

# Environmental Monitoring Report

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10<sup>th</sup> Quarterly Report (April to June 2024)  
July 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.

# 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
PMDSC	–	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 <sup>3</sup>	microgram per cubicmetre

### NOTE

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



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# TABLE OF CONTENTS

<b>I.</b>	<b>INTRODUCTION.....</b>	<b>7</b>
A.	GREATER MALE WASTE-TO-ENERGY PROJECT.....	7
B.	PROJECT OUTCOME AND OUTPUTS .....	7
C.	ENVIRONMENTAL CATEGORY.....	8
D.	ABOUT THIS REPORT .....	8
<b>II.</b>	<b>PROJECT IMPLEMENTATION ARRANGEMENTS.....</b>	<b>10</b>
A.	PROJECT AND SAFEGUARDS IMPLEMENTATION ARRANGEMENTS .....	10
B.	STATUS OF STAFF RESOURCES.....	10
<b>III.</b>	<b>PROJECT IMPLEMENTATION STATUS.....</b>	<b>13</b>
A.	STATUS OF BIDDING AND CONTRACT AWARD.....	13
B.	IMPLEMENTATION STATUS .....	14
<b>IV.</b>	<b>COMPLIANCE STATUS WITH NATIONAL/STATE/LOCAL STATUTORY ENVIRONMENTAL REQUIREMENTS.....</b>	<b>17</b>
A.	STATUS OF CLEARANCES .....	17
<b>V.</b>	<b>COMPLIANCE STATUS WITH ENVIRONMENTAL REQUIREMENTS .....</b>	<b>20</b>
A.	COMPLIANCE WITH LOAN COVENANTS .....	20
B.	STATUS OF ENVIRONMENTAL ASSESSMENT REPORTS AND APPROVAL.....	23
C.	SAFEGUARDS IN BID DOCUMENTS AND CONTRACTS .....	24
<b>VI.</b>	<b>STATUS OF EMP IMPLEMENTATION.....</b>	<b>25</b>
A.	DETAILS OF SITE VISITS/FIELD VERIFICATIONS BY SAFEGUARD STAFF.....	25
B.	IMPLEMENTATION OF DESIGN AND PRE-CONSTRUCTION STAGE EMP .....	26
C.	IMPLEMENTATION OF CONSTRUCTION STAGE EMP .....	53
D.	IMPLEMENTATION OF HEALTH & SAFETY COVID-19 PLAN .....	124
E.	KEY SITE OBSERVATIONS AND ACTION TAKEN .....	124
F.	PROJECT CONSTRUCTION RELATED ACCIDENTS AND INCIDENTS.....	132
G.	UNANTICIPATED IMPACTS .....	135
<b>VII.</b>	<b>ENVIRONMENTAL MONITORING.....</b>	<b>136</b>
A.	MONITORING ACTIVITIES - PROPOSED AND CONDUCTED.....	136
B.	MONITORING RESULTS .....	139
<b>VIII.</b>	<b>TRAINING AND CAPACITY BUILDING ACTIVITIES.....</b>	<b>164</b>
<b>IX.</b>	<b>STAKEHOLDER ENGAGEMENT .....</b>	<b>167</b>
<b>X.</b>	<b>GRIEVANCE REDRESS MECHANISM .....</b>	<b>168</b>
A.	GRIEVANCE REDRESS MECHANISM.....	168
B.	COMPLAINTS RECEIVED.....	169
<b>XI.</b>	<b>FINDINGS &amp;RECOMMENDATIONS.....</b>	<b>170</b>
A.	FINDINGS AND RECOMMENDATIONS.....	170

## 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.....	17
Table 6: Status of Compliance with Loan Covenants.....	20
Table 7: Status of the EIA Report.....	23
Table 8: Field Verification Visits by Safeguards Supervision and Monitoring Staff.....	25
Table 9: Design/Pre-Construction Mitigation Measures Implementation & Compliance .....	27
Table 10: Status of HSE Plans mentioned in the CEMP .....	53
Table 11: Construction Mitigation Measures Implementation & Compliance.....	55
Table 12: Site Observations and Current Status .....	125
Table 13: Details of Construction related incidents (reporting period) .....	132
Table 14: Construction related incidents.....	134
Table 15: Additional Baseline Data Gathering During Construction Stage.....	136
Table 16: Description of Ambient Air Quality Sampling Stations .....	141
Table 17: <i>Results of Ambient Air Quality Sampling, April and May 2024</i> .....	142
Table 18: Description of Noise Sampling Stations .....	143
Table 19: Results of Ambient Noise Level Measurements.....	144
Table 20: Description of OHS Monitoring Stations (Air quality, Noise and Illumination levels).....	145
Table 21 Results of OHS Air Quality Monitoring within the site (April and May).....	146
Table 22 :Results of OHS Noise Monitoring within the site .....	150
Table 23 Results of OHS Noise Monitoring Near Equipment.....	150
Table 24: Drinking Water Quality.....	153
Table 26: Groundwater Quality Results, May 2024.....	158
Table 27: Water quality for domestic supply of water used in construction camp during April- June 2024 .....	159
Table 28: Treated Wastewater Quality from WWTP/STP during April, May and June – 2024 .....	160
Table 29: Discharge Water Quality from Dewatering during April, May and June – 2024 .....	161
Table 30: Training and Capacity building activities conducted.....	164
Table 31: Training and Capacity building activities to be conducted by DBO/ EPC contractor during July, 2024 .....	166
Table 32: Status of Key Issues identified in previous QEMR (Jan-March 2024).....	172
Table 33: Key Issues identified and Proposed Remedial Measures during April to June 2024.....	180

## List of Figures

Figure 1 Project Implementation Area.....	9
Figure 2 Proposed WTE Site in Thilafushi .....	9
Figure 3 Ambient Air Quality Sampling Stations .....	140
Figure 4 Noise Sampling Stations .....	144
Figure 5 Ambient Air Quality Sampling Stations within Project Site.....	146
Figure 6 Reported values of PM10 in regional Ambient Air Quality.....	148
Figure 7 Reported values of PM2.5 in regional Ambient Air Quality.....	149
Figure 8 Marine Water Quality Sampling Stations .....	154
Figure 9 Groundwater Sampling Stations .....	157
Figure 10 Underwater Marine Survey Locations (M8, M9 and M10).....	162
Figure 11 Awareness session by MoCCEE .....	167

## 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 April – June 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
- Appendix 5 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**

<b>No.</b>	<b>Subproject / package</b>	<b>Type of contract</b>
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. <sup>1</sup>

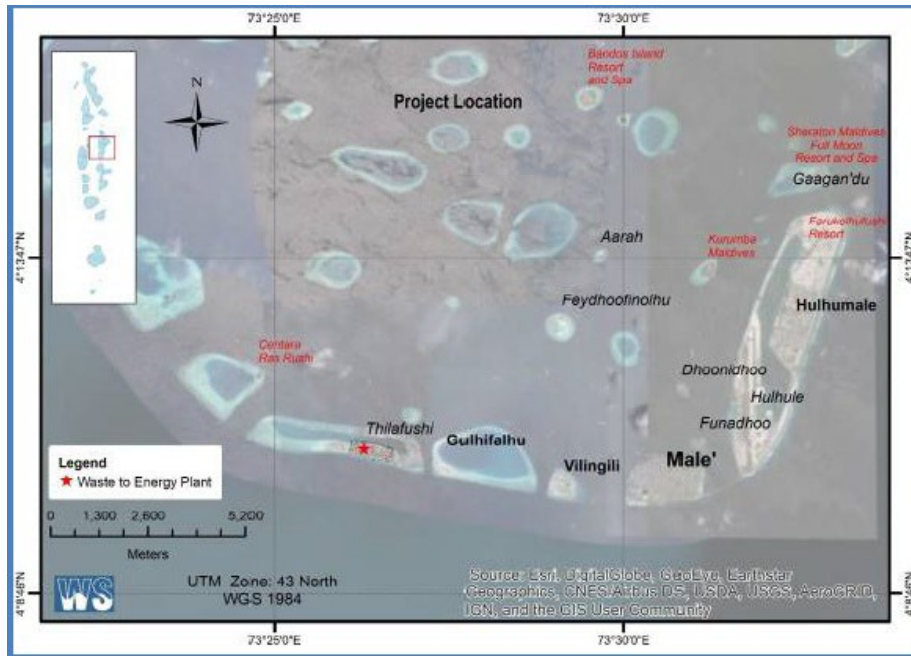
**D. About this Report**

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 April 2024 to 30<sup>th</sup> June 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.

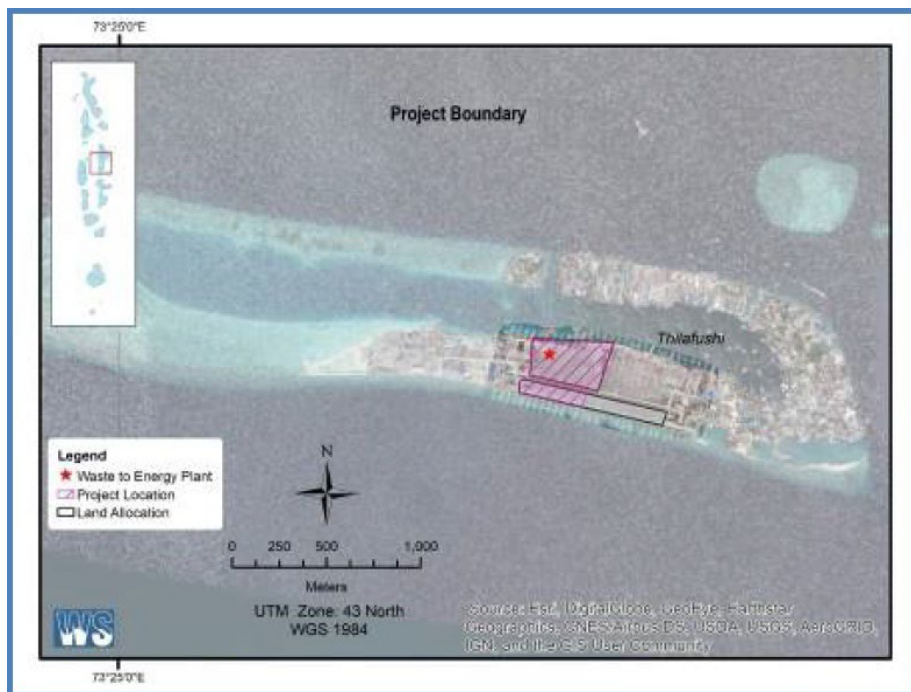
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<sup>1</sup> According to EIA regulation 2012 validity of EIA is one year and can only be extended once for another year. Before validity of decision statement expires, construction related work such as site clearance and mobilization of equipment 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 specialist consultants of PMDCSC in environment 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 HSE manager with extensive experience. As part of back-to-back contract, EPC contractor has engaged a team of HSE professionals in compliance with contractual obligations.
  - 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.



According to the DBO contractor's obligations, one environment manager, one health and safety manager, three health and safety inspectors and three environment officers must be on site, one for each shift. However, there are a total of four 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. The HSE manager for the EPC contractor resigned on the 1<sup>st</sup> of May 2024. Instead of hiring a replacement, the EPC contractor has preferred to handle HSE work with the current H&S manager and Environmental manager. The local environmental expert from PMDCSC has also resigned on the 7<sup>th</sup> of June 2024 and PMDCSC.

**Table 2: Environmental Safeguards Team**

No	Positions	Name of the expert/staff	Contact Number & Email	Remarks
<b>A PMU</b>				
1	Social and Environmental Safeguards Specialist	Fathimath Yamna Mohamed	+9609995153 <a href="mailto:fathimath.yamna@environment.gov.mv">fathimath.yamna@environment.gov.mv</a>	-
<b>B PMDCSC (Fichtner GmbH &amp; Co. KG together with Renewable Energy Maldives)</b>				
1	Team Leader	Javier Varon	+34608147897 <a href="mailto:Javier.varon@fichtner.es">Javier.varon@fichtner.es</a>	-
2	Project Manager	Maximilian Schrade	+601112201489 <a href="mailto:Maximilian.schrade@fichtner.de">Maximilian.schrade@fichtner.de</a>	-
3	Environmental Expert (international)	Sunil Chandra Gupta	+91- 9759955477, 9412230242 <a href="mailto:heenagrawal1@yahoo.co.uk">heenagrawal1@yahoo.co.uk</a>	-
4	Environmental Officer (national)	Mariyam Rifqa	+9607799374 <a href="mailto:maryam.rifqa@outlook.com">maryam.rifqa@outlook.com</a>	Left the project on 7 <sup>th</sup> June 2024. <sup>2</sup>
<b>C DBO Contractor (URBASER SA)</b>				
1	Project Manager, URBASER (DBO contractor)	Javier Gamero Sutil	+34914122000 / +34 914122907 <a href="mailto:infoMaldivesWtE@urbaser.com">infoMaldivesWtE@urbaser.com</a>	-
2	EHS Manager, URBASER (DBO contractor)	Roshan Thomas	+960 911 0165 <a href="mailto:rthomas@urbaser.com">rthomas@urbaser.com</a>	-
3	Contractor's Engineers (Project Manager)	Raymond Lee	+6590057789 <a href="mailto:rlee@ramboll.com">rlee@ramboll.com</a>	Ramboll as a company has been contracted as contractor's engineer by URBASER on 15 <sup>th</sup> March 2022
4	HSE Manager	Sedat Cot	<a href="mailto:sedat.cot@aawte.com">sedat.cot@aawte.com</a>	Left the project on 1 <sup>st</sup> May 2024. <sup>3</sup>
5	Environmental Manager	Sujith Sudhakaran	+9609502431 <a href="mailto:sujith@aawte.com">sujith@aawte.com</a>	-

<sup>2</sup> The role will be filled temporarily by the Deputy Team Leader and International Environmental Expert of PMDCSC

<sup>3</sup> EPC contractor is not planning to hire replacement as it is not contractually required

<b>No</b>	<b>Positions</b>	<b>Name of the expert/staff</b>	<b>Contact Number &amp; Email</b>	<b>Remarks</b>
6	HS manager	Dhamothara Kannan	+9609188331 <a href="mailto:dhamu@aawte.com">dhamu@aawte.com</a>	-
7	Environmental Consultant (national)	Dr. Mahmood Riyaz	+9607890307 <a href="mailto:mahmood.riyaz@gmail.com">mahmood.riyaz@gmail.com</a>	-
<b>D</b>	<b>Independent External Monitor</b>			
1	Independent environmental monitor	Nicholas Skinner	<a href="mailto:nick.skinner@vistaenvironment.com">nick.skinner@vistaenvironment.com</a> 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	Financial evaluation is currently ongoing. However: 1. Four consulting organizations have been shortlisted on the basis of EOI on March 6 2023 and the proposals were submitted on 7 September 2023.  2. Technical evaluation has been completed and no objection received.	-	-	Consultant will be finalized within the next quarter.

No.	Package Number/Name	Project components	Status	Name of contractor	Duration of contract	Contract start date
4	Independent Environment Monitor	Independent environment monitor for environment category A project	Contract signed. Site visits ongoing	Vista Environnent AB - Nicholas Skinner	60 months	19 December 2021
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 30 <sup>th</sup> June 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: -8.97% <sup>1</sup> Construction: 3.24% Procurement 2% <b>Overall Progress 2.33%</b>	Design: 56.24% Construction: 14.44% Procurement 24.73% <b>Overall Progress 19.28%</b>	Design, documentation, monitoring <ul style="list-style-type: none"> <li>▪ Detailed design of foundation and boiler components ongoing.</li> <li>▪ Monitoring of ambient air quality, noise level, ground water and marine water quality and OHS is ongoing.</li> <li>▪ Preparation /review / finalization of modified CEMP, H&amp;S Plan and</li> </ul>	<ul style="list-style-type: none"> <li>▪ Geotechnical investigation.</li> <li>▪ Concept design</li> <li>▪ Permitting design</li> <li>▪ EIA update based on conceptual design.</li> <li>▪ Installation of wastewater treatment plant (WWTP)</li> <li>▪ Installation of sedimentation tank and laying of pipeline for discharge of same into sea.</li> <li>▪ Foundation detailed design</li> </ul>

No.	Package	Progress during reporting period	Cumulative progress as of 30 <sup>th</sup> June 2024	List of main activities/works conducted during reporting period	Activities / Components completed to date
				<p>other HSE Plans.</p> <ul style="list-style-type: none"> <li>▪ Dewatering permits for WtE Building excavation from URA and excavation permits from Urbanco (HDC) for main process building and bunker.</li> <li>▪ Detailed design is ongoing on several aspects of the project.</li> <li>▪ Development of construction related method statements</li> <li>▪ Design of steam turbine has been approved with comments.</li> <li>▪ Grid connection general SLD has been revised and under review by the DBO.</li> <li>▪ Manufacturing of the boiler and the waste crane has been started.</li> </ul> <p>Construction works.</p> <ul style="list-style-type: none"> <li>▪ Continuous dewatering at the bunker area is ongoing.</li> <li>▪ Concrete for foundation slabs and walls in the</li> </ul>	<p>of the main process building approved by ER.</p> <ul style="list-style-type: none"> <li>▪ Bunker area excavation to 3.7m below ground level completed and sheet piling completed.</li> <li>▪ Spun pile driving, Pile caps concrete work has been completed for the bunker area except for 4 pile caps.</li> <li>▪ Spun pile static loading for turbine area completed.</li> <li>▪ Commissioning and operation of batching plant.</li> <li>▪ Approval of modified CEMP and H&amp;S plan</li> </ul>

<b>No.</b>	<b>Package</b>	<b>Progress during reporting period</b>	<b>Cumulative progress as of 30<sup>th</sup> June 2024</b>	<b>List of main activities/works conducted during reporting period</b>	<b>Activities / Components completed to date</b>
				Bunker area is ongoing. <ul style="list-style-type: none"> <li>▪ Backfilling between the pile caps in the Main Process Building area is ongoing.</li> </ul>	

<sup>1</sup>The Master Schedule has been revised with recommendations from the DAB, and hence the overall design progress is shown to have decreased from 65.21% in the Q1 to 56.24% because of the changes made..

## 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
<b>DBO Contract</b>		
Environmental Clearance from EPA	<ul style="list-style-type: none"> <li>▪ Decision Statement (DS) obtained on 21 January 2020 and extended until 31 December 2021</li> <li>▪ 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.</li> </ul>	<ul style="list-style-type: none"> <li>▪ 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.</li> <li>▪ 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 10<sup>th</sup> December 2023.</li> </ul>
Dewatering Permit	<ul style="list-style-type: none"> <li>• Dewatering permit for WtE Building excavation has been renewed from URA and is valid until 28.07.24.</li> <li>• Renewal of dewatering location permit is in progress.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Must be obtained from the Maldives Utility Regulatory Authority (URA) after every 28 days till completion of dewatering.</li> <li>▪ Samples of water to be discharged into sea must be tested for parameters as specified by URA on monthly basis.</li> <li>▪ For dewatering permit the required water quality tests are conducted and results submitted as per compliance requirement.</li> <li>▪ Location permit is to be obtained for laying pipeline and need to be renewed after 28 days.</li> </ul>

Clearance/Permit Required	Status	Further Actions/Remarks
Sewerage and wastewater treatment permit from the Utility Regulatory Agency (URA).	<ul style="list-style-type: none"> <li>▪ Permit via ref no 485-TE/PRIV/2023/233 dated 12 April 2023 has been obtained from URA to start operation of domestic WWTP</li> <li>▪ Unit has started operation from May 2023.</li> <li>▪ Submission of monthly testing report from the discharge point of unit to the URA has been started from June 2023.</li> </ul>	<ul style="list-style-type: none"> <li>▪ For discharging of treated grey water or black water to sea or ground, permit is required. Permit has been obtained</li> <li>▪ Monthly testing report from discharge point of unit is to be submitted to URA on regular basis.</li> <li>▪ Monthly reports of treated water quality are submitted to URA</li> </ul>
Operation of DG sets	<ul style="list-style-type: none"> <li>▪ Application has been submitted to URA and a temporary permit is given via an official email</li> <li>▪ At present 4 DG sets (2x180 KVA+ 1x200 KVA+ 1x385 KVA ) of total capacity of more than 945KVA are being used at project site during construction phase.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Maldives Utility Regulatory Authority (URA). The URA has given a conditional approval to operate gen sets on 18<sup>th</sup> 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. Contractor to follow up with URA on the permanent permit.</li> </ul>
Excavation	No excavation work was carried out within this quarter	
Desalination plant registration and License to operate desalination plant from the URA	<ul style="list-style-type: none"> <li>• Yet to be obtained as it is required for operation phase.</li> <li>• However, it is to be obtained for commissioning and operation of borewell and RO plant which is under commissioning in batching plant area for use during construction phase.</li> </ul>	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.
Registration with transport authority and permits from MNDF for mobile diesel tanker of 5000 L	<ul style="list-style-type: none"> <li>▪ This is in use. However, application for approval of the parking plot was submitted on 18<sup>th</sup> June 2024 to HDC. This approval is required prior to application for vehicle registration and MNDF approval.</li> </ul>	During this period, mobile diesel tankers visited project site 16 times for feeding diesel to machinery /equipment owned by sub-contractors.
Registration of vehicles which are	<ul style="list-style-type: none"> <li>▪ The registration process has been started.</li> </ul>	



Clearance/Permit Required	Status	Further Actions/Remarks
in use within project site		
Discharge of waste water from sedimentation tank provided in batching plant area	<ul style="list-style-type: none"> <li>▪ In May-24, it was observed that waste water from sedimentation tank is being discharged outside the premises. In response, DBO contractor informed that same is being taken via tankers by Villa subcontractor outside of the site for reuse. However, no record has been provided by DBO contractor to verify the same and DBO contractor has been notified.</li> </ul>	Requirement of permit need to be ascertained and accordingly permit(s), if required need to be obtained.
Fire Safety (Kitchen and Worker Accommodation)	<ul style="list-style-type: none"> <li>▪ Permit from MNDF (Fire Approval Letter) has been obtained on 15 February 2023 for accommodations and offices at the camp site for the construction phase.</li> <li>▪ Inspection was conducted by MNDF on 3.07.23 for verification of firefighting system installed for compliance with standards.</li> </ul>	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.

## 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**

<b>Loan Agreement</b>	<b>Covenant</b>	<b>Compliance Status</b>	<b>Proposed actions, if any</b>
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 considered in the</p>	<ul style="list-style-type: none"> <li>• Complied. All bidding documents related to the project included the EIA and the EMP, and compliance have been ensured by the Safeguards Specialist, PMU.</li> <li>• EIA update considering approved conceptual design details, prepared by contractor has been approved in September-23 and is in use.</li> </ul>	<ul style="list-style-type: none"> <li>• 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).</li> <li>• As per contract, further EIA update is to be made considering the approved design details which is still under process of finalization.</li> </ul>

Loan Agreement	Covenant	Compliance Status	Proposed actions, if any
	EIA and the EMP.		
<p>Schedule 4, paragraph 8</p> <p>Safeguards Monitoring and Reporting</p>	<p>The Borrower, through the Project Executing Agency and the Implementing Agency, shall do the following:</p> <p>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;</p> <p>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 event and</p>	<p>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.</p>	<p>-</p>

Loan Agreement	Covenant	Compliance Status	Proposed actions, if any
	<p>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 approved 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"> <li>▪ Draft EIA disclosed in ADB website in December 2019</li> <li>▪ Updated draft EIA disclosed in ADB website in March 2020 and July 2020 provide explanatory notes for the updates.</li> <li>▪ The updated EIA is disclosed by ADB on 11<sup>th</sup> September 2023</li> <li>▪ Draft and updated EIA reports also disclosed on implementing agency / project website.</li> <li>▪ 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.</li> </ul>

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/](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	Fathimath Yamna Mohamed	<ul style="list-style-type: none"> <li>• 14<sup>th</sup>, 15<sup>th</sup>, 16<sup>th</sup> and 17<sup>th</sup> April</li> <li>• 7<sup>th</sup>, 8<sup>th</sup>, 9<sup>th</sup> May</li> <li>• 30<sup>th</sup> June</li> </ul>	Inspection	WtE facility construction site in Thilafushi	EHS manager of DBO was available, working remotely during site visits in April and May and on site in June.  HSE manager of EPC was available on site during April. Left the project on 1 <sup>st</sup> May.  H&S manager and Environment manager
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"> <li>▪ 14<sup>th</sup>, 15<sup>th</sup>, 16<sup>th</sup> and 17<sup>th</sup> April</li> <li>▪ 7<sup>th</sup>, 8<sup>th</sup>, 9<sup>th</sup> May</li> <li>▪ 30<sup>th</sup> June</li> <li>▪ 13<sup>th</sup> June</li> </ul>	Inspection		
4	<u>PMMDCS C</u> : International Environment Safeguard	Sunil Gupta	<ul style="list-style-type: none"> <li>▪ 14<sup>th</sup>, 15<sup>th</sup>, 16<sup>th</sup> and 17<sup>th</sup> April</li> <li>▪ 7<sup>th</sup>, 8<sup>th</sup>, 9<sup>th</sup> May</li> </ul>	<ul style="list-style-type: none"> <li>▪ Inspection cum audit</li> <li>▪ Attended inspection visit by IEM</li> </ul>		
5	Independent	Nick Skinner	<ul style="list-style-type: none"> <li>▪ 7<sup>th</sup>, 8<sup>th</sup>, 9<sup>th</sup> May</li> </ul>	Inspection		

N o	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
	Environment Monitor					were available on site during all visits.
6	PMDCSC: Local Environment Safeguard	Mariyam Rifga	25 <sup>th</sup> April 2024  Left the project on 7 <sup>th</sup> June 2024.	-		

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 and audit done by the PMDCSC in April, May and June 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
	<b>Category of compliance</b>				<i>“Complied”, “Being complied”, “Partially complied”, “Not complied”<sup>4</sup></i>
1	Invitation for Bids	<ul style="list-style-type: none"> <li>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.</li> </ul>	<ul style="list-style-type: none"> <li>Bidding and contract documents include safeguard provisions</li> </ul>	<ul style="list-style-type: none"> <li>Completed</li> </ul>	<ul style="list-style-type: none"> <li>Complied</li> </ul>
2	Locating intake and outfall of cooling/thermal water.	<ul style="list-style-type: none"> <li>If necessary, undertake coral and benthic study following Reef Check protocol.</li> </ul>	<ul style="list-style-type: none"> <li>Findings of marine ecological survey being conducted</li> </ul>	<ul style="list-style-type: none"> <li>Marine ecological survey is being conducted on quarterly basis.</li> </ul>	<ul style="list-style-type: none"> <li>Complied</li> </ul>
		<ul style="list-style-type: none"> <li>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</li> </ul>	<ul style="list-style-type: none"> <li>Due to proposed planned shoreline reclamation work by the Housing Development Department (HDC) at the southern shoreline of Thilafushi Island, the depth and locations</li> </ul>	<ul style="list-style-type: none"> <li>HDC has confirmed during June 2024 that reclamation will be carried out to accommodate a road on the south side of the project area, between the site plot and the sea,</li> </ul>	<ul style="list-style-type: none"> <li>Being complied</li> </ul>

<sup>4</sup> Complied: Mitigation measures have been implemented, Being complied: Some mitigation measures have been implemented and some are in the process of implementation, 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>may be changed which will be determined in detailed design phase.. The shoreline extension is necessary to create space for the road construction passing the site at the Southern boundary. As per contract, the hot water discharge maximum temperature difference of 3°C compared with the intake water temperature must be complied with.</p> <ul style="list-style-type: none"> <li>▪ Marine ecological survey is being conducted and EIA will be updated accordingly.</li> </ul>	<p>in which water intake and outfall pipelines have been proposed.</p> <ul style="list-style-type: none"> <li>▪ PMDCSC is checking and confirming the basic design received from HDC and will subsequently issue an instruction to the DBO Contractor to consider the revised shoreline in their design. The reclamation project will be compatible with the WTE plant after implementing certain design changes</li> <li>▪ Modelling will be carried out considering updated design details. Contractor has indicated the recirculation study will be available in October 2024.</li> <li>▪ Study area for quarterly marine ecological survey will be changed</li> </ul>	

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
				accordingly and as part of the EIA update; impacts and EMP shall be revised.	
		<ul style="list-style-type: none"> <li>▪ 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.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Hot water discharge - maximum temperature difference of 3°C from the ambient temperature</li> </ul>	<ul style="list-style-type: none"> <li>▪ Completed</li> </ul>	<ul style="list-style-type: none"> <li>▪ Complied</li> </ul>
		<ul style="list-style-type: none"> <li>▪ 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 on the underwater ecology study.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Hot water discharge - maximum temperature difference of 3°C from the intake temperature.</li> <li>▪ Findings of marine ecological survey being conducted on regular basis</li> </ul>	<ul style="list-style-type: none"> <li>▪ Thermal dispersion modelling will be carried out for changed locations. Contractor has indicated it will be available in October 2024.</li> <li>▪ Marine ecological survey is conducted on quarterly basis.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Being complied</li> </ul>
		<ul style="list-style-type: none"> <li>▪ If there will be changes in the location of cooling water discharge location, the DBO Contractor shall conduct confirmatory numerical modelling for brine discharge– both near and far-field, covering all 4 seasons (2 monsoon and 2</li> </ul>	<ul style="list-style-type: none"> <li>▪ Findings of detailed design and revised thermal dispersion modelling.</li> <li>▪ Hot water discharge - maximum temperature difference of 3°C from the intake temperature.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Same as above</li> </ul>	<ul style="list-style-type: none"> <li>▪ Being complied</li> </ul>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		inter-monsoon) to ensure the location of discharge will not have significant impact to marine environment.	<ul style="list-style-type: none"> <li>Findings of marine ecological survey being conducted</li> </ul>		
		<ul style="list-style-type: none"> <li>Ensure that design considers achievement of proper mixing and rapid dilution within a small area around the outfall.</li> </ul>	<ul style="list-style-type: none"> <li>Outcome of detailed design and proposed modelling</li> </ul>	<ul style="list-style-type: none"> <li>System is being designed to ensure proper mixing and rapid dilution, though it is yet to be finalized and approved.</li> <li>Same will be confirmed by modelling to be carried out as part of EIA update considering approved detailed design parameters.</li> </ul>	Being Complied
		<ul style="list-style-type: none"> <li>Consider in the design of the combined outfall for hot water and treated wastewater to minimize impact to marine ecosystem.</li> </ul>	Same as above	<ul style="list-style-type: none"> <li>Same as above</li> </ul>	<ul style="list-style-type: none"> <li>Being Complied</li> </ul>
3	Location of ambient air quality monitoring stations	<ul style="list-style-type: none"> <li>Contract documents to include performance guarantee for the facility that emissions comply with applicable standards.</li> </ul>	<ul style="list-style-type: none"> <li>Copy of work orders</li> <li>Findings of performance guarantee tests</li> </ul>	<ul style="list-style-type: none"> <li>Detailed design and procurement of equipment is in process.</li> </ul>	<ul style="list-style-type: none"> <li>Being complied</li> </ul>
		<ul style="list-style-type: none"> <li>Collect/Conduct meteorological data on</li> </ul>	<ul style="list-style-type: none"> <li>Site specific meteorological data</li> </ul>	<ul style="list-style-type: none"> <li>Online anemometer has been installed at</li> </ul>	<ul style="list-style-type: none"> <li>Complied</li> </ul>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<p>daily basis for various seasons of the year to map projected wind directions, speeds at any season during plant operations.</p>	<p>including wind rose diagram</p>	<p>site to monitor wind speed, direction, temperature and 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"> <li>▪ Windsock is broken and a replacement has been ordered.</li> <li>▪ Meteorological data is received from Maldives Meteorological department on a monthly basis and is included in the Environment Monthly Reports.</li> </ul>	
		<ul style="list-style-type: none"> <li>▪ 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.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Final design details on stack height, diameter, location, gas temperature, gas velocity, emission rate of each pollutant etc.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Detailed design has been completed and approved to ensure contractual obligations as mentioned.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Complied</li> </ul>
		<ul style="list-style-type: none"> <li>▪ Undertake air dispersion modelling to show and understand the behaviour and movement of components of flue gas from the stacks.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Findings of dispersion modelling on GLCs of relevant pollutants</li> </ul>	<ul style="list-style-type: none"> <li>▪ Air dispersion modelling on the basis of detailed designed is being carried out and findings of same will</li> </ul>	<ul style="list-style-type: none"> <li>▪ Being complied</li> </ul>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
				be submitted to the Employer by mid-August 2024	
		<ul style="list-style-type: none"> <li>▪ Based on the dispersion modelling, identify the appropriate sampling locations for ambient air quality in Thilafushi island and other islands nearby, if necessary and practical.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Same as above</li> </ul>	<ul style="list-style-type: none"> <li>▪ Existing monitoring locations will be reviewed on receipt of air dispersion modelling report.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Being complied</li> </ul>
		<ul style="list-style-type: none"> <li>▪ Undertake baseline ambient air quality data gathering with due consideration of the direction of flow of smoke from the existing dumpsite</li> </ul>	<ul style="list-style-type: none"> <li>▪ Results of monitoring of ambient air quality.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Ambient air quality at 7 locations as per approved EIA report has been conducted on regular basis as per modified CEMP.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Complied</li> </ul>
4	Locating proper drainage system around the facility	<ul style="list-style-type: none"> <li>▪ To prepare and implement wastewater management, dewatering and storm water drainage plan.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Approved plans and system</li> </ul>	<ul style="list-style-type: none"> <li>▪ There are no stormwater drainage facilities in place for construction phase. However: <ol style="list-style-type: none"> <li>1. Sewerage treatment plant has been provided and treated wastewater is being discharged into sea.</li> <li>2. Dewatering during excavation is carried out with permits from HDC (renewal of permit is pending) and URA. A</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>▪ Partially complied</li> </ul>

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.</p> <p>3. No wastewater will be generated from the cooling system of concrete batching plant. However, wastewater generated during washing of transit mixers is being taken out of the site by Villa subcontractor according to DBO but no record has been made available by DBO contractor to support this statement. However, a pipeline discharging wastewater to the adjacent site was found in May 2024 during inspection.</p> <ul style="list-style-type: none"> <li>▪ No disturbance to natural drainage</li> </ul>	

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
				<p>from site construction activities for storm water has been observed during construction phase.</p> <ul style="list-style-type: none"> <li>▪ Drainage plans for the roads and facilities, as well as runoff, are to be finalized as part of the detail design by the end of August 2024.</li> </ul>	
		<ul style="list-style-type: none"> <li>▪ 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.</li> </ul>	<ul style="list-style-type: none"> <li>▪ System/plan in place and followed</li> </ul>	<ul style="list-style-type: none"> <li>▪ Drainage plans for the roads and facilities, as well as runoff, are to be finalized as part of the detail design by the end of August 2024.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Being complied</li> </ul>
		<ul style="list-style-type: none"> <li>▪ Provide cross drainage structures wherever necessary along the new approach roads.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Same as above</li> </ul>	<ul style="list-style-type: none"> <li>▪ Same as above</li> </ul>	<ul style="list-style-type: none"> <li>▪ Being complied</li> </ul>
		<ul style="list-style-type: none"> <li>▪ Integrate the above considerations in the final</li> </ul>	<ul style="list-style-type: none"> <li>▪ Same as above</li> </ul>	<ul style="list-style-type: none"> <li>▪ Same as above</li> </ul>	<ul style="list-style-type: none"> <li>▪ Being complied</li> </ul>



No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		drainage plan for the project site.			

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"> <li>▪ Integrate results of geotechnical study undertaken to the design of project infrastructures.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Findings of review and approval of detailed design at various levels</li> </ul>	<ul style="list-style-type: none"> <li>▪ Geotechnical report has been approved and all recommendations will be considered during detailed designing which is in the process.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Being Complied</li> </ul>
		<ul style="list-style-type: none"> <li>▪ Undertake and include results of climate vulnerability and risk assessment (CVRA) in the design of the project.</li> <li>▪ Provide site protections based on the risks identified in the CVRA.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Findings and recommendations of CVRA report in the detailed design.</li> <li>▪ Findings of review and approval of detailed design at various levels</li> </ul>	<ul style="list-style-type: none"> <li>▪ CVRA report is expected to be submitted by 31<sup>st</sup> August 2024.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Being complied</li> </ul>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<ul style="list-style-type: none"> <li>▪ Coordinate with WAMCO to ensure the stability of the municipal dumpsite.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Physical condition of the slope of piles of municipal waste dumped adjacent to project site.</li> <li>▪ Reported incidents of fall of materials etc.</li> </ul>	<ul style="list-style-type: none"> <li>▪ 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.</li> <li>▪ The slope of the dump is levelled by WAMCO and reinforced with construction waste.</li> <li>▪ Natural vegetation has started growing on the slope of the stockpile of waste located near the project site boundary.</li> <li>▪ WAMCO has been instructed to clear the area adjacent to the quay wall and patrol the site regularly.</li> <li>▪ Communication system is in place to resolve the related issue with WAMCO on immediate basis.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Being complied during period and is an ongoing process</li> </ul>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
6	Work program and pre-approved plans	<ul style="list-style-type: none"> <li>▪ 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"> <li>- Construction Waste Management Plan.</li> <li>- 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.</li> <li>- Construction Camp Development and Management Plan.</li> <li>- Spill Control and Containment Plan</li> <li>- Marine and Beach Area Construction Work Plan</li> <li>- Erosion Control Plan for pipeline works</li> <li>- Traffic Management Plan including via sea around the construction site to ensure easy access and passage of workers and employees of</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>▪ Findings of inspections, audits and environment monitoring as per H&amp;S plan, CEMP and relevant HSE plans.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Modified CEMP and HSE plans approved in April 2024. HSE plans as mentioned in the CEMP are in place and as per details of status provided in Table 10</li> <li>▪ OHS monitoring plan has been submitted for approval.</li> <li>▪ Activity wise method statement and SOPs are developed by the Contractor in an ongoing manner, targeting relevant construction and commissioning activities.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Being complied</li> </ul>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		establishments at two sides of the project site.			
		<ul style="list-style-type: none"> <li>▪ To prepare and implement mitigation measures and emergency response plan including SOPs and checklists during construction phase.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Same as above</li> </ul>	<ul style="list-style-type: none"> <li>▪ Same as above</li> </ul>	<ul style="list-style-type: none"> <li>▪ Being complied</li> </ul>
		<ul style="list-style-type: none"> <li>▪ Develop the following plans or manuals that shall be utilized during operation stage:               <ul style="list-style-type: none"> <li>- Operation and Maintenance Manual</li> <li>- 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.</li> <li>- In-house Solid Waste Management Plan.</li> <li>- Occupational Health and Safety Plan following international best practices on occupational health</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>▪ Findings of inspections, audits and environment monitoring as per H&amp;S plan, CEMP and relevant HSE plans.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Requisite plans will be developed on finalization of detailed design and before start of operation of proposed project.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Being complied</li> </ul>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<p>and safety such as those in IFC EHS Guidelines on Waste Management Facilities.</p> <ul style="list-style-type: none"> <li>- Spill Control and Containment Plan.</li> <li>- Emergency and Disaster Preparedness and Response Plan.</li> </ul>			
7	Consents, permits, clearances, no objection certificate (NOC), etc.	<ul style="list-style-type: none"> <li>▪ Obtain all necessary consents, permits, clearance, NOCs prior to start of civil works.</li> <li>▪ Ensure the compliance of stipulated conditions</li> </ul>	<ul style="list-style-type: none"> <li>▪ Copies of necessary consents, permits, clearance, NOCs prior to start of civil works</li> <li>▪ Compliance report of stipulated conditions</li> </ul>	<ul style="list-style-type: none"> <li>▪ By and large Consents, permits, clearance, NOCs are in place as per details enclosed in Appendix-1, however permits are yet to be obtained for:               <ol style="list-style-type: none"> <li>1. Mobile diesel tanker of 5000 L owned by EPC.</li> <li>2. Borewell and RO plant for batching plant in the process of commissioning.</li> <li>3. Renewal of dewatering location permit from HDC</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>▪ Partially Complied, as permitting is an ongoing process with renewals and new permits as per progress:</li> </ul>
8	Shifting of Utilities	<ul style="list-style-type: none"> <li>▪ Identify and include locations and operators of these utilities in the detailed design to prevent</li> </ul>	<ul style="list-style-type: none"> <li>▪ As per approved layout plan, likely disruptions are due to live power cable of STELCO</li> </ul>	<ul style="list-style-type: none"> <li>▪ The contract for relocation between HDC and STELCO has been signed on</li> </ul>	<ul style="list-style-type: none"> <li>▪ Being complied</li> </ul>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		unnecessary disruption of services during the construction phase.	passing through the project site.	<p>3rd June 2024. However, work has not been started.</p> <ul style="list-style-type: none"> <li>▪ To avoid delay in construction, DBO contractor has laid above ground water 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.</li> </ul>	
		<ul style="list-style-type: none"> <li>▪ 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"> <li>- In case of water supply disruption, provide temporary water supply</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>▪ Same as above</li> </ul>	<ul style="list-style-type: none"> <li>▪ Same as above</li> </ul>	<ul style="list-style-type: none"> <li>▪ Being complied</li> </ul>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<p>source for the affected establishments.</p> <ul style="list-style-type: none"> <li>- In case of power interruption, provide prior notice to affected establishments. If interruption is unscheduled due to unforeseen incidents, provide a standby generator set to serve as temporary power supply to affected establishments.</li> <li>▪ Identify the list of affected utilities and operators and coordinate closely with relevant government departments.</li> </ul>			
9	Locating sites for construction work, camps, areas for stockpile, storage, and disposal	<ul style="list-style-type: none"> <li>▪ Except disposal sites, all the work sites (camps, storage, stockpiles etc.) will be located within the selected site.</li> <li>▪ No construction camp shall be located on the beach or overwater.</li> <li>▪ 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.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Use of pre-approved sites for construction work camps, areas for stockpile, storage, and disposal</li> </ul>	<ul style="list-style-type: none"> <li>▪ 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.</li> <li>▪ All work sites (camps, storage, stockpiles etc.) are located within the boundary of project site</li> </ul>	<ul style="list-style-type: none"> <li>▪ Complied</li> </ul>



No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<ul style="list-style-type: none"> <li data-bbox="569 264 947 362">▪ No temporary storage shall be located at the lagoon section</li> <li data-bbox="569 399 947 630">▪ Waste shall be disposed in existing approved disposal sites; any new sites shall be developed considering siting guidelines, maintained, and operated accordingly</li> </ul>	<ul style="list-style-type: none"> <li data-bbox="980 399 1312 695">▪ Records of waste generation and disposal as per waste management plan and procedure, Soil management plan and relevant method of statements for STP, dewatering etc</li> </ul>	<ul style="list-style-type: none"> <li data-bbox="1346 264 1659 394">▪ Construction material brought to the site is stored within the project site</li> <li data-bbox="1346 399 1659 662">▪ Since the beginning of construction, the storage areas have been clearly indicated as per site organization plan and are utilized accordingly.</li> <li data-bbox="1346 667 1659 1036">▪ 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.</li> <li data-bbox="1346 1040 1659 1198">▪ Requisite facilities such as storage area for excavated soil for temporary storage has been provided.</li> <li data-bbox="1346 1203 1659 1399">▪ Sewerage treatment plant has been provided and treated wastewater is being discharged into sea. The discharge water</li> </ul>	<ul style="list-style-type: none"> <li data-bbox="1692 399 1854 427">▪ Complied</li> </ul>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
				<p>from the plant is being tested on monthly basis.</p> <ul style="list-style-type: none"> <li>▪ Dewatering during excavation is carried out with permits from HDC (permit renewal pending) and URA. A 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.</li> <li>▪ The compliance is verified through regular review of data/details provided in monthly report submitted by DBO, regular site inspections and audit carried out by PMDCSC and PMU.</li> </ul>	
10	Sourcing of construction materials	<ul style="list-style-type: none"> <li>▪ Obtain construction materials for this project from the licensed quarries acceptable to government.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Permits and compliance to stipulated condition in case construction material will be sourced from quarries.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Most of the construction material is being/will be imported from overseas, as it is not</li> </ul>	<ul style="list-style-type: none"> <li>▪ Complied</li> </ul>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
			<ul style="list-style-type: none"> <li>▪ Records of sources of procured construction materials.</li> </ul>	<p>available locally. Only internationally accepted suppliers are/will be used for supply of construction materials.</p> <ul style="list-style-type: none"> <li>▪ The government of Maldives does not maintain a register of licensed parties. Hence, PMU/PMDCSC verifies and approves supplier's information before material approval is given to contractor.</li> </ul>	
11		<ul style="list-style-type: none"> <li>▪ 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</li> </ul>	<ul style="list-style-type: none"> <li>▪ Clearance/permission from EPA, MOE, Maldives and compliance to stipulated conditions</li> </ul>	<ul style="list-style-type: none"> <li>▪ As per present estimate, no additional soil will be required for levelling of the project site or for construction.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Being Complied, if any</li> </ul>
12		<ul style="list-style-type: none"> <li>▪ Make efforts to minimize the overall material requirement for the project by adopting various</li> </ul>	<ul style="list-style-type: none"> <li>▪ Records of materials procured, used and disposed as waste</li> </ul>	<ul style="list-style-type: none"> <li>▪ All records of material procured, used and disposed as waste are being</li> </ul>	<ul style="list-style-type: none"> <li>▪ Complied</li> </ul>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<p>approaches –balanced cut and fill, re-use as much excavated material from this project as possible</p>		<p>kept as part of Daily Progress Report (DPR) and summary of same is being reported in monthly report.</p> <ul style="list-style-type: none"> <li>▪ Concrete debris is being stored at site for reuse, if any otherwise handed over to WAMCO for disposal.</li> <li>▪ Excavated material is being stored on site and used for backfilling work.</li> <li>▪ The compliance is being verified by site engineer of PMDCSC and regular site inspections carried out by PMDCSC and PMU.</li> </ul>	
		<ul style="list-style-type: none"> <li>▪ Submit to PMU monthly, documentation (materials quantities with source).</li> </ul>	<p>Records of materials procured and source</p>	<ul style="list-style-type: none"> <li>▪ 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.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Complied</li> </ul>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
				<ul style="list-style-type: none"> <li>▪ Sub-contractor is to be approved by PMDCSC/PMU before engagement.</li> </ul>	
13	Delivery route for construction materials and equipment	<ul style="list-style-type: none"> <li>▪ 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.</li> <li>▪ 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.</li> </ul>	<ul style="list-style-type: none"> <li>▪ 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.</li> </ul>	<ul style="list-style-type: none"> <li>▪ 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, to ensure that there are no obstacles during the unloading process. The space is sufficient for materials brought in for ongoing construction activities, but may hinder if large quantities are to be unloaded. Two shipwrecks have been removed and there are currently three remaining. This area is exclusively allocated for the use of the contractor and will be available</li> </ul>	<ul style="list-style-type: none"> <li>▪ Being complied</li> </ul>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
				<p>throughout the construction period.</p> <ul style="list-style-type: none"> <li>▪ 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 batching plant and its operation.</li> <li>▪ Cargo ferry is also used for small quantities of materials such as food items and other consumable materials for camp and kitchen. This is unloaded at the main port of Thilafushi and transported to project site via road.</li> </ul>	
14	Final Detailed Design Components	<ul style="list-style-type: none"> <li>▪ Ensure the final detailed design will integrate the following mandatory requirements: <ul style="list-style-type: none"> <li>- Use of best practical incineration technology</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>▪ Approval of detailed design documents.</li> <li>▪ Approval of notification of inspection</li> </ul>	<ul style="list-style-type: none"> <li>▪ The Detailed design is in progress and best practices for incineration and pollution control and management in line with contractual</li> </ul>	<ul style="list-style-type: none"> <li>▪ Complied</li> </ul>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<p>as recommended in the EIA.</p> <ul style="list-style-type: none"> <li>- 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 modelling calculation.</li> <li>- Installation of air pollution control device that will ensure emissions in compliance with the emission standards as indicated in the EIA.</li> <li>- Ensure to include installation of a continuous monitoring system (CEMS) as a mandatory requirement in the design.</li> <li>- Appropriate sampling port at the stack for random grab sampling activities.</li> <li>- Leachate treatment plant designed based</li> </ul>		<p>obligations are/will be applied to ensure implementation of:</p> <ul style="list-style-type: none"> <li>- Adequate Stack height</li> <li>- CEMS</li> <li>- Leachate plant</li> <li>▪ 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 repurposing of bottom ash.</li> <li>▪ Others as applicable.</li> <li>▪ Each document of detailed design is to be approved by PMDCSC.</li> <li>▪ Notification of inspection is to be approved by PMDCSC before start of construction of all activities as per contract.</li> </ul>	

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<p>on (i) maximum expected volume of leachate generated, and (ii) full capacity operation of the WTE plant.</p> <ul style="list-style-type: none"> <li>- 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.</li> <li>- Provision of a sampling port for thermal water (heated cooling water) at appropriate and accessible location along the cooling water line.</li> </ul>			
15	Additional Baseline Environmental Data Gathering	<ul style="list-style-type: none"> <li>▪ DBO Contractor shall: <ul style="list-style-type: none"> <li>- 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</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>▪ Results of ambient air quality measurements (TSP, PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub>, NO<sub>2</sub>)</li> <li>▪ Results of monthly noise level measurements (Leq<sub>day time</sub> and Leq<sub>night-time</sub> in dBA).</li> <li>▪ Results of quarterly marine and groundwater quality analysis as per</li> </ul>	<ul style="list-style-type: none"> <li>▪ Sampling and monitoring are carried out on a regular basis as per details: <ol style="list-style-type: none"> <li>1. Ambient air quality measurements (TSP, PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub>, NO<sub>2</sub>) monitored at seven locations as mentioned in EIA report (once in a month on 24 hourly</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>▪ Complied</li> </ul>



No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<p>report (and any other locations in and around Thilafushi island as may be deemed by the DBO Contractor as important sampling locations).</p> <ul style="list-style-type: none"> <li>- follow required sampling methodologies, including appropriate averaging time for ambient air quality and noise level measurements as indicated in the WHO standards; and</li> <li>- include results of analyses in the updating of the EIA, and consider these results in the final detailed design of the project as applicable.</li> </ul>	<p>parameter mentioned in EIA report.</p> <ul style="list-style-type: none"> <li>▪ 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).</li> <li>▪ Findings of OHS monitoring</li> </ul>	<p>basis till May -24 and on once in each quarter on 24 hourly basis from June -24 onwards)</p> <ol style="list-style-type: none"> <li>2. Noise level measurements (<math>Leq_{day\ time}</math> and <math>Leq_{night\ time}</math> in dBA) at five locations as mentioned in EIA report (once in a month on 24 hourly basis).</li> <li>3. Marine Water quality at seven locations and groundwater quality at eight locations for parameter as mentioned in EIA report.</li> <li>4. 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</li> </ol>	

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
				<p>first set of surveys in the EIA process).</p> <p>5. Quality of wastewater STP and dewatering sedimentation tank before discharge into sea is also monitored on monthly basis.</p> <ul style="list-style-type: none"> <li>▪ Sampling and testing are carried out as per method of statement enclosed with CEMP and Pre-construction monitoring plan.</li> <li>▪ OHS monitoring has been conducted for ambient air, noise level, illumination flux, drinking water quality etc during this quarter though OHS monitoring is under review and yet to be approved.</li> </ul>	

## C. Implementation of Construction Stage EMP

### i. Status of HSE Plans mentioned in CEMP

22. Status of plans as on 30<sup>th</sup> June 2024 is given in Table 10.

**Table 10: Status of HSE Plans mentioned in the CEMP**

Sn	Documents	Status	Remarks
1	Occupational Health and Safety Management	Accepted by PMDCSC as part of modified H&S plan	
2	1. Air Quality Management including fugitive and point source emission 2. Noise/Vibration Management	Accepted by PMDCSC as part of modified CEMP OHS monitoring plan is to be revised and submitted for approval	Targeted to be submitted by 31 <sup>st</sup> August 2024. However, OHS monitoring has been carried out since March-24.
3	Waste Management Plan	Accepted with comments by PMDCSC	Targeted to be submitted by 30 <sup>th</sup> September 2024.
4	Soil Management plan	Accepted by PMDCSC	
5	Traffic Management plan	Accepted by PMDCSC	
6	Stakeholder Engagement Plan	Accepted with comments by PMDCSC	Targeted to be submitted by 20 <sup>th</sup> October 2024.
7	Spill Control and Containment Plan	Accepted with comments by PMDCSC	Targeted to be submitted by 17 <sup>th</sup> October 2024.
8	Grievance Redressal Mechanism Plan	Accepted with comments by PMDCSC	Targeted to be submitted by 31 <sup>st</sup> August 2024.
9	Marine and Beach Area Management Plan	Accepted with comments by PMDCSC	Targeted to be submitted by 15 <sup>th</sup> October 2024.
10	Chemicals and Hazardous Material Management Plan	Accepted with comments by PMDCSC	Targeted to be submitted by 15 <sup>th</sup> October 2024.
11	Emergency Response Plan	Accepted with comments by PMDCSC	Targeted to be submitted by 31 <sup>st</sup> August 2024.
12	Security Management Plan	Accepted by PMDCSC	

13	COVID-19 Management Plan	Accepted with comments by PMDCSC	Not required as it is not applicable
14	Construction Camp Development Plan	Accepted with comments by PMDCSC	Targeted to be submitted by 31 <sup>st</sup> July 2024.
15	Public Health, Security and Safety Management Plan	Accepted by PMDCSC	
16	Incident reporting and investigation procedure	Accepted by PMDCSC	
17	Tool and Technique to review the CEMP	Approved as part of modified CEMP	
18	Flora & Fauna Management	Accepted with comments by PMDCSC	Targeted to be submitted by 20 <sup>th</sup> October 2024.
19	Human Resources Management	Accepted with comments by PMDCSC	Targeted to be submitted by 20 <sup>th</sup> October 2024.
20	Regulatory Compliance Evaluation Procedure	Not submitted	Targeted to be submitted by 15 <sup>th</sup> October 2024.
21	Procedure for Corrective & Proactive Actions	Accepted with comments by PMDCSC	Targeted to be submitted by 31 <sup>st</sup> July 2024.
22	Training Procedure and Plan	Accepted by PMDCSC	
23	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).	Accepted by PMDCSC as part of modified CEMP	

**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
	<b>Category of compliance</b>				<i>“Complied”,                      “Being complied”,                      “Partially complied”,                      “Not complied”<sup>5</sup></i>
1	Overall project site management	<ul style="list-style-type: none"> <li>▪ 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.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Organization chart and compliance with CEMP and H&amp;S plan</li> </ul>	<ul style="list-style-type: none"> <li>▪ DBO contractor has hired a full time HSE manager on site.</li> <li>▪ EPC contractor has also hired one full time Environment Manager and one H&amp;S manager (Refer Table 2 for details).</li> </ul>	<ul style="list-style-type: none"> <li>▪ Complied</li> </ul>

<sup>5</sup> 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
		<ul style="list-style-type: none"> <li>▪ In addition to the EHS Manager, designate one qualified trained engineer separately on Environment and H&amp;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.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Organization chart.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Four HSE officers (two H&amp;S inspector and two Environment officer) have been hired by EPC contractor on full time basis (Refer Table 2 for details).</li> <li>▪ During period from April to June, construction activities are carried out in single shift from 7 a.m. to 6 p.m. and requisite additional one H&amp;S Inspector and one Environment officer are to be recruited according to increase in number of shifts.</li> <li>▪ Construction work is being conducted mostly in one shift and on SOS basis in second shift. However, during this period, no work has been done during night shift.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Being Complied</li> </ul>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<ul style="list-style-type: none"> <li>▪ H&amp;S plan to be aligned with ISO 45001 and CEMP to be aligned with ISO 14001</li> </ul>	<ul style="list-style-type: none"> <li>▪ Approved H&amp;S plan and CEMP.</li> <li>▪ Details provided in monthly report submitted by DBO contractor.</li> <li>▪ Findings of environment monitoring, inspection and audits conducted by PMDCSC.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Modified H&amp;S plan and CEMP have been approved in April 2024</li> <li>▪ Status of HSE plans as mentioned in CEMP are as per given in Table 10.</li> <li>▪ Additionally, method of statements and SOPs are being/will be developed as no approval is required for internal documents by PMU/PMDCSC by DBO contractor. Method of statements for STP, dewatering, excavation, spun piling works etc. and SOPs such as operation of batching plan, electrical safety etc. are in place.</li> <li>▪ OHS monitoring plan has been submitted for review and approval by PMU/PMDCSC.</li> <li>▪ PMDCSC is reviewing details submitted by DBO in monthly reports.</li> <li>▪ Inspections conducted on regular basis by PMU/PMDCSC in line with project manual (refer Table 8 for details).</li> </ul>	<ul style="list-style-type: none"> <li>▪ Complied</li> </ul>
		<ul style="list-style-type: none"> <li>▪ Coordinate with the PMU on confirmatory surveys determined during design stage that need to be conducted once the DBO</li> </ul>	<ul style="list-style-type: none"> <li>▪ 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 by PMU/PMDCSC.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Aconex document platform is in place to manage the status of each document submitted, reviewed and approved by PMDCSC/PMU.</li> <li>▪ 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.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Complied</li> </ul>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<p>Contractor is selected; and complete these studies as required with support of external experts.</p>	<ul style="list-style-type: none"> <li>▪ Approval of Notification of Inspection before start of any activity by PMDCSC.</li> <li>▪ Observations made during regular site inspection by PMDCSC.</li> </ul>	<ul style="list-style-type: none"> <li>▪ To ensure compliance, a full-time civil engineer has been deputed at site by PMDCSC.</li> <li>▪ In addition to above, Deputy team leader makes visits the site on regular basis and local environment is to make site visit twice in a month for inspection.</li> <li>▪ However international safeguard make site visit for inspection cum audit on quarterly basis. Also critical review of details as part of monthly report submitted by DBO is made by international safeguard and observations are shared with DBO for response.</li> <li>▪ Regular inspections and audits are being conducted by PMDCSC to ensure the compliance.</li> </ul>	
2	Marine Traffic	<ul style="list-style-type: none"> <li>▪ 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.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Compliance to CEMP &amp; traffic management plan and security Management Plan.</li> <li>▪ Complaints, if any received via GRM</li> </ul>	<ul style="list-style-type: none"> <li>▪ Traffic management plan, Security Management plan, GRM Plan and Stakeholder Engagement plan as part of CEMP are in place.</li> <li>▪ A dedicated quay wall adjacent to project site is exclusively made available by WAMCO to contractor for unloading men and materials; however, there are access challenges 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.</li> <li>▪ Private jetty owned by Villa Pvt Ltd is used for unloading of construction</li> </ul>	<ul style="list-style-type: none"> <li>▪ Being Complied and efforts are being made to make the dedicated quay accessible by removing the shipwrecks.</li> </ul>



No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
				<p>materials for the batching plant located within project site for which same has been engaged as sub-contractor for supply of material for batching plant and its operation.</p> <ul style="list-style-type: none"> <li>▪ Cargo ferry is used to unload food and small quantities of materials at the main port of Thilafushi.</li> <li>▪ No complaint or feedback has been received via GRM.</li> </ul>	
		<ul style="list-style-type: none"> <li>▪ Utilize the exclusive docking port area being used by WAMCO</li> </ul>	<ul style="list-style-type: none"> <li>▪ Same as above</li> </ul>	<ul style="list-style-type: none"> <li>▪ Same as above</li> </ul>	<ul style="list-style-type: none"> <li>▪ Same as above.</li> </ul>
		<ul style="list-style-type: none"> <li>▪ Transport and unload heavy equipment and raw materials at night time when marine traffic is low within and around the island.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Compliance to CEMP and traffic management plan.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Unloading of heavy equipment and raw materials is being/will be unloaded via a dedicated quay wall adjacent to project site exclusively made available by WAMCO;</li> <li>▪ Construction materials is being/will be unloaded on private jetty owned by Villa subcontractor responsible for supply of construction materials and operation of batching plant.</li> <li>▪ HSE procedure for working at night and General lifting, unloading and transportation procedure are in place.</li> <li>▪ Records of unloaded materials are being kept and reported as Daily Progress Report.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Being complied</li> </ul>
3	Marine water quality	<ul style="list-style-type: none"> <li>▪ Implement spoils</li> </ul>	<ul style="list-style-type: none"> <li>▪ Compliance to CEMP and plans such as soil</li> </ul>	<ul style="list-style-type: none"> <li>▪ Soil management plan, waste Management Procedure and plan,</li> </ul>	<ul style="list-style-type: none"> <li>▪ Partially Complied.</li> </ul>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		management plan.	<p>management, waste Management Procedure and plan, Marine Beach Area etc.</p> <ul style="list-style-type: none"> <li>▪ Compliance to relevant method of statements such as spun piling, excavation work, dewatering plan, STP, batching plan etc</li> <li>▪ Results of quarterly marine water quality results.</li> <li>▪ Complaints, if any received via GRM.</li> <li>▪ Findings of walk downs, inspections and audit conducted by PMDCSC on regular basis.</li> </ul>	<p>Marine Beach Area Plan etc. are in place.</p> <ul style="list-style-type: none"> <li>▪ Internal documents such as Method of statements for spun piling, excavation work, dewatering plan, STP, batching plant etc are in place.</li> <li>▪ Solid wastes generated, stored and disposed at project site are being reported in Daily Progress Report (DPR) and monthly report submitted by DBO. However, records of soil excavated and reused are not being reported and kept.</li> <li>▪ STP is in operation and quality of treated wastewater discharged into sea is being tested on monthly basis. Permit for operation of STP from URA is in place.</li> <li>▪ 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 has been obtained and renewed as per requirements. While dewatering location permit from HDC is in the process of renewal.</li> <li>▪ As described in other section of this table, no clarity on disposal of waste water generated from sedimentation tank provided in batching plant area.</li> </ul>	

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
				<ul style="list-style-type: none"> <li>▪ Marine water quality and marine ecological surveys are also being conducted on quarterly basis.</li> <li>▪ Observations are being made and recorded by site engineer during walk downs and by local environment safeguard during inspections.</li> <li>▪ No complaint has been received via GRM</li> </ul>	
		<ul style="list-style-type: none"> <li>▪ Reuse excess spoils and materials.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Same as above</li> </ul>	<ul style="list-style-type: none"> <li>▪ In addition to details given above,               <ol style="list-style-type: none"> <li>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.</li> <li>2. Construction concrete debris are also being stored within project site for possible reuse. However, waste generated from batching plant is handed over to WAMCO for disposal. Records of same is being reported in DPR and monthly report.</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>▪ Being complied.</li> </ul>
		<ul style="list-style-type: none"> <li>▪ Temporary storage areas for excess spoils prior to disposal should be located as far as possible from the edge of the island or seawalls.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Same as above</li> </ul>	<ul style="list-style-type: none"> <li>▪ All temporary storages for spoils are being located within project site and away from edge of the island to the maximum possible extent.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Being complied</li> </ul>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<ul style="list-style-type: none"> <li>▪ Disposal site in designated areas only.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Same as above</li> </ul>	<ul style="list-style-type: none"> <li>▪ All type of solid waste generated are being handed over to WAMCO for disposal on regular basis.</li> <li>▪ However, needles of used syringes are being stored in plastic containers in the health centre on temporary basis. Negotiation with hospital at Male are ongoing for disposal of same as it is not accepted by WAMCO for disposal.</li> <li>▪ Excavated soil is being stored in temporary storage area within project site for reuse. Partly, it has already been used for backfilling</li> </ul>	<ul style="list-style-type: none"> <li>▪ Being complied.</li> </ul>
		<ul style="list-style-type: none"> <li>▪ Earthworks during dry season. Avoid earthworks during heavy rainy days, especially during monsoon season, to prevent run-off.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Same as above</li> </ul>	<ul style="list-style-type: none"> <li>▪ Efforts are being made to maximum possible extent to avoid rainy days for earthworks.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Being complied</li> </ul>
		<ul style="list-style-type: none"> <li>▪ Stockyards are covered when possible and provided with drainage canals around.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Same as above</li> </ul>	<ul style="list-style-type: none"> <li>• Stockyards in batching plant area are covered with metal sheets from three sides.</li> <li>• Temporary excavated soil storage area has not been covered No drainage canal/trench around temporary excavated soil storage</li> </ul>	<ul style="list-style-type: none"> <li>▪ Being complied. DBO has been asked to submit technical justification officially for no requirement of</li> </ul>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
				<p>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. As per observations made by PMU and PMDCSC, due to high permeability of soil, chances of runoff flowing to sea/lagoon is very unlikely.</p>	<p>trenches around excavated soil storage yard so that soil management plan may be modified accordingly.</p>
		<ul style="list-style-type: none"> <li>▪ Install temporary silt traps or sedimentation basins along drainage leading to the lagoon and sea.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Same as above</li> </ul>	<ul style="list-style-type: none"> <li>▪ Same as given in subsection on Implement spoils management plan of this section.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Complied</li> </ul>
		<ul style="list-style-type: none"> <li>▪ Fuel, other petroleum products, and toxic and hazardous chemicals or substances stored at storage areas away from water drainage and protected by impermeable</li> </ul>	<ul style="list-style-type: none"> <li>▪ Compliance to CEMP and plans such as Chemicals and Hazardous Material Management Plan, emergency response etc.</li> <li>▪ Findings of walk downs, inspections and audit conducted by PMDCSC on regular basis.</li> </ul>	<ul style="list-style-type: none"> <li>▪ 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"> <li>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</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>▪ Partially complied as:               <ol style="list-style-type: none"> <li>a. Requisite permits need to be obtained.</li> <li>b. Second containment needs to be provided.</li> <li>c. Requirements of number and capacity of spill kit need to be justified.</li> </ol> </li> </ul>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<p>lining and bunded 110%.</p>		<p>permission from MNDF. Application for same has been submitted and risk Assessment as internal document has been carried out and identified basic mitigation measures are in place.</p> <p>2. Adequate measures such as impermeable layer on floor and second containment have been provided for main storage areas of hazardous waste and chemicals. However, hazardous chemicals are being stored at other places such as temporary storage areas, in batching plant area etc without secondary containments.</p> <p>3. No risk assessment has been carried out for the other diesel mobile tankers visiting project site for supplying diesel to machinery/equipment/vehicle owned by sub-contractors</p> <p>4. Two spill kits (one in batching plant area and other one in hazardous chemical storage area) have been provided within project site to handle maximum spillage of 50 litre by each kit. Additionally, one kit has also been provided in mobile diesel tanker.</p>	
		<ul style="list-style-type: none"> <li>▪ Take precautions to minimize the</li> </ul>	<ul style="list-style-type: none"> <li>▪ Records of water usages</li> </ul>	<ul style="list-style-type: none"> <li>▪ All outlet of water to be used are provided with taps/valves.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Complied.</li> </ul>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<p>overuse of water</p>	<ul style="list-style-type: none"> <li>▪ Findings of walk downs, inspections and audit conducted by PMDCSC on regular basis.</li> </ul>	<ul style="list-style-type: none"> <li>▪ No record on water usages for domestic purpose and construction except bill paid to MWSC has been kept and reported.</li> </ul>	
		<ul style="list-style-type: none"> <li>▪ Divert all wash water generated from site into sedimentation ponds prior to discharge to canals.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Compliance to relevant Method of statements such as excavation work, dewatering plan, batching plant, STP etc</li> <li>▪ Testing report of discharged water on monthly basis.</li> <li>▪ Findings of walk downs, inspections and audit conducted by PMDCSC on regular basis.</li> </ul>	<ul style="list-style-type: none"> <li>▪ All water generated from excavation and construction site is being sent to sedimentation pond before discharge into sea.</li> <li>▪ Domestic wastewater is being treated in STP before discharge into sea.</li> <li>▪ No wastewater is generated from cooling system provided in batching plant. However, make-up water to be used for cooling purpose is being procured via vender.</li> <li>▪ Wastewater generated from washing of transit mixers at the batching plant is stored in a sedimentation tank. The discharge of overflow from the sedimentation tank has not been established and verified and has not been mentioned in operation in the relevant records. In May 2024 the Independent Environment Engineer and PMDCSC found a temporary pipeline connected with the sedimentation tank to discharge overflow to an adjacent land belonging to a third party. After this incident was detected and discussed, the DBO informed that all wastewater generated and stored in the sedimentation tank shall be taken</li> </ul>	<ul style="list-style-type: none"> <li>▪ Partially complied.</li> </ul>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
				away in tankers by Villa subcontractor for reuse at its project site located within Thilafushi. However, no records have been provided during inspection to verify this approach.	
		<ul style="list-style-type: none"> <li>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.</li> </ul>	<ul style="list-style-type: none"> <li>Same as above</li> </ul>	<ul style="list-style-type: none"> <li>Same as above</li> </ul>	<ul style="list-style-type: none"> <li>Complied</li> </ul>
		<ul style="list-style-type: none"> <li>Conduct water quality monitoring at least quarterly or as necessary.</li> </ul>	<ul style="list-style-type: none"> <li>Reports of marine water quality</li> </ul>	<ul style="list-style-type: none"> <li>Quarterly water quality monitoring is being conducted at seven locations on quarterly basis.</li> </ul>	<ul style="list-style-type: none"> <li>Being complied</li> </ul>
4	Dust and air pollution	<ul style="list-style-type: none"> <li>Use of physical controls such as water sprays, covers, compaction, screening, enclosure,</li> </ul>	<ul style="list-style-type: none"> <li>Compliance to CEMP &amp; HSE plans mentioned in CEMP and H&amp;S plan</li> <li>Findings of ambient air quality monitoring conducted within and outside project site</li> </ul>	No mentioned dust suppression measures as mentioned has been provided except metal sheets provided to cover construction materials storage area from three sides in batching plant area. DBO has been notified for same and	<ul style="list-style-type: none"> <li>Partially complied.</li> </ul> <p>24 hourly ambient air quality at two locations within</p>



No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		windbreakers, binders and/or road surfacing 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.	<ul style="list-style-type: none"> <li>▪ Findings of walk downs, inspections and audit conducted by PMDCSC on regular basis.</li> <li>▪</li> </ul>	<p>asked for justification for not providing dust suppression measures as mentioned.</p> <p>As per section B(iii), following observations are made:</p> <ol style="list-style-type: none"> <li>a. Average values of PM2.5 in ambient air at all locations are exceeding WHO limit of 15 µg/m<sup>3</sup>.</li> <li>b. Average values of PM10 in ambient air at all locations are within WHO limit of 45 µg/m<sup>3</sup>.</li> <li>c. Reported values of PM10 and PM 2.5 in ambient air within the project site are higher than the reported values outside the project site. It implies that there is a marginal contribution of PM10 and PM2.5 to the ambient air from construction activities.</li> <li>d. Reported values of PM10 and PM2.5 in ambient air at Vilimale Island are higher than values reported on Male Island. Important to note is that reclamation of land for construction of road and bridge near Vilimale from Male to Thilafushi island is in process</li> <li>e. Reported higher values of PM10 and PM2.5 in ambient air are cumulative impacts of all surrounding domestic, commercial, construction and natural activities at Male, Villimale and Thilafushi including construction activities at project site.</li> </ol>	<p>project site is to be monitored on monthly basis.</p> <p>Corrective measures such as QA/QC and calibration of monitoring instruments.</p>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
				<ul style="list-style-type: none"> <li>▪ Ambient air quality for June was monitored for one hour as a part of OHS monitoring. Monitoring was conducted at four workplaces camp area, WTE area, batching plant and warehouse within the project site and parameters included for PM10, PM2.5, SO<sub>2</sub> and NO<sub>2</sub>. However, the results are not reported within this report due to an error in the results. DBO contractor has been notified to take corrective measures including QA/QC and calibration of instrument used.</li> <li>▪ OHS monitoring plan is to be revised and submitted for approval.</li> </ul>	
		<ul style="list-style-type: none"> <li>▪ Construction vehicle's speed limited to 30 kilometres per hour (kph).</li> </ul>	<ul style="list-style-type: none"> <li>▪ Compliance to Traffic management plan</li> <li>▪ Findings of walk downs, inspections and audit conducted by PMDCSC on regular basis.</li> </ul>	<ul style="list-style-type: none"> <li>▪ During inspection, speed was always found below 20 km/hr as mentioned in Traffic management plan but no monitoring is being conducted by DBO.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Being complied</li> </ul>
		<ul style="list-style-type: none"> <li>▪ Prohibition of open burning of solid waste.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Compliance to CEMP and waste management procedure and plan</li> <li>▪ Findings of walk downs, inspections and audit conducted by PMDCSC on regular basis.</li> </ul>	<ul style="list-style-type: none"> <li>▪ All solid waste is being collected and stored at dedicated places for disposal at WAMCO dumping site.</li> <li>▪ No cooking is allowed within project site, Food for all staff and workers is being prepared in kitchen located within project site.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Complied</li> </ul>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
			<ul style="list-style-type: none"> <li>▪</li> </ul>	<ul style="list-style-type: none"> <li>▪ No solid waste is being burnt within project site.</li> </ul>	
		<ul style="list-style-type: none"> <li>▪ Minimize stockpile height.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Compliance to Soil management plan.</li> <li>▪ Findings of walk downs, inspections and audit conducted by PMDCSC on regular basis.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Height provided to temporary soil stockpile is ~4 m.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Complied</li> </ul>
		<ul style="list-style-type: none"> <li>▪ If dust generation is significant, provide a dust screen of appropriate height</li> </ul>	<ul style="list-style-type: none"> <li>▪ Same as provided in first subsection of this section.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Same as provided in first subsection of this section.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Not complied. However, in view of reported higher values of PM<sub>2.5</sub>, mitigation measures need to be reviewed and implemented.</li> </ul>
		<ul style="list-style-type: none"> <li>▪ Workers and staff should be provided with dust masks &amp; instructed to use them on site</li> </ul>	<ul style="list-style-type: none"> <li>▪ Compliance to H&amp;S plan and SOPs of PPE</li> <li>▪ Findings of walk downs, inspections and audit conducted by PMDCSC on regular basis.</li> <li>▪</li> </ul>	<ul style="list-style-type: none"> <li>▪ Mainly surgical masks have been provided to workers, but masks have not been used by most of workers. Also mask such as FFP2 and others have been provided only in limited numbers.</li> <li>▪ As per DBO, FFP2 masks are in process of procurement.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Partially complied. DBO is currently in the process of procuring the appropriate masks.</li> </ul>
		<ul style="list-style-type: none"> <li>▪ Conduct work in stages to reduce dust impacts; clearing and then conducting</li> </ul>	<ul style="list-style-type: none"> <li>▪ Daily Progress reports and monthly reports submitted by DBO.</li> <li>▪ Approval of Notification of approval by site engineer of PMDCSC</li> </ul>	<ul style="list-style-type: none"> <li>▪ Construction activities are mainly confined to concreting and backfilling in two bunker areas during this quarter.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Being complied</li> </ul>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<ul style="list-style-type: none"> <li>▪ construction in only a portion of the site at a time.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Findings of walk downs, inspections and audit conducted by PMDCSC on regular basis.</li> <li>▪</li> </ul>		
		<ul style="list-style-type: none"> <li>▪ Control access to work area, prevent unnecessary movement of vehicles, workers, public trespassing into work areas; limiting soil disturbance will minimize dust generation.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Compliance to traffic management plan, Security management plan, H&amp;S plan, Public health and safety plan etc.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Site boundary is established with a dedicated gate for vehicles entry and exit and guardhouses are located at entrance and exit points.</li> <li>▪ 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.</li> <li>▪ Access is controlled as per procedure given in security management plan.</li> <li>▪ Records are being kept for everyone coming in and going out.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Complied</li> </ul>
		<ul style="list-style-type: none"> <li>▪ Contractor's environmental manager should monitor these activities and act to apply the mitigation if dust production becomes significant.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Inspections and records</li> <li>▪ Findings of ambient air quality conducted within and outside project site</li> <li>▪ Findings of walk downs, inspections and audit conducted by PMDCSC on regular basis</li> <li>▪ Number of complaints received.</li> </ul>	<ul style="list-style-type: none"> <li>▪ 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. Findings of daily walkdowns are shared via a group chat and recorded in an observation register weekly.</li> <li>▪ Ambient air quality on 24 hourly basis within and outside project site is monitored on regular basis.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Being complied</li> </ul>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
				<ul style="list-style-type: none"> <li>▪ Monitoring of air quality on hourly basis at workplaces are being monitored since June-24.</li> <li>▪ No complaint has been received on the subject.</li> <li>▪ OHS monitoring plan is to be revised and submitted for review and approval.</li> <li>▪</li> </ul>	
		<ul style="list-style-type: none"> <li>▪ Use tarpaulins to cover loose material (soil, sand, aggregate) when transported by trucks</li> </ul>	<ul style="list-style-type: none"> <li>▪ Compliance to Traffic management plan and soil management plan.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Construction materials such as fly ash and cement are being transported in jumbo packs containing 1 tonnes of materials.</li> <li>▪ Construction materials such as gravel, sand and others and backfilling material are transported to project site via road in dumpers and no cover has been provided while transportation</li> <li>▪ Also, soil from temporary soil storage area within project site is transported to backfilling site in open dumpers without any cover.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Partially complied</li> </ul>
		<ul style="list-style-type: none"> <li>▪ Clean wheels and undercarriage of haul trucks prior to leaving construction site/quarry</li> </ul>	<ul style="list-style-type: none"> <li>▪ Compliance to traffic management plan</li> <li>▪ Facility made available for cleaning and washing.</li> <li>▪ Records of entry and exit of vehicles.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Washing facilities have been provided to clean the motor pans, transit mixers etc in batching plant area.</li> <li>▪ Transportation of materials via road is very limited as described in above sections. As per DBO, cleaning of wheels and undercarriage of hauling trucks prior to leaving the site is carried out in the batching plant area. However, no record is kept to verify</li> </ul>	<ul style="list-style-type: none"> <li>▪ Being complied.</li> </ul> <p>Records of cleaning of Wheels and undercarriage of trucks are to be kept.</p>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
				<p>the same and DBO has been notified of the same.</p> <ul style="list-style-type: none"> <li>▪ Records of entry or exit of vehicles are kept. .</li> </ul>	
		<ul style="list-style-type: none"> <li>▪ Stabilize surface soils where loaders, support equipment and vehicles will operate by using water and maintain surface soils in a stabilized condition</li> </ul>	<ul style="list-style-type: none"> <li>▪ Compliance to activities wise method of statements and SOPs.</li> <li>▪ Approval of notification of inspection.</li> <li>▪ Findings of walk downs, inspections and audit conducted by PMDCSC on regular basis</li> </ul>	<ul style="list-style-type: none"> <li>▪ In-house system is in place to plan and implement 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.</li> <li>▪ Deputy team leader of DBO contractor and Site engineer of PMDCSC review the planning to provide go ahead before start of activities and conduct inspections during execution on regular basis.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Being complied</li> </ul>
		<ul style="list-style-type: none"> <li>▪ Ensure that all the construction equipment, machinery is fitted with pollution control devices, which are operating correctly.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Results of exhaust emissions monitoring.</li> <li>▪ Records of preventive maintenance</li> </ul>	<ul style="list-style-type: none"> <li>▪ In-house facility and system are in place for preventive maintenance of vehicles and equipment and records are being kept.</li> <li>▪ No facility is available in Maldives for testing emission from exhaust of vehicles and equipment including DG sets. Hence same is not being carried out.</li> <li>▪ Fitness check is carried out on annual basis for equipment owned by EPC contractor however it does not include exhaust emissions.</li> <li>▪ In-house inspection is being carried out by using checklists for the equipment taken on rent from subcontractors before allowing then</li> </ul>	<ul style="list-style-type: none"> <li>▪ Partially complied.</li> </ul>
		<ul style="list-style-type: none"> <li>▪ Ensure that only those vehicles and equipment in good condition, and</li> </ul>			

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<p>are in good maintenance are used for project construction</p>		<p>to operate. There is no system in place to deal with equipment which does not have a valid inspection certificate.</p>	
		<ul style="list-style-type: none"> <li>▪ Vehicles / equipment should have a valid permits or licenses issued by relevant government agency.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Vehicle registry at Ministry of Transport and Civil Aviation.</li> <li>▪ Records of permits and licenses for all vehicles.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Many vehicles including mobile diesel tanker are in operation without having registration. Some of these vehicles/ machineries have been rented from third parties. The registration process has been started for the mobile diesel tanker and two vehicles only.</li> </ul>	<p>Partially complied as the tanker as well as other vehicles have been in operation prior to obtaining registration and license.</p>
		<ul style="list-style-type: none"> <li>▪ Maintain record of these permits or licenses of all vehicles at all times for ready inspection at the work sites.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Records of permits and licenses for all vehicles</li> </ul>	<ul style="list-style-type: none"> <li>▪ Registration records are maintained according to local regulations and tested for roadworthiness before registration and registration records are maintained</li> </ul>	
5	Dust and air pollution (batching plant)	<ul style="list-style-type: none"> <li>▪ Ensure that batching plant is installed with built-in air pollution and dust control system for fugitive emissions and</li> </ul>	<ul style="list-style-type: none"> <li>▪ Approval of design details</li> <li>▪ Compliance of SOPs for operation of batching plant.</li> <li>▪ Compliance to CEMP and H&amp;S plan</li> <li>▪ Results of OHS monitoring.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Design details have been approved by PMDCSC.</li> <li>▪ 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.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Being complied</li> </ul>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		dust from loading area.	<ul style="list-style-type: none"> <li>▪ Complaints, if any received via GRM.</li> <li>▪ Findings of walk downs, inspections and audit conducted by PMDCSC on regular basis</li> </ul>	<ul style="list-style-type: none"> <li>▪ Villa Pvt Ltd has been engaged as sub-contractor for operation of batching plant and supply of construction materials for same.</li> <li>▪ 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 packed in jumbo packs of 1 tonne and only opened at project site.</li> <li>▪ 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.</li> <li>▪ Washing facility is being provided to clean the transit mixer trucks and drums.</li> <li>▪ Record of real time inventory on daily basis are being kept in Daily Progress Report (DPR).</li> <li>▪ SOPs for operation of batching plant is in place.</li> <li>▪ Ambient air quality on 24 hourly basis within and outside project site is monitored on regular basis.</li> <li>▪ Air quality on hourly basis at workplaces are being monitored since June-24.</li> <li>▪ OHS monitoring plan is to be revised and submitted for approval.</li> </ul>	



No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
				<ul style="list-style-type: none"> <li>▪ No complaint and feedback have been received via GRM and Stake holder engagement.</li> </ul>	
		<ul style="list-style-type: none"> <li>▪ Provide dust screen around the components that generate emissions or fugitive dusts.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Same as above</li> </ul>	<ul style="list-style-type: none"> <li>▪ Same as above</li> </ul>	<ul style="list-style-type: none"> <li>▪ Same as above</li> </ul>
		<ul style="list-style-type: none"> <li>▪ Ensure that plant is well operated and maintained at all times according to O&amp;M manual of batching plant (provided by the equipment manufacturer).</li> </ul>	<ul style="list-style-type: none"> <li>▪ same as above</li> </ul>	<ul style="list-style-type: none"> <li>▪ Design details have been approved by PMDCSC.</li> <li>▪ Regular inspection and scheduled maintenance work</li> </ul>	<ul style="list-style-type: none"> <li>▪ Being complied</li> </ul>
		<ul style="list-style-type: none"> <li>▪ The concrete loading area is equipped with a leak-proof concrete floor, from which all drainage is collected and treated as necessary</li> </ul>	<ul style="list-style-type: none"> <li>▪ Same as above</li> </ul>	<ul style="list-style-type: none"> <li>▪ Design details have been approved by PMDCSC.</li> <li>▪ All discharges are being drained in RCC sedimentation tank provided for washing of mixer trucks and mixer drums.</li> <li>▪ As specified in sr number 3 of this table, a pipeline was found draining discharge from the sedimentation tank to the adjacent site.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Partially complied.</li> </ul>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<p>prior to discharge.</p> <ul style="list-style-type: none"> <li>▪ Mixer trucks and mixer drums are washed out only in a designated area, which should be equipped with a leak-proof floor, from which drainage is collected and treated as necessary.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Same as above</li> </ul>	<ul style="list-style-type: none"> <li>▪ Regular inspections by PMDCSC are in place.</li> <li>▪ Same as above</li> </ul>	<ul style="list-style-type: none"> <li>▪ Same as above</li> </ul>
		<ul style="list-style-type: none"> <li>▪ 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</li> </ul>	<ul style="list-style-type: none"> <li>▪ Approval of design details</li> <li>▪ Compliance of SOPs on installation, operation and Chemicals and Hazardous Materials Management plan, Emergency Response Plan etc</li> <li>▪ Inventory of chemicals</li> <li>▪ Findings of walk downs, inspections and audit conducted by PMDCSC on regular basis</li> </ul>	<ul style="list-style-type: none"> <li>▪ Design details have been approved by PMDCSC.</li> <li>▪ Chemical Sikaplastic-176 LK is being stored within batching plant area which is transported in 1000 liter containers. Storage area for containers is provided with impermeable RCC lining on floor but inadequate secondary containment.</li> <li>▪ For usages, chemical Sikaplastic-176 LK Chemicals is being stored in tank with impermeable RCC lining on floor but without secondary containment.</li> <li>▪ Limited number of PPEs such as suitable masks, one suit, eye washing station and one spill kit of handling 50 liter of spillage are provided.</li> </ul>	<p>Partially complied</p> <ul style="list-style-type: none"> <li>▪ Secondary containment is to be provided.</li> <li>▪ Adequate PPEs are to be provided.</li> </ul>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<p>bunded 110%. Storage facilities should be as specified in the appropriate international standard and should include equipment to extract dust and completely contain any spillage from leaks.</p>		<ul style="list-style-type: none"> <li>▪ Record on real time inventory is kept.</li> </ul>	
6	Noise pollution	<ul style="list-style-type: none"> <li>▪ Prepare work schedule and consult with local community and administration.</li> <li>▪ Maintain low noise levels. Noise level at the boundary</li> </ul>	<ul style="list-style-type: none"> <li>▪ Compliance of Grievance Redressal plan.</li> <li>▪ Records of consultations with local community and administration.</li> <li>▪ Compliance of method of statement for noise monitoring.</li> </ul>	<ul style="list-style-type: none"> <li>▪ GRM plan in place and no complaint has been received. However:               <ol style="list-style-type: none"> <li>1. Complaint boxes have been provided in security office at two gates of project premises only. But no complaint box has been placed at Public ferry terminal of Thilafushi.</li> <li>2. Also, no public announcements have been made through local newspapers, community bulletin boards etc and through MoE.</li> <li>3. Records are kept in compliance with GRM plan.</li> </ol> </li> <li>▪ Ambient noise levels are monitored on a monthly basis at five locations to comply with EMP on 24 hourly basis. However, two of them (NQ3 and NQ5)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Partially complied</li> <li>▪ Complied</li> </ul>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<p>of site shall not exceed 70 dB(A) during day and night unless necessary to carry out construction works.</p>	<ul style="list-style-type: none"> <li>▪ Results of ambient noise level monitored within project site</li> <li>▪ Results of noise level monitoring at sources located within project site.</li> <li>▪ Findings of walk downs, inspections and audit conducted by PMDCSC on regular basis</li> </ul>	<p>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"> <li>▪ As per Table 19, Leq daytime and Leq nighttime at NQ3 and NQ5 locations varied from 48 to 67 dB(A) and 44 to 65 dB(A) respectively during this quarter.</li> <li>▪ As per Table 23, 8 hourly Leq at NQ3 and NQ5 locations varied from 50.6 to 73.2 dB(A) during 7.00 a.m. to 2.00 p.m., 46.7 to 63.5 dB(A) during 3.00 p.m. to 10.00 p.m. and 42.1 to 63.5 dB(A) during 11 p.m. to 6.00 a.m. However construction activities have been carried out from 7.00 a.m. to 6.00 p.m. only.</li> <li>▪ OHS monitoring plan is to be revised and submitted for review and approval.</li> </ul>	
		<ul style="list-style-type: none"> <li>▪ When possible, schedule noisy works at night time when most establishments in Thilafushi are closed. Minimize any high noise-generating activities</li> </ul>	<ul style="list-style-type: none"> <li>▪ Same as above</li> </ul>	<ul style="list-style-type: none"> <li>▪ Mainly civil works such as concreting and backfilling are being conducted.</li> <li>▪ Construction work has been conducted mostly in single shift from 7.00 a.m. to 6.00 p.m.</li> </ul>	Complied.

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<p>during the daytime.</p> <ul style="list-style-type: none"> <li>▪ 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.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Compliance of SOPs on operation of machinery and equipment</li> <li>▪ Results of noise level monitored at source level.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Mitigation measure provided are confined to manufacturer's instructions and preventive maintenance on regular basis only.</li> <li>▪ Fitness test conducted on annual basis does not include verifying the fitness for noise emission.</li> <li>▪ Noise levels at the various sources including machinery/equipment are monitored at source, 1m, 2 m and 3 m. As per Table 25, reported noise levels from DG set in batching plant area, Dewatering pump 1 and 2 etc are more than 85 dB(A) which need additional mitigation measures for which DBO contractor has been notified.</li> <li>▪ As per real time inventory, limited number of ear plug and muff are provided and same are in process of procurement.</li> <li>▪ OHS monitoring plan is to be revised and submitted for approval.</li> </ul>	Partially complied
		<ul style="list-style-type: none"> <li>▪ Minimize drop heights for construction materials.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Compliance of activity wise method of statements</li> <li>▪ Compliance of SOPs on operation of machinery and equipment</li> </ul>	<ul style="list-style-type: none"> <li>▪ Compliance is being ensured by approval of notification of Inspection by DBO and PMDCSC, issuance of permit to work and regular inspection.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Complied</li> </ul>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
			<ul style="list-style-type: none"> <li>▪ Approval of notification of approval by PMDCSC</li> </ul>		
		<ul style="list-style-type: none"> <li>▪ No use of horns unless necessary.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Compliance of Traffic management plan.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Limited traffic movement as per details provided in other sections of this table.</li> <li>▪ Flag men direct the movement of movable machinery and equipment.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Complied</li> </ul>
		<ul style="list-style-type: none"> <li>▪ Avoid loud random noise from sirens, air compression, etc.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Compliance of activity wise method of statements</li> <li>▪ Compliance of SOPs on operation of machinery and equipment</li> <li>▪ Compliance of method of statement for noise monitoring.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Permit to work and approval of notification of inspections restrict the operation of machinery and equipment needed for execution of particular activity only.</li> <li>▪ Siren is only used in case of mock drill conducted and during emergency.</li> <li>▪ 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.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Complied</li> </ul>
		<ul style="list-style-type: none"> <li>▪ Avoid using multiple high noise generating equipment and activities simultaneously</li> </ul>	<ul style="list-style-type: none"> <li>▪ Compliance of SOPs on operation of machinery and equipment</li> <li>▪ Compliance of method of statement for noise monitoring.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Permit to work and approval of notification of inspections restrict the operation of machinery and equipment needed for execution of particular activity only.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Complied</li> </ul>
		<ul style="list-style-type: none"> <li>▪ Install temporary or portable acoustic barriers around</li> </ul>	<ul style="list-style-type: none"> <li>▪ Compliance of SOPs on operation of machinery and equipment</li> <li>▪ Compliance of method of statement for noise monitoring.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Mitigation measure provided are confined to manufacturer's instructions only. However, enclosures are provided for generator set used on site.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Partially complied</li> </ul>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		stationary construction noise sources.		<ul style="list-style-type: none"> <li>▪ As per Table 25, reported noise levels from DG set in batching plant area, Dewatering pump 1 and 2 etc are more than 85 dB(A) which need additional mitigation measures for which DBO contractor has been notified.</li> <li>▪ However, earplug/ear muff are being provided but to limited workers only due to availability. DBO has been notified to procure more earplug/ear muff</li> <li>▪</li> </ul>	
		<ul style="list-style-type: none"> <li>▪ Warning signs in noise hazard areas.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Findings of walk downs, inspections and audit conducted by PMDCSC on regular basis</li> </ul>	<ul style="list-style-type: none"> <li>▪ No classification of area has been made.</li> <li>▪ Warning signs have been provided.</li> <li>▪ Permit to work system and approval of Notification of inspection is in place to identify hazard, if any.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Being Complied</li> </ul>
		<ul style="list-style-type: none"> <li>▪ Identify vibration risk to nearby structures. Take caution working in such areas.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Compliance of activity wise method of statements.</li> <li>▪ Compliance of SOPs on operation of machinery and equipment</li> </ul>	<ul style="list-style-type: none"> <li>▪ No sensitive receptor is located adjacent to project site.</li> <li>▪ Mainly civil works such as concreting and filling the leftover space are being conducted.</li> <li>▪ Fitness of machinery and equipment is being carried out on regular basis by third party.</li> <li>▪ Permit to work system and approval of Notification of inspection is in place to identify hazard, if any.</li> <li>▪ No record has been shared for equipment/machinery belonged to sub-contractors to verify the status.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Partially Complied</li> </ul>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<ul style="list-style-type: none"> <li>▪ Conduct noise level monitoring at least every quarter or as necessary.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Compliance to monitoring plan as per CEMP</li> <li>▪ Results of monitoring conducted</li> </ul>	<ul style="list-style-type: none"> <li>▪ Same as given above</li> </ul>	<ul style="list-style-type: none"> <li>▪ Complied</li> </ul>
7	Aesthetics	<ul style="list-style-type: none"> <li>▪ 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"> <li>a. Reuse as much waste sand in this project as possible;</li> <li>b. Finding alternative beneficial uses for any unused</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>▪ Compliance of soil management plan, waste management procedure and plan, activity wise method of statements and SOPs.</li> <li>▪ Inspection and audit conducted by PMDCSC</li> <li>▪ Monthly report submitted by DBO</li> <li>▪ Complaint(s) received</li> </ul>	<ul style="list-style-type: none"> <li>▪ Soil management plan, waste management procedure and plan, activity wise method of statements and SOPs are in place.</li> <li>▪ 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.</li> <li>▪ Sludge generated from STP is also being stored in sludge collection bags near STP within project premises for possible usages as manure.</li> <li>▪ 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. Details of same are reported in DPR and monthly reports.</li> <li>▪ 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. Details of same are reported in DPR and monthly reports.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Complied</li> </ul>



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>c. Disposal of debris and bulky solid waste materials after construction stage.</p> <p>d. Minimizing stockpile size.</p> <p>e. Clearing wastes regularly.</p> <p>f. Avoiding stockpiling of excess spoils.</p> <p>g. Covering delivery trucks during transportation</p> <p>h. Cleaning roads.</p> <p>i. Using screening</p>		<ul style="list-style-type: none"> <li>▪ Hazardous waste such as waste oil, empty containers of hazardous chemicals etc are being stored at dedicated places and are being handed over to WAMCO for disposal. Details of same are reported in DPR and monthly reports.</li> <li>▪ 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.</li> <li>▪ WAMCO accepts the waste in mix form for disposal on chargeable basis. This also includes collection from site and transportation to dumping site.</li> <li>▪ Housekeeping is being done on regular basis and details are being reported in monthly reports.</li> <li>▪ In-house inspection is being carried out on regular basis.</li> <li>▪ Inspections and audit carried out by PMDCSC on regular basis.</li> </ul>	

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		enclosure shade cloth, temporary walls around constructio n site. j. Cleaning site regularly. k. Following the principle of “Reduce, Reuse, Recycle, and Recover”.			
		<ul style="list-style-type: none"> <li>▪ 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.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Same as above</li> </ul>	<ul style="list-style-type: none"> <li>▪ It mainly includes scrap metals and waste material. At present partly being handed over to WAMCO for disposal and rest is being stored within project site.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Being complied</li> </ul>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<ul style="list-style-type: none"> <li>▪ Hazardous waste shall be stabilized, encapsulated, and disposed as per internationally accepted practices. Provision will be made for secure storage of hazardous waste.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Same as above</li> </ul>	<ul style="list-style-type: none"> <li>▪ 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.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Complied.</li> </ul>
		<ul style="list-style-type: none"> <li>▪ 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.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Same as above</li> </ul>	<ul style="list-style-type: none"> <li>▪ 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.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Complied.</li> </ul>
		<ul style="list-style-type: none"> <li>▪ Prohibit burning of construction and/or domestic waste;</li> </ul>	<ul style="list-style-type: none"> <li>▪ Same as above</li> </ul>	<ul style="list-style-type: none"> <li>▪ 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.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Being complied.</li> </ul>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
				<ul style="list-style-type: none"> <li>▪ No cooking is allowed within project site, Food for all staff and workers is being prepared in kitchen located within project site.</li> <li>▪ No complaint has been received from public.</li> </ul>	
		<ul style="list-style-type: none"> <li>▪ 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.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Same as above</li> </ul>	<ul style="list-style-type: none"> <li>▪ Dustbins are provided at the site and housekeeping is carried out on regular basis.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Complied</li> </ul>
		<ul style="list-style-type: none"> <li>▪ Conduct site clearance and restoration to original condition after the completion of construction works.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Same as above</li> </ul>	<ul style="list-style-type: none"> <li>▪ All type of waste are being collected, stored and disposed in compliance with relevant plans, SOPs and method of statements</li> <li>▪ Regular housekeeping is carried out at the site</li> <li>▪ Inspections and audit carried out by PMDCSC on regular basis.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Being Complied. Site restoration will be carried out after completion of construction.</li> </ul>
8	Amenities for community	<ul style="list-style-type: none"> <li>▪ Implement the Traffic Management Plan that will elaborate the following:</li> </ul>	<ul style="list-style-type: none"> <li>▪ Compliance to CEMP and traffic management plan, security management plan, public health and safety plan, GRM Plan and Stakeholder</li> </ul>	<ul style="list-style-type: none"> <li>▪ Traffic management plan, Security management plan, GRM Plan and Stakeholder Engagement plan as part of CEMP is in place.</li> <li>▪ Minimal movements within the Island as raw materials are directly transported to site via sea.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Partially complied as legal requirements need to be fulfilled for operation of the</li> </ul>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<p>a. Suitable transportati on routes.</p> <p>b. Safe passage for vehicles and pedestrian s.</p> <p>c. Temporary road diversions and for provision of traffic aids if transportati on activities cannot be avoided during peak hours.</p> <p>d. Scheduling of material deliveries on low traffic hours, particularly at night time when</p>	<p>Engagement plan, activity wise method of statements and SOPs etc</p> <ul style="list-style-type: none"> <li>▪ Complaints, if any received via GRM</li> </ul>	<ul style="list-style-type: none"> <li>▪ A dedicated quay wall adjacent to project site is exclusively made available by WAMCO to contractor for unloading men and materials.</li> <li>▪ 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.</li> <li>▪ 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.</li> <li>▪ Small quantities of food and consumable items mainly for kitchen and camp are brought via the cargo ferry to the main port of Thilafushi and further via road to project site which is about 2.5 km.</li> <li>▪ Registration of vehicles with transported authority including mobile diesel tanker are yet to obtained. However as per latest update by DBO, applications for mobile diesel tanker, 2 out of 16 vehicles have been made.</li> <li>▪ Thilafushi island is an industrial island and has limited road traffic.</li> <li>▪ Access roads to project site are not in good condition and need to be</li> </ul>	<p>diesel tanker and adequate hazard mitigation measures should be taken and condition of approach roads to project site need to be improved by HDC.</p>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<p>most establishments in Thilafushi island are already closed.</p>		<p>improved. HDC has been notified for same.</p> <ul style="list-style-type: none"> <li>▪ No complaint and feedback have been received via GRM and Stakeholder engagement</li> </ul>	
		<ul style="list-style-type: none"> <li>▪ Erect and maintain barricades if required.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Approval of notification of inspection by PMDCSC and issuance of permit to work before start of particular activity in addition to above</li> </ul>	<ul style="list-style-type: none"> <li>▪ In addition to above:               <ol style="list-style-type: none"> <li>1. Most of the construction activities are mainly confined within project site which is already fenced with restricted entry.</li> <li>2. Outside the project site, construction activities mainly include laying pipeline and construction of facilities for water intake and discharge of wastewater for operation phase. However same are yet to be commissioned and mitigation will be implemented on the basis of findings of mapping of risks associated.</li> <li>3. At present pipelines for discharge of wastewater into sea generated from STP and dewatering tank are in operation which are buried under ground.</li> <li>4. Parking area is provided within project site. However transit mixers were parked on road within project site.</li> <li>5. Based on need identified during inspection by PMDCSC and permit to work to be issued by Area</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>▪ Complied</li> </ul>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
				authority/manager of EPC contractor, barricades are/will be provided.	
		<ul style="list-style-type: none"> <li>▪ Consult with business and institutions for work schedules.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Compliance to stakeholder engagement plan.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Stakeholder engagement plan is in place and same was conducted as part of EIA study and will be conducted again as part of EIA update proposed to be carried out on finalization of detailed design.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Being complied</li> </ul>
		<ul style="list-style-type: none"> <li>▪ Erect display boards around strategic locations about nature, duration of construction and contact for complaints and/or issues about the project.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Display boards with details</li> </ul>	<ul style="list-style-type: none"> <li>▪ Display board is placed at gate to provide information of nature, duration of construction and contact for complaints.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Complied</li> </ul>
		<ul style="list-style-type: none"> <li>▪ Complete quickly any work that is near adjacent establishments .</li> </ul>	<ul style="list-style-type: none"> <li>▪ Compliance of relevant activity wise method statements and SOPs</li> <li>▪ Approval of notification of inspection by PMDCSC and permit to work before start of particular activity.</li> </ul>	<ul style="list-style-type: none"> <li>▪ 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 issuance of permit to work to be issued by Area authority/manager of EPC contractor.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Complied</li> </ul>
		<ul style="list-style-type: none"> <li>▪ Restore damaged</li> </ul>	<ul style="list-style-type: none"> <li>▪ Approval of design details of construction.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Damaged properties and utilities will be restored, if any will be identified</li> </ul>	<ul style="list-style-type: none"> <li>Being complied.</li> </ul>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		properties and utilities.	<ul style="list-style-type: none"> <li>▪ Approval of notification of inspection by PMDCSC and permit to work before start of particular activity</li> <li>▪ Complaint(s) received, if any</li> <li>▪ Compliance with damage assessment section of the Emergency Response Plan</li> </ul>	<ul style="list-style-type: none"> <li>▪ during approval of design details and inspection for approval of notification of inspection by PMDCSC.</li> <li>▪ 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. As per latest update, STELCO and HDC will commence the rerouting of the cable to de-activate the live cable going through the project site.</li> <li>▪ No compliant has been registered on subject.</li> </ul>	
9012	Marine and terrestrial ecology	<ul style="list-style-type: none"> <li>▪ Implement the Marine and Beach Area during Construction Work Plan.</li> <li>▪ Implement the Erosion Control Plan for pipeline works.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Compliance of the Marine and Beach Area Management Plan</li> <li>▪ Approval of design details.</li> <li>▪ Compliance of the activity wise method of statements and SOPs</li> <li>▪ Approval of notification of inspection and regular inspection by PMDCSC</li> </ul>	<ul style="list-style-type: none"> <li>▪ The Marine and Beach Area Management Plan is in place. Additionally, Spill Control and Containment Plan, Flora and Fauna management plan etc are also in place as complementary plans.</li> <li>▪ Marine water quality and marine ecological surveys are carried out on quarterly basis.</li> <li>▪ Erosion Control Procedures are being addressed in the relevant construction procedures and method statements</li> <li>▪ PMDCSC approves all design details before planning of any construction activity.</li> <li>▪ A full-time site engineer is deputed on site by PMDCSC to grant approval of notification before start of construction</li> </ul>	<ul style="list-style-type: none"> <li>▪ Being complied</li> <li>▪ Being complied</li> </ul>



No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<ul style="list-style-type: none"> <li>▪ 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 contractor's area).</li> </ul>	<ul style="list-style-type: none"> <li>▪ Approval of design details and layout plan.</li> <li>▪ Compliance to approved site layout plan, CEMP, relevant HSE plans, method of activity wise method of statements and SOPs</li> <li>▪ Approval of notification of inspection and regular inspection by PMDCSC</li> </ul>	<p>activity and to conduct regular inspection.</p> <ul style="list-style-type: none"> <li>▪ In addition to above subsection:               <ol style="list-style-type: none"> <li>1. All construction activities are conducted within the site boundary except laying of pipelines for water intake and discharges for which adequate permission and permits will be being obtained.</li> <li>2. Layout plan has been approved by PMDCSC.</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>▪ Being complied</li> </ul>
		<ul style="list-style-type: none"> <li>▪ Prohibit any deliberate 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</li> </ul>	<ul style="list-style-type: none"> <li>▪ Compliance with plans on Flora and Fauna management and Marine Beach Area</li> </ul>	<ul style="list-style-type: none"> <li>▪ Thilafushi Island is almost devoid of terrestrial flora and fauna and as per IBAT study, no endangered species has been identified.</li> <li>▪ 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.</li> <li>▪ Camp area is located within project premises and entry is recorded and restricted via two gates where in security guards are being posted.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Being complied</li> </ul>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<p>by contractor for protected marine species.</p> <ul style="list-style-type: none"> <li>▪ 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 minimum possible.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Same as give in Sr no 4,5 and 6 of this table.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Same as give in Sr no 4,5 and 6 of this table.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Same as give in Sr no 4,5 and 6 of this table.</li> </ul>
		<ul style="list-style-type: none"> <li>▪ Create awareness in all site staff &amp; workers on the importance of the marine animals/species and plants around the site and their vulnerability.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Regular trainings for staff and workers</li> </ul>	<ul style="list-style-type: none"> <li>▪ Trainings on the marine animals/species and plants around the site is scheduled during next quarter</li> </ul>	<ul style="list-style-type: none"> <li>▪ Not complied</li> </ul>
		<ul style="list-style-type: none"> <li>▪ To protect site personnel, training should also be provided to</li> </ul>	<ul style="list-style-type: none"> <li>▪ Same as above</li> </ul>	<ul style="list-style-type: none"> <li>▪ Trainings on the marine animals/species and plants around the site is scheduled during next quarter.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Same as above.</li> </ul>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<p>enable them to recognize, and deal safely and humanely with all animals that may be encountered.</p> <ul style="list-style-type: none"> <li>▪ Implement the Spill Control and Containment Plan.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Compliance with the Spill Control and Containment Plan</li> </ul>	<ul style="list-style-type: none"> <li>▪ Spill Control and Containment Plan is in place. However, no incident has been reported.</li> <li>▪ As per observation made during site inspections: <ul style="list-style-type: none"> <li>a. Two spill kits: one near container used for storage of hazardous chemicals and one batching plant area are provided. Each kit is capable of handling 50 litres of spill only and maximum size of containers stored is 1000 litres.</li> <li>b. One spill kit has also been provided in mobile diesel tanker.</li> <li>c. No mapping of probable maximum size of spills has been done.</li> <li>d. Eye wash station: Only one near batching plant area has been provided and. However one near container used for storage of hazardous chemicals will be commissioned in July month.</li> <li>e. Mask provided as part of Spill kit is not as per document on PPE procedure.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>▪ Partially complied and need to: <ul style="list-style-type: none"> <li>a. Provide spill kits on the basis of mapping of probable maximum size of spills</li> <li>b. replace mask to comply with PPE procedure.</li> </ul> </li> </ul>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<ul style="list-style-type: none"> <li>▪ 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</li> </ul>	<ul style="list-style-type: none"> <li>▪ Approval of Notification of execution plan and notification of inspection.</li> <li>▪ Permits from relevant local authorities</li> <li>▪ Approval of notification of inspection and regular inspection by PMDCSC</li> </ul>	<ul style="list-style-type: none"> <li>▪ 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 (pending renewal) and URA are required.</li> <li>▪ Marine works including facilities for operation phase pending is yet to be started and only confined to construction of intake and outfall structures and pipelines.</li> <li>▪ 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 hazards will be carried out to plan the requisite mitigation measures.</li> <li>▪ A full-time site engineer is deputed on site by PMDCSC to grant approval of notification before start of construction activity and to conduct regular inspection.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Being Complied</li> </ul>
		<ul style="list-style-type: none"> <li>▪ Conduct the excavation, and deposit the excavated material in a more controlled manner minimizing the area that is disturbed.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Compliance with soil management plan and method statement for excavation and relevant SOPs.</li> <li>▪ Approval of notification of inspection by PMDCSC</li> <li>▪ Findings of regular walkdowns, inspection</li> </ul>	<ul style="list-style-type: none"> <li>▪ Design is approved before planning for work.</li> <li>▪ Notification of Inspection is to be raised to PMDCSC for approval before start of excavation works to ensure the compliance of relevant plans and method of statement.</li> <li>▪ Work permit is to be issued by Area Manager considering environment and health and safety risks and required mitigation measures as well</li> </ul>	<ul style="list-style-type: none"> <li>▪ Being complied.</li> </ul>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
			and audit to be conducted by PMDCSC.	<p>as on receipt of approval of inspection notification from PMDCSC before start of construction work</p> <ul style="list-style-type: none"> <li>▪ PMDCSC has deputed one full time site engineer is deputed on site for granting approval to Notification of Inspection and for inspections on regular basis.</li> <li>▪ Excavated material is stored in a designated area and is being re-used for construction work. However: <ul style="list-style-type: none"> <li>a. no record has been kept for excavated and reused soil.</li> <li>b. No in-house inspection has been carried out to comply with soil management plan.</li> </ul> </li> </ul>	
		<ul style="list-style-type: none"> <li>▪ Avoid the need to re-excavate by choosing right time (calmed sea conditions again), and quickly lowering the pipes into trench and refilling.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Same as above</li> </ul>	<ul style="list-style-type: none"> <li>▪ Same as above</li> </ul>	<ul style="list-style-type: none"> <li>▪ Complied</li> </ul>
		<ul style="list-style-type: none"> <li>▪ Limit the size of the construction area on the beach and to avoid any</li> </ul>	<ul style="list-style-type: none"> <li>▪ Same as above.</li> </ul>	<ul style="list-style-type: none"> <li>▪ All construction activities are conducted within the site boundary except laying of pipelines for water intake and discharges for which adequate permission and permits will be obtained.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Complied</li> </ul>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<p>encroachment outside the specified area.</p> <ul style="list-style-type: none"> <li>▪ Monitor the turbidity &amp; 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:               <ul style="list-style-type: none"> <li>a. The turbidity of the water is to be measured (ISO 7027) at the edge of the construction zone during trenching and backfilling activities;</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>▪ Compliance of method of statements for dewatering.</li> <li>▪ Results of monitoring of dewatering water quality.</li> <li>▪ Visual inspection.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Sedimentation pond for dewatering activities is provided to ensure quality of discharge is in line with the requirements of local regulations.</li> <li>▪ Quality of discharge water from sedimentation tank is monitored on monthly basis for the parameter in compliance with local regulations</li> <li>▪ Observation, if any made by Site engineer of PMDCSC is being raised to DBO contractor with requisite mitigation measures.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Complied</li> </ul>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<p>b. 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%.</p>			
10	Socioeconomic status	<ul style="list-style-type: none"> <li>▪ Engage the local workforce to the maximum possible extent.</li> <li>▪ Procure construction materials from local market, wherever available.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Compliance of Human resource policies and procedures</li> <li>▪ Complaints received</li> <li>▪ Number of local vendors</li> <li>▪ Complaints received</li> </ul>	<ul style="list-style-type: none"> <li>▪ Availability of local workers is limited hence at present, only three local workers/staff have been engaged out of about 226 workers/staff. However Human resource policies and procedures are in place.</li> <li>▪ No complaint received</li> <li>▪ Based on availability, preference is given to locals. All subcontractors engaged are local.</li> <li>▪ Sub contactors engaged are for supply of construction materials for batching plant and operation of batching plant, security, laboratory for</li> </ul>	<ul style="list-style-type: none"> <li>▪ Being complied</li> <li>▪ Complied.</li> </ul>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
				civil works related testing, transportation of laboratory samples, excavation works and General Electric works and all are locals. <ul style="list-style-type: none"> <li>▪ No complaints received</li> </ul>	
11	Other amenities for community welfare	<ul style="list-style-type: none"> <li>▪ Before any excavation work, reconfirm location and nature of existing infrastructure, if any, identified during detailed design stage.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Compliance of method of statement for excavation.</li> <li>▪ Approval of Notification of Inspection by PMDCSC.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Notification of inspection is to be approved by site engineer of PMDCSC before start of any excavation work. This needs inspection of site to be excavated.</li> <li>▪ As per latest update, STELCO and HDC start works to relocate the cable soon. Until then adequate mitigation measures are being taken to protect the same</li> </ul>	<ul style="list-style-type: none"> <li>▪ Complied.</li> </ul>
		<ul style="list-style-type: none"> <li>▪ Minimize repeated disturbance to locals by integrating forms of infrastructures such as temporary safe walkways in areas with ongoing excavation works. Provide alternate routes in the area if</li> </ul>	<ul style="list-style-type: none"> <li>▪ Same as above</li> </ul>	<ul style="list-style-type: none"> <li>▪ 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.</li> <li>▪ As discussed in earlier section, traffic movement via road is very limited.</li> <li>▪ Thilafushi island is uninhabited and mainly has industrial activities.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Complied.</li> </ul>



No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<p>necessary, to allow smooth movement of workers and vehicles in the area.</p>			
		<ul style="list-style-type: none"> <li>▪ Inform through continuous meaning consultations with local people about nature, duration and possible impacts of the construction and integrate their concerns.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Compliance of stakeholder engagement plan and GRM Plan.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Stakeholder with community has been carried out during EIA study conducted before start of construction activities and will be done again during proposed EIA update on finalization of detailed design.</li> <li>▪ Limited stakeholder consultation mainly with regulatory authority is being carried out from time to time. However same has not been conducted in this quarter.</li> <li>▪ As part of compliance of GRM, limited public awareness will be conducted in next quarter.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Being Complied</li> </ul>
		<ul style="list-style-type: none"> <li>▪ Promptly relocate infrastructure materials if found to be obstructing or disturbing free movement of local people.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Compliance of method of statement for excavation.</li> <li>▪ Approval of Notification of Inspection by PMDCSC</li> <li>▪ Complaint, if any received</li> </ul>	<ul style="list-style-type: none"> <li>▪ 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.</li> <li>▪ For existing pipelines laid for discharge of wastewater from STP and dewatering sedimentation tank, requisite permits from HDC (pending renewal) and URA are obtained.</li> <li>▪ PMDCSC has deputed one full time site engineer is deputed on site for</li> </ul>	<ul style="list-style-type: none"> <li>▪ Being complied</li> </ul>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<ul style="list-style-type: none"> <li>▪ Take prior permission from local authority for water use.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Permit register</li> </ul>	<p>granting approval to Notification of Inspection and for inspections on regular basis.</p> <ul style="list-style-type: none"> <li>▪ No complaint has been received.</li> <li>▪ Water is being taken from pipeline of Male Water and Sewage Company on chargeable basis for construction and domestic purposes.</li> <li>▪ To comply with local regulations, no permit/permission has been obtained for one bore well and RO plant under commissioning for producing water to be used in batching plant by Villa sub-contractor. DBO has been notified by PMDCSC on non-compliance and as per communication received from DBO contractor via monthly report of June-24 and discussion in monthly meetings, it has been initiated and production of water will not be commenced till receipt of all permissions and permits.</li> <li>▪ At present, villa subcontractor is purchasing water for usages in batching plant</li> </ul>	<ul style="list-style-type: none"> <li>▪ Partially Complied</li> </ul>
		<ul style="list-style-type: none"> <li>▪ Restore damaged properties and utilities to pre-work conditions.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Approval of design details of construction.</li> <li>▪ Approval of notification of inspection by PMDCSC and regular inspections</li> </ul>	<ul style="list-style-type: none"> <li>▪ 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.</li> <li>▪ An underground (at 1 m depth) live power cables of STELCO is passing</li> </ul>	<ul style="list-style-type: none"> <li>▪ Being Complied</li> </ul>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
			<ul style="list-style-type: none"> <li>▪ Compliance of GRM plan and stakeholder engagement plan.</li> </ul>	<ul style="list-style-type: none"> <li>through the project site and discharge pipeline from dewatering sedimentation pond is passing above the same with adequate protection. As per latest update, STELCO and HDC will commence the rerouting of the cable to deactivate the live cable going through the project site.</li> <li>▪ PMDCSC has deputed one full time site engineer is deputed on site for granting approval to Notification of Inspection and for inspections on regular basis.</li> <li>▪ No complaint has been received.</li> </ul>	
12	Community health and safety	<ul style="list-style-type: none"> <li>▪ Restrict work force in designated areas.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Compliance to CEMP and H&amp;S plan</li> <li>▪ Relevant Method of Statements and SOPs</li> <li>▪ Approval of Notification of Inspection by PMDCSC</li> <li>▪ Complaint, if any received</li> </ul>	<ul style="list-style-type: none"> <li>▪ Construction workers and activities, apart from laying of pipelines as described in other sections, mostly confined within the project site which is fenced.</li> <li>▪ Transportation of material via road is very limited as described in other sections.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Being complied</li> </ul>
		<ul style="list-style-type: none"> <li>▪ Identify stockyard areas in consultation with local administration.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Approved layout plan.</li> <li>▪ Approval of Notification of Inspection by PMDCSC</li> <li>▪ Compliance of soil management plan, waste management procedure and Plan,</li> </ul>	<ul style="list-style-type: none"> <li>▪ All construction activities are/shall be mainly confined to fenced project site and all stockyard areas are located within the project site.</li> <li>▪ No stockyard is envisaged outside project premises.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Being complied</li> </ul>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
			relevant activity wise method of statements and SOPs		
		<ul style="list-style-type: none"> <li>▪ Work on private land to require written permission of landowners.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Approved layout plan.</li> <li>▪ Approval of Notification of Inspection by PMDCSC</li> <li>▪ Permission of land acquired/to be acquired for usages, if any</li> </ul>	<ul style="list-style-type: none"> <li>▪ All construction activities are/will be executed as per approved layout plan and within project site.</li> <li>▪ Outside the project site, pipelines and other requisite facilities for wastewater discharge and water intake are/will be developed on land owned by HDC and accordingly permissions for usages are/will be obtained.</li> <li>▪ No private land is envisaged for usages during construction activities.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Partially complied</li> </ul>
		<ul style="list-style-type: none"> <li>▪ Prefer small mechanical excavator for excavation works.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Compliance of method of statements of excavation and relevant SOPs.</li> <li>▪ Approval of notification of inspection by PMDCSC.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Excavation for laying the pipelines outside project site 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.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Being complied</li> </ul>
		<ul style="list-style-type: none"> <li>▪ Prohibit alcohol and drugs on site.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Compliance of local regulations</li> </ul>	<ul style="list-style-type: none"> <li>▪ Drugs and Alcohol policy is in place as per local regulation</li> </ul>	<ul style="list-style-type: none"> <li>▪ Being complied</li> </ul>
		<ul style="list-style-type: none"> <li>▪ Prevent excessive noise.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Same as per no 6 of this table</li> </ul>	<ul style="list-style-type: none"> <li>▪ Same as per no 6 of this table</li> </ul>	<ul style="list-style-type: none"> <li>▪ Same as per no 6 of this table</li> </ul>
		<ul style="list-style-type: none"> <li>▪ Code of conduct for workers includes</li> </ul>	<ul style="list-style-type: none"> <li>▪ Compliance of Human resource polices and procedure, Construction camp development and</li> </ul>	<ul style="list-style-type: none"> <li>▪ All workers and most staff stay within camp area located within the project site.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Being complied</li> </ul>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<p>restricting workers in designated areas, no open defecation, no 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>management plan, waste management procedure and plan.</p> <ul style="list-style-type: none"> <li>▪ Records reported in Daily Progress Report (DPR) and monthly report by submitted by DBO.</li> <li>▪ Regular inspection and audit by PMDCSC.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Each one staying in camp area is being provided identity card.</li> <li>▪ Project site is fenced and entry and exit is allowed via two guarded gates only.</li> <li>▪ Food is being cooked in kitchen and provided to all. No cooking is allowed.</li> <li>▪ 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.</li> <li>▪ Waste generated is being stored in dedicated area and handed over to WAMCO for disposal.</li> <li>▪ At time of recruitment, each worker and staff are being informed by code of conduct as per Human resource polices and procedure.</li> <li>▪ H&amp;S plan is in place to ensure health and safety of workers.</li> <li>▪ Inspections and audit by PMDCSC are being conducted on regular basis.</li> </ul>	
		<ul style="list-style-type: none"> <li>▪ Follow international best practices on community health and safety such as those in Section 4.3 of IFC</li> </ul>	<ul style="list-style-type: none"> <li>▪ Approval of Notification of Inspection by PMDCSC</li> <li>▪ Compliance to CEMP and all plans as mentioned including Public health and safety plan and H&amp;S plan.</li> </ul>	<ul style="list-style-type: none"> <li>▪ 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.</li> <li>▪ Relevant plans such as traffic management plan, Security management plan, flora and fauna</li> </ul>	<ul style="list-style-type: none"> <li>▪ Partially complied</li> </ul>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<p>Environmental Health and Safety (EHS) Guidelines on Construction and Decommissioning Activities. These requirements are discussed in Section VI of the EIA report.</p>	<ul style="list-style-type: none"> <li>▪ Records reported in Daily Progress Report (DPR) and monthly report by submitted by DBO.</li> <li>▪ Regular inspection and audit by PMDCSC.</li> </ul>	<p>management plan, waste management procedure and plan, emergency response plan and activity wise method of statements on STP, batching plant, dewatering, excavation etc are in place.</p> <ul style="list-style-type: none"> <li>▪ Regular monitoring of ambient air quality and noise level within and around project site is being conducted.</li> <li>▪ Regular monitoring of wastewater discharge from STP and dewatering sedimentation tank is being conducted. However, waste water from sedimentation pond in batching plant area is being discharged on adjacent land belonged to private party.</li> <li>▪ Details of construction activities, real time inventory of construction materials, waste generated, stored and disposed are being reported in DPR and monthly report.</li> <li>▪ Inspections and audit by PMDCSC are being conducted on regular basis.</li> </ul>	
		<ul style="list-style-type: none"> <li>▪ Maintain a complaint logbook in workers camp and act promptly of complaints.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Compliance of Grievance Redressal Mechanism plan</li> </ul>	<ul style="list-style-type: none"> <li>▪ GRM plan in place and details of status of implementation of same are as per given in section X. However, no complaint has been received from during this quarter.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Partially complied as inadequate compliance of GRM plan.</li> </ul>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
13	Work site and Workers Health and Safety	<ul style="list-style-type: none"> <li>▪ Comply with labour act of Maldives.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Compliance of approved H&amp;S plan and CEMP &amp; other plans including Human Resource Management Procedure and HSE Regulatory Procedure</li> <li>▪ Insurance policies</li> <li>▪ Details provided on health and safety of workers in monthly report</li> <li>▪ Status of permits</li> <li>▪ Findings of regular inspection and audit by PMDCSC</li> </ul>	<ul style="list-style-type: none"> <li>▪ 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.</li> <li>▪ Personal Mediclaim insurance has been covered as part of permit to work issued by Maldivian Government and no separate insurance cover for individuals has been provided. However, other insurances such as third party, group insurance etc are in place.</li> <li>▪ Records of Permit to work issued by Maldivian Govt have been kept but details of medical check-up conducted for same have not been kept. Hence no medical history including blood group is available.</li> <li>▪ Requisite details on finding and actions taken training, toolbox talk, status of permits including copies of same, incident reports etc are being provided in monthly report submitted by DBO.</li> <li>▪ Appointment letters for permanent employees and contracts for contracted labours including sub-contractors are in place.</li> <li>▪ All wages, leave and overtime are provided in compliance with local regulations. For example, local employees are being paid pension fund @14% as additional amount.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Partially complied</li> </ul>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<ul style="list-style-type: none"> <li>▪ Implement the Occupational Health and Safety Plan, which shall follow all occupational health and safety requirements discussed in Section VI of the EIA report.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Compliance to H&amp;S plan and CEMP &amp; other plans such as emergency response plan, Chemical and hazardous material management plan etc</li> <li>▪ Compliance of relevant activity wise method of statements and SOPs</li> <li>▪ Complaints received via GRM</li> <li>▪ Findings of OHS monitoring</li> <li>▪ Details provided on health and safety of workers in monthly report</li> <li>▪ Regular inspection and audit by PMDCSC</li> </ul>	<p>Overtime is being provided @1.5 time on holidays and @1.25 times on working days.</p> <ul style="list-style-type: none"> <li>▪ Modified CEMP and H&amp;S plan have been approved. Status of each plan is as per given in Table 10.</li> <li>▪ 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.</li> <li>▪ OHS monitoring plan is in process of finalization. However, OHS monitoring has been carried out since March 2024.</li> <li>▪ No EHS committee has been constituted.</li> <li>▪ Mock drill has not been conducted on firefighting.</li> <li>▪ Eye wash station is located only in batching plant area and storage of chemical and hazardous storage container.</li> <li>▪ Secondary containments have not been provided for storage of packed containers of chemicals and tank in batching plant area.</li> <li>▪ Adequacy of spill kits provided/needed in terms of number and size need to be established.</li> <li>▪ Air exchange rate of container is to verified in compliance with best</li> </ul>	<ul style="list-style-type: none"> <li>▪ Partially complied</li> </ul>



No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
				<p>practice of storage of chemicals and hazardous materials.</p> <ul style="list-style-type: none"> <li>▪ Inadequate display of do's and don't and same are displayed in English only which are hard to understand by most workers and leads to unawareness by most workers.</li> <li>▪ Fire extinguishers yet to be inspected by third party, however same have been inspected by in-house team on regular basis.</li> <li>▪ 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.</li> <li>▪ Inadequate interaction and alignment between construction team and HSE team on implementation of HSE plans such as identification of additional risks and mitigation measures during supervisions as permit to work is being issued by Area manager.</li> <li>▪ As per real time inventory of PPEs, limited number of PPEs for adequate masks for protecting from PM2.5 and ear plug/muff for protecting from high noise level are in place. As per DBO, it is in process of procurement.</li> <li>▪ No update on emergency response plan in view of emergencies due to fire and smoke from adjacent waste dumping site of WAMCO.</li> </ul>	

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<ul style="list-style-type: none"> <li>▪ 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.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Compliance of HSE Training Procedure</li> <li>▪ Training schedule</li> <li>▪ Details provided in monthly report</li> </ul>	<ul style="list-style-type: none"> <li>▪ Sheets provided for scaffolding were found rusty and may create unsafe conditions. Staff responsible for inspection of same need more training.</li> <li>▪ Trainings are conducted on a regular basis as per schedule prepared on monthly basis.</li> <li>▪ Details of training provided are submitted as part of monthly report.</li> <li>▪ Training is mostly provided in Hindi and English, and videos are also displayed on the subject. However, workers are mainly from various countries such as India, Turkey, Bangladesh, Nepal, Sri Lanka etc. Mapping of understanding of language is to be conducted to make training session more effective.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Being complied</li> </ul>
		<ul style="list-style-type: none"> <li>▪ Restrict public access to worksites.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Approved project site and layout plan.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Site boundary is fenced and only three gates are provided for entry/exit</li> <li>▪ Out of three gates, two are open for use and two guards at each gate with guardhouses are placed to control and restrict entry.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Complied</li> </ul>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<ul style="list-style-type: none"> <li>▪ 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.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Compliance to H&amp;S plan, CEMP &amp; other plans such as Risk Assessment Procedure, Chemicals and hazardous materials management plan, emergency response plan, HSE training procedure etc</li> <li>▪ Activities wise method of statements and SOPs including PPE procedure.</li> <li>▪ Findings of OHS monitoring</li> <li>▪ Regular inspection and audit by PMDCSC</li> </ul>	<ul style="list-style-type: none"> <li>▪ PPEs are mainly 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.</li> <li>▪ As per real time inventory of PPEs, limited number of PPEs for adequate masks for protecting workers from PM2.5 and ear plug/muff for protecting workers from high noise level are in place. As per DBO, it is in process of procurement.</li> <li>▪ PPEs provided are by and large in compliance with British standards but need to be ensured by detailed inspection and audit.</li> <li>▪ 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.</li> <li>▪ Need more training on importance of PPEs and possible consequences due to not wearing.</li> <li>▪ Permit to work need to be made more specific as it does not provide activity specific requirements of PPEs.</li> <li>▪ Toolbox talks are being conducted and records of same are being provided in monthly report.</li> <li>▪ During inspection of records on random basis in compliance with all relevant documents, it is found that</li> </ul>	<ul style="list-style-type: none"> <li>▪ Partially complied</li> </ul>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
				same need to be audited in detail to verify the compliance.	
		<ul style="list-style-type: none"> <li>Document procedures to be followed for site activities.</li> </ul>	<ul style="list-style-type: none"> <li>Same as given in other rows of this aspects</li> </ul>	<ul style="list-style-type: none"> <li>Same as given in other rows of this aspects</li> </ul>	Same as given in other rows of this aspects
		<ul style="list-style-type: none"> <li>Maintain accident reports and records.</li> </ul>	<ul style="list-style-type: none"> <li>Compliance of H&amp;S plan and Incident reporting and investigation procedure.</li> <li>Medical register as maintained in health centre</li> <li>Incident reporting as part of monthly report.</li> <li>Regular inspection and audit by PMDCSC</li> </ul>	<ul style="list-style-type: none"> <li>All accidents are being recorded and reported in compliance with Incident reporting and investigation procedure.</li> <li>Medical register of type of patient including injured during accident are being reported in monthly report.</li> <li>LTI reporting has been corrected.</li> </ul>	<ul style="list-style-type: none"> <li>Complied</li> </ul>
		<ul style="list-style-type: none"> <li>Make first aid kits readily available.</li> </ul>	<ul style="list-style-type: none"> <li>Compliance to H&amp;S plan, CEMP &amp; other plans such as, emergency response plan, HSE training procedure etc</li> <li>Activities wise method of statements and SOPs</li> <li>Regular inspection and audit by PMDCSC</li> </ul>	<ul style="list-style-type: none"> <li>Health centre with full time one MBBS doctor and one nurse on 24x7 basis is in place.</li> <li>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.</li> <li>Total 9 trained first aiders and list of same are displayed in camp area and health centre.</li> </ul>	<ul style="list-style-type: none"> <li>Complied</li> </ul>
		<ul style="list-style-type: none"> <li>Maintain hygienic</li> </ul>	<ul style="list-style-type: none"> <li>Compliance to Construction camp</li> </ul>	<ul style="list-style-type: none"> <li>Adequate hygienic is being maintained in kitchen, dining hall and</li> </ul>	<ul style="list-style-type: none"> <li>Being complied.</li> </ul>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		accommodation in work camps.	development and management plan. <ul style="list-style-type: none"> <li>▪ Complaints received via GRM</li> <li>▪ Regular inspection and audit by PMDCSC</li> </ul>	accommodations. However, 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"> <li>▪ Pest control has been carried out on regular basis.</li> <li>▪ Test for intestinal parasites and salmonella screening has been carried out for every staff handling food items on annual basis.</li> <li>▪ No complaint has been received on subject during present quarter.</li> </ul>	
		<ul style="list-style-type: none"> <li>▪ Ensure uncontaminated water for drinking, cooking and washing.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Compliance to Construction camp development and management plan.</li> <li>▪ Monthly reports of water quality</li> <li>▪ Complaints received via GRM</li> <li>▪ Regular inspection and audit by PMDCSC</li> </ul>	<ul style="list-style-type: none"> <li>▪ Water is being supplied by MSWC on chargeable basis via pipeline.</li> <li>▪ Household RO unit at one location and filters at two locations of drinking water supply are 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.</li> <li>▪ Supply water from MSWC is being used for all purposes other than drinking and cooking.</li> <li>▪ Samples from water supply line of MSWC, outlet of all three drinking water supply points are being tested on monthly basis. Test reports are being provided as part of monthly report.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Complied</li> </ul>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
				<ul style="list-style-type: none"> <li>▪ No complaint has been received on subject during present quarter.</li> </ul>	
		<ul style="list-style-type: none"> <li>▪ Ensure clean eating areas.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Compliance to Construction camp development and management plan.</li> <li>▪ Complaints received via GRM</li> <li>▪ Regular inspection and audit by PMDCSC</li> </ul>	<ul style="list-style-type: none"> <li>▪ Adequate hygienic is maintained in kitchen, dining hall and accommodation.</li> <li>▪ Records of regular cleaning are being maintained.</li> <li>▪ No complaint has been received on subject during present quarter.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Complied</li> </ul>
		<ul style="list-style-type: none"> <li>▪ Ensure sanitation facilities are readily available.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Compliance to H&amp;S plan, Construction camp development and management plan etc.</li> <li>▪ Complaints received via GRM</li> <li>▪ Regular inspection by PMDCSC</li> </ul>	<ul style="list-style-type: none"> <li>▪ 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.</li> <li>▪ In addition to above, bio-toilets are provided near construction site including batching plant area though camp area is located with project site.</li> <li>▪ Records of regular cleaning are being maintained.</li> <li>▪ No complaint has been received on subject during present quarter.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Complied</li> </ul>
		<ul style="list-style-type: none"> <li>▪ Provide medical insurance coverage for workers.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Compliance to H&amp;S plan and Human Resource Policies and Procedure.</li> <li>▪ Complaints received via GRM</li> <li>▪ Regular inspection by PMDCSC</li> </ul>	<ul style="list-style-type: none"> <li>▪ 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.</li> <li>▪ Other insurance as third party, group insurance, compensation etc are in place.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Complied</li> </ul>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<ul style="list-style-type: none"> <li>▪ Provide orientation for guest visitors.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Compliance Security management plan, H&amp;S plan, HSE training procedure etc</li> <li>▪ Records of visitors</li> </ul>	<ul style="list-style-type: none"> <li>▪ 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, shoes in case visitor is to visit the construction site etc at entry gate.</li> <li>▪ In compliance with HSE training procedure, orientation including HSE is being provided to visitor by HSE staff in office building.</li> <li>▪ Records are kept.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Complied</li> </ul>
		<ul style="list-style-type: none"> <li>▪ Ensure that visitors do not enter hazard areas unescorted.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Same as above.</li> </ul>	<ul style="list-style-type: none"> <li>▪ In continuation to above, HSE team make sure that:               <ul style="list-style-type: none"> <li>a. Visitor is made aware about the hazardous associated with the construction site.</li> <li>b. Visitor is accompanied by a member of HSE team and/or construction team.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>▪ Complied</li> </ul>
		<ul style="list-style-type: none"> <li>▪ Ensure moving equipment is outfitted with audible backup alarms.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Compliance to H&amp;S plan, General Lifting, Unloading and Transportation Procedure etc</li> </ul>	<ul style="list-style-type: none"> <li>▪ In compliance with documents in place, equipment is being fitted with all accessories provided by manufactures.</li> <li>▪ Checklists of in-house inspection are in place.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Complied</li> </ul>
		<ul style="list-style-type: none"> <li>▪ Chemical and material storage areas need to be marked</li> </ul>	<ul style="list-style-type: none"> <li>▪ Compliance of H&amp;S plan, Chemicals and hazardous material management plan, emergency response</li> </ul>	<ul style="list-style-type: none"> <li>▪ By and large, dedicated storages for hazardous chemicals and materials are provided with secondary containment and polythene ground</li> </ul>	<ul style="list-style-type: none"> <li>▪ Partially complied</li> </ul>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		clearly. Display MSDS, train staff on storage and handling.	plan, activity wise relevant method of statements and SOPs <ul style="list-style-type: none"> <li>▪ Regular inspection and audit by PMDCSC.</li> </ul>	covers as impermeable layer. However: <ol style="list-style-type: none"> <li>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 and with parking area with impermeable layer.</li> <li>2. Chemical Sikaplastic-176 LK is being used and stored within batching plant area which is transported in 1000 liter containers. Storage area for containers is provided with impermeable RCC lining but no secondary containment.</li> <li>3. For usages, chemical Sikaplastic-176 LK Chemicals is being stored in tank with impermeable RCC lining but without secondary containment. <ul style="list-style-type: none"> <li>▪ MSDS are available with in charge of warehouse and process area.</li> <li>▪ Records on real time inventory of chemicals are kept.</li> <li>▪ Display of do's and don'ts are in English only which is hard to understand by workers.</li> <li>▪ Staff is trained on how to use PPEs, Spill Kit and fire extinguisher but have inadequate understanding on hazards associated with each</li> </ul> </li> </ol>	



No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
				chemical and specific requirement, if any to deal with same. <ul style="list-style-type: none"> <li>▪ Others as per given in above row for implementation of occupational health and safety plan.</li> </ul>	
		<ul style="list-style-type: none"> <li>▪ Hearing protection equipment enforced in noisy environment.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Compliance to H&amp;S plan, and method of statement of noise monitoring</li> <li>▪ Findings of noise monitoring within project site and at sources</li> </ul>	<ul style="list-style-type: none"> <li>▪ Ambient noise levels are monitored on a monthly basis at five locations to comply with EMP on 24 hourly basis. Same as sr number 6.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Partially Complied</li> </ul>
		<ul style="list-style-type: none"> <li>▪ Conduct of daily toolbox talks to reiterate repeatedly all the above measures and prioritize safety briefings; leanings from previous incidents, their causes and risks, and other safety procedures as may be identified.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Compliance to H&amp;S plan</li> <li>▪ Records of daily toolbox talks</li> <li>▪ Regular inspection and audit by PMDCSC.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Daily toolbox talks are conducted and records are kept.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Complied</li> </ul>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<ul style="list-style-type: none"> <li>▪ Conduct periodic safety audit, identify and remove potential hazards.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Compliance to H&amp;S plan and CEMP</li> <li>▪ Regular inspection and audit by PMDCSC.</li> </ul>	<ul style="list-style-type: none"> <li>▪ In-house supervision and inspections are being carried out by EPC contractor on regular basis and findings are being communicated to construction team via WhatsApp group and records of findings and action taken are being kept in register and on-line tracker. System needs to be improved and more training need to be provided to HSE team.</li> <li>▪ 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.</li> <li>▪ EHS committee is not in place. However, DBO contractor and EPC contractor have weekly meeting</li> <li>▪ Findings of inspections and audits carried out by EPC and DBO contractor are reported in monthly report.</li> <li>▪ As per revised project manual, PMDCSC is to conduct inspections 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.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Being complied – improvement is required in regular inspections</li> </ul>
		<ul style="list-style-type: none"> <li>▪ For works in the marine environment, ensure that:</li> </ul>	<ul style="list-style-type: none"> <li>▪ Compliance to H&amp;S plan, CEMP, relevant method of statements and SOPs,</li> </ul>	<ul style="list-style-type: none"> <li>▪ Most of the construction activities are mainly confined with project site which is already fenced with restricted entry.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Being complied</li> </ul>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<ul style="list-style-type: none"> <li>a. all persons engaged in the marine construction are competent swimmers.</li> <li>b. Lifejackets are provided to workers and worn at all times.</li> <li>c. Properly functioning ship-to-shore communications are provided.</li> <li>d. No work during rough sea conditions.</li> <li>e. Emergency rescue team is available at all times at the site during the marine work (such</li> </ul>	<ul style="list-style-type: none"> <li>▪ Approval of design details by PMDCSC and permits from URA and HDC.</li> <li>▪ Approval of Notification of approval by PMDCSC.</li> </ul>	<ul style="list-style-type: none"> <li>▪ 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 is in the process of renewal and permit from 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</li> <li>▪ 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.</li> </ul>	

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<p>as rescue boat with divers).</p> <p>f. Provide caution &amp; information boards (traffic, safety, information etc.,)</p>			
		<ul style="list-style-type: none"> <li>▪ Do not allow unauthorized / public entry into work sites / facilities</li> </ul>	<ul style="list-style-type: none"> <li>▪ Compliance to Security management plan, H&amp;S plan, Public health and safety plan etc.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Site boundary of project site is fenced with dedicated two Gates for visitor's entry and exit and guardhouses are located at gates.</li> <li>▪ Access is controlled as per procedure given in security management plan.</li> <li>▪ Patrolling along project boundary is being conducted on regular basis by security guards.</li> <li>▪ Records are being kept for visitors.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Complied</li> </ul>
		<ul style="list-style-type: none"> <li>▪ Undertake all necessary public safety measures, precautions</li> </ul>	<ul style="list-style-type: none"> <li>▪ Same as given in Sr no 11 for Other amenities for community welfare</li> </ul>	<ul style="list-style-type: none"> <li>▪ Same as given in Sr no 11 for Other amenities for community welfare</li> </ul>	<ul style="list-style-type: none"> <li>▪ Same as given in Sr no 11 for Other amenities for community welfare</li> </ul>
		<ul style="list-style-type: none"> <li>▪ Ensure proper maintenance and cleanliness of the site and facilities</li> </ul>	<ul style="list-style-type: none"> <li>▪ Records of preventive maintenance</li> <li>▪ Fitness of equipment/machinery</li> <li>▪ Records of housekeeping conducted within project site.</li> </ul>	<ul style="list-style-type: none"> <li>▪ In-house facility and system are in place for preventive maintenance of vehicles and equipment and records are being kept. However no dedicated place is assigned for same as it is done anywhere within project site.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Being complied.</li> </ul>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
				<ul style="list-style-type: none"> <li>▪ No detail of waste generated except waste oil generated is kept and provided in monthly report</li> <li>▪ In-house checklists are in place to inspect conditions of vehicles and equipment visually are in place and records of inspection are kept.</li> <li>▪ Housekeeping within project site is conducted on regular basis and records are reported in monthly report.</li> </ul>	
		<ul style="list-style-type: none"> <li>▪ Demarcate assembly area for emergencies</li> </ul>	<ul style="list-style-type: none"> <li>▪ Compliance of H&amp;S plan and Emergency response plan.</li> </ul>	<ul style="list-style-type: none"> <li>▪ 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.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Being complied</li> </ul>
		<ul style="list-style-type: none"> <li>▪ Provide medical aid facilities (first aid, doctor on call etc.,)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Compliance to H&amp;S plan, CEMP</li> <li>▪ Record of medical register provided as part of monthly report.</li> <li>▪ Regular inspection by PMDCSC</li> </ul>	<ul style="list-style-type: none"> <li>▪ Medical first aid facilities are provided which include full time MBBS doctor, nurse and 9 first aiders with all first aid facilities and first aid kits placed.</li> <li>▪ First aid facility for treatment of electrocuted person is to be provided in compliance with British Standard BS 8599-1:2019. Defibrillator has not been procured for the site. However, doctor is able to perform CPR if required.</li> <li>▪ In case of requirement of further treatment, patient is being referred to IGMH hospital, Male. A speed boat is available on 24x7 basis.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Being Complied</li> </ul>
14	Labor Camps	<ul style="list-style-type: none"> <li>▪ Avoid establishing labour camp</li> </ul>	<ul style="list-style-type: none"> <li>▪ Compliance of Construction camp</li> </ul>	<ul style="list-style-type: none"> <li>▪ Camp has been established within project site in compliance with construction camp development and</li> </ul>	<ul style="list-style-type: none"> <li>▪ Being Complied</li> </ul>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<ul style="list-style-type: none"> <li>▪ s by employing local workers as far as possible.</li> <li>▪ In unavoidable cases, establish camp within the site; and implement the Construction Camp Development and Management Plan (CCDMP).</li> <li>▪ Follow the layout plan included in the CCMP.</li> </ul>	development and management plan.	<p>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.</p> <ul style="list-style-type: none"> <li>▪ Camp is developed in phases considering all workers and supervisory staff including subcontractors.</li> <li>▪ As present, about 186 workers and staff are staying in camp area. Only DBO staff and workers of sub-contractors are not staying as accommodations for them have been arranged by themselves and provided by subcontractor.</li> </ul>	
		<ul style="list-style-type: none"> <li>▪ The CCDMP will consider all construction camp requirements discussed in Section VI of the EIA report, which, among others, are the following:</li> </ul>	<ul style="list-style-type: none"> <li>▪ Compliance of Construction camp development and management plan, waste management procedure and plan, method of statement for STP, emergency response plan, H&amp;S plan, GRM Plan etc</li> </ul>	<ul style="list-style-type: none"> <li>▪ Camp is located more than 50 m from seashore and storage area and solid waste dumping site of WAMCO.</li> <li>▪ STP is being in operation and treated wastewater is being tested on monthly basis before discharge into sea.</li> <li>▪ Solid waste is being collected and stored before handing over to WAMCO for disposal.</li> </ul>	<p>Being complied and need to address the following:</p> <ul style="list-style-type: none"> <li>▪ Provide more awareness of workers via training on camp development and</li> </ul>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<p>a. The camp, if possible in Thilafushi Island, is at least 50 m away from water bodies.</p> <p>b. Clear separation of the workers living areas from material storage areas and work sites with fencing and separate entry and exit</p> <p>c. Provision of proper liquid waste and solid waste collection, treatment and</p>	<ul style="list-style-type: none"> <li>▪ Findings of inspection and audits conducted by PMDCSC</li> <li>▪ Complaints, if any received via GRM.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Water is being taken from pipeline of Male Water and Sewage Company on chargeable basis for construction and domestic purposes.</li> <li>▪ Water supplied by Male Water and Sewage Company is being further treated for drinking purpose for workers and drinking water quality is monitored on monthly basis. This water is treated at three locations one is equipped with RO and other two are equipped with filters.</li> <li>▪ However, for supervisor staff, bottled water is being provided for drinking.</li> <li>▪ Toilets are being provided as per plan. However, at present, no female worker is being engaged.</li> <li>▪ Recreation facilities such as indoor games, TV, gymnasium etc. are in place separately for workers and staff.</li> <li>▪ Health centre is being provided all necessary first aid facilities with one full time MBBS doctor and qualified male nurse</li> <li>▪ Mainly Turkish food to is cooked in kitchen and provided in separate dining hall for staff and workers. Same food is served to all. However, for personnel (mainly from India, Bangladesh and Srilanka), food is being brought from outside due to food habits.</li> </ul>	<p>management plan and internal GRM.</p> <ul style="list-style-type: none"> <li>▪ Ensure availability of adequate communication skills with workers.</li> <li>▪ Variation in TDS values in water supply and in drinking water</li> </ul>

No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		<p>disposal system.</p> <p>d. Provision of drinking water, water for other uses, and sanitation facilities (e.g. separate toilets for men and women).</p> <p>e. Liveability at the highest standards possible at all times; living quarters provided with standard materials, space, and proper lighting and ventilation.</p>		<ul style="list-style-type: none"> <li>▪ Housekeeping is carried out on regular basis and records are being kept.</li> <li>▪ Following observations are made during inspections:</li> <li>▪ Following are yet to be addressed:</li> <li>▪ Inadequate provision of lights inside the workers accommodation</li> <li>▪ Workers need to be educated and encouraged to keep rooms clean.</li> <li>▪ Corridor is used for haphazard storage of items such as shoes and dirty cloths.</li> <li>▪ Only one gate has been provided in each block of accommodation which is also designated as the emergency exit gate;</li> <li>▪ Status of operation of emergency light and smoke detector.</li> <li>▪ Potential communication gap between workers and camp manager due to difference in spoken languages.</li> <li>▪ 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 to water logging; etc</li> <li>▪ Frequency of in-house inspection on monthly basis to comply with relevant plan.</li> </ul>	



No.	Field or Activity	Mitigation Measures	Indicator of Compliance	Status of implementation	Compliance
		f. Fire safety, medical facilities		<ul style="list-style-type: none"> <li>▪ As Section VII, no QA/QC has been done for variations reported in TDS values of water supply by Male Water and Sewage Company and in drinking water. DBO has been notified for same by PMDCSC.               <ol style="list-style-type: none"> <li>1. No complaints have been received in this quarter.</li> </ol> </li> </ul>	

## **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.


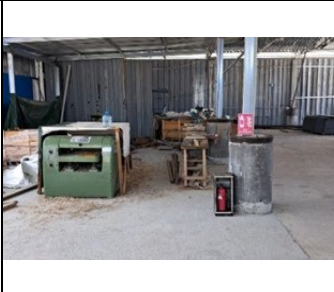

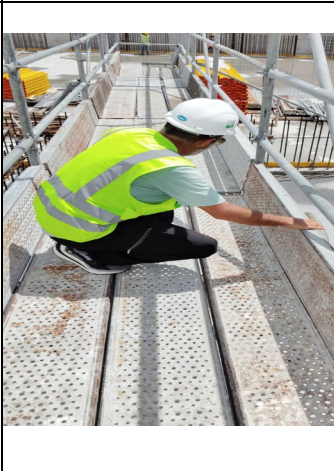


## **E. Key Site Observations and Action Taken**



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:
  - a) Regulatory compliance - requisite permit/registration for diesel mobile tanker, commissioning of bore well and RO plant in batching plant area, vehicles which are in operation at site and dewatering location.
  - b) Status of permits for mobile tankers visiting the project site to supply diesel to machinery and equipment owned by sub-contractors.
  - c) Verifications of facts on discharge of waste water from sedimentation pond provided in batching plant area and get permit if required to comply with local regulation.
  - d) Status of HSE plans- Submission of modified OHS monitoring plan for approval, Submission of Regulatory Compliance Procedure etc
  - e) Provision of secondary containment for each storage of hazardous chemicals and adequacy of spill kits provided to deal with probable identified spill size.
  - f) Compliance of EMP of approved EIA report mainly on dust suppression and noise level mitigation measures, storm water management plan for construction phase,
  - g) Inadequacy in implementation of HSE documents.
  - h) CVRA study report
  - i) Air dispersion modelling report to relocate the ambient air quality monitoring locations (outside the project site)
  - j) Variations observed in water quality and air quality as part of OHS monitoring for June month.
  - k) Risk due to presence of live electrical cables of STELCO (passing through project site) and presence of shipwrecks in sea adjacent to quay wall.
  - l) Smoke emissions and fire risk from the existing waste dump site of WAMCO.
  - m) Appointment of Public Awareness consultant by PMU and public consultations.
  - n) Training to be provided to all key personal of DBO contractor and PMU by PMDCSC; etc


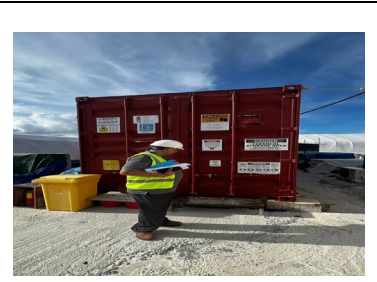
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<sup>6</sup> <https://www.adb.org/sites/default/files/publication/614811/safety-well-beingworkers-communities-covid-19.pdf>.

**Table 12: Site Observations and Current Status**





Aspect	Site Observation / Finding	Site photographs	Action to be taken	Current status	Close out photo
<b>Fire Safety</b>	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.  Closed Date: 17 <sup>th</sup> April 2024	
<b>Unsafe scaffolding</b>	Rusted sheets and gap between sheets were found  14/04/24		Rusted sheets are to be replaced and gaps between sheets are to be reduced	Rusted sheets are replaced and gaps between sheets are removed  15/04/24	
<b>Non-compliance of local regulations for Diesel mobile tanker of 5000 L</b>	It was in operation without requisite permits from transport authority, MNDF etc and signage of hazards associated,		1. Signage of hazards associated, safety signages, contact information etc need to be provided	1. Signage of hazards associated, safety signages, contact information etc are provided on 15/04/24. 2. Application has been submitted for getting requisite permits	

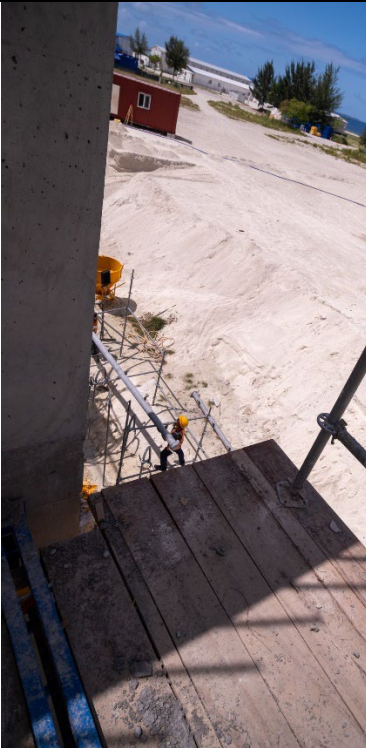
Aspect	Site Observation / Finding	Site photographs	Action to be taken	Current status	Close out photo
	safety signages, contact information etc 14/4/24		2. Requisite permits are to be obtained.		
<b>Secondary containment for storage of hazardous chemicals</b>	No secondary containment for storage of chemical Sikaplastic-176 LK in batching plant area  14/4/24		Secondary containment needs to be provided	Pending	
	No secondary containment for storage of chemicals in warehouse  07/05/24		Secondary containment needs to be provided	Pending	

Aspect	Site Observation / Finding	Site photographs	Action to be taken	Current status	Close out photo
<b>Third party inspection of fire extinguishers</b>	All fire extinguishers were found with expired date of third party inspection 14/4/24		Inspections by third party need to be done.	Pending	
<b>Eye wash station near hazardous chemical storage area</b>	Eye wash station was not provided near hazardous chemical storage area 14/4/24		Eye wash station need to be provided	Pending	



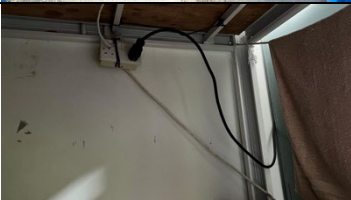

Aspect	Site Observation / Finding	Site photographs	Action to be taken	Current status	Close out photo
<p><b>Non-compliance of local regulations for transit mixers</b></p>	<p>All transit mixers were in operation without requisite registration from transport authority</p> <p>14/04/24</p>		<p>Need to get registration from Transport Authority</p>	<p>Pending.</p>	
<p><b>Emergency alarm</b></p>	<p>Rusty spindle of manually operated emergency siren</p> <p>14/04/24</p>		<p>Need to be cleaned</p>	<p>Spindle was cleaned and painted.</p>	



Aspect	Site Observation / Finding	Site photographs	Action to be taken	Current status	Close out photo
<b>GRM</b>	Complaint box was found without complaint registration form near material Gate 14/04/24		complaint registration form need to provided	Forms provided	
<b>House keeping</b>	Approach road was found full of grass 14/04/24		Need to be removed	Grass was removed 07/05/24	

Aspect	Site Observation / Finding	Site photographs	Action to be taken	Current status	Close out photo
<b>Working Platform (Working at height)</b>	<p>Working platform at bunker wall was installed not in accordance with Method of Statement.</p> <p>Need improvement to safeguard the users (workers/staff) safety. Some of the key issues as follows:</p> <ul style="list-style-type: none"> <li>a) Noticeable gap on the platform which increase the potential of falling.</li> <li>b) No adequate toe-board. This might lead to falling object.</li> <li>c) Not sufficient</li> </ul>		<p>EPC to improve awareness of scaffolders and installer on working platform requirement as specified in project specification and working platform method of statement.</p> <p>EPC to conduct training and set a mock-up platform as references.</p>	<p>Pending.</p>	



Aspect	Site Observation / Finding	Site photographs	Action to be taken	Current status	Close out photo
	handrail on every section.				
<b>Portable Toilets</b>	Portable toilets were found in bad condition  02/05/2024		Regular cleaning and maintenance of portable toilets is required	Portable toilets are cleaned and a maintenance procedure has been put in place  07/05/2024	
<b>Electrical Safety</b>	Electrical extension boards used in workers accommodations  08/05/24		Sufficient electric sockets in workers accommodations	Electric sockets have been provided.	

## F. Project Construction related Accidents and Incidents

27. Table 13 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	Type of incident	Description of incident	Consequence of incidents	Action taken by contractor	Present status
17 <sup>th</sup> March 2024 <sup>17</sup> [11:00]  At Bunker Area	First aid injury	Person slipped over gaps in the rebar while fixing rebar in the bunker area	Cut injury on right lower leg	<ul style="list-style-type: none"> <li>Plywood needs to be placed on large gaps in the rebar</li> <li>Toolbox talks needs to be conducted with the crew for the specific topic</li> </ul>	All hazards and risk associated have been mitigated.
20 <sup>th</sup> April 2024 [09:30] At Security Gate #3 Near Quay Wall	Near miss	During unloading of steel structure column with a mobile crane the web sling was slightly damaged as packing was not provided around the structure to protect the web sling	Web sling damaged during unloading of steel structure	<ul style="list-style-type: none"> <li>Packing to be provided to protect web sling during lifting</li> <li>Meeting to be conducted for safe lifting procedure</li> <li>Dos and Don't to be developed for lifting procedure</li> <li>Damaged web slings replaced</li> </ul>	All hazards and risk associated with the equipment and surroundings have been mitigated.

Date of occurrence of incident	Type of incident	Description of incident	Consequence of incidents	Action taken by contractor	Present status
<p>22<sup>nd</sup> April 2024</p> <p>[9:10 am]</p> <p>At Batching plant area</p>	<p>Asset damage</p>	<p>Internal electric and CCTV fibre optic cables were damaged during excavation for the RO plant</p>	<p>Damages internal cables</p>	<ul style="list-style-type: none"> <li>• New permit needs to be issued with SOP and risk assessment for the excavation</li> <li>• Provide cable route markers and warning signage</li> <li>• Provided refresher training for the permit to work holder</li> <li>• Provide Tool box talk / stand-down meeting to work crew</li> </ul>	<ul style="list-style-type: none"> <li>• Cables have been repaired</li> </ul>
<p>20<sup>th</sup> June 2024</p> <p>[21:35]</p> <p>At Bunker Area</p>	<p>Medical Treatment Case</p>	<p>During concrete pouring at the bunker wall the pump hose detached</p>	<p>concrete poured on the back of the civil engineer's head and splashed into his eyes</p>	<ul style="list-style-type: none"> <li>• Injured person got treatment by in-house doctor in health center</li> <li>• The injured person was sent to hospital in Male' for further diagnosis. No internal injuries / broken bones were found.</li> <li>• HSE team to meet with Villa company to take</li> </ul>	<p>All hazards and risk associated have been mitigated by implementing the actions to be taken.</p>

Date of occurrence of incident	Type of incident	Description of incident	Consequence of incidents	Action taken by contractor	Present status
				<p>appropriate control measures to prevent recurrence of similar incidents.</p> <ul style="list-style-type: none"> <li>• Instructions provided to Villa Company to replace rusted parts of the concrete pump and carry out thorough maintenance checks on all equipment.</li> <li>• HSE team to develop a pre-inspection prior to concrete pouring</li> </ul>	

<sup>15</sup> This incident occurred in the previous quarter (March 2024), however, it was reported in the monthly report of May and therefore, has been reported in this QEMR. This incident is added to the first aid case of this period in Table 14.

**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	1	1	2
Major accidents	0	0	0
Fatal accidents	0	0	0
Accidents (only damage to assets,	0	1	3

does not involve personnel injuries)			
Near miss cases	1	2	5
<b>Total</b>	<b>2</b>	<b>4</b>	<b>10</b>

**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. Monitoring of ambient air quality, ambient noise level and illumination level have been carried out as part of OHS monitoring. However, detailed OHS monitoring plan is to be revised for approval.

**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"> <li>▪ AQ1 (downwind direction of the proposed project site)</li> <li>▪ AQ2 (crosswind direction of the plume)</li> <li>▪ AQ3 (crosswind direction of the smoke plume from the existing dump site at Thilafushi.</li> <li>▪ AQ4 (Villingili as a control site)</li> <li>▪ ASR2</li> <li>▪ ASR3</li> <li>▪ ASR5</li> </ul>	Monthly sampling during April and May.  Frequency of sampling has been quarterly from May onwards as mentioned in the modified CEMP.	Ambient air quality samplings were undertaken on the following dates:  1) 6-9 April 2024 2) 1-5 May 2024
Ambient noise level	Leq <sub>day time</sub> and Leq <sub>nighttime</sub>	Total of 5 monitoring locations (Refer to Figure 4)	Monthly sampling	Noise level sampling was undertaken on the following dates: 1) 22-23 April 2024 2) 1-5 May 2024 3) 18-19 June 2024
OHS monitoring	1. Ambient air quality for TSP, PM10, PM2.5, NO2 and SO2	1. 24 hourly basis ambient air quality monitoring was conducted at two locations within	Will be conducted as per OHS plan which is under preparation	Air quality: 1) 23-25 April 2024 2) 4 to 6 May 2024 3) 18 June 2024

Assessment	Parameters	Location	Frequency	Status
	2. Noise level for $Leq_{day\ time}$ and $Leq_{night\ time}$ 3. Illumination level in Lux 4. Gas assessment	project site during April and May 2. Only one hourly basis ambient air quality has been monitored at four workplaces within project site during June (Refer to Figure 3) . 3. 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) as well as near grab monitoring at and near sources. 4. Illumination levels have been monitored on grab basis at various locations within project site. 5. Drinking water quality at three locations for parameter as referred in		Noise: 1) 21 April 2024 2) 14 May 2024 3) 08 June 2024  Illumination: 1) 17 April 2024 2) 08 May 2024 3) 16 June 2024  Drinking water quality: Grab sample was collected on 15 April 2024, 3 May 2024 and 06 June 2024  Gas: 1)27 April 2024
Marine water quality	Heavy metals (As, $Cr^{+6}$ , Cu, Ni, Pb, Zn, Hg, Cd), nitrite, pH, turbidity, and BOD <sub>5</sub> 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 3rd May 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"> <li>▪ Water samples to be collected from the eight monitoring locations (Refer Figure 56)</li> <li>▪ For each location, the sample was collected from mid-water level</li> </ul>	Quarterly sampling	<ul style="list-style-type: none"> <li>▪ Groundwater Samples were collected from seven sampling stations - GW1, GW2, GW3, GW4, GW5, GW7 and GW8 on 3rd May 2024. GW6 was inaccessible.</li> </ul>

<b>Assessment</b>	<b>Parameters</b>	<b>Location</b>	<b>Frequency</b>	<b>Status</b>
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"> <li>Supply line of Male Water and Sewerage Company Supply network at project site.</li> </ul>	Monthly sampling	<ul style="list-style-type: none"> <li>Grab sample was collected on 15 April 2024, 2 May 2024, and 6 June 2024.</li> <li>Parameters have been revised in compliance with supply water quality standard as prescribed by URA from August 2023 onwards.</li> </ul>
Treated wastewater quality from WWTP/STP to be discharged into sea	pH, COD, BOD <sub>5</sub> , heavy metals, EC, etc.	<ul style="list-style-type: none"> <li>At discharge point from the WWTP/STP to the receiving body of water</li> </ul>	Monthly sampling	<ul style="list-style-type: none"> <li>Grab sample was collected on 15 April 2024, 2 May and 06 June 2024</li> <li>Parameters have been revised in compliance with National Waste Water Quality Guidelines 2007 and IFC General EHS Guidelines from August 2023 onwards.</li> </ul>
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 15 April 2024, 2 May 2024 and 06 June 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 7 June 2024



## **B. Monitoring Results**

### **i. Ambient Air Quality**

32. As per details provided in Table 15, there were two sampling events during this reporting period i.e. during April and May-24. Measurements of parameter such as PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub>, NO<sub>2</sub>, 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. 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**

<b>Location</b>	<b>Description</b>	<b>Distance to Project Site (WtE facility construction) meter</b>
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, April and May 2024**

Parameters	Ambient Air Quality														WHO Air Quality Standards
	AQ1		AQ2		AQ3		AQ4		ASR2		ASR3		ASR5		
	April	May	April	May	April	May	April	May	April	May	April	May	April	May	
PM <sub>10</sub> (µg/m <sup>3</sup> )	28	35.8	<b>38.91</b>	44.4	<b>49.14</b>	37.7	27.96	<b>50.0</b>	38.38	38.3	30.47	31.0	24.61	31.5	45
PM <sub>2.5</sub> (µg/m <sup>3</sup> )	<b>26.2</b>	<b>33.8</b>	<b>37.01</b>	<b>42.6</b>	<b>47.53</b>	<b>35.9</b>	<b>26.08</b>	<b>47.7</b>	<b>36.35</b>	<b>36.4</b>	<b>28.69</b>	<b>29.7</b>	<b>22.60</b>	<b>30.0</b>	15
SO <sub>2</sub> (µg/m <sup>3</sup> )	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	40
NO <sub>2</sub> (µg/m <sup>3</sup> )	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<b>29.6</b>	ND	23.0	25
TSP (µg/m <sup>3</sup> )	48.9	48.1	70.00	75.6	89.94	71.0	48.87	49.7	68.38	71.5	53.44	65.1	42.01	46.1	-
Monitoring dates: April (6-9 April 2024) May (1-5 May 2024) Averaging time is 24 hours LOQ for <0.5 ppb (1.3µg/m <sup>3</sup> ) for SO <sub>2</sub> <0.5 ppb (0.94µg/m <sup>3</sup> ) for NO <sub>2</sub> ND															

34. From Table 17, results of ambient air quality conducted during this reporting period show that levels of PM<sub>2.5</sub> at all locations are exceeding the WHO air quality guidelines. Levels of PM<sub>10</sub> are also exceeding the WHO guidelines at AQ3 in April and AQ4 in May. NO<sub>2</sub> levels are higher than the guideline at ASR3 for the month of May.
35. However, as per ambient air quality monitoring results at seven locations outside the project site during April and May, 2023, values of PM<sub>10</sub> varied from 3.67 to 10.46 µg/m<sup>3</sup> while values of PM<sub>2.5</sub> varied from 3.32 to 9.12 µg/m<sup>3</sup>.
36. Variations in the ambient air quality results compared to the last year results 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. Further analysis has been mentioned in sub section (iii) i.e. OHS monitoring -air quality.
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**

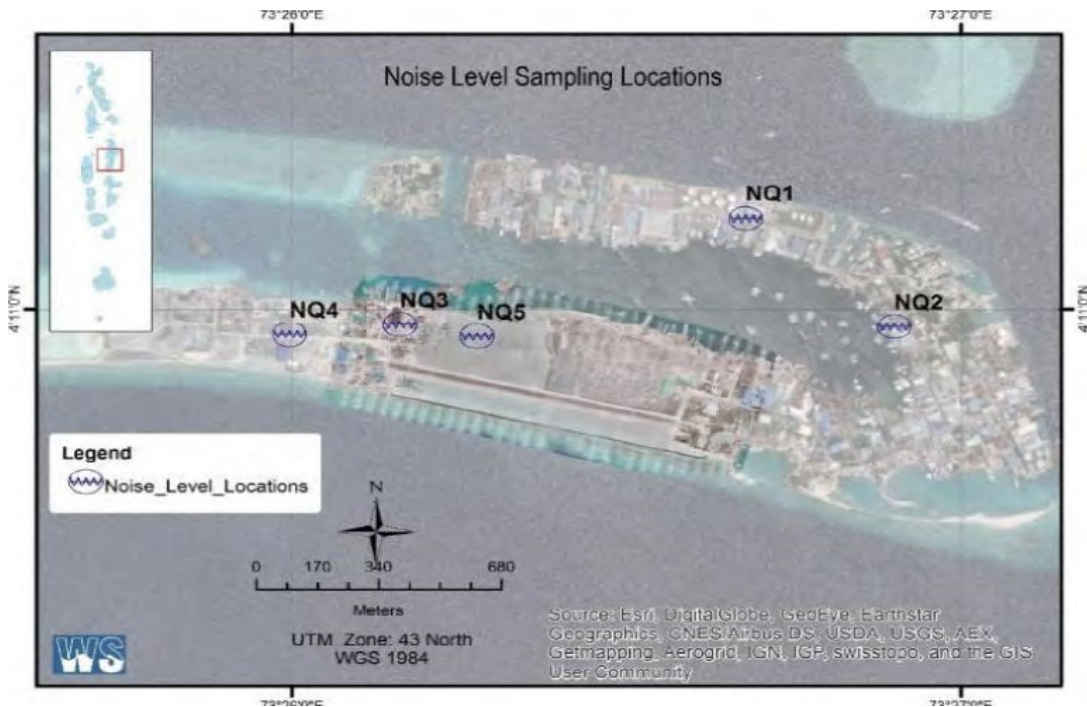
38. Ambient noise level measurements were conducted from, 22-23 April 2024, 1-5 May 2024, and 18-19 June 2024, at five sampling stations identified in the EIA (July 2020). These are NQ1 to NQ5 (refer to Table 18 for description of the sampling stations and Figure 4 for location map). Thilafushi is considered 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 19.

**Table 18: Description of Noise Sampling Stations**

<b>Station Identifier</b>	<b>Location</b>	<b>Description and rationale</b>
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 22-23 April 2024		Measured from 1-5 May 2024		Measured from 18-19 June 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	59	53	63	57	59	53
NQ2	55	47	53	48	54	46
NQ3	59	61	67	65	58	63
NQ4	54	46	64	59	54	44
NQ5	48	43	62	58	52	44
WHO Guidelines Value for Noise Levels Measured Out of Doors (One Hour LAeqin dBA)	70	70	70	70	70	70

Source: Guidelines for Community Noise. WHO. 1999						
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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 April to June 2024. Compared to the ambient noise levels measured on during April to June 2023, at same locations, 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. OHS monitoring included air quality, noise and illumination at several locations within the project site. Drinking water quality was also monitored at 3 locations. Description of the sites are given in Table 20 below.

**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	Batching plant	Near the batching plant
Air Quality	Camp area	Camp area
Air Quality	Warehouse area	Warehouse for material storage
Air Quality	WTE site area	Bunker area
Air Quality	Batching plant area	Batching plant area
Noise	NQ3	Near the process area
Noise	NQ5	Near the material storage area
Noise	Equipment	Near dewatering pump, generator sets and equipment
Illumination	Workplace & accommodation	At several locations within the site
Drinking water	Worker's accommodation	Filtered water
Drinking water	Dining area	Filtered water
Drinking water	Outside QC laboratory	Filtered water

**Air Quality**

42. Ambient air quality monitoring was carried out in April and May at two locations within the project site on 24 hourly basis and results are presented in Table 21 below. Levels of PM 2.5

were found exceeding the WHO standards for ambient air quality at all sites. However values reported for PM10 and PM2.5 within project site are in same range as reported in Table 17 for locations outside project site. Also, 8 hourly permissible limits by OSHA for respirable dust and total dust exposure limit for workers are 5 mg/m<sup>3</sup> and 10 mg/m<sup>3</sup> respectively.

43. Ambient air quality monitoring as a part of OHS monitoring was carried out on the 18<sup>th</sup> of June at 4 locations representing workplaces on 1 hourly basis by using hand hold device. Due to errors in reported results, same are not included in this section. However DBO has been notified to take corrective measures including QA/QC and calibration.



- 1. AREA 12
- 2. Batching plant

**Figure 5 Ambient Air Quality Sampling Stations within Project Site**

**Table 21 Results of OHS Air Quality Monitoring within the site (April and May)**

Parameters	OHS Air Quality Monitoring within the site				WHO Standards
	April		May		
	Near area 12	Near AAJV Office	Near area 12	Near batching plant	
PM <sub>10</sub> (µg/m <sup>3</sup> )	42.93	38.52	29.2	33.8	45



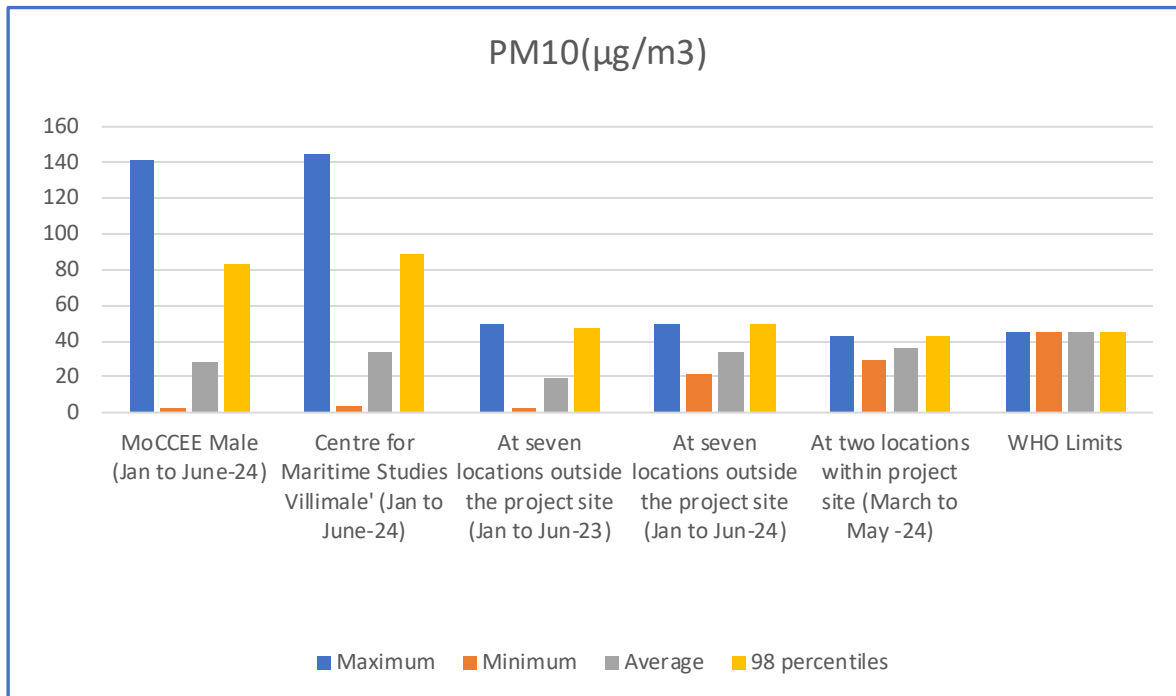
PM <sub>2.5</sub> (µg/m <sup>3</sup> )	<b>41.13</b>	<b>36.81</b>	<b>27.4</b>	<b>32.5</b>	15
SO <sub>2</sub> (µg/m <sup>3</sup> )	ND	ND	ND	ND	40
NO <sub>2</sub> (µg/m <sup>3</sup> )	ND	ND	ND	ND	25
TSP (µg/m <sup>3</sup> )	76.64	69.53	44.0	44.1	-
Monitoring dates: April (6-9 April 2024) May (1-5 May 2024) Averaging time is 24 hours LOQ for                    <0.5 ppb (1.3µg/m <sup>3</sup> )    <0.5 ppb (0.94µg/m <sup>3</sup> ) ND                            for SO <sub>2</sub> for NO <sub>2</sub>					

44. 24 hourly values of PM<sub>2.5</sub> and PM<sub>10</sub> in ambient air collected by MoCCEE at its own building at Male and at Centre for Maritime studies at Villimale from January to June 2024 and by DBO at seven locations outside the project premises during 2023 and 2024 and at two locations within project site from March to May-2024 are summarized in Table 22 and depicted in Figure 6 and 7.
45. Male and Villimale are located at about 8.0 km (aerial distance) and about 4.8 km (aerial distance) from Thilafushi respectively in eastern direction from.
46. From above mentioned table and figures, following observations are made:
- Average values of PM<sub>2.5</sub> in ambient air at all locations are exceeding WHO limit of 15 µg/m<sup>3</sup>.
  - Average values of PM<sub>10</sub> in ambient air at all locations are within WHO limit of 45 µg/m<sup>3</sup>.
  - Reported values of PM<sub>10</sub> and PM<sub>2.5</sub> in ambient air within the project site are higher than the reported values outside the project site. It implies that there is a marginal contribution of PM<sub>10</sub> and PM<sub>2.5</sub> to the ambient air from construction activities.
  - Reported values of PM<sub>10</sub> and PM<sub>2.5</sub> in ambient air at Villimale Island are higher than values reported on Male Island. Important to note is that reclamation of land for construction of road and bridge near Villimale from Male to Thilafushi island is in process
47. It is evident from above discussion that reported higher values of PM<sub>10</sub> and PM<sub>2.5</sub> in ambient air are cumulative impacts of all surrounding domestic, commercial, construction and natural activities at Male, Villimale and Thilafushi including construction activities at project site. PMU/PMDCSC have been notifying DBO on reported values of higher values and compliance on mitigation measures as mentioned in EMP of approved EIA verbally and in writing.

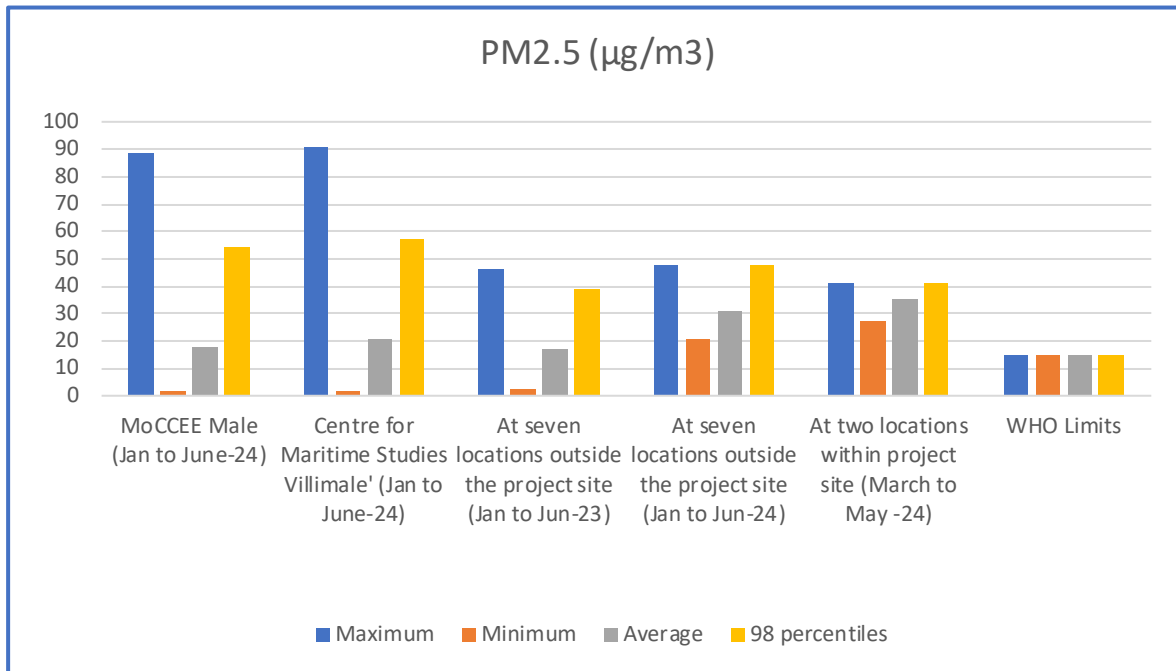
**Table 22: Summarized 24 hourly monitored values of PM<sub>2.5</sub> and PM<sub>10</sub> in regional ambient air quality**

	MoCCEE Male	Centre for Maritime Studies Villimale'	At seven locations outside the project site		At two locations within project site
	Jan to June 2024	Jan to June 2024	Jan to June 2023	Jan to May 2024	March to May-2024
PM <sub>2.5</sub> (µg/m <sup>3</sup> )					
Maximum	88.96	90.46	46.6	47.7	41.13

Minimum	1.67	2.04	2.18	20.9	27.4
Average	17.81	20.83	17.40	31.03	35.55
98 percentiles	54.63	57.23	38.89	47.58	41.01
PM10 ( $\mu\text{g}/\text{m}^3$ )					
Maximum	141	144.54	49.9	50	42.93
Minimum	2.88	3.92	2.74	21.7	29.2
Average	28.04	33.94	19.40	33.65	36.67
98 percentiles	83.73	88.91	47.36	49.93	42.65



**Figure 6 Reported values of PM10 in regional Ambient Air Quality**



**Figure 7 Reported values of PM2.5 in regional Ambient Air Quality**

**Illumination**

- 48. Illumination levels in LUX at various locations during night within project site were monitored. Results are given for the accommodation area, bunker area and material storage area in Table 23. Detailed report is enclosed as Appendix- 3.
- 49. Illumination levels were found to be lower than the recommended levels at several locations within the site. The contractor has stated that broken lights have been fixed, additional lights have been placed in the accommodation area and they are in the process of procuring additional lights.

**Table 23 Results of OHS Illumination Monitoring within the site**

Locations	Average Lux			Type of workplace	IFC Minimum limits for workplace illumination intensity
	April	May	June		
Accommodation	3.0	28	2.2	Outdoor non-working areas	<ul style="list-style-type: none"> <li>•Outdoor non-working areas – 20 lux</li> <li>•Simple orientation and temporary visits (machine storage, garage, warehouse) – 50 lux</li> </ul>

Bunker area	88.6	125.1	33.8	Medium precision work	<ul style="list-style-type: none"> <li>•Workspace with occasional visual tasks (corridors, stairways, lobby, elevator, auditorium) – 100 lux</li> <li>•Medium precision work (simple assembly, rough machine works, welding, packing, etc.) – 200 lux</li> </ul>
Material storage area	36.4	30.6	64.1	Simple orientation and temporary visits	<ul style="list-style-type: none"> <li>•Precision work (reading, moderately difficult assembly, sorting, checking, medium bench and machine works, etc, offices) – 500 lux</li> <li>•High precision work (difficult assembly, sewing, colour inspection, fine sorting etc) – 1000-3000 lux</li> </ul>

## Noise

50. As per table given in Table 24 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, Leq have been calculated for 8 hours as reported in Table 24 and compared with ILO noise standards. Leq levels for 8 hour periods are in compliance with the ILO noise standard of 85 dBA.
51. Noise levels were monitored near equipment as per the contractor's draft OHS monitoring plan. Results are presented in Table 25 below. DBO has been notified to prepare and implement plan for providing temporary or portable acoustic barriers around stationary construction noise sources and ear plug/muff based on Noise Reduction Rating to comply with EMP of approved EIA.
52. DBO has been notified to take immediate corrective actions for DG set in batching plant area and as per latest update, DBO has notified Villa Pvt Ltd as the DG set is owned by them.

**Table 22 :Results of OHS Noise Monitoring within the site**

Sn	Duration	8 hourly Leq dB(A)					
		April		May		June	
		NQ3	NQ5	NQ3	NQ5	NQ3	NQ5
1	7 a.m. to 2.00 pm	58.7	50.6	73.2	72.1	59.8	52.8
2	3 p.m. to 10.00 pm	61.1	46.7	63.5	58.4	58.6	51.0
3	10 p.m. to 6.00 a.m.	61.2	42.1	67.9	61.6	63.5	43.5

**Table 23 Results of OHS Noise Monitoring Near Equipment**

		Noise levels recorded (DB)			
Sn	Location	Very close	1 m from equipment	2 m from equipment	3 m from equipment
<b>April</b>					
1	Dewatering pump 1	93.6	87.0	82.3	78.8
2	Dewatering pump 2	90.5	87.0	82.8	77.6
3	Diesel generator 1	89.2	88.8	84.5	84.0
4	Diesel generator 2	98.5	85.2	82.8	78.4
5	Diesel generator – (Batching plant area)	105.8	100.1	94.9	90.5
<b>May</b>					
1	Dewatering pump 1	88	83.1	79.3	74.5
2	Dewatering pump 2	89.6	86.1	82.7	78.6
3	Diesel generator 1 (near batching plant)	86.9	83	80	78
4	Diesel generator 2 (near bunker area)	82.0	79.5	76.9	74.5
5	Diesel generator (Batching plant area)	104	96.6	91.1	85.9
<b>June</b>					
1	Dewatering pump 1	92.2	86.2	82.8	81.2
2	Dewatering pump 2	89.9	87.1	83.8	83.6
3	Diesel generator 1 (near batching plant)	93.0	84.6	83.2	81.9
4	Diesel generator 2 (near batching plant)	107.6	99.0	95.7	94.1
5	Carmix (bunker area)	98.3	90.7	90.3	88.3
6	80 Ton crane	87.7	81.0	79.4	76.9
7	Chiller plant (batching plant)	82.3	81.3	77.7	74.4
8	Diesel generator (process area)	96.6	88.6	88.4	81.6

## **Drinking Water**

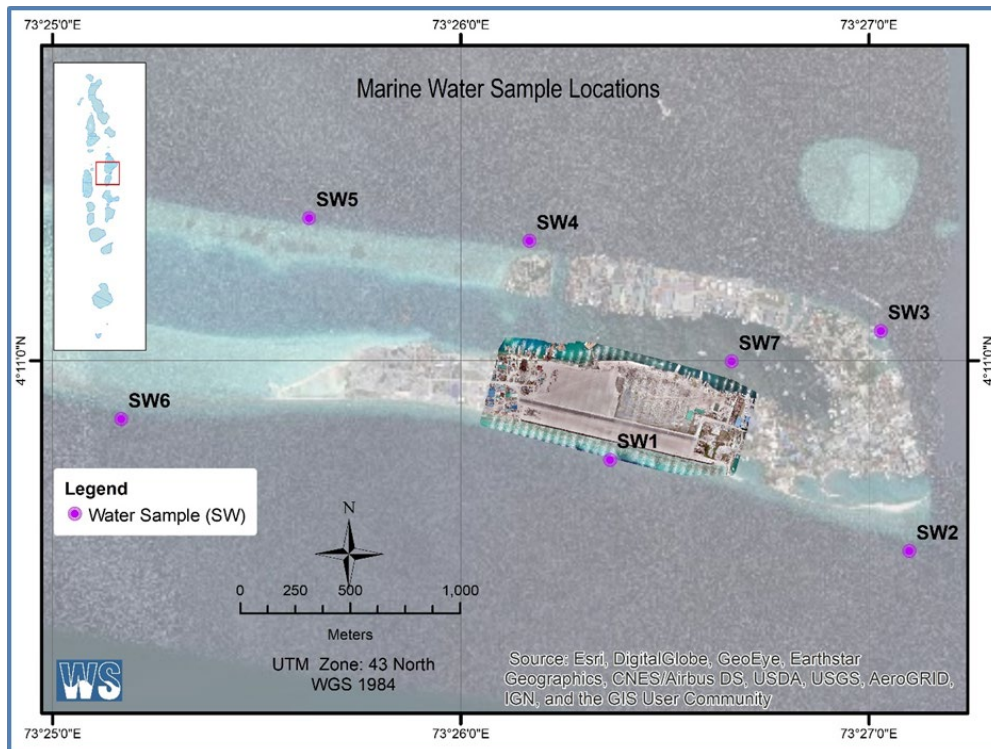
53. Drinking water quality was monitored at three locations and results are provided in the Table 26. All reported values of drinking water were found within limits.
54. Drinking water is supplied after treatment of water supplied by MWSC as per quality reported in Table 30. Out of three locations of drinking water supply, one is provided with household RO unit and other two locations are provided with filters.
55. All reported values are within the limits. However, variation in electrical conductivity and TDS levels is noted and requires close monitoring.

**Table 24: Drinking Water Quality**

Parameters	Drinking Water Quality									Unit	Limits
	Sample 1			Sample 2			Sample 3				
	April	May	June	April	May	June	April	May	June		
pH	7.2	7.2	6.9	6.5	7.3	6.5	6.6	7.3	6.5	pH	6.5-8.5
Turbidity	ND	ND	ND	ND	ND	ND	0.1	ND	0.1	NTU	< 1.0
Residual free chlorine*	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/l	0.04-0.2
Electrical conductivity	18	527.1	13.5	15	594	64.1	435	480.5	392	µS/cm	<1000
Total Dissolved Solids	12	353	9	10	396	43	290	321	265	mg/l	<500
Total Coliform	ND	ND	ND	ND	ND	ND	ND	ND	ND	MPN/100 ml	0/100 ml
Faecal Coliform	ND	ND	ND	ND	ND	ND	ND	ND	ND	MPN/100 ml	0/100 ml
Escherichia coli	ND	ND	ND	ND	ND	ND	ND	ND	ND	MPN/100 ml	0/100 ml
Iron (as Fe)	ND	ND	ND	ND	ND	ND	ND	ND	ND	mg/l	<0.3
Ammonia -N	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/l	<0.5
Nitrate (as NO <sub>3</sub> <sup>-</sup> )	ND	ND	ND	ND	ND	ND	ND	ND	ND	mg/l	<50
Chloride (as Cl <sup>-</sup> )	3.3	16.8	1.6	2.6	17.4	4.8	13.4	16.3	12.4	mg/l	<200
Physical Appearance	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear		Clear /colourless

**iv. Marine Water Quality**

56. For the additional baseline data gathering, marine water quality sampling was done on 3 May 2024 from the same seven locations identified in the EIA (July 2020) given in Figure 8 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 8 Marine Water Quality Sampling Stations**



**Table 25: Results of Marine Water Quality Sampling, May 2024**

Parameters	Date of sampling: 3rd May 2024							Unit	Approved Marine water quality standard of Maldives EPA
	SW1	SW2	SW3	SW4	SW5	SW6	SW7		
Temperature indoor/laboratory	24.8	24.5	27.8	27.2	27.8	27.2	26.3	°C	18-32
Salinity	35	32	34	33	34	33	33	%	
TSS	64	58	72	61	65	63	61	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 <sub>2</sub> )	1.8	1.5	2.1	1.8	2	1.9	1.7	mg/L	None proposed
pH at 24°C	8.4	8.4	8.4	8.3	8.4	8.4	8.1	-	8-8.3
COD	41	39	48	45	48	46	45	mg/L	
BOD <sub>5</sub> at 20 °C	16	15	20	17	19	17	15	mg/L	<2mg/L
Turbidity	2.1	2.2	2.5	2.3	2.4	2.3	2.2	NTU	3 – 5 NTU (max)
Electrical Conductivity at 25°C	56,550	55,550	59,550	57,300	58,200	57,900	57,450	µS/cm	48994-62350
Total inorganic Nitrogen	5.2	5	5.9	5.4	5.9	5.4	5.2	mg/L	None proposed
Total Phosphates (as PO <sub>4</sub> <sup>3-</sup> )	0.6	0.5	0.9	0.7	0.9	0.7	0.6	mg/L	1
Sulfide	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/l	NA
Ammonia	2.3	2.1	2.5	2.3	2.6	2.2	2	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	0.011	0.01	0.018	0.015	0.02	0.012	0.011	mg/L	NA
Hexavalent Chromium (asCr <sup>6+</sup> )*	<0.005	<0.005	<0.005	<0.004	<0.005	0.005	<0.005	mg/L	NA
Total Chromium	ND	ND	0.005	ND	ND	ND	ND	mg/L	NA
Mercury	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	mg/L	NA
Nickel	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	mg/L	NA
Zinc	0.028	0.025	0.033	0.029	0.032	0.021	0.02	mg/L	NA
Copper	0.012	0.011	0.019	0.016	0.018	0.012	0.011	mg/L	NA

57. As per Table 27, values ranged for EC from 55,550  $\mu\text{S}/\text{cm}$  to 59,550  $\mu\text{S}/\text{cm}$ , for nitrite from 1.5 mg/L to 2.1 mg/L, and for total inorganic nitrogen from 5 mg/L to 5.9 mg/L. While pH values ranged from 8.1 to 8.4. Also, BOD<sub>5</sub> values ranged from 15 mg/L to 20 mg/L. while COD values ranged from 39 mg/L to 48 mg/l.
58. During May 2023 at same locations, values ranged for EC from 69120 to 84960  $\mu\text{S}/\text{cm}$ , for nitrite from 0.01 mg/L to 0.02 mg/L, and for total nitrogen from 9.3-15.6 mg/L. While pH values ranged from 8.1 to 8.4. Also, BOD<sub>5</sub> values ranged from 38 to 49 mg/L while COD values ranged from 152 to 186 mg/l. Levels of heavy metals in all the sampling stations were found below the detection limit.
59. 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 BOD<sub>5</sub> (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 25) compared to the results from the EIA (July 2020) may be attributed to the environmental conditions at the time of sampling.

**v. Groundwater Quality**

60. Environmental monitoring of groundwater quality for the construction period was conducted on 3<sup>rd</sup> May 2024. Water samples were collected from the monitoring stations identified in the EIA (July 2020) except at GW6 (refer to Figure 6 for locations). Due to non-accessibility of location GW6, 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 26 presents the analytical results of groundwater quality with detailed test results given in Appendix 3.
61. Results from Table 28 show that levels of heavy metals were found below detection limit while other parameters are: Electrical conductivity (267  $\mu\text{S}/\text{cm}$  at GW8 to 60,600  $\mu\text{S}/\text{cm}$  at GW2), pH (7.2 at GW5 and 8.4 at GW8), nitrate (1.7 mg/l at GW8 and 5.4 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.
62. During May 2023 at same locations, levels of heavy metals were found below detection limit while other parameter are: Electrical conductivity (504  $\mu\text{S}/\text{cm}$  at GW4 to 81594  $\mu\text{S}/\text{cm}$  at GW2), pH (7.2 at GW1 to 7.7 at GW3), nitrite (0.01mg/L at all location except at GW2 (0.03 mg/L) etc.
63. 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. As use of ground water in Thilafushi is not permissible except in toilet flushing tanks there is no specific standard prescribed for ground water.
64. 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 25mS/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 6,325mg/L in GW6), and nitrate (1.7mg/L in GW1 to 34.5 mg/L in GW6).



**Figure 9 Groundwater Sampling Stations**

**Table 26: Groundwater Quality Results, May 2024**

Parameters	Results of Groundwater Quality Sampling								Unit
	Date of Sampling: 3rd May 2024								
	GW1	GW2	GW3	GW4	GW5	GW6	GW7	GW8	
Turbidity	ND	ND	0.1	0.2	2	-	0.8	1.5	NTU
pH	7.8	7.7	7.9	7.8	7.2	-	8	8.4	-
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	ND	mg/L
TSS	8	145	20	41	51	-	9	5	mg/L
Electrical Conductivity at 25 °C	2,745	60,600	960	5,265	8,310	-	404	267	µS/cm
Fecal Coliform	ND	ND	ND	ND	ND	-	ND	ND	MPN/100 ml
Oil and Grease	ND	ND	ND	1	1	-	ND	1	mg/l
Nitrate (as NO <sub>3</sub> )	3.1	26	3.5	5.4	5	-	2.8	1.7	mg/l
Cadmium (as Cd)	ND	ND	ND	ND	ND	-	ND	ND	mg/L
Lead (as Pb)	ND	ND	ND	ND	ND	-	ND	ND	mg/L
Mercury (as Hg)	ND	ND	ND	ND	ND	-	ND	ND	mg/L
Total Phosphates (as PO <sub>4</sub> <sup>3-</sup> )	0.12	4.3	0.7	ND	1.8	-	0.1	ND	mg/L
Chlorides	57.6	296.2	73.9	103	103	-	49.3	45.3	mg/L
<b>Polycyclic Aromatic Hydrocarbons (PAH)</b>									
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**

65. One grab sample during each month of this quarter 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 29 and findings of same are well within the acceptable limits. Detailed report is enclosed as Appendix3.

66. However, DBO has been notified on value of higher value of TDS reported for June month and which is not matching with reported value of electrical conductivity and has been asked for conducting QA/QC.

**Table 27: Water quality for domestic supply of water used in construction camp during April- June 2024**

Test Parameter	Unit	Results			Acceptable Limits* Supply Water Quality Standards (5 December 2022) from the Utility Regulatory Authority
		14 April 2024	6 May 2024	6 June 2024	
Date of sampling		14 April 2024	6 May 2024	6 June 2024	
Physical Appearance		Clear	Clear	Clear	-
pH	--	6.5	7.1	7.9	6.5-8.5
Turbidity	NTU	ND	0.2	0.1	< 1.0
Residual Free Chlorine	mg/l	<0.01	<0.01	<0.01	-
Electrical Conductivity	µs/cm	453	473.1	464.2	<1000
Total Hardness	mg/l	10	10	21	
Total Suspended Solids	mg/L	01	01	5	5-750
Total Dissolved Solids	mg/L	302	317	852	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 NO <sub>3</sub> -)	mg/L	ND	ND	ND	<50
Chloride (as Cl <sup>-</sup> )	mg/L	36.3	36.3	44.7	< 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**

67. One grab sample of treated wastewater was collected during each month of quarter from April to June 2024 from discharge point of WWTP/STP in operation at the project site and analyzed for limited parameter as per details given in Table 30.
68. 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 28: Treated Wastewater Quality from WWTP/STP during April, May and June – 2024**

Parameters	Unit	Results			Acceptable Limits National Wastewater Quality Guidelines URA (August 2023)	Acceptable limits as per IFC General EHS Guidelines 2007
		April 2024	May 2024	June 2024		
Total coliform	MPN/ ml	15	09	15	-	400
Fecal coliforms	Org/ml	ND	ND	ND	100	
E.coli	Org/ml	ND	ND	ND	1	
Total suspended solids	mg/L	20	19	18	30	50
Residual free Chlorine	mg/L	<0.01	<0.01	<0.01		
Temperature	°C	28.1	27.4	26.3		-
Physical Appearance		ND	ND	ND		
pH at 25°C	--	7	6.8	6.5	5-9.5	6-9
Nitrate (as NO3-)	mg/L	5.7	5.3	3.9		-
Ammonia –N	mg/L	3.3	3.1	2.1	10	
Ortho Phosphates	mg/L	0.7	0.7	0.1	10	2
Surfactants	mg/l	0.3	0.2	0.3		
Soap, oil and grease	mg/L	ND	ND	ND	5	10
Electrical Conductivity	µs/cm	960.3	878.5	645	---	-
Chemical Oxygen Demand	mg/L	42	35	30	50	125
Biological Oxygen Demand 20°C	mg/L	17	14	8	40	30
Dissolved Oxygen	mg/L	6.3	6.4	6.4		-
Total nitrogen	mg/L	6.6	5.2	4.0	15	10
Sum of metals (Pb, Cr, Ni, Cd, Se, As, Fe, Al, Sb, Cu, Mn, Hg)	mg/l	0.14	0.12	0.11	-	
Acute Toxicity	mg/l	ND	ND	ND	0	

**viii. Discharge water quality from de-watering**

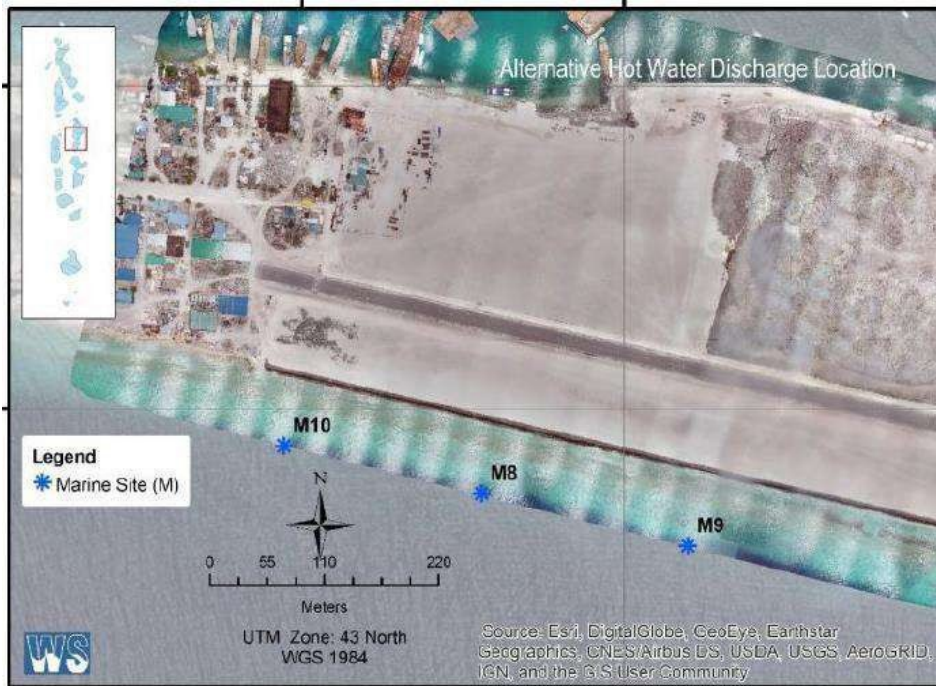
69. One grab sample of discharge water from dewatering was collected during each month of this quarter from discharge point of retention pond and analyzed for limited parameter to comply with requirements of local regulations as per details given in Table 31. However, no limit for discharge quality has been prescribed by local regulations. Detailed report is enclosed as Appendix3.

**Table 29: Discharge Water Quality from Dewatering during April, May and June – 2024**

Parameters	Unit	Results			
		April 2024	May 2024	June 2024	Limits
Fecal Coliform	MPN/100ml	ND	ND	ND	100
pH	pH	7.5	7.7	7.4	6.5-8.5
Temperature	°C	27.8	19.5	28.6	18-32
Total Dissolved Solids	mg/l	31,500	31,304	34,200	EC*0.67
Total Suspended Solids	mg/l	4	2	9	50
Dissolved Oxygen	mg/l	31,500	7.1	6.9	6.5-8.0
Turbidity	NTU	1.6	0.4	0.6	<5
Total Hydrocarbon	ppm	<0.1	<0.1	<0.1	10
Electrical Conductivity	us/CM	47,250	46,956	50,350	<= Sea Water EC Value
Salinity	ppm	3.6	3.0	3.5	3.2-4.2%
Hydrogen Sulphide	mg/l	<0.01	<0.01	<0.01	0.5
Oil& Grease	mg/l	1.3	<1	<1	5
Ammonia	mg/l	0.8	0.2	1.8	5
Nitrate (as NO <sub>3</sub> <sup>-</sup> )	mg/	2	0.8	3.9	10
Phosphates	mg/l	0.2	0.11	0.8	2

**ix. Marine ecology assessment survey**

70. As part of site environmental baseline monitoring , 5<sup>th</sup> marine ecological survey for reef benthic cover and fish population was conducted on 07th June 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 7.



**Figure 10 Underwater Marine Survey Locations (M8, M9 and M10)**

71. 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 summarized below and report is enclosed as Appendix-4
  
72. Status of Site M9: This location was identified as an alternative for brine discharge and wastewater outfall. Highest substrate cover was rock was varied from 42.2% and 8% at 5m and 10m depth respectively, followed by live coral ( 14% and 21%) . Extensive sedimentation that has been seen in the October survey was not observed during this survey. With regards to fish Balistidae *Odonus niger* was 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* were common at 5m depth only.
  
73. Status of Site M10: This location has been identified as a potential alternative for the discharge of brine water and wastewater. Coral cover has been found as 25% and 24.1% at 5m and 10m depth respectively while Coral rock cover has been found as 15.8 and 19.9% at 5 m and 10 m depth respectively. Sand and silt cover at this site has been decreased to 3.1% and 2.2% at 5m & 10m depth respectively. This is the closest site to the ongoing Thilafushi phase II reclamation project. With regards to fishes Labroides *dimidiatus* and *Chromis multispinis* were the abundant fishes at both 5 and 10m depth. Additionally,



Odonus niger and Pseudanthias evansi were abundant at 10m depth only and Chromis weberi was found in abundance at 5m depth only.

74. The large number of PVC pipe cut pieces that was found in October 2023 were not seen during the June 2024 survey.

## VIII. TRAINING AND CAPACITY BUILDING ACTIVITIES

75. Details of DBO/EPC Contractor-driven trainings are given in Table 32 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	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, 1hr	Site Workers	8, Male
2	08.04.2024	Safe Lifting and Rigging Training	Crane hazards, lifting hazards, planning, competent personals, Inspection, Load Capacity, Rigging and Slings, Training	WtE Site Thilafushi, 1hr	Site Workers	10, Male
3	16.04.2024	Safe Driving Safety	Safe Defence Driving, Driving Hazards, Blind Spot, Fatigue and Inspection and Maintenance	WtE Site Thilafushi, 1hrs	Drivers and Operators	6, Male
4	20.04.2024	Noise Awareness Training	What is Noise, How to reduce noise , Exposure hours, PPE , Training	WtE Site Thilafushi, 1hrs	Site Workers	20, Male
5	28.04.2024	Working at Height Training	What is working at height, hazards, Risk Assessment, Training, Fall prevention, PPE, Supervision, Inspection of PPE	WtE Site Thilafushi, 1hrs	Site Workers/ Supervisors	50, Male
6	06.05.2024	Fire Warden Training	Emergency Planning and Preparation, Roles and Responsibilities, Conducting regular inspection of fire fighting equipment, Evacuation Routes, Communication	WtE Site Thilafushi, 1hrs	Site Workers	10, Male

No	Date	Training Activity	Training Objective	Venue and Duration	Target Group	Number of participants (male, female)
7	12.05.2024	Emergency Response Training	Types of Emergency, Roles and Responsibility, Emergency Rescue Equipment, Evacuation Route, Communication, Assembly Point, Head Count	WtE Site Thailafushi, 1hrs	Staff	10, Male
8	12.05.2024	Risk Assessment	Hazard Identification and technique, Identity Who might be harmed, (People, Asset, Environmental) Evaluate the risk, Mitigation Measures, Recovery measures	WtE Site Thailafushi, 1hrs	Staff	10, Male
9	13.05.2024	Flagman Training	Signaling, Responsibility, Communication with operator, Signaling Device, PPE	WtE Site Thailafushi, 1hrs	Site Workers	5, male
10	28.04.2024	Scaffolding Training	What is Scaffolding, Risk Assessment, Control measures, Working at height, PPE, Training	WtE Site Thailafushi, 1hrs	Site Workers/ Supervisors	10, Male
11	09.06.2024	Rigger Training	Crane Hazards, Lifting Hazards, Planning, Competent Personals, Inspection, Load Capacity, Rigging and Slings, Training	WtE Site Thailafushi, 1hrs	Site Workers	6, Male
12	09.06.2024	Manual Handling	Manual Handling Assessment, Lifting Technique, Awkward postures, Hazards, Control Measures, PPE	WtE Site Thailafushi, 1hrs	Staff	7, Male
13	11.06.2024-13.06.2024	Third party Scaffolding Training	Methodology of Erection of scaffolding and dismantling, Design Calculation, Scaffolding Inspection and	WtE Site Thilafushi, 1 hrs	Staff/ Workers	11, Male

No	Date	Training Activity	Training Objective	Venue and Duration	Target Group	Number of participants (male, female)
			Tagging, Working at Height, Scaffolding Maintenance, scaffolding hazard safety			
14	20.06.24	Emergency Response Training	Types of Emergency, Roles and Responsibility, Emergency Rescue Equipment, Evacuation Route, Communication, Assembly Point, Head Count	WtE Site Thilafushi, 1 hrs	Site Workers	7, Male
15	22.06.24	Power Tools Safety	Power tools hazards, Control Measures, PPE, Inspection, Colour Coding systems, Training	WtE Site Thilafushi, 1 hrs	Site Workers/ Supervisors	7, Male
16	22.06.24	PTW Refresh Training	PTW Procedure, Roles and Responsibility, PTW Authorization Procedure, Supporting documents RA and SOP	WtE Site Thilafushi, 1 hrs	Workers	11, Male

76. Table 33 provides details of training plan to be conducted by DBO contractor during July, 2024. PMDSC has submitted revised project manual to PMU on 31<sup>st</sup> March 2024 and need based trainings shall be conducted on line and off line (at site) to staff of DBO contractor and PMU.

**Table 31: Training and Capacity building activities to be conducted by DBO/ EPC contractor during July, 2024**

No	Date	Training Activity
1	08.07.2024	Fire Watcher Training
2	14.07.2024	Flagman Training
3	18.07.2024	Grievance awareness
4	20.07.2024	Security management Training
5	23.07.2024	Driving safety training
6	29.07.2024	Vector based disease prevention training

## IX. Stakeholder Engagement

77. 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 technical evaluation for PAC has been completed and no objection received. The financial evaluation is ongoing and the PAC consultant is estimated to be finalized in next quarter.
78. Public awareness and communications activities of the project during this period are given below:
- On 28<sup>th</sup> May 2024, an awareness session regarding waste was carried out by MoCCEE for 180 school students and 18 teachers at Salahuddin School. The session covered information on current waste management practices, proper waste management and the concept of safe waste disposal. Photos of the session are provided below.



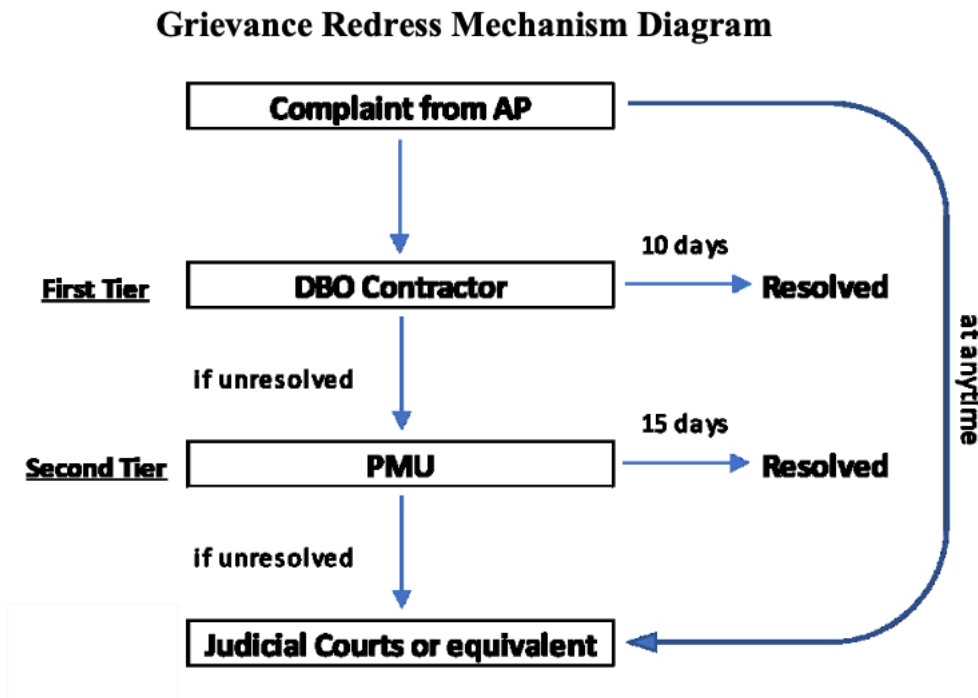
Figure 11 Awareness session by MoCCEE

## X. GRIEVANCE REDRESS MECHANISM

### A. Grievance Redress Mechanism

79. 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.
80. 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.
81. 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.
82. GRM committee meeting was held on 14<sup>th</sup> May 2024 with participants from EPC, DBO, ER and PMU. Discussions were held on the grievances received and areas for improvement.
83. GRM awareness trainings were held in May and June 2024 by the contractor.

Figure 12: Grievance Redress Mechanism Flow Chart



84. As per the system in place, a GRC for each tier in the GRM has been established. In the 1<sup>st</sup> 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 2<sup>nd</sup> 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.

85. Improvement in compliance of GRM plan is required 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. Regular meeting of GRC committee.
  - f. Record keeping of all steps defined as GRM resolution procedure need to be maintained;

## **B. Complaints Received**

86. No grievance has been received for this reporting period from public or from staff.

## **XI. FINDINGS & RECOMMENDATIONS**

### **A. Findings and Recommendations**

87. The validity of environmental clearance from the EPA has been extended until 31 December 2021 and the site clearance and levelling works started from 28 December 2021 by the contractor and EPA has been informed accordingly.
88. The revised CEMP and H&S plan have been aligned with ISO14001 and ISO 45001 in April, 2024 and in lieu of same.
89. As per Table 10, most of HSE plan are approved or approved with comments and document on Regulatory Compliance procedure is to be submitted for approval. However DBO has committed target date of completion of task for each pending plan.
90. PMDCSC has modified project manual to have more effective supervision on HSE aspects by introducing quarterly audit 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. However, there are challenges due to the frequent turnover of the local environmental safeguard. There is no local environmental consultant as of 7<sup>th</sup> June 2024. Quarterly audit was conducted on 14-15 April, 2024 by International environmental expert has visited the project site to conduct quarterly audit from 14 to 15 April 2024 and again visited project site to join the visit of IEM from 7 to 9 May 2024.
91. International environmental expert and Project Manager of PMDCSC have conducted EHS workshop on 16-17 April 2024 to finalize the modified CMP and H&S plan
92. The site boundary is established with security measures in place including provision of ID cards, guard posts and CCTV placement.
93. Fire extinguishers are placed at several locations on site but need to be inspected by third party.
94. A medical emergency drill was conducted on 10<sup>th</sup> June 2024 to evaluate the effectiveness of emergency response procedures in the event of a medical crisis in the bunker area.
95. The project site, including office, camp area including kitchen, laundry, recreation rooms, gym and general areas which are clean and well maintained. However, during inspection conducted by IEM in May-24, it was noted that there were some issues requiring rectification and an audit of accommodation facilities is required.
96. 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.
97. OHS monitoring has been conducted, and OHS monitoring plan is to be revised for approval.
98. To ensure implementation of various plans including CEMP and H&S plan, supervision, record keeping and coordination between HSE team and construction team need to be improved.
99. Fluctuation and vacancy of HSE expert positions is an ongoing problem all parties involved in the project are facing leading to challenges and discontinuity.
100. All staff are provided with basic PPEs. However additional requirements of PPEs especially dusk masks for PM2.5 and earplug/muffs need to be complied.
101. During inspections by the Independent Environment Monitor during May, a pipeline was found discharging water from the sedimentation tank at the batching plant area to the



adjacent site. This was communicated with the contractor to rectify immediately. However, no record was made available to verify the claim made by DBO contractor that Villa subcontractor is taking back this waste water via tankers to its project site for reuse.

102. The contractor has been informed of the regulatory requirements for borehole drilling and RO plant installation as well as registration requirements for the fuel tanker during the inspection visits in April (international environmental consultant of PMDCSC) and May (international environmental consultant of PMDCSC and independent environment monitor).
103. Additional site mobilization, baseline data gathering on ambient air quality, ambient noise level, & marine water quality including HSE trainings and Construction activities such as concreting and refilling were conducted during this reporting period. Table 34 and Table 35 present key issues identified in previous quarter and key issues identified and proposed remedial actions based on findings for this quarter respectively.

**Table 32: Status of Key Issues identified in previous QEMR (Jan-March 2024)**

No	Key Issue / Concern	Remedial / Corrective Measures	Target Dates	Implementation Responsibility	Monitoring Responsibility	Status of implementation from last reporting period on pending issues identified
1	Regulatory compliance	Submission of Regulatory compliance procedure for approval and implementation as part of CEMP	20 <sup>th</sup> July 2024	DBO Contractor	PMU/ PMDSC	Regulatory compliance procedure is being prepared and yet to be submitted.
		Obtain registration from transport authority and permit from MNDF and others, if any for mobile diesel tanker of 5000 liter	31 <sup>st</sup> December 2024	DBO Contractor	PMU/ PMDSC	Application for approval of the parking plot was submitted on 18 <sup>th</sup> June 2024 to HDC.  This approval is required prior to application for vehicle registration and MNDF approval.
		Renewal of permit from HDC for location of pipeline for discharge of dewatering into sea.	4 <sup>th</sup> June 2024	DBO Contractor	PMU/ PMDSC	Pending. Dewatering location permit is being processed by HDC
		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	1 <sup>st</sup> May 2024	DBO Contractor	PMU/ PMDSC	DBO has specified that Sedimentation water is collected in IBC by the subcontractor,

No	Key Issue / Concern	Remedial / Corrective Measures	Target Dates	Implementation Responsibility	Monitoring Responsibility	Status of implementation from last reporting period on pending issues identified
		plant area (considering solar evaporation rate and amount of wastewater generated during operation of batching plant) to ensure that no overflow is drained outside.				Villa and it is taken outside of the site for re-use. However, no record has been provided to verify the same.
2	Status of HSE documents	Revision of CEMP and Health and safety plan	CEMP- 8 <sup>th</sup> May 2024  HSMP - 12 <sup>th</sup> May 2024	DBO Contractor	PMU/ PMD CSC	Completed.  CEMP was approved on 8 <sup>th</sup> May 2024 and H&S plan was approved on 12 <sup>th</sup> May 2024.
		Submission of OHS monitoring plan for approval	31 <sup>st</sup> July 2024	DBO Contractor	PMU/ PMD CSC	OHS monitoring plan was initially submitted on 15 <sup>th</sup> May 2024. Revisions are currently ongoing.
		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:	8 <sup>th</sup> May 2024	DBO Contractor	PMU/ PMD CSC	CEMP has been revised and approved.

No	Key Issue / Concern	Remedial / Corrective Measures	Target Dates	Implementation Responsibility	Monitoring Responsibility	Status of implementation from last reporting period on pending issues identified
		<p>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</p> <p>2. Water spray for dust suppression as mentioned in soil management plan.</p>	31 <sup>st</sup> July 2024			
3	Implementation of HSE documents	Contracts and appointment letter prepared and accepted/signed by all staff/workers	1 <sup>st</sup> June 2024	DBO Contractor	PMU/ PMDCSC	Completed.
		Ensure compliance of GRM plan including creating awareness among workers, public announcement and constitution of GRC	30 <sup>th</sup> June 2024	DBO Contractor	PMU/ PMDCSC	Pending.
		Constitution of EHS committee	10 <sup>th</sup> July 2024	DBO Contractor	PMU/ PMDCSC	Pending.
		Inspections and audits to be conducted as per revised Project Manual submitted on 31 March 2024	1 <sup>st</sup> April 2024	PMDCSC	PMU	<p>Quarterly audit has been conducted 14-15 April 2024.</p> <p>However, improvement is required on bi-monthly inspections by the local consultants.</p>

No	Key Issue / Concern	Remedial / Corrective Measures	Target Dates	Implementation Responsibility	Monitoring Responsibility	Status of implementation from last reporting period on pending issues identified
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 <sup>th</sup> July 2024	DBO Contractor	PMU/ PMDCSC	WAMCO has taken measures to mitigate fire incidents at this location. Therefore, no fire incidents were reported during this quarter.
		PMU to follow up with WAMCO and ensure that risk is managed, and an emergency response plan is put in place.	1 <sup>st</sup> April 2024	PMU	PMDCSC	PMU visited the site with WAMCO to assess conditions and advised to clear the area with recurring fires and to ensure daily monitoring.
5	Consultation as per stakeholder engagement plan and GRM	Consultation as per stakeholder engagement plan and GRM	30 <sup>th</sup> June 2024	DBO Contractor	PMU/ PMDCSC	It is to be conducted mainly by PMU.  DBO is to only make Public announcements of presence of GRM through local newspapers,

No	Key Issue / Concern	Remedial / Corrective Measures	Target Dates	Implementation Responsibility	Monitoring Responsibility	Status of implementation from last reporting period on pending issues identified
						<p>community bulletin boards, through the MoE. also, through social media, websites, and newsletters to reach a broader audience.</p> <p>However, DBO is to conduct public consultation during preparation of EIA update considering detailed design which is yet to be completed.</p>
6	Storage areas for hazardous chemicals	Secondary containment to be provided at all areas where hazardous materials are stored	10 <sup>th</sup> July 2024	DBO Contractor	PMU/ PMDSC	Pending.
Spill kits to be provided at all storage areas		1 <sup>st</sup> June 2024	DBO Contractor	PMU/ PMDSC	Pending. However, one spill kit has been provided in batching plant area.	
Records of real time inventory to be maintained		1 <sup>st</sup> July 2024	DBO Contractor	PMU/ PMDSC	Implemented as of 29 <sup>th</sup> June 2024	

No	Key Issue / Concern	Remedial / Corrective Measures	Target Dates	Implementation Responsibility	Monitoring Responsibility	Status of implementation from last reporting period on pending issues identified
7	Clean wheels and undercarriage of haul trucks prior to leaving construction site/quarry	Facilities need to be provided.	15 <sup>th</sup> July 2024	DBO Contractor	PMU/ PMDSC	Pending.
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	31 <sup>st</sup> July 2024	DBO Contractor	PMU/ PMDSC	Procurement of masks and ear plug/muff in progress.
		Inspection of fire extinguishers by third party	26 <sup>th</sup> June 2024	DBO Contractor	PMU/ PMDSC	Scheduled for 5 <sup>th</sup> 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 <sup>th</sup> July 2024	DBO Contractor	PMU/ PMDSC	Pending.
10	Drainage plans to be finalised	Preparation of a drainage plan	30 <sup>th</sup> August 2024	DBO Contractor	PMU/ PMDSC	Pending submission.

No	Key Issue / Concern	Remedial / Corrective Measures	Target Dates	Implementation Responsibility	Monitoring Responsibility	Status of implementation from last reporting period on pending issues identified
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 <sup>st</sup> July 2024	DBO Contractor	PMU/ PMDCCSC	Pending.  CVRA is currently in progress.
12	Risk due to presence of live electrical cables of STELCO (passing through project site) and presence of shipwrecks in sea adjacent to quay wall	PMU to follow up with HDC and STELCO for shifting and ensure that risk is managed, and an emergency response plan is put in place.	1 <sup>st</sup> April 2024	PMU	MOCCEE	The contract for relocation between HDC and STELCO has been signed on 3rd June 2024. However, work has not been started.
		PMU to follow up with HDC for removal of shipwrecks.	1 <sup>st</sup> April 2024	PMU	MOCCEE	HDC has informed that the process for removal of shipwrecks has been started. However, at the time of reporting no physical work was observed by PMU.
13	Public Consultation	Public awareness and consultation to be conducted	30 <sup>th</sup> June 2024	PMU	PMU	Public consultations were not carried out during this quarter. However, an awareness session on waste



No	Key Issue / Concern	Remedial / Corrective Measures	Target Dates	Implementation Responsibility	Monitoring Responsibility	Status of implementation from last reporting period on pending issues identified
						for school students was carried out during May.
14	Appointment of Public Awareness consultant by PMU	Speed up the hiring process (final bid evaluation and contract signing). Until consultants are hired, PMU to conduct public awareness	30th June 2024	PMU	PMU	Financial open was carried out by Ministry of Finance on 24 <sup>th</sup> June.  Consultant is expected to be finalized within the next quarter.
15	Training /workshop	Need based training/workshop to be conducted for staff of DBO contractor and PMU	1 <sup>st</sup> April 2024	PMDCCSC	PMU	EHS workshop was conducted on 16-17 April 2024 to finalize the modified CMP and H&S plan.  Further trainings are to be carried out within the next quarter.

**Table 33: Key Issues identified and Proposed Remedial Measures during April to June 2024**

No	Key Issue / Concern	Remedial / Corrective Measures	Target Dates	Implementation Responsibility	Monitoring Responsibility	Status of implementation from last reporting period on pending issues identified
1	Regulatory compliance	Applicable NOC and permits for commissioning and operation of borewell and RO plant which is under commissioning in batching plant area for construction phase.	30 <sup>th</sup> October 2024	DBO Contractor	PMU/ PMDCSC	
		Permits for operation of generator sets	30 <sup>th</sup> October 2024	DBO Contractor	PMU/ PMDCSC	
		Renewal of dewatering location permit from HDC	10 <sup>th</sup> July 2024	DBO Contractor	PMU/ PMDCSC	
		Applicable registration from transport authority and permit from MNDF and others, if any for 5000-liter mobile diesel tanker	31 <sup>st</sup> December 2024	DBO Contractor	PMU/ PMDCSC	
		Applicable registration of vehicles and mobile machinery/equipment from transport authority	31 <sup>st</sup> December 2024	DBO Contractor	PMU/ PMDCSC	
		Ensure that the subcontractor (Villa) complies with the applicable permits, if any, for discharge of wastewater from sedimentation tank (batching plant area) are obtained as per discharge practices adopted/to be adopted	30 <sup>th</sup> September 2024	DBO Contractor	PMU/ PMDCSC	

No	Key Issue / Concern	Remedial / Corrective Measures	Target Dates	Implementation Responsibility	Monitoring Responsibility	Status of implementation from last reporting period on pending issues identified
2	Status of HSE documents	Submission of modified OHS monitoring Plan for approval	31 <sup>st</sup> August 2024	DBO Contractor	PMU/ PMDSC	
		Submission of Regulatory compliance procedure for approval and implementation as part of CEMP	15 <sup>th</sup> October 2024	DBO Contractor	PMU/ PMDSC	
		Submission of HSE plans which are approved with comments	20 <sup>th</sup> October 2024 <sup>8</sup>	DBO Contractor	PMU/ PMDSC	
3	Implementation of HSE documents	Compliance of GRM plan such as placing complaint box at public ferry terminal, Thilafushi, public announcements on the GRM via newspaper, social media and other means as mentioned, regular training to workers etc.	31 <sup>st</sup> July 2024	DBO Contractor	PMU/ PMDSC	
		Constitution of EHS committee	15 <sup>th</sup> August 2024	DBO Contractor	PMU/ PMDSC	
		Mapping of languages understood by workers to make training session more effective.	31 <sup>st</sup> August 2024	DBO Contractor	PMU/ PMDSC	
		To keep records of medical check-up conducted by Maldivian Govt at time of issue of work permit.	31 <sup>st</sup> August 2024	DBO Contractor	PMU/ PMDSC	
4	Compliance to EMP of approved EIA	Plan for providing temporary or portable acoustic barriers around stationary construction noise sources and ear plug/muff based	31st August 2024	DBO Contractor	PMU/ PMDSC	.

<sup>8</sup> Refer Table 10 for target date of completion of each HSE plan.

No	Key Issue / Concern	Remedial / Corrective Measures	Target Dates	Implementation Responsibility	Monitoring Responsibility	Status of implementation from last reporting period on pending issues identified
		on Noise Reduction Rating and status of actions taken as a part of the OHS monitoring method of statement				
		Plan for providing dust suppression measures such as water spray, wind breakers, dust screens, appropriate mask for protection from PM2.5 etc as per requirements – as a part of the OHS monitoring method of statement	31st August 2024	DBO Contractor	PMU/ PMDCSC	
		Maintain records of cleaning of wheels and undercarriage of haul trucks prior to leaving construction site	31 <sup>st</sup> August 2024	DBO Contractor	PMU/ PMDCSC	
		Details and records of management of waste water generated from sedimentation tank located in batching plant area.	31 <sup>st</sup> August 2024	DBO Contractor	PMU/ PMDCSC	
		Prepare storm water drainage plan for the construction phase.	31 <sup>st</sup> December 2024	DBO Contractor	PMU/ PMDCSC	

No	Key Issue / Concern	Remedial / Corrective Measures	Target Dates	Implementation Responsibility	Monitoring Responsibility	Status of implementation from last reporting period on pending issues identified
		Design of new structures for water intake and outfall as well as wastewater discharge during operation phase and thermal dispersion modelling of discharge of wastewater into sea.	31 <sup>st</sup> December 2024	DBO Contractor	PMU/ PMDCSC	
		Air dispersion modelling considering the design parameter and reshuffling of seven ambient air quality monitoring locations based on findings.	31 <sup>st</sup> August 2024	DBO Contractor	PMU/ PMDCSC	
		Create awareness in all site staff & workers on the importance of the marine animals/species and plants around the site and their vulnerability.	31 <sup>st</sup> August 2024	DBO Contractor	PMU/ PMDCSC	
5	Storage areas for hazardous chemicals	Secondary containment to be provided at all areas where hazardous materials are stored. Details need to be provided for verification.	31 <sup>st</sup> August 2024	DBO Contractor	PMU/ PMDCSC	
		Verify the adequacy of Spill kits provided referring to capacity of handling size of spill and numbers.	31 <sup>st</sup> August 2024	DBO Contractor	PMU/ PMDCSC	
6	Drainage plans to be finalised	Preparation of a drainage plan for operation phase	31 <sup>st</sup> December 2024	DBO Contractor	PMU/ PMDCSC	

No	Key Issue / Concern	Remedial / Corrective Measures	Target Dates	Implementation Responsibility	Monitoring Responsibility	Status of implementation from last reporting period on pending issues identified
7	Variation in environment monitoring results	QA/QC on environment monitoring results to close issue of variations observed and calibration of in-house monitoring instruments used for ambient air quality and noise level.	30 <sup>th</sup> September 2024	DBO Contractor	PMU/ PMD CSC	
8	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 <sup>st</sup> August 2024	DBO Contractor	PMU/ PMD CSC	
9	Removal of live electrical cables of STELCO (passing through project site) and shipwrecks (present in sea adjacent to quay wall)	PMU to follow up with HDC and STELCO on progress of work to deactivate the live cable	15 <sup>th</sup> August 2024	PMU	PMU	
		PMU to follow up with HDC for removal of shipwrecks.	15 <sup>th</sup> August 2024	PMU	PMU	
10	Public Consultation	Public awareness and consultation to be conducted	30 <sup>th</sup> September 2024	PMU	PMU	
11	Appointment of Public Awareness	Speed up the hiring process (final bid evaluation and contract signing). Until consultants are	31 <sup>st</sup> August 2024	PMU	PMU	

No	Key Issue / Concern	Remedial / Corrective Measures	Target Dates	Implementation Responsibility	Monitoring Responsibility	Status of implementation from last reporting period on pending issues identified
	consultant by PMU	hired, PMU to conduct public awareness				
12	Training /workshop	Basic training/workshop to be conducted for staff of DBO contractor and PMU	30 <sup>th</sup> September 2024	PMDCSC	PMU	
13	Position of local environment consultant is vacant	Appoint a local environment consultant	31 <sup>st</sup> August 2024	PMDCSC	PMU	

## **APPENDIXES**



# Environmental Monitoring Report

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10<sup>th</sup> Quarterly Report (April-June 2024)  
July 2024

Maldives: Greater Male Waste-to-Energy Project

PART B : Appendices

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

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

**PERMITS**

Not Started	9
Completed	38
Not Started	9
In progress	3
total	59

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

Project Manager Name: Mr. CIVAN

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 <b>(Main Building)</b>	2/18/2023		3/4/2023		Not Started	Final layout of facility to be submitted Each building drawings can be submitted seperately for permitting 7 to 14 days of approval	Final Layout Structural Drawings Architectural Drawings 2 Authorized Architect and 2 Authorized Engineer signature will be required	HDC Hussain Ziyath Director - Planning and Development 778 87 41 ziyath@hdc.com.mv
1b	HDC	Construction Permit <b>(Other Buildings)</b>	5/15/2023		5/29/2023		Not Started	Each building drawings can be submitted seperately for permitting 7 to 14 days of approval	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	Submitted for HDC approval on 22.05.2022 Submission No: HDC(161)-MNS/H14/2022/00049 Issued.	Site Handover Form Fence Design	
3	EPA	Environmental Clearance	1/31/2023		2/14/2023		Not Started	An addendum will be issued for EIA report after design is completed	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		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		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	Request for clarification submitted.	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><b>Water Connection</b> 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. <b>HDC(161)-MNS/H2/2022/00393</b> Permit approved. Works will start by 07.08.2022</p> <p><b>Sewerage Connection</b> 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"> <li>• Reg. Copy of Land (Site Handover Document)</li> <li>• Stamp of Ministry</li> <li>• Registration copy of company</li> </ul>	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 Accomodation		1/2/2023		15/02/2023	Completed	-	-	Ahmad Shan Mansoor Permanent Secretary
14	Ministry of Defence	Fire protection system for Kitchen and Worker Accomodation		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 WtE Building Facade Building Plan & Section Geotechnical Evaluation Report Building Spun Piles Layout	2) WtE 3) WtE 4) WtE 5) WtE
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			



سيرة: 485-AP/PRIV/2024/310

دولة قطر  
مجلس التنظيم والرقابة  
على الخدمات المرتبطة  
بالمياه والمياه  
والمياه

**DEWATERING PERMIT**

دولة قطر  
مجلس التنظيم والرقابة  
على الخدمات المرتبطة  
بالمياه والمياه  
والمياه

**Work Site:** Waste to Energy Facility Turbine Area

دولة قطر  
مجلس التنظيم والرقابة  
على الخدمات المرتبطة  
بالمياه والمياه  
والمياه

**Owner of the work:** MCCEE

دولة قطر  
مجلس التنظيم والرقابة  
على الخدمات المرتبطة  
بالمياه والمياه  
والمياه

**Contractor:** Alke Alkatas' Joint Venture Pvt. Ltd.

**Application Form no:** DW24075

دولة قطر  
مجلس التنظيم والرقابة  
على الخدمات المرتبطة  
بالمياه والمياه  
والمياه

**Permit Duration:** 28 Days

دولة قطر  
مجلس التنظيم والرقابة  
على الخدمات المرتبطة  
بالمياه والمياه  
والمياه

**Start Date:** 30.06.2024 12PM

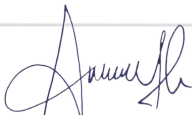
دولة قطر  
مجلس التنظيم والرقابة  
على الخدمات المرتبطة  
بالمياه والمياه  
والمياه

**End Date:** 28.07.2024 12PM

دولة قطر  
مجلس التنظيم والرقابة  
على الخدمات المرتبطة  
بالمياه والمياه  
والمياه

**Issued Date:** 30.06.2024

دولة قطر  
مجلس التنظيم والرقابة  
على الخدمات المرتبطة  
بالمياه والمياه  
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دولة قطر  
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والمياه



**Approved by**







**Appendix 2: Site Inspection Reports by PMDCSC  
from April-June 2024, including Quarterly  
Inspection Reports and Site Photos**

# Greater Male Waste to Energy Project

## EMS inspection cum audit

by the Employer's Representative

Date and Time of the Visit	Conducted by [ER]/MOE	Signature	Witnessed by	Signature
14.04.2024 and 15.04.2024	Sunil Gupta Yamna Naahee	Refer enclosed attendance sheet	DBO Contractor and EPC contractor	Refer enclosed attendance sheet

### A. Status of Construction Activities on site<sup>1</sup>

Particulars	Status		Observations
	Completed	In progress	New activity started
Spun piling	95%	No	-
Excavation	partly	Yes	-
Concreting	partly	Yes	-

<sup>1</sup>Activities till date of inspection cum audit

B. Status of compliances of stipulated conditions of applicable permits

Type of permit	Validity	Conditions stipulated	<sup>2</sup> Status of compliance
Dewatering permit from HDC	25 March 2024	To be renewed after 28 days.	Being complied as application has been made on 13 <sup>th</sup> March 2024 for renewal but reportedly rejected by HDC. However water from dewatering sedimentation pond is being discharged into sea.
Storage of 5000 liter diesel mobile tanker from MNDF	Yet to be applied	<ul style="list-style-type: none"> <li>As per local regulation -R160-2015, permission from MNDF is mandatory.</li> <li>To be included if any permission is required from URA as per latest Energy Act 18/2021</li> </ul>	Not complied and Mobile diesel tanker is in use since last five months
Registration of 5000 liter diesel in mobile tanker with transport authority	Applied but yet to received	As per local regulation –R-18-2021, registration of vehicle is mandatory	
Commissioning of bore well and RO plant for supply of water to batching plant.	Yet to be applied	Need to comply with applicable provisions of local regulations on EIA, ground water abstraction and waste water management etc	Not complied. However same is still in commissioning stage.

C. Human Resources on site

<sup>2</sup> Complied: Mitigation measures have been implemented; *no further action required*, Being complied: Some mitigation measures have been implemented and some *are in the process of implementation, ongoing process*, Partially complied: *Some mitigation measures have been implemented* but there is a gap in compliance and a remedial action is required, Not complied: Mitigation measures have not been implemented

a) Subcontractors

Name and address	Type of contract (Labour supplier/Job work)	Duration of contract
Villa Pvt Ltd	<ul style="list-style-type: none"> <li>Supply of construction material for batching plant</li> <li>Operation of batching plan</li> </ul>	No detail of contracts on management of labour issues plan and IFC-PS2 has been shared
Gage Pvt Ltd	Security provided	
Nsure Pvt Ltd	Laboratory Sample Transportation	
ELS Company	Laboratory work for civil works related testing	
Leo Trading Company	Excavation work	
Clamp Company Pvt Ltd	General Electrical works	

b) Manpower on site (local)-

Particulars	Locals					Total
	Managers	Supervisor	Skilled	Semi-skilled	Unskilled	
Permanent						3
Contracted (through contractor)						1
Sub contractor on job work						0
Contracted (direct)						0

c) Manpower on site (Expatriates)

Particulars	Expatriates					Total
	Managers	Supervisor	Skilled	Workers Semi-skilled	Unskilled	
Permanent						42
Contracted (through contractor)						32
Sub contractor on job work						46
Contracted (direct)						31

d) Others

Particulars	Observations	Status of compliance of respective plan
Total number of working shifts/day	Normally one shift per day but activities were also commenced during second shift on SOS basis especially during Ramadan period.	Being complied
Working hour per shift	8 hours	Being complied
Contract with staff/workers	<ul style="list-style-type: none"> <li>No contract/appointment letter was shared to verify the terms and conditions of employment.</li> </ul>	Not complied
Criteria for engagement of skilled and semi skilled workers	<ul style="list-style-type: none"> <li>No criteria has been shared and reportedly it is not available.</li> </ul>	Not complied
Status of insurances for workers	<ul style="list-style-type: none"> <li>Personal mediclaim insurance has been covered as part of permit to work issued by Maldivian Government and no separate insurance cover for individual has been provided. However other insurances such as third party, group insurance etc are in place.</li> <li>Records of Permit to work issued by Maldivian Govt have been kept but details of medical checkup conducted for same have not been kept. Hence no medical history including blood group is available.</li> </ul>	Being complied. However medical history need to be kept for ready reference to deal with any health emergency..
How are records of working hours kept?	Manual details with signature are being collected in loose sheets then same are kept by HR department as original sheets and also in soft copy..	Being complied
Criteria followed for wages to comply with local regulations	<ul style="list-style-type: none"> <li>Local employees- Basic salary + 14% pension fund+ Single accommodation in camp area+ Food in mess.</li> <li>Expatriates (below supervisor level)- Basic salary + Single accommodation in camp area+ Food in mess.</li> <li>Expatriates (above supervisor level)- Basic salary + Single accommodation in camp area+ Food in mess+ ticket to travel home after every four months.</li> <li>Combined accounts sheets have been shared to verify the facts.</li> </ul>	Being complied
What is percentage of overtime recorded	Approx 10-15% @	Being complied
How will the employer of particular worker identified during supervision/site visit (is any identity card etc being issued having details of worker such as name, his employer etc)	<ul style="list-style-type: none"> <li>Identity card has been issued to all individuals.</li> <li>Blood group has been mentioned as unknown for many workers.</li> <li>Name of sub contractors has not been mentioned.</li> <li>When checked on site, many workers were found not carrying identity cards</li> </ul>	Partially complied



How does DBO/EPC contractor make sure the wages paid to workers by sub contractor are in compliance with local regulations?	<ul style="list-style-type: none"><li>• Reportedly , EPC contractor collects payment receipt from subcontractor and no provisions are made in contract to ensure the compliance. However no record was made available to verify.</li><li>• No contract has been shared to verify the conditions stipulated.</li></ul>	Not complied as no record has been shared to verify.
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D. Camp area

Particulars	Observations	Status of compliance of respective plan
How many accommodations are being occupied	<ul style="list-style-type: none"> <li>▪ 154 personnel while present capacity of camp area is for 324 personnel</li> </ul>	Being complied
How many workers are not being provided accommodation, if any	<ul style="list-style-type: none"> <li>• Staff and workers of Villa Pvt Ltd subcontractor are staying in accommodation provided by sub-contractor within same island.</li> <li>▪ Staff of DBO contractor is staying in Male/Hulmale.</li> </ul>	Being complied
Conditions in and around Accommodation and surrounding area	<p>Following observations were made:</p> <ol style="list-style-type: none"> <li>a. Inadequate provision of lights and sockets inside the workers accommodation</li> <li>b. Inadequate housekeeping inside workers accommodations.</li> <li>c. Approaching corridor for worker accommodation is being allowed to store various items by workers.</li> <li>d. Only one gate has been provided in one block of accommodation which is also being designated as emergency exist gate;</li> <li>e. Water from AC is being drained in open area.</li> <li>f. 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 wash room due to religious belief leading; etc.</li> </ol> <ul style="list-style-type: none"> <li>▪ 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.</li> </ul>	Being complied but need to have corrective measures and more effective inspection.
Conditions in and around Kitchen	<ul style="list-style-type: none"> <li>▪ Kitchen is located within camp area. Inside the kitchen, conditions were found satisfactory.</li> </ul>	Same as above

Status of facilities such as food, laundry, drinking water, water supply for bathing and others, food, recreation etc	<ul style="list-style-type: none"> <li>▪ Mainly Turkish food is cooked in kitchen and provided in separate dining hall for staff and workers. Same food is served to all except for 33 personnel (mainly from India, Bangladesh and Sri Lanka) for whom food is being brought from outside.</li> <li>▪ Washing machines are provided. However, complaint has been registered on inadequacy of same.</li> <li>▪ RO water is served for drinking for workers and bottled water is served to staff.</li> <li>▪ Food is cooked in kitchen and same food is served for all workers and supervisory staff. However, due to variations in habits, food is brought from outside mainly for expatriates from India, Sri Lanka and Bangladesh.</li> <li>• Club with TV and indoor games is in place.</li> </ul>	Being complied
Inspections carried out and record keeping by DBO/EPC	Reportedly Yes but no record was shared for verification.	Not complied till same are verified in compliance with respective plan.

#### E. House keeping

Particulars	Observations
In and around area for accommodation	Overall found satisfactory and housekeeping is being carried out on regular basis.
In and around Kitchen area	Same as above
In and around construction site	Overall found satisfactory but earmarked route from office building to gate near quay wall for pedestrians was found with grass and little uneven hence need attention.
In and around storage area	Overall found satisfactory
In and around waste storage areas	Overall found satisfactory

F. Grievance Redressal Mechanism

Particulars	Observations with photo					Status of compliance of GRM plan
	Number of locations where complaint boxes are placed	Number of complaints received	Type of complaints	Status of complaints	Record keeping	
Internal complaints	On two entry gates of project site	26 from August -23 till date of visit	Quality of food  Nonpayment of wages	Ad-dressed  Ad-dressed	GR register	Partially complied <ul style="list-style-type: none"> <li>Complaint forms provided in drop box are in English language and no form was found in one of drop box.</li> <li>No detail on corrective action(s) taken was shared.</li> <li>GRC has not been constituted.</li> <li>No response has been provided to complainants as per GR register</li> <li>Inadequate record keeping to verify the compliance of plan.</li> </ul>
Complaints from public	On two entry gates of project site	Nil	-	-	GR register	Partially complied <ul style="list-style-type: none"> <li>No complaint box has been placed at public ferry terminal of Thilafusi</li> <li>No public announcements /awareness has been made through local newspapers, community bulletin boards etc and, through the MoE.</li> </ul>

G. Stakeholder consultation

Particulars	Date of consultation		Details of findings	Status of compliance of Stakeholder consultation plan
	conducted	proposed		
Public	No	No	As per discussion, EPC contractor showed intent to conduct public consultation but no targeted date was shared.	Being complied – As per plan it will be conducted as and when required. However, ABD is pursuing to conduct same since long time.
Others (mainly with agencies such as WAMCO, URA, MNDF etc)	18 Feb 2024	No	MOM has been shared and no relevant issue has been raised/recorded.	Being complied

H. Waste Management (Hazardous, non-hazardous, E-waste, Construction waste etc)

Source of waste generated	Type of waste generated	Collection	Storage	Disposal	Observations with photos Record keeping	Status of compliance of Waste management plan and Method of statement
General wastes	Kitchen waste, plastic waste, paper etc	Collected at source	Stored at dedicated place	Handed over to WAMCO for disposal	<ul style="list-style-type: none"> <li>Partial details are being provided in Daily Progress Report (DPR). However details are provided in monthly reports</li> <li>Receipts of WAMCO of accepting waste have been provided</li> </ul>	Being complied. However: <ol style="list-style-type: none"> <li>DPR need to modified accordingly.</li> <li>Cumulative quantity of waste is not being reported in case it is not disposed e.g. waste oil, sewage sludge, medical waste etc</li> </ol>
STP	Sewage sludge	Collected at source	Stored at dedicated place	Yet to be disposed		
Construction waste	Concrete residual	Collected at source	Stored at various places	Yet to be disposed		
	Wood debris			Handed over to WAMCO for disposal		
Hazardous waste	Engine oil & lubricant, chemical waste, E-waste, batteries, empty containers etc	Collected at source	Stored at dedicated place	Handed over to WAMCO for disposal		
Medical waste	Medical waste other than used needles of syringes	Collected at source	Stored in plastic box at source	Handed over to WAMCO for disposal		



Used needles of syringes	Collected at source	Stored in plastic box at source	<ul style="list-style-type: none"> <li>• Yet to be disposed as WAMCO does not accept the same.</li> <li>• Reportedly, EPC is negotiating with hospital IGMH, Male for disposal of same.</li> </ul>	No log book is not maintained and also no detail is provided in monthly report	Being complied
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I. Air emission

Source of emission	Type of emission		Observations with photos		Status of compliance of air emission management plan and method of statement
	(Dust/gas)	Point source/fugitive	Mitigation measures in place	Record keeping	
Excavation – machinery used and DG sets	Dust and gas	Point source	<ul style="list-style-type: none"> <li>a) Stack height as provided by manufacturer</li> <li>b) Preventive maintenance which is mainly confined to general checking and oil and filter change.</li> <li>c) For DG sets, preventive maintenance after 500 running hours</li> </ul>	<ul style="list-style-type: none"> <li>a) Records of preventive maintenance are kept</li> <li>b) Ambient air quality monitoring at two locations within project site (one sample for 24 hrs once in month) within project site has been commenced during March-24</li> </ul>	Partially complied as no system in place to monitor the exhaust emission and OHS monitoring plan is to be prepared for implementation
Excavation – Excavated soil storage area	Dust	-	<ul style="list-style-type: none"> <li>a) No measures on stockpile of excavated soil.</li> <li>b) 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.</li> <li>c) EPC was asked to submit technical justification officially for same.</li> </ul>	Ambient air quality monitoring at two locations within project site	<ul style="list-style-type: none"> <li>a. OHS monitoring plan is to be prepared for implementation</li> <li>b. No water spray for dust suppression resulting non-compliance to soil management plan</li> </ul>

Batching plant	Dust	Mainly fugitive emissions	Storage areas of loose construction are covered with metal sheets from three directions while storage area for cement bags is also covered with curtains and metal sheets.	Ambient air quality monitoring at two locations within project site	Being complied. However a. OHS monitoring plan is to be prepared for implementation b. No water spray for dust suppression.
Transportation of materials	Dust and gas	Point source and fugitive source	Preventive maintenance which is confined general check and to oil and filter change only	Records of preventive maintenance of vehicles are in place	Being complied. • Provision of tarpaulin to cover the materials could not be verified as no record was shared and no transportation was in place at time of visit...

J. Waste water management

Particulars	Observations including record keeping	Status of compliance waste water management plan and method of statement
Is STP in operation and respective records of discharge of treated wastewater, chemical used and running hours kept	No flow rate is monitored and no log book is provided to verify.	Being complied, however record of flow rate is to be kept at discharge point to establish real time water balance.
Is quantity of discharge from dewatering sedimentation pond being monitored and record kept	No flow rate is monitored.	Being complied, however record of flow rate is to be kept at discharge point.
Visual observations of water stored in sedimentation pond for discharge during dewatering	<ul style="list-style-type: none"> <li>• Algae formation is found which are being removed manually.</li> <li>• No record of manual inspections carried out was made available to verify.</li> <li>• Quality of discharge water is monitored on monthly basis.</li> </ul>	Being complied
Is any discharge of wastewater other than above two observed	No. Reportedly, all rain water is being percolated and no runoff is discharged into sea. Also, no water logging within project site was encountered during site visit.	Being complied
Washing of to clean plan and vehicles used for transportation of construction materials and chiller for batching plant.	<ul style="list-style-type: none"> <li>• Waste water to be generated from washing is collected in RCC tank for solar evaporation.</li> <li>• Chiller is based on no discharge of waste water. Only make up water is added.</li> </ul>	Partially complied as no detail has been provided to verify the adequacy of capacity of sedimentation pond provided for collection and solar evaporation of waste water generated from washing of transit mixer and others in batching plant area considering solar evaporation rate and amount of waste water generated during operation of batching plant to ensure that no overflow is drained outside.

K. Soil management

Particulars	Observations with photos	Status of compliance Soil management plan and method of statement
Is record of soil excavated and stored being kept?	No record has been shared.	Being complied, however record of soil excavated and stored need to be kept and reported in monthly report.
Is visual inspection of excavated soil being done for any type of contamination by DBO/EPC?	Reportedly yes but no record has been shared	Not complied till records of inspections are provided for verification.
Are trenches and barricades (garland drains) provided around storage area?	<ul style="list-style-type: none"> <li>a) Not provided however provision of garland drains is mentioned in plan.</li> <li>b) EPC is of the view that same is not required as whole rain water and runoff is being percolated and even no water logging is encountered.</li> <li>c) EPC was asked to submit technical justification officially for same.</li> </ul>	Not complied
Is soil excavated being used and/or disposed?	Partially. However, no record has been shared on quantity of soil used.	Being complied, however record of soil excavated and stored need to be kept and reported in monthly report.

L. Spill Control and Containment

Particulars	Observations with photos	Status of compliance respective management plan and method of statement,
Are containers of chemicals present on site and storage areas properly labelled?	Yes	Being complied
Sign of soil contamination on site, if any	Not observed during site visit.	
Are spill containment kits are located in ready to use mode?	Only one kit near hazardous chemical storage area. However, chemicals are being stored on batching plant area, near construction site and in diesel mobile tanker.	Partially complied as requirements of number of spill kits and locations need to be identified and maintained.
Locations of availability of spill containment kits and is it easily identified by anyone.	Yes	Being complied
Status of understanding of its usages at construction site and storage area of chemicals	Found Satisfactory	Being complied

M. Misc

Particulars	Observations with photos	Status of compliance respective management plan and method of statement, if any
Has activity wise mapping of risk to environment been carried out?	<p>Yes. Overall, as per details given in in Environment Impact Register, specific in activity wise MOS and SOPs. However:</p> <hr/> <p>No mapping of hazards and impacts of for commissioning of borewell and RO plant within area of batching plant- One bore well was being drilled within area of operation of batching plant without mapping of hazards and impacts associated and corresponding mitigation measures. Also, no permit to work for same was shared.</p> <hr/> <p>No mapping of hazards and impacts of 5000 L mobile diesel tanker during transportation, storage and filling- This has been used since November-2023</p>	Partially complied

Have environment risks been reviewed just before start of particular construction activity and during execution?	In addition to details given above: a) Permit to work system in place is being issued before start of particular construction activity. b) System is in place for regular inspections before start construction activity during by area manager, area authority, site engineer, HSE team of EPC contractor, Site Engineer and local environment engineer of ER and site team including HSE manager of DBO during execution. c) No record of regular inspections by HSE team of EPC and DBO has been shared to verify.	Partially complied
How are additional mitigation measures being identified and implemented?	a) During approval of notification of inspection by PMDCSC before start of construction of particular activity and inspections by EPC staff before issue of permit to work and inspection during execution. However, no record has been shared to verify. b) Identified additional mitigation measures are also discussed in weekly HSE meeting participated by representative of EPC, ER and DBO and online tracer system in place.	Partially complied till verification of records.
Status of understanding of workers and supervisors on environment risks considering activities in progress and internal GRM	<ul style="list-style-type: none"> <li>▪ Found not Satisfactory.</li> <li>▪ Inadequate communication due to language issues as workers belong to multiple counties and understanding of English was found inadequate with most of the workers.</li> </ul>	Partially complied and more interactions and trainings need to be provided in all applicable languages.
Overall status of record keeping by DBO/EPC	Partially maintained in compliance to HSE plans including DPR to record various data as reported in monthly report and checklists.	Partially complied and need to be inspected on status of compliance.
Availability of HSE professionals (One Environment Manager and three environment officer) as per contract	At present, one environment manager and two environment officers are on payroll of EPC. As per EPC, one environment officer is to be present in each shift, however mostly construction activities are executed in one shift while on SOS basis in second shift. Third environment officer will be recruited whenever construction activities are executed in three shifts.	Being complied
Status of supervision by Manager environment and environment officers including	Reportedly supervision on regular basis is being carried out and findings are reported via WhatsApp group. But no record has been shared to verify the details.	Partially complied



record keeping of observations		
Status of EHS committee, its meeting (s) and findings	<p>a) Technically it has not been constituted.</p> <p>b) EPC claimed that weekly meeting of EHS can be considered as EHS committee meeting. But as per records, all members of EHS committee as mentioned in HSE plans were not present in weekly EHS meeting.</p>	Not complied
Is any environment incident reported? If yes then collect details.	Nil	
Noise level within project site	<p>a) One DG set in operation near bunker area was generating noise level of more than 82 dB(A). However, noise enclosure was provided.</p> <p>b) No system in place to monitor exposure noise level for workers at 1 m from equipment/machinery.</p> <p>c) However, ambient noise level has been monitored at two locations within project site (which are same as locations (NQ5 and NQ3) on which ambient noise level around project site are monitored on monthly basis.</p> <p>d) OHS monitoring plan is to be prepared for implementation</p>	Partially complied as OHS monitoring plan is to be prepared for implementation.
Status of HSE plans	<ul style="list-style-type: none"> <li>▪ Regulatory Compliance procedure as mentioned in CEMP is to be submitted.</li> <li>▪ OHS monitoring plan is to be submitted.</li> <li>▪ No date has been shared to address observations/comments as mentioned for plans approved with comments.</li> </ul>	Partially complied till all observations are addressed.

N. Summary of observations which need corrective actions/measures

Observations	Corrective action recommended		Date of completion
	DBO agreed to comply	Need to escalate to DBO management	
Pending Permits			
Compliance to GRM plan			
Status of EHS committee and its meeting			
Submission of OHS monitoring plan			
Submission of Regulatory compliance procedure			
Closing the comments on all HSE plans approved with comments			
Adequacy of records kept in compliance with HSE documents			
Records of visits/walkdowns and observations raised and action taken by HSE team of EPC contractor and DBO HSE manager			
Public consultation			
Records of appointment letters issued to staff			
Records of contracts issued to sub-contractor			
Details of comp tenancy criteria for engagement of skilled and semi-skilled workers and staff			
To verify the adequacy of capacity of sedimentation pond provided for collection and solar evaporation of waste water generated from washing of transit mixer and others in batching plant area considering solar evaporation rate and amount of waste water generated during operation of batching plant to ensure that no overflow is drained outside.			
Others observations as mentioned in various sections			



**Metal sheets provided for dust suppression in storage area of construction materials in batching plant area**



**Curtaills and metal sheets provided for dust suppression in storage area of cement begs in batching plant area**



Sedimentation tank to take care of washing effluent in batching plant area



Mobile Diesel Tanker of 5000 L





DG set emitting higher noise level



**Stockpiles of Excavated Soil**



Route for use of pedestrians





Identify Cards



Spill Kit



Sedimentation Pond



Waste oil Storage



Waste Storage





Storage of Used Syringe Needles



Medical Waste Storage



## Greater Male Waste to Energy Project

### OHS System inspection cum audit

by the Employer's Representative

Date and Time of the Visit	Conducted by [ER]	Signature	Witnessed by	Signature
14.04.2024 and 15.04.2024	Sunil Gupta Yamna Naahee	Refer enclosed attendance sheet	DBO Contractor and EPC contractor	Refer enclosed attendance sheet

#### A. Safety in General specific to construction activities in progress at site

Particulars	Observations (with photos where appropriate)	<sup>1</sup> Reference and Status of compliance of respective plan/Method of statement/others
Status of mapping of hazards for activities in execution and batching plant on site and compliance of mitigation measures.	Overall, yes and it has been carried out and documented in Risk Assessment Procedure, relevant method of statements and SOPs. However:	Being complied
	No mapping of hazards and impacts of for commissioning of bore well and RO plant for supply of water to batching plant- One bore well was being drilled within area of operation of batching plant without mapping of hazards and impacts associated and corresponding mitigation measures. Also, no permit to work for same was shared.	Not complied
	No mapping of hazards and impacts of 5000 L mobile diesel tanker during transportation, storage and filling- This has been used since November-2023	Not complied

<sup>1</sup> Complied: Mitigation measures have been implemented; *no further action required*, Being complied: Some mitigation measures have been implemented and some *are in the process of implementation, ongoing process*, Partially complied: *Some mitigation measures have been implemented* but there is a gap in compliance and a remedial action is required, Not complied: Mitigation measures have not been implemented

<ul style="list-style-type: none"> <li>• Has mapping of hazard been reviewed before and during execution of construction activity and reviewed by EHS committee?</li> <li>• Has Job Hazard analysis been carried out before start of activity and/or tool box talk?</li> </ul>	<ul style="list-style-type: none"> <li>• Not effectively, however inspections need to be carried out for approval of notification of inspection by site engineer of PMDCSC and for issuing of permit to work by Area Manager and Area authority before start of particular activity.</li> <li>• EHS committee has not been constituted. However, DBO/EPC claimed that weekly meeting of EHS can be considered as EHS committee meeting. But as per record, all members of EHS committee in line with HSE plans were not present in weekly EHS meeting.</li> <li>• No system in place to conduct Job Hazard analysis</li> </ul>	Partially complied
Status and details of Tool box talks conducted	Yes, as based on the permit to work, permit holder is responsible to conduct the specific tool box talk related to particular activity.	Being complied but need to monitor adequacy and effectiveness of same by HSE team on site.
Understanding of construction supervisory team at site including subcontractor(s) on hazards and corresponding mitigation measures.	<ul style="list-style-type: none"> <li>• Yes, to some extent. During visit scaffold in bunker area with approval tag of scaffolding inspector and permit to work duly approved by Area Manager, Area Authority and HSE team in use was found unsafe due to usages of rusty metal sheets. Though same was corrected by EPC within 24 hours after raising the issue.</li> <li>• Need more training specific to associated hazards and adequacy and effectiveness of implementation of mitigation measures. and all should be encouraged to make complaints under GRM plan.</li> <li>• Need more effective supervision from HSE team of EPC and DBO on daily basis.</li> </ul>	Being complied. However, need more training and supervision by HSE team.
Understanding workers (assess separately with skilled, semi-skilled and unskilled workers) on hazards and corresponding mitigation measures	<ul style="list-style-type: none"> <li>• Yes, to some extent as during interaction with flag man in batching plant area, it was found that he did not have overall understanding on type of signals to be known to a flag man.</li> <li>• Need more training specific to dos and don'ts and to display dos and don'ts to maximum possible extent.</li> <li>• Issues of lack of communications due to difference in languages of workers from Turkey, India, Sri Lanka, Afghanistan, Nepal etc. Understanding of English was also found poor.</li> </ul>	Partially complied <ol style="list-style-type: none"> <li>1. More videos are to be used during training.</li> <li>2. Training materials and display boards for dos and don'ts are to be provided all common languages used at site by workers.</li> <li>3. Issue of language should be considered during tool</li> </ol>

		box talks and accordingly same should be delivered.
Status and details of compliance of activity wise mitigation measures including working in night (e.g. fall from height, working in bunker area, operation of batching plant, storage areas etc)	<ol style="list-style-type: none"> <li>Record keeping was not fully in compliance.</li> <li>Need more effective supervision and documentation/records of same by HSE team at site.</li> </ol>	Partially complied
Status and details of records including training	Satisfactory to some extent but need to review/audit in details the status of record keeping in compliance with all HSE documents including DPR on various aspects as mentioned in H&S plan and CEMP in line with IFC-PS3 such as consumption of natural resources, waste water generation and disposal etc.	Partially complied

## B. Supervision

Particulars	Observations	Reference and Status of compliance of respective plan/Method of statement/others
<b>Status of details of supervision conducted by:</b>		
HSE manager-DBO	No detail including records has been shared as HSE manager was on long leave during site visit	
HSE manager-EPC	<ol style="list-style-type: none"> <li>Reportedly on random basis. No record was being maintained of supervision conducted on daily basis. However, observation, if any during walk down was reported to relevant person via WhatsApp group and no record of follow up was shared.</li> <li>Inadequate records of inspections to verify the compliance of all HSE documents in place.</li> </ol>	Partially complied
H&S Manager -EPC		
Environment Manager-EPC		
H&S inspector(s)-EPC		
Environment officer-EPC		
HSE professional or equivalent - Sub contractor(s)	Supervisor of Villa Pvt Ltd is responsible for implementation of HSE aspects and has reasonable understanding of associated hazards and corresponding mitigation measures.	Being complied.

Others (if any)	Nil	
Status and details of record keeping of findings and action taken	<ol style="list-style-type: none"> <li>1. No record was being maintained for supervision conducted on random basis. However, observation, if any during walk down is reported to relevant person via WhatsApp group.</li> <li>2. However, issues observed during regular inspections and action taken are being recorded in online tracker system.</li> </ol>	Partially complied

### C. Electrical safety

Particulars	Observations (with photos where appropriate)	Reference and Status of compliance of respective plan/Method of statement/others
Condition of electric cables used (e.g. damage to insulation; exposed wiring; electrical cables connected with tape etc.)	<ul style="list-style-type: none"> <li>• Overall found satisfactory but no record of inspection was shared to verify.</li> <li>• Need effective regular inspections and documentation of findings as per relevant HSE documents such as Electrical Safety Procedure and Construction Camp Development Plan.</li> </ul>	Being complied till status of records is verified
Electric cable obstructing the way, away from damp area/water, running through doorways, construction site, camp area etc.	<ul style="list-style-type: none"> <li>• An underground live power cables of STELCO is passing through the project site and discharge pipeline from dewatering sedimentation pond is passing above the same with mitigation measures. Reportedly same will be shifted outside project site very soon.</li> <li>• Underground and partly over ground live power cables for internal usages were found unguarded on ground and open to be damaged as depicted in photos.</li> </ul>	Being complied. However corrective actions need to be taken to close the issues.
Conditions of electrical sockets (clean and not broken). Is there loose connection (arcing and sparking)? Is there direct connection of wire in socket?	<ul style="list-style-type: none"> <li>• Overall, in good condition but one socket as depicted in photo was found open but reportedly same was disconnected. However, no record on same was shared.</li> </ul>	Being complied till status of records is verified



Is metal dust prevented from entering or accumulating on or around electrical equipment or sockets?	Yes.	Being complied
Is there exposed electrical part (e.g. socket, broken light bubble, missing neon light, cable, portable lamp etc.) to combustible substance?	Yes, as per details given in above row.	
Are earthlings provided well maintained, cleaned and connected?	Yes but no record of inspections made has been shared to verify.	Being complied till status of records is verified
Status and details of preventive maintenance of electrical equipment	Reportedly yes but no record has been shared to verify.	Being complied till status of records is verified
Status of record for regular in-house inspection	Reportedly yes but no record has been shared to verify.	Being complied till status of records is verified
Status and details of records including training	All details are provided in monthly reports.	Being complied
Status of compliance of SOPs and Plan	Reportedly it is compiled but could not be verified as no record has been shared to verify. Also, a. Temporary arrangements were made by workers due to inadequate provision of lights and sockets inside the workers accommodation. b. Inspections are not being carried out in compliance with documents	Partially complied
Misc	<ul style="list-style-type: none"> <li>No written criteria for recruitment/engagement of electrician were in place. Reportedly, one electrician deputed is diploma holder in electrical engineering and second one is helper without relevant qualification but has experience. However, no record has been shared to verify.</li> <li>No detail of first aid kit conforming British Standard BS 8599-1:2019 has been shared. No defibrillator has been procured.</li> </ul>	Partially complied,

#### D. Fire Safety

Particulars	Observations (with photos where appropriate)	Reference and Status of compliance of respective plan/Method of statement/others
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<p>Status and details of permit(s) and compliance of stipulated conditions.</p>	<ul style="list-style-type: none"> <li>Permit from MNDF (Fire Approval Letter) has been obtained on 15 February 2023 for accommodations and offices at the camp site for the construction phase.</li> <li>However, permit from MNDF for operation of mobile diesel tanker of 5000 liter in use is yet to be obtained.</li> </ul>	<p>Partially complied</p>
<ul style="list-style-type: none"> <li>Are fire extinguishers selected and provided for the types of materials in areas where they are to be used (Class A, B, C, etc.)?</li> <li>Does the section have enough fire extinguishers and not obstructed</li> <li>Are the fire extinguishers fully charged? Are they not broken? Is there a control tag to record details of maintenance?</li> </ul>	<ul style="list-style-type: none"> <li>Yes.</li> <li>Reportedly Yes but no document has been shared to verify the adequacy of same.</li> <li>Yes. Internal inspection is being carried out. However, inspection of fire extinguishers by third party has been expired and no record has been shared to justify delay and proposed action on getting third party inspection.</li> </ul>	<p>Partially complied</p>
<ul style="list-style-type: none"> <li>Are the emergency exits unobstructed, easy to open?</li> <li>Are the emergency exits locked during working hours, including overtime?</li> <li>Do the emergency exits have a functioning emergency light above the exit?</li> <li>Is the evacuation map visible?</li> </ul>	<p>No record of inspection was shared to verify compliance of all relevant HSE documents. However,</p> <ol style="list-style-type: none"> <li>Only one gate has been provided in one block of accommodation which is also being designated as emergency exist gate;</li> <li>Approaching corridor for worker accommodation is being allowed to store various items by workers.</li> <li>During visit in camp area, it was found dark in one corridor of accommodation block. However emergency lights are provided and working.</li> <li>Evacuation map is provided at main locations such as Kitchen, office building etc.</li> </ol>	<p>Partially complied</p>
<ul style="list-style-type: none"> <li>Are escape routes kept clear to allow unhindered passage?</li> <li>Are emergency lights working (e.g. in the stairs)?</li> </ul>	<p>As per given above</p>	<p>As per given above</p>
<ul style="list-style-type: none"> <li>In case the detector is alimented by battery, is it still charged?</li> <li>Is the alarm system accessible?</li> </ul>	<ul style="list-style-type: none"> <li>Could not be verified.</li> <li>Yes. Alarm was located near material entry gate and in working condition but found rusty</li> </ul>	<p>Partially complied till status of record is verified.</p>

	<ul style="list-style-type: none"> <li>No record of inspections was shared to verify.</li> </ul>	
Are there designated smoking areas (free from flammable and combustible materials)?	Yes, only one near office building.	Being complied. However additional need to be provided near ware house and batching plant area.
Status a detail of trained volunteers for firefighting/evacuation team	Reportedly training has been provided to all on firefighting but mainly confined to usages of fire extinguishers and regarding how to approach two assembly points.	Being complied
Can members of the firefighting / evacuation team explain the content of the training they received?	<ul style="list-style-type: none"> <li>Yes, but mainly confined to usages of fire extinguishers and regarding how to approach two assembly points. Lack of awareness on evacuation from project site and/or island, if envisaged.</li> </ul>	Partially complied
Status and details of mock drills conducted	<ul style="list-style-type: none"> <li>No record been shared on mock drill conducted on firefighting. However, trainings on same have been provided on regular basis. As per emergency response plan, emergency mock drill is to be conducted after every six months.</li> <li>However, a Siren test was conducted at the site and camps to verify the effectiveness of audible in March-2024 while evacuation drill was conducted in November-23 but no report on findings has been shared.</li> <li>No mock drill on fire fighting has been conducted with in-house team and external agencies such as WAMCO, MNDF etc</li> </ul>	Partially complied
Status of record for regular in-house inspection	Date of inspection has been marked on each fire extinguisher; however, no records has been shared to verify.	Being complied
Status and details of records including training	Records with attendance register were kept and also details were provided in monthly reports.	Being complied
Others (if any)	No	

## E. Hazardous chemical and material management

Particulars	Observations (with photos where appropriate)	Reference and Status of compliance of respective plan/Method of statement/others
Status and details of compliance of local regulations for transportation, storage and handling	<ul style="list-style-type: none"> <li>Overall, in compliance with Hazardous chemical and material management plan. However:</li> <li>No mapping of hazardous and impacts for mobile diesel tanker of 5000 liter in use since November-23 has been done and also registration of vehicle and permission from MNDF are yet to be obtained.</li> <li>Others are as given below.</li> </ul>	Partially complied
<ul style="list-style-type: none"> <li>Does each chemical have a definite storage place?</li> <li>Are chemicals not stored on the way where they could be kicked by mistake?</li> <li>Are the chemicals properly segregated?</li> </ul>	<ul style="list-style-type: none"> <li>Overall, yes. All chemicals are stored in a container under lock and provided with air condition and exhaust fan. However, adequacy of capacity needs to be verified for envisaged maximum of chemicals. Diesel has been stored in mobile tanker.</li> <li>However no for chemical storage in ware house on temporary basis and in batching plant area before transferring same to storage tank and probability of kicked are very high.</li> <li>Yes, shelves are provided in container under lock provided.</li> </ul>	Partially complied
In case chemicals need to be stored above each other, is the chemical warehouse equipped with proper shelves?	Same as given above.	Same as given above
Are corrosive chemicals stored on lower levels?	No practice is in place. Need to include the same in respective plan.	Not complied
Is secondary containment provided? Does it have sufficient capacity?	<ul style="list-style-type: none"> <li>Second containment has been provided for container while not been provided for hazardous chemicals being stored in ware house on temporary basis before transferring same to dedicated storage area for same and on temporary basis and in batching plant area before transferring same to storage tank.</li> <li>No detail has been shared to verify the capacity of same but it should be 110% of maximum size of container being stored.</li> <li>No second containment has been provided for diesel mobile tanker when it is just used as storage tank.</li> </ul>	Partially complied
Is there an up-to-date inventory of all chemicals stored in the warehouse?	No	Not complied

Are flammable chemicals stored in a cool place?	Yes. Air condition and one small exhaust fan have been provided but confined to container provided with lock. However temporary storages area in warehouse and in batching plant area have been provided only shade without having mapping of hazards.	Partially complied
Are the following signs posted at the entrance of the warehouse: "chemical storage", "hazard pictogram", "non-smoking sign", "no entrance sign"?	Yes, but nothing has been provided for temporary storages.	Partially complied
Is the responsibility for managing the chemical warehouse clearly allocated? Does the person receive corresponding training?	Yes	Being complied
Is the access to the chemical warehouse limited to the authorized persons? Is the warehouse locked when authorized personal is not present?	Yes	Being complied
Does the chemical warehouse have adequate light?	Yes	Being complied
Does the air in the chemical warehouse change sufficiently? In case the natural ventilation is not sufficient, is an air exhaust system installed?	<ul style="list-style-type: none"> <li>Air condition and small exhaust fan have been provided in closed container. open sealed containers are also being stored till all the chemical is consumed/used.</li> <li>No detail on adequacy of ventilations or air exchange rate has been provided, however same need to be established by considering best industrial practices.</li> </ul>	Partially complied
Is no external electrical device plugged (such as heater, mobile phone charger)?	Air condition and small exhaust fan are provided within closed container. However, no mapping of associated hazards has been shared.	Partially complied
Is the full MSDS for each chemical available?	Yes	Being complied
Are gas cylinders secured to prevent from falling and stored away from heat?	Yes, as depicted in photo. At the time of visit, only LPG cylinders used for Kitchen were connected for use in kitchen. No cylinder used for welding and cutting are being stored.	Being complied

Are cylinders stored in well-ventilated areas and are they properly segregated?	Reportedly yes but could not be verified during visit	
Are empty cylinders stored separately from full cylinders and are they adequately signed?	Same as above	
Details of storage of chemicals in workplaces. (Is only a limited quantity of chemicals kept in the workplace (e.g. for daily use; large quantities are kept in the chemical storage)? e.g. acetone in spot cleaning room, propane gas in kitchen etc.)	<ul style="list-style-type: none"> <li>Only limited quantity of chemicals is being stored such as cylinders in kitchen area and construction area, chemicals and diesel in construction area and in STP area but no detail on real time inventory has been shared to verify.</li> </ul>	Partially complied
Do the chemicals present in the workplace for daily use have a specific storage location in the workplace (not just on the floor / on the way)?	No dedicated space was being provided for storage at construction site without adequate mitigation measures. No record has been shared to verify.	Partially complied
Is there an eyewash station in the chemical warehouse? Does it have sufficient pressure? Is it not obstructed?	The emergency eye wash station was provided only in batching plant area. No eye wash station has been provided in chemical storage area near warehouse. Reportedly, one more eye wash station will be provided near chemical warehouse and purchase order for same has been issued.	Partially complied
Is sand or other material available to clean spills and leaks?	<ul style="list-style-type: none"> <li>Only one spill kit has been provided just outside the container. However, adequacy of spill kit in reference to deal with possible maximum size of spillage is to be established.</li> <li>No mapping has been carried out for risk of spills and requirements of spill kit at other locations for storages such as in batching plant area and construction site.</li> </ul>	Partially complied
Are the PPEs required for the chemicals stored in the warehouse provided?	Reportedly, all are in compliance with respective plan. However, details could be inspected on random basis during site visit.	Being complied
Status and details of incidents of spill noted	No incident has been reported	Being complied

System in place for unloading at jetty & warehouse and road transportation to warehouse	All were being unloaded at quay wall adjacent to project site and reportedly overall in compliance with Hazardous chemical and material management plan and traffic management plan. However, records as chemical hazardous material delivery log has not been shared to verify.	Partially complied till status of records is verified.
Status of record for regular in-house inspection	Yes, as per in compliance with plan.	Being complied
Status and details of records including training	<ul style="list-style-type: none"> <li>Record keeping was reviewed on randomly basis and found in compliance with respective plan.</li> </ul>	Being complied
Others (if any)	No	

#### F. Emergency Response

Particulars	Observations (with photos where appropriate)	Reference and Status of compliance of respective plan/Method of statement/others
Overall Status of implementation of Emergency Response plan	<p>Overall, it was found in compliance with Emergency Response Plan. However, following were observed:</p> <ol style="list-style-type: none"> <li>Mock drills have not been conducted in compliance with plan.</li> <li>Date of inspection of Fire extinguishers by third party was found expired.</li> <li>Emergency alarm was found rusty though it can be still operated.</li> <li>Emergencies due to usages of mobile diesel tanker of 5000 liter and repeated fire incidents reported in adjacent waste dumping site of WAMCO have not been reviewed and/or considered in reference to adequacy of plan.</li> </ol>	Partially complied
<ul style="list-style-type: none"> <li>Status and details of PPEs and others available to deal with emergency.</li> <li>Status and details of inspection of all related PPEs and others.</li> </ul>	<ul style="list-style-type: none"> <li>Overall, it was found in compliance with Emergency Response Plan.</li> <li>No record of inspection has been shared to verify.</li> </ul>	Partially complied

<ul style="list-style-type: none"> <li>In-house plan to deal with smoke resulting from incidents of fire at adjacent waste dump site of WAMCO.</li> <li>Details of reported incidents of fire.</li> </ul>	<ul style="list-style-type: none"> <li>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.</li> <li>No specific plan is in place except mentioned in Emergency Response plan.</li> <li>No review has been carried out in HSE meetings except that all stakeholders including WAMCO and MOE have been notified on immediate basis.</li> </ul>	Partially complied
<ul style="list-style-type: none"> <li>How many areas have been designated as assembly points?</li> <li>Are assembly points available capable to provide protection to the workers and staff from smoke resulting from fire in adjacent dumpsite of WAMCO?</li> </ul>	<ul style="list-style-type: none"> <li>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 which has been closed for time being.</li> <li>No quantification of the impacted zone due to fire and smoke under worst meteorological scenario by WAMCO or DBO contractor has been made. However, Dispersion of smoke depends on wind direction and extent and duration of smoke emitted. It is worth to be noted that both assembly points are located near the dumping site and almost in same quadrant.</li> </ul>	Partially complied
How many workers can each designated assembly point accommodate?	Reportedly both are designed for peak work force but no criteria have been shared to verify the same.	Partially complied
Understanding of Emergency Response team on hazards and role of in dealing with emergency including evacuation.	Satisfactory to some extent and need further training and mock drills for evacuation from project site and/or from island in-house and with third parties including Govt and Private agencies.	Partially complied
Site evacuation plan status and details - is the plan in place and are there drills to practice such evacuations?	Yes, but mainly confined to evacuation to assembly areas only. No detail has been provided regarding evacuation plan from project site and island, if required.	Partially complied
Are emergency numbers and signage including dos and don'ts posted clearly? If yes then status and details of locations.	<ul style="list-style-type: none"> <li>Not up to the requirements and need further improvement. Inadequacy was observed in case of diesel mobile tanker, storage of lubricating oil, waste oil, hazardous chemicals etc. However, inadequacy in case of diesel mobile tanker was rectified within 24 hours.</li> <li>Dos and don'ts posted were in English language which cannot be understood by each worker. Hence same need to be provided in all prevalent languages within project site including local language.</li> </ul>	Partially complied
<ul style="list-style-type: none"> <li>Status and details of mock drills conducted</li> <li>Schedule for proposed mock drills</li> </ul>	<ul style="list-style-type: none"> <li>As per emergency response plan, emergency mock drill is to be conducted after every six months.</li> </ul>	Partially complied



	<ul style="list-style-type: none"> <li>• However, a Siren test was conducted at the site and camps to verify the effectiveness of audible in March-2024 while evacuation drill was conducted in November-23 but no report on findings has been shared.</li> <li>• No mock drill has been conducted with third parties including Govt and Private agencies.</li> <li>• No schedule for proposed mock drills has been shared.</li> </ul>	
Status and details of in-house inspection conducted on regular basis.	Reportedly, in compliance with emergency response plan. However, no record has been shared to verify.	Partially complied
List of EHS committee members and recent meetings	No EHS committee has been constituted.	Not complied
Status of record keeping and training	<ul style="list-style-type: none"> <li>• Record keeping was reviewed on randomly basis and found inadequate compliance with respective plan.</li> <li>• Need to be audited to ensure the compliance.</li> </ul>	Partially complied
Others (if any)	No	

G. Security Management

Particulars	Observations (with photos where appropriate)	Reference and Status of compliance of respective plan/Method of statement/others
How many security guards are on duty during night and day time and respective locations of guarding	Total 8 (4+4) security guards belong to sub-contractor Gage Security company. Two were posted on two gates and two were on patrolling during day and night.	Being complied
Which are the languages security guards understand and/or speak including local language?	Hindi, English and Nepali but could not find evidence of understanding of local language.	Being complied but at least one not all on duty during day and night should know local language.
What are the roles assigned to security guards as per contract with security agency.	Mainly to restrict unauthorised and illegal entry and to allow systemic entry to authorized staff/workers, visitors and Vehicles and patrolling to prevent theft, damage to property etc. However limited role has been assigned during emergency (ices) such as raising alarm, assistance in evacuation during emergency etc.	Being complied
<ul style="list-style-type: none"> <li>• What access controls for vehicles to project site are performed.</li> <li>• What access control for materials/construction machinery and equipment to project site are performed</li> <li>• What access controls for workers/staff to the site are performed</li> <li>• What access controls for visitors to the site are performed</li> </ul>	<ul style="list-style-type: none"> <li>• There are three entry / exist points provided. Gate No 1 for site entry towards Thilafushi terminal for personal and light vehicle entry, Gate No 2 entries for Heavy equipment's and vehicles to site and Gate No 3 at north side entry from Hulhumale and Male via Sea by speed boat and vessels entry for personnel and materials.</li> <li>• Gate no 1 has been closed and not in use.</li> <li>• Details at the time of entry and exist were being recorded as per checklists provided in security management plan.</li> <li>• Safety jacket, helmet and identity card were provided at security gate for each visitor.</li> </ul>	Being complied
Status and details of security arrangements in place for night	<ul style="list-style-type: none"> <li>• Measures as mentioned in Security management plan and HSE procedure for working at night such as CCTV cameras, lights, walkie talkie etc have been provided. However, adequacy of details has been verified on randomly basis only.</li> <li>• Monitoring for illumination level in and around project site has been started form March-24.</li> </ul>	Being complied.

Status and details of mock drills conducted	<ul style="list-style-type: none"> <li>• Being conducted and last drill has been conducted on 22<sup>nd</sup> January 2024.</li> <li>• However as per findings of mock drill report, stake holder meetings with local people are to be conducted up to 10 February 2024. However, no detail on same has been made available to verify the status of same.</li> </ul>	Partially complied
Understanding of security guards posted on role to play during patrolling and emergency management including evacuation	Satisfactory to some extent but need more training on regular basis especially evacuation via sea.	Partially complied
Status of record keeping and training	Could not be inspected.	
Others (if any)	No	

## H. Traffic management

Particulars	Observations (with photos where appropriate)	Reference and Status of compliance of respective plan/Method of statement/others
<b>Movement on land</b>		
Type of materials transported within the project site and from outside	<p>a) From outside project site: a) Mainly construction materials used for operation of batching plant from private jetty owned by Villa Pvt Ltd. subcontractor engaged for supply of construction materials for batching plant and its operation. All vehicles belonged to Villa Pvt Ltd and Jetty is located about 2 km b) diesel via diesel mobile tanker etc.</p> <p>b) Within project site: Mainly construction materials from jetty of Villa Pvt Ltd, Equipment, machinery and others from quay wall adjacent to project site, excavated soil, raw mix from batching plant for concreting, diesel mobile tanker, heavy construction machinery such as cranes, JCBs, mixers, dumpers etc.</p>	Being complied. However, plan need to be reviewed and modified.

	c) However, on land transportation of diesel mobile tanker and construction materials from jetty owned by Villa Pvt Ltd has been considered in plan	
Number and type of vehicles in operation for transportation of material within project site and from outside.	Dumpers, one diesel mobile tanker, one car, mixers and others. Records are being kept.	Being complied
<ul style="list-style-type: none"> <li>• Provision of dedicated way for traffic movement within site with proper barricading and signage.</li> <li>• Condition of road used for transportation of materials from outside.</li> <li>• Status and details of prescribed speed limit.</li> </ul>	<ul style="list-style-type: none"> <li>• Provided but status of barricading and signage provided need to be improved.</li> <li>• Barricaded pedestrian route from quay wall to office building has been provided.</li> <li>• Could not visited the road used for transportation of material from jetty of Villa Pvt Ltd.</li> <li>• As per traffic management plan, speed should be kept between 30 and 40 km/hr outside the premises and 20 km/hr within project site. No mechanism was in place to check the same.</li> </ul>	Partially complied
Compliance of local regulations such as qualification and experience of drivers, registration, driving license, maintenance of vehicles etc.	All drivers have valid driving license as per local regulations. However, records could be verified only on randomly basis.	Being complied
Status and details of mitigation measures taken while loading, unloading and transportation of material	Could not be inspected. However, all construction materials are being transported in Jambo bags of 1 tonne.	
Understanding of drivers on hazards associated with materials to be transported and mitigation measures to be taken.	Understanding of driver of mobile diesel tanker was found satisfactory as assessed on random basis. However other could not be inspected.	Being complied
Status and details of tool box talk provided	Could not be inspected	
Record of maintenance of vehicles	<ul style="list-style-type: none"> <li>• Preventive maintenance in place which is mainly confined to general checking and oil and filter change. Records of preventive maintenance was checked on random basis.</li> <li>• No record has been shared for vehicles owned by Villa Pvt Ltd.</li> </ul>	Partially complied

Is parking area provided? If yes then what is capacity of parking area and the approximate free capacity?	Parking area has been provided but vehicles mainly transit mixers were found parked outside parking area. However, no detail has been shared to verify the adequacy of capacity of parking area.	Partially complied
Status and details of regular in-house inspections, if any	Records were checked on randomly basis and found in compliance with respective plan.	Being complied
Status of record keeping and training	<ul style="list-style-type: none"> <li>• Record keeping was reviewed on randomly basis and found in compliance with respective plan.</li> <li>• Need to be audited to ensure the compliance.</li> </ul>	Being complied
<b>Movement via sea</b>		
Status and details of system in place especially for transportation of material, equipment/machinery, men power, evacuation for medical reasons and others, etc.	<ol style="list-style-type: none"> <li>a) Construction materials needed for operation of batching plant is being unloaded at private jetty owned by Villa Pvt Ltd who is engaged as subcontractor for operation of batching plant including supply of construction materials for same.</li> <li>b) All items other than construction materials needed for operation of batching plant are being transported via sea by external vendor and unloaded at quay wall adjacent to project site.</li> <li>c) Reportedly, Public jetty/harbour at Thilafushi is not being used for unloading of materials.</li> <li>d) Medical evacuation and limited transportation of men by speed boat engaged by EPC contractor is being operated from quay wall adjacent to project site.</li> <li>e) However, workers/staff of DBO contractor and visitors are also using public ferry from Thilafushi ferry terminal for commuting.</li> <li>f) Shipwrecks are yet to be removed by HDC to make use full used of quay wall.</li> <li>g) No detail has been provided on arrangements in case evacuation is envisaged from island.</li> </ol>	Being complied
Status of record keeping and training	Could not be inspected.	
Others (if any)	No	

- I. Construction machinery/equipment, batching plant, Sewage Treatment Plant (STP), pumps, tools, welding and others (cranes, ladders, scaffolding, lifting trucks, material hoists etc.)

Particulars	Observations (with photos where appropriate)	Reference and Status of compliance of respective plan/Method of statement/others
Broad overview on construction machine/equipment and others in use at site.	<ul style="list-style-type: none"> <li>• Machine/equipment such as crane, JCBs, transit mixers, batching plant etc used in construction activities excavation, spun piling and concreting were mainly present on site.</li> <li>• Other than above, Machine/equipment such as air compressors, DG sets, Forklifts, STP, water pumps, dumpers etc were on site.</li> <li>• Three scaffolding inspectors are being engaged for issuing fitness to temporary scaffolding and PWA, Sri Lanka has been engaged to check the fitness of machinery/equipment on regular basis.</li> <li>• Health and Safety Plan, activity wise method of statements, General Lifting, unloading and transportation Procedure are in place.</li> </ul>	Being complied



Any observations concerning equipment having inadequate condition	<ul style="list-style-type: none"> <li>• Overall, all present on site were good in condition and fitness certificate by third party i.e. PWA, Sri Lanka were verified on random basis.</li> <li>• Scaffolding provided and in use in bunker area was found unsafe as rusty sheets were provided though approval of scaffolding inspector was tagged. No record on inspection made by scaffolding inspector, Area authority and Area Manager has been shared. However same was rectified within 24 hours.</li> <li>• One DG set located near bunker area adjacent to quay wall was found emitting high noise level.</li> <li>• Limited preventive maintenance is being carried out on regular basis and records are kept.</li> <li>• No system in place to monitor exhaust gas emission.</li> <li>• OHS monitoring plan is in preparation stage.</li> </ul>	Partially complied
General observation on experience, qualification of drivers, operators, flagmen, helpers etc	<ul style="list-style-type: none"> <li>• No criteria for experience and qualification of skilled and semi-skilled workers found in place and no proof of experience and qualification has been shared. Reportedly most of them have been engaged mainly on the basis of experience.</li> <li>• However, criteria for drivers having driving license have been followed and records are kept</li> </ul>	Partially complied
Understanding of drivers, operators, flagmen, helpers etc. on hazards associated and mitigation measures	Found inadequate and need more training	Partially complied
Are fail safe, lock out switches provided where necessary and tested regularly?	Could not be inspected	
Status and details of tool box talk provided.	Could not be inspected	
Condition of PPEs provided	In compliance with PPE procedure	Being complied

Status of record for regular in-house inspection	<ul style="list-style-type: none"> <li>Records on in-house inspection and by third party inspection were checked on random basis and found in compliance with respective method of statement and SOPs.</li> </ul>	Being complied
Status of record keeping and training	Record keeping was inspected on random basis and same need to be thoroughly audited to ensure the compliance of all relevant HSE documents.	Being complied
Others (if any)	No	

## J. Maintenance workshop

Particulars	Observations (with photos where appropriate)	Reference and Status of compliance of respective plan/Method of statement/others
Status and details of facilities and staff available for maintenance	Designated workshop is yet to commissioned. However, an experience mechanic is being employed on regular basis for conducting maintenance of vehicles and others.	Partially complied
Details of type of maintenance works which can be carried out	Preventive Maintenance at site is mainly confined to general checking and change of filter and oil. Reportedly, workshop in Male is being engaged in case of fault which cannot be corrected at site.	Being complied
Status and details of experience and qualification of staff available.	No qualification detail has been shared, however mechanic on job has requisite experience.	Being complied
<ul style="list-style-type: none"> <li>Is maintenance being done on preventive basis or break down basis?</li> <li>What are status and details of maintenance conducted so far?</li> </ul>	<ul style="list-style-type: none"> <li>On preventive basis.</li> <li>Maintenance is mainly confined to change of filter and oil.</li> <li>Records are being kept.</li> </ul>	Being complied
Status of understanding of staff on hazards associated and mitigation measures	Satisfactory	Being complied
Status and details of mitigation measures including PPEs	Could not be assessed as no maintenance work was not carried out during visit	
Status and details of storage of oil, chemicals etc and waste generated, storage and disposal	<ul style="list-style-type: none"> <li>Isolated secured spaces have been provided for storage of lubricating oil and waste oil.</li> <li>Dos and don'ts are not adequately displayed.</li> </ul>	Being complied, however Do's and don'ts are to be adequately displayed
Status of record for regular in-house inspection	Could not be inspected	
Status of record keeping and training		
Others (if any)	No	

## K. PPEs

Particulars	Observations (with photos where appropriate)	Reference and Status of compliance of respective plan/Method of statement/others
<ul style="list-style-type: none"> <li>Status and details of PPEs provided for the activities in progress on site.</li> <li>Are all in line with permit to work or respective method statements?</li> </ul>	<ul style="list-style-type: none"> <li>Checked on randomly basis. Overall found in compliance with PPE procedure but some violations as depicted in photos were also observed.</li> <li>No specific detail on PPEs has been mentioned in Permit to work issued considering nature of activities and no record on same has been shared.</li> </ul>	Being complied
Are all PPEs provided complying with British standards?	Checked on randomly basis and found yes but no record has been shared to verify the same. However, no detail of first aid kit conforming British Standard BS 8599-1:2019 has been shared.	Partially complied
Status and details of assessment carried out for requirement of activity wise PPEs.	No other than mentioned in documents such as Risk Assessment Procedure, activity wise method of statements and SOPs.	Being complied
Status and details of in-house inspection on regular basis for conditions (safe for use) of PPEs	Checked on randomly basis and record has been shared. However, some workers found wearing damaged shoes	Being complied, however inspection need to be more frequent and effective.
Status and details of tool box talk conducted.	Could not been inspected. However, violations such as not using masks, gloves etc were observed	Partially complied till the status is verified.
Status of record keeping and training	Record keeping was inspected on random basis and need to be thoroughly audited to ensure the compliance	Being complied
Others (if any)	No	

## L. Permit to work

Particulars	Observations (with photos where appropriate)	Reference and Status of compliance of respective plan/Method of statement/others
Permits to work issued for the activities in progress on site and its type	All are being issued in compliance with Permit to Work Procedure and all records are maintained. Details are also provided in monthly reports	Being complied
Compliance of conditions mentioned in respective Permit to work issued for the activities in progress on site	<ul style="list-style-type: none"> <li>• Conditions mentioned were found indicative and no activity wise specific detail has been provided.</li> <li>• No record of inspection was shared to verify the compliance of conditions mentioned in respective activity wise Permit to work issued.</li> </ul>	Partially complied
Activities for which Permit to work has not been issued, if any.	<p>During visit, following observations are made on random basis:</p> <ul style="list-style-type: none"> <li>• No permit to work has been issued for boring of well in progress with batching plant area.</li> <li>• No permit to work has been issued for transportation and filling up diesel by mobile diesel tanker of 5000 liter.</li> </ul>	Not complied
Understanding of workers and supervisor on hazards associated and mitigation suggested in permit to work issued.	Overall, not up to the requirements and need further training on how to design activity wise mitigation measures considering activity specific associated hazards.	Being complied
Status and details of tool box talk conducted	Overall, not up to the requirements and need to include more on dos and don'ts.	Being complied
Status and details of visit(s) made by H&S manager and/or by H&S inspector for supervision	Reportedly visits for regular supervision are made on random basis and if found any observation then same is reported via WhatsApp but no record has been shared on details of visits made for supervision, findings and action taken.	Partially complied
Status and details of EHS committee and meetings	No EHS committee is in place.	Not complied
Status and details of record keeping including training	Record keeping was checked on randomly basis and found in compliance with Permit to Work Procedure and need to thoroughly audited to ensure the compliance.	Being complied
Others (if any)	No	

## M. Medical Treatment

Particulars	Observations (with photos where appropriate)	Reference and Status of compliance of respective plan/Method of statement/others
Status and details of regular health check-up of workers/staff	<ul style="list-style-type: none"> <li>No system in place for regular health check-up of workers/staff. However, it is being done by Maldivian Government at time of issue of work permit to individual. Also, medical insurance for individual is also part of work permit.</li> <li>System in place is only for treatment of any injury, diseases etc reported during stay in camp area.</li> <li>No record has been shared on baseline of health of each worker as per medical check-up carried out at time of issue of Permit to Work.</li> <li>No record is being kept for worker's suffering from chronic diseases such as BP, diabolic etc</li> <li>No fitness test is being conducted for workers before engagement to verify the suitability to work and no follow up monitoring is being done on same.</li> </ul>	Partially complied
<u>Reported cases of injuries, type of injuries and reasons for causing injuries</u> <u>Reported cases of chronic diseases such as BP, diabetics, heart problem etc.</u> <u>Reported diseases other than injury and chronic diseases (infection due to viral and bacterial infection etc.)</u>	<ul style="list-style-type: none"> <li>Injury of Abdul Ghafoor Roozi, reported as incident on 10 Feb 2024 has not been reported in register as per details provided in H&amp;S monthly report for February-24 and also no detail on treatment given has been enclosed with incident report.</li> <li>As per health centre register, two incidents of injuries were found recorded in March-24 but not reported and investigated. Same were also not reported in monthly report.</li> <li>Register is maintained to report details such as name, work permit number, nature of complaint, diagnosis and prescribed treatment of each individual patient getting medical treatment and details are reported on monthly basis.</li> <li>No record is being kept for worker's suffering from chronic diseases such as BP, diabolic etc</li> </ul>	Being complied. However corrective actions need to be taken.
Any evacuation due to medical reasons?	Yes. It has been reported on 23 January 2024 for getting check-up at IGMH hospital, Male. However, no detail has been shared on evacuation via sea.	Being complied

Details of treatment facilities and tools such as stretcher available at site	<ul style="list-style-type: none"> <li>Basic facilities for first aid including dressing, for monitoring and treatment of BP and diabetic, dehydration due to temperature etc. Stretcher and bed are also available in health centre.</li> <li>Inadequate first aid facility for treatment of electrocuted person as no detail of first aid kit conforming British Standard BS 8599-1:2019 has been shared and no defibrillator has been procured.</li> </ul>	Partially complied
Medico staff available at site	One full time MBBS doctor with male nursing staff is available on 24x7 basis. At the time of visit, doctor on temporary basis was present on site as reportedly doctor employed on permanent basis went on leave.	Being complied
Number of trained first aiders at site and status and details of training/certificate.	Total nine first aiders. However, no detail on training/certificate has been shared.	Partially complied till status of training/certificate is verified.
Status of MOU with external medical hospitals, if any	Reportedly with IGMH hospital at Male but no record has been shared to verify the same.	Being complied
Details of training provided on occupational health hazards and mitigation measures	Reportedly no further training has been provided to doctor and nursing staff.	Not complied
How many first aid have been given by trained first aiders	No detail has been recorded and shared as doctor and nursing staff are available on 24x7 basis on site.	Being complied
Understanding of medical staff including trained first aiders type of hazards and requirements.	Satisfactory	Being complied
Status and details of record keeping including training	Record keeping was verified on random basis and found in compliance with respective HSE documents and need to thoroughly audited to ensure the compliance.	Being complied
Others (if any)	No	

## N. Pest Control

Particulars	Observations (with photos where appropriate)	Reference and Status of compliance of respective plan/Method of statement/others
-------------	--	--

Status and details of pest control program	Pest control plan is in place but last pest control by third party was conducted in April 2023. However as per records checked on random basis, in-house pest control has been carried out on regular basis.	Being complied
Is any sign of presence of pest observed due to open storage of water/waste water such as sedimentation pond?	No. However, no record on in-house inspection has been shared.	Partially complied till the status of record is verified.
Identified sources of risk of pest including presence of waste dump site of WAMCO	Potentially in storage yards of construction materials and solid waste etc in addition to waste dump site of WAMCO and sedimentation pond.	
Is water and waste water storage observed within project site except sedimentation pond and in the area of waste dump site of WAMCO adjacent to project site	Not found during site visit, however no record on in-house inspection has been shared.	Partially complied till status of record is verified.
Status of reported diseases due to pest.	As per discussion with doctor, diseases observed were not due to pest but mainly due to seasonal changes and other reasons. Also records of each patient are kept in medical register.	Being complied
Status and details of record keeping including training	All have been kept and are also being shared in monthly reports also.	Being complied
Others (if any)	No	

## O. OHS monitoring

Particulars	Observations (with photos where appropriate)	Reference and Status of compliance of respective plan/Method of statement/others
Is the OHS monitoring plan ready?	No.	Not complied
Status and details of exposure monitoring conducted	<ol style="list-style-type: none"> <li>1. Ambient air quality monitoring at two locations within project site during March-24 (once in month for 24 hourly)</li> <li>2. Ambient noise level monitoring at two locations with project site during March-24 (once in a month for 24 hrs).</li> <li>3. Monitoring of Lumax during night from March-24.</li> </ol>	OHS monitoring plan is to be prepared



Status of ambient air quality and noise level conducted within project site	Ambient Air Quality ( $\mu\text{g}/\text{m}^3$ )					OHS monitoring plan is to be prepared	
	Location	PM10	PM2.5	SO2	NO2		TSP
	Near Area 12	40.11	39.97	ND	ND		75.21
	Near office	35.54	35.45	ND	ND		68.20
	Noise level (dB(A))						
	Location*	Leq <sub>daytime</sub>		Leq <sub>nighttime</sub>			
	NQ3	53		50			
NQ5	56		64				
	*Locations are same as monitored on monthly basis and given in EIA report.						
Corrective action proposed/implemented based on findings of OHS monitoring	No					OHS monitoring plan is to be prepared	
Status of in-house inspection on issue related to requirement of exposure training	No record has been shared to verify.					OHS monitoring plan is to be prepared	
Status and details of EHS committee and its meeting	Not in place.					OHS monitoring plan is to be prepared	
Status and details of record keeping including training	Records of monitoring conducted as stated above have been reported in monthly report of March-24.					OHS monitoring plan is to be prepared	
Others (if any)	No						

#### P. Misc

Particulars	Observations (with photos where appropriate)	Reference and Status of compliance of respective plan/Method of statement/others
Status and details of all type of incidents noted/reported	Overall, in compliance with Incident Reporting and Investigation Procedure, however following observations were made: a) <u>Incident reported on January 23 2024:</u> <ul style="list-style-type: none"> <li>Suresh, an operator of dump roller got injured.</li> </ul>	Partially complied

	<ul style="list-style-type: none"> <li>• Provided separate access for pedestrian and equipment could not be visibly observed during visit except access from office building to Exit gate near quay wall.</li> <li>• Role of flagmen has not been considered during investigation.</li> <li>• Mitigation measures recommended in incident report and LTI reported as NIL could be verified as incident report was shared on 28 April 2024.</li> </ul> <p>b) <u>Incident reported on February 10 2024:</u></p> <ul style="list-style-type: none"> <li>• Abdul Ghafoor Roozi, a helper got injured.</li> <li>• As per attendance register, he remained absent on sick leave.</li> <li>• Details were not reported in medical register as reported in monthly report.</li> <li>• LTI has not been reported.</li> </ul> <p>c) As per health centre register, two incidents of injuries were found recorded in March-24 but not reported and investigated. Same were also not reported in monthly report.</p>	
Status and details of induction training to visitors and workers	Reportedly, overall, in compliance with HSE training procedure but records could not be verified	Being complied
Status and details of facilities provided to deal with heat stress on site	<ul style="list-style-type: none"> <li>• This has not been considered in mapping of hazards.</li> <li>• As per discussion with doctor, this is common problem encountered on regular basis and health centre is equipped to provide first aid. Also, ORS pouches are being provided on SOS basis.</li> <li>• Temporary shelters have been provided near construction site and office building. Also, project site is very small and camp area is with 100 m (max.) from construction site.</li> </ul>	Being complied.
Status and details of EHS committee and meetings	Not in place.	
Status and details of interaction made with workers and construction on HSE aspects other than tool box talks.	No other system except tool box talks and training session is in place.	
• Status and details of training provided.]	<ul style="list-style-type: none"> <li>• It was found in compliance with HSE training procedure and details are being reported in monthly reports.</li> </ul>	Partially complied.

<ul style="list-style-type: none"> <li>Language in which training is provided. Is it understood by all?</li> </ul>	<ul style="list-style-type: none"> <li>Most of the workers/staff are non-Maldivians and mainly from Turkey, India, Bangladesh, Nepal, Sri Lanka and Afghanistan. All documents are made in English language.</li> <li>No professional multi- language speaking trainer has been engaged. However in-house staff is being used for the purpose in limited way.</li> <li>During interactions on randomly basis with workers, it was found that language is an issue during communication.</li> </ul>
Display of signage	Not up to the requirements and need further improvements
Display of do's and don't	Not up to the requirements and need further improvements
Others (if any)	No.

N. Summary of observations which need corrective actions/measures

Observations	Corrective action recommended		Date of completion
	DBO agreed to comply	Need to escalate to DBO management	
Mapping of hazards and impacts associated with mobile diesel tanker of 5000 L			
Mapping of hazards and impacts associated with commissioning and operation of bore well and RO plant for batching plant			
Provision of secondary containments and adequate air exchange rate for storage of chemicals and hazardous materials			
Dedicated space of storage of gas cylinders (filled and empty)			
OHS monitoring plan			
Detailed inspection/audit of record keeping in compliance with respective plan, method of statements and SOPs			

Records of Supervision of HSE team at site
To make Permit to work more effective and activity specific
Regular supervision by HSE team on regular basis and record keeping
Facilities of first aid for electrocution
Plan to deal with heat stress
LTI reported as NIL
Status of EHS committee and its meeting
Inspection of PPEs
Commissioning of workshop for maintenance
Communication with workers at site and during training due to language issues.
Mock drills for firefighting and evacuation from project site/island to be conducted
Provision of adequate number of spill kits and eye wash stations
Fitness certification of fire extinguishers by third party
Regular maintenance of fire alarm and provision of emergency exit doors as per best practices.
Electricity safety within workers accommodations
Others as mentioned in various sections



**Electrical hazard- Open socket**



**Electrical Hazard – Un guarded cable**



**Hazardous chemical storage container and Spill Kit**



**Hazardous chemical storage container from Inside**





Mobile Diesel Tanker with all marked requisite details



Lubricating oil storage





**Hazardous chemical storage in batching plant area**



**Storage of LPC cylinders in Kitchen area**



**Fire extinguisher without fitness by third party**



**Manual alarm with rusty rod to be used to rotate**





**Vehicles parked outside parking area**



**Damaged shoes**





**Emergency suit and mask kept in batching plant area**



**Scaffolding with rusty sheets**



**Scaffolding with after removal of rusty sheets**





**Discussion in meeting room**



**Discussion with supervisor of batching plant**





**Discussion with flag men and driver in batching plant area**



**Discussion with Doctor in health centre**



Design, Build and Operate of a Waste to Energy Facility at Thilafushi  
 Contract No: (AGR)438-WPMC/PRIV/2021/71



**WEEKLY HSE MEETING**

Date	12/04/2024	Duration	
Location	WTE Site Meeting Room		
Meeting Agenda	<u>Opening Meeting</u>		

**ATTENDEES**

Sl#	NAME	COMPANY	DESIGNATION	SIGNATURE
1	DHARMOTHARAN K	AAJV	H&S Manager	
2	Srinivas Prasad	URBASER	DPM/CM	
3	Sadat COT	AAJV	HSE Manager	
4	Omur Abali	AAJV	Finance Man.	
5	Hamed Ali	AAJV	Const. Man.	
6	Fathimath Farooq	PMU	Env. Social Safeguar	
7	Nashree Nazim	PMDSE	Dep. Team Leader	
8	Sunil Kapota	"	Env. environmental safeguard	
9	Mohamed A Lotif	PMU/M.E	Civil Engineer	
10	Sudhakar	AAJV	Env. Manager	
11	Mohamed Mohamed	Env. Safeguar	Social Rep	



## 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
31.3.2024	6.4.2024	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 casting for wall at Wall B completed.
- Bunker - Reinforcement bar & formwork for wall at Wall A in progress.
- Bunker - Reinforcement bar & formwork for wall at Wall D in progress.
- Bunker - Reinforcement bar and formwork for foundation slab at Area 2 in progress.
- Bunker - Structural backfilling at Leachate Area 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.

1



OVERALL - POINT ONE

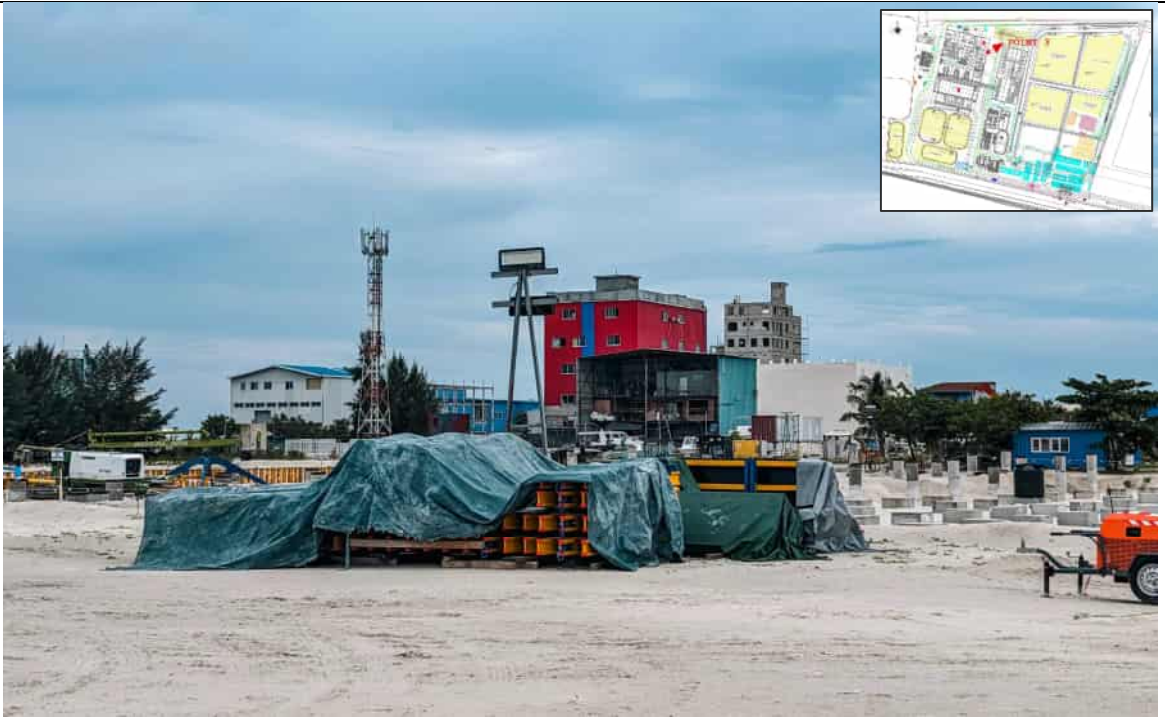
2



OVERALL - POINT TWO



3



OVERALL - POINT THREE

4



OVERALL - POINT FOUR

5



OVERALL - POINT FIVE

6



BUNKER AREA - AREA 2 IN PROGRESS.



7



BUNKER - LEACHATE AREA STRUCTURAL BACKFILLING COMPLETED

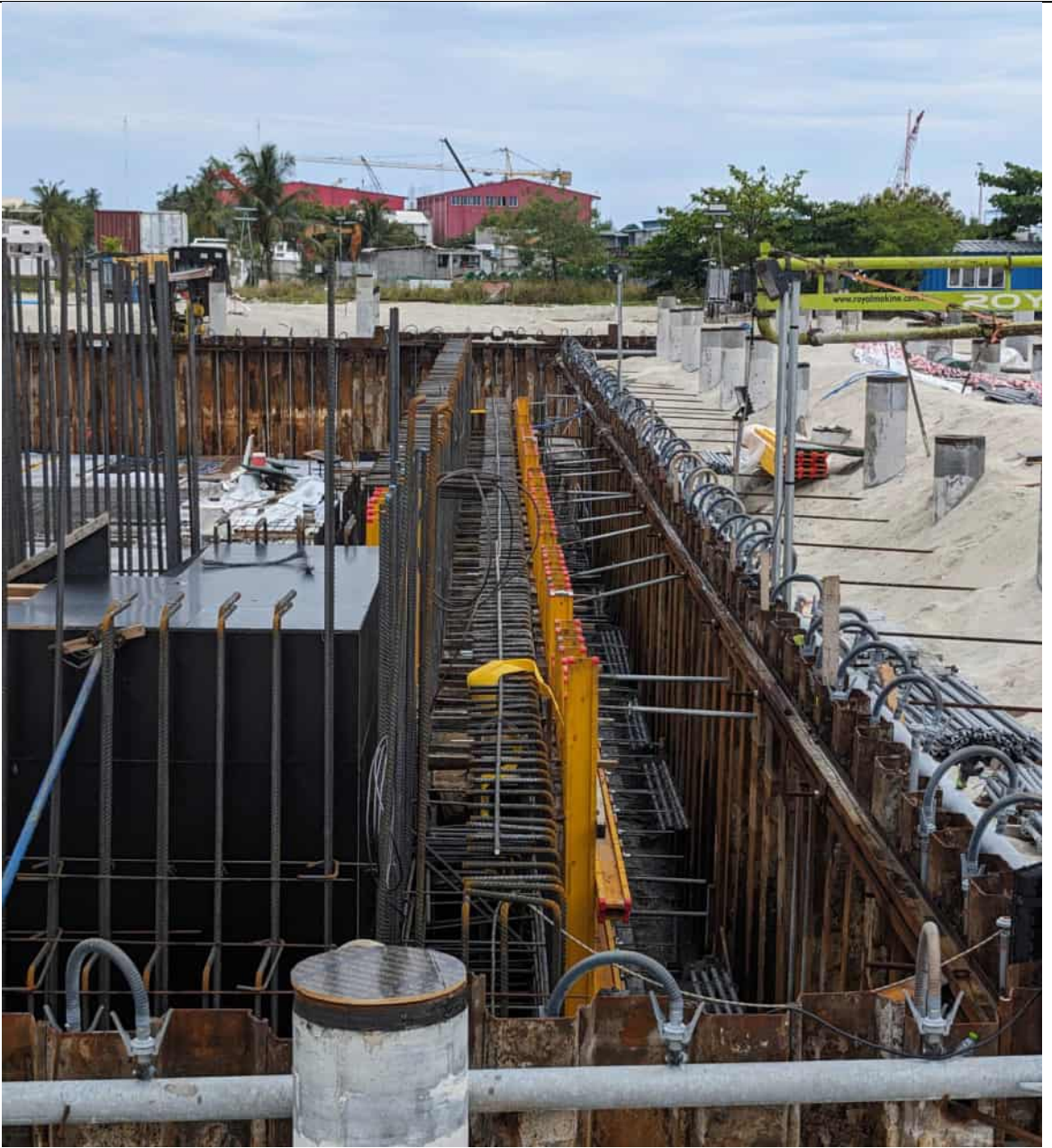
8



PROCESS AREA - NO ACTIVITY



9



BUNKER - WALL B CONCRETE CASTING COMPLETED

Site Log



Date: 31/03/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail  
 Sunday  
 Time on site:  Time off site:  Completed by:

Weather:

	Total	Civil	Process
Workers on Site	78	78	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 - 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 & compaction work at Leachate Area.
- 6) Bunker - Pilecap concrete casting work 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

Meetings	When	Who	What
	2:00pm	FIT, URB, AAJV	Weekly progress monitoring discussion
			a) Remind to expedite resubmission of method statement status approved with comment.
			b) Discuss the requirement for wall formwork and working platform.
			c) Discuss the plan piloting work to verify location of existing anchor at quay wall.
			d) AAJV update on material still not on site. Pending custom clearance.

Comments

Site Log

# FICHTNER

Date      01/04/2024      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 - 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 & compaction work at Leachate Area.
- 6) Material Delivery - Aggregate 25.043 + 24.796 tonne.
- 7) Material Delivery - Sand 25.163 tonne.
- 8) Material Delivery - Cement 15.063 tonne.
- 9) Piloting work - To verify location of existing quay wall anchor.

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

Site Log



Date: 02/04/2024 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 - 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 & compaction work at Leachate Area.
- 6) Material Delivery - Aggregate 24.674 + 25.706 tonne.
- 7) Material Delivery - Sand 25.159 + 25.428 + 25.542 + 24.780 tonne.
- 8) Material Delivery - Cement 14.790 + 15.977 + 15.264 + 15.720 + 15.742 + 15.015 + 31.547 tonne.
- 9) Piloting work - To verify location of existing quay wall anchor.

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      03/04/2024      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 wall at Wall A.  
 3) Bunker - Waterstop & Earthing installation work for wall at Wall B.  
 4) Bunker - Reinforcement bar and formwork installation for wall at Wall B.  
 5) Bunker - Geogrid installation work at Leachate Area.  
 6) Material Delivery - Aggregate 26.381 tonne.  
 7) Material Delivery - Cement 36.291 + 15.864 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).  
 Review readiness both documents and drawings required for bunker wall casting.

Meetings	When	Who	What
	10:00am	FIT, URB, AAJV	Weekly Safety Committee Meeting
			a) Remind to resubmit ERP for Bunker.
			b) Remind to conduct lighting testing (lux) for working during night shift.
			c) Update on CEMP preparation.

Comments

Site Log



Date: 04/04/2024 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 wall at Wall A.  
 3) Bunker - Inspection of working platform and wall readiness at Wall B.  
 4) Bunker - Concrete casting work for wall at Wall B.  
 5) Bunker - Geogrid installation work at Leachate Area completed.  
 6) Material Delivery - Aggregate 26.202 tonne.  
 7) Material Delivery - Sand 25.908 + 26.096 + 22.646 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 (9mm) within design tolerance (33mm).

Meetings

When	Who	What
N/A		

Comments

N/A

Site Log

# FICHTNER

Date: 05/04/2024 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

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"/>

Comments

Site Log



Date: 06/04/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail

Saturday

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

Weather: Sunny

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 wall at Wall A.
- 3) Bunker - Waterstop and earthing installation work for wall at Wall A.
- 4) Material Delivery - Aggregate 26.252 + 25.839 tonne.
- 5) Material Delivery - Sand 24.484 + 25.522 + 25.566 + 24.021 + 23.282 + 23.780 tonne.
- 6) Material Delivery - Cement 14.736 + 30.914 + 7.396 + 7.370 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 (9mm) within design tolerance (33mm).  
Remind DBO on Area 1 NDT test and structural assessment to be witness by ER.

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
7.4.2024	13.4.2024	Sofi bin Ismail		Naahee Nazim	

#### Progress Review

The works performed during the Reporting Week are as follows:

- Dewatering work for Bunker area continues.
- Bunker - Formwork removal for wall at Wall B.
- Bunker - Reinforcement bar & formwork for wall at Wall A in progress.
- Bunker - Reinforcement bar & formwork for wall for foundation slab at Area 2 in progress.
- Bunker - Waterproofing membrane installation at Area 3 completed.
- Bunker - Waterproofing membrane installation at Leachate area completed.
- Bunker - Ultrasonic pulse echo test was conducted at Area 1.

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



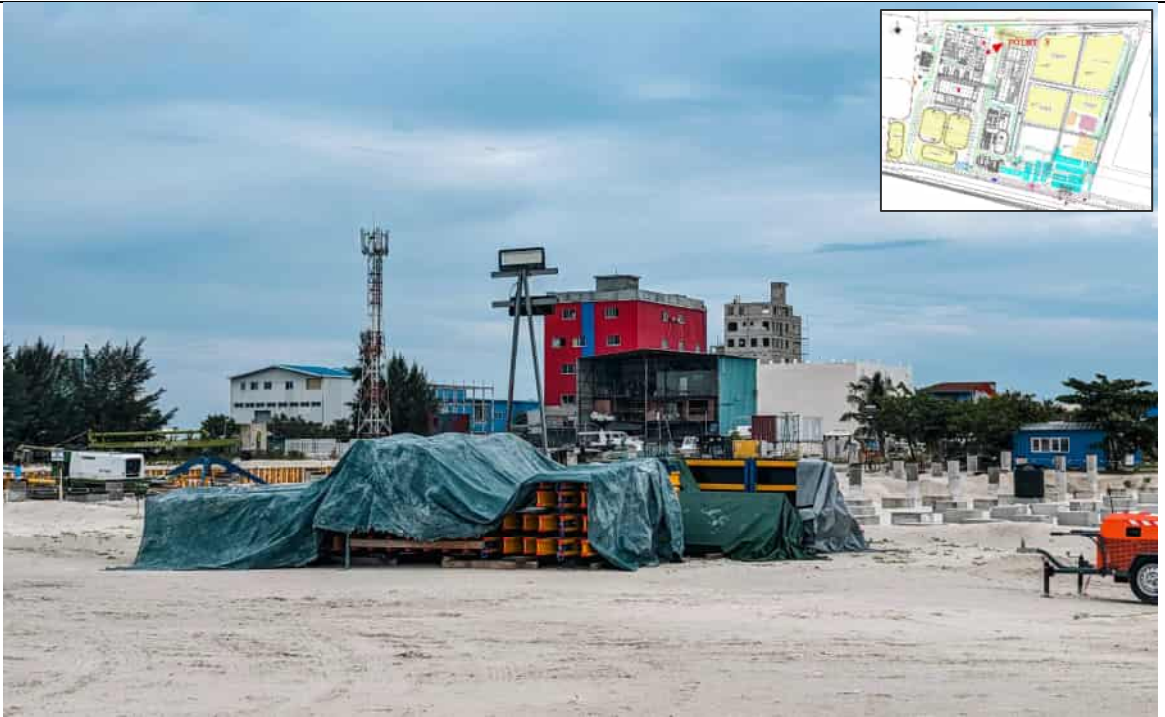
OVERALL - POINT ONE

2



OVERALL - POINT TWO

3



OVERALL - POINT THREE

4



OVERALL - POINT FOUR



5



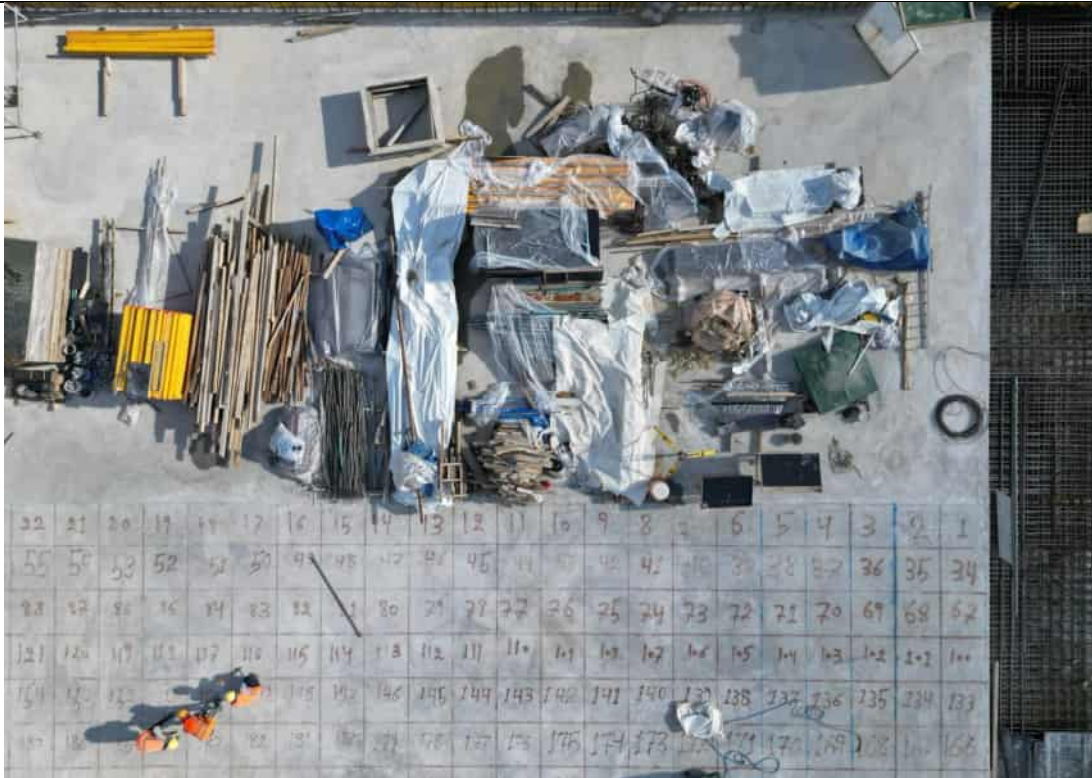
OVERALL - POINT FIVE

6



BUNKER AREA - AREA 2 IN PROGRESS.

7



BUNKER - AREA 1 ULTRASONIC PULSE ECHO TEST WAS CONDUCTED

8



PROCESS AREA - NO ACTIVITY

# FICHTNER

Site Log

Date: 07/04/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail  
 Sunday  
 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 wall at Wall A.
- 3) Bunker - Waterstop and earthing installation work for wall at Wall A.
- 4) Bunker - Lean concreting work at Leachate Area.
- 5) Bunker - Formwork removal on Wall B started.
- 6) Material Delivery - Aggregate 26.296 + 25.839 + 26.295 + 26.108 + 25.892 + 24.149 + 24.763 tonne.
- 7) Material Delivery - Cement 8.248 + 7.946 + 15.640 + 8.176 + 8.252 + 15.603 + 8.019 + 7.811 + 7.540 tonne.

Safety Audits/Safety Walkarounds

Air quality monitoring at AQ3 & ARS3 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 (11mm) within design tolerance (33mm).

Meetings	When	Who	What
	2:00pm	FIT, URB, AAJV	Weekly progress monitoring discussion
			a) Briefing on planned work for the next two weeks
			b) Update status of structural assessment for Bunker Slab Area 1
			c) Update status of material on site. Required material for the next two months still not order.
			d) Remind AAJV on the concrete curing requirement for wall to be in place.

Comments

N/A



Site Log

# FICHTNER

Date      08/04/2024      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 - Surface cleaning and applying primer for waterproofing membrane at Area 3.  
 3) Bunker - Ultrasonic pulse echo test was conducted in the Bunker Area 1 to verify concrete workmanship quality and its integrity.  
 4) Material Delivery - Aggregate 25,061 tonne.  
 5) Material Delivery - Cement 7.948 + 8.296 + 8.352 + 15.598 + 7.850 + 7.646 + 7.914 + 7.858 + 8.253 + 15.471 + 7.327 + 5.160 + 7.809 + 7.638 + 8.088 + 7.808 + 7.530 + 7.710 + 7.440 + 15.519 + 7.969 + 8.166 + 7.956 + 7.933 + 16.174 + 7.728 + 7.848 + 15.858 + 7.944 + 8.155 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"/>	<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



Site Log

# FICHTNER

Date      09/04/2024      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 - Waterproofing membrane installation at Area 3 completed.  
 3) Bunker - Geotextile installation to protect the waterproofing membrane at Area 3 completed.  
 4) Material Delivery - Cement 7.598 + 15.267 + 7.747 + 7.924 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"/>	<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

Site Log

# FICHTNER

Date: 10/04/2024 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

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

Site Log

# FICHTNER

Date 11/04/2024 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

PUBLIC 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

Site Log

# FICHTNER

Date: 12/04/2024 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

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"/>

Comments

Site Log

# FICHTNER

Date 13/04/2024 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 foundation slab at Bunker Area 2 .
- 3) Material Delivery - Reinforcement bar 160 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 (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
14.4.2024	20.4.2024	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 casting work for foundation slab at Bunker Area 2 completed.
- Bunker - Waterstop and earthing cable installation for foundation slab at Area 2 completed.
- Bunker - Reinforcement bar & formwork for wall for foundation slab at Area 2 completed.
- Bunker - Reinforcement bar & formwork for wall for foundation slab at Area 3 in progress.
- Bunker - Waterproofing membrane installation at Leachate area completed.
- Process Area - Compaction works for second layer of structural backfilling at M1-M10 and MA-ME.
- Mechanical Equipment Delivery - First shipment of Incinerator & Incinerator steel structure on site.

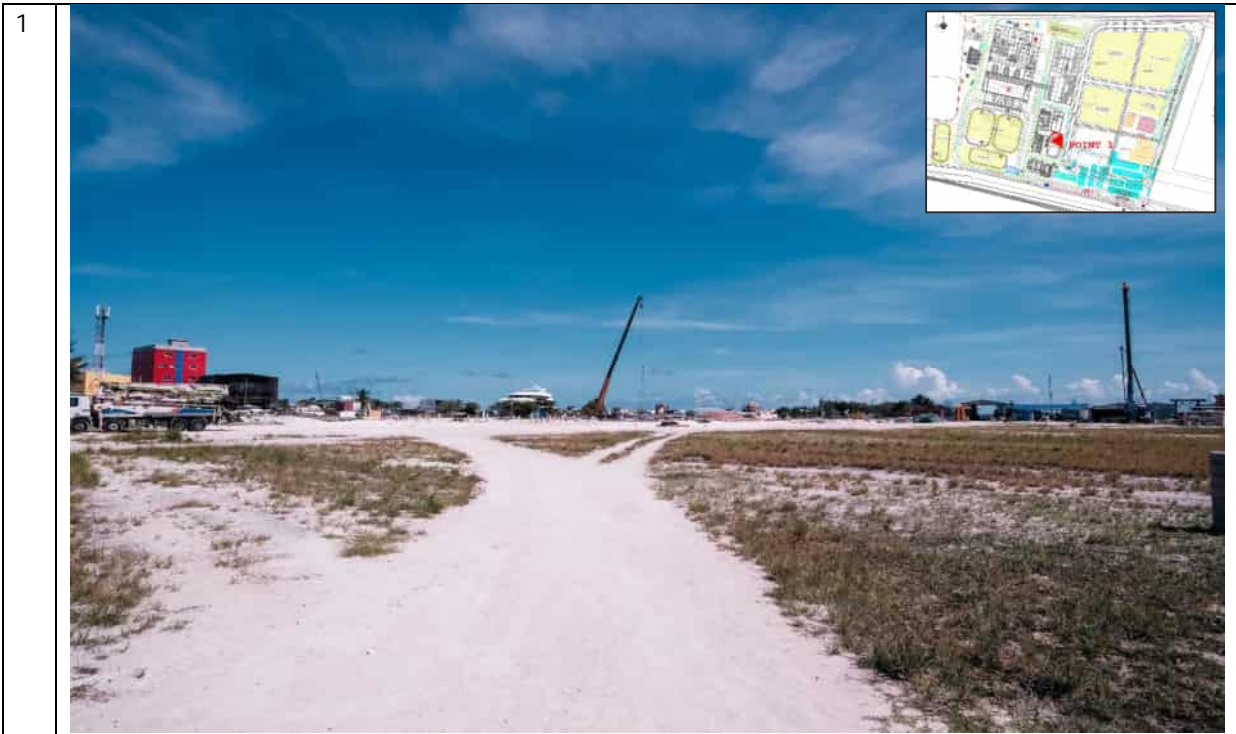
Attachment:

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 2 CONCRETING COMPLETED.



7



BUNKER - AREA 3 REINFORCEMENT BAR AND FORMWORK IN PROGRESS.

8



PROCESS AREA - COMPACTION WORK IN PROGRESS

9



FIRST SHIPMENT - INCINERATOR & INCINERATOR STEEL STRUCTURE ON SITE

Site Log

# FICHTNER

Date: 14/04/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail

Sunday  
 Time on site:  Time off site:  Completed by:

Weather:

	Total	Civil	Process	
Workers on Site	74	74	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 foundation slab at Bunker Area 2.
- 3) Bunker - Surface cleaning and primer application for waterproofing membrane at Leachate Area.
- 4) Material Delivery - Reinforcement bar 144 tonne.
- 5) Material Delivery - Aggregate 6.842 + 6.648 + 13.146 tonne.
- 6) Material Delivery - Cement 7.696 + 8.634 + 16.367 + 7.853 + 7.788 + 16.418 + 8.220 + 8.240 + 15.926 + 8.024 + 8.238 + 16.383 tonne.
- 7) Material Delivery - Sand 6.931 + 6.628 + 13.214 + 6.626 + 6.729 + 13.138 + 6.641 + 6.611 tonne.

Safety Audits/Safety Walkarounds

Water samples collection for camp water, discharge water of WWTP, drinking water and dewatering 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, maximum deflection data (12mm) within design tolerance (33mm).

Meetings

When	Who	What
N/A		

Comments

N/A

# FICHTNER

Site Log

Date      15/04/2024      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 - Reinforcement bar and formwork installation for foundation slab at Bunker Area 2.  
 3) Bunker - Waterstop and earthing cable installation for foundation slab at Bunker Area 2.  
 4) Bunker - Waterproofing membrane installation at Leachate Area.  
 5) Material Delivery - Reinforcement bar 58 tonne.  
 6) Material Delivery - Aggregate 6.458 + 6.386 + 6.558 + 6.593 + 6.571 + 13.324 tonne.  
 7) Material Delivery - Sand 13.508 + 6.676 + 6.687 + 6.770 + 6.870 + 6.542 + 13.341 + 6.916 + 6.695 + 6.757 + 13.903 + 7.003 + 6.879 + 6.943 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"/>	<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      16/04/2024      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 foundation slab at Bunker Area 2.  
 3) Bunker - Waterstop and earthing cable installation for foundation slab at Bunker Area 2.  
 4) Bunker - Waterproofing membrane installation at Leachate Area.  
 5) Bunker - Reinforcement bar and formwork installation for foundation slab at Bunker Area 3.  
 6) Material Delivery - Aggregate 6.704 + 6.226 + 11.966 + 6.014 + 6.036 + 5.978 + 12.084 + 6.308 + 12.686 + 6.727 + 6.566 + 6.665 + 12.424 + 6.313 + 6.279 + 6.573 + 5.976 + 12.011 + 6.005 + 5.889 + 6.036 + 6.034 + 12.074 + 6.166 + 12.267 + 6.196 + 6.190 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"/>	<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

Site Log

# FICHTNER

Date      17/04/2024      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 foundation slab at Bunker Area 2.  
 3) Bunker - Waterstop and earthing cable installation for foundation slab at Bunker Area 2.  
 4) Bunker - Geotextile installation at Leachate Area.  
 5) Bunker - Reinforcement bar and formwork installation for foundation slab at Bunker Area 3.  
 6) Material Delivery - First shipment of incinerator and incinerator steel structure was delivered to site. Pending inspection.  
 7) Material Delivery - Aggregate 6.293 + 6.335 + 12.674 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"/>	<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



Site Log



Date: 18/04/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail  
 Thursday  
 Time on site: [ ] Time off site: [ ] Completed by: Sofi Bin Ismail

Weather: Sunny

	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 - Concrete casting work for foundation slab at Bunker Area 2.
- 3) Bunker - Reinforcement bar and formwork installation for foundation slab at Leachate Area.
- 4) Bunker - Reinforcement bar and formwork installation for foundation slab at Bunker Area 3.
- 5) Material Delivery - First shipment of incinerator and incinerator steel structure was delivered to site. Pending inspection.

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 (14mm) within design tolerance (33mm).

Meetings	When	Who	What
	N/A		

Comments: N/A

Site Log

# FICHTNER

Date 19/04/2024 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

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"/>

Comments

Site Log



Date: 20/04/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail

Saturday

Time on site: [ ] Time off site: [ ] Completed by: Sofi Bin Ismail

Weather: Cloudy

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 foundation slab at Leachate Area.
- 3) Bunker - Reinforcement bar and formwork installation for foundation slab at Bunker Area 3.
- 4) Process Area - Compaction works for second layer of structural backfilling at M1-M10 and MA-ME.
- 5) Material Delivery - First shipment of incinerator and incinerator steel structure was delivered to site. Pending inspection.
- 6) Material Delivery - Cement 16.625 + 8.367 + 16.099 + 7.843 + 7.971 + 15.930 + 7.735 + 8.095 + 15.906 + 9.360 + 9.084 tonne.

Safety Audits/Safety Walkarounds

Air quality monitoring at AQ4 and ARS5

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
21.4.2024	27.4.2024	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 casting work for foundation slab at Bunker Area 3 & Leachate Area completed.
- Bunker - Waterstop and earthing cable installation for foundation slab at Area 3 completed.
- Bunker - Reinforcement bar & formwork for Bunker Wall H in progress.
- Bunker - Reinforcement bar & formwork for Bunker Wall A in progress.
- Bunker - Reinforcement bar & formwork for Bunker Wall J in progress.
- Temporary tower crane at Bunker installation 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.

1



OVERALL - POINT ONE

2



OVERALL - POINT TWO

3



OVERALL - POINT THREE

4



OVERALL - POINT FOUR



5



OVERALL - POINT FIVE

6



BUNKER AREA - AREA 3 & LEACHATE AREA CONCRETING COMPLETED.



7



BUNKER - REINFORCEMENT BAR AND FORMWORK IN PROGRESS FOR WALL H, A & J.

8



PROCESS AREA - NO ACTIVITY

9



FIRST SHIPMENT - INSPECTION OF THE FIRST SHIPMENT

10



FIRST SHIPMENT - INCINERATOR STEEL STRUCTURE

11



TEMPORARY TOWER CRANE INSTALLATION IN PROGRESS



Site Log



Date: 21/04/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail

Sunday

Time on site:  Time off site:  Completed by:

Weather:

	Total	Civil	Process
Workers on Site	76	76	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 foundation slab at Leachate Area.
- 3) Bunker - Waterstop & earthing cable installation for foundation slab at Leachate Area.
- 4) Bunker - Reinforcement bar and formwork installation for foundation slab at Bunker Area 3.
- 5) Bunker - Waterstop & earthing cable installation for foundation slab at Bunker Area 3.
- 6) Material Delivery - Sand 23.645 tonne.
- 7) Material Delivery - Cement 7.301 + 7.656 + 7.669 + 8.354 + 7.661 + 7.118 + 7.340 + 7.788 + 8.090 + 7.661 + 7.869 + 7.973 + 8.946 + 8.163 + 7.991 tonne.

Safety Audits/Safety Walkarounds

Air quality monitoring at 7 locations has been 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 (13mm) within design tolerance (33mm).

When	Who	What
10:00	ER, DBO, AAJV	Weekly Briefing
		1) Brief requirement for first shipment inspection.
		2) AAJV planned to concrete the final Bunker foundation Area 3 & leachate area this week.
		3) Material requirement discussion. Highlight that backfilling material and rebar in not sufficient.

Comments

N/A

Site Log

# FICHTNER

Date      22/04/2024      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	76	76	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 foundation slab at Leachate Area.  
 3) Bunker - Waterstop & earthing cable installation for foundation slab at Leachate Area.  
 4) Bunker - Reinforcement bar and formwork installation for foundation slab at Bunker Area 3.  
 5) Bunker - Waterstop & earthing cable installation for foundation slab at Bunker Area 3.

Safety Audits/Safety Walkarounds

Noise monitoring at 5 location (NQ1, NQ2, NQ3, NQ4 & 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 (13mm) within design tolerance (33mm).  
 Review document compilation from first shipment, highlight the storage category is not matching as per manufacturer recommendation.

	When	Who	What
Meetings	N/A		

Comments

N/A

Site Log



Date: 23/04/2024 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 - Concreting work for foundation slab at Bunker Area 3.  
 3) Bunker - Concreting work for foundation slab at Leachate Area.  
 4) Bunker - Reinforcement bar and formwork installation for Bunker Wall H in progress.  
 5) Bunker - Reinforcement bar and formwork installation for Bunker Wall A in progress.  
 6) Material Delivery - Sand 6.352 + 25.615 + 6.461 + 25.565 + 6.406 + 6.398 + 13.016 + 6.328 + 25.637 + 6.415 + 12.940 + 25.522 + 6.442 + 27.903 tonne.

Safety Audits/Safety Walkarounds

Noise 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, deflection data (13mm) within design tolerance (33mm).  
 Reminded DBO to check the finding of foundation assessment and expedite submission to ER.

Meetings	When	Who	What
	N/A		

Comments

N/A

Site Log



Date: 24/04/2024 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

*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 Bunker Wall H in progress.  
 3) Bunker - Reinforcement bar and formwork installation for Bunker Wall A in progress.  
 4) Bunker - Reinforcement bar and formwork installation for Bunker Wall J in progress.  
 5) Material Delivery - Sand 25.950 + 24.085 tonne.  
 6) Material Delivery - Aggregate 24.600 + 24.400 + 24.600 tonne.  
 7) Inspection on the first shipment of incinerator and incinerator steel structure. Highlight few findings:  
 7-a) Storage condition does not follow the manufacturer recommendation. DBO to finalize the storage category with manufacturer.  
 7-b) To take drone shot (plan view) and label each equipment accordingly for record.

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 (13mm) within design tolerance (33mm).  
 Review the sheetpile condition and design condition prior to sheetpile anchor removal work.

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

Comments

Site Log



Date: 25/04/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail

Thursday

Time on site: 8:30 Time off site: 18:00 Completed by: Sofi Bin Ismail

Weather: Sunny

Total	Civil	Process
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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 - Reinforcement bar and formwork installation for Bunker Wall H in progress.
- 3) Bunker - Reinforcement bar and formwork installation for Bunker Wall A in progress.
- 4) Bunker - Reinforcement bar and formwork installation for Bunker Wall J in progress.
- 5) Material Delivery - Sand 25.950 + 24.085 tonne.
- 6) Material Delivery - Aggregate 24.600 + 24.400 + 24.600 tonne.
- 7) Temporary tower crane installation at Bunker has started.

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 (13mm) within design tolerance (33mm).

Meetings

When	Who	What
N/A		

Comments

N/A



Site Log

# FICHTNER

Date: 26/04/2024 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

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"/>

Comments

Site Log



Date: 27/04/2024 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
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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 - Reinforcement bar and formwork installation for Bunker Wall H in progress.
- 3) Bunker - Reinforcement bar and formwork installation for Bunker Wall A in progress.
- 4) Bunker - Reinforcement bar and formwork installation for Bunker Wall J in progress.
- 5) Material Delivery - Sand 25.602 tonne.
- 6) Material Delivery - Aggregate 25.383 + 25.477 tonne.
- 7) Temporary tower crane installation at Bunker on going.

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
<input type="text" value="N/A"/>		

Comments



## Site Inspection Report

by the Employer's Representative

No.: SI-24-04

Dates / Time of the Visit	Conducted by [ER]	Signature
04 <sup>th</sup> April 2024 09:00 hrs – 14:00 Hrs	Nahee Nazim <i>Deputy Team Leader</i> 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.	-
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 161 workers deployed by the DBO/EPC on site.  2 1 5 38 24 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.	-
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.	-

## 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. <sup>1</sup>	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.	-

<sup>1</sup>aspects 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.

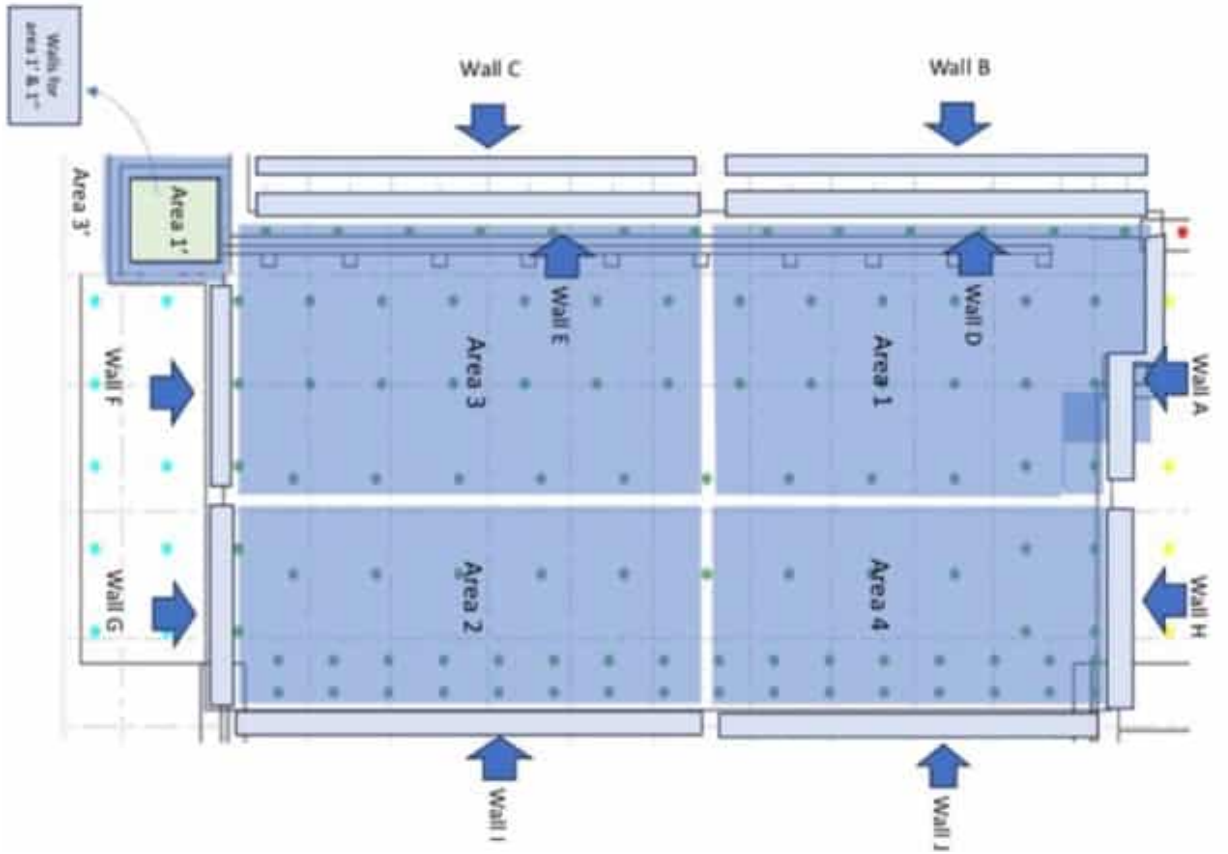
## Health and Safety Observation

Sn	Aspects	Details / Remarks	Reference
<b>Labour - health, safety and welfare</b>			
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. <sup>2</sup>	SOPS are in place for specific work activities and is an ongoing process. However following observations were made: <ul style="list-style-type: none"> <li>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.</li> <li>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.</li> <li>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.</li> </ul>	-
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 12,13,15
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.	-

<sup>2</sup>e.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.	-
<b>Community- health, safety and welfare</b>			
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.	-

Bunker area work area designations





Site Photos / Observations



**Photo 01** 04/04/24 – Continuous dewatering is ongoing, dewatering pond is kept clean.



**Photo 02** 04/04/24 – Concrete blocks for equipment laydown area being prepared.



**Photo 03** 04/04/24 – Concrete mixing trucks on site, however vehicle registration is not in place yet.



**Photo 04** 04/04/24 – Concrete blocks for the equipment laydown area being prepared.



**Photo 05** 04/04/24 – *Batching plant is operational, and water is brought in via truck for the batching plant.*



**Photo 06** 04/04/24 – *Batching plant is operational.*



**Photo 07** 04/04/24 – *Desalination plant works for the batching plant is in progress. Needs to check on permits for the bore hole and the plant.*





**Photo 08** 04/04/24 – Chemical admixtures storage area for the concrete batching plant.



**Photo 09** 04/04/24 – Aggregate storage area for the concrete batching plant.



**Photo 10** 04/04/24 – Cement storage area for the concrete batching plant.



**Photo 11** 04/04/24 – Cement storage area for the concrete batching plant.



**Photo 12** 04/04/24 – Security office on site near the main entrance gate.



**Photo 13** 04/04/24 – Guard house at the main entrance to site.



**Photo 14** 04/04/24 – Dewatering pipe outfall to sea, no sediments or discoloration seen. Monthly quality control checks in place.





**Photo 15** 27/03/24 – Main entrance gate to the site.



**Photo 16** 27/03/24 – Bunker area concrete works for the slab and walls are in progress. Area 1 and Area 4 slab has been cast.



**Photo 17** 27/03/24 – Bunker area concrete works for the slab and walls are in progress. Area 1 and Area 4 slab has been cast.



**Photo 18** 27/03/24 – Bunker area concrete works for the slab and walls are in progress. Area 1 and Area 4 slab has been cast.



**Photo 19** 27/03/24 – Bunker area concrete works for the slab and walls are in progress. Area 2 and Area 3 reinforcement is being prepared.



**Photo 20** 27/03/24 – Cage for safe removal of persons in case of an emergency has been bought and brought to site.





**Photo 21** 27/03/24 – Concrete pump truck being utilized on site.



**Photo 22** 27/03/24 – Concrete pump truck being utilized on site.



**Photo 23** 27/03/24 – Wall B is being made ready for concrete pouring.





**Photo 24** 27/03/24 – Wall B is being made ready for concrete pouring.



**Photo 25** 27/03/24 – Bar bending workshop on site.



**Photo 26** 27/03/24 – Excavated sand, and waste concrete stockpile in the laydown area.



**Photo 27** 27/03/24 – 2 new storage tents have been completed and being used.



**Photo 28** 27/03/24 – Hazardous chemical storage container is being maintained.



**Photo 29** 27/03/24 – Storage tents for materials and equipments in place. Fuel tanker is on site.

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

**Photo 30** 27/03/24 – HSE Statistics board.



## Site Inspection Report

by the Employer's Representative

No.: SI-24-05

Dates / Time of the Visit	Conducted by [ER]	Signature
08 <sup>th</sup> April 2024 14:30 hrs – 21:30 Hrs	Nahee Nazim <i>Deputy Team Leader</i> 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.	-
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 156 workers deployed by the DBO/EPC on site.  1 1 5 36 24 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.	-
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.	-

## 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. <sup>1</sup>	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.	-

<sup>1</sup>aspects 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
<b>Labour - health, safety and welfare</b>			
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. <sup>2</sup>	SOPS are in place for specific work activities and is an ongoing process. However following observations were made: <ul style="list-style-type: none"> <li>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.</li> <li>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.</li> <li>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.</li> </ul>	-
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 12,13,15
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.	-

<sup>2</sup>e.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.	-
<b>Community- health, safety and welfare</b>			
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.	-

Bunker area work area designations

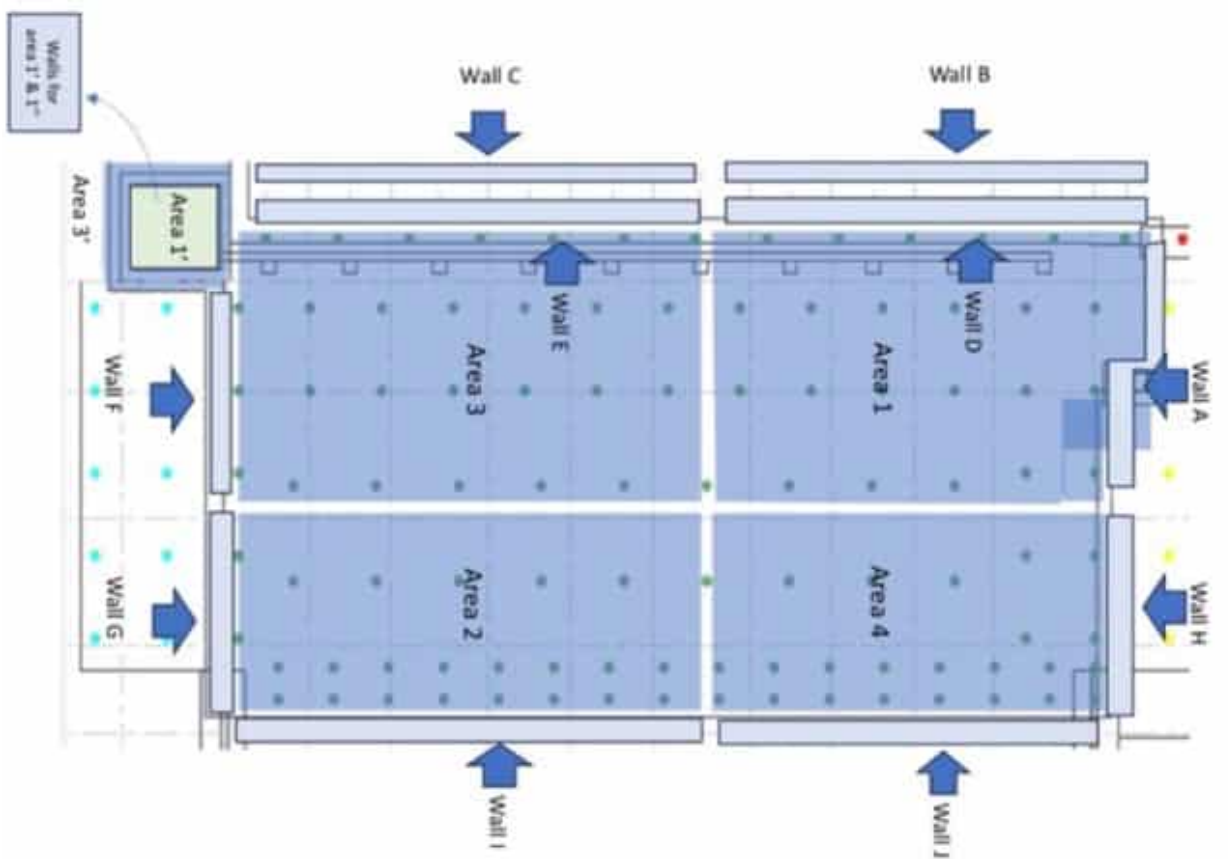




Photo 01 08/04/24 – The HSE statistics board at the EPC site office as updated for the day.



Photo 02 08/04/24 – Rebound hammer test being done on the Bunker slab in Area 1, by third party inspector Falcon Laboratories.





**Photo 03** 08/04/24 – Rebound hammer test being done on the Bunker slab in Area 1, by third party inspector Falcon Laboratories.



**Photo 04** 08/04/24 – Non destructive Pulse Echo Ultrasonic test being done on the Bunker slab in Area 1, by third party inspector Falcon Laboratories to check for any cracks, cold joints within the concrete slab.



**Photo 05** 08/04/24 – Non destructive Pulse Echo Ultrasonic test being done on the Bunker slab in Area 1, by third party inspector Falcon Laboratories to check for any cracks, cold joints within the concrete slab.



**Photo 06** 08/04/24 – Non destructive Pulse Echo Ultrasonic test being done on the Bunker slab in Area 1, by third party inspector Falcon Laboratories to check for any cracks, cold joints within the concrete slab.





**Photo 07** 08/04/24 – Equipment used and calibration check on the equipment is shown here.



**Photo 08** 08/04/24 – Pulse Echo Ultrasonic test equipment used by the third party inspectors Falcon Laboratories.



**Site Inspection Report**

No.: SI-24-06

by the Employer's Representative

Dates / Time of the Visit	Conducted by [ER]	Signature
14 <sup>th</sup> , 15 <sup>th</sup> , 16 <sup>th</sup> , 17 <sup>th</sup> April 2024 09:30 hrs – 17:30 Hrs cosmos	Nahee Nazim <i>Deputy Team Leader</i> 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.	-
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 150 workers deployed by the DBO/EPC on site.  3 1 5 31 22 74 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.	-
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.	-

## 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. <sup>1</sup>	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.	-

<sup>1</sup>aspects 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.

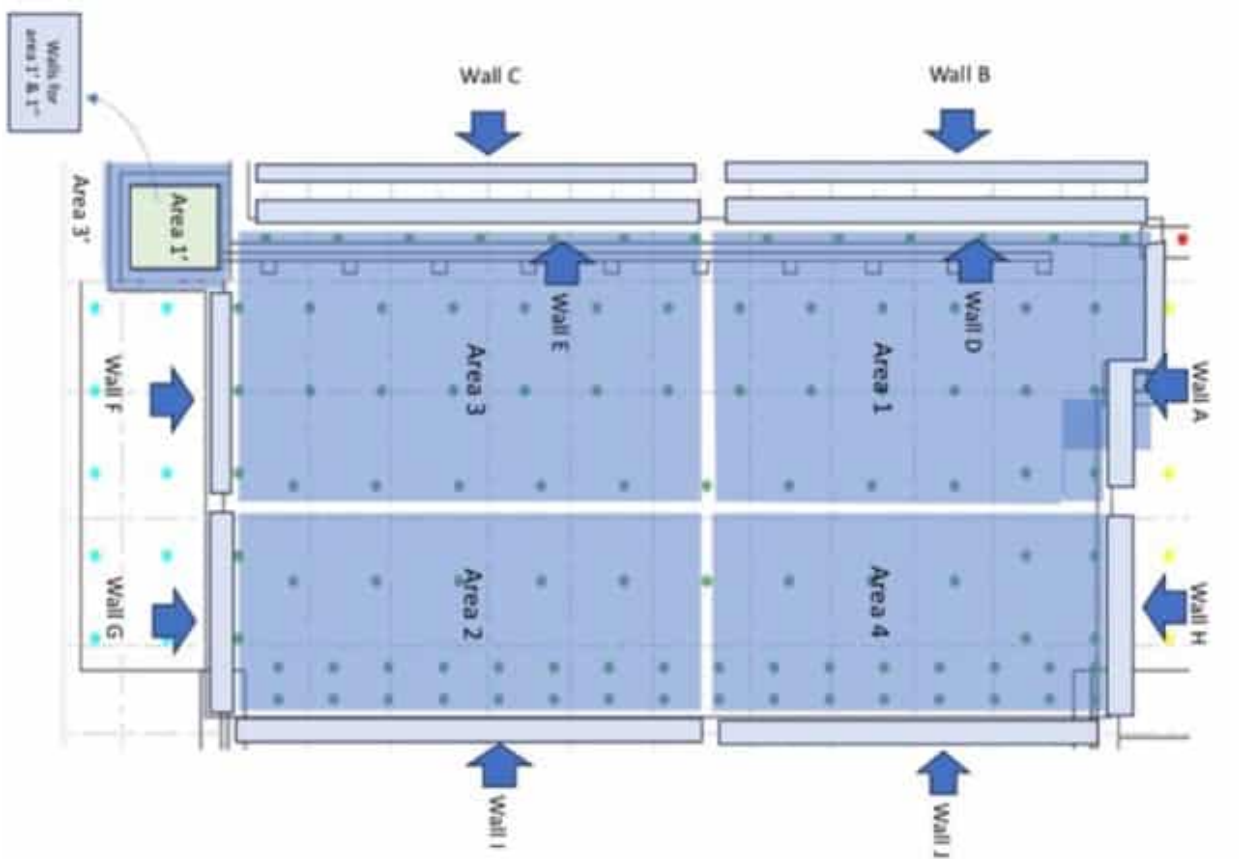
## Health and Safety Observation

Sn	Aspects	Details / Remarks	Reference
<b>Labour - health, safety and welfare</b>			
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. <sup>2</sup>	SOPS are in place for specific work activities and is an ongoing process. However following observations were made: <ul style="list-style-type: none"> <li>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.</li> <li>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.</li> <li>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.</li> </ul>	-
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.	-

<sup>2</sup>e.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.	-
<b>Community- health, safety and welfare</b>			
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.	-

Bunker area work area designations



Site Photos / Observations



**Photo 01** 08/04/24 – Mr. Sunil conducting HS meeting with the site team together with PMU members.



**Photo 02** 14/04/24 – Reinforcement installation work is continuing in Area 2 and Area 3 of the bunker slab.



**Photo 03** 14/04/24 – Several cracks were observed on the Bunker Wall B that has been cast and further investigation has been requested from the contractor. The Echo Pulse Ultrasonic tests were conducted on this part of the wall and the extent of the cracks will be checked once the reports are submitted.





**Photo 04** 14/04/24 – The Echo Pulse Ultrasonic tests were conducted on this part of the wall and the extent of the cracks will be checked once the reports are submitted.



**Photo 05** 14/04/24 – Expired third party certification, HSE inspections done after and it was not reported/identified.



**Photo 06** 14/04/24 – Rust seen on the siren, should have SOP for maintenance of these in place.



**Photo 07** 14/04/24 – Worn out/ damaged safety shoes were observed, there is a mechanism in place for replacement, the workers need to be made aware of the process for replacement.



**Photo 08** 14/04/24 – Mr. Sunil conducting site walk about with EPC site team.





**Photo 09** 14/04/24 – Cement storage area for the concrete batching plant.



**Photo 10** 14/04/24 – Sheltered storage area for aggregates and concrete admixture chemicals used by the concrete batching plant.



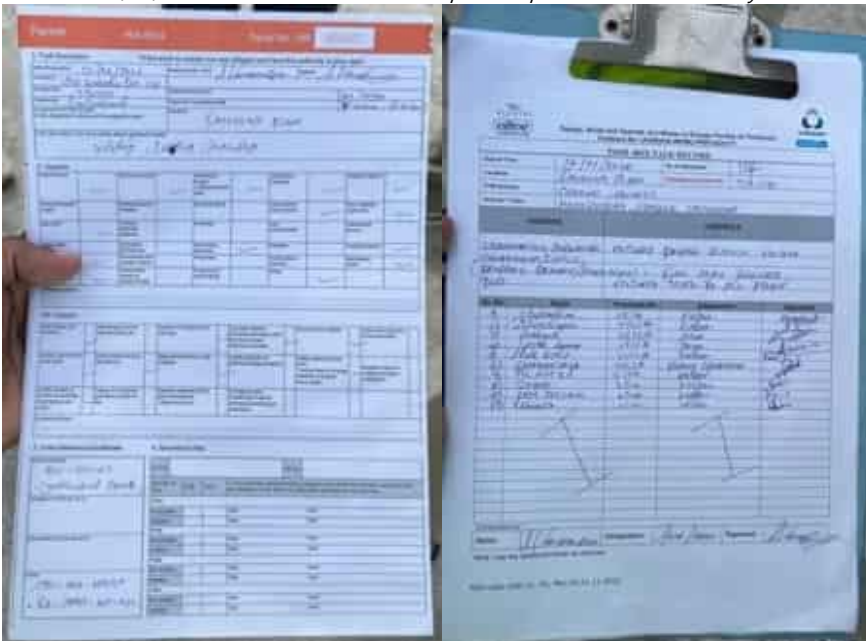
**Photo 11** 14/04/24 – Mr.Sunil checking with Villa staff operating the batching plant on the SOP's, logs, MSDS etc.



**Photo 12** 14/04/24 – Electrical cable identified as tripping hazard and asked to rectify.



**Photo 13** 14/04/24 – Protective masks and disposable protective coats used by Villa staff for handling chemicals.



**Photo 14** 14/04/24 – Records of work permit and toolbox talks conducted at the batching plant.





**Photo 15** 14/04/24 – Water cooling tower used at the batching plant, and the vehicles wash area and sedimentation tank for waste concrete.



**Photo 16** 14/04/24 – Redundant loose electrical cable found close to the batching plant area, should be removed.



**Photo 17** 14/04/24 – Concrete mixer vehicles on site, not registered yet however the application made by Villa.



**Photo 18** 14/04/24 – Diesel tanker on site 5000litres capacity - Not registered and used outside site boundary to go to fill station, necessary steps should be taken for registration and safety signage should be in accordance to regulations.



**Photo 19** 14/04/24 – Log of diesel kept in loose sheets and reported in the daily progress reports.



**Photo 20** 14/04/24 – Inspection of the hazardous chemical store.





**Photo 21** 14/04/24 – Maintenance log for the diesel generators on site is maintained.



**Photo 22** 14/04/24 – Waste segregation and collection area on site is well maintained.



**Photo 23** 14/04/24 – Waste oil storage area and Fuel storage areas on site is established and maintained.



**Photo 24** 14/04/24 – Outdoor electrical panel with rain cover missing on the outlet, should be rectified immediately.



**Photo 25** 14/04/24 – Inspection of the clinic and the medical supplies and medical waste management checked. Doctors logs were reviewed.



**Photo 26** 15/04/24 – New crane truck being used on site.





**Photo 27** 15/04/24 – Sample scaffolding setup for inspection.



**Photo 28** 14/04/24 – Barbending workshop.



**Photo 29** 14/04/24 – Genset deemed to be loud and close to the workers area, maintenance check requested.





**Photo 30** 14/04/24 – Rust seen on the scaffolding and panels were asked to be replaced.



**Photo 31** 14/04/24 – Reinforcement installation work is ongoing in the Bunker Slab Area 2, and Area 3.



**Photo 32** 15/04/24 – Earthing cable installed on the reinforcement.



**Photo 33** 15/04/24 – Shipwrecks adjacent to the quay wall remain, and a new barge is seen to be sinking as well.





**Photo 34** 16/04/24 – Reinforcement installment is ongoing for the bunker walls.



**Photo 35** 16/04/24 – Concrete pump boom placed in the bunker area.



**Photo 36** 16/04/24 – Waterbars placed in the slab and wall connections and all joints are welded and inspected.



**Photo 37** 16/04/24 – Equipment laydown area being prepared for .



**Photo 38** 17/04/24 – The workers ID cards were checked, and the blood group is stated as “unknown”, the EPC HSE team has been asked to rectify this as soon as possible and the blood groups should be mentioned for all personnel.



**Photo 38** 17/04/24 – The pedestrian walk path to the construction camp is overgrown with weeds, and is deemed as a tripping hazard. Needs to be cleared as soon as possible.



## EMS inspection

by the Employer's Representative

Date and Time of the Visit	Conducted by [ER]	Signature	Witnessed by	Signature
25/04/24 10:30	Mariyam Rifga		DBO Contractor Sujeeth	

### A. Status of Construction Activities on site<sup>1</sup>

Particulars	Observations		
	Completed	In progress	New activity started
	Excavation	Foundation Concrete works	No activity started in April
	Slab Concrete in Bunker Area		

### B. Status of compliances of stipulated conditions of applicable permits

Type of permit	Validity	Conditions stipulated	Status of compliance
<b>Detwatering Permit</b>	23/04/24	Renewed each 28 days	New validity date
<b>Construction Permits</b>	Until end of project		

### C. Human Resources on site

#### a) Subcontractors

Name and address	Type of contract (Labour supplier/Job work)	Duration of contract

<sup>1</sup> Activities since the last EMS inspection or for the last 15 calendar days, whichever is shorter

b) Manpower on site (local)

Particulars	Locals					Total
	Managers	Supervisor	Skilled	Workers Semi- skilled	Unskilled	
Permanent			3			
Contracted						
On job work						
Others						

c) Manpower on site (Expatriates)

Particulars	Expatriates					Total
	Managers	Supervisor	Skilled	Workers Semi- skilled	Unskilled	
Permanent				98		
Contracted						
On job work						
Others						





d) Others

Particulars	Observations	Status of compliance of respective plan
Total number of working shifts/day	One shift (Morning)	
Working hour per shift	8 hrs + 2hrs OT	
Status of insurances for workers	Upto date	
How are records of working hours kept?	Collected by time keeper	Met time keeper and checked the list
Criteria followed for wages to comply with local regulations		
What is percentage of overtime recorded		
How will the employer of particular worker identified during supervision/site visit (is any identity card etc being issued having details of worker such as name, his employer etc)	ID cards Vests in different colours - Yellow- Semi-skilled workers - Red – HS personel - Green- Manager - While helmet- manager - Yellow helmet- worker	
How does DBO/EPC contractor make sure the wages paid to workers by sub contractor are in compliance with local regulations?		

#### D. Camp area

Particulars	Observations	Status of compliance of respective plan
How many accommodations are being occupied	Total 79 rooms and 51 are occupied	
How many workers are not being provided accommodation, if any	Nil	
Conditions in and around Accommodation and surrounding area	Clean and well maintained	
Conditions in and around Kitchen	Clean and maintained	
Status of facilities such as laundry, drinking water, water supply for bathing and others, food, recreation etc	Clean and maintained	
Inspections carried out and record keeping by DBO/EPC	Inspection report for December 2023 available. No inspection record was available for 2024 until April.	- Advised to conduct regular inspections as per CEMP.

## E. House keeping

Particulars	Observations
In and around area for accommodation	<p>Cleaned and maintained, bins were placed in appropriate distances. Paths does not have any obstructions.</p> 
In and around Kitchen area	Cleaned and maintained.
In and around construction site	<p>Construction site is maintained well. Cleaning at Batching plant area was on going.</p> 
In and around storage area	<p>Materials are stored in allocated areas and according to storage specifications. Some materials were stored on the path as shown in the photo.</p> 
In and around waste storage areas	<p>Waste segregated and placed in allocated area. Overflow of waste was observed.</p> 

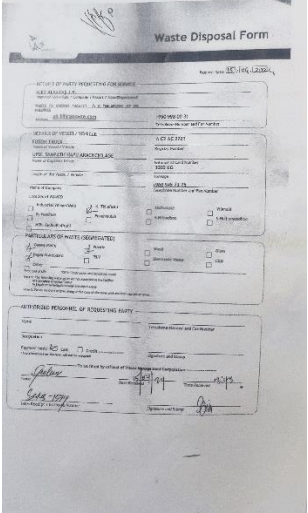
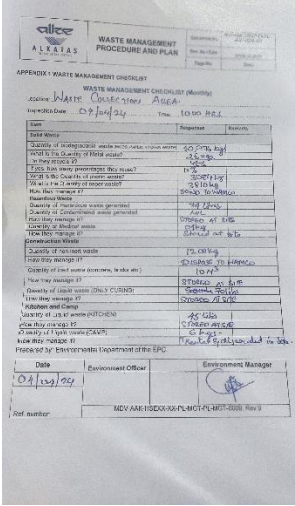
## F. Grievance Redressal Mechanism

Particulars	Observations with photo Number of locations where complaint boxes are placed	Number of complaints received	Type of complaints	Status of complaints	Record keeping	Status of compliance of GRM plan
Internal complaints	Entrance and Dining area.	No complaints were lodged in this period of inspection.			Complaints log is maintained	
Complaints from public	.Not observed	No complaints were lodged in this period of inspection				

#### G. Stakeholder consultation

Particulars	Date of consultation conducted	proposed	Details of findings	Status of compliance of Stakeholder consultation plan
<b>Public</b>				
<b>Others</b>	18/02/2024		WAMCO and MNDF fire to update project status To conduct combined training with WAMCO	


H. Waste Management (Hazardous, non-hazardous, E-waste, Construction waste etc)

Source of waste generated	Type of waste generated	Collection	Storage	Disposal	Record keeping	Status of compliance of Waste management plan and Method of statement
Construction Site	Construction waste	Via Vehicles	Separate area for construction waste.	weekly	 	
Camp	Food waste, Plastic and domestic waste	Collected in bins and trash bags and transferred to waste collection site.	Separate area for different types of waste in collection area	Every 2-3 days		

I. Air emission


Source of emission	Type of emission		Observations with photos		Status of compliance of air emission management plan and method of statement
	(Dust/gas)	Point source/fugitive	Mitigation measures in place	Record keeping	
<b>Batching plant</b>	Dust/Gas	Point source	Ambient air quality monitoring within the site.	Included in Monthly report	
<b>Dirt roads</b>	Dust	Point source	Ambient air quality monitoring within the site.	Included in Monthly report	
<b>Vehicles</b>	Gas	Point source	Ambient air quality monitoring within the site.	Included in Monthly report	
<b>Generator</b>	Gas	Point Source	Ambient air quality monitoring within the site.	Included in Monthly report	

J. Waste water management


Particulars	Observations including record keeping	Status of compliance waste water management plan and method of statement
Is STP in operation and respective records of discharge of treated wastewater, chemical used and running hours kept	Yes,	
Is quantity of discharge from dewatering sedimentation pond being monitored and record kept	Discharge water quality tested continuously	
Visual observations of water stored in sedimentation pond for discharge during dewatering		
Is any discharge of wastewater other than above two observed	No	
Misc., if any		



K. Soil management

Particulars	Observations with photos	Status of compliance Soil management plan and method of statement
Is record of soil excavated and stored being kept?	Yes, shared via aconex	
Is visual inspection of excavated soil being done for any type of contamination by DBO/EPC?	Yes, done for worksite	
Are garland drains provided around storage area?	N/A	
Is soil excavated being used and/or disposed?	Stored at site	
Dust suppression measures	Not observed 	

## L. Spill Control and Containment





Particulars	Observations with photos	Status of compliance respective management plan and method of statement,
Are containers of chemicals present on site and storage areas properly labelled?	Yes,	
Sign of soil contamination on site, if any	No sign	
Are spill containment kits are located in ready to use mode?	Yes,	
Locations of availability of spill containment kits and is it easily identified by anyone.	Yes, 	
Status of understanding of its usages at construction site and storage area of chemicals	Training done (31/03/2024) If there are any additional chemicals or changes training will be done	

## M. Misc

Particulars	Observations with photos	Status of compliance respective management plan and method of statement, if any
Has activity wise mapping of risk to environment been carried out?	NA	
Have environment risks been reviewed just before start of particular construction activity and during execution?	Yes, it has	
How are additional mitigation measures being identified and implemented?	According to DBO the additional mitigation measures required are discussed in the meetings and implemented. Meeting records are kept.	
Status of understanding of workers and supervisors on environment risks	Audit conducted this month	

considering activities in progress and internal GRM	
Overall status of record keeping by DBO/EPC	Satisfactory
Availability of HSE professionals (One Environment Manager and three environment officer) as per contract	Environment manager- 1 HSE- 1 OHS- 1  Onsite Environment manager- 1 HS- 2
Status of supervision by Manager environment and environment officers including record keeping of observations	Observation Registry is kept
Status of EHS committee, its meeting (s) and findings	No meeting was held this month.
Is any environment incident reported? If yes then collect details.	Not within the site, only fire in WAMCO site which is outside the project boudary
Details of observations made by ER's site engineer and status of same	Yes
Others, if any	

N. Summary of observations which need corrective actions/measures

Observations	Corrective action recommended		Date of completion
<p>Kitchen waste was overflowing from the allocated area in the waste collection site.</p>  <p>It was advised to dispose waste regularly and not the keep kitchen waste for a longer period of time. Further to keep the waste organised within the allocated areas.</p>	<p>DBO agreed to comply</p> <p>Yes</p>	<p>Need to escalate to DBO management</p> <p>Not required</p>	
<p>Vehicles were reversing without any precautions as per CEMP. The driver was advised by DBO at the time of operation to follow the SOP for vehicle operations.</p>  	<p>Yes</p>	<p>Not required</p>	<p>25/04/2024</p>
<p>Concrete testing zone waste must be properly stored.</p> 	<p>Yes</p>	<p>Not required</p>	

Batching plant clean up was ongoing. The footpath had cement dust and which has potential to contribute to dust pollution within the site. Was advised to clean the roads properly.

Cleaning is ongoing

Not required

Cleaning is ongoing





**Site Inspection Report**

**No.: SI-24-07**

by the Employer's Representative

Dates / Time of the Visit	Conducted by [ER]	Signature
2 <sup>nd</sup> May 2024 09:30 hrs – 14:30 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.	-
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.	-
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 150 workers deployed by the DBO/EPC on site.  3 1 5 31 22 74 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.	-
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.	-

## 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. <sup>1</sup>	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.	-

<sup>1</sup>aspects 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

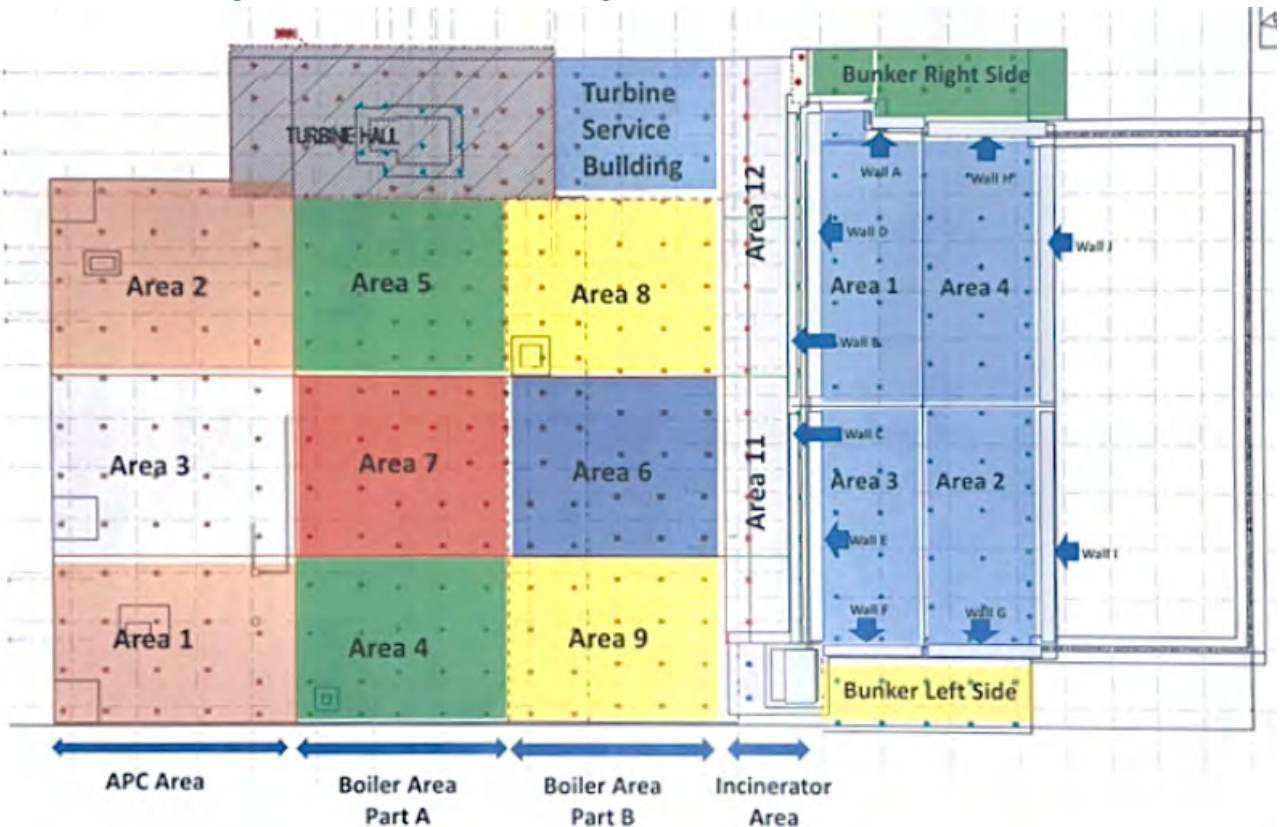
Sn	Aspects	Details / Remarks	Reference
<b>Labour - health, safety and welfare</b>			
1	Status of adequacy of HSE /Occupational Health and Safety management plan and ESMS including SOPs applicable to construction activities visited on the basis of randomly assessment made. <sup>2</sup>	SOPS are in place for specific work activities and is an ongoing process. However following observations were made: <ul style="list-style-type: none"> <li>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.</li> <li>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.</li> <li>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.</li> </ul>	-
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.	-

<sup>2</sup>e.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.	-
<b>Community- health, safety and welfare</b>			
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.	-

Main Process Building & Bunker area work area designations





Site Photos / Observations



**Photo 01** 02/05/24 – The safety tape blown away due to high winds, needs to be rectified.



**Photo 02** 02/05/24 – Mr. Latheef from MOE visiting the site, inspecting the bunker area construction works.



**Photo 03** 02/05/24 – Bunker wall reinforcement and formwork installation work is ongoing.





**Photo 04** 02/05/24 – The tower crane in the bunker area installation work is ongoing.

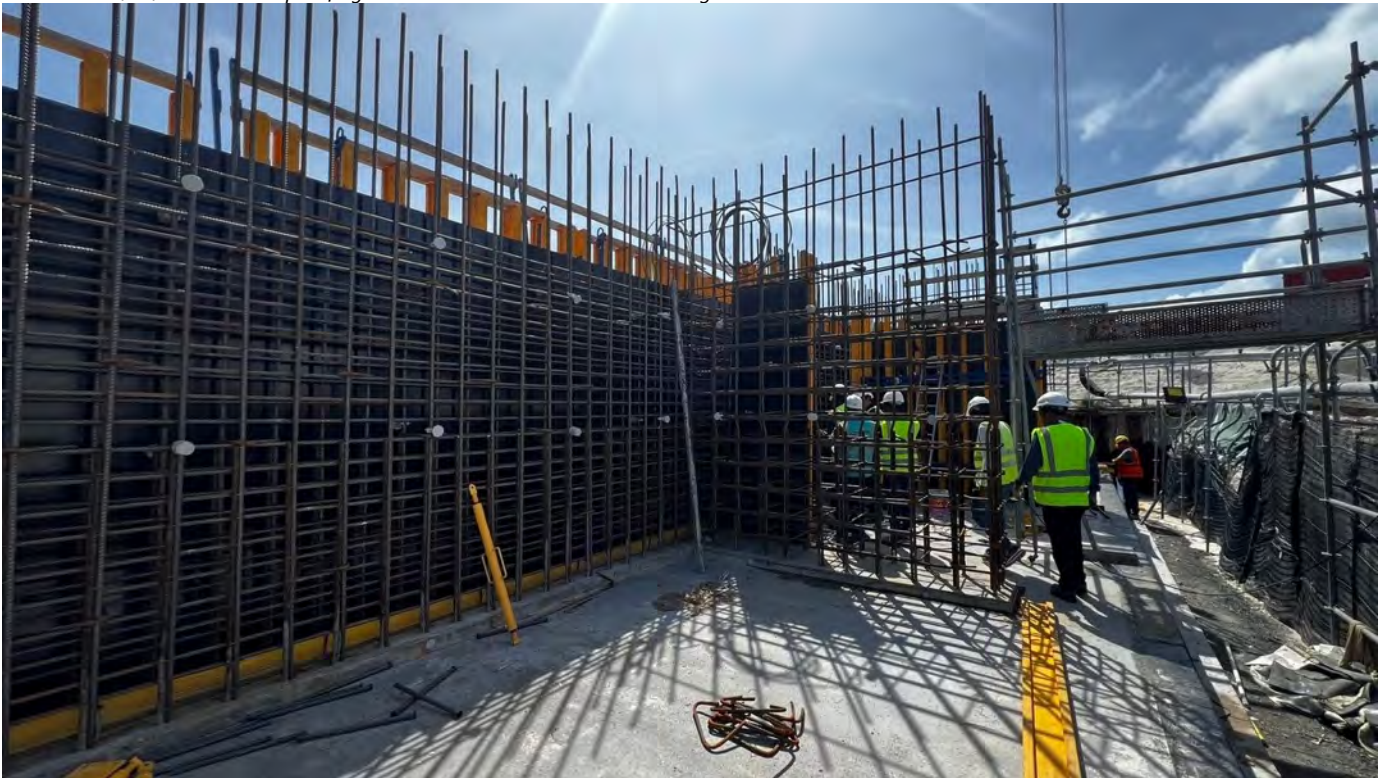


**Photo 05** 02/05/24 – Bunker wall reinforcement and formwork installation work is ongoing.



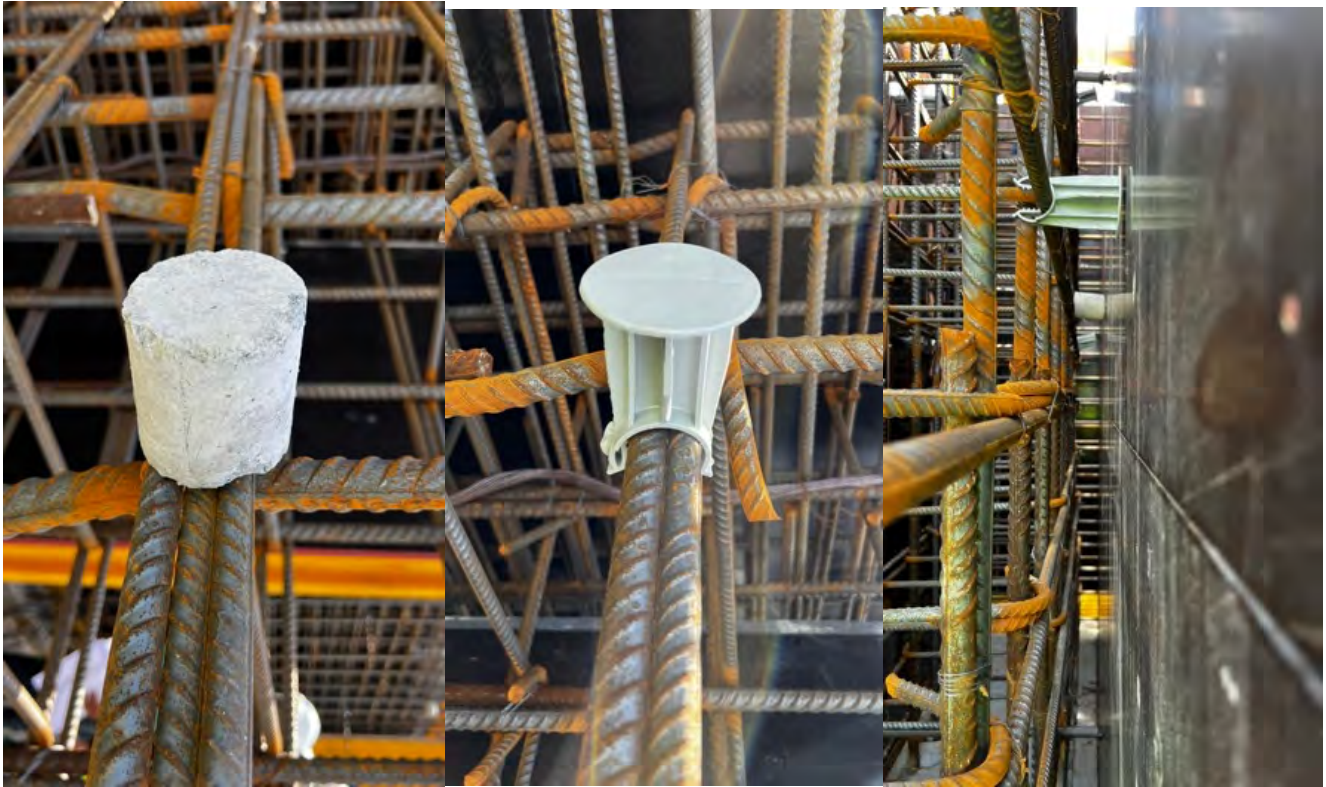


**Photo 06** 02/05/24 – Waterproofing membranes on the bunker slab being installed.



**Photo 07** 02/05/24 – Bunker wall reinforcement and formwork installation work is ongoing and inspection being carried out by DBO and ER site team.





**Photo 08** 02/05/24 – Different cover blocks being used on the bunker area.



**Photo 09** 02/05/24 – Waterproofing membrane being installed on the bunker slab edge.





**Photo 10** 02/05/24 – Bunker wall reinforcement and formwork installation work is ongoing.



**Photo 11** 02/05/24 – Leachate pit area work, waterbar installation work is ongoing.





**Photo 12** 02/05/24 – Concrete cover blocks being made.



**Photo 13** 02/05/24 – The portable toilets were not cleaned and in bad condition, EPC HS team has been informed of the issue.





**Photo 14** 02/05/24 – Tower crane assembly work is ongoing.



**Photo 15** 02/05/24 – Barbending workshop.



**Photo 16** 02/05/24 – Rebar stock on site.





**Photo 17** 02/05/24 – Third party inspector on site to collect water samples for testing.



**Photo 18** 02/05/24 – Equipment delivered to site being covered with canvas material to protect against the elements.



**Photo 19** 02/05/24 – Steel structure elements delivered to site along with the grate related materials.



**Photo 20** 02/05/24 – The barge next to the quay wall has been damaged and is sinking, MOE has been informed of this issue.



**Site Inspection Report**

No.: SI-24-08

by the Employer's Representative

Dates / Time of the Visit	Conducted by [ER]	Signature
7 <sup>th</sup> 8 <sup>th</sup> 9 <sup>th</sup> May 2024 09:30 hrs – 17:30 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.	-
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.	-
4	Total number of manpower 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) j) Clamp Engineering	Total of 168 workers deployed by the DBO/EPC on site.  3 1 5 41 21 82 7 0 6 1	-
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.	-
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.	-

## 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. <sup>1</sup>	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.	-

<sup>1</sup>aspects 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 plan, fugitive, vehicular movement, etc.) management, management of construction noise level etc.

## Health and Safety Observation

Sn	Aspects	Details / Remarks	Reference
<b>Labour - health, safety and welfare</b>			
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. <sup>2</sup>	SOPS are in place for specific work activities and is an ongoing process. However following observations were made: <ul style="list-style-type: none"> <li>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.</li> <li>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.</li> <li>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.</li> </ul>	-
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. SOPs 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 have been completed and is in use. Designated smoking areas and shelters have been established. Wastewater 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 housekeeping 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.	-

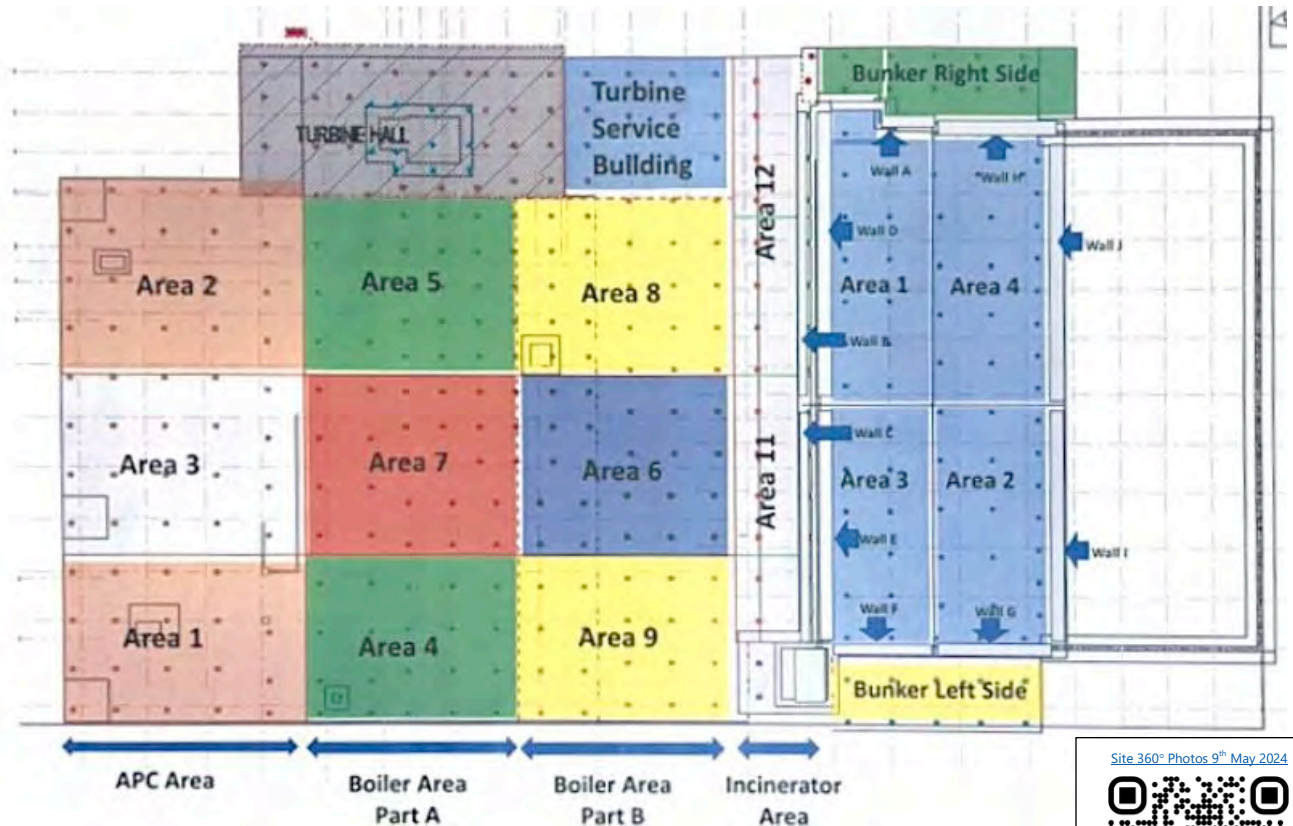
<sup>2</sup>e.g assessment of activity wise associated hazards, work permit, PPEs, first aid, toolbox talk, barricading, COVID-19, electrical safety etc.

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.	-
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.	-

**Main Process Building & Bunker area work area designations**





Site Photos / Observations



**Photo 01** 07/05/24 – Mr. Nick meeting with PMU team and ER team members to discuss HSE related matters.



**Photo 02** 07/05/24 – Mr. Nick accompanied by site team and PMU and ER members on the site walk around.



**Photo 03** 07/05/24 – Bunker wall reinforcement and formwork installation work is ongoing.





**Photo 04** 07/05/24 – Mr. Sunil inspecting the scaffolding at the bunker construction area.



**Photo 05** 07/05/24 – Portable toilets at the construction area has been cleaned and efforts are being taken to ensure this by the EPC.



**Photo 06** 07/05/24 – Mr. Nick with site team during the site walk around.





**Photo 07** 07/05/24 – Fire fighting equipment has been placed in the reinforcement workshop along with signage.



**Photo 08** 07/05/24 – Members of site team with Mr. Nick during the site walk around.



**Photo 09** 07/05/24 – Construction chemicals in the storage area, requires adequate measures to ensure safety, and spillage containment.





Photo 10 07/05/24 - Construction chemicals in the storage area, requires adequate measures to ensure safety, and spillage containment.



Photo 11 07/05/24 – construction material storage area.



Photo 12 07/05/24 – Fuel storage area.





**Photo 13** 07/05/24 – Inspection of the hazardous chemical store. Requirement of adequate ventilation was highlighted.



**Photo 14** 07/05/24 – Waste collection area kept clean and regularly dispatched to WAMCO landfill.



**Photo 15** 08/05/24 – Staff mess hall, generally kept clean and hygienic.





**Photo 16** 08/05/24 – Staff gym on site camp area, equipped and well maintained.

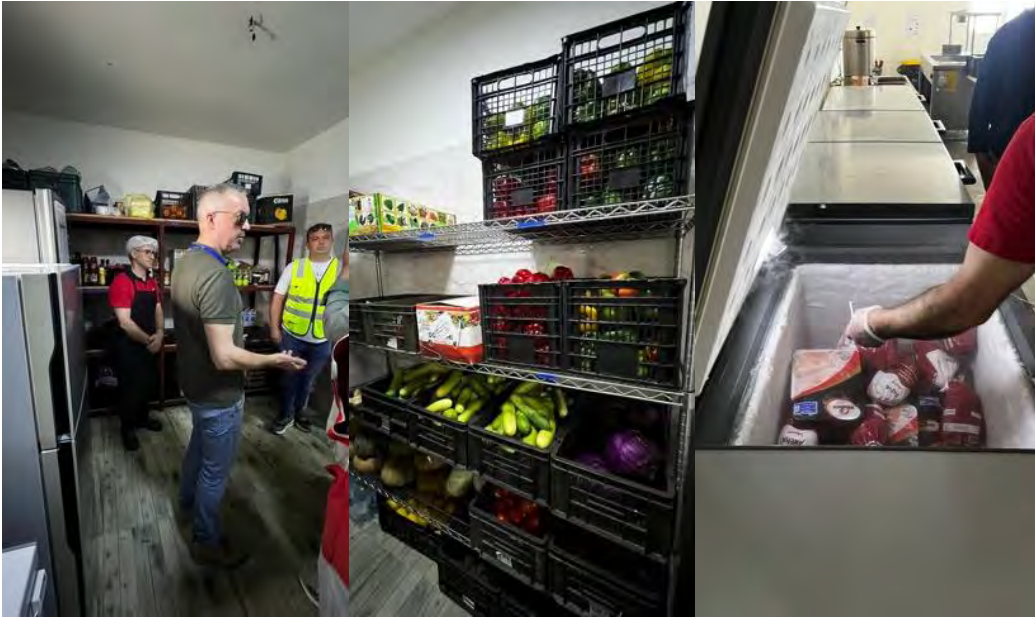


**Photo 17** 08/05/24 – Staff recreation area, equipment and well maintained.



**Photo 18** 08/05/24 – Inspection of the kitchen, all onsite staff meals are prepared here. Found to be hygienic and well maintained.





**Photo 19** 08/05/24 – Inspection of the kitchen store, a appropriate measures and records kept for storage of all meat and other items.



**Photo 20** 08/05/24 – Inspection of the LPG gas storage for the kitchen. Measures taken for safety; installations of leak alarms suggested.



**Photo 21** 08/05/24 – WTP is operational and being used, monthly outfall tests are done to ensure environmental limits are achieved.









**Photo 25** 09/05/24 – Inspection of workers accommodation, generally kept clean, however ILO requirements fulfillment was advised.



**Photo 26** 09/05/24 – Inspection of workers accommodation, unsafe use of electrical extension boards was highlighted and mitigation measures were advised.



**Photo 27** 09/05/24 – Drinking water station provided for workers to refill water bottles.





**Photo 28** 09/05/24 – Emergency water tank on site, has some leaks and this has been raised in several reports, but action taken to rectify..



**Photo 29** 09/05/24 – The fire extinguishers placed around the site has been inspected by site HS team, however several were found with expired third-party inspection certificates.



**Photo 30** 09/05/24 – Inspection of the spill control kit near the hazardous material storage area.





**Photo 31** 09/05/24 – Batching plant area and material storage area, well kept and maintained.



**Photo 32** 09/05/24 – Aggregates storage area for the batching plant, kept sheltered from the elements.





**Photo 33** 09/05/24 - Area allocated for desalination plant for the batching plant, requirement of permits from government authorities for bore hole was highlighted.



**Photo 34** 09/05/24 – Storage of grate and related equipment on site, efforts are being taken to provide cover from the elements.



**Photo 35** 09/05/24 – Storage of grate and related equipment on site, efforts are being taken to provide cover from the elements.





Photo 36 09/05/24 – Main process building and Bunker construction overview.



**Site Inspection Report**

**No.: SI-24-09**

by the Employer's Representative

Dates / Time of the Visit	Conducted by [ER]	Signature
30 <sup>th</sup> May 2024 09:30 hrs – 14:30 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.	-
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.	-
4	Total amount of manpower 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) j) Clamp Engineering	Total of 186 workers deployed by the DBO/EPC on site.  2 2 5 42 35 86 7 5 8 1	-
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.	-
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.	-

## 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. <sup>1</sup>	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.	-

<sup>1</sup>aspects 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

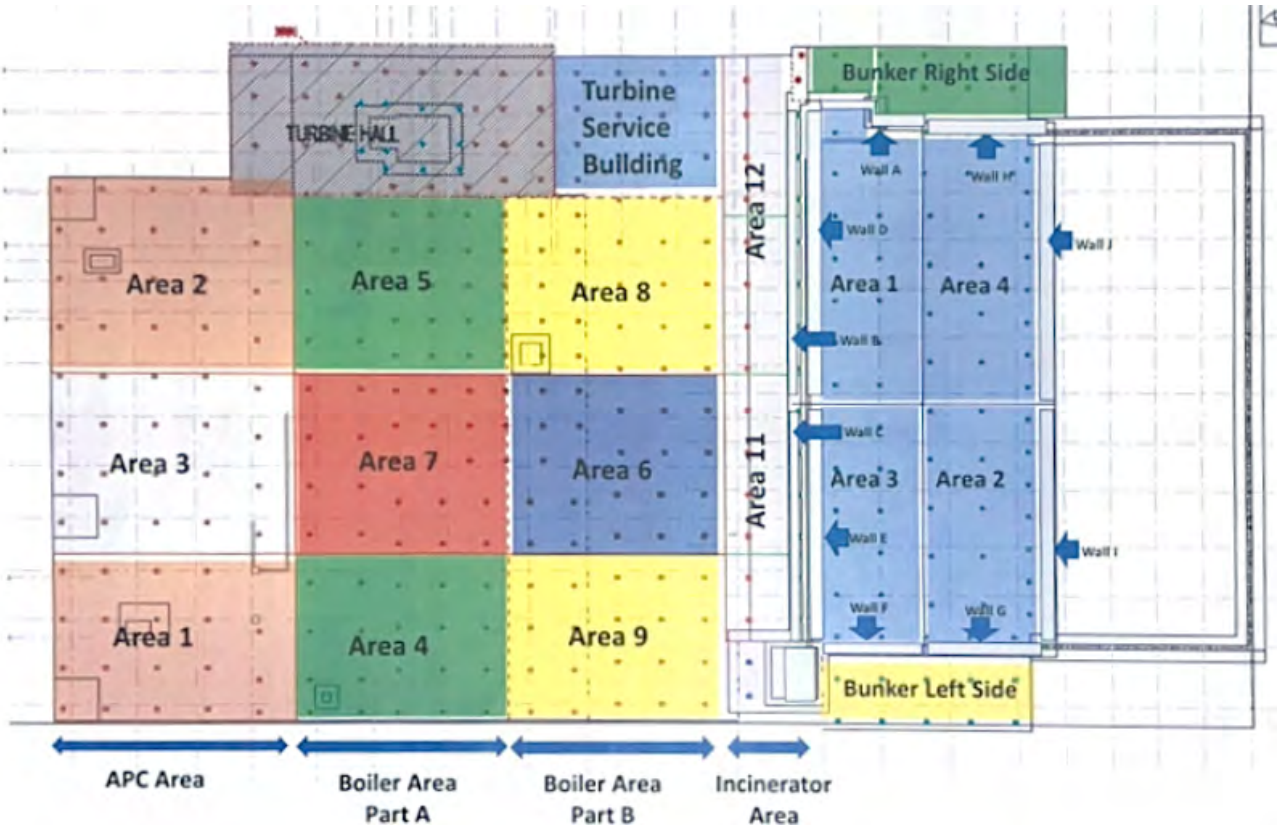
Sn	Aspects	Details / Remarks	Reference
<b>Labour - health, safety and welfare</b>			
1	Status of adequacy of HSE /Occupational Health and Safety management plan and ESMS including SOPs applicable to construction activities visited on the basis of randomly assessment made. <sup>2</sup>	SOPS are in place for specific work activities and is an ongoing process. However following observations were made: <ul style="list-style-type: none"> <li>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.</li> <li>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.</li> <li>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.</li> </ul>	-
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. SOPs 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 have been completed and is in use. Designated smoking areas and shelters have been established. Wastewater 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.	-

<sup>2</sup>e.g assessment of activity wise associated hazards, work permit, PPEs, first aid, toolbox 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.	-
<b>Community- health, safety and welfare</b>			
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.	-

Main Process Building & Bunker work area designations



Site Photos / Observations



**Photo 01** 30/05/24 – Construction of the bunker walls ongoing.



**Photo 02** 30/05/24 – Mrs. Yamna from PMU with Mr. Sofi during the site walk around.



**Photo 03** 30/05/24 – Bunker wall reinforcement and formwork installation work is ongoing.





**Photo 04** 30/05/24 – Cover blocks preparation area, open water tank to be covered to prevent mosquito breeding.



**Photo 05** 30/05/24 – Portable toilets at the construction area kept clean and maintained.





**Photo 06** 30/05/24 – Installation work for the tower cranes on site are ongoing.



**Photo 07** 30/05/24 – Main process area construction work is ongoing but slowed down due to material delivery delays..



**Photo 08** 30/05/24 – Reinforcement fabrication workshop area..





**Photo 09** 30/05/24 – Stockpile of extended sand..



**Photo 10** 30/05/24 - Construction chemicals onsite storage area, adequate measures to be taken to address spillage.



**Photo 11** 30/05/24 – Conplast X400 Construction chemicals onsite storage area, adequate measures to be taken to address spillage.



**Photo 12** 30/05/24 – New machinery on site.





**Photo 13** 30/05/24 – Mobile diesel tanker used on site, signage has been provided, registration process ongoing.



**Photo 14** 30/05/24 – Adequate measures to be taken for electrical equipment in the camp site..



**Photo 15** 30/05/24 – The site clinic is staffed and equipped to handle emergencies and records are kept.



**Photo 16** 30/05/24 – Clinical waste being handled appropriately and moved out of site for disposal..



**Photo 17** 30/05/24 – Third party inspection has expired on many of the fire extinguishers on site, however EPC HS team inspections are done on a monthly basis..



**Photo 18** 30/05/24 – Equipment delivered to site being covered with canvas material to protect against the elements.





## 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
28.4.2024	4.5.2024	Sofi bin Ismail		Naahee Nazim	

#### Progress Review

The works performed during the Reporting Week are as follows:

- Dewatering work for Bunker area continues.
- Bunker - Concreting work for Bunker Wall A was completed.
- Bunker - Concreting work for Bunker Wall C was completed.
- Bunker - Reinforcement bar & formwork for Leachate Wall in progress.
- Bunker - Reinforcement bar & formwork for Bunker Wall I in progress.
- Bunker - Reinforcement bar & formwork for Bunker Wall J in progress.
- Temporary tower crane at Bunker installation 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.

1



OVERALL - POINT ONE

2

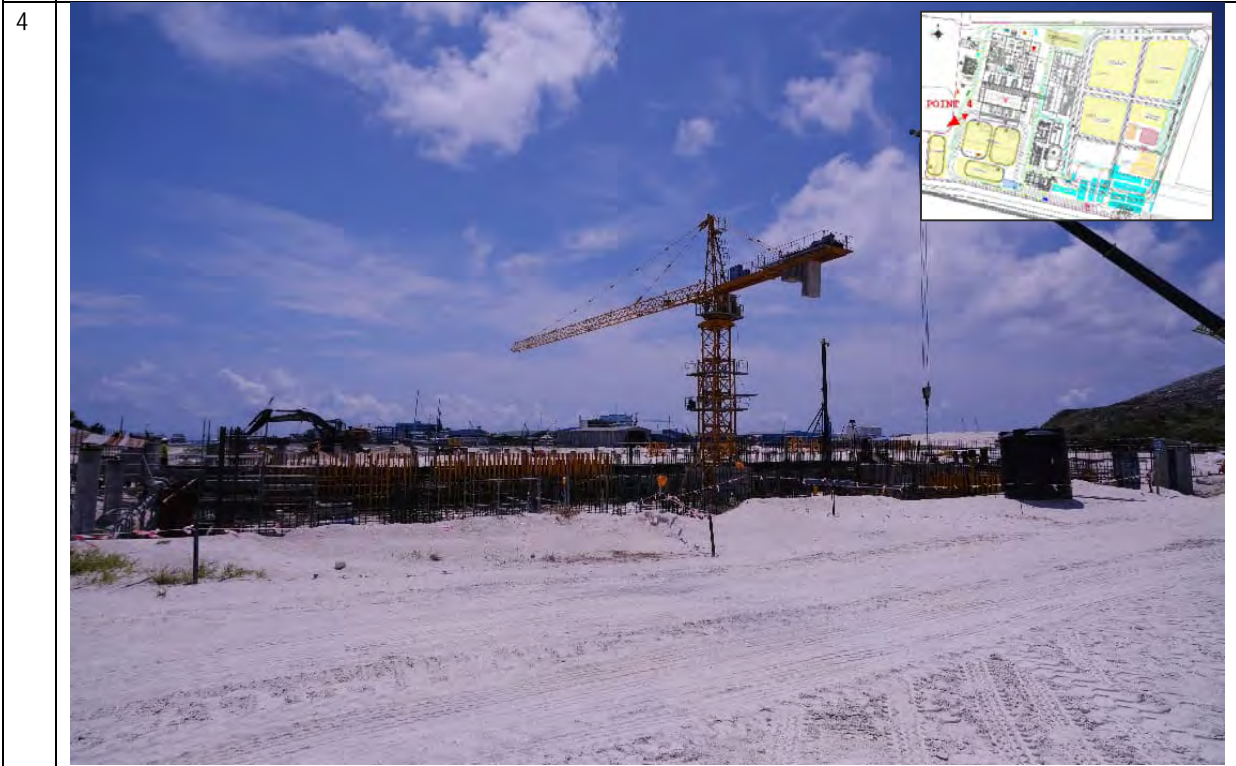


OVERALL - POINT TWO





OVERALL - POINT THREE



OVERALL - POINT FOUR



5



OVERALL - POINT FIVE

6



BUNKER AREA - WALL A & WALL C COMPLETED



7



BUNKER - REINFORCEMENT BAR AND FORMWORK IN PROGRESS FOR WALL H, A & J.

8



PROCESS AREA - NO ACTIVITY



9



TEMPORARY TOWER CRANE INSTALLATION IN PROGRESS

10



WATER SAMPLING

Site Log



Date: 28/04/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail  
 Sunday  
 Time on site:  Time off site:  Completed by:

Weather:

	Total	Civil	Process
Workers on Site	77	77	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 Bunker Wall A in progress.
- 3) Bunker - Waterstop and earthing cable installation for Bunker Wall A in progress.
- 4) Bunker - Reinforcement bar and formwork installation for Bunker Wall J in progress.
- 5) Bunker - Reinforcement bar and formwork installation for Bunker Wall I in progress.
- 6) Material Delivery - Sand 26.030 + 25.192 tonne.
- 7) Material Delivery - Aggregate 26.467 tonne.
- 8) Material Delivery - Reinforcement bar 102 tonne.
- 9) Temporary tower crane installation at Bunker on going.

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
10:00	ER, DBO, AAJV	Weekly Briefing
		1) Brief planned work for this week, expected to concrete wall A, J & C.
		2) Highlight issues on wall crack, potential issue related to curing and high cement content
		3) Material requirement discussion. Highlight that backfilling material and rebar in not sufficient.

Comments

Site Log



Date: 29/04/2024 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	82	82	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 Bunker Wall C in progress.  
 3) Bunker - Waterstop and earthing cable installation for Bunker Wall A in progress.  
 4) Bunker - Reinforcement bar and formwork installation for Bunker Wall J in progress.  
 5) Bunker - Reinforcement bar and formwork installation for Bunker Wall I in progress.  
 6) Material Delivery - Reinforcement bar 102 tonne.  
 7) Temporary tower crane installation at Bunker on going.

Safety Audits/Safety Walkarounds

Site walk on workers camp and highlight that the smoke detector require to be maintained. Several smoke detector are not working due to flat battery.

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).  
 Highlight the requirement for lightning arrestor and earthing cable for tower crane is required urgently as weather expected to be raining.

Meetings	When	Who	What
	N/A		

Comments

N/A

Site Log



Date: 30/04/2024 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 Bunker Wall C in progress.  
 3) Bunker - Waterstop and earthing cable installation for Bunker Wall C in progress.  
 4) Bunker - Reinforcement bar and formwork installation for Bunker Wall J in progress.  
 5) Bunker - Reinforcement bar and formwork installation for Bunker Wall I in progress.  
 6) Temporary tower crane installation at Bunker on going.

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 (13mm) within design tolerance (33mm).  
 Inspection of wall J, wall I, wall D, wall E, wall F, wall G found that the main reinforcement bar at all column was installed with cranked dimension not in accordance to project specification (BS8666:2005;item 8.9). Rectification required.

Meetings	When	Who	What
	3:00pm	FIT, URB, AAJV	Briefing on reinforcement bar dimension, bending and cutting requirement in accordance to BS8666:2005 as specified in project requirement.

Comments

# FICHTNER

Site Log

Date      01/05/2024      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 Bunker Wall C in progress.  
 3) Bunker - Waterstop and earthing cable installation for Bunker Wall C in progress.  
 4) Bunker - Reinforcement bar and formwork installation for Bunker Wall J in progress.  
 5) Bunker - Concreting work for Bunker Wall A completed.  
 6) Temporary tower crane installation at Bunker on going.

Safety Audits/Safety Walkarounds

Air quality monitoring at AQ2 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, deflection data (12mm) within design tolerance (33mm).

	When	Who	What
Meetings	N/A		

Comments

N/A

Site Log



Date: 02/05/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail  
 Thursday  
 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 Bunker Wall I in progress.
- 3) Bunker - Waterstop and earthing cable installation for Bunker Wall J in progress.
- 4) Bunker - Reinforcement bar and formwork installation for Bunker Wall J in progress.
- 5) Bunker - Concreting work for Bunker Wall C completed.
- 6) Temporary tower crane installation at Bunker on going.
- 7) Material Delivery - Sand 27.748 + 23.690 + 25.516 + 25.111 tonne

Safety Audits/Safety Walkarounds  
 Water sampling for marine water, construction and camp water, 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, deflection data (11mm) within design tolerance (33mm).  
 Received design calculation for sheetpile anchorage removal. Highlight to AAJV surveyor to take reading before and after removal of anchor to monitor any movement beyond expected value as per design calculation.

Meetings	When	Who	What
	N/A		

Comments  
 N/A



Site Log



Date: 03/05/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail

Friday  
Time on site: [ ] Time off site: [ ] Completed by: Sofi Bin Ismail

Weather: Sunny

	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  
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

Site Log



Date: 04/05/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail

Saturday

Time on site: 8:30 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 - Reinforcement bar and formwork installation for Leachate Wall in progress.
- 3) Bunker - Waterstop and earthing cable installation for Bunker Wall J in progress.
- 4) Bunker - Reinforcement bar and formwork installation for Bunker Wall J in progress.
- 5) Temporary tower crane installation at Bunker on going.

Safety  
Audits/Safety  
Walkarounds

Air quality monitoring at AQ3 and ARS3 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, 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
5.5.2024	11.5.2024	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 & formwork for Bunker Wall J in progress.
- Bunker - Reinforcement bar & formwork for Bunker Wall C in progress.
- Bunker - Reinforcement bar & formwork for Bunker Wall H in progress.
- Main Process Area - Spun pile cutting work in progress.
- Main Process Area - Compaction for pilecaps in progress.
- Temporary tower crane at Bunker installation 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.

1



OVERALL - POINT ONE

2



OVERALL - POINT TWO





OVERALL - POINT THREE



OVERALL - POINT FOUR



5



OVERALL - POINT FIVE

6



BUNKER AREA - WALL J, C & H IN PROGRESS

7



MAIN PROCESS AREA - PILE CUTTING AND COMPACTION IN PROGRESS

8



BUNKER AREA - WALL J, C & H IN PROGRESS



9



TEMPORARY TOWER CRANE INSTALLATION IN PROGRESS

10



AIR QUALITY MONITORING

Site Log



Date: 05/05/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail  
 Sunday  
 Time on site: 8:30 Time off site: 18:00 Completed by: Sofi Bin Ismail

Weather: Sunny

	Total	Civil	Process
Workers on Site	82	82	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 Leachate Wall in progress.
- 3) Bunker - Waterstop and earthing cable installation for Bunker Wall J in progress.
- 4) Bunker - Reinforcement bar and formwork installation for Bunker Wall J in progress.
- 5) Bunker - Reinforcement bar and formwork installation for Bunker Wall C in progress.
- 6) Main Process Area - Spun pile cutting work at SP-254, SP-242, SP-230 & SP-218.
- 7) Temporary tower crane installation at Bunker on going.
- 8) Material Delivery - Aggregate 25.552 + 25.820 + 26.286 + 25.421 tonne

Safety Audits/Safety Walkarounds  
 Water sampling for ground water 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, maximum deflection data (15mm) within design tolerance (33mm).  
 Notify DBO tower crane requirement prior for safe operation:  
 1) Third party inspection to verify tower crane fitness.  
 2) Load test.  
 3) Earthing & lightning arrestor.

When	Who	What
10:00	ER, DBO, AAJV	Weekly Briefing
		1) Brief planned work for this week, expected remove anchorage block on sheetpile.
		2) Crack issue, expect EPC to complete comprehensive crack mapping & crack classification.
		3) Material requirement discussion. Highlight that backfilling material and rebar in not sufficient.
		4) Highlight requirement for temporary tower crane prior to be use.

Comments  
 N/A

# FICHTNER

Site Log

Date      06/05/2024      Site:      Greater Male WTE      Site Representative:      Sofi bin Ismail

Monday

Time on site:      8:30      Time off site:      18:00      Completed by: Sofi Bin Ismail

Weather: Sunny

	Total	Civil	Process	
Workers on Site	82	82	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 - Anchorage block removal on sheetpile at Leachate area.

3) Bunker - Waterstop and earthing cable installation for Bunker Wall J in progress.

4) Bunker - Reinforcement bar and formwork installation for Bunker Wall J in progress.

5) Bunker - Reinforcement bar and formwork installation for Bunker Wall C in progress.

6) Bunker - Reinforcement bar and formwork installation for Bunker Wall H in progress.

7) Main Process Area - Spun pile cutting work at SP-164, SP-177, SP-183, SP-195, SP-206, SP-219, SP-231, SP-243 & SP-255.

8) Temporary tower crane installation at Bunker on going.

Safety Audits/Safety Walkarounds

Air quality monitoring at AQ1 & ARS2 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 (39mm - Leachate area) beyond design tolerance (33mm).  
5:30pm. The maximum deflection of sheetpile at Leachate area upon removal of anchorage block was observed to be beyond the design tolerance. From this, permit to work at leachate area was revoke and affected area has been barricaded. No work is allowed in Leachate area. EPC to obtain recommendation from designer on action moving forward.

	When	Who	What
Meetings	N/A		

Comments

N/A



Site Log

# FICHTNER

Date: 07/05/2024 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 - Reinstall anchorage block for sheetpile at Leachate area.
- 3) Bunker - Reinforcement bar and formwork installation for Bunker Wall J in progress.
- 4) Bunker - Reinforcement bar and formwork installation for Bunker Wall C in progress.
- 5) Bunker - Reinforcement bar and formwork installation for Bunker Wall H in progress.
- 6) Main Process Area - Spun pile cutting work at SP-165, SP-166, SP-184, SP-185, SP-196, SP-197, SP-207, SP-208 & SP-220.
- 7) Temporary tower crane installation at Bunker on going.

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
	10:00am	FIT, URB, AAJV	Briefing on action required for Leachate area.
			1) Area to be barricaded and no work is allowed within Leachate area.
			2) Designer recommend to reinstall the anchorage back while before permanent solution is on the table.

Comments

# FICHTNER

Site Log

Date      08/05/2024      Site:      Greater Male WTE      Site Representative:      Sofi bin Ismail

Wednesday

Time on site:      8:30      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 - Reinforcement bar and formwork installation for Bunker Wall J in progress.
- 3) Bunker - Reinforcement bar and formwork installation for Bunker Wall C in progress.
- 4) Bunker - Reinforcement bar and formwork installation for Bunker Wall H in progress.
- 5) Main Process Area - Spun pile cutting work at SP-128, SP-138, SP-139, SP-151, SP-152 & SP-153.
- 6) Temporary tower crane installation at Bunker on going.

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 (71mm - Leachate area) beyond design tolerance (33mm).  
Request DBO to set a joint meeting between FIT, URB, AAJV, third party expert, RAMB and designer to discuss and agreed action moving forward for wall crack issues.

	When	Who	What
Meetings	2:00pm	FIT, URB, AAJV	Discussion on wall crack documentation.
			1) Crack mapping - To improve and establish systematic labelling which can be used throughout the project.
			2) Crack classification - Third party expert concluded that the crack occur due to thermal contraction issue in line with FIT finding.

Comments      N/A

Site Log



Date: 09/05/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail  
 Thursday  
 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 Bunker Wall J in progress.
- 3) Bunker - Reinforcement bar and formwork installation for Bunker Wall C in progress.
- 4) Bunker - Reinforcement bar and formwork installation for Bunker Wall H in progress.
- 5) Bunker - Rectification of cranked main bar as highlighted by FIT on all column in progress.
- 6) Main Process Area - Spun pile cutting work at SP-096, SP-097, SP-098, SP-106, SP-115, SP-116, SP-117, SP-129, SP-130 & SP-140
- 7) Temporary tower crane installation at Bunker on going.

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

Site Log



Date: 10/05/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail

Friday  
Time on site: [ ] Time off site: [ ] Completed by: Sofi Bin Ismail

Weather: Sunny

	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: 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

Site Log



Date: 11/05/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail

Saturday

Time on site: 8:30 Time off site: 18:00 Completed by: Sofi Bin Ismail

Weather: Sunny

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

0	0	0	<i>Note : Enter this information when it is available, at least once per week as a minimum</i>
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Site Activities, Contractors Involved, Major Deliveries, Testing, Inspections

- 1) Dewatering of bunker area continue.
- 2) Bunker - Reinforcement bar and formwork installation for Bunker Wall J in progress.
- 3) Bunker - Reinforcement bar and formwork installation for Bunker Wall C in progress.
- 4) Bunker - Reinforcement bar and formwork installation for Bunker Wall H in progress.
- 5) Bunker - Rectification of cranked main bar as highlighted by FIT on all column in progress.
- 6) Main Process Area - Spun pile cutting work at SP-057, SP-058, SP-059, SP-070, SP-071, SP-072, SP-083, SP-084 & SP-085.
- 7) Main Process Area - Compaction work for pilecaps at SP-255, SP-243, SP-231, SP-219, SP-220, SP-207, SP-208, SP-196, SP-197, SP-184, SP-185, SP-165, SP-166, SP-152 & SP-153.
- 8) Temporary tower crane installation at Bunker on going.

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 (59mm) within design tolerance (33mm).

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
12.5.2024	18.5.2024	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 casting work for Wall J completed.
- Bunker - Concrete casting work for Wall C completed.
- Bunker - Concrete casting work for Wall H completed.
- Bunker - Concrete casting work for Wall G completed.
- Bunker - Concrete casting work for Wall I completed.
- Bunker - Concrete casting work for Wall J-H completed.
- Bunker - Reinforcement bar & formwork for Bunker Wall D & F in progress.
- Main Process Area - Concrete casting work for pilecaps in progress.
- Main Process Area - Compaction for pilecaps in progress.
- Temporary tower crane at Bunker installation 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.

1



OVERALL - POINT ONE

2



OVERALL - POINT TWO

3



OVERALL - POINT THREE

4



OVERALL - POINT FOUR





OVERALL - POINT FIVE



BUNKER AREA - WALL J, C, H, G & I COMPLETED (+0 LEVEL)



7



MAIN PROCESS AREA - CONCRETE CASTING FOR PILECAPS IN PROGRESS

8



BUNKER AREA - WALL D & F IN PROGRESS

9



TEMPORARY TOWER CRANE INSPECTION, TESTING & CERTIFICATION COMPLETED



10



REINSTALLATION FOR SHEETPILE ANCHOR COMPLETED

Site Log



Date: 12/05/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail  
 Sunday  
 Time on site:  Time off site:  Completed by:

Weather:

	Total	Civil	Process
Workers on Site	82	82	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 Bunker Wall J in progress.
- 3) Bunker - Waterstop and earthing cable installation for Bunker Wall C in progress.
- 4) Bunker - Reinforcement bar and formwork installation for Bunker Wall G in progress.
- 5) Bunker - Rectification of cranked main bar as highlighted by FIT on all column in progress.
- 6) Main Process Area - Compaction test FDT for pilecaps at SP-255, SP-243, SP-231, SP-219, SP-220, SP-207, SP-208, SP-196, SP-197, SP-184, SP-185, SP-165, SP-166, SP-152 & SP-153.
- 7) Main Process Area - Compaction work for pilecaps at SP-057, SP-058, SP-070, SP-071, SP-083, SP-084, SP-096, SP-097, SP-106, SP-115, SP-116 & SP-129.
- 8) Temporary tower crane installation at Bunker on going.

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 (63mm - Leachate area) beyond design tolerance (33mm).  
 Discussion with sheetpile designer together with AAJV & URB, anchor have been reinstalled. To add supporting structure once wall at leachate area completed.

When	Who	What
10:00	ER, DBO, AAJV	Weekly Briefing
		1) Brief planned work for this week, planned for wall casting at Wall C, J, H, G & I.
		2) Crack issue, crack mapping completed. Verification my ER in progress.
		3) Material requirement discussion. Highlight that backfilling material and rebar in not sufficient.
		4) Highlight requirement for temporary tower crane prior to be use. Plan for inspection on 14/5

Comments

# FICHTNER

Site Log

Date      13/05/2024      Site:      Greater Male WTE      Site Representative:      Sofi bin Ismail

Monday

Time on site:      8:30      Time off site:      18:00      Completed by:      Sofi Bin Ismail

Weather:      Sunny

	Total	Civil	Process	
Workers on Site	85	85	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 for Bunker Wall J completed.
- 3) Bunker - Concrete casting for Bunker Wall C completed.
- 4) Bunker - Reinforcement bar and formwork installation for Bunker Wall G in progress.
- 5) Bunker - Reinforcement bar and formwork installation for Bunker Wall F in progress.
- 6) Main Process Area - Lean concrete for pilecaps at SP-254, SP-242, SP-230, SP-218, SP-206, SP-207, SP-196, SP-183, SP-184, SP-177, SP-164 & SP-152.
- 7) Temporary tower crane installation at Bunker on going.
- 8) Material Delivery - Aggregate 23.665 + 23.826 tonne.
- 9) Material Delivery - Sand 26.580 + 26.505 + 26.516 + 26.389 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 (62mm - Leachate area) beyond design tolerance (33mm).

	When	Who	What
Meetings	2:00pm	FIT, URB, AAJV, PWA	Briefing on tower crane inspection to be conducted on 14/5/2024

Comments      N/A

# FICHTNER

Site Log

Date      14/05/2024      Site:      Greater Male WTE      Site Representative:      Sofi bin Ismail  
 Tuesday  
 Time on site:      8:30      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 - Concrete casting for Bunker Wall H completed.
- 3) Bunker - Reinforcement bar and formwork installation for Bunker Wall G in progress.
- 4) Bunker - Reinforcement bar and formwork installation for Bunker Wall F in progress.
- 5) Main Process Area - Compaction test sand cone for backfilling work at M2 to M10.
- 6) Main Process Area - Lean concrete for pilecaps at SP-057, SP-058, SP-070, SP-071, SP-084, SP-096, SP-097, SP-106, SP-115, SP-128, SP-129, SP-138, SP-139 & SP-151.
- 7) Temporary tower crane inspection, testing and certificate from third party PWA. Certificate was issued from 14/5/2024 to 13/5/2025.
- 8) Material Delivery - Cement 7.00 + 7.00 + 6.00 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 (62mm - Leachate area) beyond design tolerance (33mm).

	When	Who	What
Meetings	N/A		

Comments      N/A

# FICHTNER

Site Log

Date      15/05/2024      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 Bunker Wall D in progress.

3) Bunker - Reinforcement bar and formwork installation for Bunker Wall G in progress.

4) Bunker - Reinforcement bar and formwork installation for Bunker Wall F in progress.

5) Bunker - Reinforcement bar and formwork installation for Bunker Wall J-I in progress.

6) Bunker - Reinforcement bar and formwork installation for Bunker Wall J-H in progress.

7) Main Process Area - Lean concreting work at Area 1 completed.

8) Main Process Area - Concrete casting for pilecaps at SP-254 , SP-242, SP-230, SP-218, SP-206, SP-207, SP-196, SP-183, SP-184, SP-177, SP-164, SP-152, SP-75, SP-58, SP-70, SP-71, SP-84, SP-96, SP-97, SP-106, SP-115, SP-128, SP-129, SP-138, SP-139 & SP-151.

9) Material Delivery - Cement 7.720 + 6.155 + 8.100 + 8.025 tonne.

10) Material Delivery - Sand 26.043 + 25.683 tonne.

11) Material Delivery - Aggregate 24.022 tonne.

Safety Audits/Safety Walkarounds

Site walkthrough. Highlight compliance with regard to working platform. Need improvement for working platform specifically for wall casting work.

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 (62mm - Leachate area) beyond design tolerance (33mm).  
Remind URB to ensure maintenance work as mentioned in letter with regard to equipment storage requirement is executed. To call FIT for witness.

	When	Who	What
Meetings	N/A		

Comments

N/A

Site Log



Date: 16/05/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail  
 Thursday  
 Time on site: 8:30 Time off site: 18:00 Completed by: Sofi Bin Ismail

Weather: Sunny

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 Bunker Wall D in progress.
- 3) Bunker - Reinforcement bar and formwork installation for Bunker Wall G in progress.
- 4) Bunker - Reinforcement bar and formwork installation for Bunker Wall F in progress.
- 5) Bunker - Reinforcement bar and formwork installation for Bunker Wall J-I in progress.
- 6) Bunker - Reinforcement bar and formwork installation for Bunker Wall J-H in progress.
- 7) Main Process Area - Concrete casting for pilecaps at SP-57, SP-58, SP-70, SP-71, SP-84, SP-96, SP-97, SP-106, SP-115, SP-128, SP-129, SP-138, SP-139 & SP-151.
- 8) Material Delivery - Aggregate 24.407 tonne.
- 9) Material Delivery - Sand 23.379 + 24.794 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 (62mm - Leachate area) beyond design tolerance (33mm).

When	Who	What
N/A		

Comments: N/A



Site Log



Date: 17/05/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail

Friday

Time on site: [ ] Time off site: [ ] Completed by: Sofi Bin Ismail

Weather: Sunny

	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  
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

Site Log



Date: 18/05/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail

Saturday  
 Time on site: 8:30 Time off site: 18:00 Completed by: Sofi Bin Ismail

Weather: Sunny

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 Bunker Wall D in progress.
- 3) Bunker - Concrete casting for Bunker Wall G completed.
- 4) Bunker - Reinforcement bar and formwork installation for Bunker Wall F in progress.
- 5) Bunker - Concrete casting for Bunker Wall I completed.
- 6) Bunker - Concrete casting for Bunker Wall J-H completed.
- 7) Material Delivery - Aggregate 25.392 + 18.199 + 25.425 tonne.
- 8) Material Delivery - Sand 25.254 + 26.055 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 (60mm - Leachate area) beyond design tolerance (33mm).

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
19.5.2024	25.5.2024	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 casting work for Wall F & E (BW01 & BW30) completed.
- Bunker - Concrete casting work for Wall I & J (BW21, BW22 & BW23) completed.
- Bunker - Reinforcement bar & formwork for Bunker Wall I & G (BW16, BW17, BW18 & BW27) in progress.
- Bunker - Reinforcement bar & formwork for Bunker Wall D (BW13 & BW14) in progress.
- Bunker - Reinforcement bar & formwork for Bunker Wall at Leachate Area.
- Bunker - Backfilling work behind Bunker Wall C in progress.
- Bunker - Working platform and falsework for 2<sup>nd</sup> stage wall at Bunker Wall J.
- Main Process Area - Concrete casting work for pilecaps in progress.

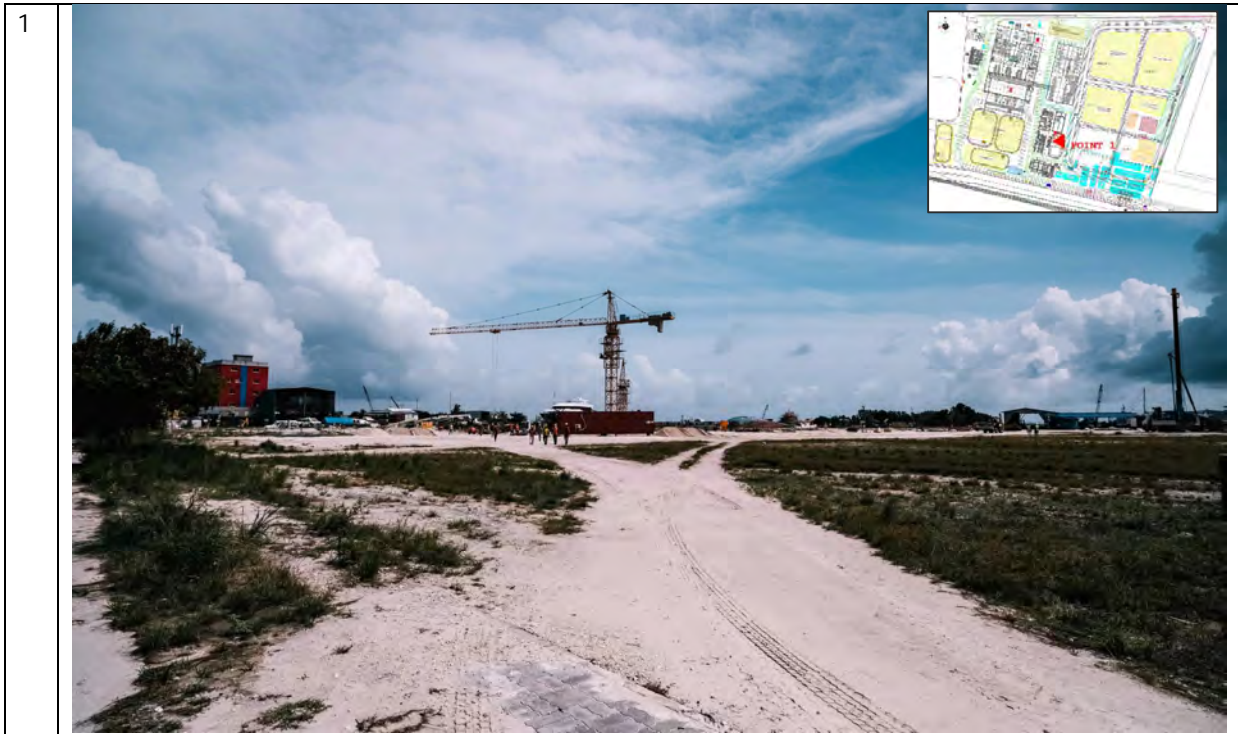
Attachment:

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 - WALL F, E, I & J COMPLETED (+0 LEVEL)

7



MAIN PROCESS AREA - CONCRETE CASTING FOR PILECAPS IN PROGRESS

8



BUNKER AREA - WALL D, I & G IN PROGRESS



9



BUNKER - BACKFILLING WORK BEHIND BUNKER WALL IN PROGRESS



10



BUNKER - LEACHATE AREA WALL IN PROGRESS

11



MAIN PROCESS AREA - LEAN CONCRETE PREPARATION

Site Log



Date: 19/05/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail

Time on site: 8:30 Time off site: 18:00 Completed by: Sofi Bin Ismail

Weather: Windy. Heavy rain from 13:00 - 18:00

Total	Civil	Process
86	86	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 Bunker Wall J in progress.
- 3) Bunker - Reinforcement bar and formwork installation for Leachate Area Wall in progress.
- 4) Bunker - Reinforcement bar and formwork installation for Bunker Wall F & E in progress.
- 5) Bunker - Reinforcement bar and formwork installation for Bunker Wall I (BW17 & 18) in progress.
- 6) Main Process Area - Reinforcement bar and formwork installation for pilecaps at SP-083, SP-116, SP-165, SP-195 & SP-219.

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 (60mm - Leachate area) beyond design tolerance (33mm). No further movement on Leachate Area upon reinstallation of anchor block.

Weather heavy wind. Checking the tower crane operation manual and calculation related to wind load requirement. Confirmed that no heavy lifting during heavy wind with 55km/h or higher.

When	Who	What
10:00	ER, DBO, AAJV	Weekly Briefing
		1) Brief planned work for this week, planned for wall casting at Wall D, F, I & Leachate Area.
		2) Highlight additive for concrete is not sufficient for concreting work this week. AAJV confirmed that order has been made and waiting for delivery.
		3) Highlight risk assessment for all activities related to expected heavy wind condition.

Comments

N/A

Site Log



Date: 20/05/2024 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	87	87	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 Bunker Wall J in progress.  
 3) Bunker - Reinforcement bar and formwork installation for Leachate Area Wall in progress.  
 4) Bunker - Concrete casting for Bunker Wall F & E (BW01 & BW30) completed.  
 5) Bunker - Reinforcement bar and formwork installation for Bunker Wall I (BW17 & 18) in progress.  
 6) Main Process Area - Concrete casting for pilecaps at SP-083, SP-116, SP-165, SP-195 & SP-219.

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 (60mm - Leachate area) beyond design tolerance (33mm). No further movement on Leachate Area upon reinstallation of anchor block.

Stop work prior to concrete casting due to improper working platform for workers. Call up civil and safety team and request for an improvement prior to allowing the concreting work.

Meetings	When	Who	What
	10:00	FIT, URB, AAJV	Highlight and emphasis on the working platform requirement. Give warning to AAJV civil team to ensure to obtain approval from safety team prior to any work. Remind the safety team to do the nessary job and assesement on work carried out at site.

Comments



Site Log



Date: 21/05/2024 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 Bunker Wall I & G (BW17, BW16, BW18 & BW 27) in progress.  
 3) Bunker - Reinforcement bar and formwork installation for Leachate Area Wall in progress.  
 4) Bunker - Concrete casting for Bunker Wall I & J (BW21, BW22 & BW23) completed.  
 5) Bunker - Reinforcement bar and formwork installation for Bunker Wall D (BW13 & BW14) in progress.

Safety Audits/Safety Walkarounds: Site walk to check all working platform installed on site. Several improvement required such as insufficient toe board, bracing and accessway. To rectify within today.

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 (60mm - Leachate area) beyond design tolerance (33mm). No further movement on Leachate Area upon reinstallation of anchor block.

Meetings	When	Who	What
	N/A		

Comments: N/A

Site Log



Date: 22/05/2024 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

*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 Bunker Wall I & G (BW17, BW16, BW18 & BW 27) in progress.  
 3) Bunker - Reinforcement bar and formwork installation for Leachate Area Wall in progress.  
 4) Bunker - Reinforcement bar and formwork installation for Bunker Wall D (BW13 & BW14) in progress.

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
4:00pm	FIT, URB, AAJV	Discussion on sheetpile removal work timeline.
		1) Backfilling between bunker wall and sheetpile to be completed.
		2) Potential breakage of sheetpile during removal work due to exposure to salty water.
		3) Load requirement to counter the uplifting force.

Comments

Site Log



Date: 23/05/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail  
 Thursday  
 Time on site:  Time off site:  Completed by:

Weather:

	Total	Civil	Process
Workers on Site	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="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 Bunker Wall I & G (BW17, BW16, BW18 & BW 27) in progress.  
 3) Bunker - Reinforcement bar and formwork installation for Leachate Area Wall in progress.  
 4) Bunker - Reinforcement bar and formwork installation for Bunker Wall D (BW13 & BW14) in progress.

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 (59mm - Leachate area) beyond design tolerance (33mm). No further movement on Leachate Area upon reinstallation of anchor block.  
 Unable to proceed concreting work due to concrete additive still not delivered to site.

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

Comments

Site Log



Date: 24/05/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail

Friday  
Time on site: [ ] Time off site: [ ] Completed by: Sofi Bin Ismail

Weather: Windy

	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: 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

Site Log



Date: 25/05/2024 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 Bunker Wall I & G (BW17, BW16, BW18 & BW 27) in progress.
- 3) Bunker - Reinforcement bar and formwork installation for Leachate Area Wall in progress.
- 4) Bunker - Reinforcement bar and formwork installation for Bunker Wall D (BW13 & BW14) in progress.
- 5) Bunker - Backfilling work behind Wall C in progress.
- 6) Bunker - Working platform and falsework for 2nd stage wall at Bunker Wall J.

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 (60mm - Leachate area) beyond design tolerance (33mm). No further movement on Leachate Area upon reinstallation of anchor block.

Meetings

When	Who	What
N/A		

Comments

N/A



**Site Inspection Report**

No.: SI-24-10

by the Employer's Representative

Dates / Time of the Visit	Conducted by [ER]	Signature
13 <sup>th</sup> June 2024 09:30 hrs – 16:30 Hrs	Nahee Nazim <i>Deputy Team Leader</i> 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.	-
4	Total amount of manpower 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) j) Clamp Engineering k) Ranik International(Injection work)	Total of 190 workers deployed by the DBO/EPC on site.  2 2 5 42 36 87 7 5 8 1 3	-
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. Batching plant is completed and is in use.	-
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. Bunker slab has been completed and bunker wall concrete works is ongoing.	-
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.	-

## 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. <sup>1</sup>	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 monitoring is ongoing. The data is collected, for ambient air and noise level.	-
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. Training drills are being conducted.	-
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.	-

<sup>1</sup>aspects 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.

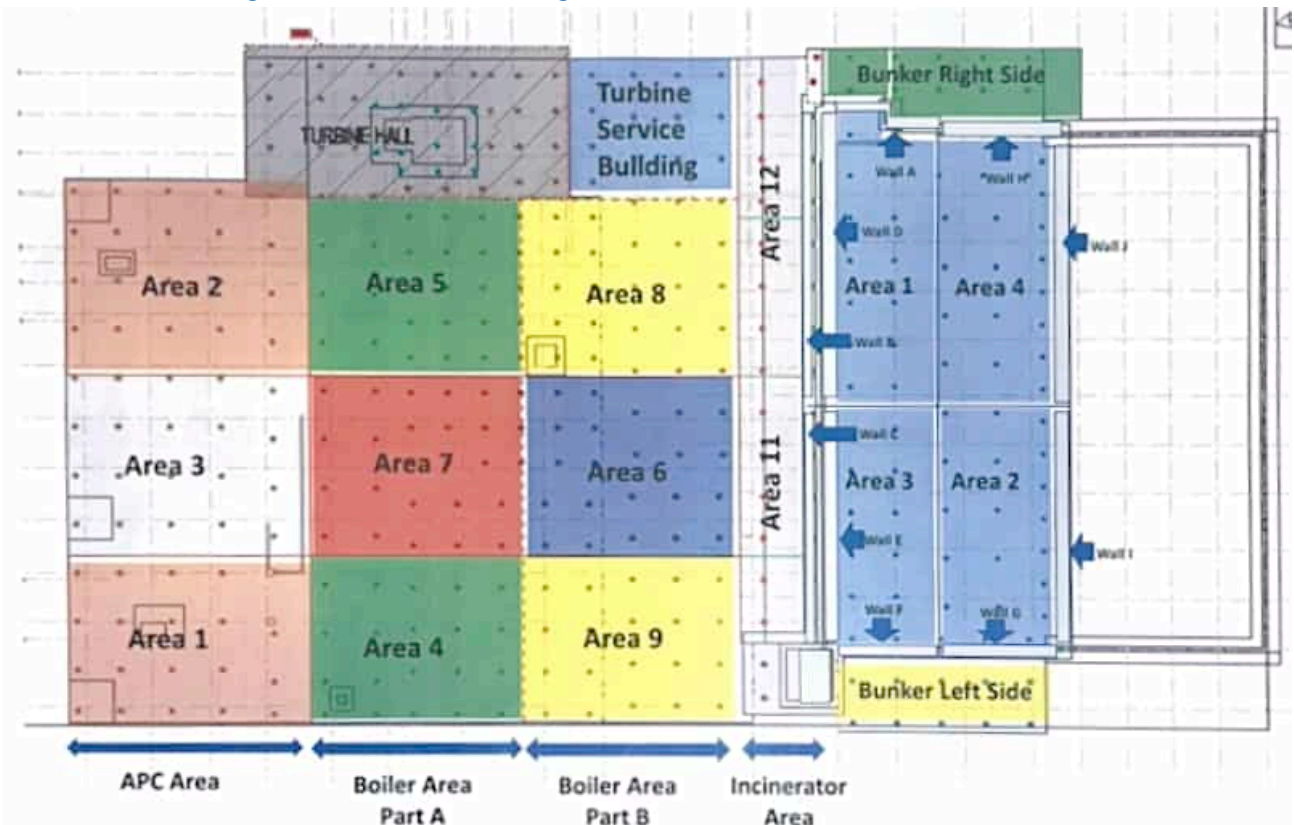
## Health and Safety Observation

Sn	Aspects	Details / Remarks	Reference
<b>Labour - health, safety and welfare</b>			
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. <sup>2</sup>	SOPS are in place for specific work activities and is an ongoing process. However following observations were made: <ul style="list-style-type: none"> <li>Impacts/risks to workers due to presence of dumping site have not been identified, OHS monitoring plan is being prepared by the DBO and has gone through review process with the ER and and revisions are being made.</li> <li>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.</li> <li>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.</li> </ul>	-
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. SOPs 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 have been completed and is in use. Designated smoking areas and shelters have been established. Wastewater 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. Notices and forms are in several languages. Effort to place a box at the ferry terminal is ongoing.	-

<sup>2</sup>e.g assessment of activity wise associated hazards, work permit, PPEs, first aid, toolbox 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.	-
<b>Community- health, safety and welfare</b>			
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.	-

Main Process Building & Bunker work area designations



Site Photos / Observations



**Photo 01** 13/06/24 – EPC HR office was checked for workers contracts and found to be in place.



**Photo 02** 13/06/24 – One of the wind socks needs repair.



**Photo 03** 13/06/24 – CNTY delivered the grate parts and are stored on the site laydown area and covered with several sheets of canvas to protect from the elements.



**Photo 04** 13/06/24 – The walkpath from the construction camp to the construction area is kept clean and free of tripping hazards.





**Photo 05** 13/06/24 – Vehicles at the parking area near the entrance gate, registration plates were not in place.



**Photo 06** 13/06/24 – Safety signage is placed around the site and maintained, and fire fighting stations also maintained.



**Photo 07** 13/06/24 – Several designated smoking areas established around the construction area and construction camp and kept clean and well maintained.





**Photo 08** 13/06/24 –Weather station is in working condition and real time information is recorded by the EPC HSE team 24/7.



**Photo 09** 13/06/24 – Scaffolding designer and inspector assigned and mock ups made before being installed and used, and safety measures in place for evacuation from the bunker area in case of emergency.



**Photo 10** 13/06/24 – Bunker construction is ongoing and bunker wall concrete works is progressing as expected.





**Photo 11** 13/06/24 – Continuous dewatering is ongoing and will continue until the bunker walls are completed and backfilling is completed around the walls.



**Photo 12** 13/06/24 – Main process building piles caps have been completed and backfilling and lean concrete works are progressin.



**Photo 13** 13/06/24 – Main process building piles caps have been completed and backfilling and lean concrete works are progressin.



**Photo 14** 13/06/24 – Dustbins are placed around the site and continuous effort is made to keep the site clean.



**Photo 15** 13/06/24 – Bar bending works are ongoing.



**Photo 16** 13/06/24 – Reinforcement for the bunker walls and part of the main process building foundation has been delivered to site.



**Photo 17** 13/06/24 – Backfilling material for the main process building area has been delivered to site.



**Photo 18** 13/06/24 – The pile driving machine from ELS is still parked on site, together with the concrete blocks.





**Photo 19** 13/06/24 – Several heavy vehicles are being used in the site.



**Photo 20** 13/06/24 – Main process building area showing part of the lean concrete completed over the backfilled material.



**Photo 21** 13/06/24 – Several heavy vehicles are being used in the site.



**Photo 22** 13/06/24 – Construction site office established near the construction area.





**Photo 23** 13/06/24 – Concrete pump used by EPC for the concreting works at the bunker area.



**Photo 24** 13/06/24 – EPC has a car with a designated driver on site for workers transportation within Thilafushi.

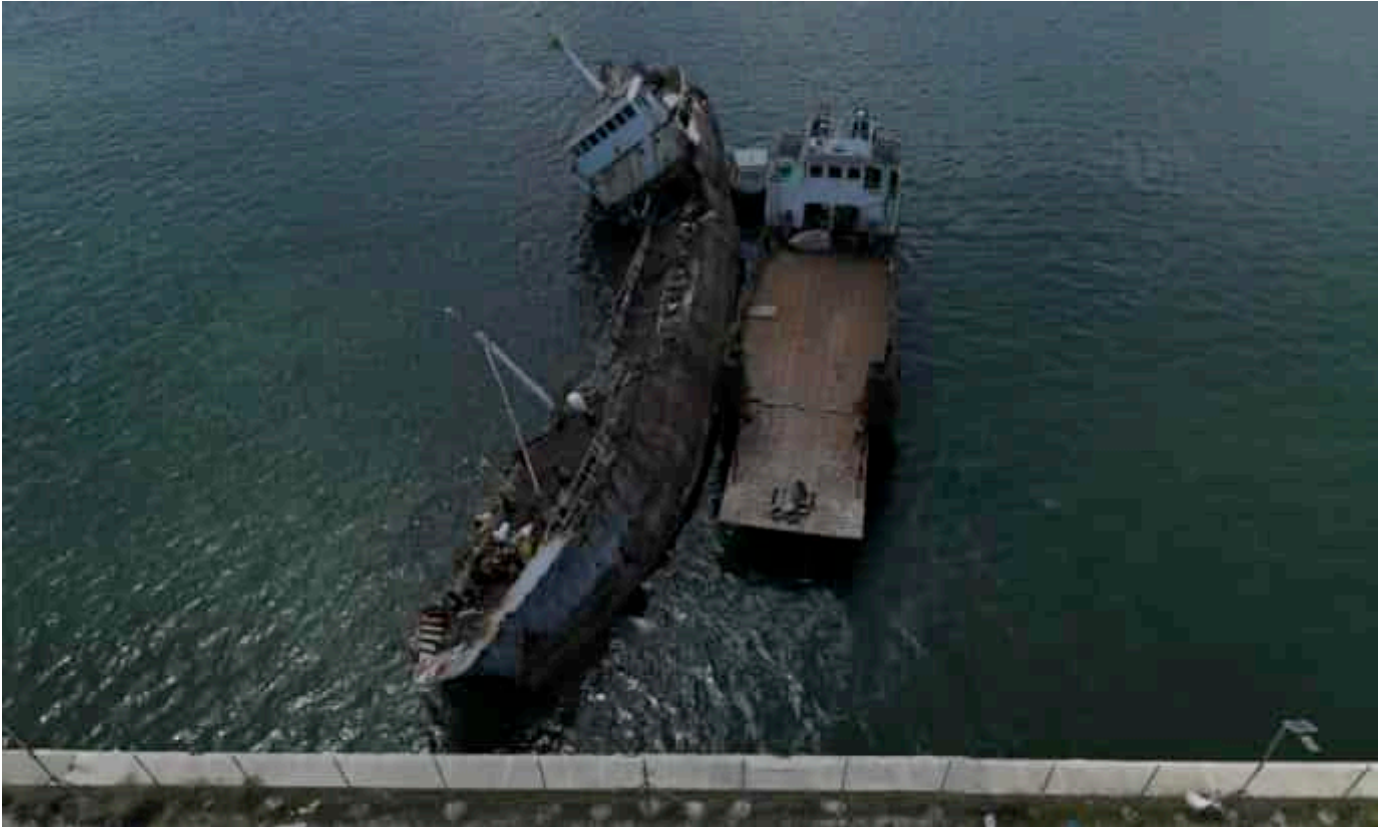


**Photo 25** 13/06/24 – CNTY delivered the grate parts and are stored on the site laydown area and covered with several sheets of canvas to protect from the elements.



**Photo 26** 13/06/24 – Backfilling material for the main process building area has been delivered to site.





**Photo 27** 13/06/24 – Shipwrecks still remain in place next to the site boundary quay wall and hinders the unloading work for the EPC.



**Photo 28** 13/06/24 – Shipwrecks still remain in place next to the site boundary quay wall and hinders the unloading work for the EPC.



**Photo 29** 13/06/24 – Waste concrete and waste from piling works are stored on the laydown area.



**Photo 30** 13/06/24 – Storage tents used for concrete admixture chemical storage. Requires measures to be in place for accidental spillage and no spill kits placed.



**Photo 31** 13/06/24 – Several heavy vehicles are being used on site, and the fuel tanker registration is ongoing and is not in place yet.



**Photo 32** 13/06/24 – Parts of the tower crane and the grate is stored on the laydown area.





**Photo 33** 13/06/24 – Scaffolding material being stored close to the storage tent.



**Photo 34** 13/06/24 – Waste collection and segregation area, and is handed over to WAMCO on a regular basis and logs are maintained.



**Photo 35** 13/06/24 – WAMCO landfill adjacent to the site is in use and the risk of falling objects is still there specially in this corner of the landfill.





**Photo 36** 13/06/24 – Construction camp is kept clean and well maintained.



**Photo 37** 13/06/24 – Main entrance to the site has guard posts and is manned by security personal at all times..



**Photo 38** 13/06/24 – Material storage area at the concrete batching plant area for aggregates and admixtures.



**Photo 39** 13/06/24 – Concrete batching plant is in operation and operated by third party Villa Pvt. Ltd.



**Photo 40** 13/06/24 – Genset shed for the batching plant diesel generator and works in progress to install the desalination plant for the batching plant.



**Photo 41** 13/06/24 – Concrete truck wash area and waste water evaporation tank used by the batching plant.





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
2.6.2024	8.6.2024	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 casting work for Bunker wall 1<sup>st</sup> layer have been completed 100%.
- Bunker - Concrete casting work for Bunker Wall 2<sup>nd</sup> layer at 60% completion.
- Bunker - Concrete casting work for Bunker Wall 3<sup>rd</sup> layer at 10% completion.
- Main Process Area - No activities.

Attachment:

Site Daily Logs

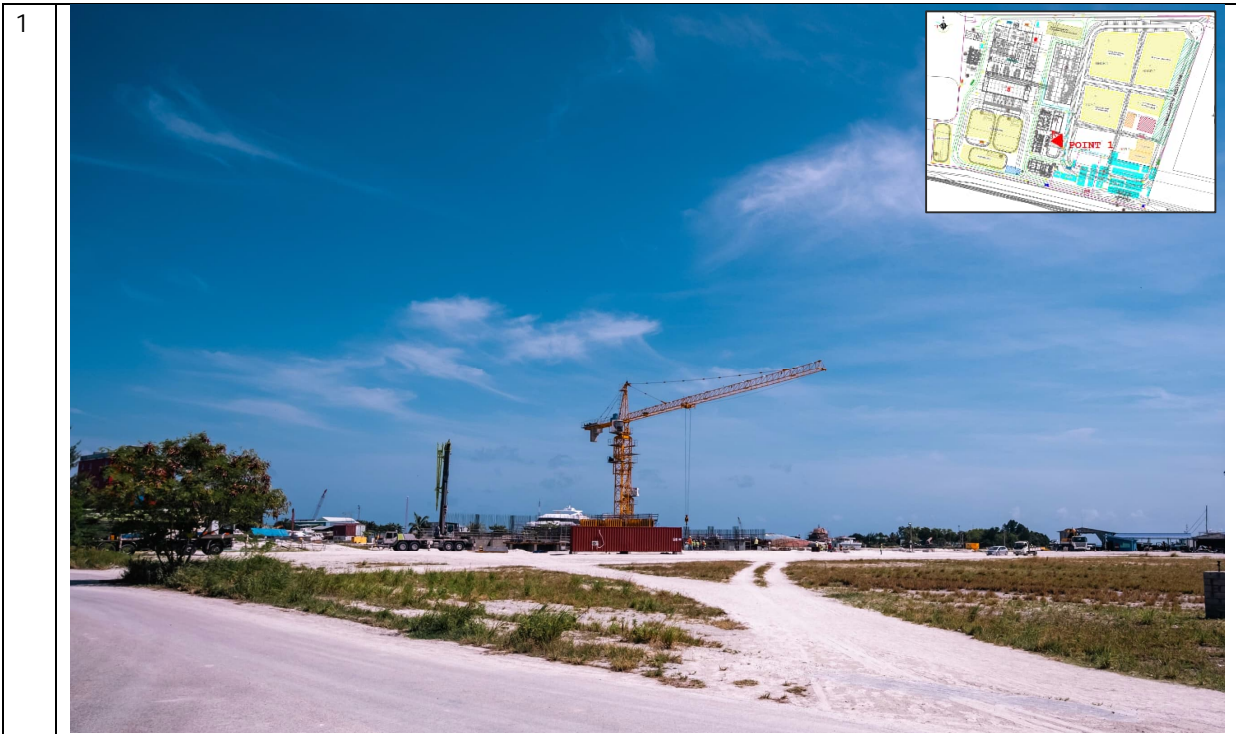
## Site Photos

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



OVERALL - POINT ONE



OVERALL - POINT TWO



OVERALL - POINT THREE



OVERALL - POINT FOUR









9



OVERALL VIEW FROM EAST SIDE

Site Log

# FICHTNER

Date: 02/06/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail

Sunday

Time on site: 8:30 Time off site: 18:00 Completed by: Sofi Bin Ismail

Weather: Sunny

	Total	Civil	Process	
Workers on Site	85	85	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 Bunker Wall F & G (2nd layer) (BW27, BW28 & BW29) in progress.
- 3) Bunker - Reinforcement bar and formwork installation for Bunker Wall I (2nd layer) (BW16, BW17, BW18 & BW19) in progress.
- 4) Bunker - Scaffolding & working platform installation for Bunker Wall D (2nd layer) (BW11, BW12, BW13 & BW14) in progress.
- 5) Bunker - Remedial work for concrete delamination at Wall J with approved material (S488). Sample cubes taken.
- 6) Material Delivery - Sand 25.839 + 26.375 + 9.109 tonne.
- 7) Material Delivery - Aggregate 17.504 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 (61mm - Leachate area) beyond design tolerance (33mm). No further movement on Leachate Area upon reinstallation of anchor block.

Meetings	When	Who	What
	10:30	ER, DBO, AAJV	Weekly Briefing
			1) Brief planned work for this week, planned to start the bunker second lift wall.
			2) Discuss on sequence and requirement for backfilling and crack remedial work.
			3) Highlight the needs for competent scaffolder on site. EPC to conduct training by 3rd party.
			4) Material requirement, PO issued for material required up to September 2024.

Comments N/A



Site Log

# FICHTNER

Date      03/06/2024      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	85	85	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 for Bunker Wall at Bunker Wall F & G (2nd layer) (BW27, BW28 & BW29) completed.  
 3) Bunker - Reinforcement bar and formwork installation for Bunker Wall I (2nd layer) (BW16 & BW17) in progress.  
 4) Bunker - Scaffolding & working platform installation for Bunker Wall D (2nd layer) (BW11, BW12, BW13 & BW14) in progress.  
 5) Bunker - Concrete casting for Bunker Wall at Bunker Wall I (2nd layer) (BW18, BW19 & BW20) completed.

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 (60mm - Leachate area) beyond design tolerance (33mm). No further movement on Leachate Area upon reinstallation of anchor block.

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

Comments

Site Log

# FICHTNER

Date 04/06/2024 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 Bunker Wall I (2nd layer) (BW16 & BW17) in progress.  
 3) Bunker - Reinforcement bar and formwork installation for Bunker Wall D (2nd layer) (BW11, BW12, BW13 & BW14) in progress.

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 (60mm - Leachate area) beyond design tolerance (33mm). No further movement on Leachate Area upon reinstallation of anchor block.

Meetings	When	Who	What
	N/A		

Comments

Site Log

# FICHTNER

Date      05/06/2024      Site:      Greater Male WTE      Site Representative:      Sofi bin Ismail

Wednesday

Time on site:      8:30      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 - Concrete casting for Bunker Wall at Bunker Wall I (2nd layer) (BW16 & BW17) completed.  
 3) Bunker - Reinforcement bar and formwork installation for Bunker Wall D (2nd layer) (BW11 & BW12) in progress.  
 4) Bunker - Concrete casting for Bunker Wall at Bunker Wall D (2nd layer) (BW13 & BW14) completed.  
 5) Material Delivery - Aggregate 25.718 + 26.518 + 25.986 + 21.755 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 (59mm - Leachate area) beyond design tolerance (33mm). No further movement on Leachate Area upon reinstallation of anchor block.

	When	Who	What
Meetings	N/A		

Comments N/A

Site Log

# FICHTNER

Date: 06/06/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail

Thursday

Time on site: 8:30 Time off site: 18:00 Completed by: Sofi Bin Ismail

Weather: Sunny

Total	Civil	Process
0	0	0

Workers on Site

0	0	0
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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

1) Dewatering of bunker area continue.  
2) Bunker - Concrete casting for Bunker Wall at Bunker Wall E (2nd layer) (BW8) completed.  
3) Bunker - Reinforcement bar and formwork installation for Bunker Wall D (2nd layer) (BW10, BW11 & BW12) in progress.  
4) Bunker - Reinforcement bar and formwork installation for Bunker Wall E (2nd layer) (BW6) in progress.  
5) Bunker - Reinforcement bar and formwork installation for Bunker Wall F & Wall G (2nd layer) (BW27, BW28 & BW29) in progress.

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 (60mm - Leachate area) beyond design tolerance (33mm). No further movement on Leachate Area upon reinstallation of anchor block.

Meetings

When	Who	What
N/A		

Comments

N/A

Site Log

# FICHTNER

Date 07/06/2024 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

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"/>

Comments

Site Log

# FICHTNER

Date: 08/06/2024 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 Bunker Wall J (3rd layer) (BW23 & BW24) in progress.  
3) Bunker - Concrete casting for Bunker Wall at Bunker Wall D (2nd layer) (BW10, BW11 & BW12) completed.  
4) Bunker - Reinforcement bar and formwork installation for Bunker Wall E (2nd layer) (BW6) in progress.  
5) Bunker - Concrete casting for Bunker Wall at Bunker Wall F & Wall G (2nd layer) (BW27, BW28 & BW29) completed.

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 (60mm - Leachate area) beyond design tolerance (33mm). No further movement on Leachate Area upon reinstallation of anchor block.

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
9.6.2024	15.6.2024	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 casting work for Bunker wall 1<sup>st</sup> layer have been completed 100%.
- Bunker - Concrete casting work for Bunker Wall 2<sup>nd</sup> layer at 80% completion.
- Bunker - Concrete casting work for Bunker Wall 3<sup>rd</sup> layer at 40% completion.
- Main Process Area - No activities.

Attachment:

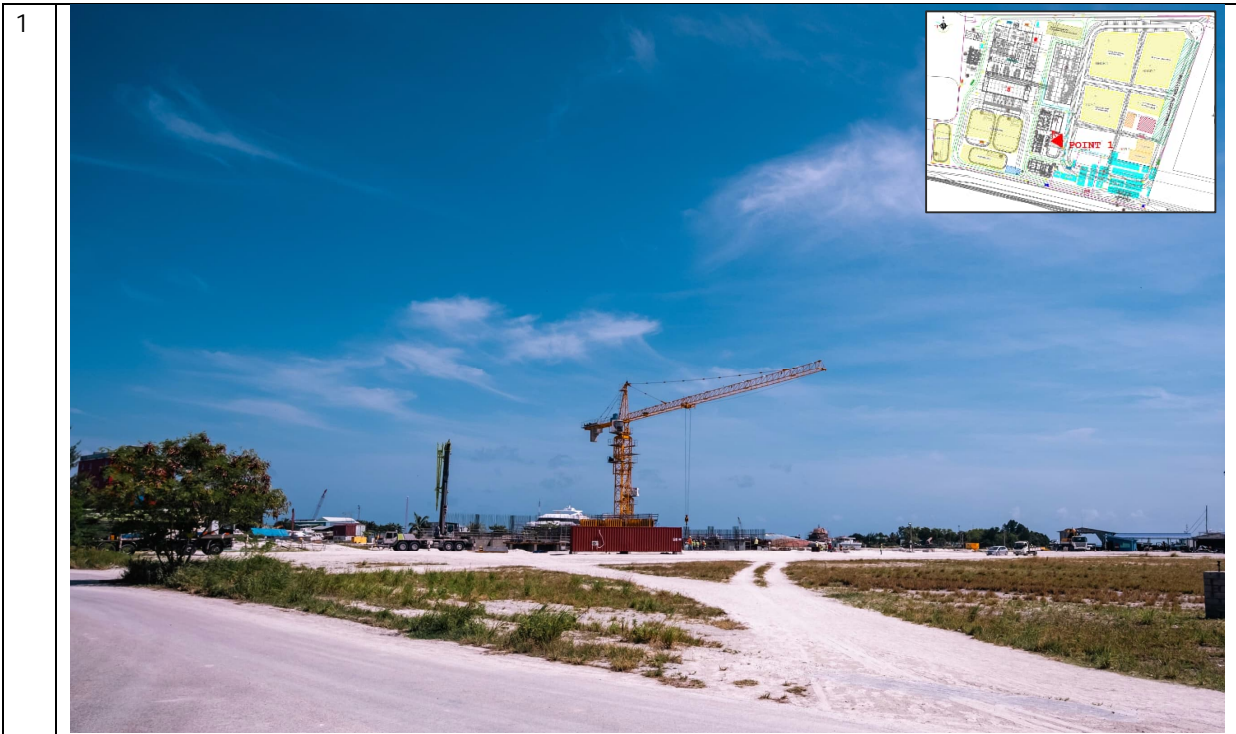
Site Daily Logs

## 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



OVERALL - POINT ONE



OVERALL - POINT TWO





OVERALL - POINT THREE



OVERALL - POINT FOUR





OVERALL - POINT FIVE



BUNKER AREA - OVERALL BUNKER WALL 2<sup>ND</sup> LAYER COMPLETED 80%



7



MAIN PROCESS AREA - LEAN CONCRETE AREA 3 COMPLETED

8



BUNKER AREA - OVERALL BUNKER 1<sup>ST</sup> LAYER COMPLETED 100%



9



OVERALL VIEW FROM EAST SIDE

10



TRAINING AND EMERGENCY DRILL FOR CASES AT BUNKER.

Site Log

# FICHTNER

Date: 09/06/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail

Sunday

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
87	87	0	

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 Bunker Wall J (3rd layer) (BW22, BW23 & BW24) in progress.
- 3) Bunker - Reinforcement bar and formwork installation for Bunker Wall E (2nd layer) (BW6) in progress.
- 4) Bunker - Structural backfilling work behind Bunker Wall J (BW22) in progress.
- 5) Bunker - Structural backfilling work behind Bunker Wall D (BW13) in progress.
- 6) Material delivery - Sand 25.991 + 26.005 + 23.143 + 26.058 tonne.
- 7) Material delivery - Cement 18.030 + 16.095 + 15.875 tonne.

Safety  
Audits/Safety  
Walkarounds

Safety and  
Environmental  
Incidents

Compliance to  
Design and  
construction  
methods,  
approved  
materials

Major Quality  
Issues

Site Instructions  
Issued

Verbal  
communication

Received sheet pile monitoring data, maximum deflection data (59mm - Leachate area) beyond design tolerance (33mm). No further movement on Leachate Area upon reinstallation of anchor block.

Meetings

When	Who	What
10:30	ER, DBO, AAJV	Weekly Briefing
		1) Brief planned work for this week, planned to start the bunker third layer wall.
		2) Discuss on sequence and requirement for backfilling and crack remedial work.
		3) EPC highlighted that scaffolder's training have been arranged to be conducted on 11/6/24.
		4) Material requirement, PO issued for material required up to September 2024.

Comments

# FICHTNER

Site Log

Date      10/06/2024      Site:      Greater Male WTE      Site Representative:      Sofi bin Ismail  
 Monday  
 Time on site:      8:30      Time off site:      18:00      Completed by:      Sofi Bin Ismail

Weather:      Cloudy

	Total	Civil	Process	
Workers on Site	87	87	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 Bunker Wall J (3rd layer) (BW22 & BW23) in progress.
- 3) Bunker - Concrete casting for Bunker Wall J (3rd layer) (BW24) completed.
- 4) Bunker - Concrete casting for Bunker Wall E (2nd layer) (BW6) completed.
- 5) Bunker - Structural backfilling work behind Bunker Wall J (BW22) in progress.
- 6) Bunker - Structural backfilling work behind Bunker Wall D (BW13) in progress.
- 7) Bunker - Scaffolding and working platform installation for Wall D (3rd layer) (BW13) in progress.
- 8) Bunker - Scaffolding and working platform installation for Wall F (3rd layer) (BWBW27 & BW28) in progress.
- 9) Bunker - Scaffolding and working platform installation for Wall G (3rd layer) (BWBW29) in progress.
- 10) Material delivery - Aggregate 24.232 + 25.745 + 23.027 + 22.945 tonne.

Safety Audits/Safety Walkarounds

DBO & EPC conducted emergency drill at Bunker area to review the fitness of emergency respond plan for bunker. Few improvement required:

- 1) Advice the EPC to have proper medical kit on site.
- 2) To ensure to have competen first aider, the first aider need to be able to decide if the victim is safe to be moved in bunker or should wait for the medical officer.

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 (59mm - Leachate area) beyond design tolerance (33mm). No further movement on Leachate Area upon reinstallation of anchor block.

	When	Who	What
Meetings	N/A		

Comments

N/A

# FICHTNER

Site Log

Date      11/06/2024      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 Bunker Wall J (3rd layer) (BW22 & BW23) in progress.
- 3) Bunker - Structural backfilling work behind Bunker Wall J (BW22) in progress.
- 4) Bunker - Structural backfilling work behind Bunker Wall D (BW13) in progress.
- 5) Bunker - Reinforcement bar and formwork installation for Wall D (3rd layer) (BW13) in progress.
- 6) Bunker - Scaffolding and working platform installation for Wall F (3rd layer) (BWBW27 & BW28) in progress.
- 7) Bunker - Scaffolding and working platform installation for Wall G (3rd layer) (BWBW29) in progress.
- 8) APC Area - Lean concrete work for APC Area 3 completed.
- 9) Material delivery - Aggregate 24.419 + 25.001 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	2:00pm	FIT, URB, AAJV, RAN	Briefing by third party specialist for remedial work of non-structural crack at Bunker wall.
			1) Introduction of material(s) to be used.
			2) Sequence of work.
			3) DT Test (cored sample) required upon completion of work. Cube samples for compressive strength test also required for each type of material.

Comments

Site Log

# FICHTNER

Date      12/06/2024      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 - Concrete casting for Bunker Wall J (3rd layer) (BW22 & BW23) completed.  
 3) Bunker - Structural backfilling work behind Bunker Wall J (BW22) in progress.  
 4) Bunker - Structural backfilling work behind Bunker Wall D (BW13) in progress.  
 5) Bunker - Reinforcement bar and formwork installation for Wall D (3rd layer) (BW13) in progress.  
 6) Bunker - Remedial work for bunker wall non-structural crack started. Preparation work by third party specialist Ranik International Pvt Ltd.  
 7) APC Area - Lean concrete work for APC Area 2 completed.  
 8) Boiler Area - Lean concrete for Elevator Pit completed.  
 9) Material delivery - Aggregate 23.696 tonne.  
 10) Material delivery - Sand 27.808 tonne.

Safety Audits/Safety Walkarounds

Third party inspection for fire extinguisher by Global Fire Service.

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 (59mm - Leachate area) beyond design tolerance (33mm). No further movement on Leachate Area upon reinstallation of anchor block.

	When	Who	What
Meetings	N/A		

Comments

N/A



Site Log

# FICHTNER

Date: 13/06/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail  
 Thursday  
 Time on site: 8:30 Time off site: 18:00 Completed by: Sofi Bin Ismail

Weather: Cloudy

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

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 Wall D (3rd layer) (BW13) in progress.  
 3) Bunker - Remedial work for bunker wall non-structural crack at external Wall H & Wall A in progress.

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 (59mm - Leachate area) beyond design tolerance (33mm). No further movement on Leachate Area upon reinstallation of anchor block.

Meetings

When	Who	What
N/A		

Comments

N/A

Site Log

# FICHTNER

Date: 14/06/2024 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

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"/>

Comments

Site Log

# FICHTNER

Date: 15/06/2024 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 - Remedial work for bunker wall non-structural crack at external Wall A, Wall F, Wall G, Wall D & Wall E in progress.

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 (60mm - Leachate area) beyond design tolerance (33mm). No further movement on Leachate Area upon reinstallation of anchor block.

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
16.6.2024	22.6.2024	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 casting work for Bunker wall 1<sup>st</sup> layer have been completed 100%.
- Bunker - Concrete casting work for Bunker Wall 2<sup>nd</sup> layer at 80% completion.
- Bunker - Concrete casting work for Bunker Wall 3<sup>rd</sup> layer at 70% completion.
- Main Process Area - Lean concrete Area 7 & Area 4 completed.
- Boiler Area - Lift shaft raft foundation completed.

Attachment:

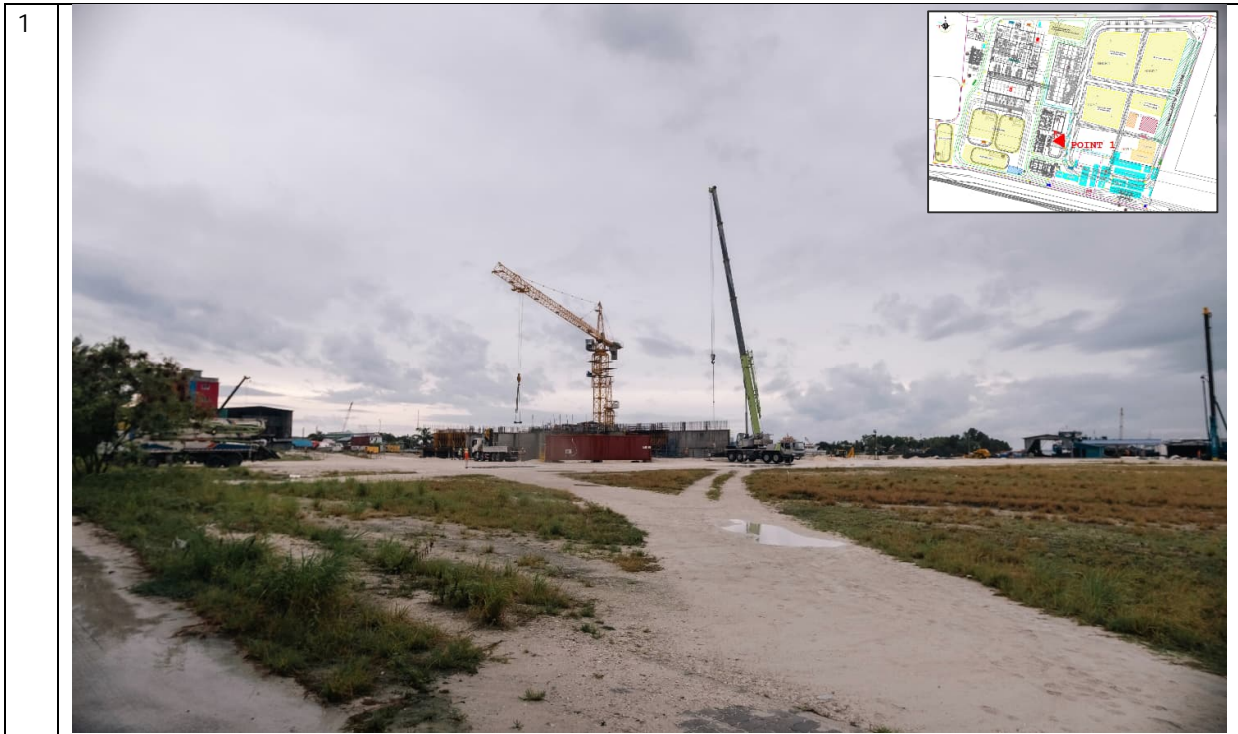
Site Daily Logs

## 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 - OVERALL BUNKER WALL 3<sup>rd</sup> LAYER COMPLETED 70%



7



MAIN PROCESS AREA - STRUCTURAL BACKFILLING IN PROGRESS

8



BUNKER AREA - CRACK REMEDIAL WORK IN PROGRESS

9



OVERALL VIEW FROM EAST SIDE

10



WORKING PLATFORM AND SCAFFOLDING WAS ERECTED BY COMPETENT SCAFFOLDERS



11



STRUCTURAL BACKFILLING BEHIND BUNKER WALL IN PROGRESS



Site Log

# FICHTNER

Date: 16/06/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail

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 - Remedial work for bunker wall non-structural crack at external Wall A, Wall F, Wall G, Wall D, Wall J & Wall E in progress.

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

Site Log

# FICHTNER

Date: 17/06/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail

Monday  
Time on site: [ ] Time off site: [ ] Completed by: Sofi Bin Ismail

Weather: Cloudy

	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 - Remedial work for bunker wall non-structural crack at external Wall A, Wall F, Wall G, Wall D, Wall J & Wall E in progress.
- 3) Material delivery - Sand 26.081 + 25.142 + 24.904 tonne.
- 4) Material delivery - Aggregate 25.503 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

Meetings	When	Who	What
	N/A		

Comments N/A

Site Log

# FICHTNER

Date: 18/06/2024 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 - Remedial work for bunker wall non-structural crack at external Wall A, Wall F, Wall G, Wall D, Wall J & Wall E in progress.
- 3) Bunker - Concrete casting for Bunker Wall D (3rd layer) (BW14 & BW13) was completed.
- 4) Bunker - Formwork and reinforcement bar installation work for Bunker Wall I (3rd layer) (BW17, BW19 & BW20) in progress.
- 5) Material delivery - Sand 20.309 + 24.690 + 25.093 + 25.223 + 25.032 tonne.
- 6) Material delivery - Aggregate 24.016 + 25.074 tonne.

Safety Audits/Safety Walkarounds

Noise monitoring was conducted in 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, maximum deflection data (60mm - Leachate area) beyond design tolerance (33mm). No further movement on Leachate Area upon reinstallation of anchor block.

	When	Who	What
Meetings	N/A		

Comments

N/A

Site Log

# FICHTNER

Date      19/06/2024      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 - Remedial work for bunker wall non-structural crack at external Wall A, Wall F, Wall G, Wall D, Wall J & Wall E in progress.  
 3) Bunker - Concrete casting for Bunker Wall D (3rd layer) (BW14 & BW13) was completed.  
 4) Bunker - Formwork and reinforcement bar installation work for Bunker Wall I (3rd layer) (BW17) in progress.  
 5) Bunker - Concrete casting for Bunker Wall I (3rd layer) (BW19 & BW20) was completed  
 6) Boiler Area - Formwork and reinforcement bar installation work at Area 7 in progress.  
 7) Material delivery - Aggregate 25.163 + 24.476 + 25.417 tonne.

Safety Audits/Safety Walkarounds

Spill response and control training was conducted at batching plant.

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 (61mm - Leachate area) beyond design tolerance (33mm). No further movement on Leachate Area upon reinstallation of anchor block.

	When	Who	What
Meetings	N/A		

Comments

N/A

Site Log

# FICHTNER

Date: 20/06/2024 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	<i>Note : Enter this information when it is available, at least once per week as a minimum</i>

Workers on Site

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

- 1) Dewatering of bunker area continue.
- 2) Bunker - Remedial work for bunker wall non-structural crack at external Wall A, Wall F, Wall G, Wall D, Wall J & Wall E in progress.
- 3) Bunker - Formwork and reinforcement bar installation work for Bunker Wall D (3rd layer) (BW11) in progress.
- 4) Bunker - Formwork and reinforcement bar installation work for Bunker Wall I (3rd layer) (BW17) in progress.
- 5) Bunker - Formwork and reinforcement bar installation work for Bunker Wall E (3rd layer) (BW8 & BW9) in progress.
- 6) Boiler Area - Concrete casting for elevator raft foundation at Area 7 completed.
- 7) Material delivery - Sand 21.171 tonne.
- 4) Material delivery - Aggregate 22.940 + 25.438 + 25.334 + 24.032 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

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

Comments



Site Log

# FICHTNER

Date: 21/06/2024 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

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"/>

Comments

Site Log

# FICHTNER

Date: 22/06/2024 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 - Remedial work for bunker wall non-structural crack at external Wall A, Wall F, Wall G, Wall D, Wall J & Wall E in progress.
- 3) Bunker - Formwork and reinforcement bar installation work for Bunker Wall D (3rd layer) (BW11) in progress.
- 4) Bunker - Formwork and reinforcement bar installation work for Bunker Wall I (3rd layer) (BW17) in progress.
- 5) Bunker - Formwork and reinforcement bar installation work for Bunker Wall E (3rd layer) (BW8 & BW9) in progress.
- 6) Boiler Area - Backfilling work prior to lean concrete work at Area 4 in progress.
- 7) Material delivery - Sand 25.793 + 25.754 + 24.541 + 26.614 tonne.
- 8) Material delivery - Aggregate 24.360 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 (60mm - Leachate area) beyond design tolerance (33mm). No further movement on Leachate Area upon reinstallation of anchor block.

Meetings

When	Who	What
<input type="text" value="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
23.6.2024	29.6.2024	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 casting work for Bunker wall 1<sup>st</sup> layer have been completed 100%.
- Bunker - Concrete casting work for Bunker Wall 2<sup>nd</sup> layer at 85% completion.
- Bunker - Concrete casting work for Bunker Wall 3<sup>rd</sup> layer at 85% completion.
- Bunker - Concrete casting work for Bunker Wall 4<sup>th</sup> layer at 15% completion.
- Main Process Area - Lean concrete 100%.
- Boiler Area - Backfilling 100%.
- Incinerator Area - No activity.
- Turbine Area - No activity.

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





7



BOILER AREA - BACKFILLING 100% COMPLETED.

8



APC AREA - LEAN CONCRETE 100% COMPLETED.

9



OVERALL VIEW FROM EAST SIDE

10



BUNKER - VIEW FROM INSIDE (EAST)



11



STRUCTURAL BACKFILLING BEHIND BUNKER WALL IN PROGRESS



Site Log

# FICHTNER

Date: 23/06/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail  
 Sunday  
 Time on site: 8:30 Time off site: 18:00 Completed by: Sofi Bin Ismail

Weather: Cloudy. Heavy rain from 18:00 to 20:00.

	Total	Civil	Process	
Workers on Site	85	85	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 for Bunker Wall D (3rd layer) (BW11) completed.
- 3) Bunker - Concrete casting for Bunker Wall I (3rd layer) (BW17) completed.
- 4) Bunker - Formwork and reinforcement bar installation work for Bunker Wall E (3rd layer) (BW8 & BW9) in progress
- 5) Bunker - Formwork and reinforcement bar installation work for Bunker Wall F (3rd layer) (BW29) in progress.
- 6) Bunker - Working platform installation for Bunker Wall J (4th layer) (BW24 & BW25) in progress.
- 7) Boiler Area - Backfilling work prior to lean concrete work at Area 4 in progress.
- 8) Material delivery - Aggregate 24.991 + 25.163 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 (60mm - Leachate area) beyond design tolerance (33mm). No further movement on Leachate Area upon reinstallation of anchor block.

Meetings	When	Who	What
	10:00am	FIT, URB, AAJV	Weekly Briefing
			1) Brief planned work for this week, plan to continue up to 4th layer bunker wall.
			2) Brief status of crack remedial work. Pending cube test result.
			3) Brief planned work for APC, Boiler, Incinerator and Turbine area.
			4) Material requirement available until September 2024.

Comments N/A

Site Log

# FICHTNER

Date      24/06/2024      Site:      Greater Male WTE      Site Representative:      Sofi bin Ismail

Monday

Time on site:      8:30      Time off site:      18:00      Completed by:      Sofi Bin Ismail

Weather:      Cloudy. Rain from 6:00 to 9:00. Heavy rain from 12:00 to 15:00.

	Total	Civil	Process	
Workers on Site	85	85	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 for Bunker Wall F (3rd layer) (BW29) completed.  
 3) Bunker - Formwork and reinforcement bar installation work for Bunker Wall E (3rd layer) (BW8 & BW9) in progress.  
 4) Bunker - Formwork and reinforcement bar installation work for Bunker Wall E (3rd layer) (BW6) in progress.  
 5) Bunker - Formwork and reinforcement bar installation work for Bunker Wall J (4th layer) (BW24 & BW25) in progress.  
 6) Boiler Area - Backfilling work prior to lean concrete work at Area 4, 5 & 7 in progress.  
 8) Material delivery - Sand 24.220 tonne.  
 9) Material delivery - Aggregate 24.897 tonne.

Safety Audits/Safety Walkarounds      Audit the certificate of competency for scaffolders and inspector. Highlight area of improvement for toe board placement.

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 (60mm - Leachate area) beyond design tolerance (33mm). No further movement on Leachate Area upon reinstallation of anchor block.

	When	Who	What
Meetings	N/A		

Comments      N/A

Site Log

# FICHTNER

Date      25/06/2024      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 - Concrete casting for Bunker Wall E (3rd layer) (BW8 & BW9) completed.  
 3) Bunker - Formwork and reinforcement bar installation work for Bunker Wall G (3rd layer) (BW27) in progress.  
 4) Bunker - Formwork and reinforcement bar installation work for Bunker Wall E (3rd layer) (BW6) in progress.  
 5) Bunker - Formwork and reinforcement bar installation work for Bunker Wall J (4th layer) (BW24 & BW25) in progress.  
 6) Bunker - Waterproofing mem  
  
 6) Boiler Area - Backfilling work prior to lean concrete work at Area 4, 5 & 7 in progress.  
  
 8) Material delivery - Sand 25.105 + 23.247 + 23.491 + 26.472 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

Site Log

# FICHTNER

Date      26/06/2024      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 - Concrete casting for Bunker Wall E (3rd layer) (BW8 & BW9) completed.  
 3) Bunker - Formwork and reinforcement bar installation work for Bunker Wall G (3rd layer) (BW27) in progress.  
 4) Bunker - Formwork and reinforcement bar installation work for Bunker Wall E (3rd layer) (BW6) in progress.  
 5) Bunker - Formwork and reinforcement bar installation work for Bunker Wall J (4th layer) (BW24 & BW25) in progress.  
 6) Bunker - Waterproofing membrane installation for external bunker wall at Bunker Wall A, H, B & C in progress.  
 7) Boiler Area - Backfilling work prior to lean concrete work at Area 4, 5 & 7 in progress.  
 8) Material delivery - Aggregate 24.930 + 24.138 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

Site Log

# FICHTNER

Date: 27/06/2024 Site: Greater Male WTE Site Representative: Sofi bin Ismail  
 Thursday  
 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 - Concrete casting for Bunker Wall E (3rd layer) (BW6) completed.
- 3) Bunker - Concrete casting for Bunker Wall G (3rd layer) (BW27) completed.
- 4) Bunker - Formwork and reinforcement bar installation work for Bunker Wall J (4th layer) (BW24 & BW25) in progress.
- 5) Bunker - Waterproofing membrane installation for external bunker wall at Bunker Wall A, H, B & C in progress.
- 6) Boiler Area - Backfilling work prior to lean concrete work at Area 4, 5 & 7 in progress.

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



Site Log

# FICHTNER

Date 28/06/2024 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

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"/>

Comments

Site Log

# FICHTNER

Date: 29/06/2024 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	<i>Note : Enter this information when it is available, at least once per week as a minimum</i>
---	---	---	--

Workers on Site

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

- 1) Dewatering of bunker area continue.
- 2) Bunker - Formwork and reinforcement bar installation work for Bunker Wall J (4th layer) (BW24 & BW25) in progress.
- 3) Bunker - Structural backfilling for external bunker wall at Bunker Wall A, H, B & C in progress.
- 4) Boiler Area - Backfilling work prior to lean concrete work at Area 4, 5 & 7 in progress.

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 (60mm - Leachate area) beyond design tolerance (33mm). No further movement on Leachate Area upon reinstallation of anchor block.

When	Who	What
N/A		

Comments

# Environmental Monitoring Report

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10<sup>th</sup> Quarterly Report (April-June 2024)  
July 2024

## Maldives: Greater Male Waste-to-Energy Project

### PART C : 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 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**

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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

**Duration:** 17.04.2024-28.04.2024



## 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 PM<sub>10</sub>, PM<sub>2.5</sub>, TSP, SO<sub>2</sub>, and NO<sub>2</sub> 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 <sub>2</sub>	Sensitivity	nA/ppm at 2ppm SO <sub>2</sub>	275 to 520
	Range	ppm limit of performance warranty	100
	Linearity	error at 100ppm SO <sub>2</sub> , linear at zero and 10ppm SO <sub>2</sub>	0 to -2
NO <sub>2</sub>	Sensitivity	nA/ppm at 2ppm NO <sub>2</sub>	-200 to -650
	Range	ppm NO <sub>2</sub> limit of performance warranty	20
	Linearity	ppb error at full scale, linear at zero and 20ppm	
Particles (PM <sub>10</sub> , PM <sub>2.5</sub> and TSP)	Mass concentration precision	%	5
	Mass concentration range	µg/m <sup>3</sup>	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.





**GPCB Schedule II Auditor | NABL Accredited Laboratory**

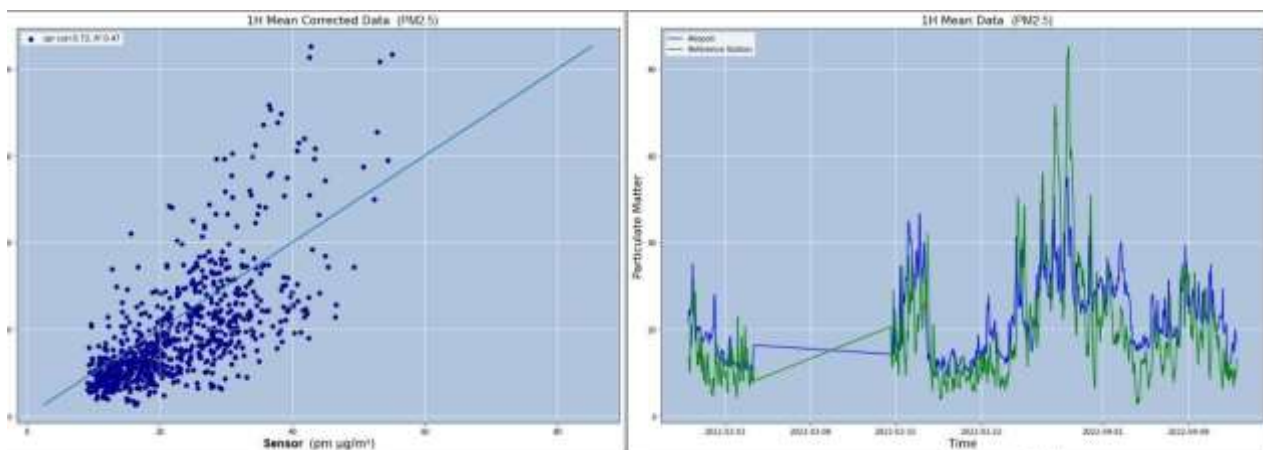
Sensor Units were calibrated using reference stations for a period before the deployment. The calibration process for particle matter and gas pollutants measurement is explained below.

Description	Methodology	
	NO <sub>2</sub> -SO <sub>2</sub> -O <sub>3</sub>	PM <sub>10</sub> -PM <sub>2.5</sub> -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 <sup>2</sup> and spearman correlation	is obtained via R <sup>2</sup> and spearman correlation

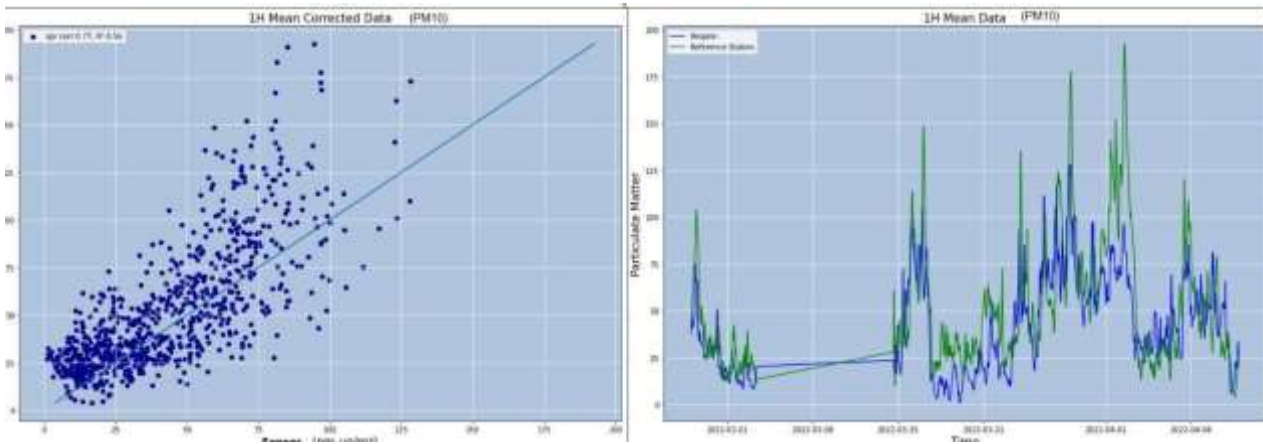
**Calibration Result for PM**

The corrected measurement results after the Smart Calibration Process are shown in the figures below. The correlation between Sensor Unit's PM<sub>2.5</sub> measurements between Reference Station's PM<sub>2.5</sub> measurements for hourly and daily mean of data is 0.73 given by the client, and the correlation between Sensor Unit's PM<sub>10</sub> measurements between Reference Station's PM<sub>10</sub> measurements for hourly and daily mean of data is 0.77 observed by the client.

**Calibration Graph of PM2.5**

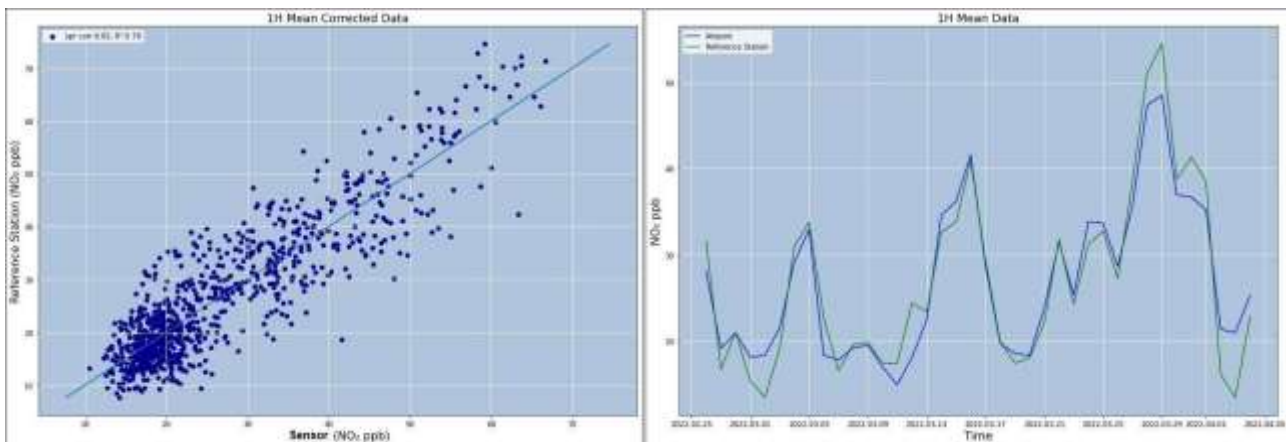


**Calibration Graph of PM<sub>10</sub>**



**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 NO<sub>2</sub> measurements between Reference Station's NO<sub>2</sub> 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). And one location Nr.Area12 within the premises and one location is in AAJV OFFICE within the premises.

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
8	Nr. Area12	Within the premises	-
9	AAJV OFFICE	Within the premises	-

#### 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 (NO<sub>2</sub>), sulfur dioxide (SO<sub>2</sub>), 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 $\mu\text{m}$ (PM <sub>10</sub> )	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 $\mu\text{m}$ (PM <sub>2.5</sub> )	24 hours	-	-	15 (not to be exceeded more than 3-4 times a year)	15
	1-year	-	20	5	5
Nitrogen Dioxide (NO <sub>x</sub> )	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 <sub>2</sub> )	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 <sub>10</sub>	PM <sub>2.5</sub>	NO <sub>2</sub>	SO <sub>2</sub>	TSP	Humidity (%)	Temperature (°C)
AQ1	2024-4-27 17:00:00	48.06	47.05	0.00	0.00	88.75	79.68	26.96
	2024-4-27 18:00:00	40.05	39.36	0.00	0.00	73.52	81.65	27.38
	2024-4-27 19:00:00	36.9	35.06	0.00	0.00	65.15	84.62	26.90
	2024-4-27 20:00:00	33.45	32.41	0.00	0.00	60.54	84.52	26.85
	2024-4-27 21:00:00	30.85	29.06	0.00	0.00	54.18	85.60	26.74
	2024-4-27 22:00:00	28.91	27.12	0.00	0.00	50.36	84.11	26.64
	2024-4-27 23:00:00	25.41	24.1	0.00	0.00	45.65	85.40	26.68
	2024-4-28 00:00:00	22.63	21.36	0.00	0.00	39.42	85.80	26.54
	2024-4-28 01:00:00	23.75	22.16	0.00	0.00	40.65	87.25	26.35
	2024-4-28 02:00:00	24.52	23.16	0.00	0.00	42.54	86.52	26.25
	2024-4-28 03:00:00	25.96	24.19	0.00	0.00	45.60	89.69	26.18
	2024-4-28 04:00:00	27.52	26.18	0.00	0.00	48.24	88.03	26.05
	2024-4-28 05:00:00	29.3	27.4	0.00	0.00	50.36	87.50	26.12
	2024-4-28 06:00:00	30.04	28.43	0.00	0.00	53.65	86.70	26.16
	2024-4-28 07:00:00	24.52	23.6	0.00	0.00	43.45	87.35	26.23
	2024-4-28 08:00:00	15.32	14.18	0.00	0.00	25.38	92.51	24.13
	2024-4-28 09:00:00	18.01	16.21	0.00	0.00	32.36	85.90	26.36
	2024-4-28 10:00:00	19.36	18.23	0.00	0.00	34.65	79.60	30.56
	2024-4-28 11:00:00	20.65	19.25	0.00	0.00	35.45	72.27	30.90
	2024-4-28 12:00:00	29.69	28.6	0.00	0.00	53.65	70.15	31.61
2024-4-28 13:00:00	27.87	26.15	0.00	0.00	50.02	63.24	34.65	
2024-4-28 14:00:00	22.3	20.25	0.00	0.00	38.25	79.71	30.41	
2024-4-28 15:00:00	27.2	25.35	0.00	0.00	46.24	97.89	180.14	
2024-4-28 16:00:00	32.03	30.25	0.00	0.00	56.38	93.51	25.27	
Hourly Limit Values	TA Luft	-	-	200	350	-	-	-
	EU	-	-	200	350	-	-	-
	WHO Ambient Air Quality Guideline Value	-	-	-	-	-	-	-
24 hour Average		<b>27.68</b>	<b>26.21</b>	<b>0.00</b>	<b>0.00</b>	<b>48.94</b>	<b>84.13</b>	<b>33.84</b>
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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### Result of AQ1

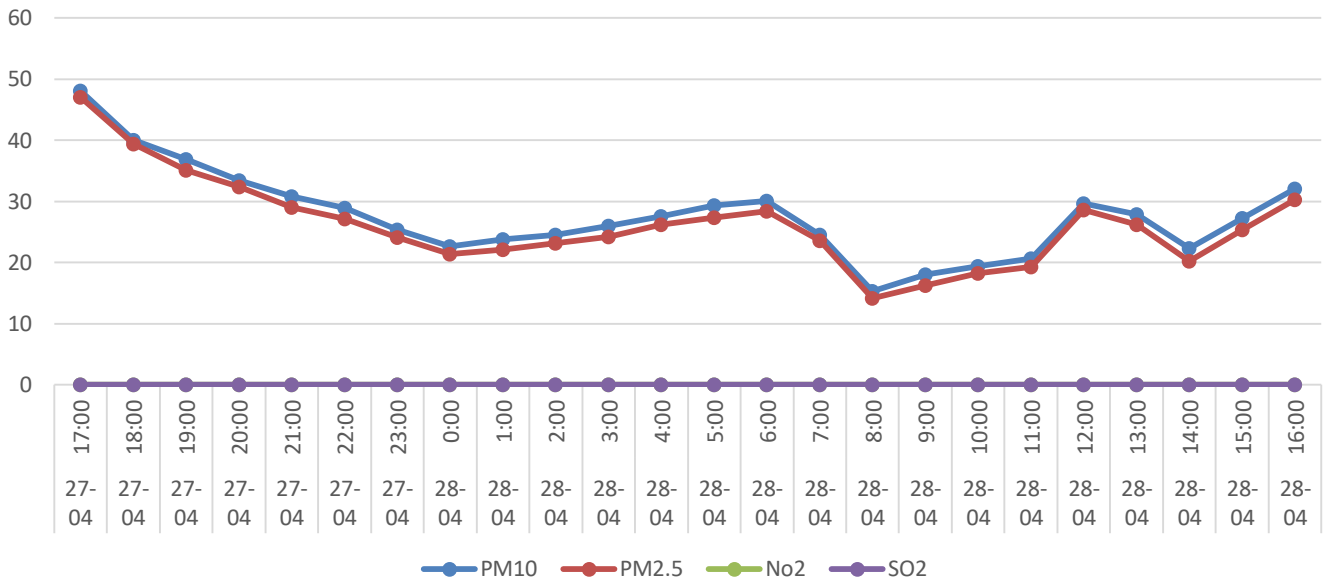


Figure 2 Measurement Graphs for Location AQ1

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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 <sub>10</sub>	PM <sub>2.5</sub>	NO <sub>2</sub>	SO <sub>2</sub>	TSP (24 Hours Average)	Humidity (%)	Temperature (°C)
AQ2	2024-4-17 17:00:00	32.63	29.21	0.00	0.00	54.28	85.89	26.15
	2024-4-17 18:00:00	33.63	29.15	0.00	0.00	54.98	81.99	26.36
	2024-4-17 19:00:00	32.12	30.38	0.00	0.00	57.35	85.58	26.16
	2024-4-17 20:00:00	33.02	31.98	0.00	0.00	60.45	85.89	26.26
	2024-4-17 21:00:00	32.85	31.42	0.00	0.00	60.65	88.78	26.36
	2024-4-17 22:00:00	38.05	36.1	0.00	0.00	64.38	91.78	26.16
	2024-4-17 23:00:00	43.99	41.54	0.00	0.00	79.59	90.69	26.99
	2024-4-18 00:00:00	37.2	35.16	0.00	0.00	66.39	91.39	25.87
	2024-4-18 01:00:00	35.05	33.06	0.00	0.00	62.40	85.78	25.89
	2024-4-18 02:00:00	37.05	35.98	0.00	0.00	68.98	86.16	25.99
	2024-4-18 03:00:00	42.01	40.52	0.00	0.00	76.60	85.36	26.16
	2024-4-18 04:00:00	45.96	43.98	0.00	0.00	84.15	83.29	26.23
	2024-4-18 05:00:00	45.85	44.65	0.00	0.00	84.50	84.25	29.19
	2024-4-18 06:00:00	44.04	42.47	0.00	0.00	81.26	83.78	26.22
	2024-4-18 07:00:00	43.63	41.16	0.00	0.00	77.78	82.39	26.68
	2024-4-18 08:00:00	41.82	39.95	0.00	0.00	75.49	75.89	29.75
	2024-4-18 09:00:00	41.54	40.56	0.00	0.00	74.75	68.69	30.10
	2024-4-18 10:00:00	40.05	37.75	0.00	0.00	72.39	63.88	31.39
	2024-4-18 11:00:00	42.62	40.64	0.00	0.00	76.99	63.48	32.38
	2024-4-18 12:00:00	43.68	41.87	0.00	0.00	78.36	62.66	33.78
2024-4-18 13:00:00	38.15	36.62	0.00	0.00	70.39	54.78	35.25	
2024-4-18 14:00:00	35.05	33.9	0.00	0.00	65.16	53.55	36.29	
2024-4-18 15:00:00	36.96	34.68	0.00	0.00	66.58	55.48	36.25	
2024-4-18 16:00:00	36.96	35.45	0.00	0.00	66.19	57.20	36.28	
Hourly Limit Values	TA Luft	-	-	200	350	-	-	-
	EU	-	-	200	350	-	-	-
	WHO Ambient Air Quality Guideline Value	-	-	-	-	-	-	-
Average		<b>38.91</b>	<b>37.01</b>	<b>0.00</b>	<b>0.00</b>	<b>70.00</b>	<b>77.02</b>	<b>29.09</b>
Daily Limit Values	TA Luft	50	-	-	125	-	-	-
	EU	50	-	-	125	-	-	-
	WHO Ambient Air Quality Guideline Value	45	15	25	40	-	-	-



### Result of AQ2

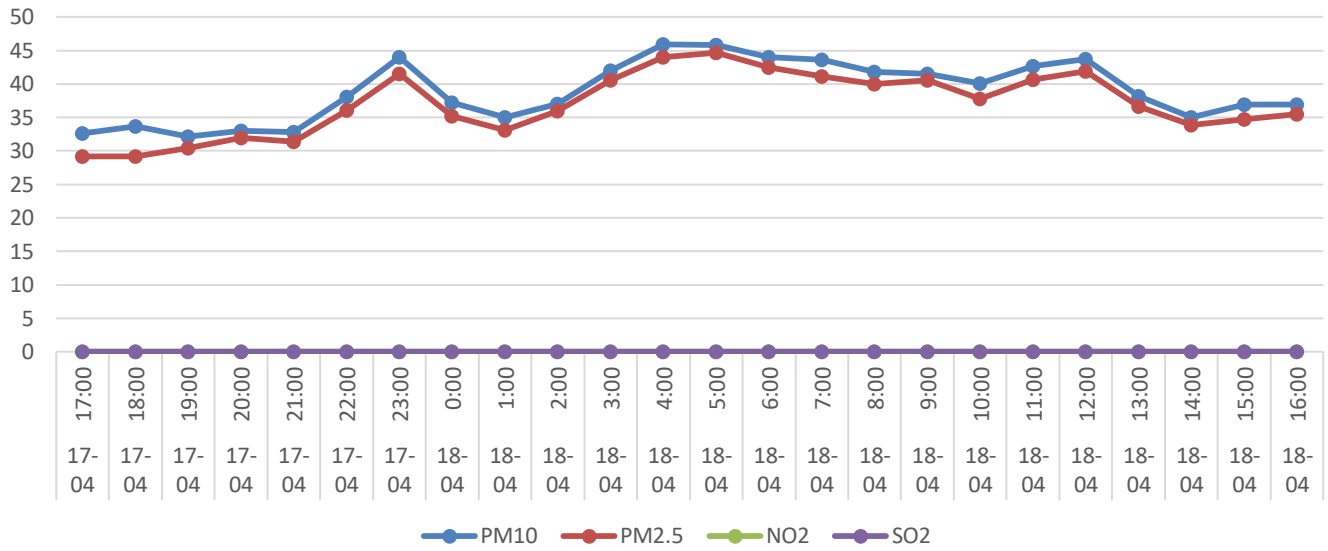


Figure 3 Measurement Graphs for Location AQ2



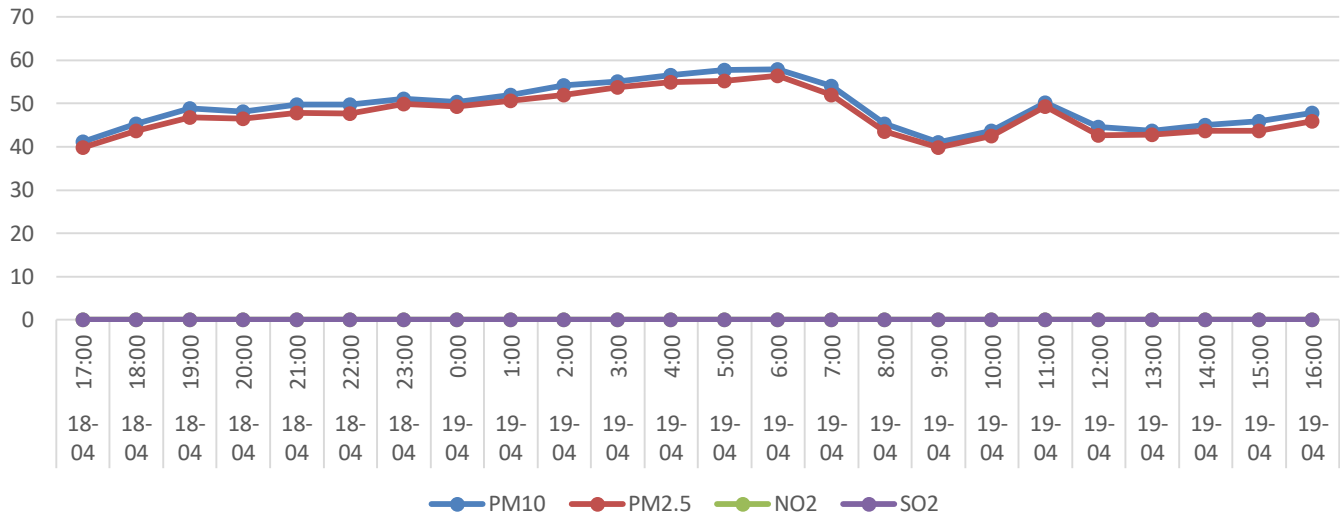
**Measurement Results for Location 3**

Device Code: 222								
Location	Sampling Date	Results (µg/m³)					Ambient Conditions	
		PM <sub>10</sub>	PM <sub>2.5</sub>	NO <sub>2</sub>	SO <sub>2</sub>	TSP (24 Hours Average)	Humidity (%)	Temperature (°C)
AQ3	2024-4-18 17:00:00	41.15	39.91	0.00	0.00	76.32	62.98	33.65
	2024-4-18 18:00:00	45.3	43.71	0.00	0.00	80.36	75.66	30.25
	2024-4-18 19:00:00	48.9	46.83	0.00	0.00	86.35	78.54	28.45
	2024-4-18 20:00:00	48.2	46.57	0.00	0.00	87.25	80.97	28.65
	2024-4-18 21:00:00	49.69	47.79	0.00	0.00	90.15	80.93	28.19
	2024-4-18 22:00:00	49.75	47.7	0.00	0.00	91.54	82.67	28.54
	2024-4-18 23:00:00	51.12	49.91	0.00	0.00	94.25	82.84	27.36
	2024-4-19 00:00:00	50.32	49.25	0.00	0.00	94.58	82.71	28.02
	2024-4-19 01:00:00	52.02	50.65	0.00	0.00	94.58	81.85	27.19
	2024-4-19 02:00:00	54.25	52.01	0.00	0.00	98.65	83.83	26.19
	2024-4-19 03:00:00	55.02	53.74	0.00	0.00	102.31	86.27	27.54
	2024-4-19 04:00:00	56.63	54.94	0.00	0.00	104.69	86.82	26.28
	2024-4-19 05:00:00	57.78	55.23	0.00	0.00	105.85	86.65	26.87
	2024-4-19 06:00:00	57.87	56.38	0.00	0.00	107.58	87.50	26.87
	2024-4-19 07:00:00	54.1	52.02	0.00	0.00	99.02	84.18	27.54
	2024-4-19 08:00:00	45.32	43.56	0.00	0.00	83.68	68.79	31.45
	2024-4-19 09:00:00	41.05	39.8	0.00	0.00	76.89	60.37	34.41
	2024-4-19 10:00:00	43.63	42.56	0.00	0.00	79.68	59.98	35.19
	2024-4-19 11:00:00	50.25	49.35	0.00	0.00	95.85	60.78	35.75
	2024-4-19 12:00:00	44.52	42.65	0.00	0.00	77.87	60.98	35.41
2024-4-19 13:00:00	43.63	42.87	0.00	0.00	80.28	60.84	35.98	
2024-4-19 14:00:00	44.99	43.68	0.00	0.00	82.89	60.48	34.87	
2024-4-19 15:00:00	45.96	43.65	0.00	0.00	82.87	63.28	34.52	
2024-4-19 16:00:00	47.89	45.98	0.00	0.00	85.12	67.04	33.75	
Hourly Limit Values	TA Luft	-	-	200	350	-	-	-
	EU	-	-	200	350	-	-	-
	WHO Ambient Air Quality Guideline Value	-	-	-	-	-	-	-
	<b>24 Hours Average</b>	<b>49.14</b>	<b>47.53</b>	<b>0.00</b>	<b>0.00</b>	<b>89.94</b>	<b>74.46</b>	<b>30.54</b>
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 (µg/m³)					Ambient Conditions	
		PM <sub>10</sub>	PM <sub>2.5</sub>	NO <sub>2</sub>	SO <sub>2</sub>	TSP (24 Hours Average)	Humidity (%)	Temperature (°C)
ASR2	2024-4-19 17:00:00	49.63	47.15	0.00	0.00	89.54	73.87	30.05
	2024-4-19 18:00:00	49.45	48.15	0.00	0.00	92.45	80.45	28.95
	2024-4-19 19:00:00	47.12	45.65	0.00	0.00	86.89	83.89	27.21
	2024-4-19 20:00:00	46.63	44.85	0.00	0.00	83.65	85.87	28.25
	2024-4-19 21:00:00	44.63	42.52	0.00	0.00	78.54	86.12	27.42
	2024-4-19 22:00:00	44.52	42.04	0.00	0.00	79.03	85.42	27.51
	2024-4-19 23:00:00	43.52	41.26	0.00	0.00	78.54	86.46	27.15
	2024-4-20 00:00:00	44.01	41.54	0.00	0.00	76.35	88.01	27.29
	2024-4-20 01:00:00	42.21	40.54	0.00	0.00	75.36	88.23	27.89
	2024-4-20 02:00:00	43.45	41.69	0.00	0.00	77.22	87.41	27.54
	2024-4-20 03:00:00	39.63	36.54	0.00	0.00	69.54	88.25	27.98
	2024-4-20 04:00:00	37.41	35.16	0.00	0.00	66.14	86.20	26.36
	2024-4-20 05:00:00	36.45	34.18	0.00	0.00	65.87	88.47	26.00
	2024-4-20 06:00:00	36.63	34.87	0.00	0.00	64.19	88.54	26.56
	2024-4-20 07:00:00	32.42	30.48	0.00	0.00	58.16	84.25	27.25
	2024-4-20 08:00:00	33.63	31.74	0.00	0.00	59.65	76.36	30.36
	2024-4-20 09:00:00	33.45	31.19	0.00	0.00	59.45	71.25	31.28
	2024-4-20 10:00:00	32.12	31.48	0.00	0.00	58.16	74.20	30.69
	2024-4-20 11:00:00	31.01	29.16	0.00	0.00	53.65	72.13	31.58
	2024-4-20 12:00:00	30.42	27.17	0.00	0.00	51.25	64.10	33.87
2024-4-20 13:00:00	30.12	27.98	0.00	0.00	52.68	64.60	33.87	
2024-4-20 14:00:00	30.12	28.54	0.00	0.00	53.89	65.26	33.48	
2024-4-20 15:00:00	30.41	28.45	0.00	0.00	53.89	66.56	33.85	
2024-4-20 16:00:00	32.14	30.05	0.00	0.00	56.78	65.13	33.25	
<b>Hourly Limit Values</b>	<b>TA Luft</b>	-	-	200	350	-	-	-
	<b>EU</b>	-	-	200	350	-	-	-
	<b>WHO Ambient Air Quality Guideline Value</b>	-	-	-	-	-	-	-
	<b>24 Hours Average</b>	<b>38.38</b>	<b>36.35</b>	<b>0.00</b>	<b>0.00</b>	<b>68.38</b>	<b>79.21</b>	<b>29.40</b>
<b>Daily Limit Values</b>	<b>TA Luft</b>	50	-	-	125	-	-	-
	<b>EU</b>	50	-	-	125	-	-	-
	<b>WHO Ambient Air Quality Guideline Value</b>	45	15	25	40	-	-	-



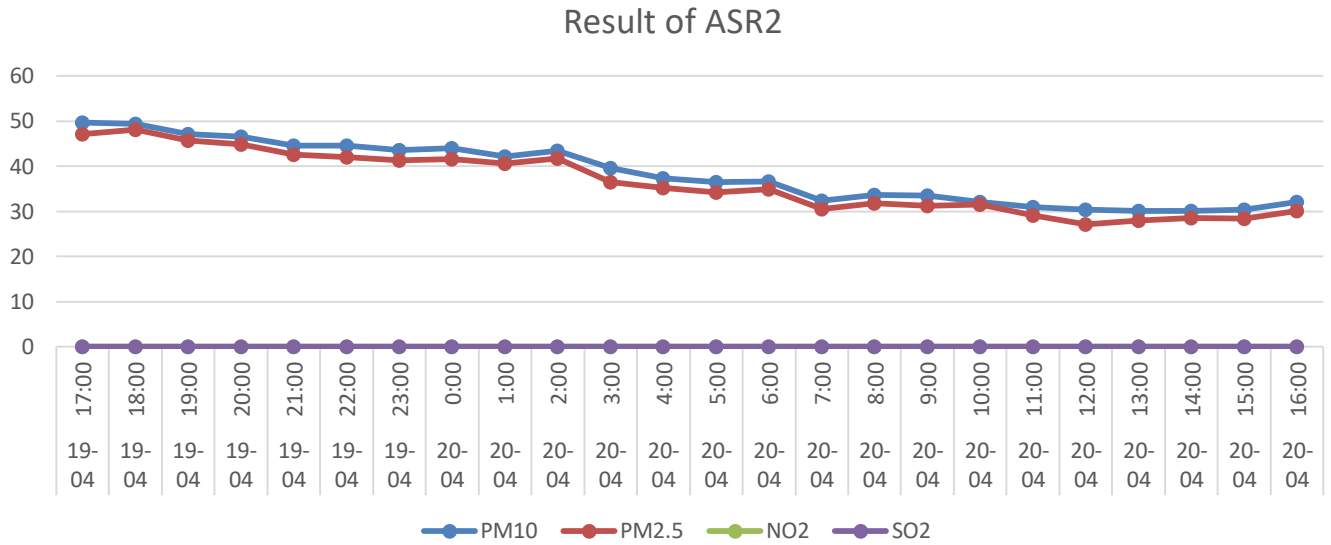


Figure 5 Measurement Graphs for Location ASR2

Measurement Results for Location 5

Device Code: AIRS-1								
Location	Sampling Date	Results (µg/m³)					Ambient Conditions	
		PM <sub>10</sub>	PM <sub>2.5</sub>	NO <sub>2</sub>	SO <sub>2</sub>	TSP (24 Hours Average)	Humidity (%)	Temperature (°C)
ASR3	2024-4-20 17:00:00	32.33	30.15	0.00	0.00	56.87	72.58	30.25
	2024-4-20 18:00:00	38.41	36.41	0.00	0.00	67.85	78.98	28.87
	2024-4-20 19:00:00	32.63	31.45	0.00	0.00	58.15	83.56	28.65
	2024-4-20 20:00:00	31.25	29.87	0.00	0.00	55.84	85.48	27.45
	2024-4-20 21:00:00	34.52	32.45	0.00	0.00	60.98	86.59	27.59
	2024-4-20 22:00:00	33.32	31.54	0.00	0.00	59.65	87.45	27.25
	2024-4-20 23:00:00	32.52	30.25	0.00	0.00	56.54	86.87	27.12
	2024-4-21 00:00:00	32.6	30.25	0.00	0.00	56.15	87.16	27.36
	2024-4-21 01:00:00	32.12	30.54	0.00	0.00	57.54	86.26	27.56
	2024-4-21 02:00:00	33.63	31.45	0.00	0.00	58.54	88.54	26.38
	2024-4-21 03:00:00	32.42	31.48	0.00	0.00	58.95	87.16	26.56
	2024-4-21 04:00:00	33.41	31.87	0.00	0.00	59.68	87.19	26.78
	2024-4-21 05:00:00	33.17	31.56	0.00	0.00	58.36	87.58	26.29
	2024-4-21 06:00:00	32.52	30.45	0.00	0.00	56.58	86.58	26.58
	2024-4-21 07:00:00	28.52	26.87	0.00	0.00	49.87	82.45	27.15
	2024-4-21 08:00:00	25.45	23.87	0.00	0.00	44.57	65.27	32.56
	2024-4-21 09:00:00	25.99	24.57	0.00	0.00	45.16	60.28	34.15
	2024-4-21 10:00:00	26.19	24.70	0.00	0.00	46.49	58.56	35.85
	2024-4-21 11:00:00	26.7	24.72	0.00	0.00	45.48	60.28	34.87
	2024-4-21 12:00:00	24.63	22.90	0.00	0.00	42.87	61.25	34.69
2024-4-21 13:00:00	24.12	22.47	0.00	0.00	42.49	62.65	33.95	
2024-4-21 14:00:00	26.18	24.21	0.00	0.00	44.78	60.28	33.56	
2024-4-21 15:00:00	29.63	27.87	0.00	0.00	50.89	62.58	33.45	
2024-4-21 16:00:00	28.98	26.54	0.00	0.00	48.24	63.59	32.56	
Hourly Limit Values	TA Luft	-	-	200	200	-	-	-
	EU	-	-	200	350	-	-	-
	WHO Ambient Air Quality Guideline Value	-	-	-	-	-	-	-
Average	24 hours Average	30.47	28.69	0.00	0.00	53.44	76.22	29.90
Daily Limit Values	TA Luft	50	-	-	125	-	-	-
	EU	50	-	-	125	-	-	-
	WHO Ambient Air Quality Guideline Value	45	15	25	40	-	-	-



### Result of ASR3

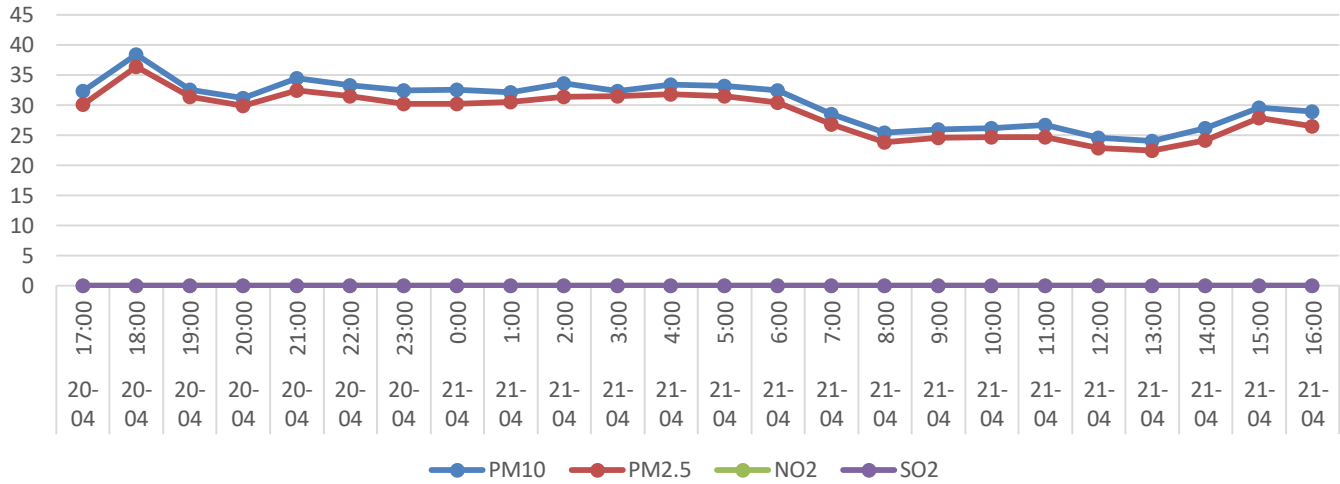


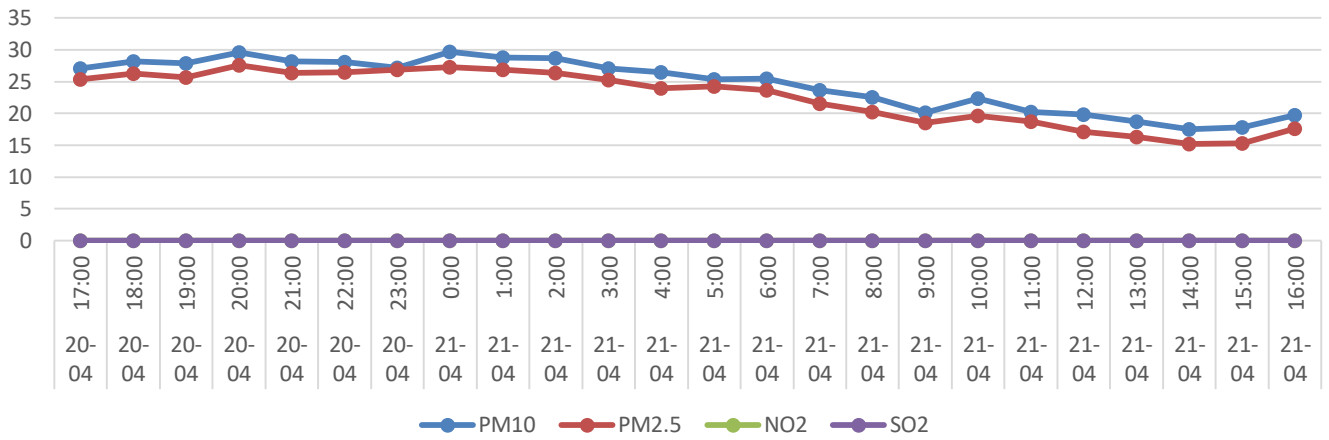
Figure 6 Measurement Graphs for Location ASR3

**Measurement Results for Location 6**

Device Code: 223								
Location	Sampling Date	Results (µg/m³)					Ambient Conditions	
		PM <sub>10</sub>	PM <sub>2.5</sub>	NO <sub>2</sub>	SO <sub>2</sub>	TSP (24 Hours Average)	Humidity (%)	Temperature (°C)
ASR5	2024-4-20 17:00:00	27.12	25.41	0.00	0.00	46.36	66.01	31.14
	2024-4-20 18:00:00	28.21	26.25	0.00	0.00	50.25	73.41	29.20
	2024-4-20 19:00:00	27.85	25.65	0.00	0.00	50.24	78.45	28.26
	2024-4-20 20:00:00	29.63	27.54	0.00	0.00	50.12	79.41	29.61
	2024-4-20 21:00:00	28.21	26.36	0.00	0.00	49.54	80.52	27.16
	2024-4-20 22:00:00	28.12	26.44	0.00	0.00	50.14	80.21	27.98
	2024-4-20 23:00:00	27.21	26.89	0.00	0.00	48.74	82.45	27.25
	2024-4-21 00:00:00	29.69	27.25	0.00	0.00	50.14	85.14	27.20
	2024-4-21 01:00:00	28.78	26.85	0.00	0.00	48.52	82.65	26.32
	2024-4-21 02:00:00	28.65	26.33	0.00	0.00	48.25	84.54	26.65
	2024-4-21 03:00:00	27.12	25.25	0.00	0.00	46.65	84.25	26.38
	2024-4-21 04:00:00	26.45	24.01	0.00	0.00	45.24	84.29	26.48
	2024-4-21 05:00:00	25.42	24.25	0.00	0.00	45.95	84.96	26.24
	2024-4-21 06:00:00	25.45	23.68	0.00	0.00	44.14	83.54	26.85
	2024-4-21 07:00:00	23.63	21.54	0.00	0.00	40.15	82.59	27.41
	2024-4-21 08:00:00	22.52	20.21	0.00	0.00	37.58	66.78	31.28
	2024-4-21 09:00:00	20.15	18.57	0.00	0.00	34.58	63.14	32.41
	2024-4-21 10:00:00	22.32	19.65	0.00	0.00	35.25	63.02	32.48
	2024-4-21 11:00:00	20.25	18.74	0.00	0.00	34.78	67.20	30.25
	2024-4-21 12:00:00	19.85	17.11	0.00	0.00	32.54	68.10	30.45
2024-4-21 13:00:00	18.78	16.36	0.00	0.00	30.24	66.30	31.06	
2024-4-21 14:00:00	17.54	15.24	0.00	0.00	27.45	66.12	31.24	
2024-4-21 15:00:00	17.85	15.28	0.00	0.00	28.78	62.35	32.32	
2024-4-21 16:00:00	19.78	17.58	0.00	0.00	32.56	63.24	32.15	
Hourly Limit Values	TA Luft	-	-	200	350	-	-	-
	EU	-	-	200	350	-	-	-
	WHO Ambient Air Quality Guideline Value	-	-	-	-	-	-	-
Average	24 Hours Average	24.61	22.60	0.00	0.00	42.01	74.95	29.07
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 <sub>10</sub>	PM <sub>2.5</sub>	NO <sub>2</sub>	SO <sub>2</sub>	TSP (24 Hours Average)	Humidity (%)	Temperature (°C)
AQ4	2024-4-21 17:00:00	20.12	18.32	0.00	0.00	35.15	68.65	30.56
	2024-4-21 18:00:00	21.25	19.25	0.00	0.00	38.75	72.45	31.65
	2024-4-21 19:00:00	20.41	18.45	0.00	0.00	36.87	78.41	28.10
	2024-4-21 20:00:00	21.56	19.65	0.00	0.00	37.25	79.65	27.30
	2024-4-21 21:00:00	23.63	21.12	0.00	0.00	39.68	81.20	27.20
	2024-4-21 22:00:00	23.47	22.32	0.00	0.00	41.57	82.45	27.22
	2024-4-21 23:00:00	25.2	23.52	0.00	0.00	42.68	83.65	27.30
	2024-4-22 00:00:00	25.1	23.69	0.00	0.00	43.87	84.61	30.36
	2024-4-22 01:00:00	27.41	25.54	0.00	0.00	46.87	82.32	27.06
	2024-4-22 02:00:00	27.15	24.15	0.00	0.00	47.52	84.01	27.96
	2024-4-22 03:00:00	29.42	27.51	0.00	0.00	52.85	82.03	27.36
	2024-4-22 04:00:00	30.15	29.54	0.00	0.00	55.69	81.05	27.09
	2024-4-22 05:00:00	32.41	30.25	0.00	0.00	57.52	81.54	27.65
	2024-4-22 06:00:00	32.52	30.24	0.00	0.00	56.78	82.96	26.09
	2024-4-22 07:00:00	29.15	27.14	0.00	0.00	52.45	78.52	27.00
	2024-4-22 08:00:00	29.45	27.04	0.00	0.00	51.45	63.98	32.65
	2024-4-22 09:00:00	33.63	31.54	0.00	0.00	57.54	60.42	33.09
	2024-4-22 10:00:00	31.45	30.25	0.00	0.00	56.89	61.40	34.07
	2024-4-22 11:00:00	25.78	23.45	0.00	0.00	56.75	61.06	34.11
	2024-4-22 12:00:00	29.52	28.74	0.00	0.00	53.45	58.30	34.65
	2024-4-22 13:00:00	32.41	30.15	0.00	0.00	57.10	58.06	34.89
2024-4-22 14:00:00	33.52	31.05	0.00	0.00	58.65	62.09	33.65	
2024-4-22 15:00:00	32.12	30.48	0.00	0.00	58.05	63.40	33.45	
2024-4-22 16:00:00	34.1	32.48	0.00	0.00	61.54	60.19	34.19	
Hourly Limit Values	TA Luft	-	-	200	350		-	-
	EU	-	-	200	350		-	-
	WHO Ambient Air Quality Guideline Value	-	-	-	-		-	-
Average	24 hours Average	27.96	26.08	0.00	0.00	49.87	73.02	30.19
Daily Limit Values	TA Luft	50	-	-	125		-	-
	EU	50	-	-	125		-	-
	WHO Ambient Air Quality Guideline Value	45	15	25	45		-	-



Result of AQ4

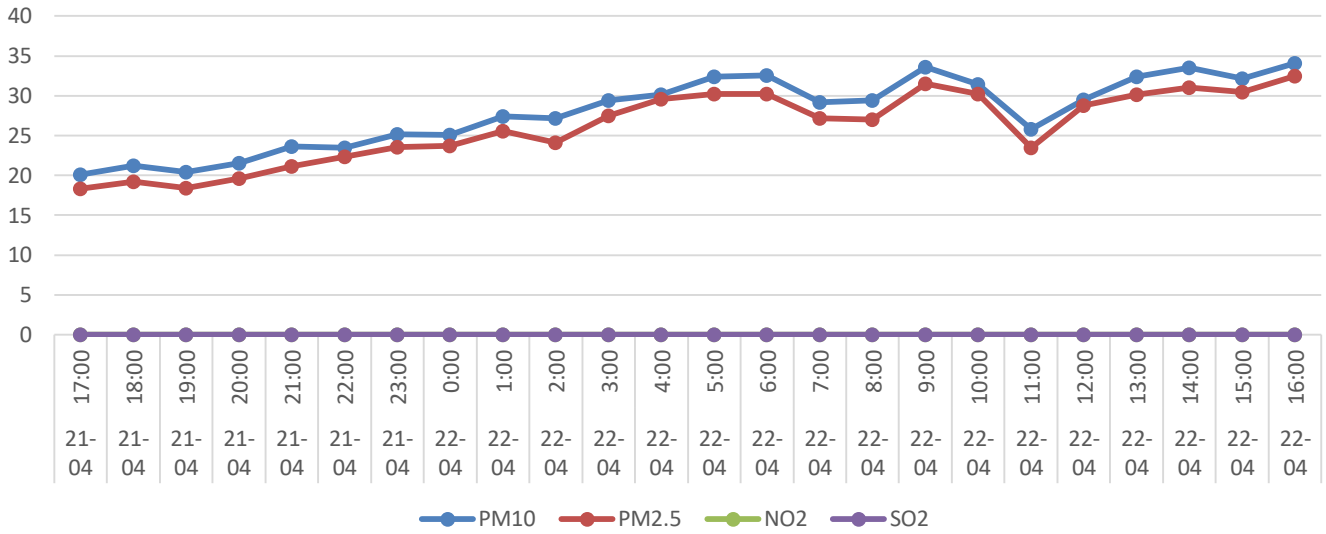


Figure 7 Measurement Graphs for Location AQ4



## **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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MALDIVES



Thilafushi Island, MALDIVES 2024

**Name of Project:** WtE Energy Facility Project

**Order No:** EN-M/2207/417\_01

**Test report:** Ambient Air Monitoring May-24

**Duration:** 01.05.2024-06.05.2024



## 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 <sub>2</sub>	275 to 520
	Range	ppm limit of performance warranty	100
	Linearity	error at 100ppmSO <sub>2</sub> , linear at zero and 10ppmSO <sub>2</sub>	0 to -2
NO2	Sensitivity	nA/ppm at 2ppm NO <sub>2</sub>	-200 to -650
	Range	ppm NO <sub>2</sub> limit of performance warranty	20
	Linearity	ppb error at full scale, linear at zero and 20ppm	
Particles (PM <sub>10</sub> , PM <sub>2.5</sub> and TSP)	Mass concentration precision	%	5
	Mass concentration range	µg/m <sup>3</sup>	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.



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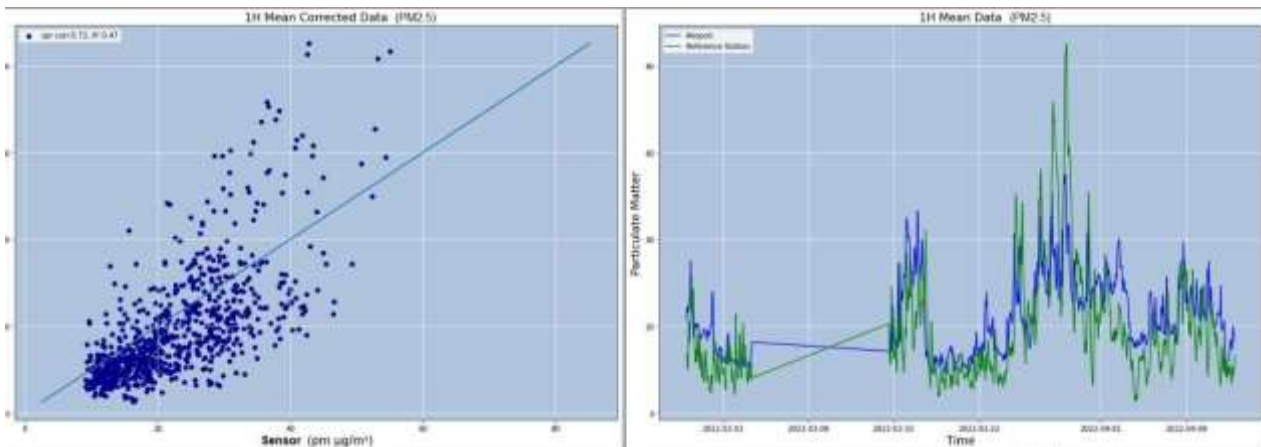
Sensor Units were calibrated using reference stations for a period before the deployment. The calibration process for particle matter and gas pollutants measurement is explained below.

Description	Methodology	
	NO <sub>2</sub> -SO <sub>2</sub> -O <sub>3</sub>	PM <sub>10</sub> -PM <sub>2.5</sub> -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 <sup>2</sup> and spearman correlation	is obtained via R <sup>2</sup> and spearman correlation

**Calibration Result for PM**

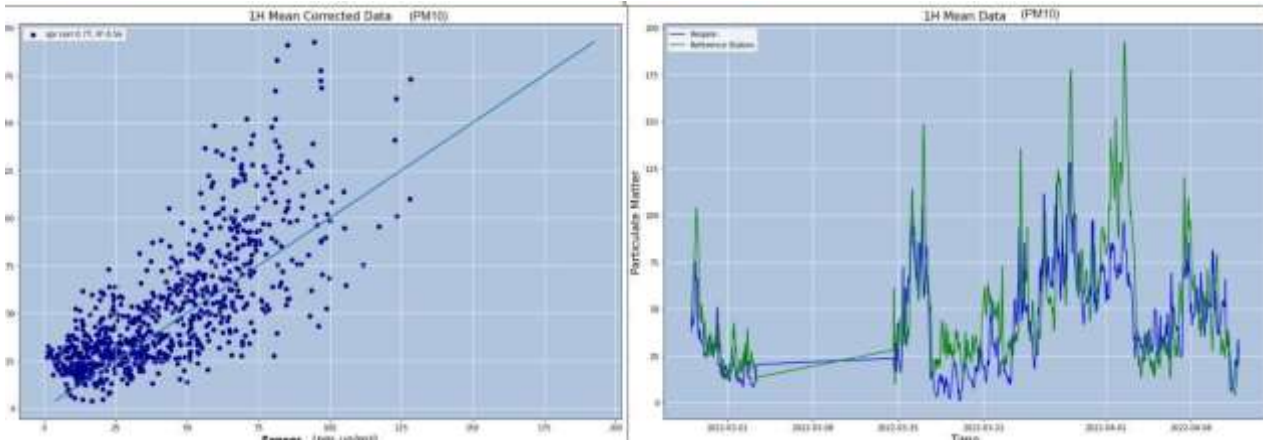
The corrected measurement results after the Smart Calibration Process are shown in the figures below. The correlation between Sensor Unit’s PM<sub>2.5</sub> measurements between Reference Station’s PM<sub>2.5</sub> measurements for hourly and daily mean of data is 0.73 given by the client, and the correlation between Sensor Unit’s PM<sub>10</sub> measurements between Reference Station’s PM<sub>10</sub> measurements for hourly and daily mean of data is 0.77 observed by the client.

**Calibration Graph of PM2.5**



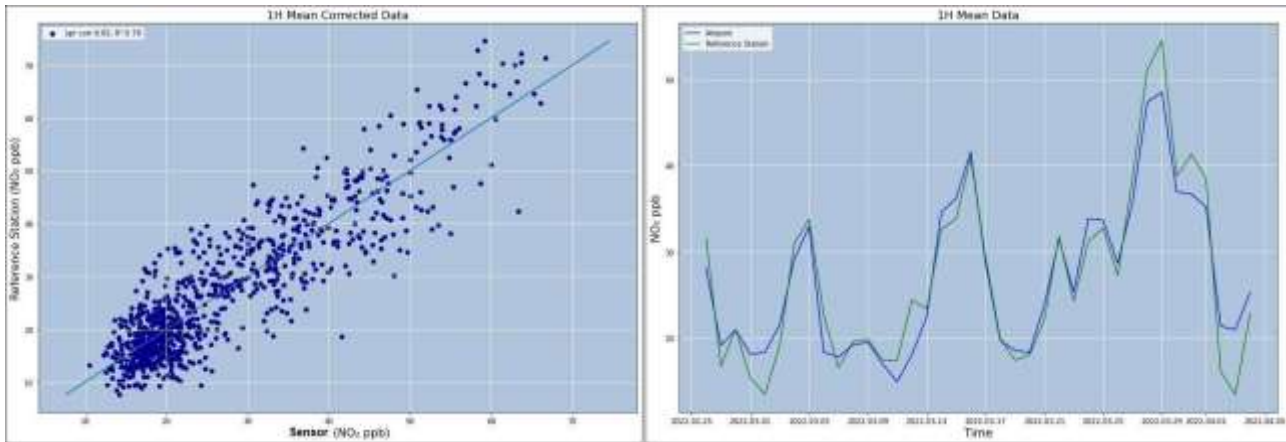


**Calibration Graph of PM<sub>10</sub>**



**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 NO<sub>2</sub> measurements between Reference Station's NO<sub>2</sub> 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
8	Area12	Within the premises	-
9	OFFICE AREA	Within the premises	-

#### 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 (NO<sub>2</sub>), sulfur dioxide (SO<sub>2</sub>), 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 $\mu\text{m}$ (PM <sub>10</sub> )	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 $\mu\text{m}$ (PM <sub>2.5</sub> )	24 hours	-	-	15 (not to be exceeded more than 3-4 times a year)	15
	1-year	-	20	5	5
Nitrogen Dioxide (NO <sub>x</sub> )	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 <sub>2</sub> )	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.



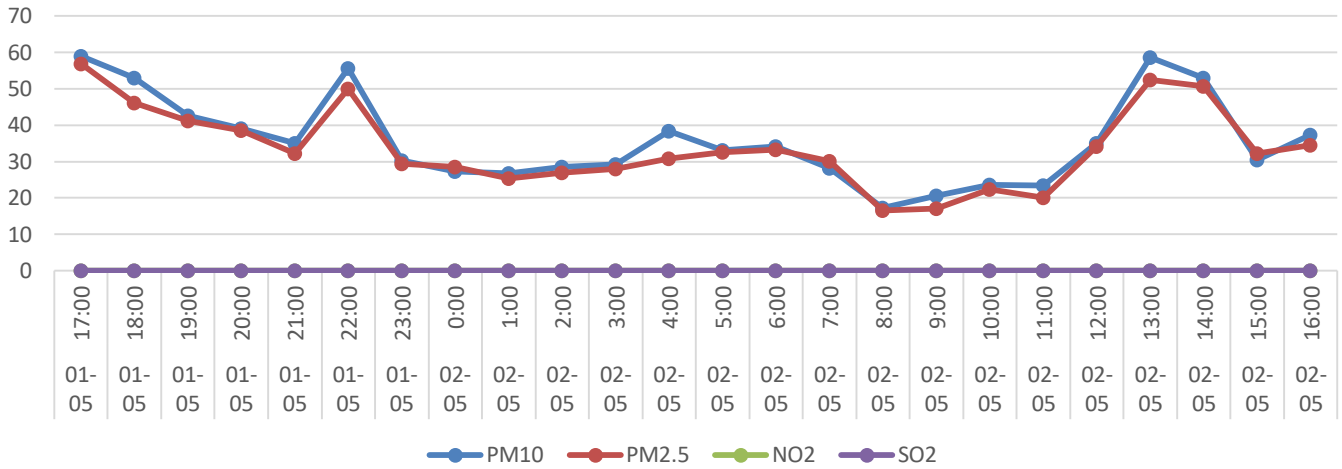
**6) Results:**

Measurement Results for Location 1

Device Code: 222								
Location	Sampling Date	Air Quality Results (µg/m <sup>3</sup> )					Ambient Conditions	
		PM <sub>10</sub>	PM <sub>2.5</sub>	NO <sub>2</sub>	SO <sub>2</sub>	TSP	Humidity (%)	Temperature (°C)
AQ1	01/05/2024 17:00	59.05	56.85	0	0	85.42	87.45	35.25
	01/05/2024 18:00	52.96	46.1	0	0	71.65	71.89	36.36
	01/05/2024 19:00	42.52	41.21	0	0	63.98	64.56	35.89
	01/05/2024 20:00	39.01	38.54	0	0	59.69	59.65	34.21
	01/05/2024 21:00	35.12	32.2	0	0	54.25	55.25	35.96
	01/05/2024 22:00	55.61	50.01	0	0	50.36	50.25	33.56
	01/05/2024 23:00	30.21	29.41	0	0	45.25	45.25	34.21
	02/05/2024 0:00	27.32	28.52	0	0	39.65	38.65	33.89
	02/05/2024 1:00	26.77	25.41	0	0	40.02	40.15	33.65
	02/05/2024 2:00	28.54	27.01	0	0	41.56	41.45	38.32
	02/05/2024 3:00	29.32	28.06	0	0	43.56	44.85	34.58
	02/05/2024 4:00	38.41	30.78	0	0	47.41	47.98	33.68
	02/05/2024 5:00	33.02	32.52	0	0	49.58	49.58	33.56
	02/05/2024 6:00	34.21	33.32	0	0	51.41	51.78	34.87
	02/05/2024 7:00	28.12	30.05	0	0	43.56	42.56	35.89
	02/05/2024 8:00	17.25	16.54	0	0	26.85	25.98	30.25
	02/05/2024 9:00	20.55	17.1	0	0	30.25	30.58	35.58
	02/05/2024 10:00	23.52	22.41	0	0	34.65	33.56	37.45
	02/05/2024 11:00	23.41	20.01	0	0	34.78	35.89	39.89
	02/05/2024 12:00	35.1	34.18	0	0	53.56	53.56	40.12
02/05/2024 13:00	58.54	52.45	0	0	48.45	49.74	43.98	
02/05/2024 14:00	53.01	50.69	0	0	36.55	39.58	39.56	
02/05/2024 15:00	30.47	32.16	0	0	45.78	47.51	35.65	
02/05/2024 16:00	37.4	34.5	0	0	55.25	56.58	32.25	
Hourly Limit Values	TA Luft	-	-	200	350	-	-	-
	EU	-	-	200	350	-	-	-
	WHO Ambient Air Quality Guideline Value	-	-	-	-	-	-	-
Daily Limit Values	24 hour Average	35.81	33.75	0.00	0.00	48.06	48.51	35.78
	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



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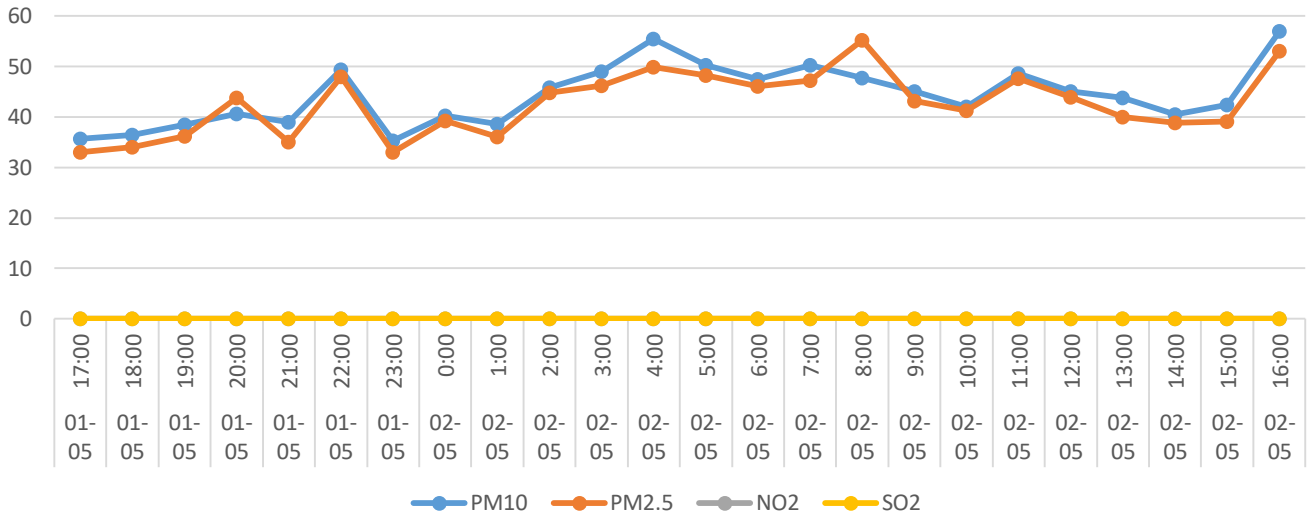
**Measurement Results for Location 2**

Device Code: 224								
Location	Sampling Date	Results ( $\mu\text{g}/\text{m}^3$ )					Ambient Conditions	
		PM <sub>10</sub>	PM <sub>2.5</sub>	NO <sub>2</sub>	SO <sub>2</sub>	TSP (24 Hours Average)	Humidity (%)	Temperature (°C)
AQ2	01/05/2024 17:00	35.72	32.98	0.00	0.00	58.69	85.45	29.56
	01/05/2024 18:00	36.41	34.01	0.00	0.00	60.89	80.54	28.25
	01/05/2024 19:00	38.45	36.21	0.00	0.00	63.58	84.58	28.15
	01/05/2024 20:00	40.58	43.85	0.00	0.00	65.78	86.98	30.25
	01/05/2024 21:00	38.95	35.1	0.00	0.00	65.70	88.56	32.52
	01/05/2024 22:00	49.42	48.01	0.00	0.00	70.86	89.45	29.56
	01/05/2024 23:00	35.32	32.98	0.00	0.00	85.12	92.45	28.25
	02/05/2024 0:00	40.21	39.22	0.00	0.00	70.15	90.24	27.45
	02/05/2024 1:00	38.58	36.11	0.00	0.00	67.52	86.58	28.52
	02/05/2024 2:00	45.85	44.87	0.00	0.00	75.41	85.12	29.86
	02/05/2024 3:00	49.02	46.24	0.00	0.00	82.45	83.58	30.25
	02/05/2024 4:00	55.42	49.87	0.00	0.00	89.87	82.88	32.52
	02/05/2024 5:00	50.21	48.22	0.00	0.00	88.56	84.12	28.12
	02/05/2024 6:00	47.52	46.12	0.00	0.00	87.41	83.45	28.65
	02/05/2024 7:00	50.24	47.25	0.00	0.00	84.20	82.89	28.74
	02/05/2024 8:00	47.78	55.21	0.00	0.00	81.52	74.25	30.25
	02/05/2024 9:00	45.11	43.14	0.00	0.00	83.58	69.69	33.58
	02/05/2024 10:00	42.01	41.25	0.00	0.00	79.84	64.52	34.56
	02/05/2024 11:00	48.65	47.65	0.00	0.00	82.45	63.56	35.25
	02/05/2024 12:00	45.12	43.87	0.00	0.00	83.41	60.25	36.56
02/05/2024 13:00	43.81	40.01	0.00	0.00	75.85	53.56	37.45	
02/05/2024 14:00	40.56	38.85	0.00	0.00	69.54	55.85	38.78	
02/05/2024 15:00	42.44	39.11	0.00	0.00	70.45	58.02	37.87	
02/05/2024 16:00	56.98	53.01	0.00	0.00	72.52	56.36	39.58	
Hourly Limit Values	TA Luft	-	-	200	350	-	-	-
	EU	-	-	200	350	-	-	-
	WHO Ambient Air Quality Guideline Value	-	-	-	-	-	-	-
Average		44.35	42.63	0.00	0.00	75.64	76.79	
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 Location

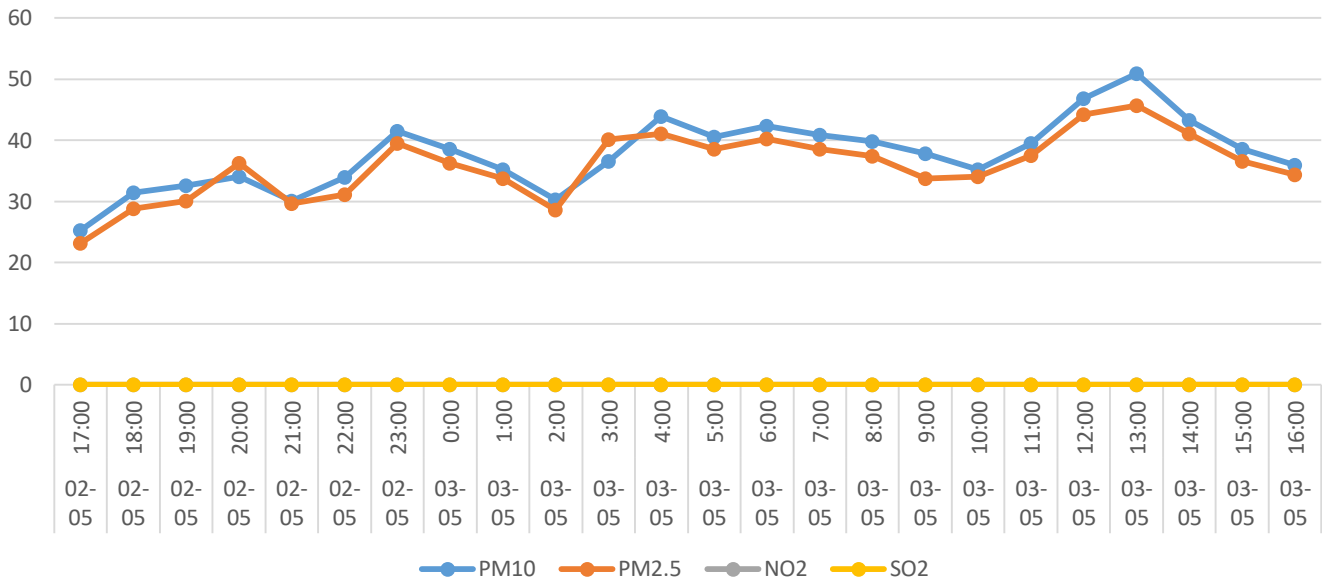


**Measurement Results for Location 3**

Device Code: 222								
Location	Sampling Date	Results ( $\mu\text{g}/\text{m}^3$ )					Ambient Conditions	
		PM <sub>10</sub>	PM <sub>2.5</sub>	NO <sub>2</sub>	SO <sub>2</sub>	TSP (24 Hours Average)	Humidity (%)	Temperature (°C)
AQ3	02/05/2024 17:00	25.21	23.21	0	0	55.52	85.25	27.48
	02/05/2024 18:00	31.41	28.84	0	0	56.36	82.45	28.54
	02/05/2024 19:00	32.54	30.12	0	0	59.54	85.56	27.59
	02/05/2024 20:00	34.1	36.21	0	0	61.25	86.26	27.95
	02/05/2024 21:00	30.12	29.65	0	0	62.32	87.58	28.89
	02/05/2024 22:00	33.95	31.15	0	0	66.45	90.26	27.65
	02/05/2024 23:00	41.44	39.52	0	0	79.87	92.58	26.59
	03/05/2024 0:00	38.54	36.25	0	0	68.45	93.69	28.54
	03/05/2024 1:00	35.25	33.69	0	0	65.69	87.45	27.65
	03/05/2024 2:00	30.25	28.65	0	0	69.87	85.97	26.56
	03/05/2024 3:00	36.52	40.11	0	0	77.54	85.47	28.88
	03/05/2024 4:00	43.88	41.05	0	0	84.58	84.75	27.45
	03/05/2024 5:00	40.52	38.56	0	0	86.25	85.45	24.52
	03/05/2024 6:00	42.37	40.24	0	0	82.52	83.56	26.59
	03/05/2024 7:00	40.87	38.59	0	0	76.54	85.56	28.65
	03/05/2024 8:00	39.82	37.41	0	0	73.58	74.12	30.58
	03/05/2024 9:00	37.85	33.69	0	0	77.41	69.42	31.25
	03/05/2024 10:00	35.25	34.01	0	0	72.58	64.12	33.59
	03/05/2024 11:00	39.52	37.54	0	0	77.48	68.52	34.52
	03/05/2024 12:00	46.85	44.21	0	0	79.59	60.54	35.45
03/05/2024 13:00	50.87	45.65	0	0	70.25	55.26	37.52	
03/05/2024 14:00	43.25	41.1	0	0	65.75	53.54	37.98	
03/05/2024 15:00	38.52	36.58	0	0	66.89	56.89	36.87	
03/05/2024 16:00	35.96	34.32	0	0	67.85	58.75	37.52	
Hourly Limit Values	TA Luft	-	-	200	350	-	-	-
	EU	-	-	200	350	-	-	-
	WHO Ambient Air Quality Guideline Value	-	-	-	-	-	-	-
	<b>24 Hours Average</b>	37.70	35.85	0.00	0.00	71.01	77.63	30.37
Daily Limit Values	TA Luft	50	-	-	-	-	-	-
	EU	50	-	-	-	-	-	-
	WHO Ambient Air Quality Guideline Value	45	15	25	40	-	-	-



### Result of AQ3 Location



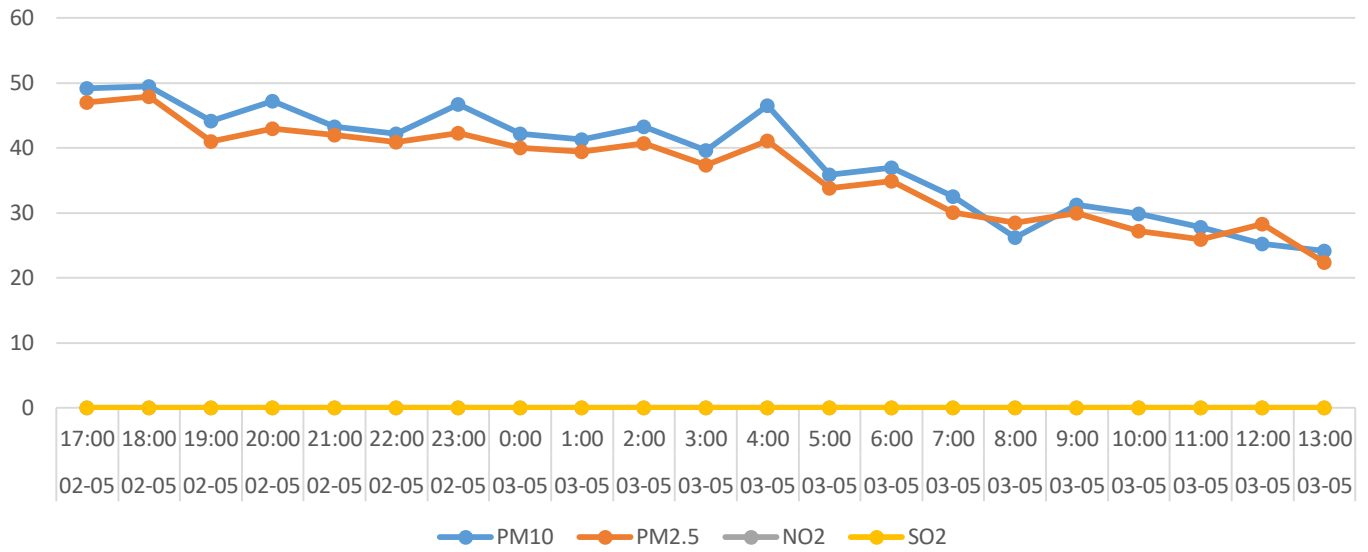
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**Measurement Results for Location 4**

Device Code: 223								
Location	Sampling Date	Results (µg/m <sup>3</sup> )					Ambient Conditions	
		PM <sub>10</sub>	PM <sub>2.5</sub>	NO <sub>2</sub>	SO <sub>2</sub>	TSP (24 Hours Average)	Humidity (%)	Temperature (°C)
ASR2	02/05/2024 17:00	49.21	47.02	0	0	90.25	74.32	30.56
	02/05/2024 18:00	49.52	47.89	0	0	92.89	75.95	29.56
	02/05/2024 19:00	44.21	41.02	0	0	87.45	83.56	27.56
	02/05/2024 20:00	47.25	43.01	0	0	84.56	86.54	28.69
	02/05/2024 21:00	43.25	42.03	0	0	78.98	86.59	27.59
	02/05/2024 22:00	42.21	40.93	0	0	78.56	86.87	27.69
	02/05/2024 23:00	46.69	42.33	0	0	79.56	87.14	29.56
	03/05/2024 0:00	42.21	40.01	0	0	77.36	90.15	29.36
	03/05/2024 1:00	41.26	39.41	0	0	76.52	89.54	28.56
	03/05/2024 2:00	43.25	40.67	0	0	78.57	87.69	28.21
	03/05/2024 3:00	39.65	37.41	0	0	70.54	89.23	27.45
	03/05/2024 4:00	46.52	41.12	0	0	68.45	87.58	26.28
	03/05/2024 5:00	35.85	33.8	0	0	66.89	89.32	29.65
	03/05/2024 6:00	36.98	34.89	0	0	65.42	88.25	28.98
	03/05/2024 7:00	32.52	30.12	0	0	57.65	85.48	30.25
	03/05/2024 8:00	26.21	28.52	0	0	60.45	77.54	32.25
	03/05/2024 9:00	31.22	30.01	0	0	60.75	72.45	33.65
	03/05/2024 10:00	29.89	27.21	0	0	61.25	75.89	30.59
	03/05/2024 11:00	27.83	25.95	0	0	55.85	73.65	31.48
	03/05/2024 12:00	25.25	28.31	0	0	55.25	65.25	33.59
03/05/2024 13:00	24.12	22.41	0	0	53.59	64.28	35.25	
Hourly Limit Values	TA Luft	-	-	200	350	-	-	-
	EU	-	-	200	350	-	-	-
	WHO Ambient Air Quality Guideline Value	-	-	-	-	-	-	-
	24 Hours Average	38.34	36.38	0.00	0.00	71.47	81.77	29.84
Daily Limit Values	TA Luft	50	-	-	125			
	EU	50	-	-	125			
	WHO Ambient Air Quality Guideline Value	45	15	25	40			



### Result of ASR2 Location

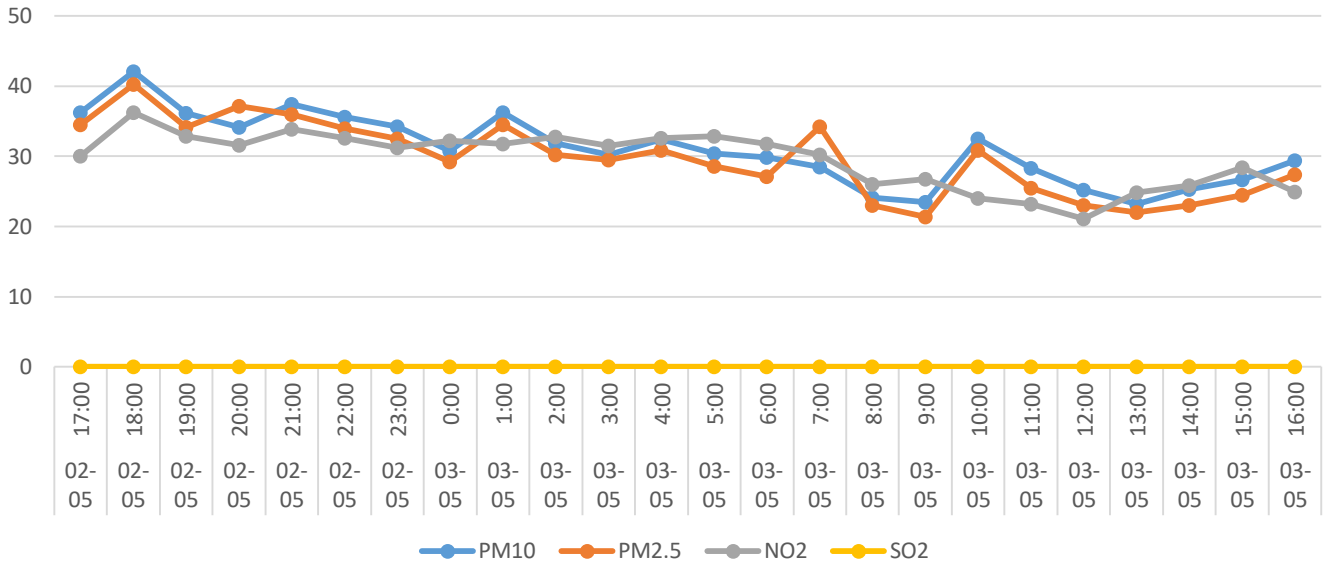


Measurement Results for Location 5

Device Code: AIRS-1								
Location	Sampling Date	Results ( $\mu\text{g}/\text{m}^3$ )					Ambient Conditions	
		PM <sub>10</sub>	PM <sub>2.5</sub>	NO <sub>2</sub>	SO <sub>2</sub>	TSP (24 Hours Average)	Humidity (%)	Temperature (°C)
ASR3	02/05/2024 17:00	36.21	34.52	30.02	0.00	75.20	68.98	73.69
	02/05/2024 18:00	42.11	40.25	36.21	0.00	80.78	70.47	79.89
	02/05/2024 19:00	36.18	34.12	32.89	0.00	71.45	65.85	85.36
	02/05/2024 20:00	34.15	37.12	31.58	0.00	70.87	63.48	86.85
	02/05/2024 21:00	37.46	35.96	33.89	0.00	66.26	64.49	88.69
	02/05/2024 22:00	35.65	34.01	32.58	0.00	65.20	63.74	88.45
	02/05/2024 23:00	34.21	32.52	31.20	0.00	63.26	61.58	89.65
	03/05/2024 0:00	30.73	29.22	32.25	0.00	68.62	60.65	87.45
	03/05/2024 1:00	36.25	34.52	31.74	0.00	65.24	59.49	86.52
	03/05/2024 2:00	31.84	30.26	32.78	0.00	62.41	67.69	87.11
	03/05/2024 3:00	30.25	29.51	31.48	0.00	63.45	69.34	86.44
	03/05/2024 4:00	32.38	30.82	32.58	0.00	61.87	67.25	85.85
	03/05/2024 5:00	30.45	28.56	32.89	0.00	60.58	69.89	87.25
	03/05/2024 6:00	29.85	27.1	31.75	0.00	61.01	72.52	85.25
	03/05/2024 7:00	28.45	34.28	30.25	0.00	54.78	63.24	82.59
	03/05/2024 8:00	24.14	22.99	25.98	0.00	56.47	65.28	69.54
	03/05/2024 9:00	23.51	21.36	26.75	0.00	58.15	63.01	62.25
	03/05/2024 10:00	32.52	30.85	23.99	0.00	59.47	60.89	59.59
	03/05/2024 11:00	28.32	25.45	23.20	0.00	54.52	63.05	61.20
	03/05/2024 12:00	25.21	23.02	21.09	0.00	55.89	65.42	62.59
03/05/2024 13:00	23.21	21.97	24.87	0.00	51.74	67.25	63.65	
03/05/2024 14:00	25.33	23.03	25.87	0.00	75.20	69.98	60.45	
03/05/2024 15:00	26.65	24.51	28.41	0.00	78.45	70.59	62.85	
03/05/2024 16:00	29.42	27.41	24.89	0.00	80.87	73.68	63.45	
Hourly Limit Values	TA Luft	-	-	200	200	-	-	-
	EU	-	-	200	350	-	-	-
	WHO Ambient Air Quality Guideline Value	-	-	-	-	-	-	-
Average	24 hours Average	31.02	29.72	29.55	0.00	65.07	66.16	76.94
Daily Limit Values	TA Luft	50	-	-	125	-	-	-
	EU	50	-	-	125	-	-	-
	WHO Ambient Air Quality Guideline Value	45	15	25	40	-	-	-



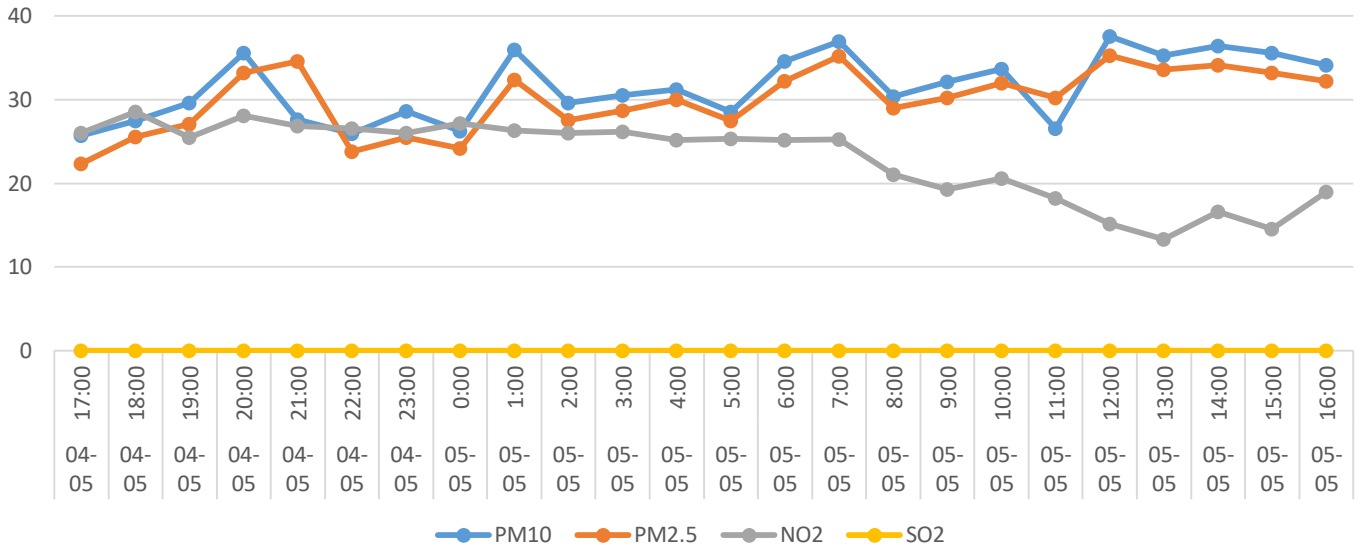
### Result of ASR3 Location



Measurement Results for Location 6

Device Code: 223								
Location	Sampling Date	Results (µg/m³)					Ambient Conditions	
		PM <sub>10</sub>	PM <sub>2.5</sub>	NO <sub>2</sub>	SO <sub>2</sub>	TSP (24 Hours Average)	Humidity (%)	Temperature (°C)
ASR5	04/05/2024 17:00	25.69	22.36	26.02	0.00	49.2	47.65	67.98
	04/05/2024 18:00	27.51	25.56	28.54	0.00	52.25	55.59	74.54
	04/05/2024 19:00	29.65	27.11	25.52	0.00	48.26	50.89	79.59
	04/05/2024 20:00	35.58	33.23	28.12	0.00	54.32	53.45	78.25
	04/05/2024 21:00	27.62	34.59	26.85	0.00	51.87	50.58	80.45
	04/05/2024 22:00	25.91	23.77	26.52	0.00	50.48	55.58	79.52
	04/05/2024 23:00	28.65	25.52	26.02	0.00	48.45	50.59	82.15
	05/05/2024 0:00	26.27	24.19	27.15	0.00	51.21	52.78	85.69
	05/05/2024 1:00	35.98	32.41	26.32	0.00	45.24	50.59	82.52
	05/05/2024 2:00	29.65	27.54	26.01	0.00	49.25	54.69	86.59
	05/05/2024 3:00	30.54	28.69	26.21	0.00	50.25	52.54	85.26
	05/05/2024 4:00	31.25	30.01	25.20	0.00	51.65	49.35	84.21
	05/05/2024 5:00	28.52	27.51	25.37	0.00	49.15	50.20	84.26
	05/05/2024 6:00	34.58	32.23	25.20	0.00	50.21	48.85	83.89
	05/05/2024 7:00	36.98	35.21	25.26	0.00	45.25	46.58	82.78
	05/05/2024 8:00	30.41	29.02	21.06	0.00	40.12	44.36	68.63
	05/05/2024 9:00	32.15	30.25	19.30	0.00	40.58	42.54	63.59
	05/05/2024 10:00	33.69	32.02	20.59	0.00	35.58	46.24	62.85
	05/05/2024 11:00	26.52	30.25	18.20	0.00	38.62	40.89	68.49
	05/05/2024 12:00	37.54	35.25	15.15	0.00	39.54	36.05	67.58
05/05/2024 13:00	35.25	33.63	13.29	0.00	40.25	39.48	66.45	
05/05/2024 14:00	36.41	34.1	16.58	0.00	41.25	35.65	65.48	
05/05/2024 15:00	35.56	33.25	14.54	0.00	43.01	33.89	63.59	
05/05/2024 16:00	34.12	32.25	18.99	0.00	40.68	38.65	61.04	
Hourly Limit Values	TA Luft	-	-	200	350	-	-	-
	EU	-	-	200	350	-	-	-
	WHO Ambient Air Quality Guideline Value	-	-	-	-	-	-	-
Average	24 Hours Average	31.50	30.01	23.00	0.00	46.11	46.99	75.22
Daily Limit Values	TA Luft	50	-	-	125	-	-	-
	EU	50	-	-	125	-	-	-
	WHO Ambient Air Quality Guideline Value	45	15	25	40	-	-	-

Result of ASR5 Location



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**Measurement Results for Location 7**

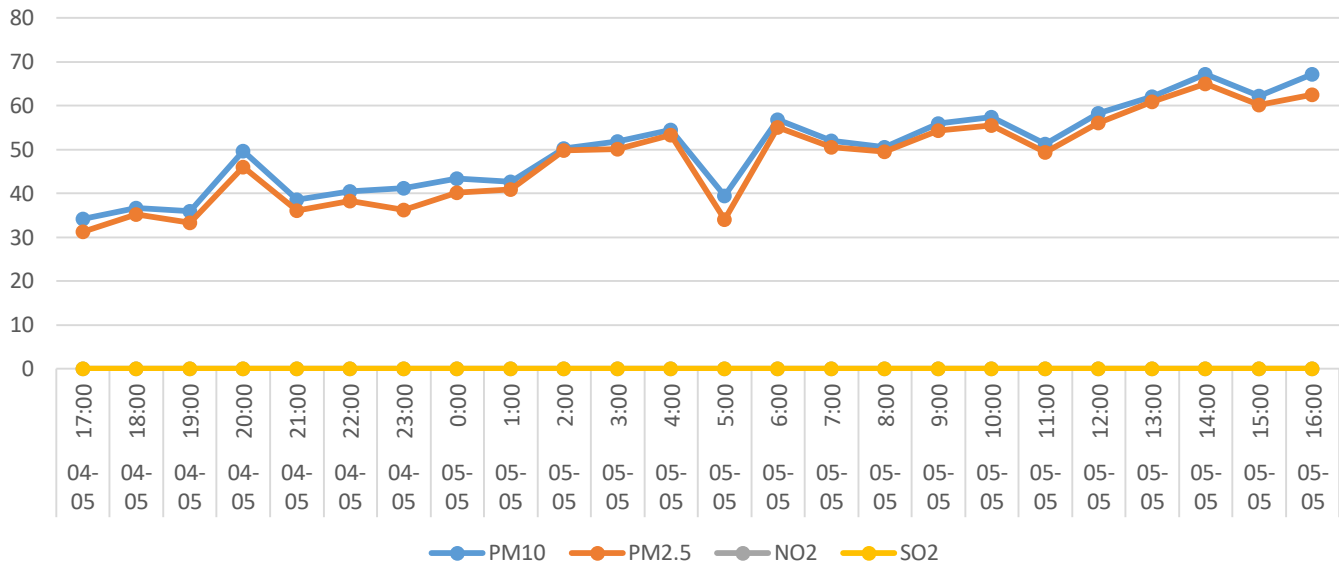
Device Code: 224								
Location	Sampling Date	Results ( $\mu\text{g}/\text{m}^3$ )					Ambient Conditions	
		PM <sub>10</sub>	PM <sub>2.5</sub>	NO <sub>2</sub>	SO <sub>2</sub>	TSP (24 Hours Average)	Humidity (%)	Temperature (°C)
AQ4	04/05/2024 17:00	34.21	31.25	0.00	0.00	35.25	68.96	31.58
	04/05/2024 18:00	36.65	35.15	0.00	0.00	38.59	72.58	30.58
	04/05/2024 19:00	35.89	33.25	0.00	0.00	36.32	78.65	28.65
	04/05/2024 20:00	49.69	46.02	0.00	0.00	38.96	79.59	27.96
	04/05/2024 21:00	38.52	36.11	0.00	0.00	39.21	82.95	26.58
	04/05/2024 22:00	40.52	38.21	0.00	0.00	42.55	82.48	25.59
	04/05/2024 23:00	41.15	36.25	0.00	0.00	40.12	83.59	27.89
	05/05/2024 0:00	43.32	40.23	0.00	0.00	43.59	83.59	26.63
	05/05/2024 1:00	42.69	40.98	0.00	0.00	44.85	82.87	25.59
	05/05/2024 2:00	50.32	49.87	0.00	0.00	46.65	85.59	24.65
	05/05/2024 3:00	51.86	50.14	0.00	0.00	53.69	83.58	27.69
	05/05/2024 4:00	54.51	53.25	0.00	0.00	55.89	81.74	26.25
	05/05/2024 5:00	39.41	34.01	0.00	0.00	57.98	80.54	25.45
	05/05/2024 6:00	56.89	55.11	0.00	0.00	56.58	82.48	24.62
	05/05/2024 7:00	52.05	50.56	0.00	0.00	52.48	78.69	28.62
	05/05/2024 8:00	50.52	49.56	0.00	0.00	50.87	65.65	33.69
	05/05/2024 9:00	55.94	54.41	0.00	0.00	58.65	61.52	32.54
	05/05/2024 10:00	57.45	55.58	0.00	0.00	56.89	60.32	33.65
	05/05/2024 11:00	51.26	49.32	0.00	0.00	54.20	59.32	36.65
	05/05/2024 12:00	58.25	56.03	0.00	0.00	51.25	57.52	34.69
05/05/2024 13:00	62.12	60.89	0.00	0.00	59.99	59.65	35.89	
05/05/2024 14:00	67.24	65.02	0.00	0.00	58.62	62.69	33.52	
05/05/2024 15:00	62.22	60.12	0.00	0.00	56.54	65.65	32.48	
05/05/2024 16:00	67.16	62.56	0.00	0.00	61.98	60.98	35.32	
Hourly Limit Values	TA Luft	-	-	200	350		-	-
	EU	-	-	200	350		-	-
	WHO Ambient Air Quality Guideline Value	-	-	-	-		-	-
Average	24 hours Average	49.99	47.66	0.00	0.00	49.65	73.38	29.87
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

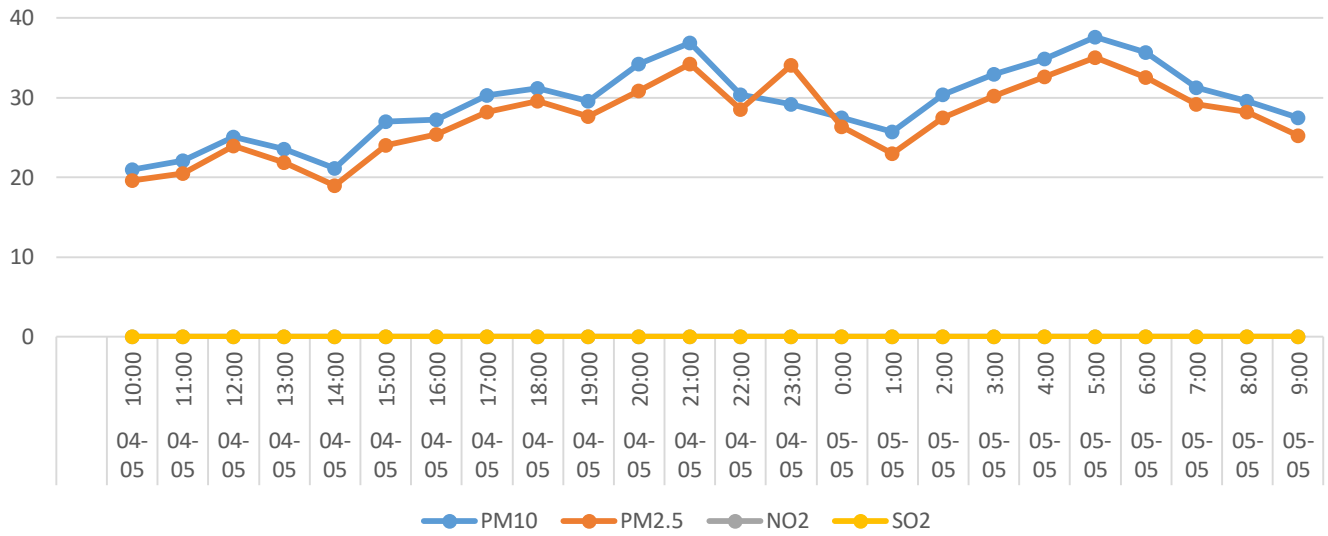


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**Measurement Results for Location 8**

Device Code: 224								
Location	Sampling Date	Results (µg/m <sup>3</sup> )					Ambient Conditions	
		PM <sub>10</sub>	PM <sub>2.5</sub>	NO <sub>2</sub>	SO <sub>2</sub>	TSP (24 Hours Average)	Humidity (%)	Temperature (°C)
Area 12	04-05-2024 10:00	20.96	19.65	0.00	0.00	40.23	69.65	34.69
	04/05/2024 11:00	22.1	20.54	0.00	0.00	41.99	67.69	32.98
	04/05/2024 12:00	25.1	23.99	0.00	0.00	43.01	63.58	33.69
	04/05/2024 13:00	23.52	21.89	0.00	0.00	42.65	61.96	36.98
	04/05/2024 14:00	21.15	18.99	0.00	0.00	45.36	58.69	32.58
	04/05/2024 15:00	26.98	24.01	0.00	0.00	41.12	60.51	33.69
	04/05/2024 16:00	27.25	25.41	0.00	0.00	46.25	58.56	32.06
	04/05/2024 17:00	30.32	28.21	0.00	0.00	48.65	60.69	31.65
	04/05/2024 18:00	31.15	29.54	0.00	0.00	40.89	56.89	28.98
	04/05/2024 19:00	29.54	27.65	0.00	0.00	42.19	53.00	29.85
	04/05/2024 20:00	34.22	30.89	0.00	0.00	45.15	50.46	27.96
	04/05/2024 21:00	36.85	34.25	0.00	0.00	50.01	48.58	30.89
	04/05/2024 22:00	30.41	28.54	0.00	0.00	41.32	46.41	28.36
	04/05/2024 23:00	29.15	34.07	0.00	0.00	44.49	43.15	27.05
	05/05/2024 00:00	27.52	26.35	0.00	0.00	48.10	46.65	29.65
	05/05/2024 01:00	25.69	23.00	0.00	0.00	45.15	48.87	27.15
	05/05/2024 02:00	30.36	27.47	0.00	0.00	48.36	50.05	31.30
	05/05/2024 03:00	32.96	30.21	0.00	0.00	49.15	52.96	26.15
	05/05/2024 04:00	34.85	32.65	0.00	0.00	45.65	55.26	29.30
	05/05/2024 05:00	37.58	35.02	0.00	0.00	46.54	57.66	26.06
05/05/2024 06:00	35.65	32.52	0.00	0.00	48.25	59.89	28.35	
05/05/2024 07:00	31.25	29.15	0.00	0.00	43.60	51.65	27.09	
05/05/2024 08:00	29.54	28.21	0.00	0.00	45.69	53.89	29.87	
05/05/2024 09:00	27.45	25.25	0.00	0.00	42.89	50.09	33.89	
Hourly Limit Values	TA Luft	-	-	200	350	-	-	-
	EU	-	-	200	350	-	-	-
	WHO Ambient Air Quality Guideline Value	-	-	-	-	-	-	-
Average	24 hours Average	29.23	27.39	0.00	0.00	44.	55.28	30.43
Daily Limit Values	TA Luft	50	-	-	125	-	-	-
	EU	50	-	-	125	-	-	-
	WHO Ambient Air Quality Guideline Value	45	15	25	40	-	-	-

### Result of AREA 12 Location



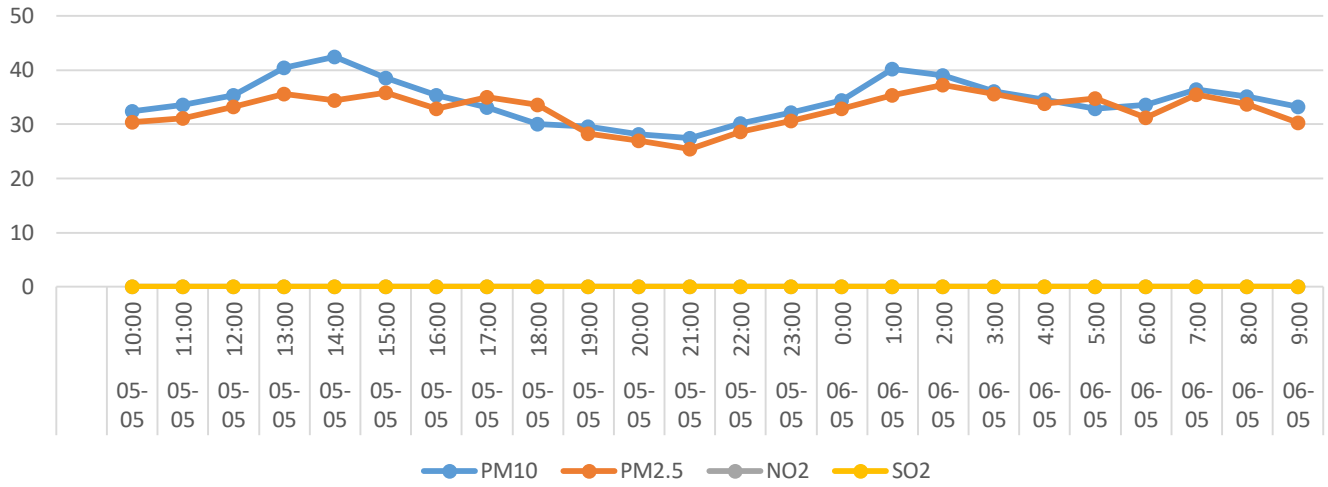
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**Measurement Results for Location 9**

Device Code: 224								
Location	Sampling Date	Results (µg/m <sup>3</sup> )					Ambient Conditions	
		PM <sub>10</sub>	PM <sub>2.5</sub>	NO <sub>2</sub>	SO <sub>2</sub>	TSP (24 Hours Average)	Humidity (%)	Temperature (°C)
BATCHING PLANT	05/05/2024 10:00	32.41	30.35	0.00	0.00	48.89	63.15	30.69
	05/05/2024 11:00	33.56	31.08	0.00	0.00	45.85	64.89	32.58
	05/05/2024 12:00	35.41	33.25	0.00	0.00	43.58	65.89	33.50
	05/05/2024 13:00	40.45	35.65	0.00	0.00	40.69	65.59	34.59
	05/05/2024 14:00	42.41	34.45	0.00	0.00	41.25	63.89	35.60
	05/05/2024 15:00	38.52	35.87	0.00	0.00	42.78	63.58	38.10
	05/05/2024 16:00	35.41	32.85	0.00	0.00	44.25	62.85	39.63
	05/05/2024 17:00	33.15	35.05	0.00	0.00	50.01	65.89	35.56
	05/05/2024 18:00	30.1	33.57	0.00	0.00	41.65	68.58	33.56
	05/05/2024 19:00	29.52	28.25	0.00	0.00	43.25	69.96	30.88
	05/05/2024 20:00	28.14	26.98	0.00	0.00	44.89	65.58	29.45
	05/05/2024 21:00	27.4	25.45	0.00	0.00	46.57	64.58	28.20
	05/05/2024 22:00	30.15	28.59	0.00	0.00	49.56	63.65	26.45
	05/05/2024 23:00	32.19	30.68	0.00	0.00	42.85	66.69	27.45
	06/05/2024 00:00	34.41	32.85	0.00	0.00	41.45	67.48	29.65
	06/05/2024 01:00	40.25	35.41	0.00	0.00	40.52	68.25	28.62
	06/05/2024 02:00	38.98	37.25	0.00	0.00	43.29	65.02	27.20
	06/05/2024 03:00	36.12	35.56	0.00	0.00	45.89	64.36	28.32
	06/05/2024 04:00	34.52	33.85	0.00	0.00	41.45	65.21	27.56
	06/05/2024 05:00	32.89	34.77	0.00	0.00	42.56	66.23	29.99
	06/05/2024 06:00	33.58	31.25	0.00	0.00	44.45	64.20	27.77
06/05/2024 07:00	36.45	35.45	0.00	0.00	47.06	67.12	28.58	
06/05/2024 08:00	35.15	33.69	0.00	0.00	43.58	66.52	30.89	
06/05/2024 09:00	33.25	30.25	0.00	0.00	41.15	64.78	33.55	
Hourly Limit Values	TA Luft	-	-	200	350	-	-	-
	EU	-	-	200	350	-	-	-
	WHO Ambient Air Quality Guideline Value	-	-	-	-	-	-	-
Average	24 hours Average	33.81	32.50	0.00	0.00	44.06	65.58	31.18
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 OFFICE AREA Location



## **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.





## **Ambient Noise Level**

Environmental monitoring Report Pre-Construction–Stage WtE Facility  
at Thilafushi

Noise Level Measurements (April 2024)

Prepared by: Mahmood Riyaz



27th April 2024

## Table of contents

<b>Table of contents</b>	<b>2</b>
<b>List of Tables</b>	<b>2</b>
<b>List of Figures</b>	<b>2</b>
<b>1. INTRODUCTION</b>	<b>3</b>
<b>2. NOISE LEVEL</b>	<b>3</b>
<b>2.1 Results</b>	<b>4</b>
<b>Annex 1. Noise level Hourly recorded</b>	<b>7</b>

## List of Tables

<b>Table 1: Locations selected for Ambient Noise Level Measurements</b>	<b>3</b>
<b>Table 2: Noise measurement records in (dBA), 9-10 March 2024 Thilafushi</b>	<b>5</b>

## List of Figures

<b>Figure 1: Ambient noise level sampling locations</b>	<b>4</b>
<b>Figure 2. Graph showing the Ambient noise level recorded</b>	<b>6</b>

# 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

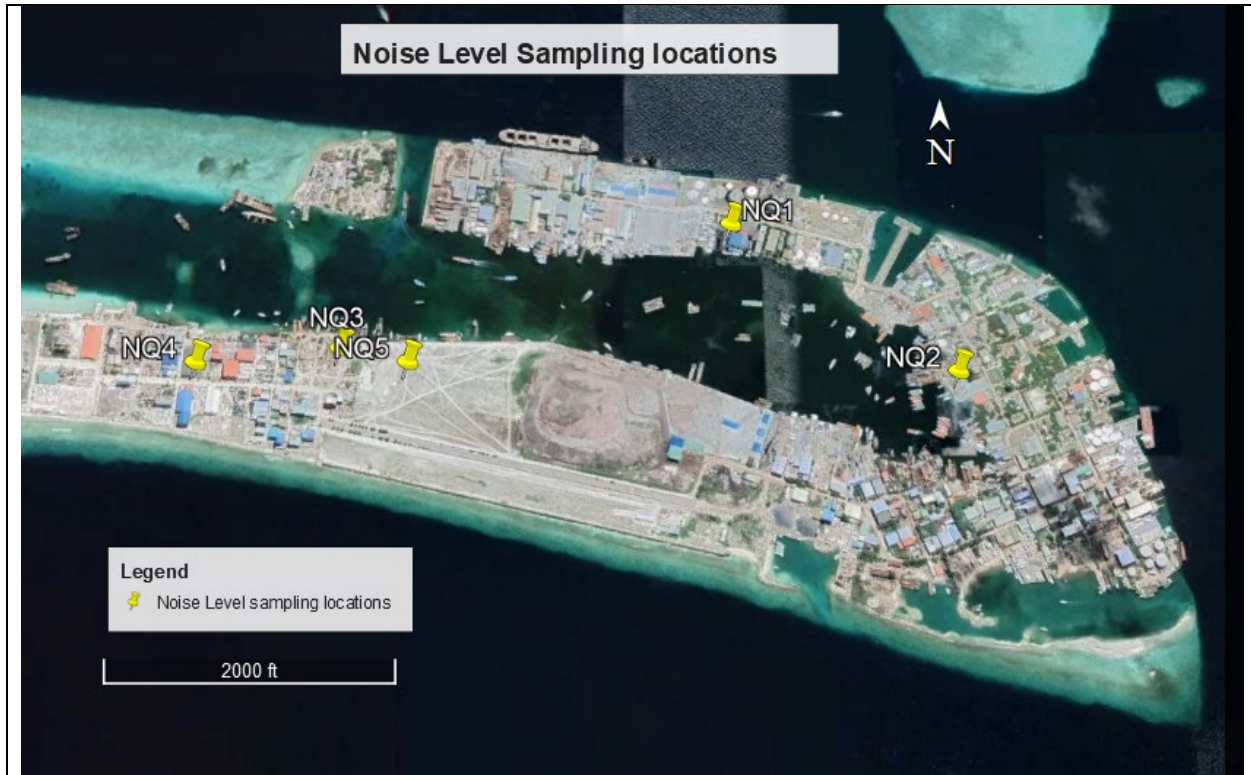
As part of the pre-construction monitoring of Thilafushi Waste to Energy facility, ambient noise levels measurements were repeated at the same five locations used in the EIA report. Ambient noise level measurement was done using a handheld sound level meter (ET-958 Professional Sound Level Meter) Measurements are recorded in NQ1, and NQ2 NQ3, NQ4 and NQ5 from 22<sup>nd</sup> April 2024 13: 00 to 23<sup>th</sup> April 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



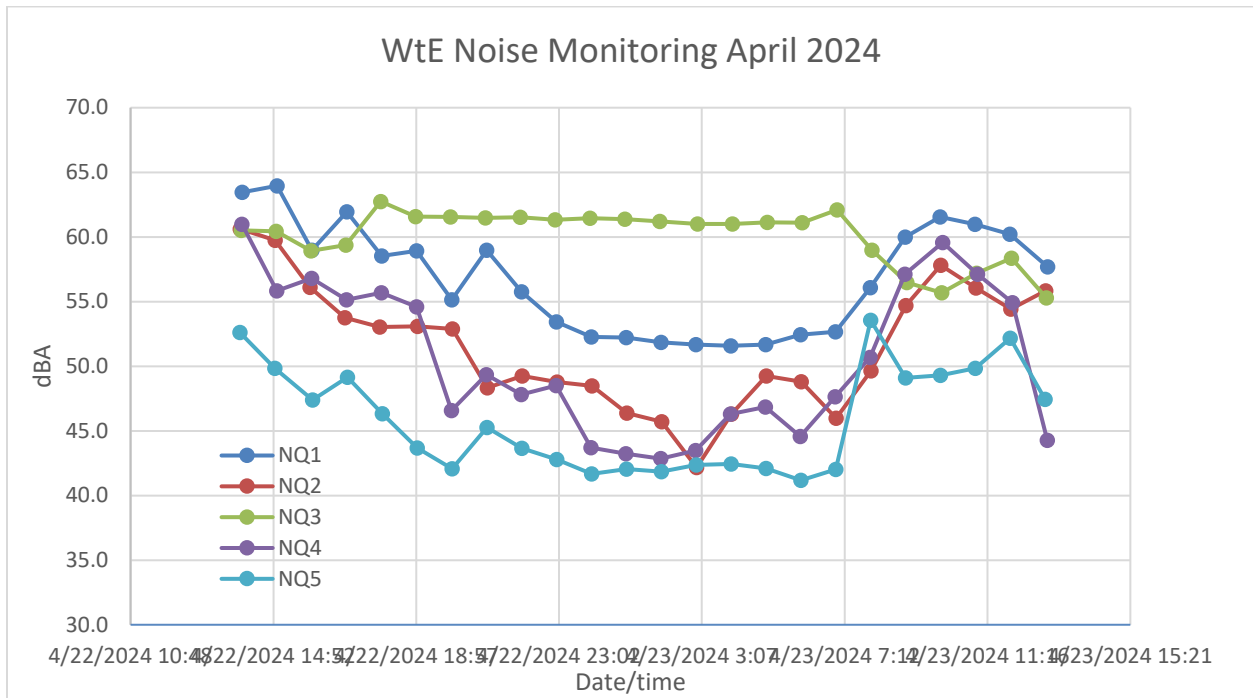
## 2.1 Results

**Table 2: Noise measurement records in (dBA), 22-23 April 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)
4/22/2024 13:59	63.5	4/22/2024 13:55	60.6	4/22/2024 13:57	60.5	4/22/2024 13:59	61.0	4/22/2024 13:55	52.6
4/22/2024 14:59	64.0	4/22/2024 14:55	59.7	4/22/2024 14:57	60.4	4/22/2024 14:58	55.8	4/22/2024 14:55	49.8
4/22/2024 15:59	59.0	4/22/2024 15:55	56.1	4/22/2024 15:57	58.9	4/22/2024 15:58	56.8	4/22/2024 15:59	47.4
4/22/2024 16:58	62.0	4/22/2024 16:55	53.7	4/22/2024 16:56	59.4	4/22/2024 16:58	55.1	4/22/2024 16:59	49.1
4/22/2024 17:58	58.5	4/22/2024 17:55	53.0	4/22/2024 17:56	62.8	4/22/2024 17:58	55.7	4/22/2024 17:59	46.3
4/22/2024 18:58	58.9	4/22/2024 18:59	53.1	4/22/2024 18:56	61.6	4/22/2024 18:57	54.6	4/22/2024 18:59	43.7
4/22/2024 19:58	55.1	4/22/2024 19:59	52.9	4/22/2024 19:56	61.6	4/22/2024 19:57	46.6	4/22/2024 19:58	42.1
4/22/2024 20:58	59.0	4/22/2024 20:59	48.3	4/22/2024 20:56	61.5	4/22/2024 20:57	49.4	4/22/2024 20:58	45.3
4/22/2024 21:57	55.8	4/22/2024 21:59	49.2	4/22/2024 21:55	61.5	4/22/2024 21:57	47.8	4/22/2024 21:58	43.6
4/22/2024 22:57	53.4	4/22/2024 22:59	48.8	4/22/2024 22:55	61.3	4/22/2024 22:57	48.5	4/22/2024 22:58	42.8
4/22/2024 23:57	52.3	4/22/2024 23:58	48.5	4/22/2024 23:55	61.4	4/22/2024 23:56	43.7	4/22/2024 23:58	41.7
4/23/2024 0:57	52.2	4/23/2024 0:58	46.4	4/23/2024 0:55	61.4	4/23/2024 0:56	43.2	4/23/2024 0:57	42.0
4/23/2024 1:57	51.9	4/23/2024 1:58	45.7	4/23/2024 1:55	61.2	4/23/2024 1:56	42.9	4/23/2024 1:57	41.8
4/23/2024 2:56	51.7	4/23/2024 2:58	42.2	4/23/2024 2:59	61.0	4/23/2024 2:56	43.5	4/23/2024 2:57	42.4
4/23/2024 3:56	51.6	4/23/2024 3:58	46.3	4/23/2024 3:59	61.0	4/23/2024 3:56	46.3	4/23/2024 3:57	42.4
4/23/2024 4:56	51.7	4/23/2024 4:57	49.3	4/23/2024 4:59	61.1	4/23/2024 4:55	46.9	4/23/2024 4:57	42.1
4/23/2024 5:56	52.5	4/23/2024 5:57	48.8	4/23/2024 5:59	61.1	4/23/2024 5:55	44.6	4/23/2024 5:56	41.2
4/23/2024 6:56	52.7	4/23/2024 6:57	46.0	4/23/2024 6:59	62.1	4/23/2024 6:55	47.6	4/23/2024 6:56	42.0
4/23/2024 7:55	56.1	4/23/2024 7:57	49.6	4/23/2024 7:58	59.0	4/23/2024 7:55	50.7	4/23/2024 7:56	53.6
4/23/2024 8:55	60.0	4/23/2024 8:57	54.7	4/23/2024 8:58	56.5	4/23/2024 8:55	57.1	4/23/2024 8:56	49.1
4/23/2024 9:55	61.6	4/23/2024 9:56	57.8	4/23/2024 9:58	55.7	4/23/2024 9:59	59.6	4/23/2024 9:56	49.3
4/23/2024 10:55	61.0	4/23/2024 10:56	56.1	4/23/2024 10:58	57.2	4/23/2024 10:59	57.1	4/23/2024 10:55	49.9
4/23/2024 11:55	60.2	4/23/2024 11:56	54.4	4/23/2024 11:57	58.4	4/23/2024 11:59	54.9	4/23/2024 11:55	52.2
4/23/2024 12:59	57.7	4/23/2024 12:56	55.8	4/23/2024 12:57	55.3	4/23/2024 12:59	44.3	4/23/2024 12:55	47.4
Average dB(A)	56.8		51.5		60.1		50.6		45.8
Daytime	59.3		54.5		59.2		54.1		48.2
Night time	53.2		47.3		61.3		45.7		42.5
WHO guideline for ambient noise level	<b>70</b>								



**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. It was observed that in NQ station 3 the average noise level is higher this is because this is the main area where work is going on currently, mainly pilling and concrete work is undergoing it is in a close proximity to the measuring station.

## 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	Scattered shower and	Temperature:31.6°C
Start time	4/22/2024 13:59	thunder stoms in S and Central Atolls	Wind 5-15mph SW/W
End time	4/23/2024 12:59	Generally fine weather	

Date/time	dBA	Remarks	noise level
4/22/2024 13:59	63.5	Conversation	
4/22/2024 14:59	64.0	Conversation	
4/22/2024 15:59	59.0	Quiet Office	
4/22/2024 16:58	62.0	Conversation	
4/22/2024 17:58	58.5	Quiet Office	
4/22/2024 18:58	58.9	Quiet Office	
4/22/2024 19:58	55.1	Quiet Office	
4/22/2024 20:58	59.0	Quiet Office	
4/22/2024 21:57	55.8	Quiet Office	
4/22/2024 22:57	53.4	Quiet Office	
4/22/2024 23:57	52.3	Quiet Office	
4/23/2024 0:57	52.2	Quiet Office	
4/23/2024 1:57	51.9	Quiet Office	
4/23/2024 2:56	51.7	Quiet Office	
4/23/2024 3:56	51.6	Quiet Office	
4/23/2024 4:56	51.7	Quiet Office	
4/23/2024 5:56	52.5	Quiet Office	
4/23/2024 6:56	52.7	Quiet Office	
4/23/2024 7:55	56.1	Quiet Office	
4/23/2024 8:55	60.0	Quiet Office	
4/23/2024 9:55	61.6	Conversation	
4/23/2024 10:55	61.0	Conversation	
4/23/2024 11:55	60.2	Conversation	
4/23/2024 12:59	57.7	Quiet Office	
Average	56.8		
Day time avr	59.3		
Night time average	53.2		



**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	Scattered shower and thunder storms in S and Central Atolls Generally fine weather	Temperature:31.6°C
Start time	4/22/2024 13:55		Wind 5-15mph SW/W
End time	4/23/2024 12:56		

Date/time	dB(A)	Remarks noise level
4/22/2024 13:55	60.6	Conversation
4/22/2024 14:55	59.7	Quiet Office
4/22/2024 15:55	56.1	Quiet Office
4/22/2024 16:55	53.7	Quiet Office
4/22/2024 17:55	53.0	Quiet Office
4/22/2024 18:59	53.1	Quiet Office
4/22/2024 19:59	52.9	Quiet Office
4/22/2024 20:59	48.3	Quiet Library
4/22/2024 21:59	49.2	Quiet Library
4/22/2024 22:59	48.8	Quiet Library
4/22/2024 23:58	48.5	Quiet Library
4/23/2024 0:58	46.4	Quiet Library
4/23/2024 1:58	45.7	Quiet Library
4/23/2024 2:58	42.2	Quiet Library
4/23/2024 3:58	46.3	Quiet Library
4/23/2024 4:57	49.3	Quiet Library
4/23/2024 5:57	48.8	Quiet Library
4/23/2024 6:57	46.0	Quiet Library
4/23/2024 7:57	49.6	Quiet Library
4/23/2024 8:57	54.7	Quiet Office
4/23/2024 9:56	57.8	Quiet Office
4/23/2024 10:56	56.1	Quiet Office
4/23/2024 11:56	54.4	Quiet Office
4/23/2024 12:56	55.8	Quiet Office

Average 51.5  
 Day time avr 54.5  
 Night time average 47.3

**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	Scattered shower and thunder storms in S and Central Atolls Generally fine weather	Temperature:31.6°C
Start time	4/22/2024 13:57		Wind 5-15mph SW/W
End time	4/23/2024 12:57		

Date/time	dBA	Remarks Noise level
4/22/2024 13:57	60.5	Conversation
4/22/2024 14:57	60.4	Conversation
4/22/2024 15:57	58.9	Quiet Office
4/22/2024 16:56	59.4	Quiet Office
4/22/2024 17:56	62.8	Conversation
4/22/2024 18:56	61.6	Conversation
4/22/2024 19:56	61.6	Conversation
4/22/2024 20:56	61.5	Conversation
4/22/2024 21:55	61.5	Conversation
4/22/2024 22:55	61.3	Conversation
4/22/2024 23:55	61.4	Conversation
4/23/2024 0:55	61.4	Conversation
4/23/2024 1:55	61.2	Conversation
4/23/2024 2:59	61.0	Conversation
4/23/2024 3:59	61.0	Conversation
4/23/2024 4:59	61.1	Conversation
4/23/2024 5:59	61.1	Conversation
4/23/2024 6:59	62.1	Conversation
4/23/2024 7:58	59.0	Quiet Office
4/23/2024 8:58	56.5	Quiet Office
4/23/2024 9:58	55.7	Quiet Office
4/23/2024 10:58	57.2	Quiet Office
4/23/2024 11:57	58.4	Quiet Office
4/23/2024 12:57	55.3	Quiet Office

Average 60.1  
Day time avr 59.2  
Night time average 61.3



**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	Scattered shower and thunder storms in S and Central Atolls Generally fine weather	Temperature:31.6°C
Start time	4/22/2024 13:59		Wind 5-15mph SW/W
End time	4/23/2024 12:59		

Date/time	dBA	Remarks Noise level
4/22/2024 13:59	61.0	Conversation
4/22/2024 14:58	55.8	Quiet Office
4/22/2024 15:58	56.8	Quiet Office
4/22/2024 16:58	55.1	Quiet Office
4/22/2024 17:58	55.7	Quiet Office
4/22/2024 18:57	54.6	Quiet Office
4/22/2024 19:57	46.6	Quiet Library
4/22/2024 20:57	49.4	Quiet Library
4/22/2024 21:57	47.8	Quiet Library
4/22/2024 22:57	48.5	Quiet Library
4/22/2024 23:56	43.7	Quiet Library
4/23/2024 0:56	43.2	Quiet Library
4/23/2024 1:56	42.9	Quiet Library
4/23/2024 2:56	43.5	Quiet Library
4/23/2024 3:56	46.3	Quiet Library
4/23/2024 4:55	46.9	Quiet Library
4/23/2024 5:55	44.6	Quiet Library
4/23/2024 6:55	47.6	Quiet Library
4/23/2024 7:55	50.7	Quiet Office
4/23/2024 8:55	57.1	Quiet Office
4/23/2024 9:59	59.6	Quiet Office
4/23/2024 10:59	57.1	Quiet Office
4/23/2024 11:59	54.9	Quiet Office
4/23/2024 12:59	44.3	Quiet Library

Average 50.6  
 Day time avr 54.1  
 Night time average 45.7

**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	Scattered shower and thunder storms in S and Central Atolls Generally fine weather	Temperature:31.6°C
Start time	4/22/2024 13:55		Wind 5-15mph SW/W
End time	4/23/2024 12:55		

Date/time	dBA	Remarks Noise level
4/22/2024 13:55	52.6	Quiet Office
4/22/2024 14:55	49.8	Quiet Library
4/22/2024 15:59	47.4	Quiet Library
4/22/2024 16:59	49.1	Quiet Library
4/22/2024 17:59	46.3	Quiet Library
4/22/2024 18:59	43.7	Quiet Library
4/22/2024 19:58	42.1	Quiet Library
4/22/2024 20:58	45.3	Quiet Library
4/22/2024 21:58	43.6	Quiet Library
4/22/2024 22:58	42.8	Quiet Library
4/22/2024 23:58	41.7	Quiet Library
4/23/2024 0:57	42.0	Quiet Library
4/23/2024 1:57	41.8	Quiet Library
4/23/2024 2:57	42.4	Quiet Library
4/23/2024 3:57	42.4	Quiet Library
4/23/2024 4:57	42.1	Quiet Library
4/23/2024 5:56	41.2	Quiet Library
4/23/2024 6:56	42.0	Quiet Library
4/23/2024 7:56	53.6	Quiet Office
4/23/2024 8:56	49.1	Quiet Library
4/23/2024 9:56	49.3	Quiet Library
4/23/2024 10:55	49.9	Quiet Library
4/23/2024 11:55	52.2	Quiet Office
4/23/2024 12:55	47.4	Quiet Library

Average 45.8  
 Day time avr 48.2  
 Night time average 42.5





REPUBLIC OF MALDIVES  
MINISTRY OF ENVIRONMENT, CLIMATE CHANGE and TECHNOLOGY

DBO CONTRACTOR:



RAMBOLL

EMPLOYER  
REPRESENTATIV

Review & Approval:

**FICHTNER**

EPC CONTRACTOR:

ALKE-ALKATAŞ JV



Project Title:

Design, Build and Operate of a Waste to Energy Facility at Thilafushi  
Contract No: (AGR) 438-WPMC/PRIV/2021/71

Document Name:

**NOISE MONITORING REPORT**

Status:

Project Management Deliverables

Design:

Company:

Name:

Date:

Document No:

Prepared by:

AA JV

Dhamotharan

21.04.2024

Checked by:

AA JV

Sedat Cot

21.04.2024

URB/RAM

Released by:

## **Summary**

The noise monitoring assessment was conducted at the WTE construction site as part of the site's occupational health monitoring. This site features both static and moving equipment that operate continuously, leading to high noise exposure for employees as well as the nearby public.

## **Methodology**

The hand-held device (Flus – ET958) was utilized for noise measurement at the WTE construction site. Measurements were taken at various distances, including very close proximity, 1 meter, 2 meters, and 3 meters away from both static and moving equipment."

The measurements were taken at various locations at the site (Bunker area, Process area, Generator locations, yards and workshop)

Additionally, during the assessment, the team considered the relevant local regulations and international standards, including the IFC EHS guideline section 7 on noise assessment.

## **Findings**

- At the batching plant area generator noise was very high (Maximum 105 DB)
- Generator no3 near the process area generator noise was high (Maximum 95 DB)
- Moving equipment's noise was at an acceptable level
- The power tools equipment's noise was acceptable level

For further reference the attached pictures and assessment reports in the report as an appendix

## **Recommendation**

- Advised mechanic to conduct periodic maintenance including oil changes, filter replacements and general servicing and find the source of excessive noise
- Check such as any loose components, worn-out parts and malfunctioning engine components
- Check inadequate soundproofing placement
- Check the overloading of the engine that is beyond its rated capacity
- Check exhaust systems
- Advised workers to wear ear protection very close to excessive noise equipment area



Batching Plant Generator



Batching Plant Generator



Generator No 3

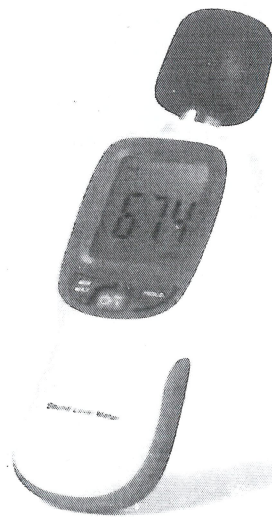


Batching Plant Area

**NOISE ASSESSMENT**

Date of Assessment : 21-04-2024,

SN.	Equipment Name	Location	Noise level DB (Distance)				Remarks
			Very close	1mtr	2mtr	3mtr	
1.	Water Discharge pump	Pump area	93.6	87.0	82.3	78.8	
2.	Water Discharge pump	Pump area	90.5	87.0	82.8	77.6	
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							



safe exposure limit is 85 DB for eight hours a day

dB

- 0-10 Silent
- 15-20 Quiet
- 20-40 Whispered
- 40-60 Normal conversation
- 60-70 Noisy
- 70-90 Begin to damage hearing
- 90-100 Loss of hearing
- 100+ Great damage to hearing

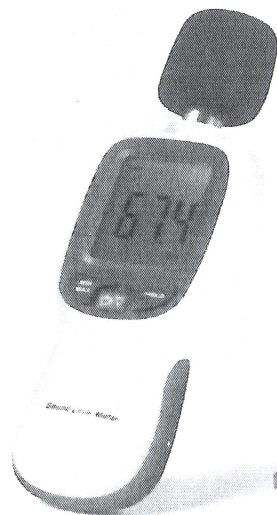
Assessment By	Reviewed By
Name: <u>Shakti Singh</u>	Name: <u>Dhanu Karam</u>
Signature with date: <u>[Signature]</u> <u>21/04/24</u>	Signature with date: <u>[Signature]</u> <u>21/04/2024</u>



**NOISE ASSESSMENT**

Date of Assessment : 21-04-2024.

SN.	Equipment Name	Location	Noise level DB (Distance)				Remarks
			Very close	1mtr	2mtr	3mtr	
1.	Diesel Generator <sup>01</sup> ASDV (Batching plant)		89.2	88.8	84.5	84.0	
2.	Diesel Generator <sup>02</sup> ASDV (process area)		98.5	85.2	82.8	78.4	
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							



safe exposure limit is 85 DB for eight hours a day

**dB**

- 1-15 Silent
- 15-20 Quiet
- 20-40 Whispered
- 40-60 Normal conversation
- 60-70 Noisy
- 70-90 Begin to damage hearing
- 90-100 Loss of hearing
- 100+ Great damage to hearing

Assessment By	Reviewed By
Name: <u>Shakti Singh</u>	Name: <u>Chameeran</u>
Signature with date: <u>[Signature]</u>	Signature with date: <u>[Signature]</u>

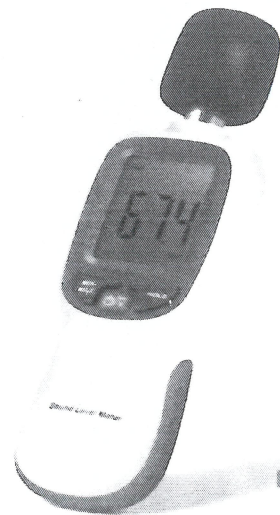
21/04/2024

21/04/2024

**NOISE ASSESSMENT**

Date of Assessment : 21-04-2024

SN.	Equipment Name	Location	Noise level DB (Distance)				Remarks
			Very close	1mtr	2mtr	3mtr	
1.	Diesel generator	(villa) Batching plant	105.8	100.1	94.9	90.5	Maintenance Required.
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							



safe exposure limit is 85 DB for eight hours a day

**dB**

- 0-10 Silent
- 15-20 Quiet
- 20-40 Whispered
- 40-60 Normal conversation
- 60-70 Noisy
- 70-90 Begin to damage hearing
- 90-100 Loss of hearing
- 100+ Great damage to hearing

Assessment By	Reviewed By
Name: <u>Shakti Singh</u>	Name: <u>Dhanu Tharan</u>
Signature with date: <u>[Signature]</u> 21/04/2024	Signature with date: <u>[Signature]</u> 21/04/2024



Environmental monitoring Report Pre-Construction–Stage WtE Facility  
at Thilafushi

Noise Level Measurements (May 2024)

Prepared by: Mahmood Riyaz



28th May 2024

## Table of contents

<b>Table of contents</b>	<b>2</b>
<b>List of Tables</b>	<b>2</b>
<b>List of Figures</b>	<b>2</b>
<b>1. INTRODUCTION</b>	<b>3</b>
<b>2. NOISE LEVEL</b>	<b>3</b>
<b>2.1 Results</b>	<b>4</b>
<b>Annex 1. Noise level Hourly recorded</b>	<b>7</b>

## List of Tables

<b>Table 1: Locations selected for Ambient Noise Level Measurements</b>	<b>3</b>
<b>Table 2: Noise measurement records in (dBA), 9-10 March 2024 Thilafushi</b>	<b>5</b>

## List of Figures

<b>Figure 1: Ambient noise level sampling locations</b>	<b>4</b>
<b>Figure 2. Graph showing the Ambient noise level recorded</b>	<b>6</b>

# 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

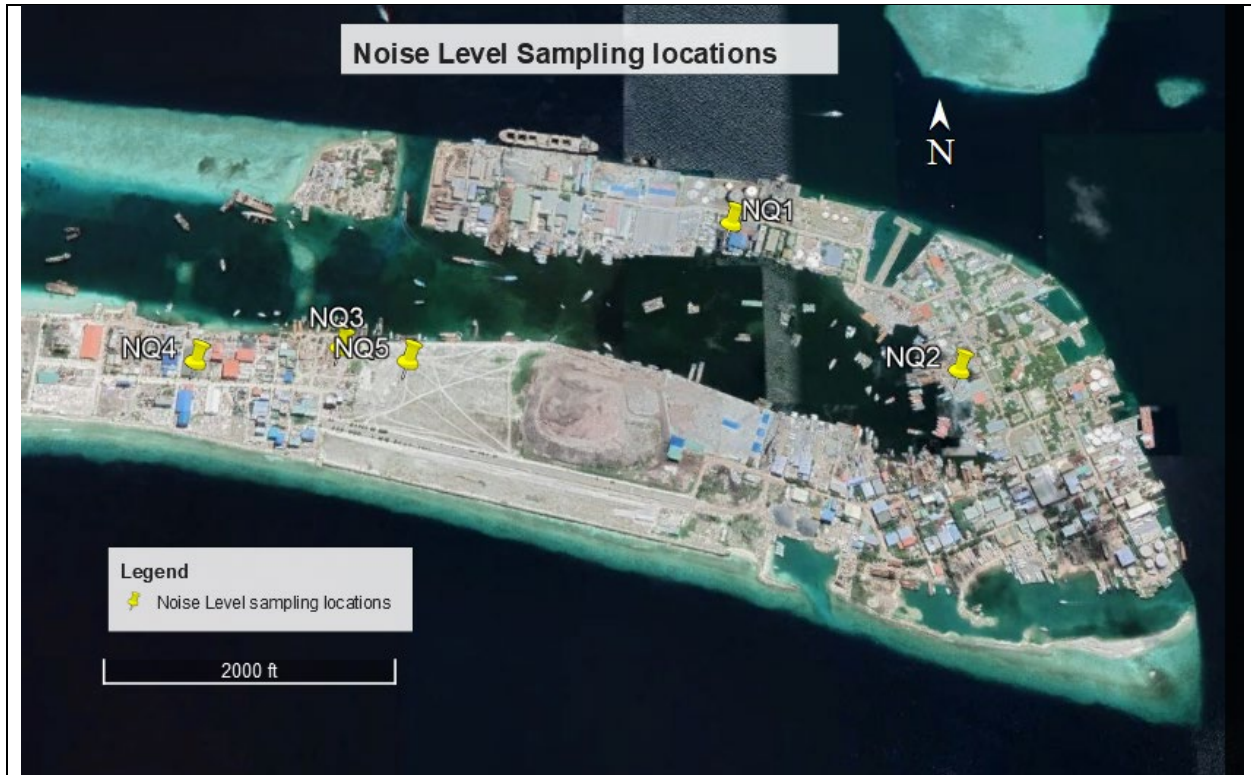
As part of the pre-construction monitoring of Thilafushi Waste to Energy facility, ambient noise levels measurements were repeated at the same five locations used in the EIA report. Ambient noise level measurement was done using a handheld sound level meter (ET-958 Professional Sound Level Meter) Measurements are recorded in NQ1, and NQ2 NQ3, NQ4 and NQ5 from 21<sup>st</sup> May 2024 13: 00 to 22nd May 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

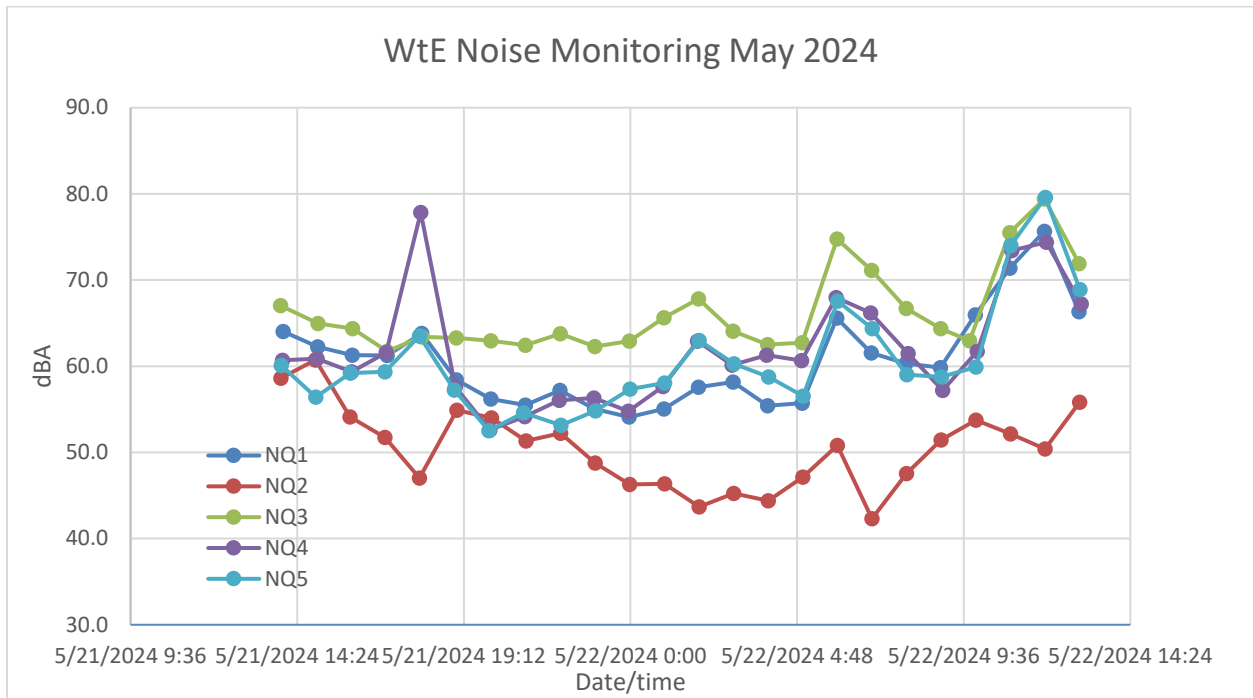


## 2.1 Results

**Table 2: Noise measurement records in (dBA), 22-23 April 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)
5/21/2024 13:59	64.0	5/21/2024 13:55	58.6	5/21/2024 13:55	67.1	5/21/2024 13:58	60.7	5/21/2024 13:56	60.1
5/21/2024 14:59	62.3	5/21/2024 14:55	60.7	5/21/2024 14:59	65.0	5/21/2024 14:58	60.9	5/21/2024 14:56	56.4
5/21/2024 15:59	61.3	5/21/2024 15:55	54.1	5/21/2024 15:59	64.4	5/21/2024 15:58	59.4	5/21/2024 15:55	59.2
5/21/2024 16:59	61.3	5/21/2024 16:55	51.7	5/21/2024 16:59	61.7	5/21/2024 16:57	61.6	5/21/2024 16:55	59.4
5/21/2024 17:59	63.8	5/21/2024 17:55	47.0	5/21/2024 17:59	63.4	5/21/2024 17:57	77.8	5/21/2024 17:55	63.5
5/21/2024 18:58	58.4	5/21/2024 18:59	54.9	5/21/2024 18:59	63.3	5/21/2024 18:57	57.6	5/21/2024 18:55	57.2
5/21/2024 19:58	56.2	5/21/2024 19:59	54.0	5/21/2024 19:58	63.0	5/21/2024 19:57	52.6	5/21/2024 19:55	52.5
5/21/2024 20:58	55.5	5/21/2024 20:59	51.3	5/21/2024 20:58	62.4	5/21/2024 20:57	54.2	5/21/2024 20:55	54.6
5/21/2024 21:58	57.2	5/21/2024 21:59	52.2	5/21/2024 21:58	63.8	5/21/2024 21:56	56.0	5/21/2024 21:59	53.1
5/21/2024 22:58	55.1	5/21/2024 22:59	48.8	5/21/2024 22:58	62.3	5/21/2024 22:56	56.3	5/21/2024 22:59	54.8
5/21/2024 23:57	54.1	5/21/2024 23:58	46.3	5/21/2024 23:58	62.9	5/21/2024 23:56	54.8	5/21/2024 23:59	57.3
5/22/2024 0:57	55.0	5/22/2024 0:58	46.4	5/22/2024 0:57	65.6	5/22/2024 0:56	57.7	5/22/2024 0:59	58.0
5/22/2024 1:57	57.6	5/22/2024 1:58	43.7	5/22/2024 1:57	67.8	5/22/2024 1:56	62.9	5/22/2024 1:59	63.0
5/22/2024 2:57	58.2	5/22/2024 2:58	45.3	5/22/2024 2:57	64.1	5/22/2024 2:55	60.1	5/22/2024 2:58	60.3
5/22/2024 3:57	55.4	5/22/2024 3:58	44.4	5/22/2024 3:57	62.5	5/22/2024 3:55	61.3	5/22/2024 3:58	58.8
5/22/2024 4:56	55.7	5/22/2024 4:57	47.2	5/22/2024 4:57	62.7	5/22/2024 4:55	60.7	5/22/2024 4:58	56.6
5/22/2024 5:56	65.6	5/22/2024 5:57	50.8	5/22/2024 5:56	74.8	5/22/2024 5:55	68.0	5/22/2024 5:58	67.6
5/22/2024 6:56	61.5	5/22/2024 6:57	42.3	5/22/2024 6:56	71.1	5/22/2024 6:55	66.2	5/22/2024 6:58	64.4
5/22/2024 7:56	60.3	5/22/2024 7:57	47.6	5/22/2024 7:56	66.7	5/22/2024 7:59	61.5	5/22/2024 7:57	59.0
5/22/2024 8:56	59.8	5/22/2024 8:57	51.5	5/22/2024 8:56	64.4	5/22/2024 8:59	57.2	5/22/2024 8:57	58.8
5/22/2024 9:55	66.0	5/22/2024 9:56	53.8	5/22/2024 9:46	63.0	5/22/2024 9:59	61.7	5/22/2024 9:57	59.9
5/22/2024 10:55	71.4	5/22/2024 10:56	52.1	5/22/2024 10:55	75.5	5/22/2024 10:59	73.4	5/22/2024 10:57	74.0
5/22/2024 11:55	75.7	5/22/2024 11:56	50.4	5/22/2024 11:55	79.4	5/22/2024 11:59	74.4	5/22/2024 11:57	79.6
5/22/2024 12:55	66.3	5/22/2024 12:56	55.8	5/22/2024 12:55	71.9	5/22/2024 12:58	67.2	5/22/2024 12:56	68.9
Average dB(A)	60.7		50.5		66.2		61.8		60.7
Daytime	63.4		52.5		67.1		63.7		62.4
Night time	56.9		47.6		64.9		59.2		58.4
WHO guideline for ambient noise level		<b>70</b>							

**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 except one station ambient noise level reached threshold particularly in NQ stations 1,3,4 and 5 (marked in the table). The average noise level is highest in NQ3 this is because this is the main area where work is going on currently, mainly pilling and concrete work is undergoing it is in a close proximity to the measuring station.



## 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	Heavy rain strong wind 28-35mph and gets 55mph Orange Alert level	Temperature:29.1°C
Start time	5/21/2024 13:59		Wind 34-40mph W/NW gets 60mph
End time	5/22/2024 12:55		

Date/time	dB(A)	Remarks noise level
5/21/2024 13:59	64.0	Conversation
5/21/2024 14:59	62.3	Conversation
5/21/2024 15:59	61.3	Conversation
5/21/2024 16:59	61.3	Conversation
5/21/2024 17:59	63.8	Conversation
5/21/2024 18:58	58.4	Quiet Office
5/21/2024 19:58	56.2	Quiet Office
5/21/2024 20:58	55.5	Quiet Office
5/21/2024 21:58	57.2	Quiet Office
5/21/2024 22:58	55.1	Quiet Office
5/21/2024 23:57	54.1	Quiet Office
5/22/2024 0:57	55.0	Quiet Office
5/22/2024 1:57	57.6	Quiet Office
5/22/2024 2:57	58.2	Quiet Office
5/22/2024 3:57	55.4	Quiet Office
5/22/2024 4:56	55.7	Quiet Office
5/22/2024 5:56	65.6	Conversation
5/22/2024 6:56	61.5	Conversation
5/22/2024 7:56	60.3	Conversation
5/22/2024 8:56	59.8	Quiet Office
5/22/2024 9:55	66.0	Conversation
5/22/2024 10:55	71.4	Restaurent
5/22/2024 11:55	75.7	Restaurent
5/22/2024 12:55	66.3	Conversation
Average	60.7	
Day time avr	63.4	
Night time average	56.9	



**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	Heavy rain strong wind 28-35mph and gets 55mph Orange Alert level	Temperature:29.1°C
Start time	5/21/2024 13:55		Wind 34-40mph W/NW gets 60mph
End time	5/22/2024 12:56		

Date/time	dBA	Remarks noise level
5/21/2024 13:55	58.6	Quiet Office
5/21/2024 14:55	60.7	Conversation
5/21/2024 15:55	54.1	Quiet Office
5/21/2024 16:55	51.7	Quiet Office
5/21/2024 17:55	47.0	Quiet Library
5/21/2024 18:59	54.9	Quiet Office
5/21/2024 19:59	54.0	Quiet Office
5/21/2024 20:59	51.3	Quiet Office
5/21/2024 21:59	52.2	Quiet Office
5/21/2024 22:59	48.8	Quiet Library
5/21/2024 23:58	46.3	Quiet Library
5/22/2024 0:58	46.4	Quiet Library
5/22/2024 1:58	43.7	Quiet Library
5/22/2024 2:58	45.3	Quiet Library
5/22/2024 3:58	44.4	Quiet Library
5/22/2024 4:57	47.2	Quiet Library
5/22/2024 5:57	50.8	Quiet Office
5/22/2024 6:57	42.3	Quiet Library
5/22/2024 7:57	47.6	Quiet Library
5/22/2024 8:57	51.5	Quiet Office
5/22/2024 9:56	53.8	Quiet Office
5/22/2024 10:56	52.1	Quiet Office
5/22/2024 11:56	50.4	Quiet Office
5/22/2024 12:56	55.8	Quiet Office

Average 50.5  
 Day time avr 52.5  
 Night time average 47.6

**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	Heavy rain strong wind 28-35mph and gets 55mph Orange Alert level	Temperature:29.1°C
Start time	5/21/2024 13:55		Wind 34-40mph W/NW gets 60mph
End time	5/22/2024 12:55		

Date/time	dBA	Remarks Noise level
5/21/2024 13:55	67.1	Conversation
5/21/2024 14:59	65.0	Conversation
5/21/2024 15:59	64.4	Conversation
5/21/2024 16:59	61.7	Conversation
5/21/2024 17:59	63.4	Conversation
5/21/2024 18:59	63.3	Conversation
5/21/2024 19:58	63.0	Conversation
5/21/2024 20:58	62.4	Conversation
5/21/2024 21:58	63.8	Conversation
5/21/2024 22:58	62.3	Conversation
5/21/2024 23:58	62.9	Conversation
5/22/2024 0:57	65.6	Conversation
5/22/2024 1:57	67.8	Conversation
5/22/2024 2:57	64.1	Conversation
5/22/2024 3:57	62.5	Conversation
5/22/2024 4:57	62.7	Conversation
5/22/2024 5:56	74.8	Restaurent
5/22/2024 6:56	71.1	Restaurent
5/22/2024 7:56	66.7	Conversation
5/22/2024 8:56	64.4	Conversation
5/22/2024 9:46	63.0	Conversation
5/22/2024 10:55	75.5	Restaurent
5/22/2024 11:55	79.4	Restaurent
5/22/2024 12:55	71.9	Restaurent

Average 66.2  
 Day time avr 67.1  
 Night time average 64.9

**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	Heavy rain strong wind 28-35mph and gets 55mph Orange Alert level	Temperature:29.1°C
Start time	5/21/2024 13:58		Wind 34-40mph W/NW gets 60mph
End time	5/22/2024 12:58		

Date/time	dBA	Remarks Noise level
5/21/2024 13:58	60.7	Conversation
5/21/2024 14:58	60.9	Conversation
5/21/2024 15:58	59.4	Quiet Office
5/21/2024 16:57	61.6	Conversation
5/21/2024 17:57	77.8	Restaurent
5/21/2024 18:57	57.6	Quiet Office
5/21/2024 19:57	52.6	Quiet Office
5/21/2024 20:57	54.2	Quiet Office
5/21/2024 21:56	56.0	Quiet Office
5/21/2024 22:56	56.3	Quiet Office
5/21/2024 23:56	54.8	Quiet Office
5/22/2024 0:56	57.7	Quiet Office
5/22/2024 1:56	62.9	Conversation
5/22/2024 2:55	60.1	Conversation
5/22/2024 3:55	61.3	Conversation
5/22/2024 4:55	60.7	Conversation
5/22/2024 5:55	68.0	Conversation
5/22/2024 6:55	66.2	Conversation
5/22/2024 7:59	61.5	Conversation
5/22/2024 8:59	57.2	Quiet Office
5/22/2024 9:59	61.7	Conversation
5/22/2024 10:59	73.4	Restaurent
5/22/2024 11:59	74.4	Restaurent
5/22/2024 12:58	67.2	Conversation

Average 61.8  
Day time avr 63.7  
Night time average 59.2

**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	Heavy rain strong wind 28-35mph and gets 55mph Orange Alert level	Temperature:29.1°C
Start time	5/21/2024 13:56		Wind 34-40mph W/NW gets 60mph
End time	5/22/2024 12:56		

Date/time	dBA	Remarks Noise level
5/21/2024 13:56	60.1	Conversation
5/21/2024 14:56	56.4	Quiet Office
5/21/2024 15:55	59.2	Quiet Office
5/21/2024 16:55	59.4	Quiet Office
5/21/2024 17:55	63.5	Conversation
5/21/2024 18:55	57.2	Quiet Office
5/21/2024 19:55	52.5	Quiet Office
5/21/2024 20:55	54.6	Quiet Office
5/21/2024 21:59	53.1	Quiet Office
5/21/2024 22:59	54.8	Quiet Office
5/21/2024 23:59	57.3	Quiet Office
5/22/2024 0:59	58.0	Quiet Office
5/22/2024 1:59	63.0	Conversation
5/22/2024 2:58	60.3	Conversation
5/22/2024 3:58	58.8	Quiet Office
5/22/2024 4:58	56.6	Quiet Office
5/22/2024 5:58	67.6	Conversation
5/22/2024 6:58	64.4	Conversation
5/22/2024 7:57	59.0	Quiet Office
5/22/2024 8:57	58.8	Quiet Office
5/22/2024 9:57	59.9	Quiet Office
5/22/2024 10:57	74.0	Restaurent
5/22/2024 11:57	79.6	Restaurent
5/22/2024 12:56	68.9	Conversation

Average	60.7
Day time avr	62.4
Night time average	58.4

Environmental monitoring Report Pre-Construction–Stage WtE Facility  
at Thilafushi

Noise Level Measurements (June 2024)

Prepared by: Mahmood Riyaz



28th June 2024



## Table of contents

<b>Table of contents</b>	<b>2</b>
<b>List of Tables</b>	<b>2</b>
<b>List of Figures</b>	<b>2</b>
<b>1. INTRODUCTION</b>	<b>3</b>
<b>2. NOISE LEVEL</b>	<b>3</b>
<b>2.1 Results</b>	<b>4</b>
<b>Annex 1. Noise level Hourly recorded</b>	<b>7</b>

## List of Tables

<b>Table 1: Locations selected for Ambient Noise Level Measurements</b>	<b>3</b>
<b>Table 2: Noise measurement records in (dBA), 9-10 March 2024 Thilafushi</b>	<b>5</b>

## List of Figures

<b>Figure 1: Ambient noise level sampling locations</b>	<b>4</b>
<b>Figure 2. Graph showing the Ambient noise level recorded</b>	<b>6</b>

## 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

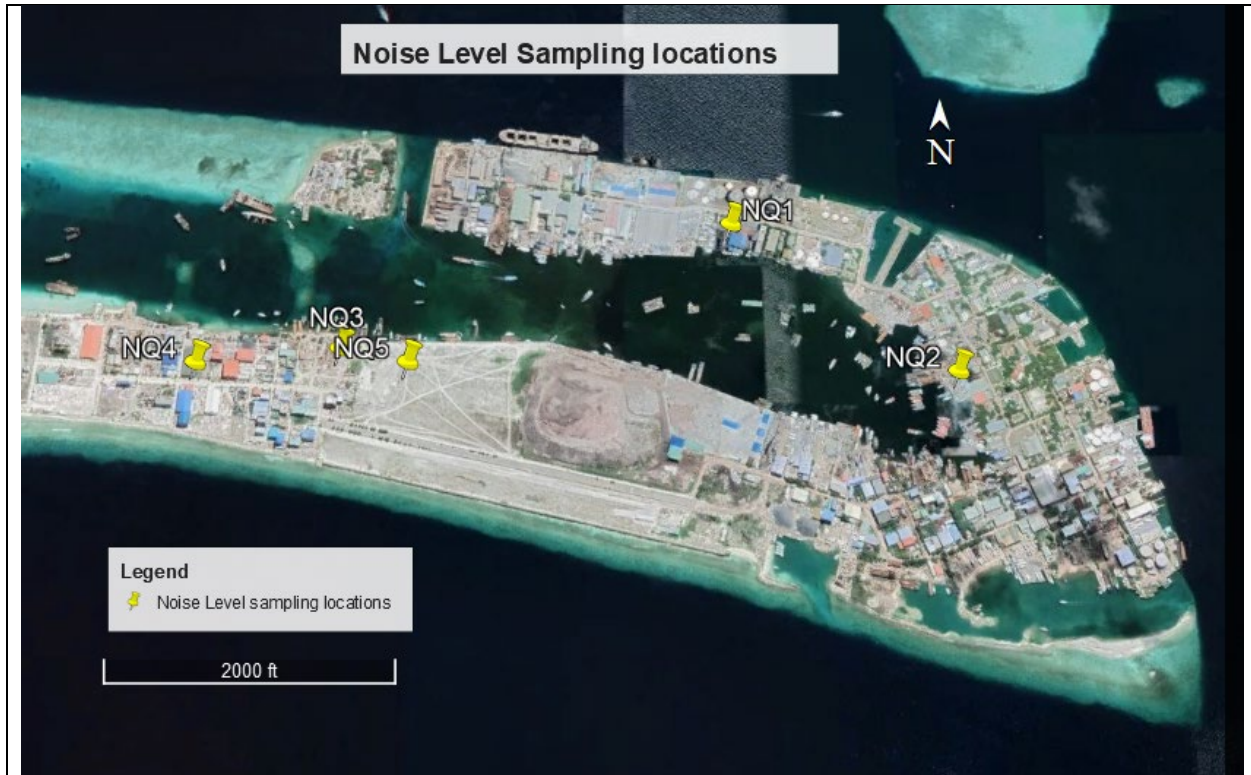
As part of the pre-construction monitoring of Thilafushi Waste to Energy facility, ambient noise levels measurements were repeated at the same five locations used in the EIA report. Ambient noise level measurement was done using a handheld sound level meter (ET-958 Professional Sound Level Meter) Measurements are recorded in NQ1, and NQ2 NQ3, NQ4 and NQ5 from 18<sup>th</sup> June 2024 13: 00 to 19<sup>th</sup> June 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

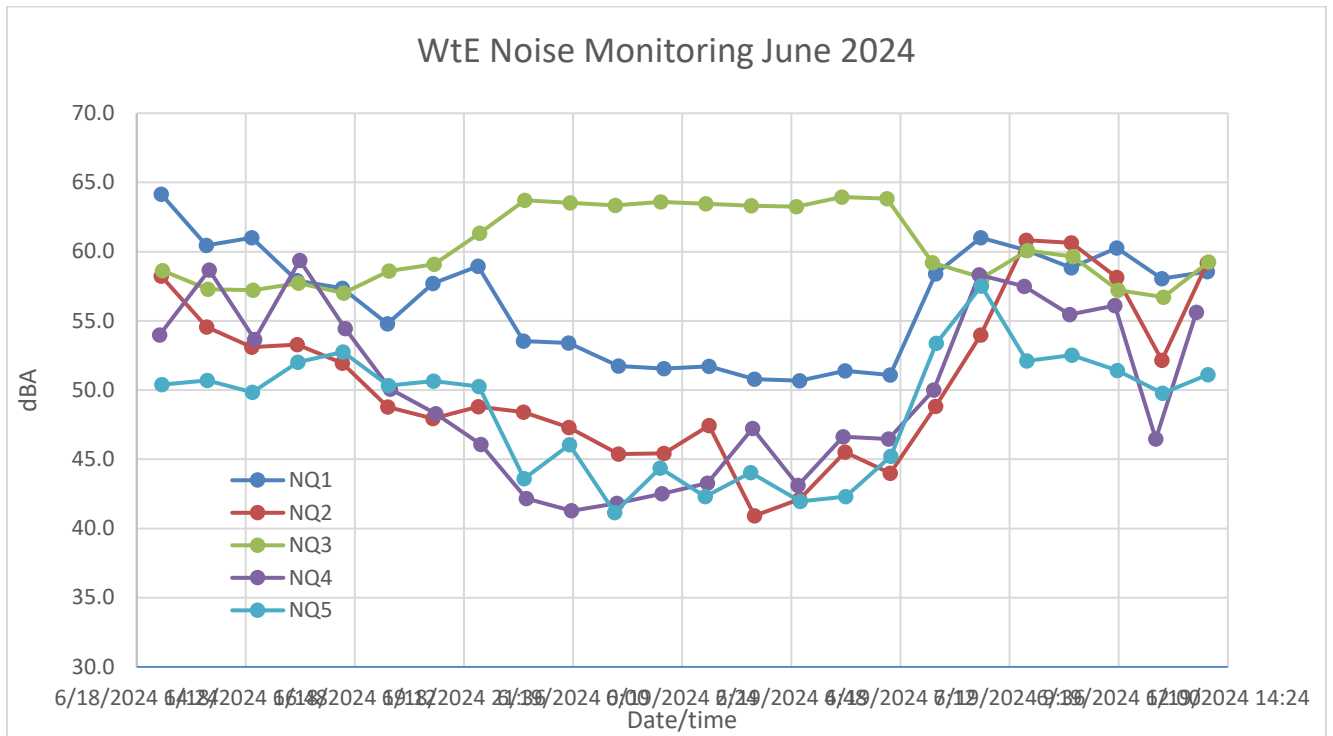


## 2.1 Results

**Table 2: Noise measurement records in (dBA), 18-19 June 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)
6/18/2024 14:56	64.2	6/18/2024 14:56	58.2	6/18/2024 14:58	58.6	6/18/2024 14:54	54.0	6/18/2024 14:57	50.4
6/18/2024 15:56	60.5	6/18/2024 15:56	54.6	6/18/2024 15:57	57.3	6/18/2024 15:59	58.7	6/18/2024 15:56	50.7
6/18/2024 16:55	61.0	6/18/2024 16:55	53.1	6/18/2024 16:57	57.2	6/18/2024 16:59	53.7	6/18/2024 16:56	49.8
6/18/2024 17:55	57.9	6/18/2024 17:55	53.3	6/18/2024 17:57	57.7	6/18/2024 17:59	59.4	6/18/2024 17:56	52.0
6/18/2024 18:55	57.4	6/18/2024 18:55	51.9	6/18/2024 18:57	57.0	6/18/2024 18:59	54.4	6/18/2024 18:56	52.8
6/18/2024 19:55	54.8	6/18/2024 19:55	48.8	6/18/2024 19:56	58.6	6/18/2024 19:58	50.1	6/18/2024 19:55	50.3
6/18/2024 20:54	57.7	6/18/2024 20:54	48.0	6/18/2024 20:56	59.1	6/18/2024 20:58	48.3	6/18/2024 20:55	50.7
6/18/2024 21:54	59.0	6/18/2024 21:54	48.8	6/18/2024 21:56	61.3	6/18/2024 21:58	46.1	6/18/2024 21:55	50.3
6/18/2024 22:54	53.6	6/18/2024 22:54	48.4	6/18/2024 22:56	63.7	6/18/2024 22:58	42.2	6/18/2024 22:55	43.6
6/18/2024 23:54	53.4	6/18/2024 23:54	47.3	6/18/2024 23:56	63.5	6/18/2024 23:57	41.3	6/18/2024 23:55	46.0
6/19/2024 0:59	51.8	6/19/2024 0:59	45.4	6/19/2024 0:55	63.3	6/19/2024 0:57	41.8	6/19/2024 0:54	41.2
6/19/2024 1:59	51.6	6/19/2024 1:59	45.4	6/19/2024 1:55	63.6	6/19/2024 1:57	42.5	6/19/2024 1:54	44.4
6/19/2024 2:59	51.7	6/19/2024 2:59	47.4	6/19/2024 2:55	63.5	6/19/2024 2:57	43.3	6/19/2024 2:54	42.3
6/19/2024 3:59	50.8	6/19/2024 3:59	40.9	6/19/2024 3:55	63.3	6/19/2024 3:56	47.2	6/19/2024 3:54	44.1
6/19/2024 4:58	50.7	6/19/2024 4:58	42.1	6/19/2024 4:54	63.3	6/19/2024 4:56	43.1	6/19/2024 4:59	42.0
6/19/2024 5:58	51.4	6/19/2024 5:58	45.5	6/19/2024 5:54	64.0	6/19/2024 5:56	46.6	6/19/2024 5:59	42.3
6/19/2024 6:58	51.1	6/19/2024 6:58	44.0	6/19/2024 6:54	63.8	6/19/2024 6:56	46.5	6/19/2024 6:59	45.2
6/19/2024 7:58	58.4	6/19/2024 7:58	48.8	6/19/2024 7:54	59.2	6/19/2024 7:55	50.0	6/19/2024 7:59	53.4
6/19/2024 8:57	61.0	6/19/2024 8:57	54.0	6/19/2024 8:59	58.1	6/19/2024 8:55	58.3	6/19/2024 8:58	57.5
6/19/2024 9:57	60.1	6/19/2024 9:57	60.8	6/19/2024 9:59	60.1	6/19/2024 9:55	57.5	6/19/2024 9:58	52.1
6/19/2024 10:57	58.8	6/19/2024 10:57	60.6	6/19/2024 10:59	59.7	6/19/2024 10:55	55.5	6/19/2024 10:58	52.5
6/19/2024 11:57	60.3	6/19/2024 11:57	58.2	6/19/2024 11:59	57.2	6/19/2024 11:54	56.1	6/19/2024 11:58	51.4
6/19/2024 12:56	58.0	6/19/2024 12:57	52.2	6/19/2024 12:58	56.7	6/19/2024 12:48	46.5	6/19/2024 12:57	49.8
6/19/2024 13:56	58.6	6/19/2024 13:56	59.2	6/19/2024 13:58	59.3	6/19/2024 13:42	55.6	6/19/2024 13:57	51.1
Average dB(A)	56.4		50.7		60.4		49.9		48.6
Daytime	59.2		54.4		58.3		54.1		51.8
Night time	52.5		45.5		63.3		44.1		44.1
WHO guideline for ambient noise level		<b>70</b>							

**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 stations ambient noise level is below the threshold levels. The average noise level is highest in NQ3 this is because this is the main area where work is going on currently, mainly pilling and concrete work is undergoing it is in a close proximity to the measuring station.

## 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	isolated showers and few thunderstorms 8-18mph and gets I	Temperature:31.7°C
Start time	6/18/2024 14:56		Wind 8-18mph S/SW
End time	6/19/2024 13:56		

Date/time	dB(A)	Remarks noise level
6/18/2024 14:56	64.2	Conversation
6/18/2024 15:56	60.5	Conversation
6/18/2024 16:55	61.0	Conversation
6/18/2024 17:55	57.9	Quiet Office
6/18/2024 18:55	57.4	Quiet Office
6/18/2024 19:55	54.8	Quiet Office
6/18/2024 20:54	57.7	Quiet Office
6/18/2024 21:54	59.0	Quiet Office
6/18/2024 22:54	53.6	Quiet Office
6/18/2024 23:54	53.4	Quiet Office
6/19/2024 0:59	51.8	Quiet Office
6/19/2024 1:59	51.6	Quiet Office
6/19/2024 2:59	51.7	Quiet Office
6/19/2024 3:59	50.8	Quiet Office
6/19/2024 4:58	50.7	Quiet Office
6/19/2024 5:58	51.4	Quiet Office
6/19/2024 6:58	51.1	Quiet Office
6/19/2024 7:58	58.4	Quiet Office
6/19/2024 8:57	61.0	Conversation
6/19/2024 9:57	60.1	Conversation
6/19/2024 10:57	58.8	Quiet Office
6/19/2024 11:57	60.3	Conversation
6/19/2024 12:56	58.0	Quiet Office
6/19/2024 13:56	58.6	Quiet Office
Average	56.4	
Day time avr	59.2	
Night time average	52.5	





**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	isolated showers and few thunderstorms 8-18mph and gets l	Temperature:31.7°C
Start time	6/18/2024 14:56		Wind 8-18mph S/SW
End time	6/19/2024 13:56		

Date/time	dBa	Remarks noise level
6/18/2024 14:56	58.2	Quiet Office
6/18/2024 15:56	54.6	Quiet Office
6/18/2024 16:55	53.1	Quiet Office
6/18/2024 17:55	53.3	Quiet Office
6/18/2024 18:55	51.9	Quiet Office
6/18/2024 19:55	48.8	Quiet Library
6/18/2024 20:54	48.0	Quiet Library
6/18/2024 21:54	48.8	Quiet Library
6/18/2024 22:54	48.4	Quiet Library
6/18/2024 23:54	47.3	Quiet Library
6/19/2024 0:59	45.4	Quiet Library
6/19/2024 1:59	45.4	Quiet Library
6/19/2024 2:59	47.4	Quiet Library
6/19/2024 3:59	40.9	Quiet Library
6/19/2024 4:58	42.1	Quiet Library
6/19/2024 5:58	45.5	Quiet Library
6/19/2024 6:58	44.0	Quiet Library
6/19/2024 7:58	48.8	Quiet Library
6/19/2024 8:57	54.0	Quiet Office
6/19/2024 9:57	60.8	Conversation
6/19/2024 10:57	60.6	Conversation
6/19/2024 11:57	58.2	Quiet Office
6/19/2024 12:57	52.2	Quiet Office
6/19/2024 13:56	59.2	Quiet Office

Average 50.7  
 Day time avr 54.4  
 Night time average 45.5

### 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	isolated showers and few thunderstorms 8-18mph and gets	Temperature:31.7°C
Start time	6/18/2024 14:58		Wind 8-18mph S/SW
End time	6/19/2024 13:58		

Date/time	dBA	Remarks Noise level
6/18/2024 14:58	58.6	Quiet Office
6/18/2024 15:57	57.3	Quiet Office
6/18/2024 16:57	57.2	Quiet Office
6/18/2024 17:57	57.7	Quiet Office
6/18/2024 18:57	57.0	Quiet Office
6/18/2024 19:56	58.6	Quiet Office
6/18/2024 20:56	59.1	Quiet Office
6/18/2024 21:56	61.3	Conversation
6/18/2024 22:56	63.7	Conversation
6/18/2024 23:56	63.5	Conversation
6/19/2024 0:55	63.3	Conversation
6/19/2024 1:55	63.6	Conversation
6/19/2024 2:55	63.5	Conversation
6/19/2024 3:55	63.3	Conversation
6/19/2024 4:54	63.3	Conversation
6/19/2024 5:54	64.0	Conversation
6/19/2024 6:54	63.8	Conversation
6/19/2024 7:54	59.2	Quiet Office
6/19/2024 8:59	58.1	Quiet Office
6/19/2024 9:59	60.1	Conversation
6/19/2024 10:59	59.7	Quiet Office
6/19/2024 11:59	57.2	Quiet Office
6/19/2024 12:58	56.7	Quiet Office
6/19/2024 13:58	59.3	Quiet Office

Average 60.4  
Day time avr 58.3  
Night time average 63.3

**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	isolated showers and few thunderstorms 8-18mph and gets l	Temperature:31.7°C
Start time	6/18/2024 14:54		Wind 8-18mph S/SW
End time	6/19/2024 13:42		

Date/time	dBA	Remarks Noise level
6/18/2024 14:54	54.0	Quiet Office
6/18/2024 15:59	58.7	Quiet Office
6/18/2024 16:59	53.7	Quiet Office
6/18/2024 17:59	59.4	Quiet Office
6/18/2024 18:59	54.4	Quiet Office
6/18/2024 19:58	50.1	Quiet Office
6/18/2024 20:58	48.3	Quiet Library
6/18/2024 21:58	46.1	Quiet Library
6/18/2024 22:58	42.2	Quiet Library
6/18/2024 23:57	41.3	Quiet Library
6/19/2024 0:57	41.8	Quiet Library
6/19/2024 1:57	42.5	Quiet Library
6/19/2024 2:57	43.3	Quiet Library
6/19/2024 3:56	47.2	Quiet Library
6/19/2024 4:56	43.1	Quiet Library
6/19/2024 5:56	46.6	Quiet Library
6/19/2024 6:56	46.5	Quiet Library
6/19/2024 7:55	50.0	Quiet Office
6/19/2024 8:55	58.3	Quiet Office
6/19/2024 9:55	57.5	Quiet Office
6/19/2024 10:55	55.5	Quiet Office
6/19/2024 11:54	56.1	Quiet Office
6/19/2024 12:48	46.5	Quiet Library
6/19/2024 13:42	55.6	Quiet Office

Average 49.9  
 Day time avr 54.1  
 Night time average 44.1



**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	isolated showers and few thunderstorms 8-18mph and gets l	Temperature:31.7°C
Start time	6/18/2024 14:57		Wind 8-18mph S/SW
End time	6/19/2024 13:57		

Date/time	dBA	Remarks Noise level
6/18/2024 14:57	50.4	Quiet Office
6/18/2024 15:56	50.7	Quiet Office
6/18/2024 16:56	49.8	Quiet Library
6/18/2024 17:56	52.0	Quiet Office
6/18/2024 18:56	52.8	Quiet Office
6/18/2024 19:55	50.3	Quiet Office
6/18/2024 20:55	50.7	Quiet Office
6/18/2024 21:55	50.3	Quiet Office
6/18/2024 22:55	43.6	Quiet Library
6/18/2024 23:55	46.0	Quiet Library
6/19/2024 0:54	41.2	Quiet Library
6/19/2024 1:54	44.4	Quiet Library
6/19/2024 2:54	42.3	Quiet Library
6/19/2024 3:54	44.1	Quiet Library
6/19/2024 4:59	42.0	Quiet Library
6/19/2024 5:59	42.3	Quiet Library
6/19/2024 6:59	45.2	Quiet Library
6/19/2024 7:59	53.4	Quiet Office
6/19/2024 8:58	57.5	Quiet Office
6/19/2024 9:58	52.1	Quiet Office
6/19/2024 10:58	52.5	Quiet Office
6/19/2024 11:58	51.4	Quiet Office
6/19/2024 12:57	49.8	Quiet Library
6/19/2024 13:57	51.1	Quiet Office

Average 48.6  
 Day time avr 51.8  
 Night time average 44.1

**APPENDIX :8.2 NOISE MONITORING ASSESSMENT REPORT**



REPUBLIC OF MALDIVES  
MINISTRY OF ENVIRONMENT, CLIMATE CHANGE and TECHNOLOGY

DBO CONTRACTOR:



**RAMBOLL**

EMPLOYER  
REPRESENTATIV

Review & Approval:

**FICHTNER**

EPC CONTRACTOR:

ALKE-ALKATAŞ JV



Project Title:

Design, Build and Operate of a Waste to Energy Facility at Thilafushi  
Contract No: (AGR) 438-WPMC/PRIV/2021/71

Document Name:

**NOISE MONITORING REPORT**

Status:

Project Management Deliverables

Design:

Company:

Name:

Date:

Document No:

Prepared by:

AA JV

Dhamotharan

20.06.2024

Checked by:

AA JV

Civan Kalafat

21.06.2024

URB/RAM

Released by:

## Summary

The noise monitoring assessment was conducted at the WTE construction site as part of the site's occupational health monitoring. This site features both static and moving equipment, machinery and power operated tools that operate continuously, leading to high noise exposure for employees as well as the nearby public.

### Noise level Monitoring at work site

The hand-held device (Flus – ET958) was utilized for noise measurement at the WTE construction site. Measurements were taken at various distances, including very close proximity, 1 meter, 2 meters, and 3 meters away from both static and moving equipment, machinery and power operated tools."

### Location and Frequency

The measurements were taken at various locations at the site (Bunker area, Process area, Generator locations, yards and workshop)

The monitoring frequency is monthly periods according to the monitoring schedule

### Parameters

Additionally, during the assessment, the team considered the relevant local regulations and international standards, including the IFC EHS guideline section 7 on noise assessment.

Noise sources	Day time (07:00-22:00) (dBa)	Night time (22:00-07:00) (dBa)
Residential; institutional; educational	55	45
Industrial; Commercial	70	70

### Noise Level Monitoring Within Project as per CEMP

Noise level monitoring within the project site, the ET-958 Professional Sound Level Meter (the Type 1 meter) was utilized. Ambient noise level measurement used a handheld sound level meter (ET-958 Professional Sound Level Meter).

### Monitoring locations and Frequency

The overall noise level in a particular area within the project NQ3 and NQ5 was assessed, and the report takes into account both the ambient noise level and any noise generated by sources in the area. The locations where the ambient and source noise levels will be measured have already been determined in the EIA.

The monitoring frequency is monthly periods according to the monitoring schedule.



#### *Noise Monitoring Location Within Project Site*

Station name	Geographic Coordinates	Sources
NQ3	4°10'58.3 N, 73°26'09.6 E	Approved CEMP, EIA
NQ5	4°10'57.3 N, 73°26'14.4 E	Approved CEMP, EIA

#### **Findings**

- At the batching plant area generator noise was very high (Maximum 107 DB) at very close proximity, however, the generator is not located near the worker's exposed area and operating minimum period
- Generator No. 3 near the process area and steel yard noise level was (Maximum 96.6) at very close proximity, however, the generator is not located near the worker's exposed area
- Moving equipment's noise level was at an acceptable level as per the machine manufacturing standards
- The power tools equipment's noise level was acceptable as per the machine manufacturing recommended standards
- Within the project location noise level was acceptable (refer to the attached report)

For further reference the attached pictures and assessment reports in the report as an appendix

#### **Recommendation**

- Advised mechanic to conduct periodic maintenance including oil changes, filter replacements and general servicing and find the source of excessive noise
- Advised workers to wear hearing protection very close to excessive noise equipment area
- Close monitoring by the supervisor where the workers are working near the noise generation equipment and strictly implemented to wear hearing protection



Batching Plant Chiller Plant Pump



Batching Plant Generator



Generator No 1



Concrete Mixer



Dewatering Pump



Dewatering Pump



Back Hoe

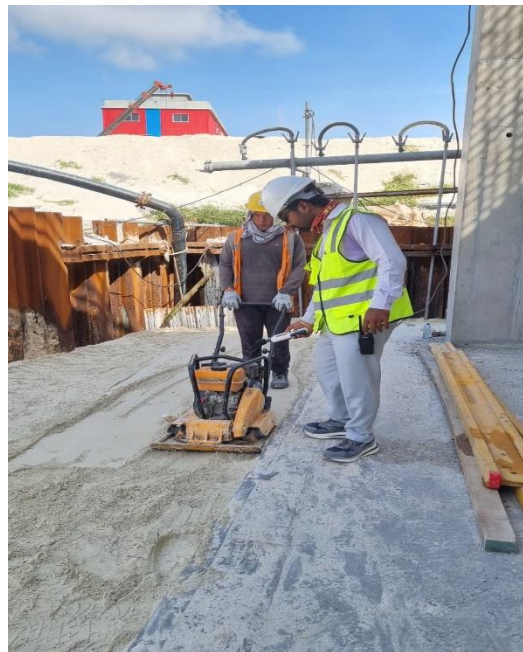


Plate Compactor



**NOISE ASSESSMENT**

Month of Assessment:- JUNE - 2024

SN.	Equipment Name	Location	Noise level DB (Distance)				Average	Remarks
			Very close	1mtr	2mtr	3mtr		
1.	Diesel Generator (01)	Batching plant	93.00	84.6	83.2	81.9	85.6	
2.	Diesel Generator	Batching plant	107.6	99.00	95.7	94.2	99.1	
3.	V-Loaders	Batching plant	96.6	88.6	88.00	77.5	87.6	
4.	Carmix - (02)	Bunker area	98.3	90.7	90.3	88.3	91.9	
5.	Zoomlion Crane 8070M	Bunker area	87.7	81.0	79.4	76.9	81.0	
6.	Water Discharge Pump (01)	Bunker area	92.1	86.2	82.8	81.2	85.5	
7.	Water Discharge Pump (02)	Bunker area	89.9	87.1	83.8	83.6	86.1	
8.								
9.								
10.								



safe exposure limit is 85 DB for eight hours a day.

**dB**

- 1-15 Silent
- 15-20 Quiet
- 20-40 Whispered
- 40-60 Normal conversation
- 60-70 Noisy
- 70-90 Begin to damage hearing
- 90-100 Loss of hearing
- 100+ Great damage to hearing

Assessment By	Reviewed By
Name: <u>Shakti Singh</u>	Name: <u>Chandrasekharan</u>
Signature with date: <u>[Signature]</u> 08/06/2024	Signature with date: <u>[Signature]</u> 08/06/2024

**NOISE ASSESSMENT**

Month of Assessment:- JUNE. 2024.

SN.	Equipment Name	Location	Noise level DB (Distance)				Average	Remarks
			Very close	1mtr	2mtr	3mtr		
1.	Chiller plant	Batching plant	82.3	81.3	77.7	74.4	78.9	
2.								
3.								
4.								
5.								
6.								
7.								
8.								
9.								
10.								



safe expourelimit is 85 DB for eight hours a day.

**dB**

- 1-15 Silent
- 15-20 Quiet
- 20-40 Whispered
- 40-60 Normal conversation
- 60-70 Noisy
- 70-90 Begin to damage hearing
- 90-100 Loss of hearing
- 100+ Great damage to hearing

Assessment By	Reviewed By
Name: <u>Shakti Singh</u>	Name: <u>Shamsharan</u>
Signature with date: <u>[Signature]</u> 08/06/2024	Signature with date: <u>[Signature]</u> 09/06/2024

**NOISE ASSESSMENT**

Month of Assessment: -JUNE-2024-

SN.	Equipment Name	Location	Noise level DB (Distance)				Average	Remarks
			Very close	1mtr	2mtr	3mtr		
1.	<sup>(03)</sup> Diesel Generator	process area	96.6	88.6	88.4	81.6	88.4.	
2.								
3.								
4.								
5.								
6.								
7.								
8.								
9.								
10.								



safe exposure limit is 85 DB for eight hours a day.

**dB**

- 1-15 Silent
- 15-20 Quiet
- 20-40 Whispered
- 40-60 Normal conversation
- 60-70 Noisy
- 70-90 Begin to damage hearing
- 90-100 Loss of hearing
- 100+ Great damage to hearing

Assessment By	Reviewed By
Name: <u>Shakti Singh</u>	Name: <u>Shamshad</u>
Signature with date: <u>[Signature]</u> 08/06/24	Signature with date: <u>[Signature]</u> 08/06/2024





**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	isolated showers and few thunderstorms 8-18mph and gets	Temperature:31.7°C
Start time	6/18/2024 14:58		Wind 8-18mph S/SW
End time	6/19/2024 13:58		

Date/time	dBa	Remarks Noise level
6/18/2024 14:58	58.6	Quiet Office
6/18/2024 15:57	57.3	Quiet Office
6/18/2024 16:57	57.2	Quiet Office
6/18/2024 17:57	57.7	Quiet Office
6/18/2024 18:57	57.0	Quiet Office
6/18/2024 19:56	58.6	Quiet Office
6/18/2024 20:56	59.1	Quiet Office
6/18/2024 21:56	61.3	Conversation
6/18/2024 22:56	63.7	Conversation
6/18/2024 23:56	63.5	Conversation
6/19/2024 0:55	63.3	Conversation
6/19/2024 1:55	63.6	Conversation
6/19/2024 2:55	63.5	Conversation
6/19/2024 3:55	63.3	Conversation
6/19/2024 4:54	63.3	Conversation
6/19/2024 5:54	64.0	Conversation
6/19/2024 6:54	63.8	Conversation
6/19/2024 7:54	59.2	Quiet Office
6/19/2024 8:59	58.1	Quiet Office
6/19/2024 9:59	60.1	Conversation
6/19/2024 10:59	59.7	Quiet Office
6/19/2024 11:59	57.2	Quiet Office
6/19/2024 12:58	56.7	Quiet Office
6/19/2024 13:58	59.3	Quiet Office

Average	60.4
Day time avr	58.3
Night time average	63.3

**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	isolated showers and few thunderstorms 8-18mph and gets l	Temperature:31.7°C
Start time	6/18/2024 14:57		Wind 8-18mph S/SW
End time	6/19/2024 13:57		

Date/time	dBA	Remarks Noise level
6/18/2024 14:57	50.4	Quiet Office
6/18/2024 15:56	50.7	Quiet Office
6/18/2024 16:56	49.8	Quiet Library
6/18/2024 17:56	52.0	Quiet Office
6/18/2024 18:56	52.8	Quiet Office
6/18/2024 19:55	50.3	Quiet Office
6/18/2024 20:55	50.7	Quiet Office
6/18/2024 21:55	50.3	Quiet Office
6/18/2024 22:55	43.6	Quiet Library
6/18/2024 23:55	46.0	Quiet Library
6/19/2024 0:54	41.2	Quiet Library
6/19/2024 1:54	44.4	Quiet Library
6/19/2024 2:54	42.3	Quiet Library
6/19/2024 3:54	44.1	Quiet Library
6/19/2024 4:59	42.0	Quiet Library
6/19/2024 5:59	42.3	Quiet Library
6/19/2024 6:59	45.2	Quiet Library
6/19/2024 7:59	53.4	Quiet Office
6/19/2024 8:58	57.5	Quiet Office
6/19/2024 9:58	52.1	Quiet Office
6/19/2024 10:58	52.5	Quiet Office
6/19/2024 11:58	51.4	Quiet Office
6/19/2024 12:57	49.8	Quiet Library
6/19/2024 13:57	51.1	Quiet Office

Average	48.6
Day time avr	51.8
Night time average	44.1

# Groundwater Quality

# TEST REPORT



**Report No:** (7424)067-2138

**Code Name:** AAJV

May 15, 2024

Page 12 of 49

**Customer:** Alke Alkatas Joint Venture (Pvt) Ltd  
**Address :** H.H. Moomiyaage, 5A, Asaree Hingun. 20265 Male, Republic of Maldives  
**Date of Sample Received:** May 03, 2024  
**Date of Testing Started:** May 03, 2024  
**Date of Testing Completed:** May 15, 2024

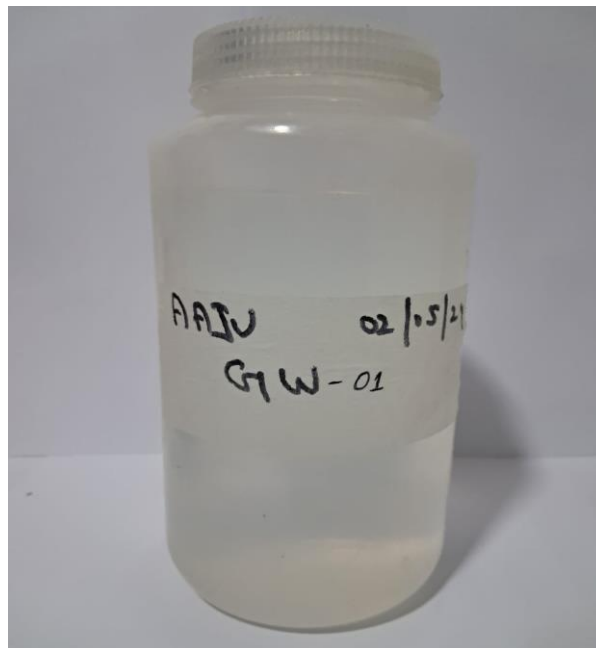
**Sample Description:** **Sample Received as:**  
A water sample contained in sealed plastic bottle

**Sample Identified by the Client as:**  
Ground Water 01

Date of Sample Collection: 05.02.2024

**Sample Drawn By BVCPS** NO

**Photo of the Submitted Samples**



# TEST REPORT



Report No: (7424)067-2138

May 15, 2024

Code Name: AAJV

Page 13 of 49

## TEST RESULTS

No.	Parameters	Results	Referencerange **	LOQ	Unit	Test Method
1	Turbidity	ND	Max. 1	0.1 NTU	NTU	APHA 23rd ed: 2017 :2130 B
2	Nitrate (as NO <sub>3</sub> <sup>-</sup> )*	3.1	Max. 50	0.1 mg/l	mg/L	APHA 23rd ed: 2017: 4500 -NO <sub>3</sub> -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)	08	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	7.8	6.5-8.5	-	ph	APHA 23rd ed: 2017: 4500H+B
13	Electrical Conductivity at25°C	2745	<1000	1µS/cm	µS/ cm	APHA 23rd ed: 2017: 2510 B
14	Total Phosphates (as PO <sub>4</sub> <sup>3-</sup> )	0.12	Max. 5.0	0.1 mg/l	mg/L	APHA 23rd ed: 2017: 4500-PC
15	Chloride (as Cl <sup>-</sup> )	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: (7424)067-2138

May 15, 2024

Code Name: AAJV

Page 14 of 49

\*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,

$\mu\text{S}/\text{cm}$ : 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 Satisfactory as per the Reference range \*\*specified as per Supply Water Quality Standard, Environment Protection Agency EPA, Maldives**



# TEST REPORT



**Report No:** (7424)067-2138

**Code Name:** AAJV

May 15, 2024

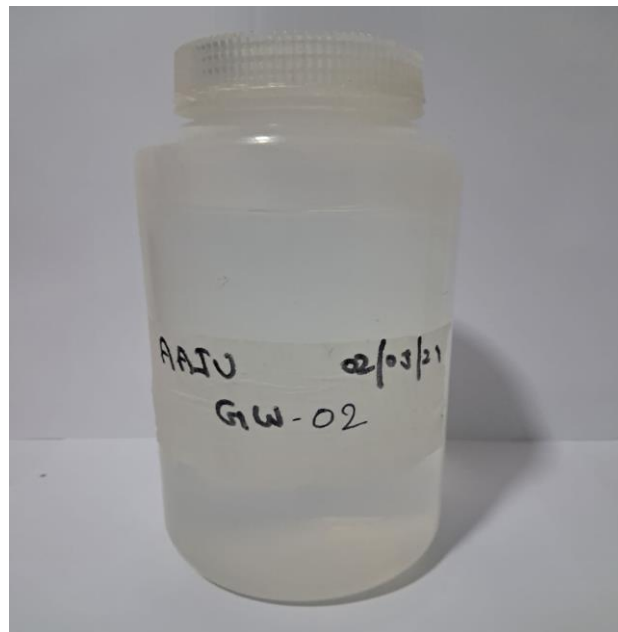
Page 15 of 49

**Customer:** Alke Alkatas Joint Venture (Pvt) Ltd  
**Address :** H.H. Moomiyaage, 5A, Asaree Hingun. 20265 Male, Republic of Maldives  
**Date of Sample Received:** May 03, 2024  
**Date of Testing Started:** May 03, 2024  
**Date of Testing Completed:** May 15, 2024  
**Sample Description:** **Sample Received as:**  
A water sample contained in sealed plastic bottle  
**Sample Identified by the Client as:**  
Ground Water 02

Date of Sample Collection: 05.02.2024

**Sample Drawn By BVCPS** NO

**Photo of the Submitted Samples**



# TEST REPORT



Report No: (7424)067-2138

May 15, 2024

Code Name: AAJV

Page 16 of 49

## TEST RESULTS

No.	Parameters	Results	Referencerange **	LOQ	Unit	Test Method
1	Turbidity	ND	Max. 1	0.1 NTU	NTU	APHA 23rd ed: 2017 :2130 B
2	Nitrate (as NO <sub>3</sub> <sup>-</sup> )*	26	Max. 50	0.1 mg/l	mg/L	APHA 23rd ed: 2017: 4500 -NO <sub>3</sub> -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)	145	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	7.7	6.5-8.5	-	ph	APHA 23rd ed: 2017: 4500H+B
13	Electrical Conductivity at25°C	60,600	<1000	1µS/cm	µS/ cm	APHA 23rd ed: 2017: 2510 B
14	Total Phosphates (as PO <sub>4</sub> <sup>3-</sup> )	4.3	Max. 5.0	0.1 mg/l	mg/L	APHA 23rd ed: 2017: 4500-PC
15	Chloride (as Cl <sup>-</sup> )	296.2	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: (7424)067-2138**

May 15, 2024

**Code Name: AAJV**

Page 17 of 49

\*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,

$\mu\text{S}/\text{cm}$ : 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:** (7424)067-2138

**Code Name:** AAJV

May 15, 2024

Page 18 of 49

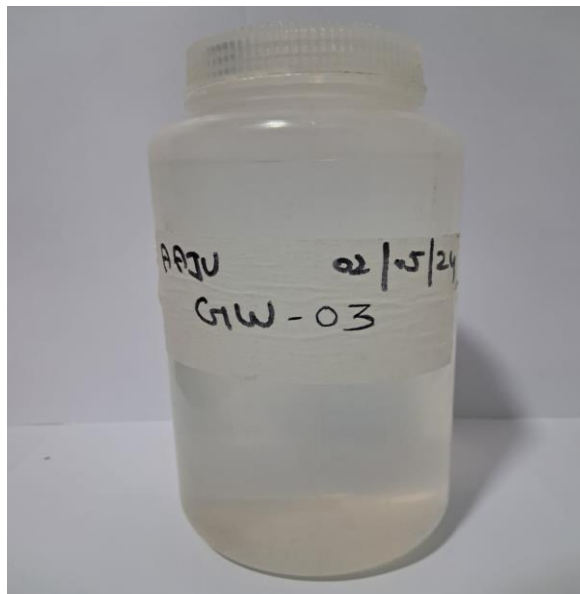
**Customer:** Alke Alkatas Joint Venture (Pvt) Ltd  
**Address :** H.H. Moomiyaage, 5A, Asaree Hingun. 20265 Male, Republic of Maldives  
**Date of Sample Received:** May 03, 2024  
**Date of Testing Started:** May 03, 2024  
**Date of Testing Completed:** May 15, 2024  
**Sample Description:** **Sample Received as:**  
A water sample contained in sealed plastic bottle

**Sample Identified by the Client as:**  
Ground Water 03

Date of Sample Collection: 05.02.2024

**Sample Drawn By BVCPS** NO

**Photo of the Submitted Samples**



# TEST REPORT



Report No: (7424)067-2138

May 15, 2024

Code Name: AAJV

Page 19 of 49

## TEST RESULTS

No.	Parameters	Results	Referencerange **	LOQ	Unit	Test Method
1	Turbidity	0.1	Max. 1	0.1 NTU	NTU	APHA 23rd ed: 2017 :2130 B
2	Nitrate (as NO <sub>3</sub> <sup>-</sup> )*	3.5	Max. 50	0.1 mg/l	mg/L	APHA 23rd ed: 2017: 4500 -NO <sub>3</sub> -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	Feacal 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	960.1	<1000	1µS/cm	µS/ cm	APHA 23rd ed: 2017: 2510 B
14	Total Phosphates (as PO <sub>4</sub> <sup>3-</sup> )	0.7	Max. 5.0	0.1 mg/l	mg/L	APHA 23rd ed: 2017: 4500-PC
15	Chloride (as Cl <sup>-</sup> )	73.9	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: (7424)067-2138

May 15, 2024

Code Name: AAJV

Page 20 of 49

\*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,

$\mu\text{S}/\text{cm}$ : 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:** (7424)067-2138

**Code Name:** AAJV

May 15, 2024

Page 21 of 49

**Customer:** Alke Alkatas Joint Venture (Pvt) Ltd  
**Address :** H.H. Moomiyaage, 5A, Asaree Hingun. 20265 Male, Republic of Maldives  
**Date of Sample Received:** May 03, 2024  
**Date of Testing Started:** May 03, 2024  
**Date of Testing Completed:** May 15, 2024

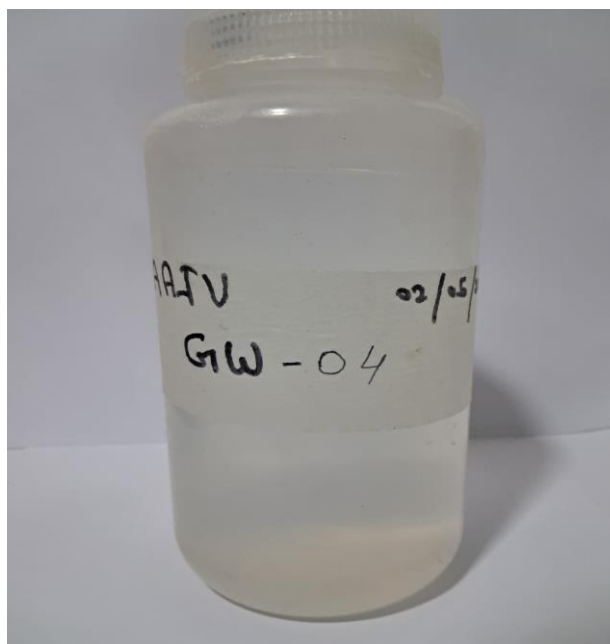
**Sample Description:** **Sample Received as:**  
A water sample contained in sealed plastic bottle

**Sample Identified by the Client as:**  
Ground Water 04

Date of Sample Collection: 05.02.2024

**Sample Drawn By BVCPS** NO

**Photo of the Submitted Samples**



# TEST REPORT



Report No: (7424)067-2138

May 15, 2024

Code Name: AAJV

Page 22 of 49

## TEST RESULTS

No.	Parameters	Results	Referencerange **	LOQ	Unit	Test Method
1	Turbidity	0.2	Max. 1	0.1 NTU	NTU	APHA 23rd ed: 2017 :2130 B
2	Nitrate (as NO <sub>3</sub> <sup>-</sup> )*	5.4	Max. 50	0.1 mg/l	mg/L	APHA 23rd ed: 2017: 4500 -NO <sub>3</sub> -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)	41	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	7.8	6.5-8.5	-	ph	APHA 23rd ed: 2017: 4500H+B
13	Electrical Conductivity at25°C	5,265	<1000	1µS/cm	µS/ cm	APHA 23rd ed: 2017: 2510 B
14	Total Phosphates (as PO <sub>4</sub> <sup>3-</sup> )	ND	Max. 5.0	0.1 mg/l	mg/L	APHA 23rd ed: 2017: 4500-PC
15	Chloride (as Cl <sup>-</sup> )	103	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: (7424)067-2138

May 15, 2024

Code Name: AAJV

Page 23 of 49

\*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,

$\mu$ 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:** (7424)067-2138

**Code Name:** AAJV

May 15, 2024

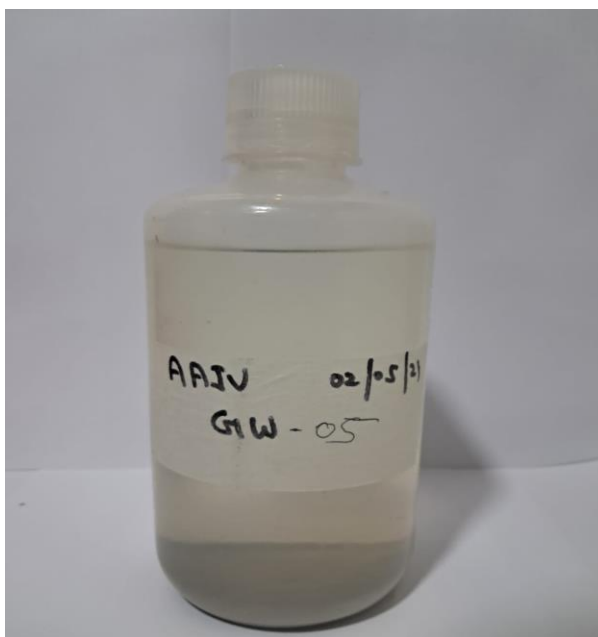
Page 24 of 49

**Customer:** Alke Alkatas Joint Venture (Pvt) Ltd  
**Address :** H.H. Moomiyaage, 5A, Asaree Hingun. 20265 Male, Republic of Maldives  
**Date of Sample Received:** May 03, 2024  
**Date of Testing Started:** May 03, 2024  
**Date of Testing Completed:** May 15, 2024  
**Sample Description:** **Sample Received as:**  
A water sample contained in sealed plastic bottle  
**Sample Identified by the Client as:**  
Ground Water 05

Date of Sample Collection: 05.02.2024

**Sample Drawn By BVCPS** NO

**Photo of the Submitted Samples**



# TEST REPORT



Report No: (7424)067-2138

May 15, 2024

Code Name: AAJV

Page 25 of 49

## TEST RESULTS

No.	Parameters	Results	Referencerange **	LOQ	Unit	Test Method
1	Turbidity	2.0	Max. 1	0.1 NTU	NTU	APHA 23rd ed: 2017 :2130 B
2	Nitrate (as NO <sub>3</sub> <sup>-</sup> )*	5.0	Max. 50	0.1 mg/l	mg/L	APHA 23rd ed: 2017: 4500 -NO <sub>3</sub> -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)	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	7.2	6.5-8.5	-	ph	APHA 23rd ed: 2017: 4500H+B
13	Electrical Conductivity at25°C	8310	<1000	1µS/cm	µS/ cm	APHA 23rd ed: 2017: 2510 B
14	Total Phosphates (as PO <sub>4</sub> <sup>3-</sup> )	1.8	Max. 5.0	0.1 mg/l	mg/L	APHA 23rd ed: 2017: 4500-PC
15	Chloride (as Cl <sup>-</sup> )	102.6	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: (7424)067-2138

May 15, 2024

Code Name: AAJV

Page 26 of 49

\*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,

$\mu$ 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:** (7424)067-2138

**Code Name:** AAJV

May 15, 2024

Page 27 of 49

**Customer:** Alke Alkatas Joint Venture (Pvt) Ltd  
**Address :** H.H. Moomiyaage, 5A, Asaree Hingun. 20265 Male, Republic of Maldives  
**Date of Sample Received:** May 03, 2024  
**Date of Testing Started:** May 03, 2024  
**Date of Testing Completed:** May 15, 2024  
**Sample Description:** **Sample Received as:**

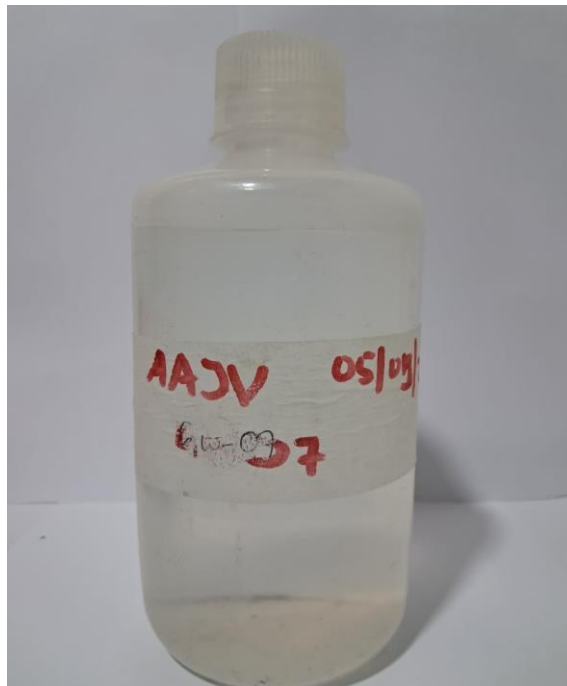
A water sample contained in sealed plastic bottle

**Sample Identified by the Client as:**  
Ground Water 07

Date of Sample Collection: 05.02.2024

**Sample Drawn By BVCPS** NO

**Photo of the Submitted Samples**



# TEST REPORT



Report No: (7424)067-2138

May 15, 2024

Code Name: AAJV

Page 28 of 49

## TEST RESULTS

No.	Parameters	Results	Referencerange**	LOQ	Unit	Test Method
1	Turbidity	0.8	Max. 1	0.1 NTU	NTU	APHA 23rd ed: 2017 :2130 B
2	Nitrate (as NO <sub>3</sub> <sup>-</sup> )*	2.8	Max. 50	0.1 mg/l	mg/L	APHA 23rd ed: 2017: 4500 -NO <sub>3</sub> -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)	09	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	8.0	6.5-8.5	-	ph	APHA 23rd ed: 2017: 4500H+B
13	Electrical Conductivity at25°C	403.5	<1000	1µS/cm	µS/ cm	APHA 23rd ed: 2017: 2510 B
14	Total Phosphates (as PO <sub>4</sub> <sup>3-</sup> )	0.1	Max. 5.0	0.1 mg/l	mg/L	APHA 23rd ed: 2017: 4500-PC
15	Chloride (as Cl <sup>-</sup> )	49.3	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: (7424)067-2138**

May 15, 2024

**Code Name: AAJV**

Page 29 of 49

\*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,  
 $\mu$ 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:** (7424)067-2138

**Code Name:** AAJV

May 15, 2024

Page 30 of 49

**Customer:** Alke Alkatas Joint Venture (Pvt) Ltd  
**Address :** H.H. Moomiyaage, 5A, Asaree Hingun. 20265 Male, Republic of Maldives  
**Date of Sample Received:** May 03, 2024  
**Date of Testing Started:** May 03, 2024  
**Date of Testing Completed:** May 15, 2024  
**Sample Description:** **Sample Received as:**

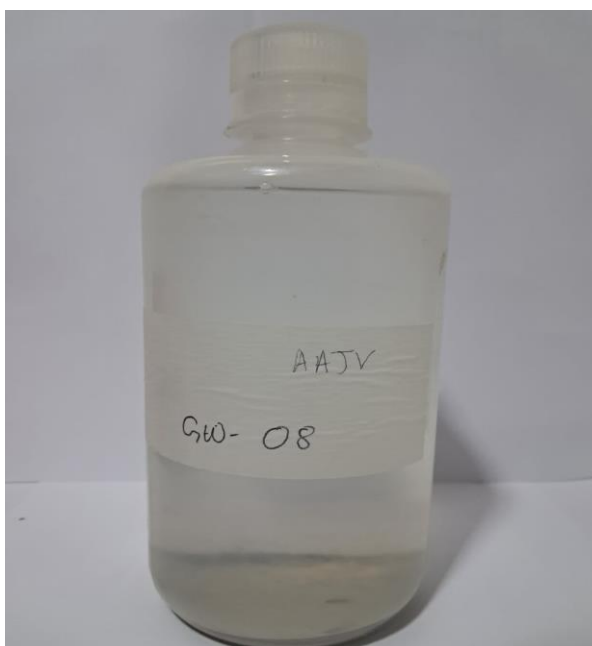
A water sample contained in sealed plastic bottle

**Sample Identified by the Client as:**  
Ground Water 08

Date of Sample Collection: 05.02.2024

**Sample Drawn By BVCPS** NO

**Photo of the Submitted Samples**



# TEST REPORT



Report No: (7424)067-2138

May 15, 2024

Code Name: AAJV

Page 31 of 49

## TEST RESULTS

No.	Parameters	Results	Referencerange **	LOQ	Unit	Test Method
1	Turbidity	1.5	Max. 1	0.1 NTU	NTU	APHA 23rd ed: 2017 :2130 B
2	Nitrate (as NO <sub>3</sub> <sup>-</sup> )*	1.7	Max. 50	0.1 mg/l	mg/L	APHA 23rd ed: 2017: 4500 -NO <sub>3</sub> -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	8.4	6.5-8.5	-	ph	APHA 23rd ed: 2017: 4500H+B
13	Electrical Conductivity at25°C	266.9	<1000	1µS/cm	µS/ cm	APHA 23rd ed: 2017: 2510 B
14	Total Phosphates (as PO <sub>4</sub> <sup>3-</sup> )	ND	Max. 5.0	0.1 mg/l	mg/L	APHA 23rd ed: 2017: 4500-PC
15	Chloride (as Cl <sup>-</sup> )	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	

**Quality of Drinking water, Water used for camp and construction, waste water discharge from STP and dewatering**



**Report No:** (7423)051-8906

**Code Name:** AAJV

Apr 21, 2024

Page 1 of 13

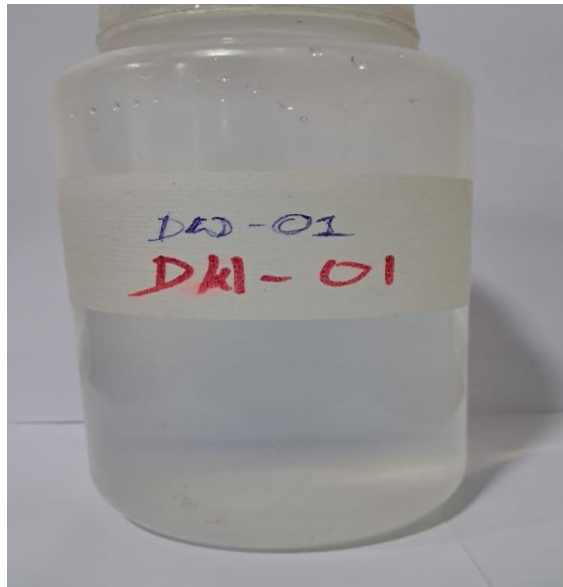
**Customer:** Alke Alkatas Joint Venture (Pvt) Ltd  
**Address :** H.H. Moomiyaage, 5A, Asaree Hingun. 20265 Male, Republic of Maldives  
**Date of Sample Received:** Apr 15, 2024  
**Date of Testing Started:** Apr 15, 2024  
**Date of Testing Completed:** Apr 21, 2024  
**Sample Description:** **Sample Received as:**  
A water sample contained in sealed plastic bottle

**Sample Identified by the Client as:**  
Drinking Water 01

Date of Sample Collection: 04.14.2024

**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](mailto:bvcp.lanka@lk.bureauveritas.com)

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# TEST REPORT



Report No: (7423)051-8906

Apr 21, 2024

Code Name: AAJV

Page 2 of 13

## 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 <sub>3</sub> ) <sup>-</sup> *	ND	<50	0.1 mg/l	mg/L	APHA-4500NO <sub>3</sub> -B
12	Chloride (as Cl <sup>-</sup> )	3.3	<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)051-8906

**Code Name:** AAJV

Apr 21, 2024

Page 3 of 13

**Customer:** Alke Alkatas Joint Venture (Pvt) Ltd  
**Address :** H.H. Moomiyaage, 5A, Asaree Hingun. 20265 Male, Republic of Maldives  
**Date of Sample Received:** Apr 15, 2024  
**Date of Testing Started:** Apr 15, 2024  
**Date of Testing Completed:** Apr 21, 2024

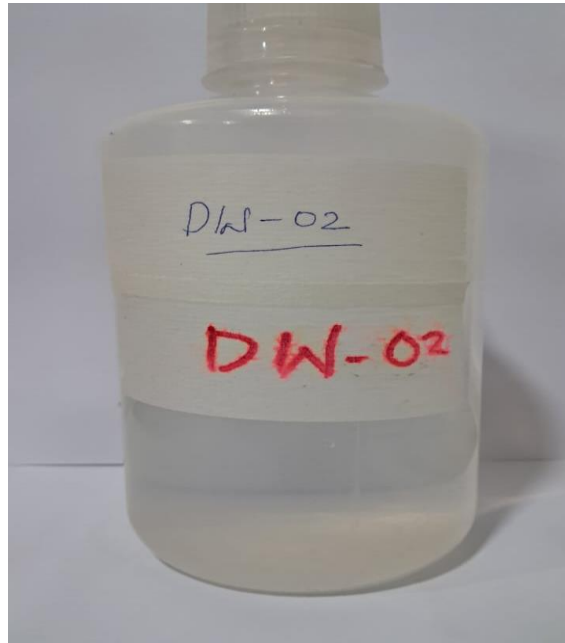
**Sample Description:** **Sample Received as:**  
A water sample contained in sealed plastic bottle

**Sample Identified by the Client as:**  
Drinking Water 02

Date of Sample Collection: 04.14.2024

**Sample Drawn By BVCPS** NO

**Photo of the Submitted Samples**



# TEST REPORT



Report No: (7423)051-8906

Code Name: AAJV

Apr 21, 2024

Page 4 of 13

## TEST RESULTS

No.	Parameters	Results	Referencerange **	LOQ	Unit	Test Method
1	pH	6.5	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	15	<1000	1µS/cm	µS/cm	APHA-2510-B
5	Total Dissolved solids	10	<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 <sub>3</sub> <sup>-</sup> )*	ND	<50	0.1 mg/l	mg/L	APHA-4500NO <sub>3</sub> -B
12	Chloride (as Cl <sup>-</sup> )	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)051-8906

**Code Name:** AAJV

Apr 21, 2024

Page 5 of 13

**Customer:** Alke Alkatas Joint Venture (Pvt) Ltd  
**Address :** H.H. Moomiyaage, 5A, Asaree Hingun. 20265 Male, Republic of Maldives  
**Date of Sample Received:** Apr 15, 2024  
**Date of Testing Started:** Apr 15, 2024  
**Date of Testing Completed:** Apr 21, 2024

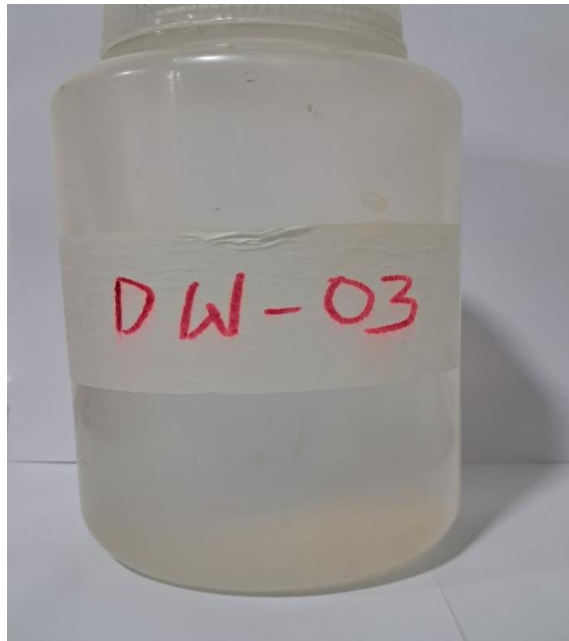
**Sample Description:** **Sample Received as:**  
A water sample contained in sealed plastic bottle

**Sample Identified by the Client as:**  
Drinking Water 03

Date of Sample Collection: 04.14.2024

**Sample Drawn By BVCPS** NO

**Photo of the Submitted Samples**



# TEST REPORT



Report No: (7423)051-8906

Code Name: AAJV

Apr 21, 2024

Page 6 of 13

## TEST RESULTS

No.	Parameters	Results	Referencerange **	LOQ	Unit	Test Method
1	pH	6.6	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	435	<1000	1µS/cm	µS/cm	APHA-2510-B
5	Total Dissolved solids	290	<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 <sub>3</sub> <sup>-</sup> )*	ND	<50	0.1 mg/l	mg/L	APHA-4500NO <sub>3</sub> -B
12	Chloride (as Cl <sup>-</sup> )	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)051-8906

**Code Name:** AAJV

Apr 21, 2024

Page 7 of 13

**Customer:** Alke Alkatas Joint Venture (Pvt) Ltd  
**Address :** H.H. Moomiyaage, 5A, Asaree Hingun. 20265 Male, Republic of Maldives  
**Date of Sample Received:** Apr 15, 2024  
**Date of Testing Started:** Apr 15, 2024  
**Date of Testing Completed:** Apr 21, 2024

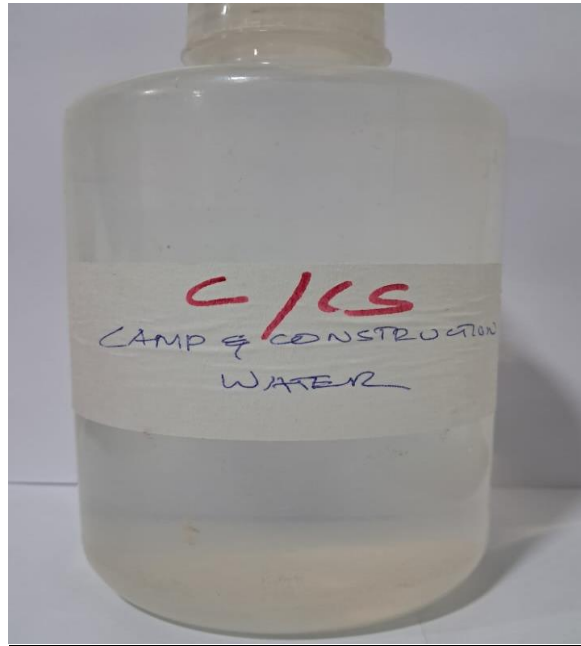
**Sample Description:** **Sample Received as:**  
A water sample contained in sealed plastic bottle

**Sample Identified by the Client as:**  
Camp and Construction Water

Date of Sample Collection: 04.14.2024

**Sample Drawn By BVCPS** NO

## Photo of the Submitted Samples



# TEST REPORT



Report No: (7423)051-8906  
Code Name: AAJV

Apr 21, 2024  
Page 8 of 13

## TEST RESULTS

No.	Parameters	Results	Referencerange **	LOQ	Unit	Test Method
1	Physical Appearance	Clear	Clear/Colorless	-	Clear/Colorless	Visual Examination
2	pH	6.5	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	453	<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	302	<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 <sub>3</sub> <sup>-</sup> )*	ND	<50	0.1 mg/l	mg/L	APHA-4500NO3-B
16	Chloride (as Cl <sup>-</sup> )	36.3	<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)051-8906

**Code Name:** AAJV

Apr 21, 2024

Page 9 of 13

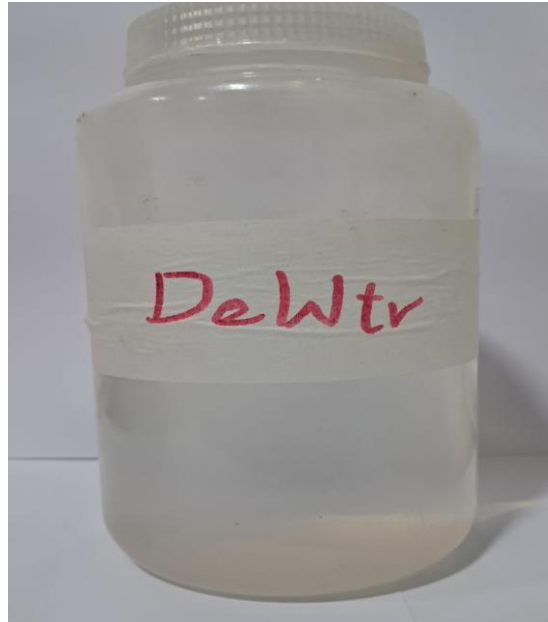
**Customer:** Alke Alkatas Joint Venture (Pvt) Ltd  
**Address :** H.H. Moomiyaage, 5A, Asaree Hingun. 20265 Male, Republic of Maldives  
**Date of Sample Received:** Apr 15, 2024  
**Date of Testing Started:** Apr 15, 2024  
**Date of Testing Completed:** Apr 21, 2024  
**Sample Description:** **Sample Received as:**  
A water sample contained in sealed plastic bottle

**Sample Identified by the Client as:**  
Dewatering Water

Date of Sample Collection: 04.14.2024

**Sample Drawn By BVCPS** NO

## Photo of the Submitted Samples



# TEST REPORT



Report No: (7423)051-8906  
Code Name: AAJV

Apr 21, 2024  
Page 10 of 13

## 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	7.5	6.5-8.5	-	-	APHA-4500-H <sup>+</sup>
3	Temperature	27.8	18-32	-	°C	APHA-2550 B
4	Total Dissolved Solids	31,500	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	6.5	6.5-8.0	0.2 mg/l	mg/l	APHA-4500-O
7	Electrical Conductivity	47,250	35,000-60,000	1µS/cm	µS/cm	APHA-2510
8	Turbidity	1.6	< 5	0.1 NTU	NTU	APHA-2130-B
9	Salinity	3.6	3.2-4.2%	0.001 %	%	APHA-2520-B
10	Ammonia - N	0.8	10	0.1 mg/l	mg/l	APHA-4500-NH <sub>3</sub> <sup>-</sup>
11	Hydrogen Sulphide (H <sub>2</sub> S)	<0.01	0.5	0.01 mg/l	mg/l	APHA-4500-D
12	Nitrate (as NO <sub>3</sub> <sup>-</sup> )*	2.0	15	0.1 mg/l	mg/l	APHA-4500-NO <sub>2</sub> <sup>-</sup>
13	Phosphate as P	0.2	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	1.3	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



**Report No:** (7423)051-8906

**Code Name:** AAJV

Apr 21, 2024

Page 11 of 13

**Customer:** Alke Alkatas Joint Venture (Pvt) Ltd  
**Address :** H.H. Moomiyaage, 5A, Asaree Hingun. 20265 Male, Republic of Maldives  
**Date of Sample Received:** Apr 15, 2024  
**Date of Testing Started:** Apr 15, 2024  
**Date of Testing Completed:** Apr 21, 2024  
**Sample Description:** **Sample Received as:**

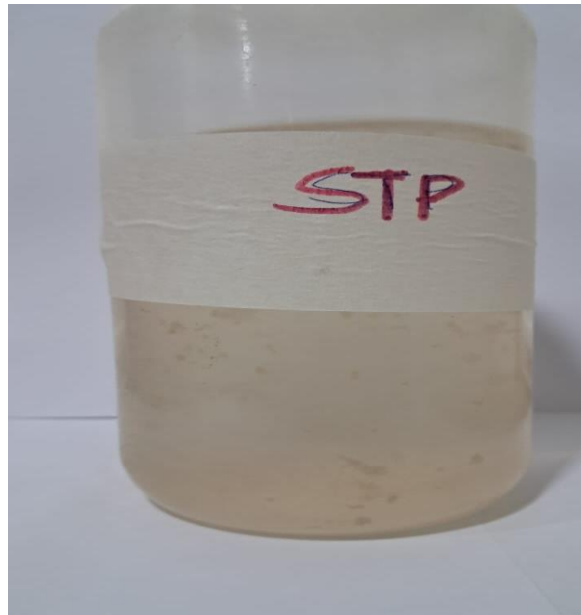
A water sample contained in sealed plastic bottle

**Sample Identified by the Client as:**  
STP

Date of Sample Collection: 04.14.2024

**Sample Drawn By BVCPS** NO

## Photo of the Submitted Samples



# TEST REPORT



**Report No: (7423)051-8906**  
**Code Name: AAJV**

Apr 21, 2024  
 Page 12 of 13

## TEST RESULTS

No.	Parameters	Results	Reference Range **	LOQ	Unit	Test Method
1	Fecal Coliforms	ND	1	-	MPN/100ml	SLS 1461:Part 1/Section 3:2013
2	Total Coliforms	15	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	7.0	5.0-9.5	-	-	APHA-4500-H <sup>+</sup>
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	6.3	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	960.3	35,000-60,000	1µS/cm	µS/cm	APHA-2510-B
12	Chemical Oxygen Demand	42	50	5 mg/l	mg/l	APHA-5220-D
13	Biological Oxygen Demand	17	40	5 mg/l	mg/l	APHA-5210-B
14	Nitrate (as NO <sub>3</sub> <sup>-</sup> )*	5.7	15	0.1 mg/l	mg/l	APHA-4500NO <sub>3</sub> -B
15	Ammonia - N	3.3	10	0.1 mg/l	mg/l	APHA-4500-NH <sub>3</sub> <sup>-</sup>
16	Total Nitrogen (as N)*	6.6	10	0.001 mg/l	mg/l	APHA 23rd ed: 2017 - 4500-Norg B
17	Surfactants	0.3	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)	0.14	5	-	mg/l	In House Method
20	Acute Toxicity	ND	0	-	mg/l	In House Method



# TEST REPORT



Report No: (7423)051-8906  
Code Name: AAJV

Apr 21, 2024  
Page 13 of 13

\*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,  
 $\mu$ 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)**

<b>GENERAL INQUIRIES:</b>		
MOHOMED NAWZER	TEL: +94 764 412 907	E-MAIL: mohomed.nawzer@bureauveritas.com
<b>TECHNICAL INQUIRIES:</b>		
RUWANI AMARASINGHE	TEL: +94 768 229 457	E-MAIL: ruwani.amarasinghe@bureauveritas.com
<b>FEED BACK:</b>		
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**

**Report No:** (7424)067-2138

**Code Name:** AAJV

May 15, 2024

Page 1 of 49

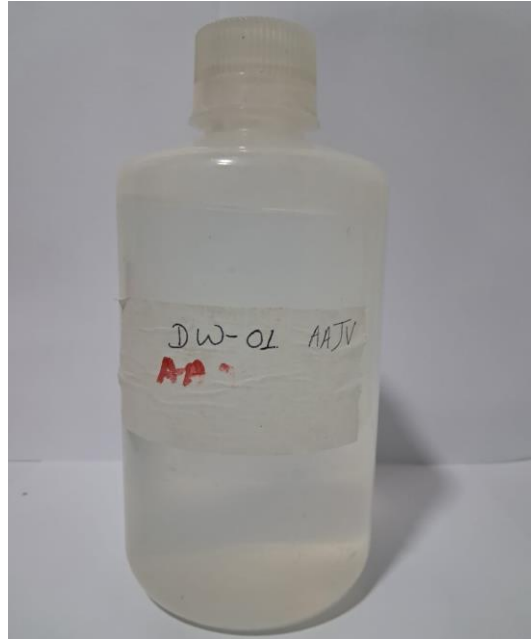
**Customer:** Alke Alkatas Joint Venture (Pvt) Ltd  
**Address :** H.H. Moomiyaage, 5A, Asaree Hingun. 20265 Male, Republic of Maldives  
**Date of Sample Received:** May 03, 2024  
**Date of Testing Started:** May 03, 2024  
**Date of Testing Completed:** May 15, 2024  
**Sample Description:** **Sample Received as:**  
A water sample contained in sealed plastic bottle

**Sample Identified by the Client as:**  
Drinking Water 1

Date of Sample Collection: 05.02.2024

**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: [bvcps.lanka@lk.bureauveritas.com](mailto:bvcps.lanka@lk.bureauveritas.com)

This report is governed by, and incorporates by reference, the Conditions of Testing as posted at the date of issuance of this report at <http://www.bureauveritas.com/home/about-us/our-business/cps/about-us/terms-conditions/> and is intended for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. Measurement uncertainty is only provided upon request for accredited tests. Statements of conformity are based on simple acceptance criteria without taking measurement uncertainty into account, unless otherwise requested in writing. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence or if you require measurement uncertainty; provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents.

# TEST REPORT



Report No: (7424)067-2138

May 15, 2024

Code Name: AAJV

Page 2 of 49

## 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	527.1	<1000	1µS/cm	µS/cm	APHA-2510-B
5	Total Dissolved solids	353	<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 <sub>3</sub> ) <sup>-</sup> *	ND	<50	0.1 mg/l	mg/L	APHA-4500NO <sub>3</sub> -B
12	Chloride (as Cl <sup>-</sup> )	16.8	<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:** (7424)067-2138

**Code Name:** AAJV

May 15, 2024

Page 3 of 49

**Customer:** Alke Alkatas Joint Venture (Pvt) Ltd  
**Address :** H.H. Moomiyaage, 5A, Asaree Hingun. 20265 Male, Republic of Maldives

**Date of Sample Received:** May 03, 2024

**Date of Testing Started:** May 03, 2024

**Date of Testing Completed:** May 15, 2024

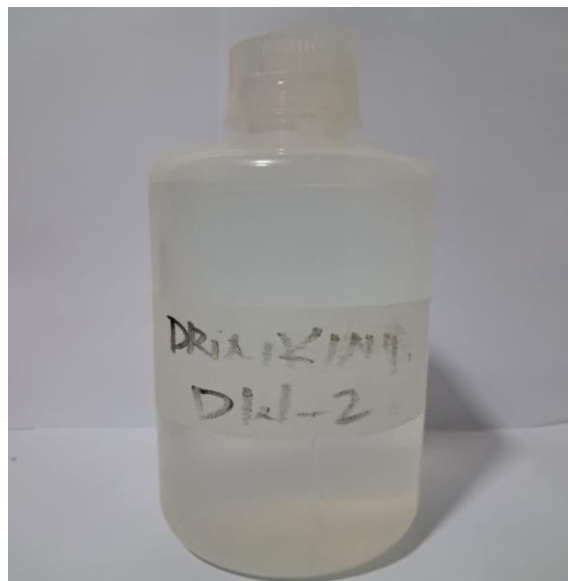
**Sample Description:** **Sample Received as:**  
A water sample contained in sealed plastic bottle

**Sample Identified by the Client as:**  
Drinking Water 2

Date of Sample Collection: 05.02.2024

**Sample Drawn By BVCPS** NO

**Photo of the Submitted Samples**



# TEST REPORT



Report No: (7424)067-2138

Code Name: AAJV

May 15, 2024

Page 4 of 49

## TEST RESULTS

No.	Parameters	Results	Referencerange **	LOQ	Unit	Test Method
1	pH	7.3	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	594	<1000	1µS/cm	µS/cm	APHA-2510-B
5	Total Dissolved solids	396	<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 <sub>3</sub> <sup>-</sup> )*	ND	<50	0.1 mg/l	mg/L	APHA-4500NO <sub>3</sub> -B
12	Chloride (as Cl <sup>-</sup> )	17.4	<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:** (7424)067-2138

**Code Name:** AAJV

May 15, 2024

Page 5 of 49

**Customer:** Alke Alkatas Joint Venture (Pvt) Ltd  
**Address :** H.H. Moomiyaage, 5A, Asaree Hingun. 20265 Male, Republic of Maldives  
**Date of Sample Received:** May 03, 2024  
**Date of Testing Started:** May 03, 2024  
**Date of Testing Completed:** May 15, 2024

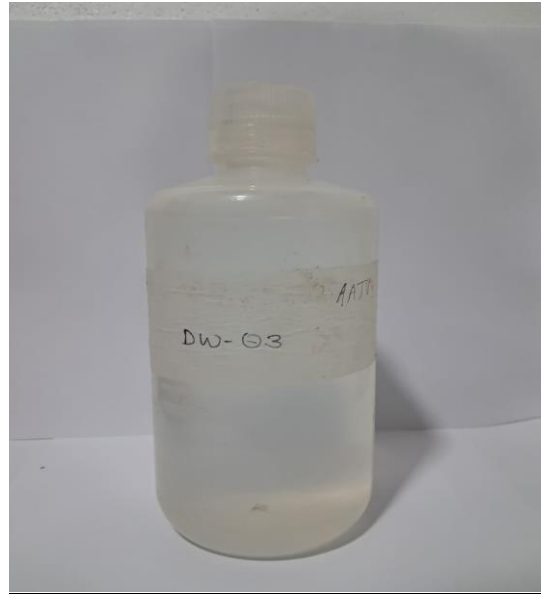
**Sample Description:** **Sample Received as:**  
A water sample contained in sealed plastic bottle

**Sample Identified by the Client as:**  
Drinking Water 03

Date of Sample Collection: 05.02.2024

**Sample Drawn By BVCPS** NO

## Photo of the Submitted Samples





# TEST REPORT



Report No: (7424)067-2138

Code Name: AAJV

May 15, 2024

Page 6 of 49

## TEST RESULTS

No.	Parameters	Results	Referencerange **	LOQ	Unit	Test Method
1	pH	7.3	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	480.5	<1000	1µS/cm	µS/cm	APHA-2510-B
5	Total Dissolved solids	321	<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 <sub>3</sub> <sup>-</sup> )*	ND	<50	0.1 mg/l	mg/L	APHA-4500NO <sub>3</sub> -B
12	Chloride (as Cl <sup>-</sup> )	16.3	<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:** (7424)067-2138

**Code Name:** AAJV

May 15, 2024

Page 7 of 49

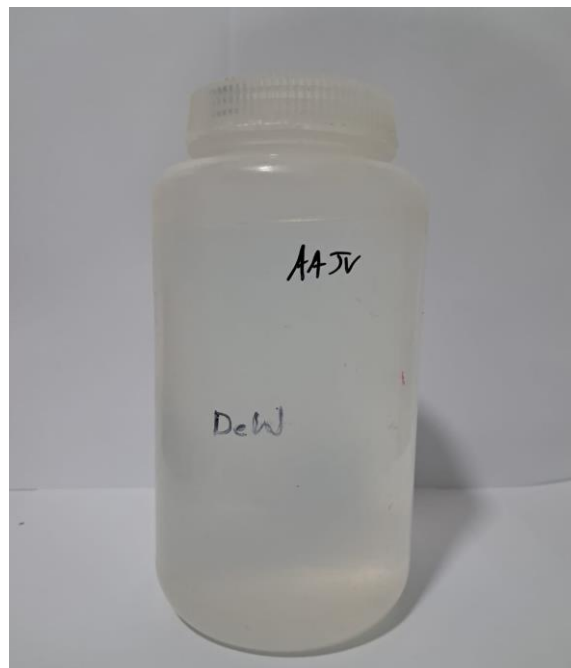
**Customer:** Alke Alkatas Joint Venture (Pvt) Ltd  
**Address :** H.H. Moomiyaage, 5A, Asaree Hingun. 20265 Male, Republic of Maldives  
**Date of Sample Received:** May 03, 2024  
**Date of Testing Started:** May 03, 2024  
**Date of Testing Completed:** May 15, 2024  
**Sample Description:** **Sample Received as:**  
A water sample contained in sealed plastic bottle

**Sample Identified by the Client as:**  
Dewatering Water

Date of Sample Collection: 05.02.2024

**Sample Drawn By BVCPS** NO

## Photo of the Submitted Samples



# TEST REPORT



Report No: (7424)067-2138  
Code Name: AAJV

May 15, 2024  
Page 8 of 49

## 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	7.7	6.5-8.5	-	-	APHA-4500-H <sup>+</sup>
3	Temperature	19.5	18-32	-	°C	APHA-2550 B
4	Total Dissolved Solids	31,304	EC * 0.67	1.0 mg/l	mg/l	APHA-2540-C
5	Total Suspended Solids (TSS)	02	50	1.0 mg/l	mg/l	APHA-2540-B
6	Dissolved Oxygen	7.1	6-8	0.2 mg/l	mg/l	APHA-4500-O
7	Electrical Conductivity	46,956	<= Sea Water EC	1µS/cm	µS/cm	APHA-2510
8	Turbidity	0.4	< 5	0.1 NTU	NTU	APHA-2130-B
9	Salinity	3.0	3.2-4.2%	0.001 %	%	APHA-2520-B
10	Ammonia - N	0.2	10	0.1 mg/l	mg/l	APHA-4500-NH <sub>3</sub> <sup>-</sup>
11	Hydrogen Sulphide (H <sub>2</sub> S)	<0.01	0.5	0.01 mg/l	mg/l	APHA-4500-D
12	Nitrate (as NO <sub>3</sub> <sup>-</sup> )*	0.8	15	0.1 mg/l	mg/l	APHA-4500-NO <sub>2</sub> <sup>-</sup>
13	Phosphate as P	0.11	10	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	<01	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:

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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



May 15, 2024  
Page 09 of 49

**Report No:** (7424)067-2138  
**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:** May 03, 2024

**Date of Testing Started:** May 03, 2024

**Date of Testing Completed:** May 15, 2024

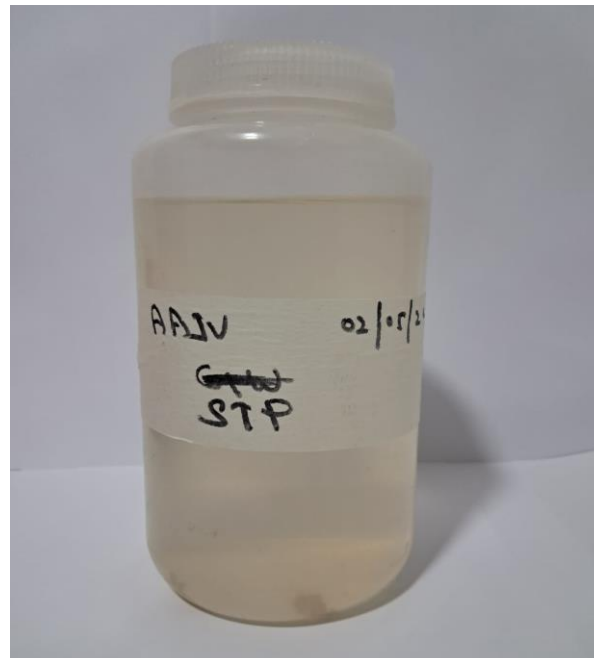
**Sample Description:** **Sample Received as:**  
A water sample contained in sealed plastic bottle

**Sample Identified by the Client as:**  
STP

Date of Sample Collection: 05.02.2024

**Sample Drawn By BVCPS** NO

## Photo of the Submitted Samples



# TEST REPORT



Report No: (7424)067-2138  
Code Name: AAJV

May 15, 2024  
Page 10 of 49

## TEST RESULTS

No.	Parameters	Results	Reference Range **	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	6.8	6-9	-	-	APHA-4500-H <sup>+</sup>
5	Temperature	27.4	44	-	°C	APHA-2550 B
6	Total Suspended Solids	19	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	6.4	6-8	0.2 mg/l	mg/l	APHA-4500-O
10	Free Residual Chlorine	< 0.01	0.1	0.01 mg/l	mg/l	APHA-4500-Cl
11	Electrical Conductivity	878.5	<= Sea Water	1µS/cm	µS/cm	APHA-2510-B
12	Chemical Oxygen Demand	35	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 <sub>3</sub> <sup>-</sup> )*	5.3	15	0.1 mg/l	mg/l	APHA-4500NO <sub>3</sub> -B
15	Ammonia - N	3.1	10	0.1 mg/l	mg/l	APHA-4500-NH <sub>3</sub> <sup>-</sup>
16	Total Nitrogen (as N)*	5.2	10	0.001 mg/l	mg/L	APHA 23rd ed: 2017 - 4500-Norg B
17	Surfactants	0.2	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: (7424)067-2138**

May 15, 2024

**Code Name: AAJV**

Page 32 of 49

\*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,

$\mu$ 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:** (7424)067-2138

**Code Name:** AAJV

May 15, 2024

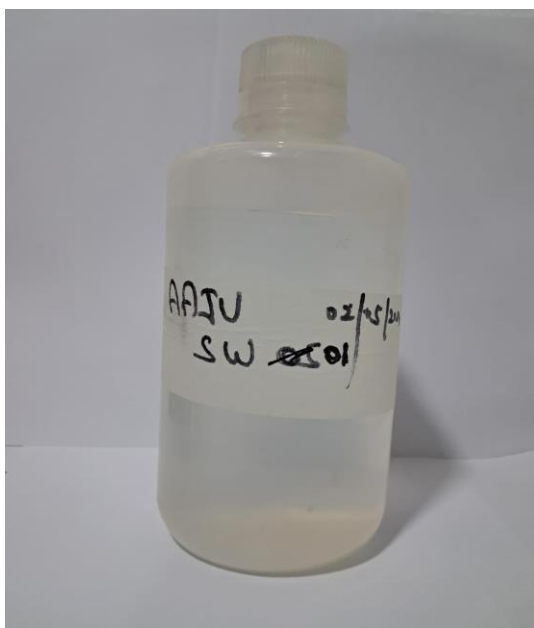
Page 33 of 49

**Customer:** Alke Alkatas Joint Venture (Pvt) Ltd  
**Address :** H.H. Moomiyaage, 5A, Asaree Hingun. 20265 Male, Republic of Maldives  
**Date of Sample Received:** May 03, 2024  
**Date of Testing Started:** May 03, 2024  
**Date of Testing Completed:** May 15, 2024  
**Sample Description:** **Sample Received as:**  
A water sample contained in sealed plastic bottle  
**Sample Identified by the Client as:**  
Sea Water 01

Date of Sample Collection: 05.02.2024

**Sample Drawn By BVCPS** NO

**Photo of the Submitted Samples**



# TEST REPORT



Report No: (7424)067-2138

May 15, 2024

Code Name: AAJV

Page 34 of 49

## 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)	64	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	100	-	MPN/100ml	SLS 1461:Part 1/Section 3:2013
5	Nitrite as NO <sub>2</sub>	1.8	05	0.1 mg/l	mg/L	APHA-4500-NO <sub>2</sub> -
6	pH at 25°C	8.4	8.0-8.3	-	-	APHA-4500-H <sup>+</sup>
7	Chemical Oxygen Demand	41	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	2.1	3	0.1 NTU	NTU	APHA-2130-B
10	Electrical Conductivity	56,550	<= Sea Water	1 μS/cm	μs/cm	APHA-2510
11	Total Inorganic Nitrogen	5.2	70	0.001 mg/l	mg/L	APHA-4500-N
12	Total Phosphates (as PO <sub>4</sub> ) <sub>3</sub>	0.6	0.02	0.01 mg/l	mg/L	APHA-2540-C
13	Sulfide	<0.1	2	0.1 mg/l	mg/L	APHA-4500-D
14	Ammonia - N	2.3	2	0.1 mg/l	mg/L	APHA-4500-NH <sub>3</sub> <sup>-</sup>
15	Temperature	24.8	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	0.05	0.0001 mg/l	mg/L	APHA-3125-B
18	Lead as Pb	0.011	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)	0.003	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	0.028	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 Unsatisfactory as per the Reference range \*\*specified as per Supply Water Quality Standard, Environment Protection Agency EPA, Maldives**

# TEST REPORT



**Report No:** (7424)067-2138

**Code Name:** AAJV

May 15, 2024

Page 35 of 49

**Customer:** Alke Alkatas Joint Venture (Pvt) Ltd  
**Address :** H.H. Moomiyaage, 5A, Asaree Hingun. 20265 Male, Republic of Maldives  
**Date of Sample Received:** May 03, 2024  
**Date of Testing Started:** May 03, 2024  
**Date of Testing Completed:** May 15, 2024  
**Sample Description:** **Sample Received as:**

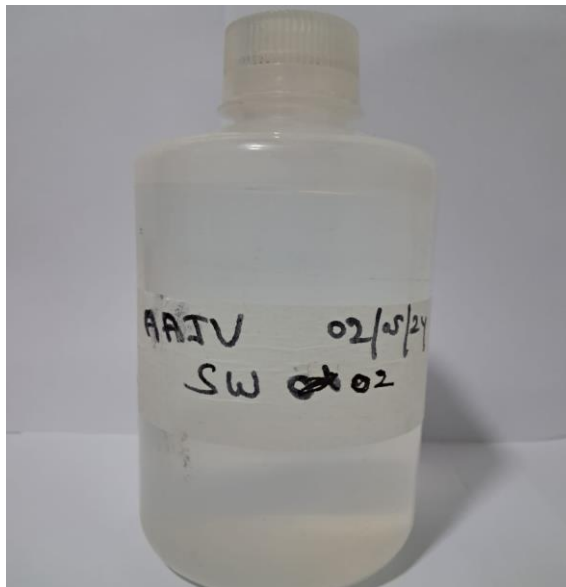
A water sample contained in sealed plastic bottle

**Sample Identified by the Client as:**  
Sea Water 02

Date of Sample Collection: 05.02.2024

**Sample Drawn By BVCPS** NO

**Photo of the Submitted Samples**



# TEST REPORT



Report No: (7424)067-2138

May 15, 2024

Code Name: AAJV

Page 36 of 49

## TEST RESULTS

No.	Parameters	Results	Referencerange **	LOQ	Unit	Test Method
1	Salinity	3.2%	3.2-4.2%	0.001 %	%	APHA-2520-B
2	Total Suspended Solids (TSS)	58	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	100	-	MPN/100ml	SLS 1461:Part 1/Section 3:2013
5	Nitrite as NO <sub>2</sub>	1.5	05	0.1 mg/l	mg/L	APHA-4500-NO2-
6	pH at 25°C	8.4	8.0-8.3	-	-	APHA-4500-H <sup>+</sup>
7	Chemical Oxygen Demand	39	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	2.2	3-5	0.1 NTU	NTU	APHA-2130-B
10	Electrical Conductivity	55,500	<=Sea Water	1µS/cm	µs/cm	APHA-2510
11	Total Inorganic Nitrogen	5.0	70	0.001 mg/l	mg/L	APHA-4500-N
12	Total Phosphates (as PO <sub>4</sub> ) <sub>3</sub>	0.5	3	0.01 mg/l	mg/L	APHA-2540-C
13	Sulphate	<0.1	2	0.1 mg/l	mg/L	APHA-4500-D
14	Ammonia - N	2.1	2	0.1 mg/l	mg/L	APHA-4500-NH <sub>3</sub> <sup>-</sup>
15	Temperature	24.5	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	0.05	0.0001 mg/l	mg/L	APHA-3125-B
18	Lead as Pb	0.010	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)	0.003	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	0.025	2	0.005 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:** (7424)067-2138

**Code Name:** AAJV

May 15, 2024

Page 37 of 49

**Customer:** Alke Alkatas Joint Venture (Pvt) Ltd  
**Address :** H.H. Moomiyaage, 5A, Asaree Hingun. 20265 Male, Republic of Maldives  
**Date of Sample Received:** May 03, 2024  
**Date of Testing Started:** May 03, 2024  
**Date of Testing Completed:** May 15, 2024

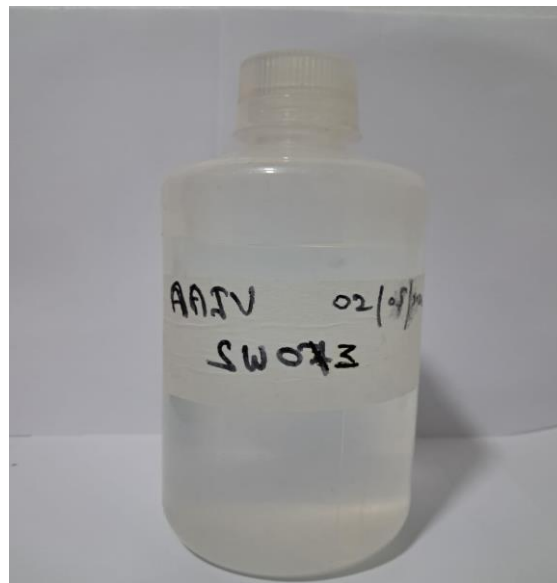
**Sample Description:** **Sample Received as:**  
A water sample contained in sealed plastic bottle

**Sample Identified by the Client as:**  
Sea Water 03

Date of Sample Collection: 05.02.2024

**Sample Drawn By BVCPS** NO

**Photo of the Submitted Samples**



# TEST REPORT



Report No: (7424)067-2138

May 15, 2024

Code Name: AAJV

Page 38 of 49

## TEST RESULTS

No.	Parameters	Results	Referencerange **	LOQ	Unit	Test Method
1	Salinity	3.4%	3.2-4.2%	0.001 %	%	APHA-2520-B
2	Total Suspended Solids (TSS)	72	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	100	-	MPN/100ml	SLS 1461:Part 1/Section 3:2013
5	Nitrite as NO <sub>2</sub>	2.1	05	0.1 mg/l	mg/L	APHA-4500-NO <sub>2</sub> -
6	pH at 25°C	8.4	8.0-8.3	-	-	APHA-4500-H <sup>+</sup>
7	Chemical Oxygen Demand	48	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	2.5	3-5	0.1 NTU	NTU	APHA-2130-B
10	Electrical Conductivity	59,550	<= Sea Water	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 <sub>4</sub> ) <sub>3</sub>	0.9	3	0.01 mg/l	mg/L	APHA-2540-C
13	Sulphate	<0.1	2	0.1 mg/l	mg/L	APHA-4500-D
14	Ammonia - N	2.5	2	0.1 mg/l	mg/L	APHA-4500-NH <sub>3</sub> <sup>-</sup>
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	0.05	0.0001 mg/l	mg/L	APHA-3125-B
18	Lead as Pb	0.018	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	0.033	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 Satisfactory as per the Reference range \*\*specified as per Supply Water Quality Standard, Environment Protection Agency EPA, Maldives**



# TEST REPORT



**Report No:** (7424)067-2138

**Code Name:** AAJV

May 15, 2024

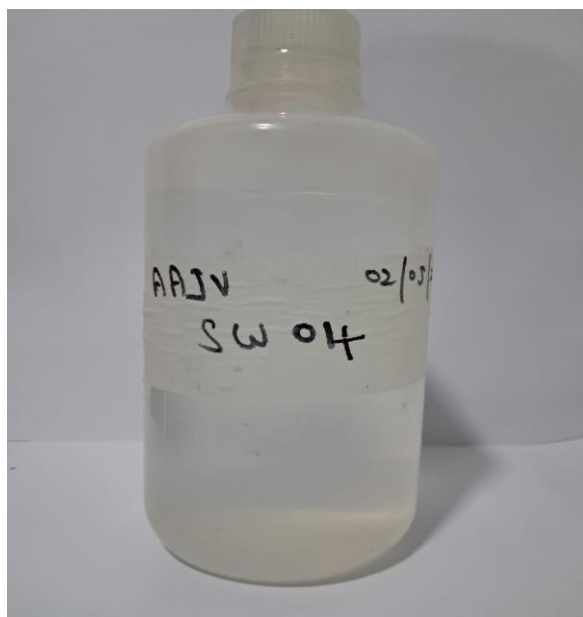
Page 39 of 49

**Customer:** Alke Alkatas Joint Venture (Pvt) Ltd  
**Address :** H.H. Moomiyaage, 5A, Asaree Hingun. 20265 Male, Republic of Maldives  
**Date of Sample Received:** May 03, 2024  
**Date of Testing Started:** May 03, 2024  
**Date of Testing Completed:** May 15, 2024  
**Sample Description:** **Sample Received as:**  
A water sample contained in sealed plastic bottle  
**Sample Identified by the Client as:**  
Sea Water 04

Date of Sample Collection: 05.02.2024

**Sample Drawn By BVCPS** NO

**Photo of the Submitted Samples**



# TEST REPORT



Report No: (7424)067-2138

May 15, 2024

Code Name: AAJV

Page 40 of 49

## 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)	61	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	100	-	MPN/100ml	SLS 1461:Part 1/Section 3:2013
5	Nitrite as NO <sub>2</sub>	1.8	05	0.1 mg/l	mg/L	APHA-4500-NO <sub>2</sub> -
6	pH at 25°C	8.3	8.0-8.3	-	-	APHA-4500-H <sup>+</sup>
7	Chemical Oxygen Demand	45	200	5 mg/l	mg/L	APHA-5220-D
8	Biological Oxygen Demand	17	20	5 mg/l	mg/L	APHA-5210-B
9	Turbidity	2.3	3-5	0.1 NTU	NTU	APHA-2130-B
10	Electrical Conductivity	57,300	<= Sea Water	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 <sub>4</sub> ) <sub>3</sub>	0.7	3	0.01 mg/l	mg/L	APHA-2540-C
13	Sulphate	<0.1	2	0.1 mg/l	mg/L	APHA-4500-D
14	Ammonia - N	2.3	2	0.1 mg/l	mg/L	APHA-4500-NH <sub>3</sub> <sup>-</sup>
15	Temperature	27.2	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	0.05	0.0001 mg/l	mg/L	APHA-3125-B
18	Lead as Pb	0.015	0.5	0.001 mg/l	mg/L	APHA-3125-B
19	Chromium VI	<0.004	0.1	0.005 mg/l	mg/L	APHA-3125-B
20	Total Chromium (as Cr)	0.004	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	0.029	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:** (7424)067-2138

**Code Name:** AAJV

May 15, 2024

Page 41 of 49

**Customer:** Alke Alkatas Joint Venture (Pvt) Ltd  
**Address :** H.H. Moomiyaage, 5A, Asaree Hingun. 20265 Male, Republic of Maldives  
**Date of Sample Received:** May 03, 2024  
**Date of Testing Started:** May 03, 2024  
**Date of Testing Completed:** May 15, 2024  
**Sample Description:** **Sample Received as:**

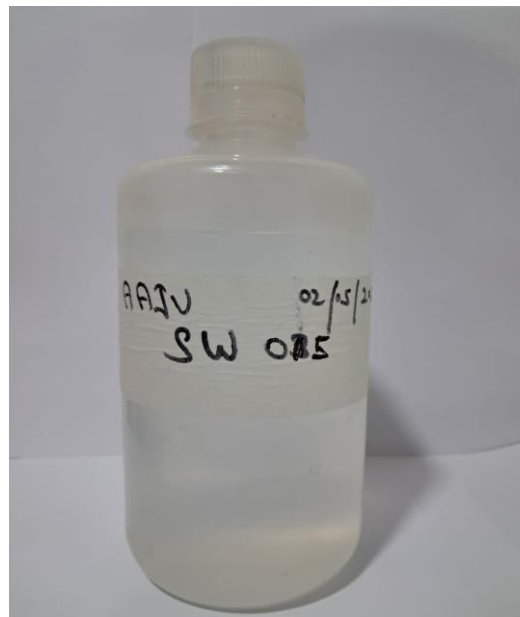
A water sample contained in sealed plastic bottle

**Sample Identified by the Client as:**  
Sea Water 05

Date of Sample Collection: 05.02.2024

**Sample Drawn By BVCPS** NO

**Photo of the Submitted Samples**



# TEST REPORT



Report No: (7424)067-2138

May 15, 2024

Code Name: AAJV

Page 42 of 49

## TEST RESULTS

No.	Parameters	Results	Referencerange **	LOQ	Unit	Test Method
1	Salinity	3.4%	3.2-4.2%	0.001 %	%	APHA-2520-B
2	Total Suspended Solids (TSS)	65	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	100	-	MPN/100ml	SLS 1461:Part 1/Section 3:2013
5	Nitrite as NO <sub>2</sub>	2.0	05	0.1 mg/l	mg/L	APHA-4500-NO <sub>2</sub> -
6	pH at 25°C	8.4	8.0-8.3	-	-	APHA-4500-H <sup>+</sup>
7	Chemical Oxygen Demand	48	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	2.4	3-5	0.1 NTU	NTU	APHA-2130-B
10	Electrical Conductivity	58,200	<= Sea Water	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 <sub>4</sub> ) <sub>3</sub>	0.9	3	0.01 mg/l	mg/L	APHA-2540-C
13	Sulphate	<0.1	2	0.1 mg/l	mg/L	APHA-4500-D
14	Ammonia - N	2.6	2	0.1 mg/l	mg/L	APHA-4500-NH <sub>3</sub> <sup>-</sup>
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	0.05	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)	0.004	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	0.032	2	0.005 mg/l	mg/L	APHA-3125-B
24	Copper as Cu	0.018	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:** (7424)067-2138

**Code Name:** AAJV

May 15, 2024

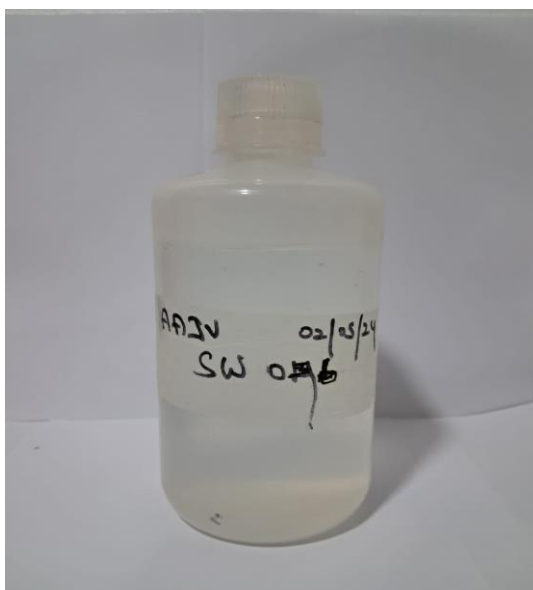
Page 43 of 49

**Customer:** Alke Alkatas Joint Venture (Pvt) Ltd  
**Address :** H.H. Moomiyaage, 5A, Asaree Hingun. 20265 Male, Republic of Maldives  
**Date of Sample Received:** May 03, 2024  
**Date of Testing Started:** May 03, 2024  
**Date of Testing Completed:** May 15, 2024  
**Sample Description:** **Sample Received as:**  
A water sample contained in sealed plastic bottle  
**Sample Identified by the Client as:**  
Sea Water 06

Date of Sample Collection: 05.02.2024

**Sample Drawn By BVCPS** NO

**Photo of the Submitted Samples**



# TEST REPORT



Report No: (7424)067-2138

May 15, 2024

Code Name: AAJV

Page 44 of 49

## 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)	63	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	100	-	MPN/100ml	SLS 1461:Part 1/Section 3:2013
5	Nitrite as NO <sub>2</sub>	1.9	05	0.1 mg/l	mg/L	APHA-4500-NO <sub>2</sub> -
6	pH at 25°C	8.4	8.0-8.3	-	-	APHA-4500-H <sup>+</sup>
7	Chemical Oxygen Demand	46	200	5 mg/l	mg/L	APHA-5220-D
8	Biological Oxygen Demand	17	20	5 mg/l	mg/L	APHA-5210-B
9	Turbidity	2.3	3-5	0.1 NTU	NTU	APHA-2130-B
10	Electrical Conductivity	57,900	<= Sea Water	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 <sub>4</sub> ) <sub>3</sub>	0.7	3	0.01 mg/l	mg/L	APHA-2540-C
13	Sulphate	<0.1	2	0.1 mg/l	mg/L	APHA-4500-D
14	Ammonia - N	2.2	2	0.1 mg/l	mg/L	APHA-4500-NH <sub>3</sub> <sup>-</sup>
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	0.05	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)	0.004	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	0.021	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:** (7424)067-2138

**Code Name:** AAJV

May 15, 2024

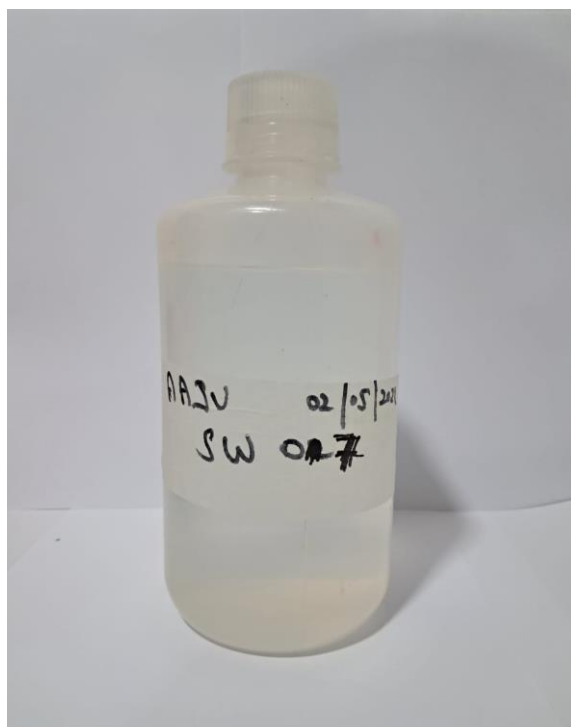
Page 45 of 49

**Customer:** Alke Alkatas Joint Venture (Pvt) Ltd  
**Address :** H.H. Moomiyaage, 5A, Asaree Hingun. 20265 Male, Republic of Maldives  
**Date of Sample Received:** May 03, 2024  
**Date of Testing Started:** May 03, 2024  
**Date of Testing Completed:** May 15, 2024  
**Sample Description:** **Sample Received as:**  
A water sample contained in sealed plastic bottle  
**Sample Identified by the Client as:**  
Sea Water 07

Date of Sample Collection: 05.02.2024

**Sample Drawn By BVCPS** NO

**Photo of the Submitted Samples**



# TEST REPORT



Report No: (7424)067-2138

May 15, 2024

Code Name: AAJV

Page 46 of 49

## 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)	61	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	100	-	MPN/100ml	SLS 1461:Part 1/Section 3:2013
5	Nitrite as NO <sub>2</sub>	1.7	05	0.1 mg/l	mg/L	APHA-4500-NO2-
6	pH at 25°C	8.1	8.0-8.3	-	-	APHA-4500-H <sup>+</sup>
7	Chemical Oxygen Demand	45	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	2.2	3-5	0.1 NTU	NTU	APHA-2130-B
10	Electrical Conductivity	57,450	<= Sea Water	1µS/cm	µs/cm	APHA-2510
11	Total Inorganic Nitrogen	5.2	70	0.001 mg/l	mg/L	APHA-4500-N
12	Total Phosphates (as PO <sub>4</sub> ) <sub>3</sub>	0.6	3	0.01 mg/l	mg/L	APHA-2540-C
13	Sulpate	<0.1	2	0.1 mg/l	mg/L	APHA-4500-D
14	Ammonia - N	2.0	2	0.1 mg/l	mg/L	APHA-4500-NH <sub>3</sub> <sup>-</sup>
15	Temperature	26.3	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	0.05	0.0001 mg/l	mg/L	APHA-3125-B
18	Lead as Pb	0.011	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)	0.004	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	0.020	2	0.005 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 Unsatisfactory as per the Reference range \*\*specified as per Supply Water Quality Standard, Environment Protection Agency EPA, Maldives**

# TEST REPORT



**Report No:** (7424)067-2138

**Code Name:** AAJV

May 15, 2024

Page 47 of 49

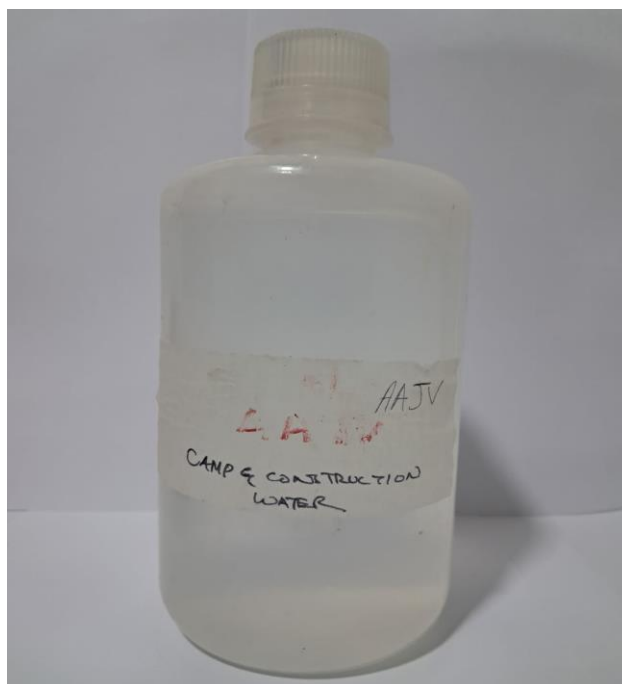
**Customer:** Alke Alkatas Joint Venture (Pvt) Ltd  
**Address :** H.H. Moomiyaage, 5A, Asaree Hingun. 20265 Male, Republic of Maldives  
**Date of Sample Received:** May 03, 2024  
**Date of Testing Started:** May 03, 2024  
**Date of Testing Completed:** May 15, 2024  
**Sample Description:** **Sample Received as:**  
A water sample contained in sealed plastic bottle

**Sample Identified by the Client as:**  
Camp and Construction Water

Date of Sample Collection: 05.02.2024

**Sample Drawn By BVCPS** NO

**Photo of the Submitted Samples**



# TEST REPORT



Report No: (7424)067-2138

May 15, 2024

Code Name: AAJV

Page 48 of 49

## TEST RESULTS

No.	Parameters	Results	Referencerange **	LOQ	Unit	Test Method
1	Physical Appearance	Clear	Clear/Colorless	-	Clear/Colorless	Visual Examination
2	pH	7.1	6.5-8.5	-	-	APHA-4500-B
3	Turbidity	0.2	< 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	473.1	<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	317	<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 <sub>3</sub> ) <sup>*</sup>	ND	<50	0.1 mg/l	mg/L	APHA-4500NO3-B
16	Chloride (as Cl <sup>-</sup> )	36.3	<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: (7424)067-2138

Code Name: AAJV

May 15, 2024

Page 49 of 49

## Contact information for this report (Technical and General Inquiries and Feedback)

<b>GENERAL INQUIRIES:</b>		
MOHOMED NAWZER	TEL: +94 764 412 907	E-MAIL: mohomed.nawzer@bureauveritas.com
<b>TECHNICAL INQUIRIES:</b>		
RUWANI AMARASINGHE	TEL: +94 768 229 457	E-MAIL: ruwani.amarasinghe@bureauveritas.com
<b>FEED BACK:</b>		
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**

**Report No:** (7424)067-5094

**Code Name:** AAJV

Jun 11, 2024

Page 1 of 13

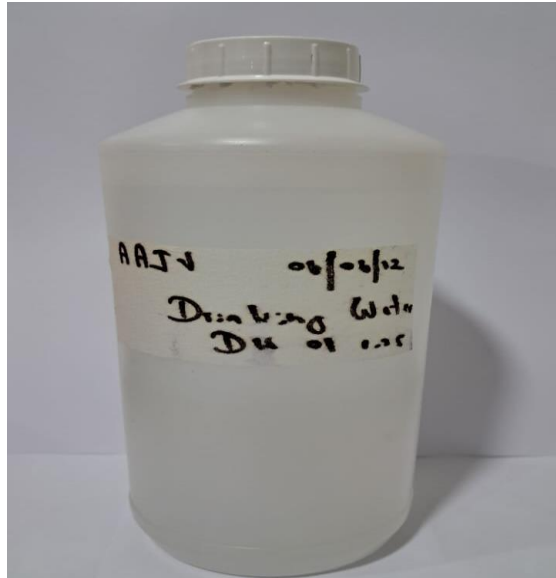
**Customer:** Alke Alkatas Joint Venture (Pvt) Ltd  
**Address :** H.H. Moomiyaage, 5A, Asaree Hingun. 20265 Male, Republic of Maldives  
**Date of Sample Received:** Jun 06, 2024  
**Date of Testing Started:** Jun 07, 2024  
**Date of Testing Completed:** Jun 11, 2024  
**Sample Description:** **Sample Received as:**  
A water sample contained in sealed plastic bottle

**Sample Identified by the Client as:**  
Drinking Water 01

Date of Sample Collection: 06.06.2024

**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: [bvcps.lanka@lk.bureauveritas.com](mailto:bvcps.lanka@lk.bureauveritas.com)

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# TEST REPORT



Report No: (7424)067-5094

Jun 11, 2024

Code Name: AAJV

Page 2 of 13

## TEST RESULTS

No.	Parameters	Results	Referencerange **	LOQ	Unit	Test Method
1	pH	6.9	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	13.5	<1000	1µS/cm	µS/cm	APHA-2510-B
5	Total Dissolved solids	09	<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 <sub>3</sub> ) <sup>-</sup> *	ND	<50	0.1 mg/l	mg/L	APHA-4500NO <sub>3</sub> -B
12	Chloride (as Cl <sup>-</sup> )	1.6	<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:** (7424)067-5094

**Code Name:** AAJV

Jun 11, 2024

Page 3 of 13

**Customer:** Alke Alkatas Joint Venture (Pvt) Ltd  
**Address :** H.H. Moomiyaage, 5A, Asaree Hingun. 20265 Male, Republic of Maldives  
**Date of Sample Received:** Jun 06, 2024  
**Date of Testing Started:** Jun 07, 2024  
**Date of Testing Completed:** Jun 11, 2024

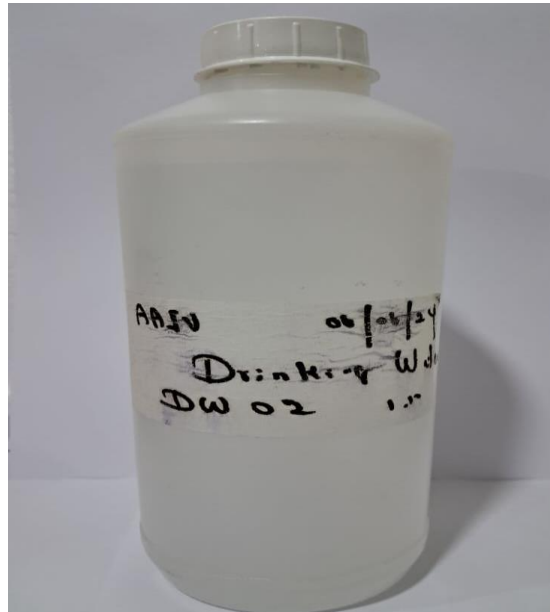
**Sample Description:** **Sample Received as:**  
A water sample contained in sealed plastic bottle

**Sample Identified by the Client as:**  
Drinking Water 02

Date of Sample Collection: 06.06.2024

**Sample Drawn By BVCPS** NO

**Photo of the Submitted Samples**



# TEST REPORT



Report No: (7424)067-5094

Code Name: AAJV

Jun 11, 2024

Page 4 of 13

## TEST RESULTS

No.	Parameters	Results	Referencerange **	LOQ	Unit	Test Method
1	pH	6.5	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	64.1	<1000	1µS/cm	µS/cm	APHA-2510-B
5	Total Dissolved solids	43	<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 <sub>3</sub> <sup>-</sup> )*	ND	<50	0.1 mg/l	mg/L	APHA-4500NO <sub>3</sub> -B
12	Chloride (as Cl <sup>-</sup> )	4.8	<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: (7424)067-5094

Code Name: AAJV

Jun 11, 2024

Page 5 of 13

**Customer:** Alke Alkatas Joint Venture (Pvt) Ltd  
**Address :** H.H. Moomiyaage, 5A, Asaree Hingun. 20265 Male, Republic of Maldives  
**Date of Sample Received:** Jun 06, 2024  
**Date of Testing Started:** Jun 07, 2024  
**Date of Testing Completed:** Jun 11, 2024

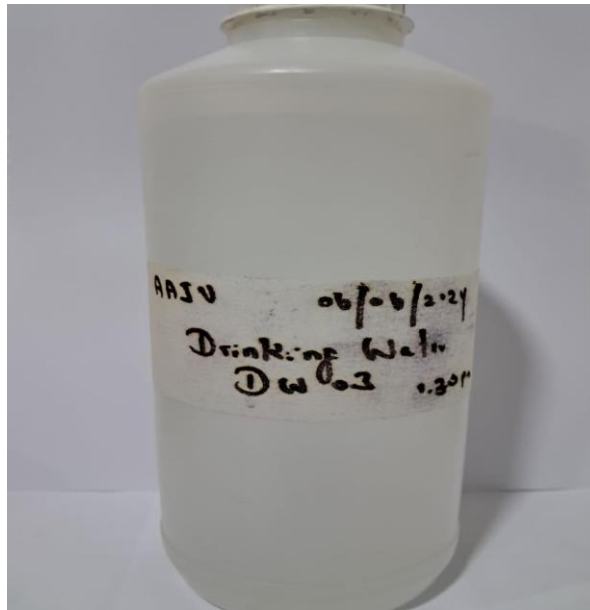
**Sample Description:** **Sample Received as:**  
A water sample contained in sealed plastic bottle

**Sample Identified by the Client as:**  
Drinking Water 03

Date of Sample Collection: 06.06.2024

**Sample Drawn By BVCPS** NO

**Photo of the Submitted Samples**



# TEST REPORT



Report No: (7424)067-5094

Code Name: AAJV

Jun 11, 2024

Page 6 of 13

## TEST RESULTS

No.	Parameters	Results	Referencerange **	LOQ	Unit	Test Method
1	pH	6.5	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	392	<1000	1µS/cm	µS/cm	APHA-2510-B
5	Total Dissolved solids	265	<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 <sub>3</sub> <sup>-</sup> )*	ND	<50	0.1 mg/l	mg/L	APHA-4500NO <sub>3</sub> -B
12	Chloride (as Cl <sup>-</sup> )	12.4	<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:** (7424)067-5094

**Code Name:** AAJV

Jun 11, 2024

Page 7 of 13

**Customer:** Alke Alkatas Joint Venture (Pvt) Ltd  
**Address :** H.H. Moomiyaage, 5A, Asaree Hingun. 20265 Male, Republic of Maldives  
**Date of Sample Received:** Jun 06, 2024  
**Date of Testing Started:** Jun 07, 2024  
**Date of Testing Completed:** Jun 11, 2024

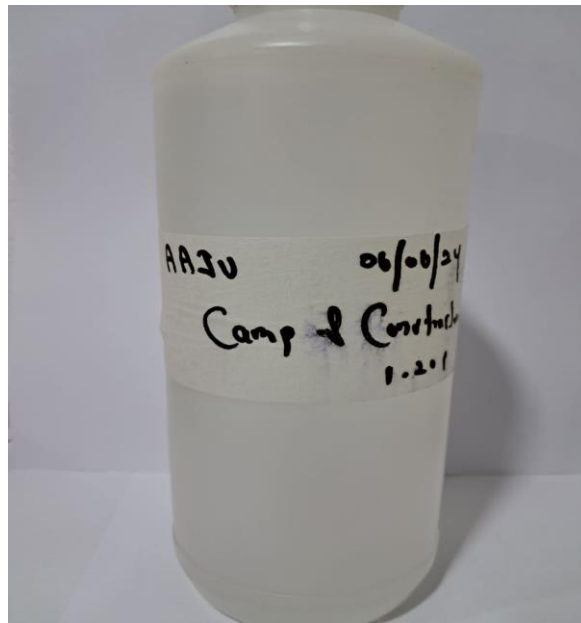
**Sample Description:** **Sample Received as:**  
A water sample contained in sealed plastic bottle

**Sample Identified by the Client as:**  
Camp and Construction Water

Date of Sample Collection: 06.06.2024

**Sample Drawn By BVCPS** NO

## Photo of the Submitted Samples





# TEST REPORT



Report No: (7424)067-5094  
Code Name: AAJV

Jun 11, 2024  
Page 8 of 13

## TEST RESULTS

No.	Parameters	Results	Referencerange **	LOQ	Unit	Test Method
1	Physical Appearance	Clear	Clear/Colorless	-	Clear/Colorless	Visual Examination
2	pH	7.9	6.5-8.5	-	-	APHA-4500-B
3	Turbidity	0.1	< 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	464.2	<1000	1µS/cm	µS/cm	APHA-2510-B
6	Total Hardness	21	<75	1.0 mg/l	mg/L	APHA-2340-C
7	Total Suspended Solids (TSS)	05	5-750	1.0 mg/l	mg/L	APHA-2540-B
8	Total Dissolved solids	852	<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 <sub>3</sub> <sup>-</sup> )*	ND	<50	0.1 mg/l	mg/L	APHA-4500NO3-B
16	Chloride (as Cl <sup>-</sup> )	44.7	<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: (7424)067-5094

Code Name: AAJV

Jun 11, 2024

Page 9 of 13

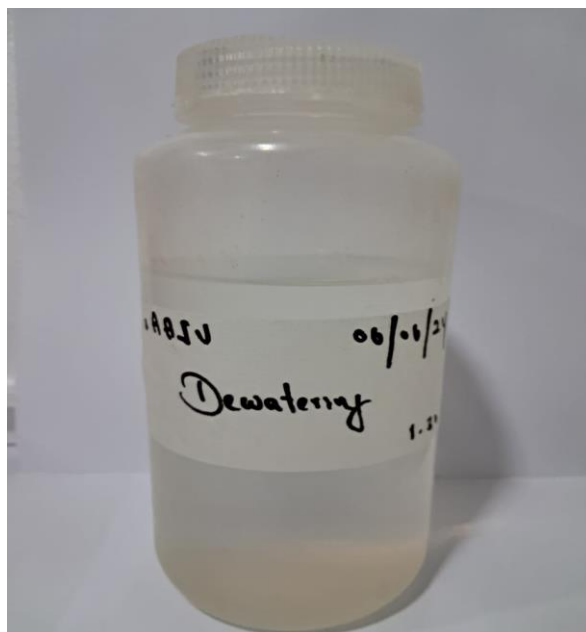
**Customer:** Alke Alkatas Joint Venture (Pvt) Ltd  
**Address :** H.H. Moomiyaage, 5A, Asaree Hingun. 20265 Male, Republic of Maldives  
**Date of Sample Received:** Jun 06, 2024  
**Date of Testing Started:** Jun 07, 2024  
**Date of Testing Completed:** Jun 11, 2024  
**Sample Description:** **Sample Received as:**  
A water sample contained in sealed plastic bottle

**Sample Identified by the Client as:**  
Dewatering Water

Date of Sample Collection: 06.06.2024

**Sample Drawn By BVCPS** NO

## Photo of the Submitted Samples



# TEST REPORT



Report No: (7424)067-5094  
Code Name: AAJV

Jun 11, 2024  
Page 10 of 13

## 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	7.4	6.5-8.5	-	-	APHA-4500-H <sup>+</sup>
3	Temperature	28.6	18-32	-	°C	APHA-2550 B
4	Total Dissolved Solids	34,200	EC * 0.67	1.0 mg/l	mg/l	APHA-2540-C
5	Total Suspended Solids (TSS)	09	50	1.0 mg/l	mg/l	APHA-2540-B
6	Dissolved Oxygen	6.9	6.5-8.0	0.2 mg/l	mg/l	APHA-4500-O
7	Electrical Conductivity	50,350	35,000-60,000	1µS/cm	µS/cm	APHA-2510
8	Turbidity	0.6	< 5	0.1 NTU	NTU	APHA-2130-B
9	Salinity	3.5	3.2-4.2%	0.001 %	%	APHA-2520-B
10	Ammonia - N	1.8	10	0.1 mg/l	mg/l	APHA-4500-NH <sub>3</sub> <sup>-</sup>
11	Hydrogen Sulphide (H <sub>2</sub> S)	<0.01	0.5	0.01 mg/l	mg/l	APHA-4500-D
12	Nitrate (as NO <sub>3</sub> <sup>-</sup> )*	3.9	15	0.1 mg/l	mg/l	APHA-4500-NO <sub>2</sub> <sup>-</sup>
13	Phosphate as P	0.8	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	<01	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



**Report No:** (7424)067-5094

**Code Name:** AAJV

Jun 11, 2024

Page 11 of 13

**Customer:** Alke Alkatas Joint Venture (Pvt) Ltd  
**Address :** H.H. Moomiyaage, 5A, Asaree Hingun. 20265 Male, Republic of Maldives  
**Date of Sample Received:** Jun 06, 2024  
**Date of Testing Started:** Jun 07, 2024  
**Date of Testing Completed:** Jun 11, 2024  
**Sample Description:** **Sample Received as:**

A water sample contained in sealed plastic bottle

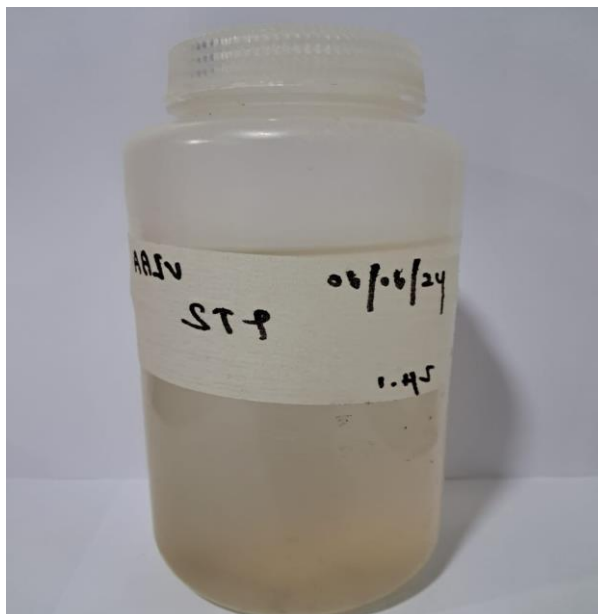
**Sample Identified by the Client as:**

STP

Date of Sample Collection: 06.06.2024

**Sample Drawn By BVCPS** NO

## Photo of the Submitted Samples



# TEST REPORT



Report No: (7424)067-5094  
Code Name: AAJV

Jun 11, 2024  
Page 12 of 13

## TEST RESULTS

No.	Parameters	Results	Reference Range **	LOQ	Unit	Test Method
1	Fecal Coliforms	ND	1	-	MPN/100ml	SLS 1461:Part 1/Section 3:2013
2	Total Coliforms	15	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	6.5	5.0-9.5	-	-	APHA-4500-H <sup>+</sup>
5	Temperature	26.3	44	-	°C	APHA-2550 B
6	Total Suspended Solids	18	150	1.0 mg/l	mg/l	APHA-2540-D
7	Ortho Phosphate as P	0.1	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	6.4	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	645	35,000-60,000	1 μS/cm	μS/cm	APHA-2510-B
12	Chemical Oxygen Demand	30	50	5 mg/l	mg/l	APHA-5220-D
13	Biological Oxygen Demand	08	40	5 mg/l	mg/l	APHA-5210-B
14	Nitrate (as NO <sub>3</sub> <sup>-</sup> )*	3.9	15	0.1 mg/l	mg/l	APHA-4500NO <sub>3</sub> -B
15	Ammonia - N	2.1	10	0.1 mg/l	mg/l	APHA-4500-NH <sub>3</sub> <sup>-</sup>
16	Total Nitrogen (as N)*	4.0	10	0.001 mg/l	mg/l	APHA 23rd ed: 2017 - 4500-Norg B
17	Surfactants	0.3	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)	0.11	5	-	mg/l	In House Method
20	Acute Toxicity	ND	0	-	mg/l	In House Method

# TEST REPORT



Report No: (7424)067-5094  
Code Name: AAJV

Jun 11, 2024  
Page 13 of 13

\*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,  
 $\mu$ 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)**

<b>GENERAL INQUIRIES:</b>		
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<b>TECHNICAL INQUIRIES:</b>		
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<b>FEED BACK:</b>		
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**



**Illumination Level**



REPUBLIC OF MALDIVES  
 MINISTRY OF ENVIRONMENT, CLIMATE CHANGE and TECHNOLOGY

DBO CONTRACTOR:



EMPLOYER  
 REPRESENTATIV

Review & Approval:



EPC CONTRACTOR:

ALKE-ALKATAŞ JV



Project Title:

Design, Build and Operate of a Waste to Energy Facility at Thilafushi  
 Contract No: (AGR) 438-WPMC/PRIV/2021/71

Document Name:

**LIGHT ILLUMINATION ASSESSMENT REPORT**

Status:

Project Management Deliverables

Design:

Company:

Name:

Date:

Document No:

Prepared by:

AA JV

Dhamotharan

27.04.2024

Checked by:

AA JV

Sedat Cot

27.04.2024

URB/RAM

Released by:

## Summary

The light illumination assessment was conducted at the WTE construction site as part of the site's occupational health monitoring as well as to comply with the night work procedure.

The illumination assessment aimed to ensure that proper illumination has been implemented at the WTE worksite, pedestrian access, warehouse, yards and worker accommodations as per the recommended local and international regulations and guidelines such as the Health and Safety at Work Regulation 1999 (MHSW) IFC EHS Guideline

## Methodology

The hand-held device (KLEIK TOOLS) was utilized for light illumination assessment at the WTE construction site.

The measurements were taken at various locations across the construction site including work areas, pedestrian access, warehouse, yards and worker accommodation. The assessment was conducted during the nighttime to capture different lighting condition

The measurement captured in the Foot Candle (FC) one foot-candle is equal to 10.764 lux

## Compliance and Recommended Illumination

The below table shows the recommended average and minimum illumination at a typical location as per the Health and Safety at Work Regulation 1999 (MHSW)

<b>Activity</b>	<b>Typical Locations</b>	<b>Average Illumination (lux) 1x</b>	<b>Minimum measured illumination(lux) 1x</b>
Movement of People, machines and vehicles	Lorry Park, corridors, circulation routes	20	5
Movement of people machines and vehicles in hazardous areas, rough work not requiring any perception of details	Construction site clearance, excavation and soil work loading bays bolting and canning plant	50	20
Work requiring perception of details	Kitchen, factories assembling large components, potteries	100	50
Work requiring perception of details	Offices sheet metal work, book bindings	200	100
Work requiring perception of fine details	Drawing offices, factories assembling electronic components textile protection	500	200

## **Findings**

- Worker accommodation and foreman accommodation light levels were low
- Worksite light levels were satisfied level
- The sedimentation pool area light was average level
- The pedestrian access light level was very poor

For further reference the attached pictures and assessment reports in the report as an appendix

## **Recommendation**

- Suggested the installation of supplementary lighting in areas with adequate illumination as per the assessment report
- Advised Electrician to adjust lighting fixtures where proposed changes to the placement, and angle intensity of lighting fixtures to improve visibility and safety

**Pictures and Reports**



**Bunker Area**



**Bunker Area Access**



**Accommodations Area**



**Accommodations Area**

ILLUMINATION ASSESSMENT

Date of Assessment : 27/04/2024

SN.	Location	Area	Illumination level (FC/LUX)	Remarks
1.	Accommodation Area	walkway new worker's Accommodation	0.28 FC	illumination level. is low
2.	"	Walkway for man Accom	0.28 FC	"
3.	"	Near first Aid center	0.05 FC	"
4.	Bunker	Access no. 2.	0.23 FC	"
5.	"	Access No. 3	14.98 FC	there is Good light
6.	"	working location tower crane	4.05 FC	
7.	"	"	13.66 FC	
8.	WTE Site	mechanical equipments storage Yard.	3.38 FC	
9.	"	"	3.33 FC	
10.	"	Between Bunker & Process	11.55 FC	



Assessment By	Reviewed By
Name: <u>Amir Kumar</u>	Name: <u>Dhanuheran</u>
Signature with date: <u>[Signature] 27/04/2024</u>	Signature with date: <u>[Signature] 27/04/2024</u>



**ILLUMINATION ASSESSMENT**

Date of Assessment : 27/04/2024

SN.	Location	Area	Illumination level (FC/LUX)	Remarks
1.	WTE Site	Selemenolation Pool	3.69 FC	Light is Average.
2.	"	Selemenolation Pool Access	10.14 FC	
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				



Assessment By	Reviewed By
Name: <u>Amil Kumar</u>	Name: <u>Dhanatharan</u>
Signature with date: <u>[Signature]</u> 27/04/2024	Signature with date: <u>[Signature]</u> 28/04/2024



REPUBLIC OF MALDIVES  
MINISTRY OF ENVIRONMENT, CLIMATE CHANGE and TECHNOLOGY

DBO CONTRACTOR:



RAMBOLL

EMPLOYER  
REPRESENTATIV

Review & Approval:

**FICHTNER**

EPC CONTRACTOR:

ALKE-ALKATAŞ JV



Project Title:

Design, Build and Operate of a Waste to Energy Facility at Thilafushi  
Contract No: (AGR) 438-WPMC/PRIV/2021/71

Document Name:

**OCCUPATIONAL HEALTH MONITORING -GAS TEST**

Status:

Project Management Deliverables

Design:

Company:

Name:

Date:

Document No:

Prepared by:

AA JV

Dhamotharan

27.04.2024

Checked by:

AA JV

Sedat Cot

27.04.2024

URB/RAM

Released by:

## Summary

The Gas test assessment was conducted at the WTE construction site as part of the site's occupational health monitoring

The Gas test assessment aimed to ensure safety by detecting and monitoring the presence of gases or vapors in the environment. Gas testing is crucial in construction sites where various activities such as excavation, welding and confined space work may release gases that pose a risk to workers' health and safety

## Objective

**Identifying Hazards:** Gas testing helps identify the presence of potentially harmful gases such as methane, carbon monoxide, hydrogen sulfide, or volatile organic compounds (VOCs) that may be released during construction activities.

**Preventing Accidents:** Early detection of hazardous gases allows for prompt action to mitigate risks and prevent accidents such as fires, explosions, or toxic gas exposure.

**Ensuring Compliance:** Gas testing helps ensure compliance with regulatory standards and occupational health and safety guidelines, which mandate the monitoring and control of hazardous substances in the workplace.

**Protecting Workers' Health:** By monitoring gas levels in the construction environment, gas testing helps protect workers from acute or chronic health effects associated with exposure to hazardous gases, including respiratory issues, neurological disorders, or asphyxiation.

**Facilitating Safe Work Practices:** Gas testing results inform safety protocols and work practices, enabling the implementation of appropriate control measures such as ventilation, personal protective equipment (PPE), or evacuation procedures to maintain a safe working environment.

**Monitoring Confined Spaces:** In confined spaces such as trenches, tunnels, or excavations, gas testing is essential to assess the air quality and ensure it is safe for workers to enter and work in these areas

## Methodology

The hand-held device (VENTIS MX4) was utilised for gas assessment at the WTE construction site. The measurements were taken at various locations across the construction site including work areas, near WAMCO stockpiles, warehouses, yards, worker accommodations and kitchen.

## Compliance and Recommended Illumination

The below table shows the recommended average gas detection limitation range along with lower and upper limit values as per the standard BS EN 45544

Gas	Detection Range	Lower Limit(ppm)	Upper Limit (ppm)
Oxygen (O <sub>2</sub> )	0-25%	19.5	23.05
Carbon Monoxide (CO)	0-500 ppm	35	200

Hydrogen Sulfide (H <sub>2</sub> S)	0-100 ppm	5	15
Lower Explosive Limit	0-100% LEL	5% LEL	20% LEL
Volatile Organic (VOCs)	0-1000 ppm	0	1000

**Findings**

- No harmful gas was detected during the gas test assessment above table mentions ranges

For further reference the attached pictures and assessment reports in the report as an appendix

**Recommendation**

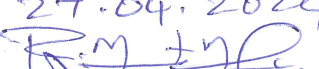
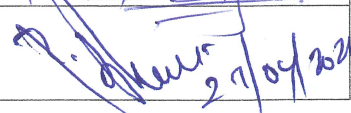
- No further action required

## Pictures and Reports



OCCUPATIONAL HEALTH MONITORING- GAS TEST

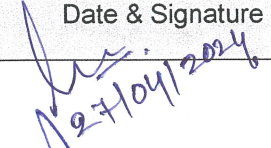
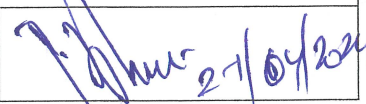
Date/Time	Location	% LEL	Limit %	% O <sub>2</sub>	Limit %	%CO	Limit	%H <sub>2</sub> S	Limit
27-04-24 03:45PM	BATCHING PLANT	0%	< 5 %	20.9%	19.5 to 23	0PPM	<35 PPM	0PPM	< 5PPM
27-04-24 03:50PM	BUNKER AREA	0%	"	20.9%	"	0PPM	"	0PPM	"
27-04-24 03:55PM	PROCESS AREA	0%	"	20.9%	"	0PPM	"	0PPM	"
27-04-24 04:00PM	WASTE YARD	0%	"	20.9%	"	0PPM	"	0PPM	"
27-04-24 04:05PM	STP	0%	"	20.9%	"	0PPM	"	0PPM	"
27-04-24 04:15PM	SECURITY GATES	0%	"	20.9%	"	0PPM	"	0PPM	"

	Name	Position	Date & Signature
Inspected By	MURTHY	HSE OFFICER	27-04-2024 
Reviewed By	Dhaneshwaran.	H/S Manager.	 27/04/2024



**OCCUPATIONAL HEALTH MONITORING- GAS TEST**

Date/Time	Location	% LEL	Limit %	% O <sub>2</sub>	Limit %	%CO	Limit	%H <sub>2</sub> S	Limit
27/04/24	Plant Batching	00:00	< 5 %	20.09%	19.5 to 23	00 PPM	<35 PPM	00	< 5PPM
27/04/24	Semi maintenance	00:00	"	20.9%	"	00 PPM		00	PPM
27/04/24	Bunker area	00:00	"	20.9%	"	00 PPM		00	PPM
27/04/24	Process area	00:00	"	20.9%	"	00 PPM		00	PPM
27/04/24	Steelyard	00:00	"	20.9%	"	00 PPM		00	PPM
27/04/24	warehouse	00:00	"	20.9%	"	00 PPM		00	PPM
27/04/24	Kitchen area	00:00	"	20.7%	"	017 PPM		00	PPM
27/04/24	Chemical area	00:00	"	20.9%	"	00 PPM		00	PPM
27/04/24	Labour Washroom	00:00	"	20.9%	"	00 PPM		00	PPM
27/04/24	Labour Laundry	00:00	"	20.9%	"	00 PPM		00	PPM

	Name	Position	Date & Signature
Inspected By	- Shweta Singh	HSE officer	 27/04/2024
Reviewed By	Dhanu	HIS Manager	 27/04/2024



REPUBLIC OF MALDIVES  
 MINISTRY OF ENVIRONMENT, CLIMATE CHANGE and TECHNOLOGY

DBO CONTRACTOR:



EMPLOYER  
 REPRESENTATIV

Review & Approval:



EPC CONTRACTOR:

ALKE-ALKATAŞ JV



Project Title:

Design, Build and Operate of a Waste to Energy Facility at Thilafushi  
 Contract No: (AGR) 438-WPMC/PRIV/2021/71

Document Name:

**LIGHT ILLUMINATION ASSESSMENT REPORT**

Status:

Project Management Deliverables

Design:

Company:

Name:

Date:

Document No:

Prepared by:

AA JV

Dhamotharan

20.05.2024

Checked by:

AA JV

Civan Kalafat

21.05.2024

URB

Released by:

URB

## Summary

The light illumination assessment was conducted at the WTE construction site as part of the site's occupational health monitoring as well as to comply with the night work procedure.

The illumination assessment aimed to ensure that proper illumination has been implemented at the WTE worksite, pedestrian access, warehouse, yards and worker accommodations as per the recommended local and international regulations and guidelines such as the Health and Safety at Work Regulation 1999 (MHSW) IFC EHS Guideline

## Methodology

The hand-held device (KLEIK TOOLS) was utilized for light illumination assessment at the WTE construction site.

The measurements were taken at various locations across the construction site including work areas, pedestrian access, warehouse, yards and worker accommodation. The assessment was conducted during the nighttime to capture different lighting condition

The measurement captured in the lux parameter (lux)1x

## Compliance and Recommended Illumination

The below table shows the recommended average and minimum illumination at a typical location as per the Health and Safety at Work Regulation 1999 (MHSW)

Activity	Typical Locations	Average Illumination (lux) 1x	Minimum measured illumination(lux) 1x
Movement of People, machines and vehicles	Lorry Park, corridors, circulation routes	20	5
Movement of people machines and vehicles in hazardous areas, rough work not requiring any perception of details	Construction site clearance, excavation and soil work loading bays bolting and canning plant	50	20
Work requiring perception of details	Kitchen, factories assembling large components, potteries	100	50
Work requiring perception of details	Offices sheet metal work, book bindings	200	100
Work requiring perception of fine details	Drawing offices, factories assembling electronic components textile protection	500	200

## **Findings**

- Mechanical equipment storage yard illumination was not sufficient
- The walkway to the site office to jetty illumination was very low
- The walkway for accommodation area illumination was very low
- Near first aid, illumination was very low
- Overall work site area illumination was satisfied

For further reference the attached pictures and assessment reports in the report as an appendix

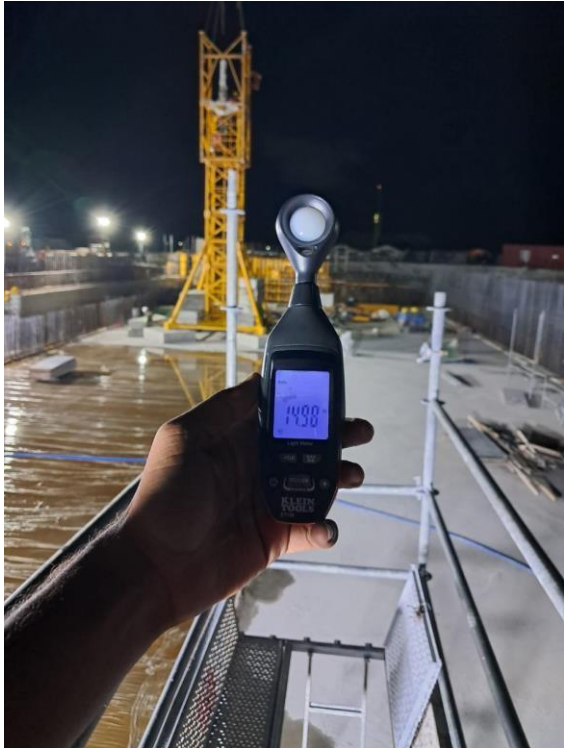
## **Recommendation**

- Suggested the installation of supplementary lighting in areas with adequate illumination as per the assessment report
- Advised Electrician to adjust lighting fixtures where proposed changes to the placement, and angle intensity of lighting fixtures to improve visibility and safety as per the assessment report

## **Corrective Action**

- Near the first aid room, the light has been fixed
- Additional solar power light has been placed in accommodation area
- Additional lights have been ordered in place

Pictures and Reports



Bunker Area



Bunker Area Access



Accommodations Area



Accommodations Area



ILLUMINATION ASSESSMENT

Date of Assessment: 08/05/2024

SN.	Location	Area	Illumination level (FC/LUX)	Remarks
1.	WTE Site	Bunker Access no. 2	103.7 Lux	(walkways for bunker)
2.	"	Bunker Access no. 1	90.2 Lux	"
3.	Bunker Area	Near Tower crane	125.1 Lux	(working Area)
4.	WTE Site	Mechanical equipment storage yard.	30.6 Lux	illumination is not sufficient
5.	"	"	37.7 Lux	"
6.	WTE Site	walkway office to Jetty	11.0 Lux	Need to fix light outside
7.	"	walkway office to Site	33.1 Lux	"
8.	WTE Site	Process Area.	93.6 Lux	(working Area)
9.	WTE Site	Sedimentation Pools	40.1 Lux	
10.	"	"	107.3 Lux	



Assessment By	Reviewed By
Name: <u>Smit Kumar</u>	Name: <u>Dhanu Arora</u>
Signature with date: <u>[Signature]</u> 08/05/2024	Signature with date: <u>[Signature]</u> 10/05/2024



ILLUMINATION ASSESSMENT

Date of Assessment: 08/05/2024

SN.	Location	Area	Illumination level (FC/LUX)	Remarks
1.	WTE Site	Walkways for Accommodation	28 Lux	illumination level is low
2.	"	"	26.4 Lux	
3.	"	near first Aid	5.2 Lux	very low illumination.
4.				
5.				
6.				
7.				
8.				
9.				
10.				



Assessment By	Reviewed By
Name: <u>Amith Kumar</u>	Name: <u>Shamsharan</u>
Signature with date: <u>[Signature] 8/05/2024</u>	Signature with date: <u>[Signature] 10/05/2024</u>

**APPENDIX : 8.3 LIGHT ILLUMINATION SURVEY REPORT**



REPUBLIC OF MALDIVES  
 MINISTRY OF ENVIRONMENT, CLIMATE CHANGE and TECHNOLOGY

DBO CONTRACTOR:



EMPLOYER  
 REPRESENTATIV

Review & Approval:



EPC CONTRACTOR:

ALKE-ALKATAŞ JV



Project Title:

Design, Build and Operate of a Waste to Energy Facility at Thilafushi  
 Contract No: (AGR) 438-WPMC/PRIV/2021/71

Document Name:

**LIGHT ILLUMINATION ASSESSMENT REPORT**

Status:

Project Management Deliverables

Design:

Company:

Name:

Date:

Document No:

Prepared by:

AA JV

Dhamotharan

20.06.2024

Checked by:

AA JV

Civan Kalafat

21.06.2024

URB

Released by:

URB

## Summary

The light illumination assessment was conducted at the WTE construction site as part of the site's occupational health monitoring as well as to comply with the night work procedure.

The illumination assessment aimed to ensure that proper illumination has been implemented at the WTE worksite, pedestrian access, warehouse, yards and worker accommodations as per the recommended local and international regulations and guidelines such as the Health and Safety at Work Regulation 1999 (MHSW) IFC EHS Guideline

## Methodology

The hand-held device (KLEIK TOOLS) was utilized for light illumination assessment at the WTE construction site.

The measurements were taken at various locations across the construction site including work areas, pedestrian access, warehouse, yards and worker accommodation. The assessment was conducted during the nighttime to capture different lighting condition

The measurement captured in the lux parameter (lux)1x

## Compliance and Recommended Illumination

The below table shows the recommended average and minimum illumination at a typical location as per the Health and Safety at Work Regulation 1999 (MHSW)

Activity	Typical Locations	Average Illumination (lux) 1x	Minimum measured illumination(lux) 1x
Movement of People, machines and vehicles	Lorry Park, corridors, circulation routes	20	5
Movement of people machines and vehicles in hazardous areas, rough work not requiring any perception of details	Construction site clearance, excavation and soil work loading bays bolting and canning plant	50	20
Work requiring perception of details	Kitchen, factories assembling large components, potteries	100	50
Work requiring perception of details	Offices sheet metal work, book bindings	200	100
Work requiring perception of fine details	Drawing offices, factories assembling electronic components textile protection	500	200

## **Findings**

- The walkway to the site office to jetty illumination was very low
- The walkway for accommodation area illumination was very low
- Near first aid, illumination was very low
- Overall work site area illumination was satisfied

For further reference the attached pictures and assessment reports in the report as an appendix

## **Recommendation**

- Suggested the installation of supplementary lighting in areas with adequate illumination as per the assessment report
- Advised Electrician to adjust lighting fixtures where proposed changes to the placement, and angle intensity of lighting fixtures to improve visibility and safety as per the assessment report

## **Corrective Action**

- Near the first aid room, the light has been fixed
- Additional solar power light has been placed in accommodation rea
- Additional lights have been ordered in place

Pictures and Reports



Shakti Singh Galaxy S23  
24 June 2024 9:17 pm

Bunker Area



Shakti Singh Galaxy S23  
24 June 2024 9:24 pm

Bunker Area Access



Shakti Singh Galaxy S23  
24 June 2024 9:07 pm

Accommodations Area



Shakti Singh Galaxy S23  
24 June 2024 9:10 pm

Accommodations Area

**ILLUMINATION ASSESSMENT**

Date of Assessment: 24-06-2024

SN.	Location	Area	Illumination Level (FC/LUX)	Remarks
1.	South Side	Bunker area.	29.4 Lux	
2.	North Side	Bunker area.	20.7 Lux	
3.	East Side	Bunker area	37.8 Lux	
4.	West Side	Bunker area.	68.1 Lux	
5.	Top Side	Bunker area.	19.0 Lux	
6.	South side	process area	85.9 Lux	
7.	East Side	process area	28.2 Lux	
8.	Street road	Steel yard.	64.1 Lux	
9.	Security Gate-03	Jetty area	78.3 Lux	
10.	Security Gate-02	Office area.	120.6 Lux	



Assessment By	Reviewed By
Name: <u>Shakti Singh</u>	Name: <u>Dhanraj</u>
Signature with date:	Signature with date:

MDV-AAK-HSE- 27.04.2024

Shakti Singh  
24/06/24

Dhanraj  
24/06/2024



**ILLUMINATION ASSESSMENT**

Date of Assessment: 24-06-2024

SN.	Location	Area	Illumination Level (FC/LUX)	Remarks
1.	First aid center	Camp area	06.7 Lux	Observed poor light
2.	Accommodation-02	Camp area	00.0 Lux	"
3.	Accommodation-03	Camp area.	00.0 Lux	"
4.	Accommodation-01	Camp area.	00.0 Lux	"
5.	warehouse 01	Store area.	50.1 Lux	
6.	pathway	Laboratory area	68.8 Lux	
7.	pathway	Batching plant area	50.5 Lux	
8.	Cement Silo	Batching plant area	33.0 Lux	
9.	Water Storage Tank	Batching plant area	43.9 Lux	
10.	Cement Store	Batching plant area	125.4 Lux	



Assessment By	Reviewed By
Name: <u>Shakti Singh</u>	Name: <u>Shamshad Khan</u>
Signature with date: <u>[Signature]</u>	Signature with date: <u>[Signature]</u>

MDV-AAK-HSE- 27.04.2024

24/06/24

24/06/2024

# Environmental Monitoring Report

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10<sup>th</sup> Quarterly Report (April-June 2024)  
July 2024

Maldives: Greater Male Waste-to-Energy Project

PART D : Appendices

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## **Appendix 4: Marine ecology survey report**

Environmental monitoring Report Pre-Construction–Construction Stage  
WtE Facility at Thilafushi  
Marine Ecology (June 2024)

Prepared by: Mahmood Riyaz



28th June 2024

## Table of contents

<b>Table of contents</b>	<b>2</b>
<b>List of Tables</b>	<b>2</b>
<b>1. INTRODUCTION</b>	<b>3</b>
<b>2. MARINE ECOLOGICAL SURVEY</b>	<b>4</b>
2.1 Data analysis	5
2.2 Results	5
2.3 Fish surveys	12
<b>Annex 1. Marine ecology survey ; Fish census data</b>	<b>15</b>
Fish Census data M9	15
Fish Census data M8	16
Fish Census data M10	17

## List of Tables

<b>Table 1: Substrate categories and the codes.</b>	<b>5</b>
<b>Table 2: Summary of fish census for three site ordered as Rare, Common and Abundant for three site.</b>	<b>13</b>

## List of Figures

<b>Figure 1: Underwater Marine Survey Locations M8,M9 and M10 for construction stage Monitoring June 2024</b>	<b>4</b>
<b>Figure 2. Waste water outfall pipe installed at M8 discharging from temporary waste water plant (April 2023).</b>	<b>6</b>
<b>Figure 3: Photos Taken from Site 8 (M8) (7<sup>th</sup> June 2024) at 5m depth</b>	<b>7</b>
<b>Figure 4: Photos Taken from Site 8 (M8) (7<sup>th</sup> June 2024) at 10m depth</b>	<b>7</b>
<b>Figure 5: Overall view of the site at 5m depth June 2024 (bottom)</b>	<b>7</b>
<b>Figure 6: Average benthic cover and their standard error for M8 at both 5 and 10m depth 7<sup>th</sup> June 2024</b>	<b>8</b>
<b>Figure 6: Photos Taken from Site 9 (M9) (7<sup>th</sup> June 2024) at 5m depth</b>	<b>8</b>
<b>Figure 7: Overall view of the site at 5m depth February 2024 (top) and June 2024 (bottom)</b>	<b>8</b>
<b>Figure 8: Photos Taken from Site 9 (M9) (7<sup>th</sup> June 2024) at 10m depth</b>	<b>9</b>
<b>Figure 9: Average benthic cover and their standard error for M9 at both 5 and 10m depth 7<sup>th</sup> June 2024</b>	<b>10</b>
<b>Figure 11: Photos Taken from Site 10 (M10) (7<sup>th</sup> June 2024) at 5m depth</b>	<b>11</b>
<b>Figure 12: Photos Taken from Site 10 (M10) (7<sup>th</sup> June 2024) at 10m depth</b>	<b>11</b>
<b>Figure 13: Overall view of the site at 5m (top) and 10m depth (bottom) June 2024 at M10</b>	<b>11</b>
<b>Figure 14: Average benthic cover and their standard error for M9 at both 5 and 10m depth, 7<sup>th</sup> June 2024</b>	<b>12</b>
<b>Figure 15: Fish families total occurrence at each depth at 5m and 10m depth in June 2024</b>	<b>13</b>



## 1. INTRODUCTION

This is the environmental monitoring report of marine ecology result conducted in June 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 7<sup>th</sup> June 2024 as part the requirements of the EIA monitoring and the Project Environmental Management Plan developed to meet the anticipated environment impacts, health and safety, as well as to ensure the sustainability of the Project.

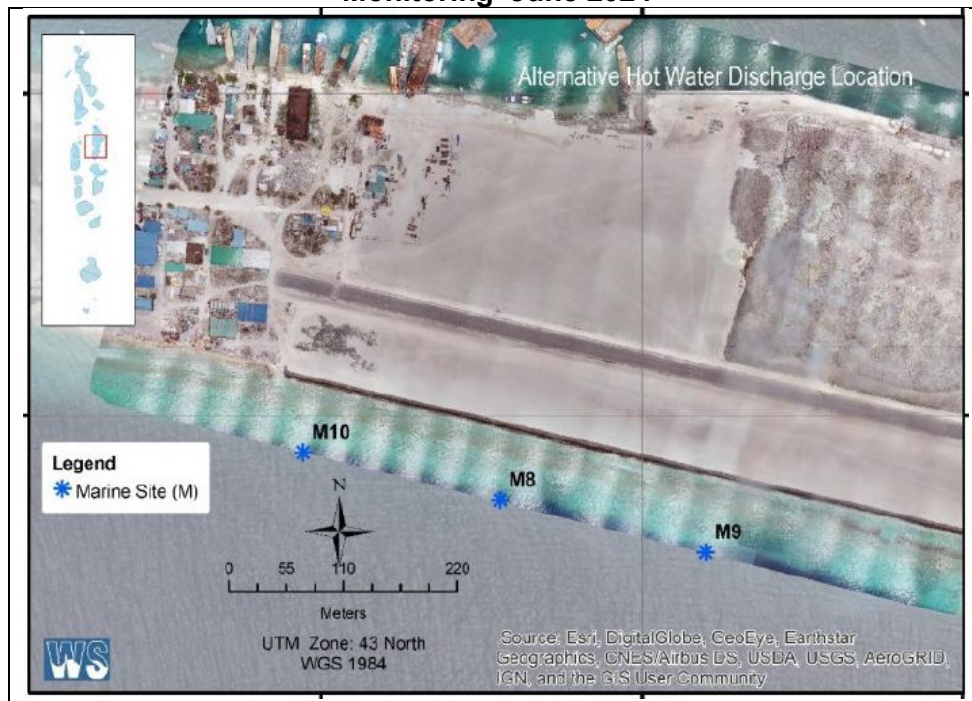
## 2. MARINE ECOLOGICAL SURVEY

For the construction site environmental monitoring reef benthic 6<sup>th</sup> survey was conducted 7<sup>th</sup> June 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 24<sup>th</sup> December 2022 and the following report is based on the 6<sup>th</sup> survey conducted on 7<sup>th</sup> June 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 June 2024**



## 2.1 Data analysis

The data collected in June 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)<sup>1</sup>. 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 June 2024 shows a decrease in shallow water (at 5m depth) coral cover of 18-20% while the coral cover at 10m slightly increase between 23% and 25.3%. Due to increase in sea surface temperature worldwide subsequent coral bleaching was observed in M8 at both 5 and 10m depth and about 9.2% and 8.8% of the corals are bleached at 5m and 10m depth respectively. Coral bleaching impact may have been exacerbated due to sedimentation from the dredging activities of Thilafushi Phase II that was observed in October monitoring. The dominant benthic cover is sand and silt about 25.8-35% in the 5 and 10 m transect respectively. Rock and coral rubble cover

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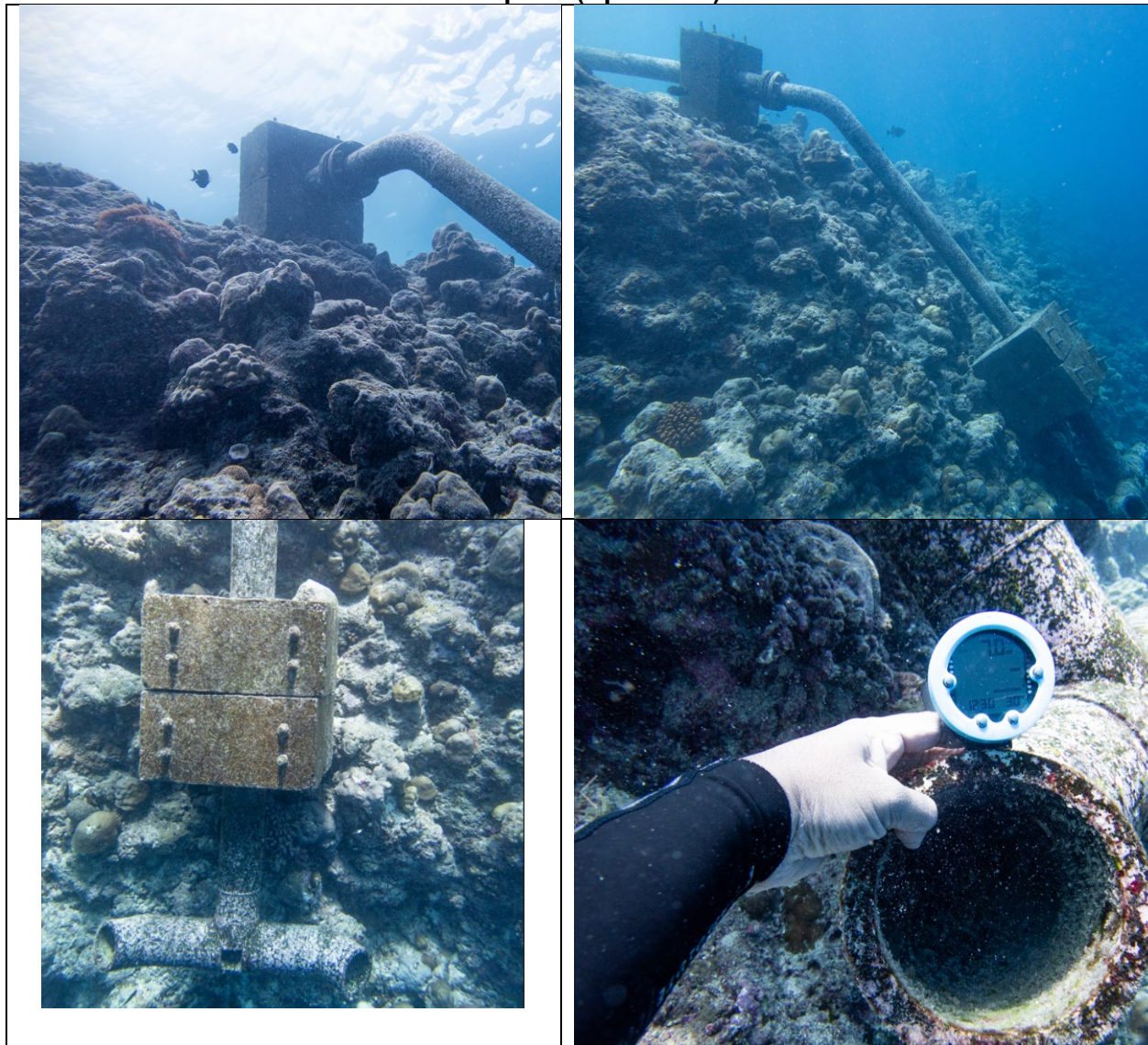
<sup>1</sup> Kohler, K.E., Gill, S.M., 2006. Coral Point Count with Excel Extension (CPCe): A Visual Basic program for the determination of coral and substrate coverage using random point count methodology. *Computers and Geosciences* 32, 1259–1269.



is about 21% at 5m depth and 23 % at 10m depth. Macro algae cover was around 16-10% at 5m and 10m depth respectively. Most of the live coral was massive and sub-massive corals.

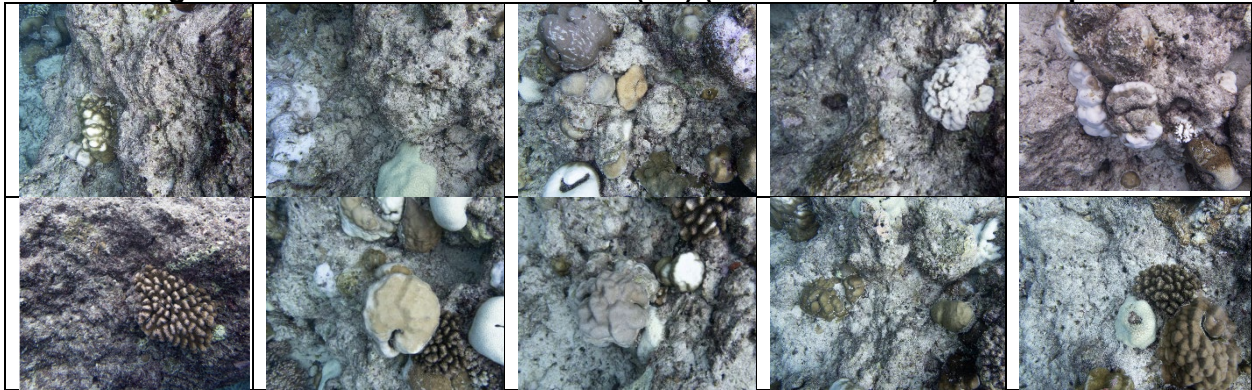
Fish diversity was highest for one species of Balistidae, *Odonus niger* is abundant in both 5 and 10m. Labridae *Thalassoma amblycephalum* and Acanthuridae *Ctenochaetus striatus* are the most abundant at 5m depth. While Pomacentridae *Chromis dimidiata*, was abundant at 10m depth Serranidae *Pseudanthias squamipinnis* and *Pseudanthias evansi* are common at 10m 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).**

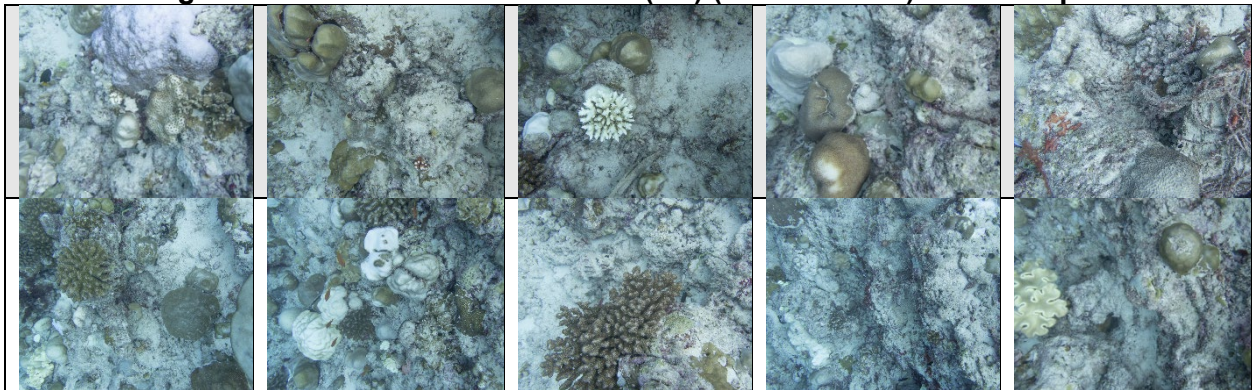




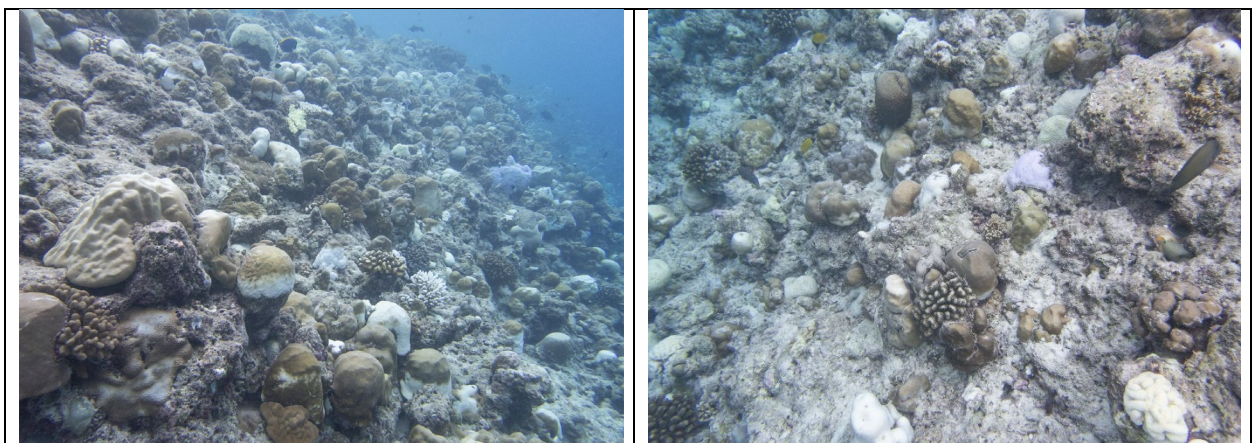
**Figure 3: Photos Taken from Site 8 (M8) (7th June 2024) at 5m depth**



**Figure 4: Photos Taken from Site 8 (M8) (7<sup>th</sup> June 2024) at 10m depth**

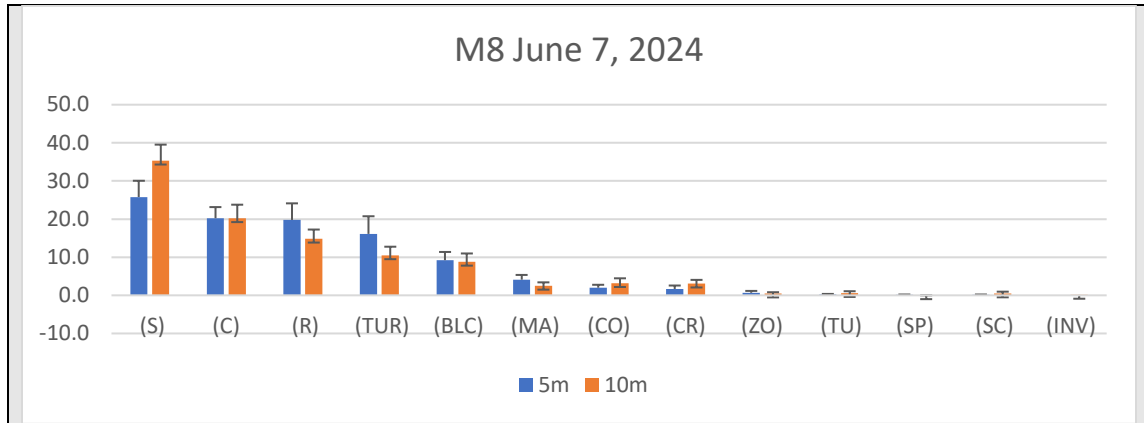


**Figure 5: Overall view of the site at 5m depth June 2024 (bottom)**





**Figure 6: Average benthic cover and their standard error for M8 at both 5 and 10m depth 7<sup>th</sup> June 2024**

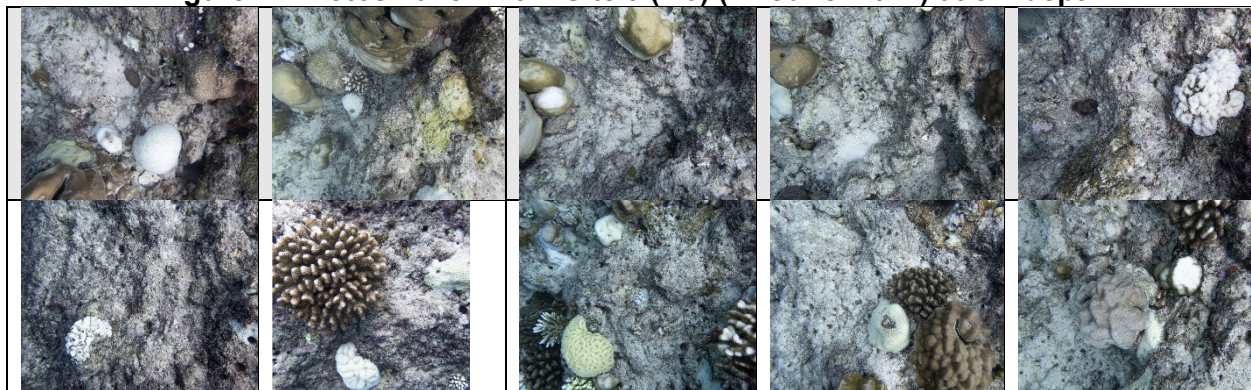


**Status of Site M9:** This location was identified as an alternative for brine discharge and wastewater outfall. This is close to the WtE site at the southern reef of Thilafushi Island. Substrate cover was qualitatively similar to the results obtained in the past surveys. Highest substrate cover was rock, some 42.2-48% at 5m depth while sand and silt cover was 28-38% at 10m depth. Live coral cover was 14-21% and 5m and 16-26% at 10m depth.

Like M8, M9 coral bleaching was observed to be about 5.4 and 6.7% at 5m and 10m depth respectively. It seems that the stormy weather condition prevailed during January 2024 and May 2024 has cleaned up the reef from sediments to a large extent. Also the reclamation of Thilafushi Phase II has been on hold therefore, impact of sedimentation is less.

With regards to fish *Acanthuridae Labroides dimidiatus* and *Ctenochaetus striatus* are the most abundant fish at 5m depth while *Pomacentridae Odonus niger* and *Balistidae Chromis dimidiata* are abundant at 10m depth. *Pomacentrus indicus*, *Centropyge multispinis* and *Chromis weberi* from *Acanthuridae* family were common at 5m depth. *Acanthuridae Chromis weber* *Chaetodontidae Pomacentrus philippinus*, *Lutjanidae Pseudanthias squamipinnis* and *Serranidae Pterocaesio tile* are common at 10m depth. 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 7: Photos Taken from Site 9 (M9) (7<sup>th</sup> June 2024) at 5m depth**



**Figure 8: Overall view of the site at 5m depth February 2024 (top) and June 2024 (bottom)**



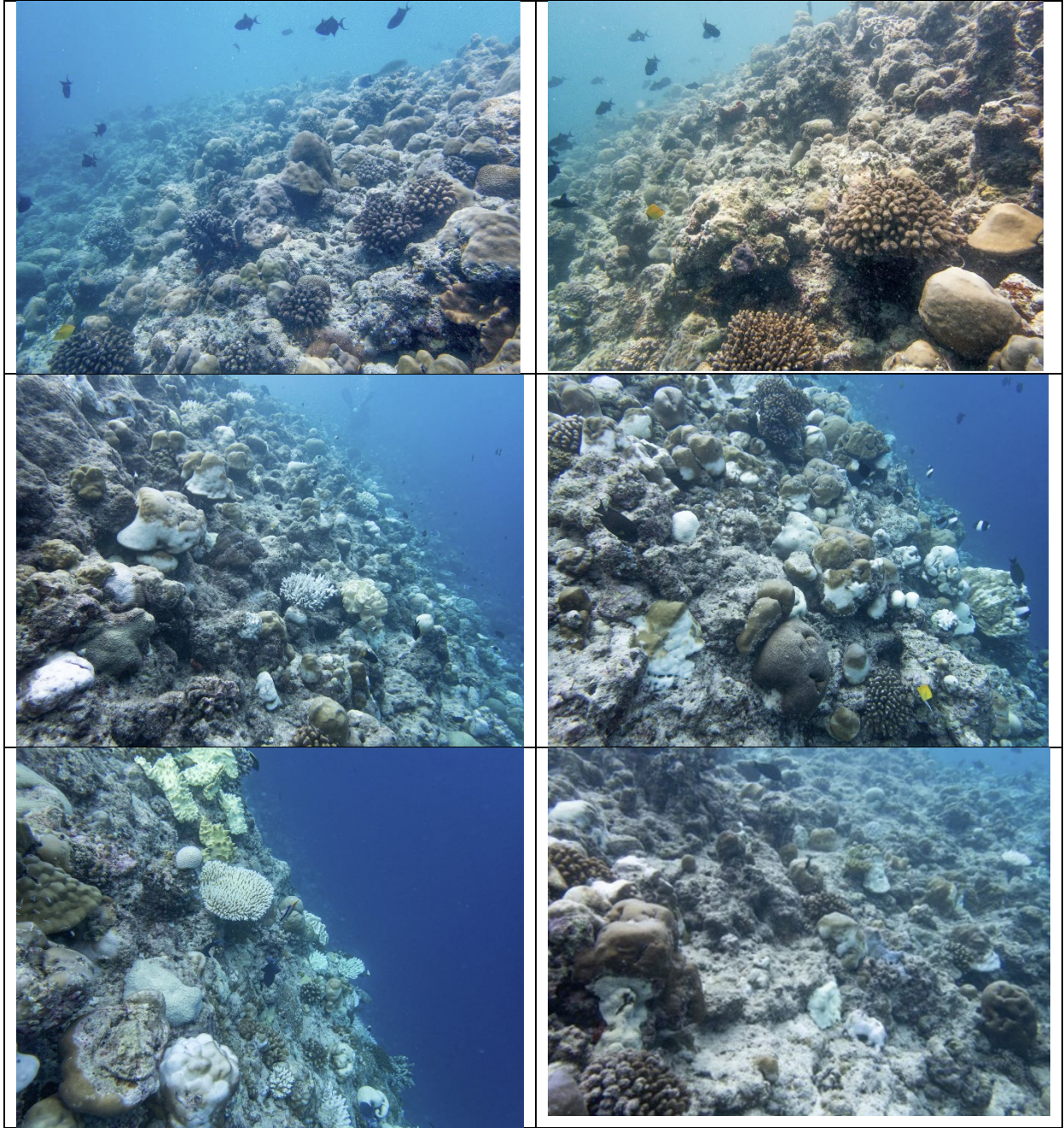
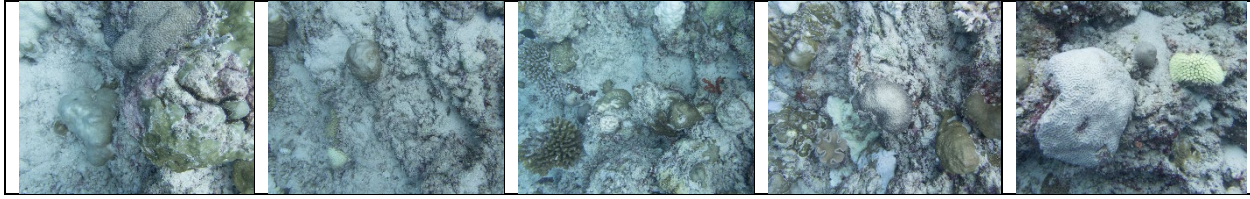


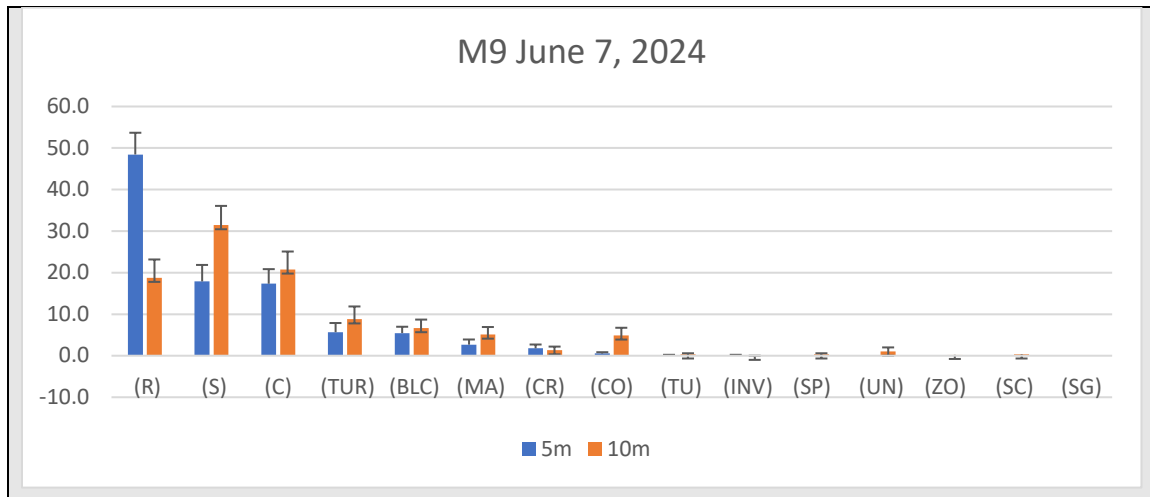
Figure 9: Photos Taken from Site 9 (M9) (7<sup>th</sup> June 2024) at 10m depth







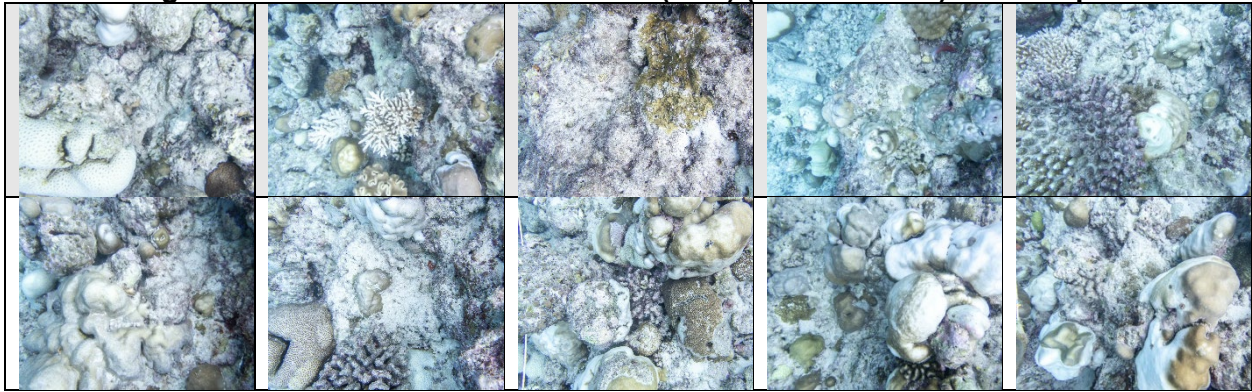
**Figure 10: Average benthic cover and their standard error for M9 at both 5 and 10m depth  
7<sup>th</sup> June 2024**



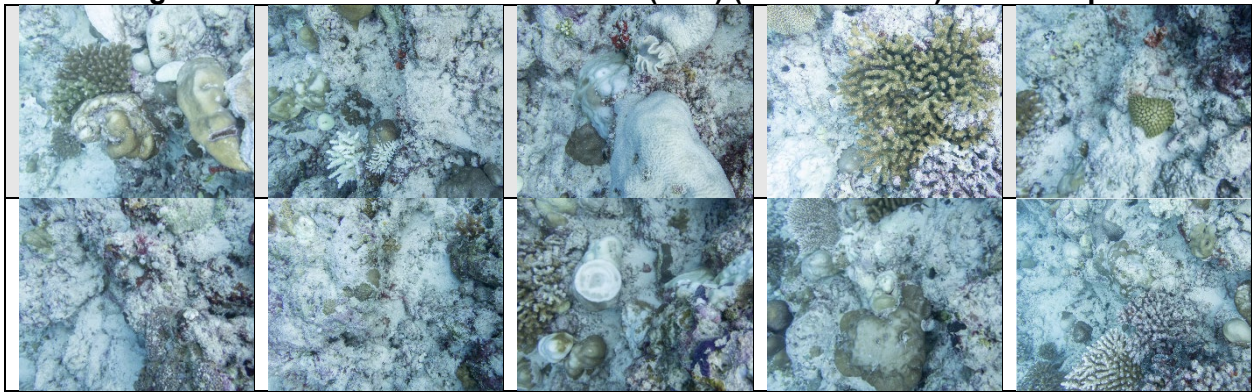
**Status of Site M10:** This location has been identified in the EIA report as a potential alternative for the discharge of brine water and waste water. The location is very close to the WtE facility and it is on the southern reef of Thilafushi Island. Live coral cover in Site M10 is 25-.24.1% at 5m and 10m depth respectively and coral rock cover at 5m depth is higher than 10m depth between 15.8 and 19.9% respectively, while sand and silt cover at this site has decreased to 3.1 and 2.2% at 5m and 10m depth respectively. Coral bleaching also very low at this site is about 0.4-0.9% at 5m and 10m depth. This is the closest site to the ongoing Thilafushi phase II reclamation project. Silt content is relatively low both at 5 and 10m this may be due the inability of silt to settle at shallow water due to strong wave and current action. Turf Algae cover on the substrate is high at 5m about 20% while at 10m it is about 5% and Macro algal cover on the substrates are 3.3% an 2.2% at 5m and 10m depth respectively.

With regard to fish three species Labridae *Thalassoma amblycephalum* is the most abundant Pomacentridae *Chromis dimidiata* is second and Chaetodontidae *Hemitaurichthys zoster* is third in fish abundance at 5m depth. At 10m depth Balistidae *Odonus niger* is the most abundant followed by Pomacentridae *Chromis dimidiata* and Pomacentridae *Pomacentrus philippinus* respectively. Acanthuridae *Ctenochaetus striatus* and Pomacentridae *Pomacentrus philippinus* were the only common species found at 5m depth while Chaetodontidae *Hemitaurichthys zoster* was the only common species found at 10m 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 14 .

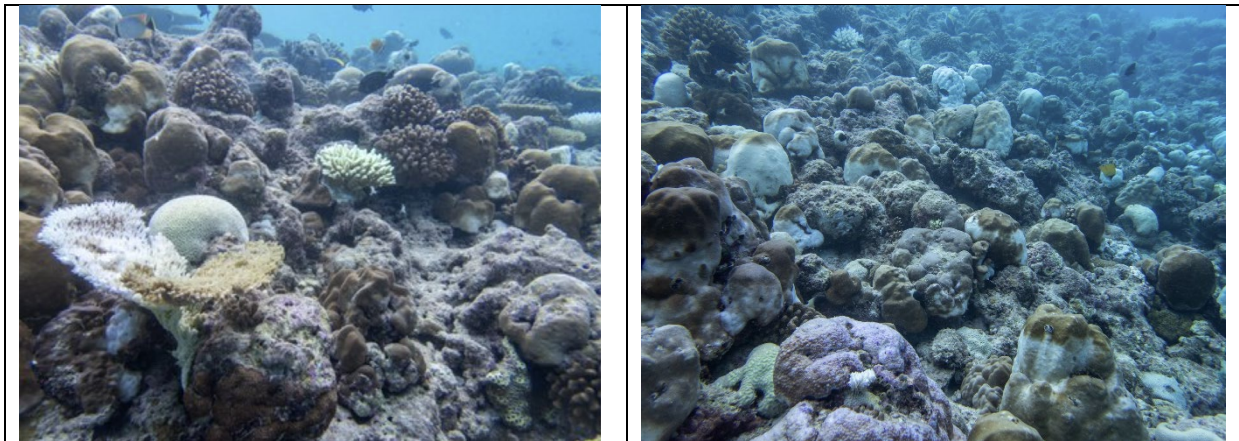
**Figure 11: Photos Taken from Site 10 (M10) (7<sup>th</sup> June 2024) at 5m depth**



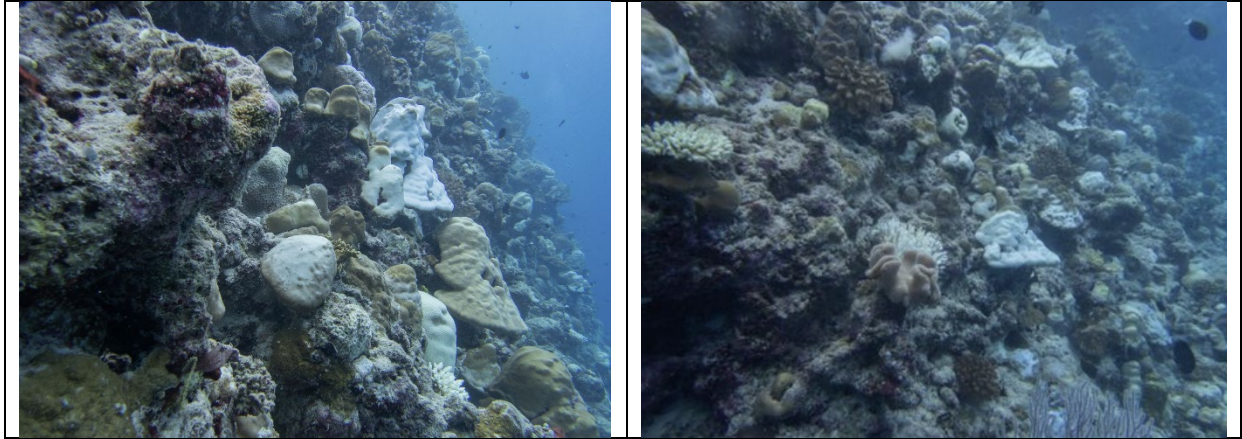
**Figure 12: Photos Taken from Site 10 (M10) (7<sup>th</sup> June 2024) at 10m depth**



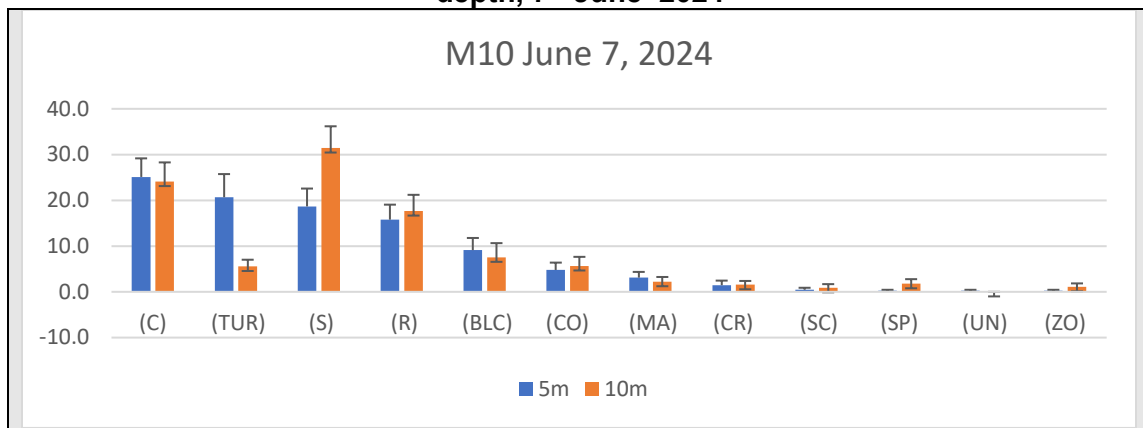
**Figure 13: Overall view of the site at 5m (top) and 10m depth (bottom) June 2024 at M10**







**Figure 14: Average benthic cover and their standard error for M9 at both 5 and 10m depth, 7<sup>th</sup> June 2024**



### 2.3 Fish surveys

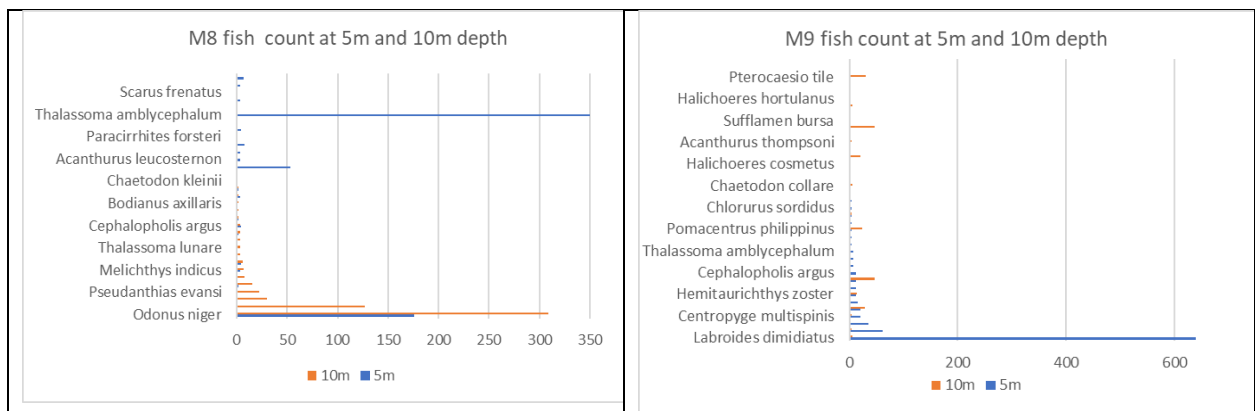
To ensure that the fish were not disturbed while data on substrate was being collected, a visual assessment of the fish was performed after the transect was laid. As previously mentioned, at each transect and at each depth (5m and 10m), three transects of 20m length were observed. The counts were estimated 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 *Labroides dimidiatus* *Odonus niger* and *Chromis dimidiata* by depth are most abundant species at both 5m and 10m depth. In Figure 14 fish families total occurrence at each depth is provided and the list is provided in the Appendix.

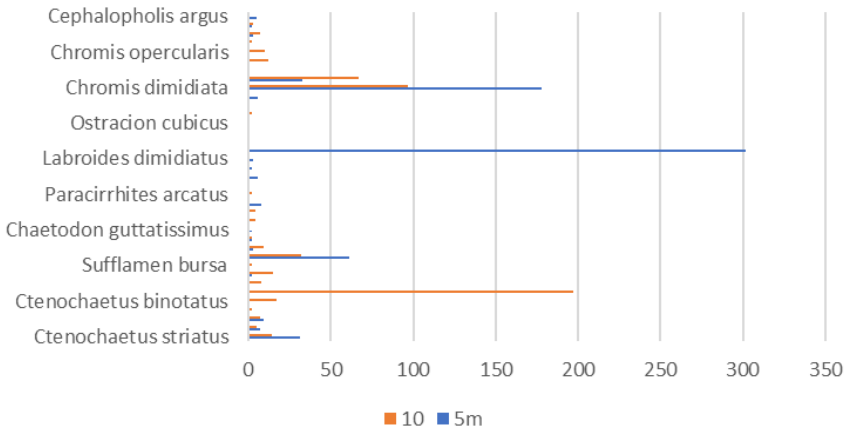
**Table 2: Summary of fish census for three site ordered as Rare, Common and Abundant for three site.**

Site M8				Site M9				Site M10			
Family	Scientific Name	5m	10m	Family	Scientific Name	5m	10m	Family	Scientific Name	5m	10m
Balistidae	<i>Odonus niger</i>	Abundant	Abu	Acanthuridae	<i>Labroides dimidiatus</i>	Abundant	Rare	Acanthuridae	<i>Ctenochaetus striatus</i>	Common	Rare
Pomacentridae	<i>Chromis dimidiata</i>	Rare	Abu	Acanthuridae	<i>Ctenochaetus striatus</i>	Abundant	Rare	Acanthuridae	<i>Acanthurus leucosternon</i>	Rare	Rare
Serranidae	<i>Pseudanthias squamipinnis</i>	Rare	Com	Acanthuridae	<i>Pomacentrus indicus</i>	Common	Rare	Acanthuridae	<i>Acanthurus thompsoni</i>	Rare	Rare
Serranidae	<i>Pseudanthias evansi</i>	Rare	Com	Acanthuridae	<i>Centropyge multispinis</i>	Common	Rare	Acanthuridae	<i>Acanthurus nigricauda</i>	Rare	Rare
Balistidae	<i>Balistapus undulatus</i>	Rare	Rare	Acanthuridae	<i>Chromis weberi</i>	Common	Com	Acanthuridae	<i>Ctenochaetus binotatus</i>	Rare	Rare
Zanclidae	<i>Zanclus cornutus</i>	Rare	Rare	Balistidae	<i>Chaetodon kleinii</i>	Rare	Rare	Balistidae	<i>Odonus niger</i>	Rare	Abu
Balistidae	<i>Melichthys indicus</i>	Rare	Rare	Balistidae	<i>Hemitaurichthys zoster</i>	Rare	Rare	Balistidae	<i>Melichthys indicus</i>	Rare	Rare
Acanthuridae	<i>Zebbrasoma desjardini</i>	Rare	Rare	Balistidae	<i>Paracirrhites forsteri</i>	Rare	Rare	Balistidae	<i>Balistapus undulatus</i>	Rare	Rare
Acanthuridae	<i>Acanthurus leucosternon</i>	Rare	Rare	Balistidae	<i>Chromis dimidiata</i>	Rare	Abu	Balistidae	<i>Sufflamen bursa</i>	Rare	Rare
Labridae	<i>Thalassoma lunare</i>	Rare	Rare	Chaetodontidae	<i>Cephalopholis argus</i>	Rare	Rare	Balistidae	<i>Sufflamen bursa</i>	Rare	Rare
Pomacanthidae	<i>Centropyge multispinis</i>	Rare	Rare	Chaetodontidae	<i>Acanthurus leucosternon</i>	Rare	Rare	Chaetodontidae	<i>Hemitaurichthys zoster</i>	Abundant	Com
Scaridae	<i>Chlorurus sordidus</i>	Rare	Rare	Chaetodontidae	<i>Acanthurus leucosternon</i>	Rare	Rare	Chaetodontidae	<i>Forcipiger flavissimus</i>	Rare	Rare
Serranidae	<i>Cephalopholis argus</i>	Rare	Rare	Chaetodontidae	<i>Thalassoma amblycephalum</i>	Rare	Rare	Chaetodontidae	<i>Chaetodon collare</i>	Rare	Rare
Chaetodontidae	<i>Chaetodon collare</i>	Rare	Rare	Chaetodontidae	<i>Melichthys indicus</i>	Rare	Rare	Chaetodontidae	<i>Chaetodon guttatisimus</i>	Rare	Rare
Labridae	<i>Halichoeres hortulanus</i>	Rare	Rare	Chaetodontidae	<i>Forcipiger flavissimus</i>	Rare	Rare	Chaetodontidae	<i>Chaetodon kleinii</i>	Rare	Rare
Labridae	<i>Bodianus axillaris</i>	Rare	Rare	Chaetodontidae	<i>Pomacentrus philippinus</i>	Rare	Com	Chaetodontidae	<i>Chaetodon trifasciatus</i>	Rare	Rare
Pomacentridae	<i>Chromis weberi</i>	Rare	Rare	Cirrhitidae	<i>Paracirrhites forsteri</i>	Rare	Rare	Chaetodontidae	<i>Chaetodon trifasciatus</i>	Rare	Rare
Serranidae	<i>Cephalopholis nigripinnis</i>	Rare	Rare	Cirrhitidae	<i>Balistapus undulatus</i>	Rare	Rare	Cirrhitidae	<i>Paracirrhites arcatus</i>	Rare	Rare
Chaetodontidae	<i>Chaetodon kleinii</i>	Rare	Rare	Labridae	<i>Chlorurus sordidus</i>	Rare	Rare	Haemulidae	<i>Plectorbichthys vittatus</i>	Rare	Rare
Ostraciidae	<i>Ostracion meleagris</i>	Rare	Rare	Labridae	<i>Zanclus cornutus</i>	Rare	Rare	Holocentridae	<i>Myriapistis berndt</i>	Rare	Rare
Acanthuridae	<i>Ctenochaetus striatus</i>	Abundant	Rare	Labridae	<i>Chaetodon trifasciatus</i>	Rare	Rare	Labridae	<i>Gomphosus caeruleus</i>	Rare	Rare
Acanthuridae	<i>Acanthurus leucosternon</i>	Rare	Rare	Labridae	<i>Chaetodon collare</i>	Rare	Rare	Labridae	<i>Labroides dimidiatus</i>	Rare	Rare
Acanthuridae	<i>Acanthurus nigricauda</i>	Rare	Rare	Labridae	<i>Chaetodon guttatisimus</i>	Rare	Rare	Labridae	<i>Thalassoma amblycephalum</i>	Abundant	Abu
Chaetodontidae	<i>Forcipiger flavissimus</i>	Rare	Rare	Labridae	<i>Pseudocheilinus hexataenia</i>	Rare	Rare	Labridae	<i>Bodianus diana</i>	Rare	Rare
Cirrhitidae	<i>Paracirrhites forsteri</i>	Rare	Rare	Labridae	<i>Halichoeres cosmetus</i>	Rare	Rare	Lutjanidae	<i>Lutjanus bohar</i>	Rare	Rare
Holocentridae	<i>Myriapistis berndt</i>	Rare	Rare	Labridae	<i>Pseudanthias squamipinnis</i>	Rare	Com	Ostraciidae	<i>Ostracion cubicus</i>	Rare	Rare
Labridae	<i>Pseudocheilinus hexataenia</i>	Rare	Rare	Pomacanthidae	<i>Pseudanthias evansi</i>	Rare	Rare	Pomacanthidae	<i>Centropyge multispinis</i>	Rare	Rare
Labridae	<i>Thalassoma amblycephalum</i>	Abundant	Rare	Pomacentridae	<i>Acanthurus thompsoni</i>	Rare	Rare	Pomacentridae	<i>Pomacentrus chrysurus</i>	Rare	Rare
Mullidae	<i>Parupeneus barbevinus</i>	Rare	Rare	Pomacentridae	<i>Ctenochaetus binotatus</i>	Rare	Rare	Pomacentridae	<i>Pomacentrus indicus</i>	Rare	Rare
Pomacentridae	<i>Pomacentrus philippinus</i>	Rare	Rare	Pomacentridae	<i>Odonus niger</i>	Rare	Abu	Pomacentridae	<i>Chromis dimidiata</i>	Abundant	Abu
Scaridae	<i>Scarus frenatus</i>	Rare	Rare	Pomacentridae	<i>Sufflamen bursa</i>	Rare	Rare	Pomacentridae	<i>Pomacentrus philippinus</i>	Common	Abu
Scaridae	<i>Scarus prasiognathos</i>	Rare	Rare	Pomacentridae	<i>Chaetodon falcula</i>	Rare	Rare	Pomacentridae	<i>Plectroalphidodon lacromatus</i>	Rare	Rare
Serranidae	<i>Cephalopholis leopardus</i>	Rare	Rare	Scaridae	<i>Paracirrhites arcatus</i>	Rare	Rare	Pomacentridae	<i>Dascyllus carneus</i>	Rare	Rare
				Serranidae	<i>Halichoeres hortulanus</i>	Rare	Rare	Pomacentridae	<i>Chromis opercularis</i>	Rare	Rare
				Serranidae	<i>Thalassoma lunare</i>	Rare	Rare	Scaridae	<i>Scarus frenatus</i>	Rare	Rare
				Serranidae	<i>Pterocaesio tile</i>	Rare	Com	Serranidae	<i>Cephalopholis leopardus</i>	Rare	Rare
				Serranidae	<i>Scarus tricolor</i>	Rare	Rare	Serranidae	<i>Cephalopholis nigripinnis</i>	Rare	Rare
				Zanclidae	<i>Cephalopholis leopardus</i>	Rare	Rare	Serranidae	<i>Cephalopholis argus</i>	Rare	Rare

**Figure 15: Fish families total occurrence at each depth at 5m and 10m depth in June 2024**



M10 fish count 5m and 10m depth



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## Annex 1. Marine ecology survey ; Fish census data

### Fish Census data M9

Family	Scientific Name	5m	10m
Acanthuridae	<i>Labroides dimidiatus</i>	Abundant	Rare
Acanthuridae	<i>Ctenochaetus striatus</i>	Abundant	Rare
Acanthuridae	<i>Pomacentrus indicus</i>	Common	Rare
Acanthuridae	<i>Centropyge multispinis</i>	Common	Rare
Acanthuridae	<i>Chromis weberi</i>	Common	Common
Balistidae	<i>Chaetodon kleinii</i>	Rare	Rare
Balistidae	<i>Hemitaurichthys zoster</i>	Rare	Rare
Balistidae	<i>Paracirrhites forsteri</i>	Rare	Rare
Balistidae	<i>Chromis dimidiata</i>	Rare	Abundant
Chaetodontidae	<i>Cephalopholis argus</i>	Rare	Rare
Chaetodontidae	<i>Acanthurus leucosternon</i>	Rare	Rare
Chaetodontidae	<i>Acanthurus lineatus</i>	Rare	Rare
Chaetodontidae	<i>Thalassoma amblycephalum</i>	Rare	Rare
Chaetodontidae	<i>Melichthys indicus</i>	Rare	Rare
Chaetodontidae	<i>Forcipiger flavissimus</i>	Rare	Rare
Chaetodontidae	<i>Pomacentrus philippinus</i>	Rare	Common
Cirrhitidae	<i>Dascyllus carneus</i>	Rare	Rare
Cirrhitidae	<i>Balistapus undulatus</i>	Rare	Rare
Labridae	<i>Chlorurus sordidus</i>	Rare	Rare
Labridae	<i>Zanclus cornutus</i>	Rare	Rare
Labridae	<i>Chaetodon trifasciatus</i>	Rare	Rare
Labridae	<i>Chaetodon collare</i>	Rare	Rare
Labridae	<i>Chaetodon guttatissimus</i>	Rare	Rare
Labridae	<i>Pseudocheilinus hexataenia</i>	Rare	Rare
Labridae	<i>Halichoeres cosmetus</i>	Rare	Rare
Lutjanidae	<i>Pseudanthias squamipinnis</i>	Rare	Common
Pomacanthidae	<i>Pseudanthias evansi</i>	Rare	Rare
Pomacentridae	<i>Acanthurus thompsoni</i>	Rare	Rare
Pomacentridae	<i>Ctenochaetus binotatus</i>	Rare	Rare
Pomacentridae	<i>Odonus niger</i>	Rare	Abundant
Pomacentridae	<i>Sufflamen bursa</i>	Rare	Rare
Pomacentridae	<i>Chaetodon falcula</i>	Rare	Rare
Scaridae	<i>Paracirrhites arcatus</i>	Rare	Rare
Scaridae	<i>Halichoeres hortulanus</i>	Rare	Rare
Serranidae	<i>Bodianus diana</i>	Rare	Rare
Serranidae	<i>Thalassoma lunare</i>	Rare	Rare
Serranidae	<i>Pterocaesio tile</i>	Rare	Common
Serranidae	<i>Scarus tricolor</i>	Rare	Rare
Zanclidae	<i>Cephalopholis leopardus</i>	Rare	Rare

## Fish Census data M8

Family	Scientific Name	5m	10m
Balistidae	<i>Odonus niger</i>	Abundant	Abundant
Pomacentridae	<i>Chromis dimidiata</i>	Rare	Abundant
Serranidae	<i>Pseudanthias squamipinnis</i>	Rare	Common
Serranidae	<i>Pseudanthias evansi</i>	Rare	Common
Balistidae	<i>Balistapus undulatus</i>	Rare	Rare
Zanclidae	<i>Zanclus cornutus</i>	Rare	Rare
Balistidae	<i>Melichthys indicus</i>	Rare	Rare
Acanthuridae	<i>Zebrasoma desjardini</i>	Rare	Rare
Acanthuridae	<i>Acanthurus leucosternon</i>	Rare	Rare
Labridae	<i>Thalassoma lunare</i>	Rare	Rare
Pomacanthidae	<i>Centropyge multispinis</i>	Rare	Rare
Scaridae	<i>Chlorurus sordidus</i>	Rare	Rare
Serranidae	<i>Cephalopholis argus</i>	Rare	Rare
Chaetodontidae	<i>Chaetodon collare</i>	Rare	Rare
Labridae	<i>Halichoeres hortulanus</i>	Rare	Rare
Labridae	<i>Bodianus axillaris</i>	Rare	Rare
Pomacentridae	<i>Chromis weberi</i>	Rare	Rare
Serranidae	<i>Cephalopholis nigripinnis</i>	Rare	Rare
Chaetodontidae	<i>Chaetodon kleinii</i>	Rare	Rare
Ostraciidae	<i>Ostracion meleagris</i>	Rare	Rare
Acanthuridae	<i>Ctenochaetus striatus</i>	Abundant	Rare
Acanthuridae	<i>Acanthurus leucosternon</i>	Rare	Rare
Acanthuridae	<i>Acanthurus nigricauda</i>	Rare	Rare
Chaetodontidae	<i>Forcipiger flavissimus</i>	Rare	Rare
Cirrhitidae	<i>Paracirrhites forsteri</i>	Rare	Rare
Holocentridae	<i>Myripristis berndti</i>	Rare	Rare
Labridae	<i>Pseudocheilinus hexataenia</i>	Rare	Rare
Labridae	<i>Thalassoma amblycephalum</i>	Abundant	Rare
Mullidae	<i>Parupeneus barberinus</i>	Rare	Rare
Pomacentridae	<i>Pomacentrus philippinus</i>	Rare	Rare
Scaridae	<i>Scarus frenatus</i>	Rare	Rare
Scaridae	<i>Scarus prasiognathos</i>	Rare	Rare
Serranidae	<i>Cephalopholis leopardus</i>	Rare	Rare

## Fish Census data M10

Family	Scientific Name	5m	10m
Acanthuridae	<i>Ctenochaetus striatus</i>	Common	Rare
Acanthuridae	<i>Acanthurus leucosternon</i>	Rare	Rare
Acanthuridae	<i>Acanthurus thompsoni</i>	Rare	Rare
Acanthuridae	<i>Acanthurus nigricauda</i>	Rare	Rare
Acanthuridae	<i>Ctenochaetus binotatus</i>	Rare	Rare
Balistidae	<i>Odonus niger</i>	Rare	Abundant
Balistidae	<i>Melichthys indicus</i>	Rare	Rare
Balistidae	<i>Balistapus undulatus</i>	Rare	Rare
Balistidae	<i>Sufflamen bursa</i>	Rare	Rare
Chaetodontidae	<i>Hemitaurichthys zoster</i>	Abundant	Common
Chaetodontidae	<i>Forcipiger flavissimus</i>	Rare	Rare
Chaetodontidae	<i>Chaetodon collare</i>	Rare	Rare
Chaetodontidae	<i>Chaetodon guttatissimus</i>	Rare	Rare
Chaetodontidae	<i>Chaetodon kleinii</i>	Rare	Rare
Chaetodontidae	<i>Chaetodon trifasciatus</i>	Rare	Rare
Cirrhitidae	<i>Paracirrhites forsteri</i>	Rare	Rare
Cirrhitidae	<i>Paracirrhites arcatus</i>	Rare	Rare
Haemulidae	<i>Plectorhinchus vittatus</i>	Rare	Rare
Holocentridae	<i>Myripristis berndti</i>	Rare	Rare
Labridae	<i>Gomphosus caeruleus</i>	Rare	Rare
Labridae	<i>Labroides dimidiatus</i>	Rare	Rare
Labridae	<i>Thalassoma amblycephalum</i>	Abundant	Rare
Labridae	<i>Bodianus diana</i>	Rare	Rare
Lutjanidae	<i>Lutjanus bohar</i>	Rare	Rare
Ostraciidae	<i>Ostracion cubicus</i>	Rare	Rare
Pomacanthidae	<i>Centropyge multispinis</i>	Rare	Rare
Pomacentridae	<i>Pomacentrus chrysurus</i>	Rare	Rare
Pomacentridae	<i>Pomacentrus indicus</i>	Rare	Rare
Pomacentridae	<i>Chromis dimidiata</i>	Abundant	Abundant
Pomacentridae	<i>Pomacentrus philippinus</i>	Common	Abundant
Pomacentridae	<i>Plectroglyphidodon lacrymatus</i>	Rare	Rare
Pomacentridae	<i>Dascyllus carneus</i>	Rare	Rare
Pomacentridae	<i>Chromis opercularis</i>	Rare	Rare
Scaridae	<i>Scarus frenatus</i>	Rare	Rare
Serranidae	<i>Cephalopholis leopardus</i>	Rare	Rare
Serranidae	<i>Cephalopholis nigripinnis</i>	Rare	Rare
Serranidae	<i>Cephalopholis argus</i>	Rare	Rare

## **Appendix 5: Other Site Photos (from Contractor)**

	<b>ENVIRONMENTAL MONTHLY REPORT</b> <b>April 2024</b>	<b>Document No</b>	MDV-AAK-CEMPX- XX-RP-XXX-0007-000
		<b>Rev. No / Date</b>	03.05.2024
		<b>Page No:</b>	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 April. (27.04.2024)

Training subjects are: (REFRESHMENT TRAINING ON CHEMICAL GHS CODE, MSDS, SAFE USGAE & STORAGE OF HAZARDOUS CHEMICALS & MONITORING – 27-04-2024)



## 7 PICTURES OF SAPMLING FOR ENVIRONMENTAL MONITORING

### 7.1 AMBIENT AIR MONITORING



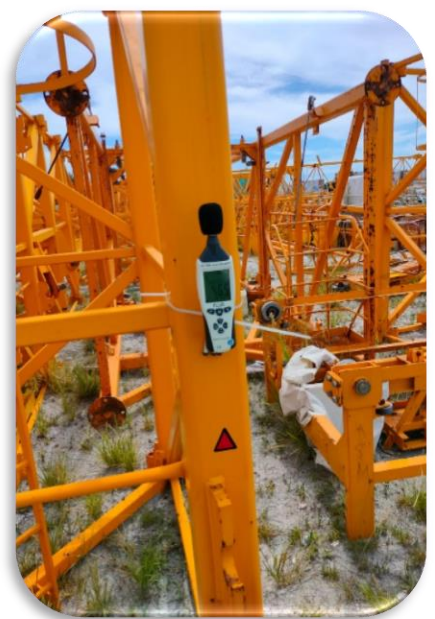


 <p><b>alke</b> A L K A T A Ş İNSAAT VE TAHHÜT A.Ş.</p>	<b>ENVIRONMENTAL MONTHLY REPORT</b> <b>April 2024</b>	<b>Document No</b>	MDV-AAK-CEMPX- XX-RP-XXX-0007-000
		<b>Rev. No / Date</b>	03.05.2024
		<b>Page No:</b>	27/34

### AIR MONITORING CONDUCTED SITE



### 7.2 NOISE MONITORING





	<b>ENVIRONMENTAL MONTHLY REPORT</b> <b>April 2024</b>	<b>Document No</b>	MDV-AAK-CEMPX- XX-RP-XXX-0007-000
		<b>Rev. No / Date</b>	03.05.2024
		<b>Page No:</b>	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**

 INSAAAT VE TAHHÜT A.Ş.	<b>ENVIRONMENTAL MONTHLY REPORT</b> <b>April 2024</b>	<b>Document No</b>	MDV-AAK-CEMPX- XX-RP-XXX-0007-000
		<b>Rev. No / Date</b>	03.05.2024
		<b>Page No:</b>	29/34

#### 7.4 CONDITION OF WASTE DISPOSAL AREA





	<b>ENVIRONMENTAL MONTHLY REPORT</b> <b>May 2024</b>	<b>Document No</b>	MDV-AAK-CEMPX- XX-RP-XXX-0007-000
		<b>Rev. No / Date</b>	04.06.2024
		<b>Page No:</b>	29/37

## TRAINING

WASTE MANAGEMENT AND SEGREGATION as per MDV-AAK-HSEXX-XX-PL-MGT-0009(14/05/24), Spill Control & Containment Plan as per MDV-AAK-HSEXX-XX-PL-MGT-0010 and Chemical & Hazardous Material Management Plan as per MDV-AAK-HSEXX-XX-PL-MGT-0012.

Training subjects are:

- Classification of Waste
- Importance of Proper disposal
- Effects of Chemicals and Hazardous Materials to the Environment.
- Chemical Handling
- PPE Requirements While Working with Chemicals.
- Spill Management



 <p><b>alke</b> A L K A T A S İNSAAT VE TAAHHÜT A.Ş.</p>	<p><b>ENVIRONMENTAL MONTHLY REPORT</b> May 2024</p>	<p><b>Document No</b></p> <p>MDV-AAK-CEMPX-XX-RP-XXX-0007-000</p>
		<p><b>Rev. No / Date</b></p> <p>04.06.2024</p>
		<p><b>Page No:</b></p> <p>30/37</p>

## 1 PICTURES OF SAPMLING FOR ENVIRONMENTAL MONITORING

### 7.1 AMBIENT AIR MONITORING IN May 2024



### 7.2 NOISE MONITORING IN May 2024





	<b>ENVIRONMENTAL MONTHLY REPORT</b> <b>May 2024</b>	<b>Document No</b>	MDV-AAK-CEMPX- XX-RP-XXX-0007-000
		<b>Rev. No / Date</b>	04.06.2024
		<b>Page No:</b>	31/37

**7.3 WATER FOR CONSTRUCTION AND WASTEWATER TREATMENT**



**Drinking Water Sampling**



**STP Effluent Sampling**



**Dewatering Effluent Sampling**



**Supply Water for Camp And Construction Sampling**

 <p><b>ALKE</b> AL K A T A Ş İN SA AT VE TA AH H UT A. Ş.</p>	<p><b>ENVIRONMENTAL MONTHLY REPORT</b> May 2024</p>	<p><b>Document No</b></p>	<p>MDV-AAK-CEMPX- XX-RP-XXX-0007-000</p>
		<p><b>Rev. No / Date</b></p>	<p>04.06.2024</p>
		<p><b>Page No:</b></p>	<p>32/37</p>



**Groundwater Sampling**



**Marine Water Sampling**

**7.4 WASTE DISPOSAL AREA**





 <b>alke</b> <b>A L K A T A S</b> <small>İNSAAT VE TAAHHÜT A.Ş.</small>	<b>ENVIRONMENTAL MONTHLY REPORT</b> <b>JUNE 2024</b>	<b>Document No</b>	MDV-AAK-CEMPX- XX-RP-XXX-0007-000
		<b>Rev. No / Date</b>	30.06.2024
		<b>Page No:</b>	30/42

## 6 TRAINING

Waste Management & Segregation training was given as per MDV-AAK-HSEXX-XX-PL-MGT-0009, Spill Response & Containment training was given MDV-AAK-HSEXX-XX-PL-MGT-0010



 <p><b>alke</b> <b>ALKATAS</b> INSAAT VE TAHHUT A.Ş.</p>	<b>ENVIRONMENTAL MONTHLY REPORT</b> <b>JUNE 2024</b>	<b>Document No</b>	MDV-AAK-CEMPX- XX-RP-XXX-0007-000
		<b>Rev. No / Date</b>	30.06.2024
		<b>Page No:</b>	31/42

## 7 PICTURES OF SAPMLING FOR ENVIRONMENTAL MONITORING

### 7.1 NOISE MONITORING IN June 2024



### 7.2 WATER FOR CONSTRUCTION AND WASTEWATER TREATMENT



**Drinking Water Sampling**



**STP Effluent Sampling**



	<b>ENVIRONMENTAL MONTHLY REPORT JUNE 2024</b>	<b>Document No</b>	MDV-AAK-CEMPX- XX-RP-XXX-0007-000
		<b>Rev. No / Date</b>	30.06.2024
		<b>Page No:</b>	32/42



**Dewatering Effluent Sampling  
Supply Water for Camp And**

**Construction Sampling**

**7.3 MARINE UNDERWATER SURVEY**

Marine underwater survey carried out on 7<sup>th</sup> June 2024.



	<b>ENVIRONMENTAL MONTHLY REPORT JUNE 2024</b>	<b>Document No</b>	MDV-AAK-CEMPX- XX-RP-XXX-0007-000
		<b>Rev. No / Date</b>	30.06.2024
		<b>Page No:</b>	33/42

## 8. Inspections

### 8.1 SPILL KIT INSPECTIONS



### 8.2 CHEMICAL STORE INSPECTION



## 9 CONDITION OF DISPOSAL AREA

