	Arsenic (as As)	ND	Max. 0.01	0.001 mg/l	mg/L	
6	Cadmium (as Cd)	ND	Max. 0.003	0.0001 mg/l	mg/L	
7	Lead (as Pb)	ND	Max. 0.01	0.001 mg/l	mg/L	
8	Mercury (as Hg)	ND	Max. 0.001	0.00050 mg/l	mg/L	
9	Total Suspended Solids (TSS)	11	5 - 750	1.0 mg/l	mg/L	APHA 23rd ed: 2017 : 2540D
10	Feecal Coliform	ND	0	-	MPN/100ml	SLS 1461:Part 1/Section 3:2013
11	Oil & Grease	ND	-	1.0 mg/l	mg/L	APHA 23rd ed: 2017: 5520B
12	pH at 25°C	7.4	6.5-8.5	-	ph	APHA 23rd ed: 2017: 4500H+B
13	Electrical Conductivity at25°C	405	<1000	1µS/cm	µS/ cm	APHA 23rd ed: 2017: 2510 B
14	Total Phosphates (as PO ₄ ³⁻)	0.12	Max. 5.0	0.1 mg/l	mg/L	APHA 23rd ed: 2017: 4500-PC
15	Chloride (as Cl ⁻)	57.6	Max. 200	1.0 mg/l	mg/L	APHA 23rd ed: 2017: 4500-Cl- B
16	Polycyclic Aromatic Hydrocarbons (PAH)*					
17	Naphthalene*	ND	1	1.0	mg/L	CPSD-AN-00090
18	Benzo(a)anthracene*	ND	1	1.0	mg/L	
19	Acenaphthylene*	ND	1	1.0	mg/L	
20	Acenaphthene*	ND	1	1.0	mg/L	
21	Fluorene*	ND	1	1.0	mg/L	
22	Phenanthrene*	ND	1	1.0	mg/L	
23	Pyrene*	ND	1	1.0	mg/L	
24	Chrysene*	ND	1	1.0	mg/L	
25	Benzo(b)fluoranthene*	ND	1	1.0	mg/L	
26	Benzo(k)fluoranthene*	ND	1	1.0	mg/L	
27	Dibenzo(a,h)anthracene*	ND	1	1.0	mg/L	
28	Benzo(g,h,i)perylene*	ND	1	1.0	mg/L	
29	Benzo(j)fluoranthene*	ND	1	1.0	mg/L	
30	Benzo(a)pyrene*	ND	1	1.0	mg/L	
31	Benzo(e)pyrene*	ND	1	1.0	mg/L	
32	Indeno(1,2,3-cd) pyrene*	ND	1	1.0	mg/L	

TEST REPORT



Report No: (7423)053-6930

Feb 14, 2024

Code Name: AAJV

Page 14 of 47

*Test not covered ISO 17025: 2017 by Sri Lanka Accreditation Board for conformity assessment.
Reference range **as per Supply Water Quality Standard, Environment Protection Agency, Maldives.

NOTE:

APHA: American Public Health Association,

SLS: Sri Lanka Standard,

ND: Not Detected,

μ S/cm: Micro Siemens per centimeter

LOQ: Limit of Quantification,

mg/L: Milligrams per liter,

NTU: Nephelometric Turbidity Units,

°C : Celcius,

MPN / 100mL- Most Probable Number per hundred milliliter,

COMMENT : The Testing Results revealed that hygiene of Tested Water Sample is Satisfactory as per the Reference range **specified as per Supply Water Quality Standard, Environment Protection Agency EPA, Maldives

TEST REPORT



Report No: (7423)053-6930

Code Name: AAJV

Feb 14, 2024

Page 15 of 47

Customer: Alke Alkatas Joint Venture (Pvt) Ltd
Address : H.H. Moomiyaage, 5A, Asaree Hingun. 20265 Male, Republic of Maldives
Date of Sample Received: Feb 07, 2024
Date of Testing Started: Feb 07, 2024
Date of Testing Completed: Feb 14, 2024

Sample Description: **Sample Received as:**
A water sample contained in 2 sealed plastic bottles

Sample Identified by the Client as:
GW 02

Date of Sample Collection: 02.06.2024

Sample Drawn By BVCPS NO

Photo of the Submitted Samples



TEST REPORT



Report No: (7423)053-6930

Feb 14, 2024

Code Name: AAJV

Page 16 of 47

TEST RESULTS

No.	Parameters	Results	Referencerange**	LOQ	Unit	Test Method
1	Turbidity	0.9	Max. 1	0.1 NTU	NTU	APHA 23rd ed: 2017 :2130 B
2	Nitrate (as NO ₃ ⁻)*	16	Max. 50	0.1 mg/l	mg/L	APHA 23rd ed: 2017: 4500 -NO ₃ -B
3	Iron (as Fe)	ND	Max. 0.3	0.005 mg/l	mg/L	APHA 23rd ed: 2017: 3125 B(ICP-MS)
4	Manganese (as Mn) *	ND	Max. 0.1	0.001 mg/l	mg/L	
5	Arsenic (as As)	ND	Max. 0.01	0.001 mg/l	mg/L	
6	Cadmium (as Cd)	ND	Max. 0.003	0.0001 mg/l	mg/L	
7	Lead (as Pb)	ND	Max. 0.01	0.001 mg/l	mg/L	
8	Mercury (as Hg)	ND	Max. 0.001	0.00050 mg/l	mg/L	
9	Total Suspended Solids (TSS)	105	5 - 750	1.0 mg/l	mg/L	APHA 23rd ed: 2017 : 2540D
10	Feecal Coliform	ND	0	-	MPN/100ml	SLS 1461:Part 1/Section 3:2013
11	Oil & Grease	ND	-	1.0 mg/l	mg/L	APHA 23rd ed: 2017: 5520B
12	pH at 25°C	7.3	6.5-8.5	-	ph	APHA 23rd ed: 2017: 4500H+B
13	Electrical Conductivity at25°C	48,930	<1000	1µS/cm	µS/ cm	APHA 23rd ed: 2017: 2510 B
14	Total Phosphates (as PO ₄ ³⁻)	3.6	Max. 5.0	0.1 mg/l	mg/L	APHA 23rd ed: 2017: 4500-PC
15	Chloride (as Cl ⁻)	244.2	Max. 200	1.0 mg/l	mg/L	APHA 23rd ed: 2017: 4500-Cl- B
16	Polycyclic Aromatic Hydrocarbons (PAH)*					
17	Naphthalene*	ND	1	1.0	mg/L	CPSD-AN-00090
18	Benzo(a)anthracene*	ND	1	1.0	mg/L	
19	Acenaphthylene*	ND	1	1.0	mg/L	
20	Acenaphthene*	ND	1	1.0	mg/L	
21	Fluorene*	ND	1	1.0	mg/L	
22	Phenanthrene*	ND	1	1.0	mg/L	
23	Pyrene*	ND	1	1.0	mg/L	
24	Chrysene*	ND	1	1.0	mg/L	
25	Benzo(b)fluoranthene*	ND	1	1.0	mg/L	
26	Benzo(k)fluoranthene*	ND	1	1.0	mg/L	
27	Dibenzo(a,h)anthracene*	ND	1	1.0	mg/L	
28	Benzo(g,h,i)perylene*	ND	1	1.0	mg/L	
29	Benzo(j)fluoranthene*	ND	1	1.0	mg/L	
30	Benzo(a)pyrene*	ND	1	1.0	mg/L	
31	Benzo(e)pyrene*	ND	1	1.0	mg/L	
32	Indeno(1,2,3-cd) pyrene*	ND	1	1.0	mg/L	

TEST REPORT



Report No: (7423)053-6930

Feb 14, 2024

Code Name: AAJV

Page 17 of 47

*Test not covered ISO 17025: 2017 by Sri Lanka Accreditation Board for conformity assessment.
Reference range **as per Supply Water Quality Standard, Environment Protection Agency, Maldives.

NOTE:

APHA: American Public Health Association,

SLS: Sri Lanka Standard,

ND: Not Detected,

μ S/cm: Micro Siemens per centimeter

LOQ: Limit of Quantification,

mg/L: Milligrams per liter,

NTU: Nephelometric Turbidity Units,

$^{\circ}$ C : Celcius,

MPN / 100mL- Most Probable Number per hundred milliliter,

COMMENT : The Testing Results revealed that hygiene of Tested Water Sample is Unsatisfactory as per the Reference range **specified as per Supply Water Quality Standard, Environment Protection Agency EPA, Maldives

TEST REPORT



Report No: (7423)053-6930

Code Name: AAJV

Feb 14, 2024

Page 18 of 47

Customer: Alke Alkatas Joint Venture (Pvt) Ltd
Address : H.H. Moomiyaage, 5A, Asaree Hingun. 20265 Male, Republic of Maldives
Date of Sample Received: Feb 07, 2024
Date of Testing Started: Feb 07, 2024
Date of Testing Completed: Feb 14, 2024

Sample Description: **Sample Received as:**
A water sample contained in 2 sealed bottles

Sample Identified by the Client as:
GW 03

Date of Sample Collection: 02.06.2024

Sample Drawn By BVCPS NO

Photo of the Submitted Samples



TEST REPORT



Report No: (7423)053-6930

Feb 14, 2024

Code Name: AAJV

Page 19 of 47

TEST RESULTS

No.	Parameters	Results	Referencerange **	LOQ	Unit	Test Method
1	Turbidity	0.9	Max. 1	0.1 NTU	NTU	APHA 23rd ed: 2017 :2130 B
2	Nitrate (as NO ₃ ⁻)*	4.5	Max. 50	0.1 mg/l	mg/L	APHA 23rd ed: 2017: 4500 -NO ₃ -B
3	Iron (as Fe)	ND	Max. 0.3	0.005 mg/l	mg/L	APHA 23rd ed: 2017: 3125 B(ICP-MS)
4	Manganese (as Mn) *	ND	Max. 0.1	0.001 mg/l	mg/L	
5	Arsenic (as As)	ND	Max. 0.01	0.001 mg/l	mg/L	
6	Cadmium (as Cd)	ND	Max. 0.003	0.0001 mg/l	mg/L	
7	Lead (as Pb)	ND	Max. 0.01	0.001 mg/l	mg/L	
8	Mercury (as Hg)	ND	Max. 0.001	0.00050 mg/l	mg/L	
9	Total Suspended Solids (TSS)	20	5 - 750	1.0 mg/l	mg/L	APHA 23rd ed: 2017 : 2540D
10	Feecal Coliform	ND	0	-	MPN/100ml	SLS 1461:Part 1/Section 3:2013
11	Oil & Grease	ND	-	1.0 mg/l	mg/L	APHA 23rd ed: 2017: 5520B
12	pH at 25°C	8.2	6.5-8.5	-	ph	APHA 23rd ed: 2017: 4500H+B
13	Electrical Conductivity at25°C	2107	<1000	1µS/cm	µS/ cm	APHA 23rd ed: 2017: 2510 B
14	Total Phosphates (as PO ₄ ³⁻)	1.0	Max. 5.0	0.1 mg/l	mg/L	APHA 23rd ed: 2017: 4500-PC
15	Chloride (as Cl ⁻)	81.9	Max. 200	1.0 mg/l	mg/L	APHA 23rd ed: 2017: 4500-Cl- B
16	Polycyclic Aromatic Hydrocarbons (PAH)*					
17	Naphthalene*	ND	1	1.0	mg/L	CPSD-AN-00090
18	Benzo(a)anthracene*	ND	1	1.0	mg/L	
19	Acenaphthylene*	ND	1	1.0	mg/L	
20	Acenaphthene*	ND	1	1.0	mg/L	
21	Fluorene*	ND	1	1.0	mg/L	
22	Phenanthrene*	ND	1	1.0	mg/L	
23	Pyrene*	ND	1	1.0	mg/L	
24	Chrysene*	ND	1	1.0	mg/L	
25	Benzo(b)fluoranthene*	ND	1	1.0	mg/L	
26	Benzo(k)fluoranthene*	ND	1	1.0	mg/L	
27	Dibenzo(a,h)anthracene*	ND	1	1.0	mg/L	
28	Benzo(g,h,i)perylene*	ND	1	1.0	mg/L	
29	Benzo(j)fluoranthene*	ND	1	1.0	mg/L	
30	Benzo(a)pyrene*	ND	1	1.0	mg/L	
31	Benzo(e)pyrene*	ND	1	1.0	mg/L	
32	Indeno(1,2,3-cd) pyrene*	ND	1	1.0	mg/L	

TEST REPORT



Report No: (7423)053-6930

Feb 14, 2024

Code Name: AAJV

Page 20 of 47

*Test not covered ISO 17025: 2017 by Sri Lanka Accreditation Board for conformity assessment.
Reference range **as per Supply Water Quality Standard, Environment Protection Agency, Maldives.

NOTE:

APHA: American Public Health Association,

SLS: Sri Lanka Standard,

ND: Not Detected,

μ S/cm: Micro Siemens per centimeter

LOQ: Limit of Quantification,

mg/L: Milligrams per liter,

NTU: Nephelometric Turbidity Units,

°C : Celcius,

MPN / 100mL- Most Probable Number per hundred milliliter,

COMMENT : The Testing Results revealed that hygiene of Tested Water Sample is Unsatisfactory as per the Reference range **specified as per Supply Water Quality Standard, Environment Protection Agency EPA, Maldives

TEST REPORT



Report No: (7423)053-6930

Code Name: AAJV

Feb 14, 2024

Page 21 of 47

Customer: Alke Alkatas Joint Venture (Pvt) Ltd
Address : H.H. Moomiyaage, 5A, Asaree Hingun. 20265 Male, Republic of Maldives
Date of Sample Received: Feb 07, 2024
Date of Testing Started: Feb 07, 2024
Date of Testing Completed: Feb 14, 2024

Sample Description: **Sample Received as:**
A water sample contained in 2 sealed glass bottles

Sample Identified by the Client as:
GW 04

Date of Sample Collection: 02.06.2024

Sample Drawn By BVCPS NO

Photo of the Submitted Samples



TEST REPORT



Report No: (7423)053-6930

Feb 14, 2024

Code Name: AAJV

Page 22 of 47

TEST RESULTS

No.	Parameters	Results	Referencerange**	LOQ	Unit	Test Method
1	Turbidity	0.9	Max. 1	0.1 NTU	NTU	APHA 23rd ed: 2017 :2130 B
2	Nitrate (as NO ₃ ⁻)*	8.4	Max. 50	0.1 mg/l	mg/L	APHA 23rd ed: 2017: 4500 -NO ₃ -B
3	Iron (as Fe)	ND	Max. 0.3	0.005 mg/l	mg/L	APHA 23rd ed: 2017: 3125 B(ICP-MS)
4	Manganese (as Mn) *	ND	Max. 0.1	0.001 mg/l	mg/L	
5	Arsenic (as As)	ND	Max. 0.01	0.001 mg/l	mg/L	
6	Cadmium (as Cd)	ND	Max. 0.003	0.0001 mg/l	mg/L	
7	Lead (as Pb)	ND	Max. 0.01	0.001 mg/l	mg/L	
8	Mercury (as Hg)	ND	Max. 0.001	0.00050 mg/l	mg/L	
9	Total Suspended Solids (TSS)	68	5 - 750	1.0 mg/l	mg/L	APHA 23rd ed: 2017 : 2540D
10	Faecal Coliform	ND	0	-	MPN/100ml	SLS 1461:Part 1/Section 3:2013
11	Oil & Grease	01	-	1.0 mg/l	mg/L	APHA 23rd ed: 2017: 5520B
12	pH at 25°C	8.2	6.5-8.5	-	ph	APHA 23rd ed: 2017: 4500H+B
13	Electrical Conductivity at25°C	16,640	<1000	1µS/cm	µS/ cm	APHA 23rd ed: 2017: 2510 B
14	Total Phosphates (as PO ₄ ³⁻)	ND	Max. 5.0	0.1 mg/l	mg/L	APHA 23rd ed: 2017: 4500-PC
15	Chloride (as Cl ⁻)	123	Max. 200	1.0 mg/l	mg/L	APHA 23rd ed: 2017: 4500-Cl- B
16	Polycyclic Aromatic Hydrocarbons (PAH)*					
17	Naphthalene*	ND	1	1.0	mg/L	CPSD-AN-00090
18	Benzo(a)anthracene*	ND	1	1.0	mg/L	
19	Acenaphthylene*	ND	1	1.0	mg/L	
20	Acenaphthene*	ND	1	1.0	mg/L	
21	Fluorene*	ND	1	1.0	mg/L	
22	Phenanthrene*	ND	1	1.0	mg/L	
23	Pyrene*	ND	1	1.0	mg/L	
24	Chrysene*	ND	1	1.0	mg/L	
25	Benzo(b)fluoranthene*	ND	1	1.0	mg/L	
26	Benzo(k)fluoranthene*	ND	1	1.0	mg/L	
27	Dibenzo(a,h)anthracene*	ND	1	1.0	mg/L	
28	Benzo(g,h,i)perylene*	ND	1	1.0	mg/L	
29	Benzo(j)fluoranthene*	ND	1	1.0	mg/L	
30	Benzo(a)pyrene*	ND	1	1.0	mg/L	
31	Benzo(e)pyrene*	ND	1	1.0	mg/L	
32	Indeno(1,2,3-cd) pyrene*	ND	1	1.0	mg/L	

TEST REPORT



Report No: (7423)053-6930

Feb 14, 2024

Code Name: AAJV

Page 23 of 47

*Test not covered ISO 17025: 2017 by Sri Lanka Accreditation Board for conformity assessment.
Reference range **as per Supply Water Quality Standard, Environment Protection Agency, Maldives.

NOTE:

APHA: American Public Health Association,

SLS: Sri Lanka Standard,

ND: Not Detected,

μ S/cm: Micro Siemens per centimeter

LOQ: Limit of Quantification,

mg/L: Milligrams per liter,

NTU: Nephelometric Turbidity Units,

°C : Celcius,

MPN / 100mL- Most Probable Number per hundred milliliter,

COMMENT : The Testing Results revealed that hygiene of Tested Water Sample is Unsatisfactory as per the Reference range **specified as per Supply Water Quality Standard, Environment Protection Agency EPA, Maldives

TEST REPORT



Report No: (7423)053-6930

Code Name: AAJV

Feb 14, 2024

Page 24 of 47

Customer: Alke Alkatas Joint Venture (Pvt) Ltd
Address : H.H. Moomiyaage, 5A, Asaree Hingun. 20265 Male, Republic of Maldives
Date of Sample Received: Feb 07, 2024
Date of Testing Started: Feb 07, 2024
Date of Testing Completed: Feb 14, 2024

Sample Description: **Sample Received as:**
A water sample contained in 2 sealed glass bottles

Sample Identified by the Client as:
GW 06

Date of Sample Collection: 02.06.2024

Sample Drawn By BVCPS NO

Photo of the Submitted Samples



TEST REPORT



Report No: (7423)053-6930

Feb 14, 2024

Code Name: AAJV

Page 25 of 47

TEST RESULTS

No.	Parameters	Results	Referencerange**	LOQ	Unit	Test Method
1	Turbidity	32	Max. 1	0.1 NTU	NTU	APHA 23rd ed: 2017 :2130 B
2	Nitrate (as NO ₃ ⁻)*	5.0	Max. 50	0.1 mg/l	mg/L	APHA 23rd ed: 2017: 4500 -NO ₃ -B
3	Iron (as Fe)	0.66	Max. 0.3	0.005 mg/l	mg/L	APHA 23rd ed: 2017: 3125 B(ICP-MS)
4	Manganese (as Mn) *	ND	Max. 0.1	0.001 mg/l	mg/L	
5	Arsenic (as As)	ND	Max. 0.01	0.001 mg/l	mg/L	
6	Cadmium (as Cd)	ND	Max. 0.003	0.0001 mg/l	mg/L	
7	Lead (as Pb)	0.004	Max. 0.01	0.001 mg/l	mg/L	
8	Mercury (as Hg)	ND	Max. 0.001	0.00050 mg/l	mg/L	
9	Total Suspended Solids (TSS)	51	5 - 750	1.0 mg/l	mg/L	APHA 23rd ed: 2017 : 2540D
10	Feecal Coliform	ND	0	-	MPN/100ml	SLS 1461:Part 1/Section 3:2013
11	Oil & Grease	01	-	1.0 mg/l	mg/L	APHA 23rd ed: 2017: 5520B
12	pH at 25°C	7.3	6.5-8.5	-	ph	APHA 23rd ed: 2017: 4500H+B
13	Electrical Conductivity at25°C	8340	<1000	1µS/cm	µS/ cm	APHA 23rd ed: 2017: 2510 B
14	Total Phosphates (as PO ₄ ³⁻)	1.8	Max. 5.0	0.1 mg/l	mg/L	APHA 23rd ed: 2017: 4500-PC
15	Chloride (as Cl ⁻)	134.5	Max. 200	1.0 mg/l	mg/L	APHA 23rd ed: 2017: 4500-Cl- B
16	Polycyclic Aromatic Hydrocarbons (PAH)*					
17	Naphthalene*	ND	1	1.0	mg/L	CPSD-AN-00090
18	Benzo(a)anthracene*	ND	1	1.0	mg/L	
19	Acenaphthylene*	ND	1	1.0	mg/L	
20	Acenaphthene*	ND	1	1.0	mg/L	
21	Fluorene*	ND	1	1.0	mg/L	
22	Phenanthrene*	ND	1	1.0	mg/L	
23	Pyrene*	ND	1	1.0	mg/L	
24	Chrysene*	ND	1	1.0	mg/L	
25	Benzo(b)fluoranthene*	ND	1	1.0	mg/L	
26	Benzo(k)fluoranthene*	ND	1	1.0	mg/L	
27	Dibenzo(a,h)anthracene*	ND	1	1.0	mg/L	
28	Benzo(g,h,i)perylene*	ND	1	1.0	mg/L	
29	Benzo(j)fluoranthene*	ND	1	1.0	mg/L	
30	Benzo(a)pyrene*	ND	1	1.0	mg/L	
31	Benzo(e)pyrene*	ND	1	1.0	mg/L	
32	Indeno(1,2,3-cd) pyrene*	ND	1	1.0	mg/L	

TEST REPORT



Report No: (7423)053-6930

Feb 14, 2024

Code Name: AAJV

Page 26 of 47

*Test not covered ISO 17025: 2017 by Sri Lanka Accreditation Board for conformity assessment.
Reference range **as per Supply Water Quality Standard, Environment Protection Agency, Maldives.

NOTE:

APHA: American Public Health Association,

SLS: Sri Lanka Standard,

ND: Not Detected,

$\mu\text{S/cm}$: Micro Siemens per centimeter

LOQ: Limit of Quantification,

mg/L: Milligrams per liter,

NTU: Nephelometric Turbidity Units,

$^{\circ}\text{C}$: Celcius,

MPN / 100mL- Most Probable Number per hundred milliliter,

COMMENT : The Testing Results revealed that hygiene of Tested Water Sample is Unsatisfactory as per the Reference range **specified as per Supply Water Quality Standard, Environment Protection Agency EPA, Maldives

TEST REPORT



Report No: (7423)053-6930

Code Name: AAJV

Feb 14, 2024

Page 27 of 47

Customer: Alke Alkatas Joint Venture (Pvt) Ltd

Address : H.H. Moomiyaage, 5A, Asaree Hingun. 20265 Male, Republic of Maldives

Date of Sample Received: Feb 07, 2024

Date of Testing Started: Feb 07, 2024

Date of Testing Completed: Feb 14, 2024

Sample Description: **Sample Received as:**
A water sample contained in 2 sealed plastic bottles

Sample Identified by the Client as:
GW 07

Date of Sample Collection: 02.06.2024

Sample Drawn By BVCPS NO

Photo of the Submitted Samples



TEST REPORT



Report No: (7423)053-6930

Feb 14, 2024

Code Name: AAJV

Page 28 of 47

TEST RESULTS

No.	Parameters	Results	Referencerange **	LOQ	Unit	Test Method
1	Turbidity	1.4	Max. 1	0.1 NTU	NTU	APHA 23rd ed: 2017 :2130 B
2	Nitrate (as NO ₃ ⁻)*	2.5	Max. 50	0.1 mg/l	mg/L	APHA 23rd ed: 2017: 4500 -NO ₃ -B
3	Iron (as Fe)	ND	Max. 0.3	0.005 mg/l	mg/L	APHA 23rd ed: 2017: 3125 B(ICP-MS)
4	Manganese (as Mn) *	ND	Max. 0.1	0.001 mg/l	mg/L	
5	Arsenic (as As)	ND	Max. 0.01	0.001 mg/l	mg/L	
6	Cadmium (as Cd)	ND	Max. 0.003	0.0001 mg/l	mg/L	
7	Lead (as Pb)	ND	Max. 0.01	0.001 mg/l	mg/L	
8	Mercury (as Hg)	ND	Max. 0.001	0.00050 mg/l	mg/L	
9	Total Suspended Solids (TSS)	06	5 - 750	1.0 mg/l	mg/L	APHA 23rd ed: 2017 : 2540D
10	Feecal Coliform	ND	0	-	MPN/100ml	SLS 1461:Part 1/Section 3:2013
11	Oil & Grease	ND	-	1.0 mg/l	mg/L	APHA 23rd ed: 2017: 5520B
12	pH at 25°C	7.9	6.5-8.5	-	ph	APHA 23rd ed: 2017: 4500H+B
13	Electrical Conductivity at25°C	361.5	<1000	1µS/cm	µS/ cm	APHA 23rd ed: 2017: 2510 B
14	Total Phosphates (as PO ₄ ³⁻)	0.1	Max. 5.0	0.1 mg/l	mg/L	APHA 23rd ed: 2017: 4500-PC
15	Chloride (as Cl ⁻)	48.3	Max. 200	1.0 mg/l	mg/L	APHA 23rd ed: 2017: 4500-Cl- B
16	Polycyclic Aromatic Hydrocarbons (PAH)*					
17	Naphthalene*	ND	1	1.0	mg/L	CPSD-AN-00090
18	Benzo(a)anthracene*	ND	1	1.0	mg/L	
19	Acenaphthylene*	ND	1	1.0	mg/L	
20	Acenaphthene*	ND	1	1.0	mg/L	
21	Fluorene*	ND	1	1.0	mg/L	
22	Phenanthrene*	ND	1	1.0	mg/L	
23	Pyrene*	ND	1	1.0	mg/L	
24	Chrysene*	ND	1	1.0	mg/L	
25	Benzo(b)fluoranthene*	ND	1	1.0	mg/L	
26	Benzo(k)fluoranthene*	ND	1	1.0	mg/L	
27	Dibenzo(a,h)anthracene*	ND	1	1.0	mg/L	
28	Benzo(g,h,i)perylene*	ND	1	1.0	mg/L	
29	Benzo(j)fluoranthene*	ND	1	1.0	mg/L	
30	Benzo(a)pyrene*	ND	1	1.0	mg/L	
31	Benzo(e)pyrene*	ND	1	1.0	mg/L	
32	Indeno(1,2,3-cd) pyrene*	ND	1	1.0	mg/L	

TEST REPORT



Report No: (7423)053-6930

Feb 14, 2024

Code Name: AAJV

Page 29 of 47

*Test not covered ISO 17025: 2017 by Sri Lanka Accreditation Board for conformity assessment.
Reference range **as per Supply Water Quality Standard, Environment Protection Agency, Maldives.

NOTE:

APHA: American Public Health Association,

SLS: Sri Lanka Standard,

ND: Not Detected,

μ S/cm: Micro Siemens per centimeter

LOQ: Limit of Quantification,

mg/L: Milligrams per liter,

NTU: Nephelometric Turbidity Units,

$^{\circ}$ C : Celcius,

MPN / 100mL- Most Probable Number per hundred milliliter,

COMMENT : The Testing Results revealed that hygiene of Tested Water Sample is Satisfactory as per the Reference range **specified as per Supply Water Quality Standard, Environment Protection Agency EPA, Maldives

TEST REPORT



Report No: (7423)053-6930

Code Name: AAJV

Feb 14, 2024

Page 30 of 47

Customer: Alke Alkatas Joint Venture (Pvt) Ltd
Address : H.H. Moomiyaage, 5A, Asaree Hingun. 20265 Male, Republic of Maldives
Date of Sample Received: Feb 07, 2024
Date of Testing Started: Feb 07, 2024
Date of Testing Completed: Feb 14, 2024

Sample Description: **Sample Received as:**
A water sample contained in 2 sealed plastic bottles

Sample Identified by the Client as:
GW 08

Date of Sample Collection: 02.06.2024

Sample Drawn By BVCPS NO

Photo of the Submitted Samples



TEST REPORT



Report No: (7423)053-6930

Feb 14, 2024

Code Name: AAJV

Page 31 of 47

TEST RESULTS

No.	Parameters	Results	Referencerange **	LOQ	Unit	Test Method
1	Turbidity	1.1	Max. 1	0.1 NTU	NTU	APHA 23rd ed: 2017 :2130 B
2	Nitrate (as NO ₃ ⁻)*	1.7	Max. 50	0.1 mg/l	mg/L	APHA 23rd ed: 2017: 4500 -NO ₃ -B
3	Iron (as Fe)	ND	Max. 0.3	0.005 mg/l	mg/L	APHA 23rd ed: 2017: 3125 B(ICP-MS)
4	Manganese (as Mn) *	ND	Max. 0.1	0.001 mg/l	mg/L	
5	Arsenic (as As)	ND	Max. 0.01	0.001 mg/l	mg/L	
6	Cadmium (as Cd)	ND	Max. 0.003	0.0001 mg/l	mg/L	
7	Lead (as Pb)	ND	Max. 0.01	0.001 mg/l	mg/L	
8	Mercury (as Hg)	ND	Max. 0.001	0.00050 mg/l	mg/L	
9	Total Suspended Solids (TSS)	05	5 - 750	1.0 mg/l	mg/L	APHA 23rd ed: 2017 : 2540D
10	Feecal Coliform	ND	0	-	MPN/100ml	SLS 1461:Part 1/Section 3:2013
11	Oil & Grease	01	-	1.0 mg/l	mg/L	APHA 23rd ed: 2017: 5520B
12	pH at 25°C	7.9	6.5-8.5	-	ph	APHA 23rd ed: 2017: 4500H+B
13	Electrical Conductivity at25°C	266	<1000	1µS/cm	µS/ cm	APHA 23rd ed: 2017: 2510 B
14	Total Phosphates (as PO ₄ ³⁻)	ND	Max. 5.0	0.1 mg/l	mg/L	APHA 23rd ed: 2017: 4500-PC
15	Chloride (as Cl ⁻)	45.3	Max. 200	1.0 mg/l	mg/L	APHA 23rd ed: 2017: 4500-Cl- B
16	Polycyclic Aromatic Hydrocarbons (PAH)*					
17	Naphthalene*	ND	1	1.0	mg/L	CPSD-AN-00090
18	Benzo(a)anthracene*	ND	1	1.0	mg/L	
19	Acenaphthylene*	ND	1	1.0	mg/L	
20	Acenaphthene*	ND	1	1.0	mg/L	
21	Fluorene*	ND	1	1.0	mg/L	
22	Phenanthrene*	ND	1	1.0	mg/L	
23	Pyrene*	ND	1	1.0	mg/L	
24	Chrysene*	ND	1	1.0	mg/L	
25	Benzo(b)fluoranthene*	ND	1	1.0	mg/L	
26	Benzo(k)fluoranthene*	ND	1	1.0	mg/L	
27	Dibenzo(a,h)anthracene*	ND	1	1.0	mg/L	
28	Benzo(g,h,i)perylene*	ND	1	1.0	mg/L	
29	Benzo(j)fluoranthene*	ND	1	1.0	mg/L	
30	Benzo(a)pyrene*	ND	1	1.0	mg/L	
31	Benzo(e)pyrene*	ND	1	1.0	mg/L	
32	Indeno(1,2,3-cd) pyrene*	ND	1	1.0	mg/L	

TEST REPORT



Report No: (7423)053-6930

Feb 14, 2024

Code Name: AAJV

Page 32 of 47

*Test not covered ISO 17025: 2017 by Sri Lanka Accreditation Board for conformity assessment.
Reference range **as per Supply Water Quality Standard, Environment Protection Agency, Maldives.

NOTE:

APHA: American Public Health Association,

SLS: Sri Lanka Standard,

ND: Not Detected,

μ S/cm: Micro Siemens per centimeter

LOQ: Limit of Quantification,

mg/L: Milligrams per liter,

NTU: Nephelometric Turbidity Units,

$^{\circ}$ C : Celcius,

MPN / 100mL- Most Probable Number per hundred milliliter,

COMMENT : The Testing Results revealed that hygiene of Tested Water Sample is Satisfactory as per the Reference range **specified as per Supply Water Quality Standard, Environment Protection Agency EPA, Maldives

Quality of Drinking water, Water used for camp and construction, waste water discharge from STP and dewatering

Report No: (7423)049-2187

Code Name: AAJV

Jan 21, 2024

Page 1 of 11

Customer: Alke Alkatas Joint Venture (Pvt) Ltd

Address : H.H. Moomiyaage, 5A, Asaree Hingun. 20265 Male, Republic of Maldives

Date of Sample Received: Jan 14, 2024

Date of Testing Started: Jan 14, 2024

Date of Testing Completed: Jan 21, 2024

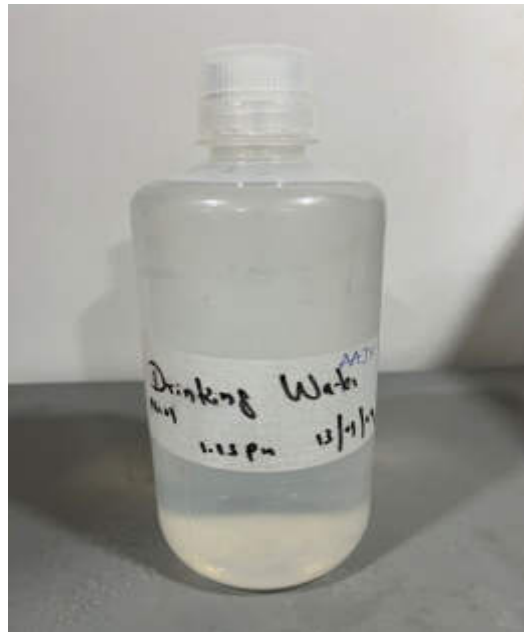
Sample Description: **Sample Received as:**
A water sample contained in sealed plastic bottle

Sample Identified by the Client as:
Drinking Water 1

Date of Sample Collection: 01.14.2024

Sample Drawn By BVCPS NO

Photo of the Submitted Samples



Bureau Veritas Consumer Products Services Lanka (Pvt) Ltd.

No. 570, Galle Road, Katubedda, Moratuwa, Sri Lanka
Tel: (9411) 2350111-115 (dedicated lines), Fax: (9411)
112622198 & 199
Email: bvcp.lanka@lk.bureauveritas.com

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TEST REPORT



Report No: (7423)049-2187

Code Name: AAJV

Jan 21, 2024

Page 2 of 11

TEST RESULTS

No.	Parameters	Results	Reference Range **	LOQ	Unit	Test Method
1	pH	7.1	6.5-8.5	-	-	APHA-4500-B
2	Turbidity	ND	< 1.0	0.1 NTU	NTU	APHA-2130-B
3	Residual free chlorine*	<0.01	0.2-0.5	0.01 mg/l	mg/L	APHA-4500-Cl
4	Electrical Conductivity	19.5	<1000	1µS/cm	µS/cm	APHA-2510-B
5	Total Dissolved solids	12	<500	1.0 mg/l	mg/L	APHA-2540-C
6	Fecal Coliform	ND	0/100ml	-	MPN/100ml	SLS 1461:Part 1/Section 3:2013
7	Total Coliform	ND	0/100ml	-	MPN/100ml	SLS 1461:Part 1/Section 3:2013
8	Escherichia coli	ND	0/100ml	-	MPN/100ml	SLS 1461:Part 1/Section 3:2013
9	Iron (as Fe)	ND	<0.3	0.005 mg/l	mg/L	APHA-3120B
10	Ammonia - N	<0.1	<0.5	0.1 mg/l	mg/L	APHA-4500-F
11	Nitrate (as NO ₃ ⁻)*	ND	<50	0.1 mg/l	mg/L	APHA-4500NO ₃ -B
12	Chloride (as Cl ⁻)	14.3	<200	1.0 mg/l	mg/L	APHA-4500Cl-B
13	Physical Appearance	Clear	Clear/Colorless	-	Clear/Colorless	Visual Examination

*Test not covered ISO 17025: 2017 by Sri Lanka Accreditation Board for conformity assessment.

Reference range ** as per Supply Water Quality Standard, Environment Protection Agency, Maldives

NOTE:

APHA: American Public Health Association,

SLS: Sri Lanka Standard,

ND: Not Detected,

µS/cm: micro Siemens per centimeter

LOQ: Limit of Quantification,

mg/L: milligrams per liter,

NTU: Nephelometric Turbidity Units

°C : Celcius,

MPN / 100mL- Most Probable Number per hundred milliliter,

COMMENT : The Testing Results revealed that hygiene of Tested Water Sample is Satisfactory as per the Reference range **specified as per Supply Water Quality Standard, Environment Protection Agency EPA, Maldives.

TEST REPORT



Report No: (7423)049-2187

Code Name: AAJV

Jan 21, 2024

Page 3 of 11

Customer: Alke Alkatas Joint Venture (Pvt) Ltd

Address : H.H. Moomiyaage, 5A, Asaree Hingun. 20265 Male, Republic of Maldives

Date of Sample Received: Jan 14, 2024

Date of Testing Started: Jan 14, 2024

Date of Testing Completed: Jan 21, 2024

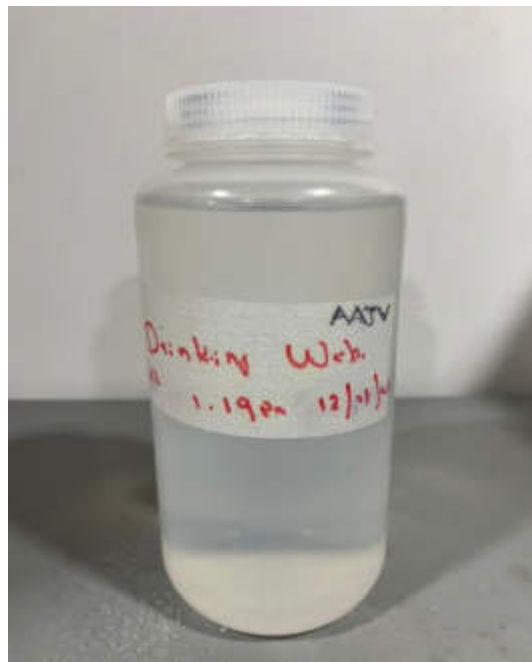
Sample Description: **Sample Received as:**
A water sample contained in sealed plastic bottle

Sample Identified by the Client as:
Drinking Water 2

Date of Sample Collection: 01.14.2024

Sample Drawn By BVCPS NO

Photo of the Submitted Samples



TEST REPORT



Report No: (7423)049-2187

Jan 21, 2024

Code Name: AAJV

Page 4 of 11

TEST RESULTS

No.	Parameters	Results	Reference Range **	LOQ	Unit	Test Method
1	pH	6.6	6.5-8.5	-	-	APHA-4500-B
2	Turbidity	0.5	< 1.0	0.1 NTU	NTU	APHA-2130-B
3	Residual free chlorine*	<0.01	0.2-0.5	0.01 mg/l	mg/L	APHA-4500-Cl
4	Electrical Conductivity	08	<1000	1µS/cm	µS/cm	APHA-2510-B
5	Total Dissolved solids	05	<500	1.0 mg/l	mg/L	APHA-2540-C
6	Feacal Coliform	ND	0/100ml	-	MPN/100ml	SLS 1461:Part 1/Section 3:2013
7	Total Coliform	ND	0/100ml	-	MPN/100ml	SLS 1461:Part 1/Section 3:2013
8	Escherichia coli	ND	0/100ml	-	MPN/100ml	SLS 1461:Part 1/Section 3:2013
9	Iron (as Fe)	ND	<0.3	0.005 mg/l	mg/L	APHA-3120B
10	Ammonia - N	<0.1	<0.5	0.1 mg/l	mg/L	APHA-4500-F
11	Nitrate (as NO ₃ ⁻)*	ND	<50	0.1 mg/l	mg/L	APHA-4500NO ₃ -B
12	Chloride (as Cl ⁻)	7.6	<200	1.0 mg/l	mg/L	APHA-4500Cl-B
13	Physical Appearance	Clear	Clear/Colorless	-	Clear/Colorless	Visual Examination

*Test not covered ISO 17025: 2017 by Sri Lanka Accreditation Board for conformity assessment.

Reference range **as per Supply Water Quality Standard, Environment Protection Agency, Maldives

NOTE:

APHA: American Public Health Association,

SLS: Sri Lanka Standard,

ND: Not Detected,

µS/cm: micro Siemens per centimeter

LOQ: Limit of Quantification,

mg/L: milligrams per liter,

NTU: Nephelometric Turbidity Units,

°C : Celcius,

MPN / 100mL- Most Probable Number per hundred milliliter,

COMMENT : The Testing Results revealed that hygiene of Tested Water Sample is Satisfactory as per the Reference range *specified as per Supply Water Quality Standard, Environment Protection Agency EPA, Maldives**

TEST REPORT



Report No: (7423)049-2187

Code Name: AAJV

Jan 21, 2024

Page 5 of 11

Customer: Alke Alkatas Joint Venture (Pvt) Ltd
Address : H.H. Moomiyaage, 5A, Asaree Hingun. 20265 Male, Republic of Maldives
Date of Sample Received: Jan 14, 2024
Date of Testing Started: Jan 14, 2024
Date of Testing Completed: Jan 21, 2024

Sample Description: **Sample Received as:**
A water sample contained in sealed plastic bottle

Sample Identified by the Client as:
Water for Camp and Construction

Date of Sample Collection: 01.14.2024

Sample Drawn By BVCPS NO

Photo of the Submitted Samples



TEST REPORT



Report No: (7423)049-2187

Code Name: AAJV

Jan 21, 2024

Page 6 of 11

TEST RESULTS

No.	Parameters	Results	Reference Range **	LOQ	Unit	Test Method
1	Physical Appearance	Clear	Clear/Colorless	-	Clear/Colorless	Visual Examination
2	pH	7.2	6.5-8.5	-	-	APHA-4500-B
3	Turbidity	ND	< 1.0	0.1 NTU	NTU	APHA-2130-B
4	Residual free chlorine*	<0.01	0.04-0.2	0.01 mg/l	mg/L	APHA-4500-Cl
5	Electrical Conductivity	582.1	<1000	1µS/cm	µS/cm	APHA-2510-B
6	Total Hardness	13	<75	1.0 mg/l	mg/L	APHA-2340-C
7	Total Suspended Solids (TSS)	01	5-750	1.0 mg/l	mg/L	APHA-2540-B
8	Total Dissolved solids	336	<500	1.0 mg/l	mg/L	APHA-2540-C
9	Feacal Coliform	ND	0/100ml	-	MPN/100ml	SLS 1461:Part 1/Section 3:2013
10	Total Coliform	ND	0/100ml	-	MPN/100ml	SLS 1461:Part 1/Section 3:2013
11	Escherichia coli	ND	0/100ml	-	MPN/100ml	SLS 1461:Part 1/Section 3:2013
12	Iron (as Fe)	ND	<0.3	0.005 mg/l	mg/L	APHA-3120B
13	Hydrogen Sulphide	<0.01	<0.05	0.01 mg/l	mg/L	APHA: 2017
14	Ammonia - N	<0.1	<0.5	0.1 mg/l	mg/L	APHA-4500-F
15	Nitrate (as NO ₃ ⁻)*	ND	<50	0.1 mg/l	mg/L	APHA-4500NO3-B
16	Chloride (as Cl ⁻)	43.7	<200	1.0 mg/l	mg/L	APHA-4500Cl-B

*Test not covered ISO 17025: 2017 by Sri Lanka Accreditation Board for conformity assessment.

Reference range **as per Supply Water Quality Standard, Environment Protection Agency, Maldives.

NOTE:

APHA: American Public Health Association,

SLS: Sri Lanka Standard,

ND: Not Detected,

µS/cm: Micro Siemens per centimeter

LOQ: Limit of Quantification,

mg/L: Milligrams per liter,

NTU: Nephelometric Turbidity Units,

°C : Celcius,

MPN / 100mL- Most Probable Number per hundred milliliter,

COMMENT : The Testing Results revealed that hygiene of Tested Water Sample is Satisfactory as per the Reference range **specified as per Supply Water Quality Standard, Environment Protection Agency EPA, Maldives

TEST REPORT



Report No: (7423)049-2187

Code Name: AAJV

Jan 21, 2024

Page 7 of 11

Customer: Alke Alkatas Joint Venture (Pvt) Ltd
Address : H.H. Moomiyaage, 5A, Asaree Hingun. 20265 Male, Republic of Maldives
Date of Sample Received: Jan 14, 2024
Date of Testing Started: Jan 14, 2024
Date of Testing Completed: Jan 21, 2024

Sample Description: **Sample Received as:**
A water sample contained in sealed plastic bottle

Sample Identified by the Client as:
Dewatering

Date of Sample Collection: 01.14.2024

Sample Drawn By BVCPS NO

Photo of the Submitted Samples



TEST REPORT



Report No: (7423)049-2187
Code Name: AAJV

Jan 21, 2024
Page 8 of 11

TEST RESULTS

No.	Parameters	Results	Reference Range **	LOQ	Unit	Test Method
1	Fecal Coliforms	ND	-	-	MPN/100ml	SLS 1461:Part 1/Section 3:2013
2	pH	6.9	-	-	-	APHA-4500-H ⁺
3	Temperature	27.8	-	-	°C	APHA-2550 B
4	Total Dissolved Solids	27,200	-	1.0 mg/l	mg/l	APHA-2540-C
5	Total Suspended Solids (TSS)	06	50	1.0 mg/l	mg/l	APHA-2540-B
6	Dissolved Oxygen	6.8	-	0.2 mg/l	mg/l	APHA-4500-O
7	Electrical Conductivity	46,960	-	1µS/cm	µS/cm	APHA-2510
8	Turbidity	1.6	-	0.1 NTU	NTU	APHA-2130-B
9	Salinity	3.8	-	0.001 %	%	APHA-2520-B
10	Ammonia - N	1.8	-	0.1 mg/l	mg/l	APHA-4500-NH ₃ ⁻
11	Hydrogen Sulphide (H ₂ S)	<0.01	-	0.01 mg/l	mg/l	APHA-4500-D
12	Nitrate (as NO ₃ ⁻)*	5.54	-	0.1 mg/l	mg/l	APHA-4500-NO ₂ ⁻
13	Phosphate as P	0.21	-	0.01 mg/l	mg/l	APHA-2540-C
14	Total Hydrocarbon	< 0.1	-	0.1 ppm	ppm	Inhouse –Laboratory Method
15	Oil & Grease	<01	-	1.0 mg/l	mg/l	APHA-5520-B

*Test not covered ISO 17025: 2017 by Sri Lanka Accreditation Board for conformity assessment.

Reference range **as per Supply Water Quality Standard, Environment Protection Agency, Maldives.

NOTE:

APHA: American Public Health Association,

SLS: Sri Lanka Standard,

ND: Not Detected,

µS/cm: Micro Siemens per centimeter

LOQ: Limit of Quantification,

mg/L: Milligrams per liter,

NTU: Nephelometric Turbidity Units,

°C : Celcius,

MPN / 100mL- Most Probable Number per hundred milliliter,

COMMENT : The Testing Results revealed that hygiene of Tested Water Sample is Satisfactory as per the Reference range **specified as per Supply Water Quality Standard, Environment Protection Agency EPA, Maldives

TEST REPORT



Jan 21, 2024
Page 09 of 11

Report No: (7423)049-2187
Code Name: AAJV

Customer: Alke Alkatas Joint Venture (Pvt) Ltd
Address : H.H. Moomiyaage, 5A, Asaree Hingun. 20265 Male, Republic of Maldives

Date of Sample Received: Jan 14, 2024

Date of Testing Started: Jan 14, 2024

Date of Testing Completed: Jan 21, 2024

Sample Description: **Sample Received as:**
A water sample contained in sealed plastic bottle

Sample Identified by the Client as:
STP

Date of Sample Collection: 01.14.2024

Sample Drawn By BVCPS NO

Photo of the Submitted Samples



TEST REPORT



Report No: (7423)049-2187
Code Name: AAJV

Jan 21, 2024
Page 10 of 11

TEST RESULTS

No.	Parameters	Results	ReferenceRange **	LOQ	Unit	Test Method
1	Fecal Coliforms	ND	1	-	MPN/100ml	SLS 1461:Part 1/Section 3:2013
2	Total Coliforms	09	400	-	MPN/100ml	SLS 1461:Part 1/Section 3:2013
3	E.Coli	ND	0.01	-	MPN/100ml	SLS 1461:Part 1/Section 3:2013
4	pH	6.0	6-9	-	-	APHA-4500-H ⁺
5	Temperature	28.1	44	-	°C	APHA-2550 B
6	Total Suspended Solids	23	50	1.0 mg/l	mg/l	APHA-2540-D
7	Ortho Phosphate as P	0.7	10	0.1 mg/l	mg/l	APHA-2540-C
8	Oil & Grease	01	5	1.0 mg/l	mg/l	APHA-5520-B
9	Dissolved Oxygen	6.0	6-8	0.2 mg/l	mg/l	APHA-4500-O
10	Residual Chlorine	< 0.01	0.1	0.01 mg/l	mg/l	APHA-4500-Cl
11	Electrical Conductivity	801	35,000-60,000	1µS/cm	µS/cm	APHA-2510-B
12	Chemical Oxygen Demand	40	50	5 mg/l	mg/l	APHA-5220-D
13	Biological Oxygen Demand	14	30	5 mg/l	mg/l	APHA-5210-B
14	Nitrate (as NO ₃ ⁻)*	4.3	15	0.1 mg/l	mg/l	APHA-4500NO ₃ -B
15	Ammonia - N	3.5	10	0.1 mg/l	mg/l	APHA-4500-NH ₃ ⁻
16	Total Nitrogen (as N)*	9.1	10	0.001 mg/l	mg/L	APHA 23rd ed: 2017 - 4500-Norg B
17	Surfactants	0.6	10	0.1 mg/l	mg/l	APHA-5540-C
18	Phenolic Compounds	0.01	1	0.005 mg/l	mg/l	APHA-5530-D
19	Sum of metals (Pb, Cr, Ni, Cd, Se, As, Fe, Al, Sb, Cu, Mn, , Hg)	0.12	5	-	mg/l	In House Method
20	Acute Toxicity	ND	0	-	mg/l	In House Method

TEST REPORT



Report No: (7423)049-2187
Code Name: AAJV

Jan 21, 2024
Page 11 of 11

*Test not covered ISO 17025: 2017 by Sri Lanka Accreditation Board for conformity assessment.
Reference range **as per Supply Water Quality Standard, Environment Protection Agency, Maldives

NOTE:

APHA: American Public Health Association,
SLS: Sri Lanka Standard,
ND: Not Detected,
 μ S/cm: micro Siemens per centimeter
LOQ: Limit of Quantification,
mg/L: milligrams per liter,
NTU: Nephelometric Turbidity Units,
 $^{\circ}$ C : Celcius,
MPN / 100mL- Most Probable Number per hundred milliliter,
ICP-MS- Inductively Coupled Plasma Mass Spectrometry

COMMENT : The Testing Results revealed that hygiene of Tested Water Sample is Unsatisfactory as per the Reference range **specified as per Supply Water Quality Standard, Environment Protection Agency EPA, Maldives

Contact information for this report (Technical and General Inquiries and Feedback)

GENERAL INQUIRIES:		
MOHOMED NAWZER	TEL: +94 764 412 907	E-MAIL: mohomed.nawzer@bureauveritas.com
TECHNICAL INQUIRIES:		
RUWANI AMARASINGHE	TEL: +94 768 229 457	E-MAIL: ruwani.amarasinghe@bureauveritas.com
FEED BACK:		
KUMUDINI RATHNAYAKE – ASST. QA MANAGER	TEL: +94 768 229 455	E-MAIL: kumudinie.rathnayake@bureauveritas.com

REVIEWED BY: HIMASHA JAYAWARDENA

BUREAU VERITAS CONSUMER PRODUCTS SERVICES LANKA (PVT) LTD.
AUTHORIZED SIGNATORY

APPROVED BY:



RUWANI AMARASINGHE

ASSISTANT MANAGER –
FOOD & MICROBIOLOGY LABORATORY

END OF THE REPORT

TEST REPORT

Report No: (7423)053-6930

Code Name: AAJV

Feb 14, 2024

Page 1 of 47

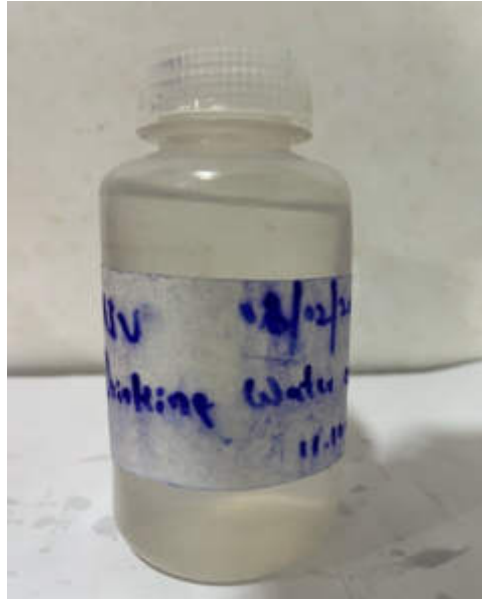
Customer: Alke Alkatas Joint Venture (Pvt) Ltd
Address : H.H. Moomiyaage, 5A, Asaree Hingun. 20265 Male, Republic of Maldives
Date of Sample Received: Feb 07, 2024
Date of Testing Started: Feb 07, 2024
Date of Testing Completed: Feb 14, 2024
Sample Description: **Sample Received as:**
A water sample contained in sealed plastic bottle

Sample Identified by the Client as:
Drinking Water 1

Date of Sample Collection: 02.06.2024

Sample Drawn By BVCPS NO

Photo of the Submitted Samples



**Bureau Veritas Consumer
Products Services Lanka (Pvt)
Ltd.**

No. 570, Galle Road, Katubedda, Moratuwa, Sri Lanka
Tel: (9411) 2350111-115 (dedicated lines), Fax: (9411)
112622198 & 199
Email: bvcp.lanka@lk.bureauveritas.com

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TEST REPORT



Report No: (7423)053-6930

Feb 14, 2024

Code Name: AAJV

Page 2 of 47

TEST RESULTS

No.	Parameters	Results	Referencerange **	LOQ	Unit	Test Method
1	pH	7.7	6.5-8.5	-	-	APHA-4500-B
2	Turbidity	ND	< 1.0	0.1 NTU	NTU	APHA-2130-B
3	Residual free chlorine*	<0.01	0.04-0.2	0.01 mg/l	mg/L	APHA-4500-Cl
4	Electrical Conductivity	24.5	<1000	1µS/cm	µS/cm	APHA-2510-B
5	Total Dissolved solids	16	<500	1.0 mg/l	mg/L	APHA-2540-C
6	Feecal Coliform	ND	0/100ml	-	MPN/100ml	SLS 1461:Part 1/Section 3:2013
7	Total Coliform	ND	0/100ml	-	MPN/100ml	SLS 1461:Part 1/Section 3:2013
8	Escherichia coli	ND	0/100ml	-	MPN/100ml	SLS 1461:Part 1/Section 3:2013
9	Iron (as Fe)	ND	<0.3	0.005 mg/l	mg/L	APHA-3120B
10	Ammonia - N	<0.1	<0.5	0.1 mg/l	mg/L	APHA-4500-F
11	Nitrate (as NO ₃ ⁻)*	ND	<50	0.1 mg/l	mg/L	APHA-4500NO ₃ -B
12	Chloride (as Cl ⁻)	9.3	<200	1.0 mg/l	mg/L	APHA-4500Cl-B
13	Physical Appearance	Clear	Clear/Colorless	-	Clear/Colorless	Visual Examination

*Test not covered ISO 17025: 2017 by Sri Lanka Accreditation Board for conformity assessment.
Reference range **as per Supply Water Quality Standard, Environment Protection Agency, Maldives

NOTE:

APHA: American Public Health Association,

SLS: Sri Lanka Standard,

ND: Not Detected,

µS/cm: micro Siemens per centimeter

LOQ: Limit of Quantification,

mg/L: milligrams per liter,

NTU: Nephelometric Turbidity Units

°C : Celcius,

MPN / 100mL- Most Probable Number per hundred milliliter,

COMMENT : The Testing Results revealed that hygiene of Tested Water Sample is Satisfactory as per the Reference range **specified as per Supply Water Quality Standard, Environment Protection Agency EPA, Maldives.

TEST REPORT



Report No: (7423)053-6930

Code Name: AAJV

Feb 14, 2024

Page 3 of 47

Customer: Alke Alkatas Joint Venture (Pvt) Ltd
Address : H.H. Moomiyaage, 5A, Asaree Hingun. 20265 Male, Republic of Maldives

Date of Sample Received: Feb 07, 2024

Date of Testing Started: Feb 07, 2024

Date of Testing Completed: Feb 14, 2024

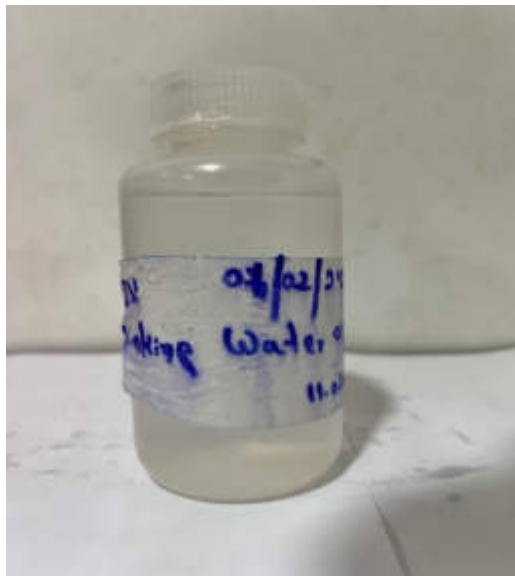
Sample Description: **Sample Received as:**
A water sample contained in sealed plastic bottle

Sample Identified by the Client as:
Drinking Water 2

Date of Sample Collection: 02.06.2024

Sample Drawn By BVCPS NO

Photo of the Submitted Samples



TEST REPORT



Report No: (7423)053-6930

Code Name: AAJV

Feb 14, 2024

Page 4 of 47

TEST RESULTS

No.	Parameters	Results	Referencerange **	LOQ	Unit	Test Method
1	pH	7.6	6.5-8.5	-	-	APHA-4500-B
2	Turbidity	ND	< 1.0	0.1 NTU	NTU	APHA-2130-B
3	Residual free chlorine*	<0.01	0.04-0.2	0.01 mg/l	mg/L	APHA-4500-Cl
4	Electrical Conductivity	09	<1000	1µS/cm	µS/cm	APHA-2510-B
5	Total Dissolved solids	05	<500	1.0 mg/l	mg/L	APHA-2540-C
6	Feecal Coliform	ND	0/100ml	-	MPN/100ml	SLS 1461:Part 1/Section 3:2013
7	Total Coliform	ND	0/100ml	-	MPN/100ml	SLS 1461:Part 1/Section 3:2013
8	Escherichia coli	ND	0/100ml	-	MPN/100ml	SLS 1461:Part 1/Section 3:2013
9	Iron (as Fe)	ND	<0.3	0.005 mg/l	mg/L	APHA-3120B
10	Ammonia - N	<0.1	<0.5	0.1 mg/l	mg/L	APHA-4500-F
11	Nitrate (as NO ₃ ⁻)*	ND	<50	0.1 mg/l	mg/L	APHA-4500NO ₃ -B
12	Chloride (as Cl ⁻)	3.1	<200	1.0 mg/l	mg/L	APHA-4500Cl-B
13	Physical Appearance	Clear	Clear/Colorless	-	Clear/Colorless	Visual Examination

*Test not covered ISO 17025: 2017 by Sri Lanka Accreditation Board for conformity assessment.

Reference range **as per Supply Water Quality Standard, Environment Protection Agency, Maldives

NOTE:

APHA: American Public Health Association,

SLS: Sri Lanka Standard,

ND: Not Detected,

µS/cm: micro Siemens per centimeter

LOQ: Limit of Quantification,

mg/L: milligrams per liter,

NTU: Nephelometric Turbidity Units,

°C : Celcius,

MPN / 100mL- Most Probable Number per hundred milliliter,

COMMENT : The Testing Results revealed that hygiene of Tested Water Sample is Satisfactory as per the Reference range **specified as per Supply Water Quality Standard, Environment Protection Agency EPA, Maldives

TEST REPORT



Report No: (7423)053-6930

Code Name: AAJV

Feb 14, 2024

Page 5 of 47

Customer: Alke Alkatas Joint Venture (Pvt) Ltd
Address : H.H. Moomiyaage, 5A, Asaree Hingun. 20265 Male, Republic of Maldives
Date of Sample Received: Feb 07, 2024
Date of Testing Started: Feb 07, 2024
Date of Testing Completed: Feb 14, 2024

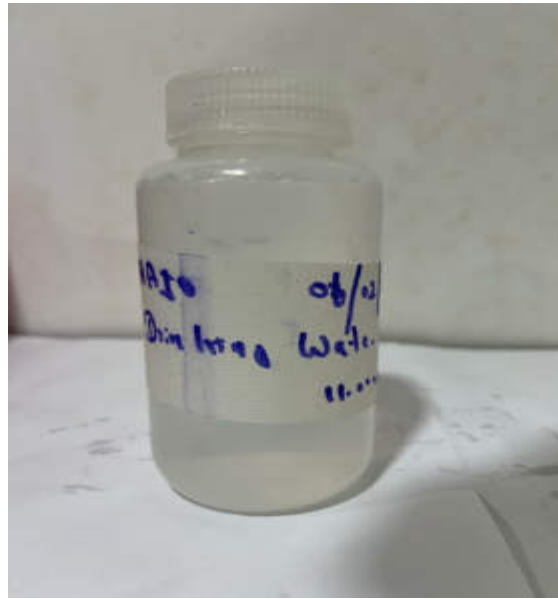
Sample Description: **Sample Received as:**
A water sample contained in sealed plastic bottle

Sample Identified by the Client as:
Drinking Water 03

Date of Sample Collection: 02.06.2024

Sample Drawn By BVCPS NO

Photo of the Submitted Samples



TEST REPORT

Report No: (7423)053-6930

Code Name: AAJV



Feb 14, 2024

Page 6 of 47

TEST RESULTS

No.	Parameters	Results	Referencerange **	LOQ	Unit	Test Method
1	pH	6.8	6.5-8.5	-	-	APHA-4500-B
2	Turbidity	ND	< 1.0	0.1 NTU	NTU	APHA-2130-B
3	Residual free chlorine*	<0.01	0.04-0.2	0.01 mg/l	mg/L	APHA-4500-Cl
4	Electrical Conductivity	432.9	<1000	1µS/cm	µS/cm	APHA-2510-B
5	Total Dissolved solids	258	<500	1.0 mg/l	mg/L	APHA-2540-C
6	Feacal Coliform	ND	0/100ml	-	MPN/100ml	SLS 1461:Part 1/Section 3:2013
7	Total Coliform	ND	0/100ml	-	MPN/100ml	SLS 1461:Part 1/Section 3:2013
8	Escherichia coli	ND	0/100ml	-	MPN/100ml	SLS 1461:Part 1/Section 3:2013
9	Iron (as Fe)	ND	<0.3	0.005 mg/l	mg/L	APHA-3120B
10	Ammonia - N	<0.1	<0.5	0.1 mg/l	mg/L	APHA-4500-F
11	Nitrate (as NO ₃) ⁻ *	ND	<50	0.1 mg/l	mg/L	APHA-4500NO ₃ -B
12	Chloride (as Cl ⁻)	15.6	<200	1.0 mg/l	mg/L	APHA-4500Cl-B
13	Physical Appearance	Clear	Clear/Colorless	-	Clear/Colorless	Visual Examination

*Test not covered ISO 17025: 2017 by Sri Lanka Accreditation Board for conformity assessment.

Reference range **as per Supply Water Quality Standard, Environment Protection Agency, Maldives.

NOTE:

APHA: American Public Health Association,

SLS: Sri Lanka Standard,

ND: Not Detected,

µS/cm: Micro Siemens per centimeter

LOQ: Limit of Quantification,

mg/L: Milligrams per liter,

NTU: Nephelometric Turbidity Units,

°C : Celcius,

MPN / 100mL- Most Probable Number per hundred milliliter,

COMMENT : The Testing Results revealed that hygiene of Tested Water Sample is Satisfactory as per the Reference range **specified as per Supply Water Quality Standard, Environment Protection Agency EPA, Maldives

TEST REPORT



Report No: (7423)053-6930

Code Name: AAJV

Feb 14, 2024

Page 7 of 47

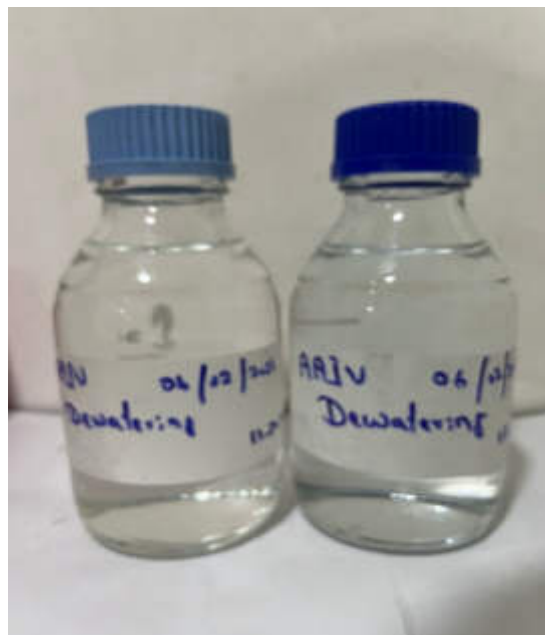
Customer: Alke Alkatas Joint Venture (Pvt) Ltd
Address : H.H. Moomiyaage, 5A, Asaree Hingun. 20265 Male, Republic of Maldives
Date of Sample Received: Feb 07, 2024
Date of Testing Started: Feb 07, 2024
Date of Testing Completed: Feb 14, 2024
Sample Description: **Sample Received as:**
A water sample contained in 2 sealed glass bottles

Sample Identified by the Client as:
Dewatering Water

Date of Sample Collection: 02.06.2024

Sample Drawn By BVCPS NO

Photo of the Submitted Samples



TEST REPORT



Report No: (7423)053-6930
Code Name: AAJV

Feb 14, 2024
Page 8 of 47

TEST RESULTS

No.	Parameters	Results	Referencerange **	LOQ	Unit	Test Method
1	Fecal Coliforms	ND		-	MPN/100ml	SLS 1461:Part 1/Section 3:2013
2	pH	7.4		-	-	APHA-4500-H ⁺
3	Temperature	27.8		-	°C	APHA-2550 B
4	Total Dissolved Solids	26,300		1.0 mg/l	mg/l	APHA-2540-C
5	Total Suspended Solids (TSS)	06	50	1.0 mg/l	mg/l	APHA-2540-B
6	Dissolved Oxygen	6.8		0.2 mg/l	mg/l	APHA-4500-O
7	Electrical Conductivity	42,940		1µS/cm	µS/cm	APHA-2510
8	Turbidity	1.3		0.1 NTU	NTU	APHA-2130-B
9	Salinity	3.7		0.001 %	%	APHA-2520-B
10	Ammonia - N	1.6		0.1 mg/l	mg/l	APHA-4500-NH ₃ ⁻
11	Hydrogen Sulphide (H ₂ S)	<0.01		0.01 mg/l	mg/l	APHA-4500-D
12	Nitrate (as NO ₃ ⁻)*	4.8		0.1 mg/l	mg/l	APHA-4500-NO ₂ ⁻
13	Phosphate as P	0.21		0.01 mg/l	mg/l	APHA-2540-C
14	Total Hydrocarbon	< 0.1		0.1 ppm	ppm	Inhouse –Laboratory Method
15	Oil & Grease	<01		1.0 mg/l	mg/l	APHA-5520-B

*Test not covered ISO 17025: 2017 by Sri Lanka Accreditation Board for conformity assessment.
Reference range **as per Supply Water Quality Standard, Environment Protection Agency, Maldives.

NOTE:

APHA: American Public Health Association,
SLS: Sri Lanka Standard,
ND: Not Detected,
µS/cm: Micro Siemens per centimeter
LOQ: Limit of Quantification,
mg/L: Milligrams per liter,
NTU: Nephelometric Turbidity Units,
°C : Celcius,
MPN / 100mL- Most Probable Number per hundred milliliter,

COMMENT : The Testing Results revealed that hygiene of Tested Water Sample is Satisfactory as per the Reference range **specified as per Supply Water Quality Standard, Environment Protection Agency EPA, Maldives

TEST REPORT



Feb 14, 2024
Page 09 of 47

Report No: (7423)053-6930
Code Name: AAJV

Customer: Alke Alkatas Joint Venture (Pvt) Ltd
Address : H.H. Moomiyaage, 5A, Asaree Hingun. 20265 Male, Republic of Maldives

Date of Sample Received: Feb 07, 2024

Date of Testing Started: Feb 07, 2024

Date of Testing Completed: Feb 14, 2024

Sample Description: **Sample Received as:**
A water sample contained in 2 sealed glass bottles

Sample Identified by the Client as:
STP

Date of Sample Collection: 02.06.2024

Sample Drawn By BVCPS NO

Photo of the Submitted Samples



TEST REPORT



Report No: (7423)053-6930
Code Name: AAJV

Feb 14, 2024
Page 10 of 47

TEST RESULTS

No.	Parameters	Results	ReferenceRange **	LOQ	Unit	Test Method
1	Fecal Coliforms	ND	1	-	MPN/100ml	SLS 1461:Part 1/Section 3:2013
2	Total Coliforms	12	400	-	MPN/100ml	SLS 1461:Part 1/Section 3:2013
3	E.Coli	ND	0.01	-	MPN/100ml	SLS 1461:Part 1/Section 3:2013
4	pH	6.2	6-9	-	-	APHA-4500-H ⁺
5	Temperature	28.1	44	-	°C	APHA-2550 B
6	Total Suspended Solids	24	50	1.0 mg/l	mg/l	APHA-2540-D
7	Ortho Phosphate as P	0.7	10	0.1 mg/l	mg/l	APHA-2540-C
8	Oil & Grease	ND	5	1.0 mg/l	mg/l	APHA-5520-B
9	Dissolved Oxygen	6.2	6-8	0.2 mg/l	mg/l	APHA-4500-O
10	Free Residual Chlorine	< 0.01	0.2-0.8	0.01 mg/l	mg/l	APHA-4500-Cl
11	Electrical Conductivity	838	<= Sea Water	1µS/cm	µS/cm	APHA-2510-B
12	Chemical Oxygen Demand	41	50	5 mg/l	mg/l	APHA-5220-D
13	Biological Oxygen Demand	13	30	5 mg/l	mg/l	APHA-5210-B
14	Nitrate (as NO ₃) [*]	5.9	15	0.1 mg/l	mg/l	APHA-4500NO ₃ -B
15	Ammonia - N	3.5	10	0.1 mg/l	mg/l	APHA-4500-NH ₃ ⁻
16	Total Nitrogen (as N) [*]	7.8	10	0.001 mg/l	mg/L	APHA 23rd ed: 2017 - 4500-Norg B
17	Surfactants	0.7	10	0.1 mg/l	mg/l	APHA-5540-C
18	Phenolic Compounds	0.01	1	0.005 mg/l	mg/l	APHA-5530-D
19	Sum of metals (Pb, Cr, Ni, Cd, Se, As, Fe, Al, Sb, Cu, Mn, , Hg)	0.15	5	-	mg/l	In House Method
20	Acute Toxicity	ND	0	-	mg/l	In House Method

TEST REPORT



Report No: (7423)053-6930
Code Name: AAJV

Feb 14, 2024
Page 11 of 47

*Test not covered ISO 17025: 2017 by Sri Lanka Accreditation Board for conformity assessment.
Reference range **as per Supply Water Quality Standard, Environment Protection Agency, Maldives

NOTE:

APHA: American Public Health Association,
SLS: Sri Lanka Standard,
ND: Not Detected,
 μ S/cm: micro Siemens per centimeter
LOQ: Limit of Quantification,
mg/L: milligrams per liter,
NTU: Nephelometric Turbidity Units,
 $^{\circ}$ C : Celcius,
MPN / 100mL- Most Probable Number per hundred milliliter,
ICP-MS- Inductively Coupled Plasma Mass Spectrometry

COMMENT : The Testing Results revealed that hygiene of Tested Water Sample is Unsatisfactory as per the Reference range **specified as per Supply Water Quality Standard, Environment Protection Agency EPA, Maldives

TEST REPORT



Report No: (7423)053-6930

Code Name: AAJV

Feb 14, 2024

Page 33 of 47

Customer: Alke Alkatas Joint Venture (Pvt) Ltd
Address : H.H. Moomiyaage, 5A, Asaree Hingun. 20265 Male, Republic of Maldives
Date of Sample Received: Feb 07, 2024
Date of Testing Started: Feb 07, 2024
Date of Testing Completed: Feb 14, 2024

Sample Description: **Sample Received as:**
A water sample contained in 2 sealed plastic bottles

Sample Identified by the Client as:
SW 01

Date of Sample Collection: 02.06.2024

Sample Drawn By BVCPS NO

Photo of the Submitted Samples



TEST REPORT



Report No: (7423)053-6930

Feb 14, 2024

Code Name: AAJV

Page 34 of 47

TEST RESULTS

No.	Parameters	Results	Referencerange **	LOQ	Unit	Test Method
1	Salinity	3.6%	3.2-4.2%	0.001 %	%	APHA-2520-B
2	Total Suspended Solids (TSS)	82	50	1.0 mg/l	mg/L	APHA-2540-C
3	Oil & Grease	ND	0.1	1.0 mg/l	mg/L	APHA-5520-B
4	Feacal Coliform	ND	400	-	MPN/100ml	SLS 1461:Part 1/Section 3:2013
5	Nitrite as NO ₂	2.2	05	0.1 mg/l	mg/L	APHA-4500-NO ₂ -
6	pH at 25°C	7.3	8.0-8.3	-	-	APHA-4500-H ⁺
7	Chemical Oxygen Demand	55	200	5 mg/l	mg/L	APHA-5220-D
8	Biological Oxygen Demand	20	20	5 mg/l	mg/L	APHA-5210-B
9	Turbidity	2.7	3-5	0.1 NTU	NTU	APHA-2130-B
10	Electrical Conductivity	61,200	-	1µS/cm	µs/cm	APHA-2510
11	Total Inorganic Nitrogen	5.7	70	0.001 mg/l	mg/L	APHA-4500-N
12	Total Phosphates (as PO ₄)	0.9	3	0.01 mg/l	mg/L	APHA-2540-C
13	Sulfide	<0.1	1	0.1 mg/l	mg/L	APHA-4500-D
14	Ammonia - N	2.6	2 - 3	0.1 mg/l	mg/L	APHA-4500-NH ₃ ⁻
15	Temperature	27.8	18-32 °C	-	°C	APHA-2550 B
16	Arsenic as As	< 0.005	0.1	0.005 mg/l	mg/L	APHA-3125-B
17	Cadmium as Cd	< 0.005	0.5	0.0001 mg/l	mg/L	APHA-3125-B
18	Lead as Pb	0.014	0.5	0.001 mg/l	mg/L	APHA-3125-B
19	Chromium VI	<0.005	0.1	0.005 mg/l	mg/L	APHA-3125-B
20	Total Chromium (as Cr)	0.01	0.5	0.005 mg/l	°C	APHA-3125-B
21	Mercury as Hg	< 0.0005	0.02	0.00050 mg/l	mg/L	APHA-3125-B
22	Nickel as Ni	< 0.001	1	0.001 mg/l	mg/L	APHA-3125-B
23	Zinc as Zn	0.038	2	0.005 mg/l	mg/L	APHA-3125-B
24	Copper as Cu	0.019	0.5	0.005 mg/l	mg/L	APHA-3125-B

*Test not covered ISO 17025: 2017 by Sri Lanka Accreditation Board for conformity assessment.

Reference range **as per Supply Water Quality Standard, Environment Protection Agency, Maldives.

NOTE:

APHA: American Public Health Association,

SLS: Sri Lanka Standard,

ND: Not Detected,

µS/cm: Micro Siemens per centimeter

LOQ: Limit of Quantification,

mg/L: Milligrams per liter,

NTU: Nephelometric Turbidity Units,

°C : Celcius,

MPN / 100mL- Most Probable Number per hundred milliliter,

COMMENT : The Testing Results revealed that hygiene of Tested Water Sample is Unsatisfactory as per the Reference range **specified as per Supply Water Quality Standard, Environment Protection Agency EPA, Maldives

TEST REPORT



Report No: (7423)053-6930

Code Name: AAJV

Feb 14, 2024

Page 35 of 47

Customer: Alke Alkatas Joint Venture (Pvt) Ltd
Address : H.H. Moomiyaage, 5A, Asaree Hingun. 20265 Male, Republic of Maldives
Date of Sample Received: Feb 07, 2024
Date of Testing Started: Feb 07, 2024
Date of Testing Completed: Feb 14, 2024

Sample Description: **Sample Received as:**
A water sample contained in 2 sealed plastic bottles

Sample Identified by the Client as:
SW 02

Date of Sample Collection: 02.06.2024

Sample Drawn By BVCPS NO

Photo of the Submitted Samples



TEST REPORT



Report No: (7423)053-6930

Feb 14, 2024

Code Name: AAJV

Page 36 of 47

TEST RESULTS

No.	Parameters	Results	Referencerange **	LOQ	Unit	Test Method
1	Salinity	3.3%	3.2-4.2%	0.001 %	%	APHA-2520-B
2	Total Suspended Solids (TSS)	28	50	1.0 mg/l	mg/L	APHA-2540-C
3	Oil & Grease	ND	-	1.0 mg/l	mg/L	APHA-5520-B
4	Feacal Coliform	ND	400	-	MPN/100ml	SLS 1461:Part 1/Section 3:2013
5	Nitrite as NO ₂	1.1	05	0.1 mg/l	mg/L	APHA-4500-NO ₂ -
6	pH at 25°C	7.0	8.0-8.3	-	-	APHA-4500-H ⁺
7	Chemical Oxygen Demand	46	200	5 mg/l	mg/L	APHA-5220-D
8	Biological Oxygen Demand	15	20	5 mg/l	mg/L	APHA-5210-B
9	Turbidity	2.5	3-5	0.1 NTU	NTU	APHA-2130-B
10	Electrical Conductivity	50,560	-	1μS/cm	μs/cm	APHA-2510
11	Total Inorganic Nitrogen	5.1	70	0.001 mg/l	mg/L	APHA-4500-N
12	Total Phosphates (as PO ₄)	0.8	3	0.01 mg/l	mg/L	APHA-2540-C
13	Sulfide	<0.1	1	0.1 mg/l	mg/L	APHA-4500-D
14	Ammonia - N	2.3	2 - 3	0.1 mg/l	mg/L	APHA-4500-NH ₃ ⁻
15	Temperature	27.8	18-32 °C	-	°C	APHA-2550 B
16	Arsenic as As	< 0.005	0.1	0.005 mg/l	mg/L	APHA-3125-B
17	Cadmium as Cd	< 0.005	0.5	0.0001 mg/l	mg/L	APHA-3125-B
18	Lead as Pb	0.017	0.5	0.001 mg/l	mg/L	APHA-3125-B
19	Chromium VI	<0.005	0.1	0.005 mg/l	mg/L	APHA-3125-B
20	Total Chromium (as Cr)	0.005	0.5	0.005 mg/l	°C	APHA-3125-B
21	Mercury as Hg	0.001	0.02	0.00050 mg/l	mg/L	APHA-3125-B
22	Nickel as Ni	< 0.001	1	0.001 mg/l	mg/L	APHA-3125-B
23	Zinc as Zn	0.038	2	0.005 mg/l	mg/L	APHA-3125-B
24	Copper as Cu	0.016	0.5	0.005 mg/l	mg/L	APHA-3125-B

*Test not covered ISO 17025: 2017 by Sri Lanka Accreditation Board for conformity assessment.

Reference range **as per Supply Water Quality Standard, Environment Protection Agency, Maldives.

NOTE:

APHA: American Public Health Association,

SLS: Sri Lanka Standard,

ND: Not Detected,

μS/cm: Micro Siemens per centimeter

LOQ: Limit of Quantification,

mg/L: Milligrams per liter,

NTU: Nephelometric Turbidity Units,

°C : Celcius,

MPN / 100mL- Most Probable Number per hundred milliliter,

COMMENT : The Testing Results revealed that hygiene of Tested Water Sample is Satisfactory as per the Reference range **specified as per Supply Water Quality Standard, Environment Protection Agency EPA, Maldives

TEST REPORT



Report No: (7423)053-6930

Code Name: AAJV

Feb 14, 2024

Page 37 of 47

Customer: Alke Alkatas Joint Venture (Pvt) Ltd
Address : H.H. Moomiyaage, 5A, Asaree Hingun. 20265 Male, Republic of Maldives
Date of Sample Received: Feb 07, 2024
Date of Testing Started: Feb 07, 2024
Date of Testing Completed: Feb 14, 2024

Sample Description: **Sample Received as:**
A water sample contained in 2 sealed plastic bottles

Sample Identified by the Client as:
SW 03

Date of Sample Collection: 02.06.2024

Sample Drawn By BVCPS NO

Photo of the Submitted Samples



TEST REPORT



Report No: (7423)053-6930

Feb 14, 2024

Code Name: AAJV

Page 38 of 47

TEST RESULTS

No.	Parameters	Results	Referencerange **	LOQ	Unit	Test Method
1	Salinity	3.5%	3.2-4.2%	0.001 %	%	APHA-2520-B
2	Total Suspended Solids (TSS)	37	50	1.0 mg/l	mg/L	APHA-2540-C
3	Oil & Grease	ND	-	1.0 mg/l	mg/L	APHA-5520-B
4	Feacal Coliform	ND	400	-	MPN/100ml	SLS 1461:Part 1/Section 3:2013
5	Nitrite as NO ₂	1.6	05	0.1 mg/l	mg/L	APHA-4500-NO ₂ -
6	pH at 25°C	7.0	8.0-8.3	-	-	APHA-4500-H ⁺
7	Chemical Oxygen Demand	47	200	5 mg/l	mg/L	APHA-5220-D
8	Biological Oxygen Demand	19	20	5 mg/l	mg/L	APHA-5210-B
9	Turbidity	3.0	3-5	0.1 NTU	NTU	APHA-2130-B
10	Electrical Conductivity	54,400	-	1µS/cm	µs/cm	APHA-2510
11	Total Inorganic Nitrogen	5.9	70	0.001 mg/l	mg/L	APHA-4500-N
12	Total Phosphates (as PO ₄)	0.9	3	0.01 mg/l	mg/L	APHA-2540-C
13	Sulfide	<0.1	1	0.1 mg/l	mg/L	APHA-4500-D
14	Ammonia - N	2.5	2 - 3	0.1 mg/l	mg/L	APHA-4500-NH ₃ ⁻
15	Temperature	27.8	18-32 °C	-	°C	APHA-2550 B
16	Arsenic as As	< 0.005	0.1	0.001 mg/l	mg/L	APHA-3125-B
17	Cadmium as Cd	< 0.005	0.5	0.005 mg/l	mg/L	APHA-3125-B
18	Lead as Pb	0.018	0.5	0.0001 mg/l	mg/L	APHA-3125-B
19	Chromium VI	0.005	0.1	0.001 mg/l	mg/L	APHA-3125-B
20	Total Chromium (as Cr)	0.03	0.5	0.005 mg/l	°C	APHA-3125-B
21	Mercury as Hg	0.001	0.02	0.005 mg/l	mg/L	APHA-3125-B
22	Nickel as Ni	< 0.001	1	0.00050 mg/l	mg/L	APHA-3125-B
23	Zinc as Zn	0.033	2	0.001 mg/l	mg/L	APHA-3125-B
24	Copper as Cu	0.011	0.5	0.005 mg/l	mg/L	APHA-3125-B

*Test not covered ISO 17025: 2017 by Sri Lanka Accreditation Board for conformity assessment.

Reference range **as per Supply Water Quality Standard, Environment Protection Agency, Maldives.

NOTE:

APHA: American Public Health Association,

SLS: Sri Lanka Standard,

ND: Not Detected,

µS/cm: Micro Siemens per centimeter

LOQ: Limit of Quantification,

mg/L: Milligrams per liter,

NTU: Nephelometric Turbidity Units,

°C : Celcius,

MPN / 100mL- Most Probable Number per hundred milliliter,

COMMENT : The Testing Results revealed that hygiene of Tested Water Sample is Satisfactory as per the Reference range **specified as per Supply Water Quality Standard, Environment Protection Agency EPA, Maldives

TEST REPORT



Report No: (7423)053-6930

Code Name: AAJV

Feb 14, 2024

Page 39 of 47

Customer: Alke Alkatas Joint Venture (Pvt) Ltd
Address : H.H. Moomiyaage, 5A, Asaree Hingun. 20265 Male, Republic of Maldives
Date of Sample Received: Feb 07, 2024
Date of Testing Started: Feb 07, 2024
Date of Testing Completed: Feb 14, 2024

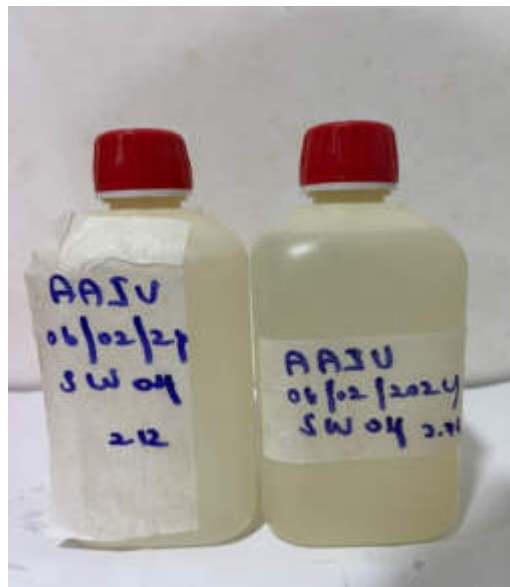
Sample Description: **Sample Received as:**
A water sample contained in 2 sealed plastic bottles

Sample Identified by the Client as:
SW 04

Date of Sample Collection: 02.06.2024

Sample Drawn By BVCPS NO

Photo of the Submitted Samples



TEST REPORT



Report No: (7423)053-6930

Feb 14, 2024

Code Name: AAJV

Page 40 of 47

TEST RESULTS

No.	Parameters	Results	Referencerange **	LOQ	Unit	Test Method
1	Salinity	3.5%	3.2-4.2%	0.001 %	%	APHA-2520-B
2	Total Suspended Solids (TSS)	26	50	1.0 mg/l	mg/L	APHA-2540-C
3	Oil & Grease	ND	-	1.0 mg/l	mg/L	APHA-5520-B
4	Feacal Coliform	ND	400	-	MPN/100ml	SLS 1461:Part 1/Section 3:2013
5	Nitrite as NO ₂	1.6	05	0.1 mg/l	mg/L	APHA-4500-NO ₂ -
6	pH at 25°C	7.4	8.0-8.3	-	-	APHA-4500-H ⁺
7	Chemical Oxygen Demand	45	200	5 mg/l	mg/L	APHA-5220-D
8	Biological Oxygen Demand	16	20	5 mg/l	mg/L	APHA-5210-B
9	Turbidity	2.8	3-5	0.1 NTU	NTU	APHA-2130-B
10	Electrical Conductivity	53,520	-	1µS/cm	µs/cm	APHA-2510
11	Total Inorganic Nitrogen	5.4	70	0.001 mg/l	mg/L	APHA-4500-N
12	Total Phosphates (as PO ₄)	0.8	3	0.01 mg/l	mg/L	APHA-2540-C
13	Sulfide	<0.1	1	0.1 mg/l	mg/L	APHA-4500-D
14	Ammonia - N	2.2	2 - 3	0.1 mg/l	mg/L	APHA-4500-NH ₃ ⁻
15	Temperature	27.8	18-32 °C	-	°C	APHA-2550 B
16	Arsenic as As	< 0.005	0.1	0.005 mg/l	mg/L	APHA-3125-B
17	Cadmium as Cd	< 0.005	0.5	0.0001 mg/l	mg/L	APHA-3125-B
18	Lead as Pb	0.016	0.5	0.001 mg/l	mg/L	APHA-3125-B
19	Chromium VI	<0.005	0.1	0.005 mg/l	mg/L	APHA-3125-B
20	Total Chromium (as Cr)	0.022	0.5	0.005 mg/l	°C	APHA-3125-B
21	Mercury as Hg	< 0.0005	0.02	0.00050 mg/l	mg/L	APHA-3125-B
22	Nickel as Ni	< 0.001	1	0.001 mg/l	mg/L	APHA-3125-B
23	Zinc as Zn	0.03	2	0.005 mg/l	mg/L	APHA-3125-B
24	Copper as Cu	0.01	0.5	0.005 mg/l	mg/L	APHA-3125-B

*Test not covered ISO 17025: 2017 by Sri Lanka Accreditation Board for conformity assessment.

Reference range **as per Supply Water Quality Standard, Environment Protection Agency, Maldives.

NOTE:

APHA: American Public Health Association,

SLS: Sri Lanka Standard,

ND: Not Detected,

µS/cm: Micro Siemens per centimeter

LOQ: Limit of Quantification,

mg/L: Milligrams per liter,

NTU: Nephelometric Turbidity Units,

°C : Celcius,

MPN / 100mL- Most Probable Number per hundred milliliter,

COMMENT : The Testing Results revealed that hygiene of Tested Water Sample is Satisfactory as per the Reference range **specified as per Supply Water Quality Standard, Environment Protection Agency EPA, Maldives

TEST REPORT



Report No: (7423)053-6930

Code Name: AAJV

Feb 14, 2024

Page 41 of 47

Customer: Alke Alkatas Joint Venture (Pvt) Ltd
Address : H.H. Moomiyaage, 5A, Asaree Hingun. 20265 Male, Republic of Maldives
Date of Sample Received: Feb 07, 2024
Date of Testing Started: Feb 07, 2024
Date of Testing Completed: Feb 14, 2024

Sample Description: **Sample Received as:**
A water sample contained in 2 sealed plastic bottles

Sample Identified by the Client as:
SW 05

Date of Sample Collection: 02.06.2024

Sample Drawn By BVCPS NO

Photo of the Submitted Samples



TEST REPORT



Report No: (7423)053-6930

Feb 14, 2024

Code Name: AAJV

Page 42 of 47

TEST RESULTS

No.	Parameters	Results	Referencerange **	LOQ	Unit	Test Method
1	Salinity	3.6%	3.2-4.2%	0.001 %	%	APHA-2520-B
2	Total Suspended Solids (TSS)	44	50	1.0 mg/l	mg/L	APHA-2540-C
3	Oil & Grease	ND	-	1.0 mg/l	mg/L	APHA-5520-B
4	Feacal Coliform	ND	400	-	MPN/100ml	SLS 1461:Part 1/Section 3:2013
5	Nitrite as NO ₂	2.0	05	0.1 mg/l	mg/L	APHA-4500-NO ₂ -
6	pH at 25°C	7.4	8.0-8.3	-	-	APHA-4500-H ⁺
7	Chemical Oxygen Demand	53	200	5 mg/l	mg/L	APHA-5220-D
8	Biological Oxygen Demand	19	20	5 mg/l	mg/L	APHA-5210-B
9	Turbidity	3.0	3-5	0.1 NTU	NTU	APHA-2130-B
10	Electrical Conductivity	55,500	-	1μS/cm	μs/cm	APHA-2510
11	Total Inorganic Nitrogen	5.9	70	0.001 mg/l	mg/L	APHA-4500-N
12	Total Phosphates (as PO ₄)	0.9	3	0.01 mg/l	mg/L	APHA-2540-C
13	Sulfide	<0.1	1	0.1 mg/l	mg/L	APHA-4500-D
14	Ammonia - N	2.6	2 - 3	0.1 mg/l	mg/L	APHA-4500-NH ₃ ⁻
15	Temperature	27.8	18-32 °C	-	°C	APHA-2550 B
16	Arsenic as As	< 0.005	0.1	0.005 mg/l	mg/L	APHA-3125-B
17	Cadmium as Cd	< 0.005	0.5	0.0001 mg/l	mg/L	APHA-3125-B
18	Lead as Pb	0.02	0.5	0.001 mg/l	mg/L	APHA-3125-B
19	Chromium VI	<0.005	0.1	0.005 mg/l	mg/L	APHA-3125-B
20	Total Chromium (as Cr)	0.028	0.5	0.005 mg/l	°C	APHA-3125-B
21	Mercury as Hg	< 0.0005	0.02	0.00050 mg/l	mg/L	APHA-3125-B
22	Nickel as Ni	< 0.001	1	0.001 mg/l	mg/L	APHA-3125-B
23	Zinc as Zn	0.036	2	0.005 mg/l	mg/L	APHA-3125-B
24	Copper as Cu	0.014	0.5	0.005 mg/l	mg/L	APHA-3125-B

*Test not covered ISO 17025: 2017 by Sri Lanka Accreditation Board for conformity assessment.

Reference range **as per Supply Water Quality Standard, Environment Protection Agency, Maldives.

NOTE:

APHA: American Public Health Association,

SLS: Sri Lanka Standard,

ND: Not Detected,

μS/cm: Micro Siemens per centimeter

LOQ: Limit of Quantification,

mg/L: Milligrams per liter,

NTU: Nephelometric Turbidity Units,

°C : Celcius,

MPN / 100mL- Most Probable Number per hundred milliliter,

COMMENT : The Testing Results revealed that hygiene of Tested Water Sample is Satisfactory as per the Reference range **specified as per Supply Water Quality Standard, Environment Protection Agency EPA, Maldives

TEST REPORT



Report No: (7423)053-6930

Code Name: AAJV

Feb 14, 2024

Page 43 of 47

Customer: Alke Alkatas Joint Venture (Pvt) Ltd
Address : H.H. Moomiyaage, 5A, Asaree Hingun. 20265 Male, Republic of Maldives
Date of Sample Received: Feb 07, 2024
Date of Testing Started: Feb 07, 2024
Date of Testing Completed: Feb 14, 2024

Sample Description: **Sample Received as:**
A water sample contained in 2 sealed plastic bottles

Sample Identified by the Client as:
SW 06

Date of Sample Collection: 02.06.2024

Sample Drawn By BVCPS NO

Photo of the Submitted Samples



TEST REPORT



Report No: (7423)053-6930

Feb 14, 2024

Code Name: AAJV

Page 44 of 47

TEST RESULTS

No.	Parameters	Results	Referencerange **	LOQ	Unit	Test Method
1	Salinity	3.5%	3.2-4.2%	0.001 %	%	APHA-2520-B
2	Total Suspended Solids (TSS)	37	50	1.0 mg/l	mg/L	APHA-2540-C
3	Oil & Grease	ND	-	1.0 mg/l	mg/L	APHA-5520-B
4	Feecal Coliform	ND	400	-	MPN/100ml	SLS 1461:Part 1/Section 3:2013
5	Nitrite as NO ₂	1.8	05	0.1 mg/l	mg/L	APHA-4500-NO ₂ -
6	pH at 25°C	7.5	8.0-8.3	-	-	APHA-4500-H ⁺
7	Chemical Oxygen Demand	46	200	5 mg/l	mg/L	APHA-5220-D
8	Biological Oxygen Demand	14	20	5 mg/l	mg/L	APHA-5210-B
9	Turbidity	3.0	3-5	0.1 NTU	NTU	APHA-2130-B
10	Electrical Conductivity	55,140	-	1µS/cm	µs/cm	APHA-2510
11	Total Inorganic Nitrogen	5.4	70	0.001 mg/l	mg/L	APHA-4500-N
12	Total Phosphates (as PO ₄)	0.7	3	0.01 mg/l	mg/L	APHA-2540-C
13	Sulfide	<0.1	1	0.1 mg/l	mg/L	APHA-4500-D
14	Ammonia - N	2.2	2 - 3	0.1 mg/l	mg/L	APHA-4500-NH ₃ ⁻
15	Temperature	27.8	18-32 °C	-	°C	APHA-2550 B
16	Arsenic as As	< 0.005	0.1	0.005 mg/l	mg/L	APHA-3125-B
17	Cadmium as Cd	0.005	0.5	0.0001 mg/l	mg/L	APHA-3125-B
18	Lead as Pb	0.012	0.5	0.001 mg/l	mg/L	APHA-3125-B
19	Chromium VI	0.005	0.1	0.005 mg/l	mg/L	APHA-3125-B
20	Total Chromium (as Cr)	0.032	0.5	0.005 mg/l	°C	APHA-3125-B
21	Mercury as Hg	0.0013	0.02	0.00050 mg/l	mg/L	APHA-3125-B
22	Nickel as Ni	< 0.001	1	0.001 mg/l	mg/L	APHA-3125-B
23	Zinc as Zn	0.021	2	0.005 mg/l	mg/L	APHA-3125-B
24	Copper as Cu	0.012	0.5	0.005 mg/l	mg/L	APHA-3125-B

*Test not covered ISO 17025: 2017 by Sri Lanka Accreditation Board for conformity assessment.

Reference range **as per Supply Water Quality Standard, Environment Protection Agency, Maldives.

NOTE:

APHA: American Public Health Association,

SLS: Sri Lanka Standard,

ND: Not Detected,

µS/cm: Micro Siemens per centimeter

LOQ: Limit of Quantification,

mg/L: Milligrams per liter,

NTU: Nephelometric Turbidity Units,

°C : Celcius,

MPN / 100mL- Most Probable Number per hundred milliliter,

COMMENT : The Testing Results revealed that hygiene of Tested Water Sample is Satisfactory as per the Reference range **specified as per Supply Water Quality Standard, Environment Protection Agency EPA, Maldives

TEST REPORT



Report No: (7423)053-6930

Code Name: AAJV

Feb 14, 2024

Page 45 of 47

Customer: Alke Alkatas Joint Venture (Pvt) Ltd

Address : H.H. Moomiyaage, 5A, Asaree Hingun. 20265 Male, Republic of Maldives

Date of Sample Received: Feb 07, 2024

Date of Testing Started: Feb 07, 2024

Date of Testing Completed: Feb 14, 2024

Sample Description: **Sample Received as:**
A water sample contained in 2 sealed plastic bottles

Sample Identified by the Client as:
SW 07

Date of Sample Collection: 02.06.2024

Sample Drawn By BVCPS NO

Photo of the Submitted Samples



TEST REPORT



Report No: (7423)053-6930

Feb 14, 2024

Code Name: AAJV

Page 46 of 47

TEST RESULTS

No.	Parameters	Results	Referencerange **	LOQ	Unit	Test Method
1	Salinity	3.6%	3.2-4.2%	0.001 %	%	APHA-2520-B
2	Total Suspended Solids (TSS)	43	50	1.0 mg/l	mg/L	APHA-2540-C
3	Oil & Grease	ND	-	1.0 mg/l	mg/L	APHA-5520-B
4	Feacal Coliform	ND	400	-	MPN/100ml	SLS 1461:Part 1/Section 3:2013
5	Nitrite as NO ₂	2.0	05	0.1 mg/l	mg/L	APHA-4500-NO ₂ -
6	pH at 25°C	7.4	8.0-8.3	-	-	APHA-4500-H ⁺
7	Chemical Oxygen Demand	57	200	5 mg/l	mg/L	APHA-5220-D
8	Biological Oxygen Demand	20	20	5 mg/l	mg/L	APHA-5210-B
9	Turbidity	3.0	3-5	0.1 NTU	NTU	APHA-2130-B
10	Electrical Conductivity	57,300	-	1µS/cm	µs/cm	APHA-2510
11	Total Inorganic Nitrogen	6.1	70	0.001 mg/l	mg/L	APHA-4500-N
12	Total Phosphates (as PO ₄)	0.9	3	0.01 mg/l	mg/L	APHA-2540-C
13	Sulfide	<0.1	1	0.1 mg/l	mg/L	APHA-4500-D
14	Ammonia - N	2.7	2 - 3	0.1 mg/l	mg/L	APHA-4500-NH ₃ ⁻
15	Temperature	27.8	18-32 °C	-	°C	APHA-2550 B
16	Arsenic as As	< 0.005	0.1	0.005 mg/l	mg/L	APHA-3125-B
17	Cadmium as Cd	< 0.005	0.5	0.0001 mg/l	mg/L	APHA-3125-B
18	Lead as Pb	0.023	0.5	0.001 mg/l	mg/L	APHA-3125-B
19	Chromium VI	<0.005	0.1	0.005 mg/l	mg/L	APHA-3125-B
20	Total Chromium (as Cr)	0.03	0.5	0.005 mg/l	°C	APHA-3125-B
21	Mercury as Hg	< 0.0005	0.02	0.00050 mg/l	mg/L	APHA-3125-B
22	Nickel as Ni	< 0.001	1	0.001 mg/l	mg/L	APHA-3125-B
23	Zinc as Zn	0.042	2	0.005 mg/l	mg/L	APHA-3125-B
24	Copper as Cu	0.016	0.5	0.005 mg/l	mg/L	APHA-3125-B

*Test not covered ISO 17025: 2017 by Sri Lanka Accreditation Board for conformity assessment.

Reference range **as per Supply Water Quality Standard, Environment Protection Agency, Maldives.

NOTE:

APHA: American Public Health Association,

SLS: Sri Lanka Standard,

ND: Not Detected,

µS/cm: Micro Siemens per centimeter

LOQ: Limit of Quantification,

mg/L: Milligrams per liter,

NTU: Nephelometric Turbidity Units,

°C : Celcius,

MPN / 100mL- Most Probable Number per hundred milliliter,

COMMENT : The Testing Results revealed that hygiene of Tested Water Sample is Unsatisfactory as per the Reference range **specified as per Supply Water Quality Standard, Environment Protection Agency EPA, Maldives

TEST REPORT



Report No: (7423)053-6930

Feb 14, 2024

Code Name: AAJV

Page 47 of 47

Contact information for this report (Technical and General Inquiries and Feedback)

GENERAL INQUIRIES:		
MOHOMED NAWZER	TEL: +94 764 412 907	E-MAIL: mohomed.nawzer@bureauveritas.com
TECHNICAL INQUIRIES:		
RUWANI AMARASINGHE	TEL: +94 768 229 457	E-MAIL: ruwani.amarasinghe@bureauveritas.com
FEED BACK:		
KUMUDINI RATHNAYAKE – ASST. QA MANAGER	TEL: +94 768 229 455	E-MAIL: kumudinie.rathnayake@bureauveritas.com

REVIEWED BY: HIMASHA JAYAWARDENA

BUREAU VERITAS CONSUMER PRODUCTS SERVICES LANKA (PVT) LTD.
AUTHORIZED SIGNATORY

APPROVED BY:

RUWANI AMARASINGHE

ASSISTANT MANAGER –
FOOD & MICROBIOLOGY LABORATORY

END OF THE REPORT

Mar 11, 2024

Page 1 of 14

Report No: (7423)051-6312

Code Name: AAJV

Customer:

Address :

Date of Sample Received:

Date of Testing Started:

Date of Testing Completed:

Sample Description:

Alke Alkatas Joint Venture (Pvt) Ltd

H.H. Moomiyaage, 5A, Asaree Hingun. 20265 Male, Republic of
Maldives

Mar 05, 2024

Mar 05, 2024

Mar 11, 2024

Sample Received as:

A water sample contained in sealed plastic bottle

Sample Identified by the Client as:

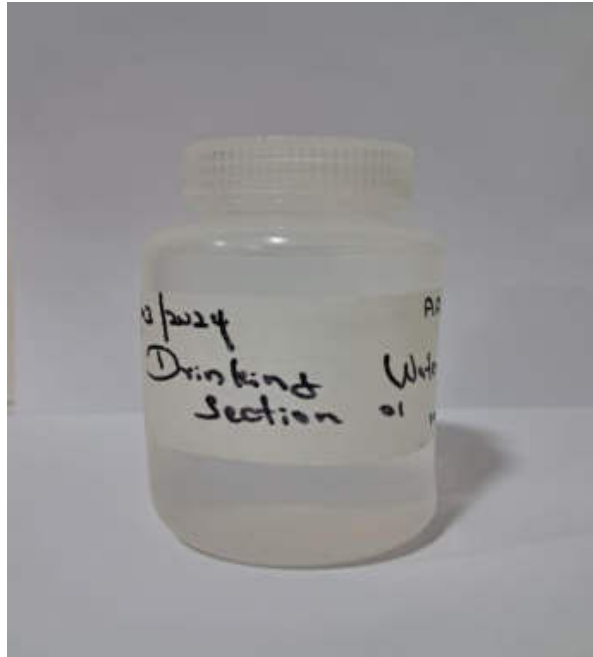
Drinking Water 1

Date of Sample Collection: 04.03.2024

NO

Sample Drawn By BVCPS

Photo of the Submitted Samples



**Bureau Veritas Consumer
Products Services Lanka (Pvt)
Ltd.**

No. 570, Galle Road, Katubedda, Moratuwa, Sri Lanka
Tel: (9411) 2350111-115 (dedicated lines), Fax: (9411)
112622198 & 199

Email: bvcps.lanka@lk.bureauveritas.com

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TEST REPORT



Report No: (7423)051-6312

Mar 11, 2024

Code Name: AAJV

Page 2 of 14

TEST RESULTS

No.	Parameters	Results	Referencerange **	LOQ	Unit	Test Method
1	pH	7.2	6.5-8.5	-	-	APHA-4500-B
2	Turbidity	ND	< 1.0	0.1 NTU	NTU	APHA-2130-B
3	Residual free chlorine*	<0.01	0.04-0.2	0.01 mg/l	mg/L	APHA-4500-Cl
4	Electrical Conductivity	18	<1000	1µS/cm	µS/cm	APHA-2510-B
5	Total Dissolved solids	12	<500	1.0 mg/l	mg/L	APHA-2540-C
6	Feecal Coliform	ND	0/100ml	-	MPN/100ml	SLS 1461:Part 1/Section 3:2013
7	Total Coliform	ND	0/100ml	-	MPN/100ml	SLS 1461:Part 1/Section 3:2013
8	Escherichia coli	ND	0/100ml	-	MPN/100ml	SLS 1461:Part 1/Section 3:2013
9	Iron (as Fe)	ND	<0.3	0.005 mg/l	mg/L	APHA-3120B
10	Ammonia - N	<0.1	<0.5	0.1 mg/l	mg/L	APHA-4500-F
11	Nitrate (as NO ₃) [*]	ND	<50	0.1 mg/l	mg/L	APHA-4500NO ₃ -B
12	Chloride (as Cl ⁻)	3.3	<200	1.0 mg/l	mg/L	APHA-4500Cl-B
13	Physical Appearance	7.2	6.5-8.5	-	Clear/Colorless	Visual Examination

*Test not covered ISO 17025: 2017 by Sri Lanka Accreditation Board for conformity assessment.

Reference range **as per Supply Water Quality Standard, Environment Protection Agency, Maldives

NOTE:

APHA: American Public Health Association,

SLS: Sri Lanka Standard,

ND: Not Detected,

µS/cm: micro Siemens per centimeter

LOQ: Limit of Quantification,

mg/L: milligrams per liter,

NTU: Nephelometric Turbidity Units

°C : Celcius,

MPN / 100mL- Most Probable Number per hundred milliliter,

COMMENT : The Testing Results revealed that hygiene of Tested Water Sample is Satisfactory as per the Reference range **specified as per Supply Water Quality Standard, Environment Protection Agency EPA, Maldives.

TEST REPORT



Report No: (7423)051-6312

Code Name: AAJV

Mar 11, 2024

Page 3 of 14

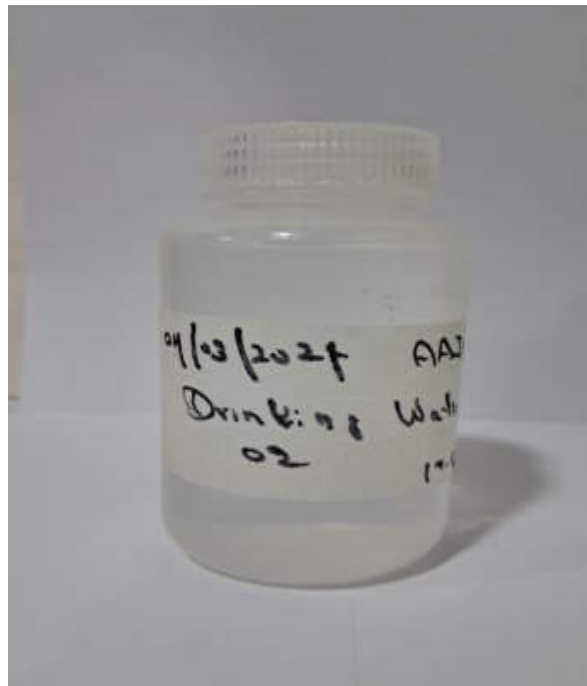
Customer: Alke Alkatas Joint Venture (Pvt) Ltd
Address : H.H. Moomiyaage, 5A, Asaree Hingun. 20265 Male, Republic of Maldives
Date of Sample Received: Mar 05, 2024
Date of Testing Started: Mar 05, 2024
Date of Testing Completed: Mar 11, 2024
Sample Description: **Sample Received as:**
A water sample contained in sealed plastic bottle

Sample Identified by the Client as:
Drinking Water 2

Date of Sample Collection: 04.03.2024

Sample Drawn By BVCPS NO

Photo of the Submitted Samples



TEST REPORT



Report No: (7423)051-6312

Mar 11, 2024

Code Name: AAJV

Page 4 of 14

TEST RESULTS

No.	Parameters	Results	Referencerange **	LOQ	Unit	Test Method
1	pH	7.2	6.5-8.5	-	-	APHA-4500-B
2	Turbidity	ND	< 1.0	0.1 NTU	NTU	APHA-2130-B
3	Residual free chlorine*	<0.01	0.04-0.2	0.01 mg/l	mg/L	APHA-4500-Cl
4	Electrical Conductivity	12	<1000	1µS/cm	µS/cm	APHA-2510-B
5	Total Dissolved solids	08	<500	1.0 mg/l	mg/L	APHA-2540-C
6	Feecal Coliform	ND	0/100ml	-	MPN/100ml	SLS 1461:Part 1/Section 3:2013
7	Total Coliform	ND	0/100ml	-	MPN/100ml	SLS 1461:Part 1/Section 3:2013
8	Escherichia coli	ND	0/100ml	-	MPN/100ml	SLS 1461:Part 1/Section 3:2013
9	Iron (as Fe)	ND	<0.3	0.005 mg/l	mg/L	APHA-3120B
10	Ammonia - N	<0.1	<0.5	0.1 mg/l	mg/L	APHA-4500-F
11	Nitrate (as NO ₃ ⁻)*	ND	<50	0.1 mg/l	mg/L	APHA-4500NO ₃ -B
12	Chloride (as Cl ⁻)	2.6	<200	1.0 mg/l	mg/L	APHA-4500Cl-B
13	Physical Appearance	Clear	Clear/Colorless	-	Clear/Colorless	Visual Examination

*Test not covered ISO 17025: 2017 by Sri Lanka Accreditation Board for conformity assessment.

Reference range **as per Supply Water Quality Standard, Environment Protection Agency, Maldives

NOTE:

APHA: American Public Health Association,

SLS: Sri Lanka Standard,

ND: Not Detected,

µS/cm: micro Siemens per centimeter

LOQ: Limit of Quantification,

mg/L: milligrams per liter,

NTU: Nephelometric Turbidity Units,

°C : Celcius,

MPN / 100mL- Most Probable Number per hundred milliliter,

COMMENT : The Testing Results revealed that hygiene of Tested Water Sample is Satisfactory as per the Reference range **specified as per Supply Water Quality Standard, Environment Protection Agency EPA, Maldive

TEST REPORT



Report No: (7423)051-6312

Code Name: AAJV

Mar 11, 2024

Page 5 of 14

Customer: Alke Alkatas Joint Venture (Pvt) Ltd
Address : H.H. Moomiyaage, 5A, Asaree Hingun. 20265 Male, Republic of Maldives
Date of Sample Received: Mar 05, 2024
Date of Testing Started: Mar 05, 2024
Date of Testing Completed: Mar 11, 2024

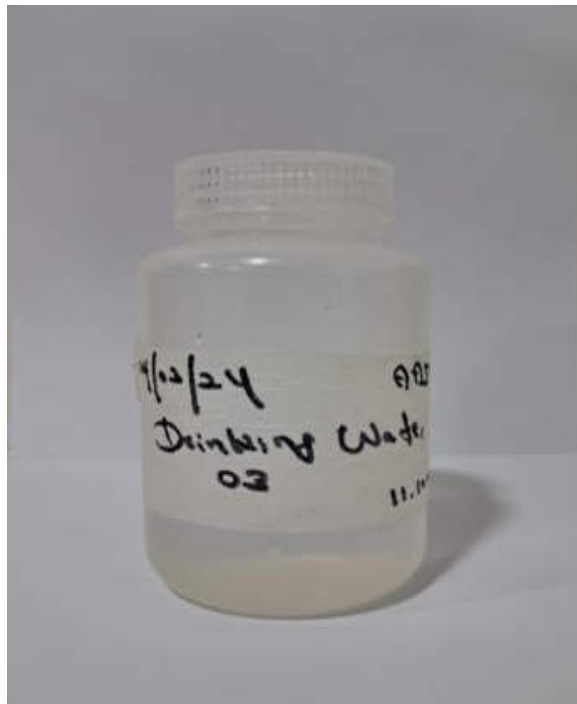
Sample Description: **Sample Received as:**
A water sample contained in sealed plastic bottle

Sample Identified by the Client as:
Drinking Water 3

Date of Sample Collection: 04.03.2024

Sample Drawn By BVCPS NO

Photo of the Submitted Samples



TEST REPORT



Report No: (7423)051-6312

Mar 11, 2024

Code Name: AAJV

Page 6 of 14

TEST RESULTS

No.	Parameters	Results	Referencerange **	LOQ	Unit	Test Method
1	pH	6.9	6.5-8.5	-	-	APHA-4500-B
2	Turbidity	0.1	< 1.0	0.1 NTU	NTU	APHA-2130-B
3	Residual free chlorine*	<0.01	0.04-0.2	0.01 mg/l	mg/L	APHA-4500-Cl
4	Electrical Conductivity	423.9	<1000	1µS/cm	µS/cm	APHA-2510-B
5	Total Dissolved solids	283	<500	1.0 mg/l	mg/L	APHA-2540-C
6	Feecal Coliform	ND	0/100ml	-	MPN/100ml	SLS 1461:Part 1/Section 3:2013
7	Total Coliform	ND	0/100ml	-	MPN/100ml	SLS 1461:Part 1/Section 3:2013
8	Escherichia coli	ND	0/100ml	-	MPN/100ml	SLS 1461:Part 1/Section 3:2013
9	Iron (as Fe)	ND	<0.3	0.005 mg/l	mg/L	APHA-3120B
10	Ammonia - N	<0.1	<0.5	0.1 mg/l	mg/L	APHA-4500-F
11	Nitrate (as NO ₃ ⁻)*	ND	<50	0.1 mg/l	mg/L	APHA-4500NO ₃ -B
12	Chloride (as Cl ⁻)	13.4	<200	1.0 mg/l	mg/L	APHA-4500Cl-B
13	Physical Appearance	Clear	Clear/Colorless	-	Clear/Colorless	Visual Examination

*Test not covered ISO 17025: 2017 by Sri Lanka Accreditation Board for conformity assessment.

Reference range **as per Supply Water Quality Standard, Environment Protection Agency, Maldives

NOTE:

APHA: American Public Health Association,

SLS: Sri Lanka Standard,

ND: Not Detected,

µS/cm: micro Siemens per centimeter

LOQ: Limit of Quantification,

mg/L: milligrams per liter,

NTU: Nephelometric Turbidity Units,

°C : Celcius,

MPN / 100mL- Most Probable Number per hundred milliliter,

COMMENT : The Testing Results revealed that hygiene of Tested Water Sample is Satisfactory as per the Reference range *specified as per Supply Water Quality Standard, Environment Protection Agency EPA, Maldives**

TEST REPORT



Report No: (7423)051-6312

Code Name: AAJV

Mar 11, 2024

Page 7 of 14

Customer: Alke Alkatas Joint Venture (Pvt) Ltd
Address : H.H. Moomiyaage, 5A, Asaree Hingun. 20265 Male, Republic of Maldives
Date of Sample Received: Mar 05, 2024
Date of Testing Started: Mar 05, 2024
Date of Testing Completed: Mar 11, 2024

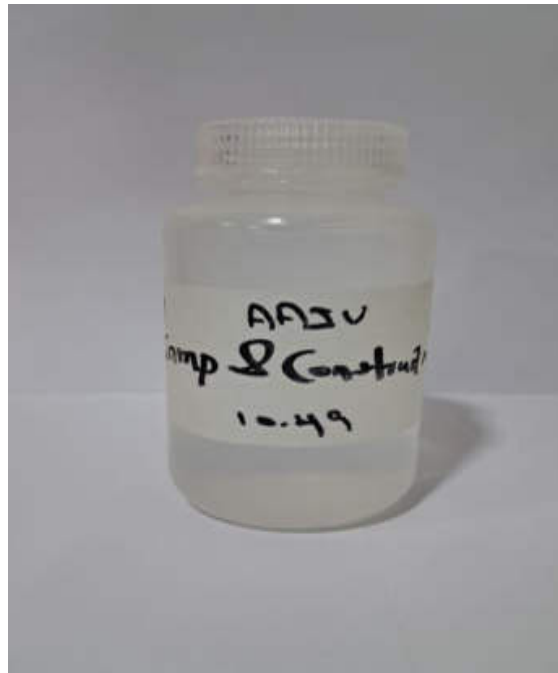
Sample Description: **Sample Received as:**
A water sample contained in sealed plastic bottle

Sample Identified by the Client as:
Camp and Construction Water

Date of Sample Collection: 04.03.2024

Sample Drawn By BVCPS NO

Photo of the Submitted Samples



TEST REPORT



Report No: (7423)051-6312

Code Name: AAJV

Mar 11, 2024

Page 8 of 14

TEST RESULTS

No.	Parameters	Results	Referencerange **	LOQ	Unit	Test Method
1	Physical Appearance	Clear	Clear/Colorless	-	Clear/Colorless	Visual Examination
2	pH	7.8	6.5-8.5	-	-	APHA-4500-B
3	Turbidity	ND	< 1.0	0.1 NTU	NTU	APHA-2130-B
4	Residual free chlorine*	<0.01	0.04-0.2	0.01 mg/l	mg/L	APHA-4500-CI
5	Electrical Conductivity	450	<1000	1µS/cm	µS/cm	APHA-2510-B
6	Total Hardness	10	<75	1.0 mg/l	mg/L	APHA-2340-C
7	Total Suspended Solids (TSS)	01	5-750	1.0 mg/l	mg/L	APHA-2540-B
8	Total Dissolved solids	300	<500	1.0 mg/l	mg/L	APHA-2540-C
9	Feecal Coliform	ND	0/100ml	-	MPN/100ml	SLS 1461:Part 1/Section 3:2013
10	Total Coliform	ND	0/100ml	-	MPN/100ml	SLS 1461:Part 1/Section 3:2013
11	Escherichia coli	ND	0/100ml	-	MPN/100ml	SLS 1461:Part 1/Section 3:2013
12	Iron (as Fe)	ND	<0.3	0.005 mg/l	mg/L	APHA-3120B
13	Hydrogen Sulphide	<0.01	<0.05	0.01 mg/l	mg/L	APHA: 2017
14	Ammonia - N	<0.1	<0.5	0.1 mg/l	mg/L	APHA-4500-F
15	Nitrate (as NO ₃ ⁻)*	ND	<50	0.1 mg/l	mg/L	APHA-4500NO3-B
16	Chloride (as Cl ⁻)	38.7	<200	1.0 mg/l	mg/L	APHA-4500Cl-B

*Test not covered ISO 17025: 2017 by Sri Lanka Accreditation Board for conformity assessment.

Reference range **as per Supply Water Quality Standard, Environment Protection Agency, Maldives.

NOTE:

APHA: American Public Health Association,

SLS: Sri Lanka Standard,

ND: Not Detected,

µS/cm: Micro Siemens per centimeter

LOQ: Limit of Quantification,

mg/L: Milligrams per liter,

NTU: Nephelometric Turbidity Units,

°C : Celcius,

MPN / 100mL- Most Probable Number per hundred milliliter,

COMMENT : The Testing Results revealed that hygiene of Tested Water Sample is Satisfactory as per the Reference range **specified as per Supply Water Quality Standard, Environment Protection Agency EPA, Maldives

TEST REPORT



Report No: (7423)051-6312

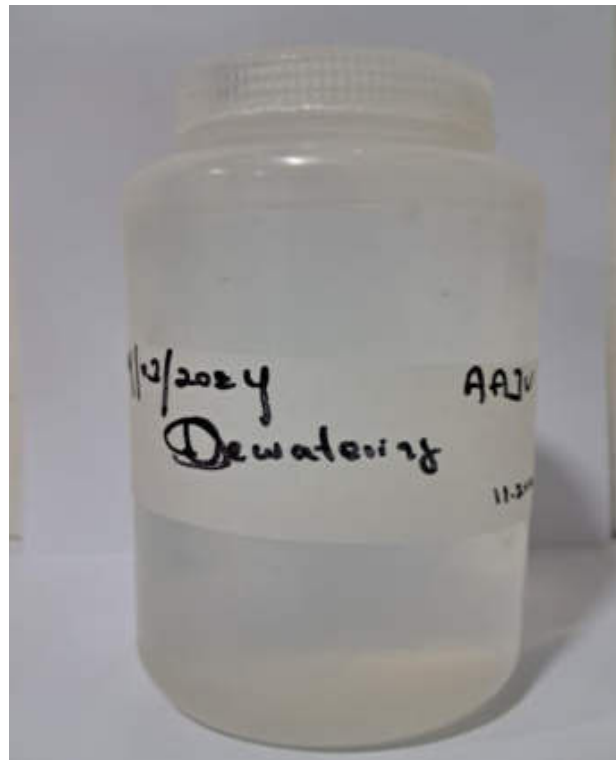
Code Name: AAJV

Mar 11, 2024

Page 9 of 14

Customer: Alke Alkatas Joint Venture (Pvt) Ltd
Address : H.H. Moomiyaage, 5A, Asaree Hingun. 20265 Male, Republic of Maldives
Date of Sample Received: Mar 05, 2024
Date of Testing Started: Mar 05, 2024
Date of Testing Completed: Mar 11, 2024
Sample Description: **Sample Received as:**
A water sample contained in sealed plastic bottle
Sample Identified by the Client as:
Dewatering
Date of Sample Collection: 04.03.2024
Sample Drawn By BVCPS NO

Photo of the Submitted Samples



TEST REPORT



Report No: (7423)051-6312
Code Name: AAJV

Mar 11, 2024
Page 10 of 14

TEST RESULTS

No.	Parameters	Results	Referencerange **	LOQ	Unit	Test Method
1	Fecal Coliforms	ND	100	-	MPN/100ml	SLS 1461:Part 1/Section 3:2013
2	pH	8.8	6.5-8.5	-	-	APHA-4500-H ⁺
3	Temperature	27.8	18-32	-	°C	APHA-2550 B
4	Total Dissolved Solids	31,000	EC * 0.67	1.0 mg/l	mg/l	APHA-2540-C
5	Total Suspended Solids (TSS)	04	50	1.0 mg/l	mg/l	APHA-2540-B
6	Dissolved Oxygen	6.3	6.5-8.0	0.2 mg/l	mg/l	APHA-4500-O
7	Electrical Conductivity	46,560	35,000-60,000	1µS/cm	µS/cm	APHA-2510
8	Turbidity	1.6	< 5	0.1 NTU	NTU	APHA-2130-B
9	Salinity	3.7	3.2-4.2%	0.001 %	%	APHA-2520-B
10	Ammonia - N	1.0	10	0.1 mg/l	mg/l	APHA-4500-NH ₃ ⁻
11	Hydrogen Sulphide (H ₂ S)	<0.01	0.5	0.01 mg/l	mg/l	APHA-4500-D
12	Nitrate (as NO ₃ ⁻)*	2.1	15	0.1 mg/l	mg/l	APHA-4500-NO ₂ ⁻
13	Phosphate as P	0.1	2	0.01 mg/l	mg/l	APHA-2540-C
14	Total Hydrocarbon	< 0.1	10	0.1 ppm	ppm	Inhouse –Laboratory Method
15	Oil & Grease	1.6	5	1.0 mg/l	mg/l	APHA-5520-B

*Test not covered ISO 17025: 2017 by Sri Lanka Accreditation Board for conformity assessment.
Reference range **as per Supply Water Quality Standard, Environment Protection Agency, Maldives.

NOTE:

APHA: American Public Health Association,
SLS: Sri Lanka Standard,
ND: Not Detected,
µS/cm: Micro Siemens per centimeter
LOQ: Limit of Quantification,
mg/L: Milligrams per liter,
NTU: Nephelometric Turbidity Units,
°C : Celcius,
MPN / 100mL- Most Probable Number per hundred milliliter,

COMMENT : The Testing Results revealed that hygiene of Tested Water Sample is Satisfactory as per the Reference range **specified as per Supply Water Quality Standard, Environment Protection Agency EPA, Maldives

TEST REPORT



Mar 11, 2024
Page 11 of 14

Report No: (7423)051-6932
Code Name: AAJV

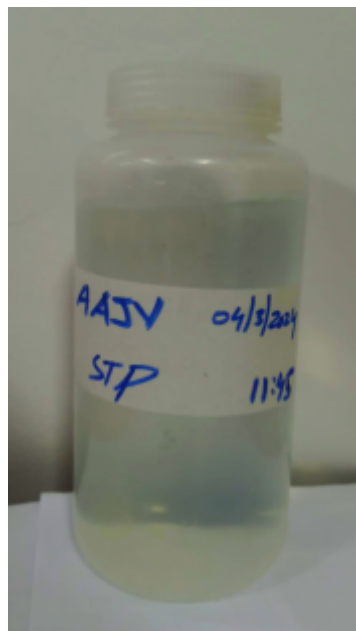
Customer: Alke Alkatas Joint Venture (Pvt) Ltd
Address : H.H. Moomiyaage, 5A, Asaree Hingun. 20265 Male, Republic of Maldives
Date of Sample Received: Mar 05, 2024
Date of Testing Started: Mar 05, 2024
Date of Testing Completed: Mar 11, 2024
Sample Description: **Sample Received as:**
A water sample contained in sealed plastic bottles

Sample Identified by the Client as:
STP

Date of Sample Collection: 04.03.2024

Sample Drawn By BVCPS NO

Photo of the Submitted Samples



TEST REPORT



Report No: (7423)051-6932
Code Name: AAJV

Mar 11, 2024
Page 12 of 14

TEST RESULTS

No.	Parameters	Results	ReferenceRange **	LOQ	Unit	Test Method
1	Fecal Coliforms	ND	1	-	MPN/100ml	SLS 1461:Part 1/Section 3:2013
2	Total Coliforms	10.5	400	-	MPN/100ml	SLS 1461:Part 1/Section 3:2013
3	E.Coli	ND	0.01	-	MPN/100ml	SLS 1461:Part 1/Section 3:2013
4	pH	6.6	5.0-9.5	-	-	APHA-4500-H ⁺
5	Temperature	28.1	44	-	°C	APHA-2550 B
6	Total Suspended Solids	20	150	1.0 mg/l	mg/l	APHA-2540-D
7	Ortho Phosphate as P	0.7	10	0.1 mg/l	mg/l	APHA-2540-C
8	Oil & Grease	ND	5	1.0 mg/l	mg/l	APHA-5520-B
9	Dissolved Oxygen	6.0	6-8	0.2 mg/l	mg/l	APHA-4500-O
10	Free Residual Chlorine	< 0.01	0.2-0.8	0.01 mg/l	mg/l	APHA-4500-Cl
11	Electrical Conductivity	823	35,000-60,000	1µS/cm	µS/cm	APHA-2510-B
12	Chemical Oxygen Demand	40	50	5 mg/l	mg/l	APHA-5220-D
13	Biological Oxygen Demand	16	30	5 mg/l	mg/l	APHA-5210-B
14	Nitrate (as NO ₃) [*]	4.5	15	0.1 mg/l	mg/l	APHA-4500NO ₃ -B
15	Ammonia - N	3.5	10	0.1 mg/l	mg/l	APHA-4500-NH ₃ ⁻
16	Total Nitrogen (as N) [*]	7.8	10	0.001 mg/l	mg/L	APHA 23rd ed: 2017 - 4500-Norg B
17	Surfactants	0.6	10	0.1 mg/l	mg/l	APHA-5540-C
18	Phenolic Compounds	0.01	1	0.005 mg/l	mg/l	APHA-5530-D
19	Sum of metals (Pb, Cr, Ni, Cd, Se, As, Fe, Al, Sb, Cu, Mn, , Hg)	0.12	5	-	mg/l	In House Method
20	Acute Toxicity	ND	0	-	mg/l	In House Method

TEST REPORT



Report No: (7423)051-6930
Code Name: AAJV

Mar 11, 2024
Page 13 of 14

*Test not covered ISO 17025: 2017 by Sri Lanka Accreditation Board for conformity assessment.
Reference range **as per Supply Water Quality Standard, Environment Protection Agency, Maldives

NOTE:

APHA: American Public Health Association,
SLS: Sri Lanka Standard,
ND: Not Detected,
 μ S/cm: micro Siemens per centimeter
LOQ: Limit of Quantification,
mg/L: milligrams per liter,
NTU: Nephelometric Turbidity Units,
 $^{\circ}$ C : Celcius,
MPN / 100mL- Most Probable Number per hundred milliliter,
ICP-MS- Inductively Coupled Plasma Mass Spectrometry

COMMENT : The Testing Results revealed that hygiene of Tested Water Sample is Unsatisfactory as per the Reference range **specified as per Supply Water Quality Standard, Environment Protection Agency EPA, Maldives

TEST REPORT



Report No: (7423)051-6312
Code Name: AAJV

Mar 11, 2024
Page 14 of 14


Contact information for this report (Technical and General Inquiries and Feedback)

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REVIEWED BY: HIMASHA JAYAWARDENA

BUREAU VERITAS CONSUMER PRODUCTS SERVICES LANKA (PVT) LTD.
AUTHORIZED SIGNATORY

APPROVED BY:


RUWANI AMARASINGHE

ASSISTANT MANAGER –
FOOD & MICROBIOLOGY LABORATORY

END OF THE REPORT

Illumination Level



WASTE-TO-ENERGY (WTE) FACILITY



LIGHTING OF CONSTRUCTION SITE REPORT

Contents,

- Lighting plan
- Site Control

Lighting plan,

For an appropriate lighting plan to be drawn up, the types of activity that will be likely to require lighting need to be specified. These activities can then be given an illumination target (with the unit being lux). Lamps are often given a measurement in lumens (lm), which is the total quantity of visible light emitted. One lux is one lumen per square metre.

Examples of recommended minimum target values for building activities include:

External lighting:

Circulation: 10 lx

Materials handling: 10 lx

Internal lighting:

Circulation: 5 lx

Working areas: 15 lx

Concreting: 50 lx

Carpentry and joinery: 100 lx

Bricklaying and plastering: 100 lx

Painting and decorating: 200 lx

Site offices: 200 lx

Drawing board positions: 300 lx

It is possible to calculate the required lumens for a particular need with the following equation:

Total lumens required = area to be illuminated (m²) x target value (lx) / Utilisation factor

Where the utilisation factor is **0.23**.

Once the lamp type has been chosen, the required number can be calculated with the following equation:

No. of lamps required = total lumens required / lumen output of lamp

1-CAMP AREA LIGHTING CONTROL



2-WAREHOUSE AREA LIGHTING CONTROL



3-FERRY WALKWAY AREA LIGHTING CONTROL



4-SECURITY GATE NO: 03 AREA LIGHTING CONTROL



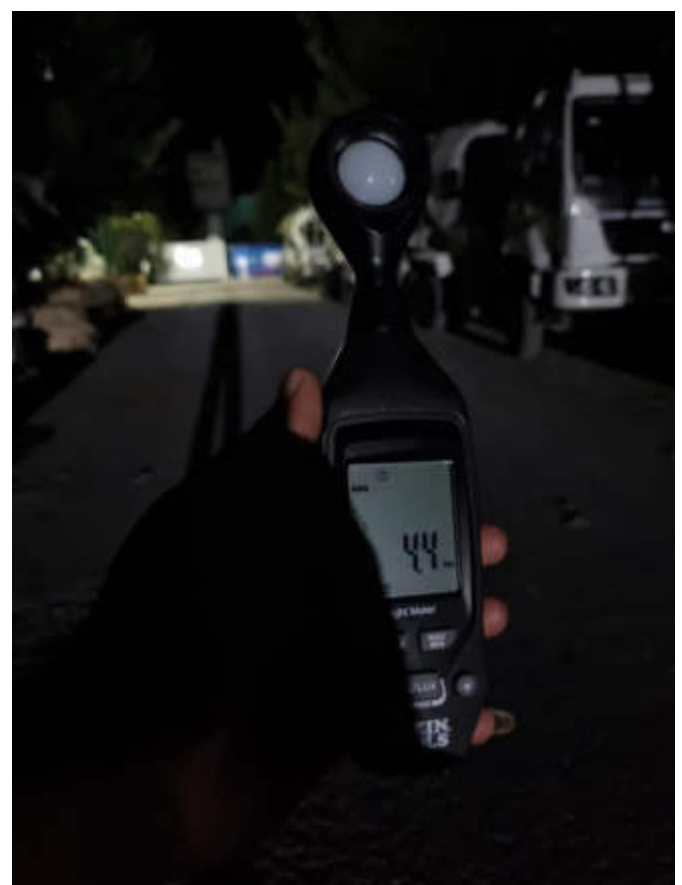
5-STEEL YARD AREA LIGHTING CONTROL



6-BUNKER WALKWAY AREA LIGHTING CONTROL



7-BATCHING PLANT ACCESS AREA LIGHTING CONTROL



8-BATCHING PLANT AREA LIGHTING CONTROL



9- BUNKER AREA INSIDE LIGHTING CONTROL



9- SECURITY GATE NO: 02 AREA LIGHTING CONTROL

