

Environmental Impact Assessment

Document Stage: Updated
Number: 51077-003
August 2023

Maldives: Greater Malé Waste-to-Energy Project – Waste to Energy Plant (Part J)

Appendices

Prepared by the Ministry of Environment, Climate Change and Technology for the Ministry of Finance and the Asian Development Bank. This is an updated version of the draft originally posted in July 2020 available on <https://www.adb.org/projects/documents/mld-51077-003-eia-2>.

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Annex 3: Commitment letter from the Proponent



Ministry of Environment, Climate Change and Technology
Male', Republic of Maldives

Date: 30th January 2023

No: 438-WMPC/203/2023/7

Mr. Ibrahim Naeem,
Director General,
Environmental Protection Agency
3rd Floor Green Building, Handhuvaree Hingun, Maafannu, Male', 20392,
Maldives.

Re: Proponent declaration and commitment to the First Addendum to the Greater Male' Waste-to-Energy Project; Installation of Sewage Treatment Plant (STP) for the construction period, Thilafushi, Kaafu Atoll

Dear Sir,

As the Proponent of the proposed project, we guarantee that we have read the report and to the best of our knowledge, all information relevant to this project in terms of project description, project construction works, and operational aspects provided here are accurate and complete.

As the Proponent of the project, we assure you of our commitment to undertake the proposed mitigation measures and monitoring programme given in the report by the DBO contractor.

Sincerely,


Ahmed Murthaza,
Director General



Page 1 of 1

+960 3078300

secretariat@environment.gov.mv

MoEnv.mv

www.environment.gov.mv

Annex 4: STP Specifications

PROJECT

***250 PE CAPACITY
WASTEWATER TREATMENT PLANT***

CLIENT

ALKE CONSTRUCTION



**ENVIRONMENTAL TECHNOLOGIES ENGINEERING
MACINERY CONSTRUCTION INDUSTRY & TRADING LTD.**

Çınardere Mah. Erenkr Cad. No: 2/3
Post Box: 34896 Pendik, ISTANBUL, TURKEY
E-mail: mittem@mittem.com <http://www.mitem.com>
Tel: +90 (216) 459 40 43-44 Fax: +90 (216) 459 40 45



I. SUBJECT AND APPROACH

This offer has been prepared for setting up a new wastewater treatment plant; with a nominal capacity of 250 PE capacity.

For the whole tasks specified herein this offer has been put forward. Within our technical commentary we have outlined our design assumptions and performance details used in the construction of our proposal. To bring this project to its successful conclusion will require a continued exchange of information so that the scope of works, design basis and battery limits are clearly defined. Offer preparation and documentation have been based on information provided by the customer. The information provided in the enquiry document forms the basis for the initial submittal of information. Should our offer be of interest we look forward to further discussion and clarifications based on our proposal prior to contract award.

II. PROCESS DESCRIPTION OF THE PLANT

Wastewater enters by gravity to a wet basin, i.e. primary treatment unit. Screenings are removed in this unit. Effluent from the primary sedimentation flows to the equalization unit over a weir.

In the equalization basin located are submersible pumps. In this unit, both volumetric and organic loads are dampened, thereby; downstream units are fed equally in terms of these characteristics, yielding constant rate, homogenous flow. Submersible pump/pumps located in the basin pump the wastewater to the reactor unit. The pumps in the equalization basin are ON/OFF controlled by level switches.

SBR tank and all of the cycles thereof are intermittently operated and controlled by PLC automation (See the attached "GENERAL DESCRIPTION OF THE TREATMENT UNITS").

Decant from the SBR tank is provided by a submersible pump. The effluent (decant) exits from the system by a submersible pump and then chlorinated at the discharge main.

Excess sludge from the SBR is provided by a vacuum truck about twice a year.



III. PROCESS AND DESIGN SPECIFICATIONS

1 GENERAL

The plant and associated pipelines and pumping systems were designed to meet the specifications, in terms of also, capacity and quality.

2 FLOWRATE & FUTURE EXTENSIONS

Q = 250 PE x 200 L/person.day
Q = 50 m³/day

3 CLIMATIC & GEOLOGICAL CONDITIONS

No any information is present at the time being. Full details of temperature, site elevations, wind, rainfall and relative humidity will be taken into consideration during the design/re-design phase after the contract. Basic assumptions are stated as below:

4 GENERAL REQUIREMENTS & STANDARDS

In the project, standards, requirements and characteristics taken into consideration are from the issued documents and/or information which have been provided by the customer; internationally (mainly European or American) accepted standards and the similar projects experienced in the past.

✦ POWER & CHEMICAL CONSUMPTION REQUIREMENTS

Table 1. Power set & Power consumptions

TOTAL SYSTEM	<15	kW set power
TOTAL SYSTEM	<85	kWh per day

Table 2. Chemical consumptions

CHLORINE (NaOCl)	<3,5	KG PER DAY (% 15)
C. POLY	<1	KG PER MONTH

✦ OPERATIONAL REQUIREMENTS

The plant is designed for minimum operator requirement. In this context, all the required equipments and automation considered. A routine daily control will be enough.

✦ STANDARDS

Table 3. Foremost standards taken into consideration

COUNTRY	REFERENCE NO	TITLE (IN BRIEF)	PURPOSE FOR WHICH STANDARDS ARE APPLIED
UK	BS 5163	Valves	Check Valves
UK	BS 1452	Valves	Control Valves
EC	DIN 1691	Cast Iron	Butterfly Valves
EC	ISO 1629	EPDM	Butterfly Valves
UK	BS 5493	Paint	Protection
EC / UK	DIN 2501 / BS4504	Flanges	All Flanges
EC	EN 1452-2	UPVC	UPVC Pipe/Fittings
EC	DIN EN 752	Sewer Systems	Sewer Systems Outside the Buildings
UK	BS 970/4	High Chrome Steel	Pump & Pump Shafts
EC	DIN 1686	Cast Iron	Pumps
UK	BS 1452	Cast Iron	Pumps
UK	BS 6231	PVC Cables	General Cables
UK	BS 5481	Panels	Switchgear / MCC Panels
UK	BS 4800	Paint	Panels
EC	DIN 19569-7	Pump Stations	Municipal Pump Stations
EC	DIN 19569-11	Dosing	Chemical Dosing Systems
EC/UK	DIN 1461 or BS 729	Hot dip galvanize	Gratings, Handrails, Vertical Access Ladders
UK	BS 4592	Open Steel Flooring	Gratings
UK	BS 6180	Handrails	Handrails
UK	BS 1387 or BS 6323	Tubular Handrails	Handrails
UK	BS 5395	Loadings Design	Handrails
UK	BS 4211	Ladders	Vertical Access Ladders
UK	BS 5395	Access Means	Vertical Access Ladders, Ship Type Ladders, Stairways, Step Irons



IV. TECHNICAL SPECIFICATIONS OF THE PLANT

1 PRIMARY TREATMENT UNIT

✦ LIFTING STATION

Quantity	:	1
Type	:	Cylindrical, underground
Dimensions (Ø x H)	:	1,20 x 1,00 m
Material	:	St-37 carbon steel + epoxy paint
Accessories & Features	:	Manhole, level switch
Manufacturer	:	MITTEM

✦ LIFTING PUMP

Quantity	:	1 duty + 1 stand-by
Type	:	Submersible pump with cutter
Installation	:	Wet well
Impeller	:	Vortex
Capacity	:	12 m ³ /h @ 10 mWC
Solids handling capacity	:	35 mm
Power supply	:	220V / 50 Hz / 1P
Power rating	:	0,75 kW
Insulation class	:	F
Protection class	:	IP 68
Operation control	:	ON/OFF by automation & float switches
Starting	:	Direct, >15 starts/h
Material	:	
Pump body	:	Cast iron
Motor casing	:	Cast iron
Shaft	:	Stainless steel
Impeller	:	Cast iron
Cutter	:	Stainless steel
Sealing	:	Double mechanical
Accessories & Features	:	Chain with shackle, discharge hose with hose clips, skirt base
Manufacturer	:	WILO (GERMANY) or equivalent

✦ BASKET SCREEN

Quantity	:	1
Distance between meshes	:	10 mm
Mesh size	:	8-10 mm
Dimensions (W x L x H)	:	0,40 x 0,40 x 0,40 m
Material	:	St-37 carbon steel + hot deep galvanized
Accessories & Features	:	Manual crane
Manufacturer	:	MITTEM



2 EQUALIZATION UNIT

✦ **EQUALIZATION TANK**

Quantity	:	1
Type	:	Rectangular, covered
Dimensions (W x L x H)	:	2,20 x 3,00 x 2,50 m
Material	:	St-37 carbon steel + epoxy paint
Accessories & Features	:	Influent baffle, access hatches, air vents, interior ladder
Manufacturer	:	MITTEM

✦ **FEEDING PUMP**

Quantity	:	1 duty + 1 stand-by
Type	:	Submersible
Installation	:	Wet well
Impeller	:	Vortex
Capacity	:	17 m ³ /h @ 6 mWC
Solids handling capacity	:	40 mm
Power supply	:	230V / 50 Hz / 1P
Power rating	:	0,75 kW
Insulation class	:	F
Protection class	:	IP 68
Operation control	:	ON/OFF by automation & float switches
Starting	:	Direct, >15 starts/h
Material	:	
Pump body	:	Cast iron
Motor casing	:	Stainless steel
Shaft	:	Stainless steel
Impeller	:	Stainless steel
Sealing	:	Double mechanical
Accessories & Features	:	Chain with shackle, discharge hose with hose clips, skirt base
Manufacturer	:	WILO (GERMANY) or equivalent



3 BIOLOGICAL TREATMENT

◆ BIOLOGICAL REACTOR TANK (SBR)

Quantity	:	1
Type	:	Rectangular, covered
Dimensions (W x L x H)	:	2,20 x 9,00 x 2,50 m
Material	:	St-37 carbon steel + epoxy paint
Accessories & Features	:	Compartment for blower, PLC control, level switches, influent baffle, access hatches, air vents, interior ladder
Manufacturer	:	MITTEM

◆ SUBMERSIBLE MIXER

Quantity	:	1
Type	:	Submersible, high speed
Propeller diameter	:	200 mm
Rotational speed	:	1405 rpm
Power supply	:	380V / 50 Hz / 3P
Power rating	:	0,75 kW
Protection & Insulation class	:	IP 68 & F
Starting	:	Direct, <15 starts/h
Mounting	:	On guide rail
Material	:	
Motor casing	:	Cast iron
Shaft	:	Stainless steel
Propeller	:	Stainless steel
Accessories & Features	:	Square guide rail, chain with shackle
Manufacturer	:	ZENIT (ITALY) or equivalent

◆ BLOWER

Quantity	:	1 duty + 1 stand-by
Type	:	Centrifugal
Capacity	:	140 m ³ /h @ 300 mbar
Power supply	:	380V / 50 Hz / 3P
Power rating	:	3 kW
Protection class	:	IP 55
Operation control	:	ON/OFF by automation
Starting	:	Direct, >15 starts/h
Material	:	
Body	:	GG25 Cast iron
Baseplate	:	St-37 carbon steel + epoxy paint
Accessories & Features	:	Suction filter, suction and pressure silencer, bluff valve, check valve, manometer
Manufacturer	:	FPZ (ITALY) or equivalent



◆ **DIFFUSERS**

Quantity	:	32
Type	:	Porous, membrane
Bubble	:	Fine
Capacity	:	2 – 10 m ³ /h
Dimensions (W x L or D)	:	~Ø270 mm
Material	:	EPDM
Accessories & Features	:	Fittings
Manufacturer	:	GUMMI JAGER (GERMANY) or equivalent

◆ **DECANT PUMP**

Quantity	:	1 duty + 1 stand-by
Type	:	Submersible
Installation	:	Wet well
Impeller	:	Vortex
Capacity	:	17 m ³ /h @ 6 mWC
Solids handling capacity	:	40 mm
Power supply	:	230V / 50 Hz / 1P
Power rating	:	0,75 kW
Insulation class	:	F
Protection class	:	IP 68
Operation control	:	ON/OFF by automation & float switches
Starting	:	Direct, >15 starts/h
Material	:	
Pump body	:	Cast iron
Motor casing	:	Stainless steel
Shaft	:	Stainless steel
Impeller	:	Stainless steel
Sealing	:	Double mechanical
Accessories & Features	:	Chain with shackle, discharge hose with hose clips, skirt base
Manufacturer	:	WILO (GERMANY) or equivalent



◆ **SLUDGE PUMP**

Quantity	:	1
Type	:	Submersible
Installation	:	Wet well
Impeller	:	Vortex
Capacity	:	3 m ³ /h @ 7 mWC
Solids handling capacity	:	35 mm
Power supply	:	220V / 50 Hz / 1P
Power rating	:	0,55 kW
Insulation class	:	F
Protection class	:	IP 68
Operation control	:	ON/OFF by automation & float switches
Starting	:	Direct, >15 starts/h
Material	:	
Pump body	:	Cast iron
Motor casing	:	Stainless steel
Shaft	:	Stainless steel
Impeller	:	Stainless steel
Sealing	:	Double mechanical
Accessories & Features	:	Chain with shackle, discharge hose with hose clips, skirt base
Manufacturer	:	WILO (GERMANY) or equivalent

4 **DISINFECTION UNIT**

◆ **HYPOCHLORITE STORAGE TANK**

Quantity	:	1
Type	:	Covered
Capacity	:	100 L
Material	:	PE
Manufacturer	:	ROTAPLAST (TURKEY) or equivalent

◆ **HYPOCHLORITE DOSING PUMP**

Quantity	:	1 duty + 1 stand-by
Type	:	Electromagnetic solenoid
Capacity	:	5 L/h @ 5 bar
Power supply	:	220 V / 50 Hz / 1P
Accessories & Features	:	10 – 100 % manual stroke adjustment
Manufacturer	:	PRODOZ (HOLLAND) or equivalent



5 SLUDGE DEWATERING UNIT

✦ SLUDGE HOLDING TANK

Quantity	:	1
Type	:	Cylindrical, open
Capacity	:	1,5 m ³
Material	:	
Tank	:	PE
Chassis	:	St-37 carbon steel + epoxy paint
Static mixer	:	AISI 304
Accessories & Features	:	Conical base, manual drain valve, chassis, inlet static mixer
Manufacturer	:	MITTEM

✦ C. POLYELECTROLYTE PREPARATION SYSTEM

Quantity	:	1
Preparation type	:	1-chamber, batch
Chemical type	:	C. Poly
Tank net volume	:	200 L
Stage (i.e. # of mixers)	:	1
Power supply	:	380V / 50 Hz / 3P
Power rating	:	0,12 kW
Protection & Temperature rise class	:	IP 55 /B
Operation control	:	Manual
Gearbox	:	IMAK or equivalent
Material	:	
Tank	:	PE
Mixer shaft & impeller	:	Stainless steel
Nuts, bolts, washers	:	Stainless steel
Accessories & Features	:	Isolation valves, drain valves, mixer platform
Manufacturer	:	MITTEM

✦ C. POLYELECTROLYTE DOSING PUMP

Quantity	:	1
Type	:	Solenoid
Capacity	:	2 L/h @ 5 bar
Power supply	:	220 V / 50 Hz/ 1P
Accessories & Features	:	10 – 100 % manual stroke adjustment
Manufacturer	:	PRODOZ (HOLLAND) or equivalent



◆ **SLUDGE FEED PUMP**

Quantity	:	1
Type	:	Centrifugal, vortex
Installation	:	Horizontal shaft
Capacity	:	2 m ³ /h @ 6,5 mWC
Power supply	:	380V / 50 Hz / 3P
Power rating	:	0,37 kW
Insulation class	:	F
Protection class	:	IP 55
Temperature rise class	:	B
Explosion proof / zone	:	Not required
Operation control	:	ON/OFF by automation & float switches
Starting	:	Direct, >15 starts/h
Material	:	
Pump casing	:	Stainless steel
Shaft	:	Stainless steel
Impellers	:	Stainless steel
Sealing	:	Gland
Accessories & Features	:	-
Manufacturer	:	XYLEM (ITALY) or equivalent

◆ **BAG TYPE DEWATERING EQUIPMENT**

Quantity	:	1
Type	:	Bag type dewatering equipment
Operation	:	Manual
Number of bag	:	4
Bag volume	:	100 L/each
Material	:	
Bag	:	Nylon
Chassis	:	Stainless steel
Accessories & Features	:	Distribution pipe, manual filling valves
Manufacturer	:	MITTEM



6 **GENERAL**

✦ **VALVING & PIPING**

✦ **VALVES**

Type	:	Check, control (ball, gate, butterfly, etc.).
Protection	:	IP 55, 66, as appropriate

✦ **PIPES & FITTINGS**

Size	:	Various sizes
Material	:	
Main piping	:	
Over ground	:	PVC or Carbon steel
Under ground	:	PVC, Carbon steel or PE
Air pipelines	:	Dry parts: Carbon steel, Wet parts: PVC
Chemicals pipeline	:	PVC or ABS
Free surface pipelines	:	PVC

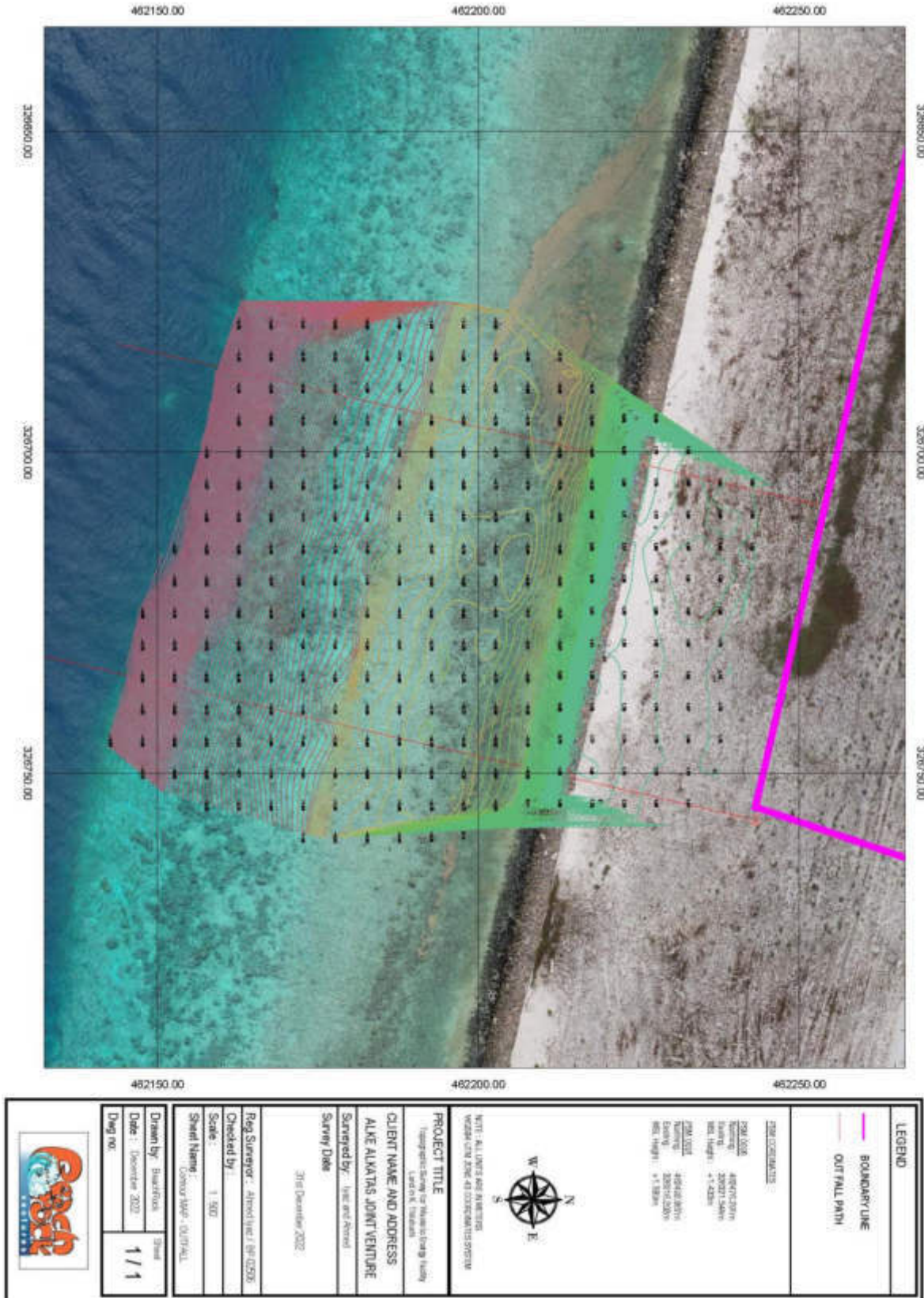
✦ **ELECTRICAL & AUTOMATION & INSTRUMENTATION**

✦ **CONTROL PANEL**

Quantity	:	1
Type	:	Compartment mounted
Protection class	:	IP 55 or as required
Cables	:	NYY, TTR
Accessories & Features	:	PLC automation (SIEMENS)
Material	:	Polyester
Panel constituents	:	SIEMENS and SCHNEIDER
Manufacturer	:	MITTEM

Where applicable and necessary; accessories & features inside the panel or next to the equipments also include overload protection, emergency push buttons, operation and trouble indicators, motor protection relays, fuses, relays, main switches, timers, electro-pneumatic controls, level controls, complete with all accessories required.

Annex 5: Bathymetry map



Annex 6: Water samples analysis reports

WATER QUALITY TEST REPORT
 Report No: 2019090

Customer Information:
 Alka Akshay Joint Venture Pte Ltd
 02769000

Report Date: 20/09/2022
 Test Requestion Form No: 00119040
 Sampling Received Date: 21/09/2022
 Date of Analysis: 21/09/2022 - 20/09/2022

Sample Description -	09/01	09/04	09/05	TEST METHOD	UNIT
Sample Type -	Ground Water	Ground Water	Ground Water		
Sample No -	0102020	0102020	0102021		
Sample Date -	18/09/2022 11:00	18/09/2022 11:00	18/09/2022 11:00		
PARAMETER	ANALYSIS RESULT				
Physical Appearance	Clear with particles	Pale yellow with particles	Pale yellow with particles		
Conductivity *	351	375	388	Method 2570-8 adopted from Standard method for the examination of water and wastewater, 200 edition	µS/cm
pH *	7.0	6.5	7.2	Method 4500-H+ B adopted from Standard method for the examination of water and wastewater, 200 edition	-
Temperature	24.0	22.5	24.6	Standard	°C
Total Dissolved Solids	186.7	200	204	Standard	mg/L
Total Suspended Solids	< 0.045 mg/L	< 0.045 mg/L	30	ISO 15705-2:2001	mg/L
Turbidity *	1.18	0.85	0.97	ISO 7027-2:2012	NTU
Iron, Total *	0.00	< 0.02 mg/L	0.04	ISO 15705-2:2001	mg/L
Manganese	< 0.005 mg/L	0.006	0.007	ISO 15705-2:2001	mg/L
Nitrate *	0.0	0.2	2.8	ISO 15705-2:2001	mg/L
Chemical Oxygen Demand (COD)	76.0	87.8	70.0	ISO 15705-2:2001	mg/L

Note: pH(m), Iron (Total) per Centimeter, °C - Degree Celsius, mg/L - Milligram Per Liter, NTU - Nephelometric Turbidity Unit

Checked by

 Arvind Saha
 Laboratory Executive

Approved by

 Arvind A. Saha
 Assistant Quality Manager

Note:
 Sampling Authority: Sampling was not done by WQAC Laboratory.
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 This test report is ONLY FOR THE SAMPLES TESTED.
 - Information provided by the customer. This information may affect the validity of the test results.
 * Parameters controlled by SMC under ISO/IEC 17025:2017
 Chemical Oxygen Demand for Sample No:0102020 could not be determined due to high turbidity of the sample

WATER QUALITY TEST REPORT
 Report No: 2019090

Customer Information:
 Alka Akshay Joint Venture Pte Ltd
 02769000

Report Date: 20/09/2022
 Test Requestion Form No: 00119040
 Sampling Received Date: 21/09/2022
 Date of Analysis: 21/09/2022 - 20/09/2022

Sample Description -	09/01	09/04	09/05	TEST METHOD	UNIT
Sample Type -	Ground Water	Ground Water	Ground Water		
Sample No -	0102020	0102020	0102021		
Sample Date -	18/09/2022 11:00	18/09/2022 11:00	18/09/2022 11:00		
PARAMETER	ANALYSIS RESULT				
Physical Appearance	Clear with particles	Pale yellow with particles	Pale yellow with particles		
Dissolved Oxygen (DO)	6.37	7.74	6.50	ISO 15705-2:2001	mg/L
Biological Oxygen Demand (BOD)	7	0	7	ISO 15705-2:2001	mg/L

Note: pH(m), Iron (Total) per Centimeter, °C - Degree Celsius, mg/L - Milligram Per Liter, NTU - Nephelometric Turbidity Unit

Checked by

 Arvind Saha
 Laboratory Executive

Approved by

 Arvind A. Saha
 Assistant Quality Manager

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 * Parameters controlled by SMC under ISO/IEC 17025:2017
 Chemical Oxygen Demand for Sample No:0102020 could not be determined due to high turbidity of the sample

WATER QUALITY TEST REPORT
 Report No: MW/2022

Customer Information:
 Aha Akshay Joint Venture Pvt Ltd
 02763032

Report Date: 28/09/2022
 Test Prescription Form No: 001/19/040
 Sample(s) Received Date: 21/09/2022
 Date of Analysis: 21/09/2022 - 28/09/2022

Sample Description	09A-07	09A-02	TEST METHOD	UNIT
Sample Type	Ground Water	Ground Water		
Sample No	WQ/2022	WQ/2022		
Sample Date	09/09/2022 11:00	09/09/2022 11:00		
PARAMETER	ANALYSIS RESULT			
Physical Appearance	Clear with particles	Clear with particles		
Conductivity	888	82100	Method 2510-10, adapted from Standard methods for the examination of water and waste water, 24th edition	µS/cm
pH	7.6	7.3	Method 1591-10, adapted from Standard methods for the examination of water and waste water, 24th edition	-
Temperature	24.8	24.8	(Standard)	°C
Total Dissolved Solids	294	20100	(Standard)	mg/L
Total Suspended Solids	97	47	ISO 15705-2:2002	mg/L
Turbidity	66.1	1.56	ISO 7027:2002 (Nephelometric Turbidity Unit)	NTU
Iron, Total	<0.01 (0.01 mg/L)	<0.01 (0.01 mg/L)	ISO 15705-2:2002	mg/L
Manganese	0.023	0.002	ISO 15705-2:2002	mg/L
Nitrate	0.3	0.0	ISO 15705-2:2002	mg/L
Chemical Oxygen Demand (COD)	<0.04 (0 mg/L)	-	ISO 15705-2:2002	mg/L

Key: µS/cm - Micro Siemens per Centimeter, °C - Degree Celsius, mg/L - Milligram Per Liter, NTU - Nephelometric Turbidity Unit

Checked by

 Anish Saha
 Laboratory Executive

Approved by

 Anil A. Saha
 Resident Quality Manager

Notes
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 Parameters controlled by ISIRI under ISIRI: 17025:2017
 Chemical Oxygen Demand for Sample No WQ/2022 could not be determined due to high turbidity of the sample.
 Page 2 of 4

MWSC-43-F-02 Rev. 01

WATER QUALITY TEST REPORT
 Report No: MW/2022

Customer Information:
 Aha Akshay Joint Venture Pvt Ltd
 02763032

Report Date: 28/09/2022
 Test Prescription Form No: 001/19/040
 Sample(s) Received Date: 21/09/2022
 Date of Analysis: 21/09/2022 - 28/09/2022

Sample Description	09A-07	09A-02	TEST METHOD	UNIT
Sample Type	Ground Water	Ground Water		
Sample No	WQ/2022	WQ/2022		
Sample Date	09/09/2022 11:00	09/09/2022 11:00		
PARAMETER	ANALYSIS RESULT			
Physical Appearance	Clear with particles	Clear with particles		
Dissolved Oxygen (DO)	6.46	6.88	in-house Test method adapted from ISO 15705-2:2002 (DO Probe Method) (ISO 15705-2:2002)	mg/L
Biological Oxygen Demand (BOD)	7	4	ISO 15705-2:2002	mg/L

Key: µS/cm - Micro Siemens per Centimeter, °C - Degree Celsius, mg/L - Milligram Per Liter, NTU - Nephelometric Turbidity Unit

Checked by

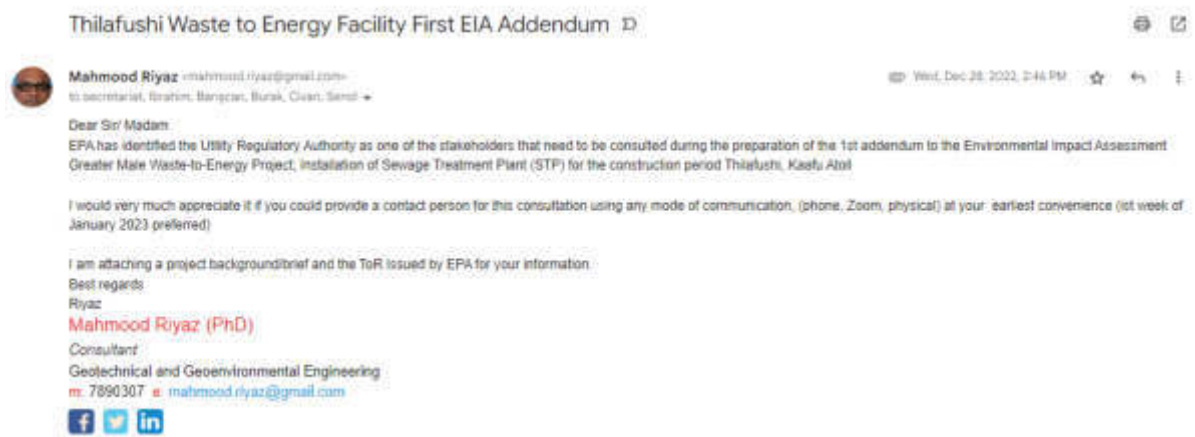
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 Laboratory Executive

Approved by

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 Parameters controlled by ISIRI under ISIRI: 17025:2017
 Chemical Oxygen Demand for Sample No WQ/2022 could not be determined due to high turbidity of the sample.
 ***** END OF REPORT *****

Annex 7: Email sent to URA requesting a meeting



Response to the Information Lacking in the 1st Addendum to the EIA for the Proposed Greater Male Waste-to-Energy Project (Installation of STP for the Construction Period) at K.Thilafushi

1. Need to provide details of how the sludge will be managed.

Response: According to the existing literature the sludge production rates range between 0.15-0.29L/person/day. So based on this this the proposed plant will produce approximately 15tonnes per year. The system will collect the sludge and will be dried and used as fertilizer for non-edible plants and landscaping purposes around site.

2. Boundaries of the areas affected (impact boundary) need to be provided.

Response: The impact boundary is shown in the map below



Figure 1. Impact boundary of the proposed STP plant WtE at Thilafushi

3. The report does not have page numbers on the majority of pages. Please include them.

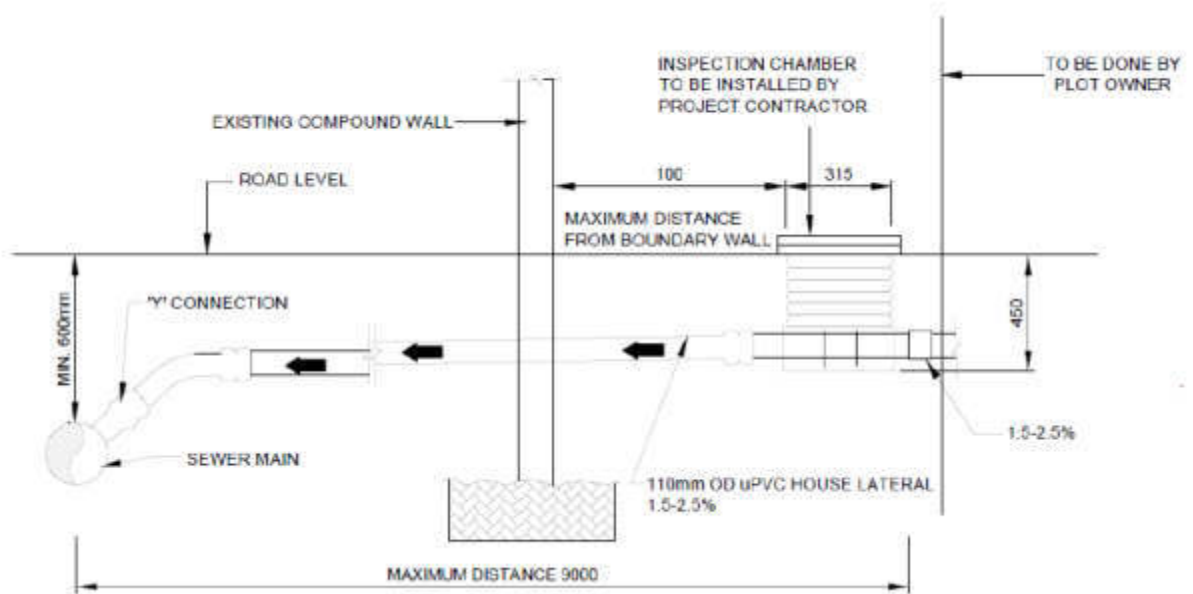
Report with pages number is submitted with this information sheet

4. In chapter 5, under relevant legislations/guidelines/policies, need to justify why EPA is mentioned as regulator for Water and Sewerage Act (8/2020) and National Wastewater Quality Guidelines/Standards. Also, it was written “Dewatering Regulation (2013/R-1697, 1st January 2014”, hence, need to correct it.

Response: Probably EPA was the regulator of the regulations mentioned before it was moved to URA. That was a mistake URA is the regulator of Water and Sewerage Act (8/2020) and National Wastewater Quality Guidelines/Standards. Also the correct reference for the Dewatering Regulation should be (2021/20-R/) 3rd February 2021

The figures 3, 4, 5, 7 and 15 are unclear. Need to provide clear and readable ones.

Response: Readable figures of 3, 4,5 and 15 are provided in the Annex of the report it is attached here again as the attachment, and readable figure 7 is below:



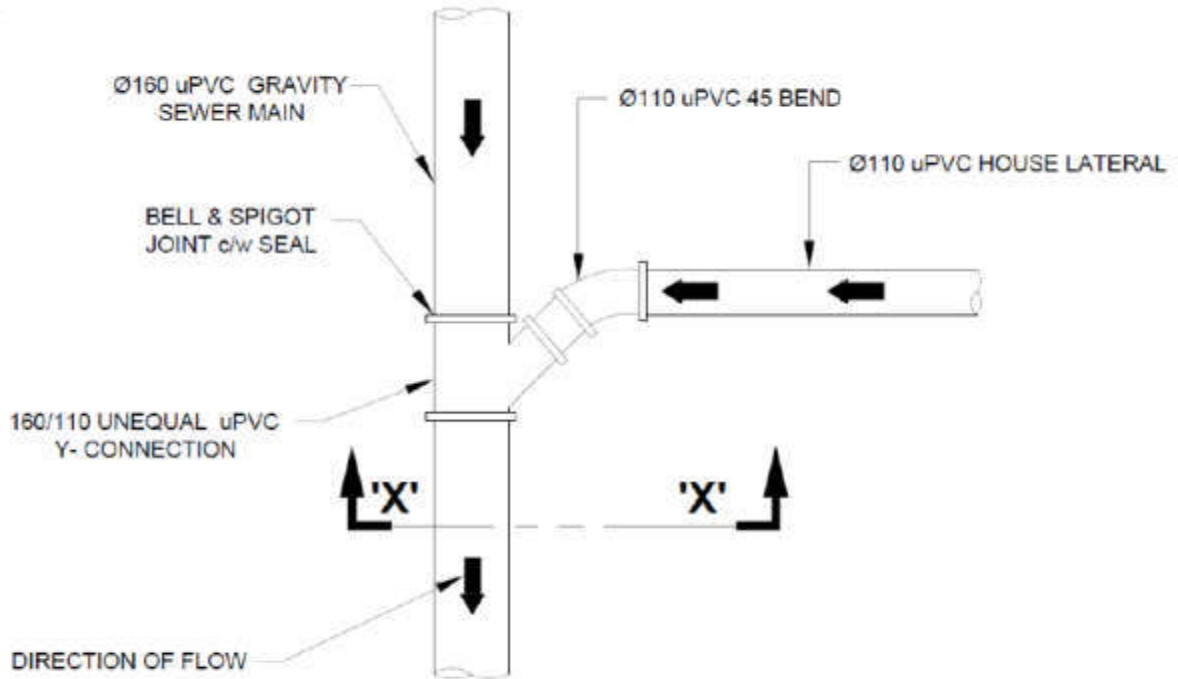


Figure 7.

6. Need to provide justification for the selection of outfall location.

Response: The outfall location is same as the main outfall location of the WtE waste water outfall, which was approved in the original main original EIA report.

7. The subsection 4.6 refers as “a maximum depth of excavation of 3 m is allowed as per the guidelines of URA/EPA.” Please to provide proper reference to this guideline.

Response: This is a typo it should be a maximum depth of excavation of 2.5 m as per the General design section 2, Design Criteria and Technical Specifications: Design and Construction of Sewerage System URA 2001:2021

8. On page 24, the report says that “large land clearance is required at the entrance point.”, although under 4.6.2.5-land clearance says that “there is no need for land clearance for the construction and installation of STP plant.” Need to clarify this contradiction.

Response: Well, the context in which “large land clearance is required at the entrance point.” Is mentioned as general disadvantage of the HDD system not necessarily this project. As clearly mentioned in 4.6.2.5 that no land clearance is required for this project and there is no confusion or contradiction about that.

9. In executive summary and conclusion, the report says that the proposed STP installation and operation will not create any new impact that has not been included/addressed in the initial EIA report. Need to justify why this is the case.

Response: This is because the original EIA has covered the impacts of the waste water disposal from the WtE plant extensively, compared with the discharge from the proposed STP, which is not expected to have environmental impact that has not been addressed in the original EIA report.

10. Need to specify an emergency plan if system fails as per the approved ToR.

Response: As the case in all the STP units in the Maldives a bypass will be made available to pump directly to the ocean outfall in the sewerage system in emergency situations

11. The work schedule for the proposed works to be carried out under this addendum need to be provided.

Response: Tentative schedule of the proposed STP installation

Activity	Jan 2023				Feb 2023				Mar 2023			
EIA preparation	■	■										
EIA Approval (decision note)			■	■	■	■						
Site mobilization and preparation						■	■					
Importation of STP unit						■	■	■				
Sewage pipe laying & trenching								■	■			
Sewage network connection to STP										■		
Testing and commissioning											■	
Commencement of operation												■

12. GPS coordinates of the surveyed locations for groundwater and marine environment assessments need to be provided.

Response: GPS coordinates of survey location for groundwater and marine environment assessments are given below

Ground water sample coordinates		Marine water and reef survey GPS coordinates	
GW1	73°26'52.50"E, 4°11'4.66"N	M8	73°26'15.57"E, 4°10'47.38"N
GW2	73°26'45.84"E, 4°10'47.22"N	M9, SW1	73°26'21.99"E, 4°10'45.76"N
GW3	73°26'55.32"E, 4°11'2.66"N	M10	73°26'9.43"E, 4°10'48.85"N
GW4	73°26'42.84"E, 4°11'9.30"N	SW2	73°27'7.29"E, 4°10'31.98"N
GW5	73°26'39.35"E, 4°10'50.95"N	SW3	73°27'2.78"E, 4°11'2.71"N
GW6	73°26'23.48"E, 4°10'51.69"N	SW4	73°26'11.43"E, 4°11'16.80"N
GW7	73°26'18.69"E, 4°10'55.28"N	SW5	73°25'39.13"E, 4°11'20.58"N
GW8	73°26'15.50"E, 4°10'58.02"N	SW6	73°25'11.15"E, 4°10'52.82"N
		SW7	73°26'40.58"E, 4°10'56.63"N

13. Assessments of currents (in relation to outfall locations) need to be provided as per the approved ToR.

Response: The open ocean currents were generally slow during flood and ebb tides but increased closer to the Thilafushi channel during the flood tide. Current speeds with the lagoon showed a consistent average speed between 0.1 - 0.2 m/s. This was mainly due to the blocked nature of the inner lagoon. The speed increased an average of 0.3 m/s close to the Thilafushi Channel.

14. Sea water quality assessments results of M8, M9 and M10 needs to be provided.

Response: Results of Seawater quality assessments laboratory reports are given below



TEST REPORT



Report No: (7422)332-0111

Dec 13, 2022

Page 1 of 2

Attn: Servet Burak Ozdemir

Customer: Alke – Alkataş Joint Venture (Pvt) Ltd
Address : H.H. Moomiyaage, 5A, Asaree Hingun 20265, K. Male', Maldives
Date of Sample Received: Nov 30, 2022
Date of Testing Started: Nov 30, 2022
Date of Testing Completed: Dec 13, 2022
Sample Description: **Sample Received as:**
A water samples contained in sealed glass & plastic bottles
Sample Identified by the Client as:
SW-01
1.5L Plastic Bottle, 1L Glass Bottle & 0.5L Plastic Bottle
Sample Drawn By BVCPS: NO

Photo of the Submitted Samples



Report Number
(7422)332-0111



Report Number
(7422)332-0111



Report Number
(7422)332-0111

Bureau Veritas Consumer Products Services Lanka (Pvt) Ltd.

No. 570, Galle Road, Kambedda, Morutwa, Sri Lanka
Tel: (9411) 2550113-115 (dedicated lines), Fax: (9411)
112622198 & 199
Email: bvps.lanka@bureauveritas.com

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TEST REPORT



Report No: (7422)332-0111

Dec 13, 2022

Page 2 of 2

TEST RESULTS

No.	Parameters	Results	LOQ	Unit	Test Method
1	Free Ammonia (as NH ₃)*	ND	0.02	mg/L	SLS 614 Appendix A: 2013
2	Biological Oxygen Demand (BOD ₅) @ 20°C	2	-	mg/L	APHA 23rd ed: 2017 : 5210D
3	Total Suspended Solids (TSS)	4	-	mg/L	APHA 23rd ed: 2017 : 2540D
4	Salinity*	35	-	‰	By salinity refractometer
5	Nitrate (as NO ₃ -)*	0.3	-	mg/L	APHA 23rd ed: 2017: 4500 -NO ₃ - B
6	Oil & Grease	ND	2.0	mg/L	APHA 23rd ed: 2017 :5520B
7	Arsenic (as As)	ND	0.001	mg/L	CPSD-AN-00581: 2019 V15 by ICP-MS
8	Copper (as Cu)	ND	0.001	mg/L	
9	Nickel (as Ni)	ND	0.001	mg/L	
10	Cadmium (as Cd)	ND	0.0001	mg/L	
11	Total Chromium (as Cr)	ND	0.001	mg/L	
12	Lead (as Pb)	ND	0.001	mg/L	
13	Mercury (as Hg)	ND	0.00005	mg/L	
14	Zinc (as Zn)	ND	0.001	mg/L	

*Test not covered ISO 17025: 2017 by Sri Lanka Accreditation Board for conformity assessment.

NOTE:

APHA: American Public Health Association, ND: Not Detected,

LOQ: Limit of Quantification, ‰ : Parts per thousand,

mg/l: milligrams per liter, ICP-MS: Inductively Coupled Plasma Mass Spectrometry.

Contact information for this report (Technical and General Inquiries and Feedback)

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FEED BACK:		
KUMUDINI RATHNAYAKE – ASST. QA MANAGER	TEL: +94 768 229 455	E-MAIL: kumudinie.rathnayake@bureauveritas.com

REVIEWED BY: SHASHI MANOJ

BUREAU VERITAS CONSUMER PRODUCTS SERVICES LANKA (PVT) LTD.
AUTHORIZED SIGNATORY

APPROVED BY: 
RUWANI AMARASINGHE
ASSISTANT MANAGER –
FOOD & MICROBIOLOGY LABORATORY

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TEST REPORT



Report No: (7422)334-0390

Dec 13, 2022

Page 1 of 2

Attn: Servet Burak Ozdemir

Customer: Alke – Alkatas Joint Venture (Pvt) Ltd
Address : H.H. Moomiyaage, 5A, Asarce Hingun 20265, K. Male', Maldives
Date of Sample Received: Nov 30, 2022
Date of Testing Started: Nov 30, 2022
Date of Testing Completed: Dec 13, 2022
Sample Description: **Sample Received as:** A water samples contained in sealed glass & plastic bottles
Sample Identified by the Client as: SW-02
1.5L Plastic Bottle, 1L Glass Bottle & 0.5L Plastic Bottle
Sample Drawn By BVCPS: NO

Photo of the Submitted Samples



Bureau Veritas Consumer Products Services Lanka (Pvt) Ltd.

No. 570, Galle Road, Katubedda, Morotawa, Sri Lanka
Tel: (9411) 2350111-115 (dedicated lines), Fax: (9411) 112622198 & 199
Email: lvps.lanka@bureauveritas.com

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TEST REPORT



Report No: (7422)334-0390

Dec 13, 2022

Page 2 of 2

TEST RESULTS

No.	Parameters	Results	LOQ	Unit	Test Method
1	Free Ammonia (as NH ₃)*	ND	0.02	mg/L	SLS 614 Appendix A: 2013
2	Biological Oxygen Demand (BOD ₅) @ 20°C	2	-	mg/L	APHA 23rd ed: 2017 : 5210D
3	Total Suspended Solids (TSS)	3	-	mg/L	APHA 23rd ed: 2017 : 2540D
4	Salinity*	35	-	‰	By salinity refractometer
5	Nitrate (as NO ₃ -)*	0.5	-	mg/L	APHA 23rd ed: 2017: 4500 -NO ₃ - B
6	Oil & Grease	ND	2.0	mg/L	APHA 23rd ed: 2017 :5520B
7	Arsenic (as As)	ND	0.001	mg/L	CPSD-AN-00581: 2019 V15 by ICP-MS
8	Copper (as Cu)	ND	0.001	mg/L	
9	Nickel (as Ni)	ND	0.001	mg/L	
10	Cadmium (as Cd)	ND	0.0001	mg/L	
11	Total Chromium (as Cr)	ND	0.001	mg/L	
12	Lead (as Pb)	ND	0.001	mg/L	
13	Mercury (as Hg)	ND	0.00005	mg/L	
14	Zinc (as Zn)	ND	0.001	mg/L	

*Test not covered ISO 17025: 2017 by Sri Lanka Accreditation Board for conformity assessment.

NOTE:

APHA: American Public Health Association, ND: Not Detected,

LOQ: Limit of Quantification, ‰ : Parts per thousand,

mg/l: milligrams per liter, ICP-MS: Inductively Coupled Plasma Mass Spectrometry.

Contact information for this report (Technical and General Inquiries and Feedback)

GENERAL INQUIRIES:		
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KUMUDINI RATHNAYAKE – ASST. QA MANAGER	TEL: +94 768 229 455	E-MAIL: kumudinie.rathnayake@bureauveritas.com

REVIEWED BY: SHASHI MANOJ

BUREAU VERITAS CONSUMER PRODUCTS SERVICES LANKA (PVT) LTD.
AUTHORIZED SIGNATORY

APPROVED BY: _____
RUWANI AMARASINGHE
ASSISTANT MANAGER –
FOOD & MICROBIOLOGY LABORATORY

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TEST REPORT



Report No: (7422)334-0387

Dec 14, 2022

Page 1 of 2

Attn: Servet Burak Ozdemir

Customer: Alke – Alkataş Joint Venture (Pvt) Ltd
Address : H.H. Moomiyaage, 5A, Asaree Hingun 20265, K. Male', Maldives
Date of Sample Received: Nov 30, 2022
Date of Testing Started: Nov 30, 2022
Date of Testing Completed: Dec 14, 2022
Sample Description: **Sample Received as:**
A water samples contained in sealed glass & plastic bottles
Sample Identified by the Client as:
SW-03
1.5L Plastic Bottle, 1L Glass Bottle & 0.5L Plastic Bottle
Sample Drawn By BVCPS: NO

Photo of the Submitted Samples



Bureau Veritas Consumer Products Services Lanka (Pvt) Ltd.

No. 570, Galle Road, Kumbura, Morutwa, Sri Lanka
Tel: (9411) 2550113-115 (dedicated lines), Fax: (9411) 112622198 & 199
Email: bvcp.lanka@bureauveritas.com

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TEST REPORT



Report No: (7422)334-0387

Dec 14, 2022

Page 2 of 2

TEST RESULTS

No.	Parameters	Results	LOQ	Unit	Test Method
1	Free Ammonia (as NH ₃)*	ND	0.02	mg/L	SLS 614 Appendix A: 2013
2	Biological Oxygen Demand (BOD ₅) @ 20°C	2	-	mg/L	APHA 23rd ed: 2017 : 5210D
3	Total Suspended Solids (TSS)	6	-	mg/L	APHA 23rd ed: 2017 : 2540D
4	Salinity*	36	-	‰	Salinity-Refractometer
5	Nitrate (as NO ₃ -)*	0.3	-	mg/L	APHA 23rd ed: 2017: 4500 -NO ₃ - E
6	Oil & Grease	ND	2.0	mg/L	APHA 23rd ed: 2017 :5520B
7	Arsenic (as As)	ND	0.001	mg/L	CPSD-AN-00581: 2019 V15 by ICP-MS
8	Copper (as Cu)	ND	0.001	mg/L	
9	Nickel (as Ni)	ND	0.001	mg/L	
10	Cadmium (as Cd)	ND	0.0001	mg/L	
11	Total Chromium (as Cr)	ND	0.001	mg/L	
12	Lead (as Pb)	ND	0.001	mg/L	
13	Mercury (as Hg)	ND	0.00005	mg/L	
14	Zinc (as Zn)	ND	0.001	mg/L	

*Test not covered ISO 17025: 2017 by Sri Lanka Accreditation Board for conformity assessment.

NOTE:

APHA: American Public Health Association, ND: Not Detected,

LOQ: Limit of Quantification, µm: micrometer,

mg/l: milligrams per liter, ‰: Parts per thousand.

Contact information for this report (Technical and General Inquiries and Feedback)

GENERAL INQUIRIES:		
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FEED BACK:		
KUMUDINI RATHNAYAKE – ASST. QA MANAGER	TEL: +94 768 229 455	E-MAIL: kumudinie.rathnayake@bureauveritas.com

REVIEWED BY: SHASHI MANOJ

BUREAU VERITAS CONSUMER PRODUCTS SERVICES LANKA (PVT) LTD.
AUTHORIZED SIGNATORY

APPROVED BY: _____
RUWANI AMARASINGHE
ASSISTANT MANAGER –
FOOD & MICROBIOLOGY LABORATORY

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TEST REPORT



Report No: (7422)334-0394

Dec 13, 2022

Page 1 of 2

Attn: Servet Burak Ozdemir

Customer: Alke – Alkatas Joint Venture (Pvt) Ltd
Address : H.H. Moomiyaage, 5A, Asarce Hingun 20265, K. Male', Maldives
Date of Sample Received: Nov 30, 2022
Date of Testing Started: Nov 30, 2022
Date of Testing Completed: Dec 13, 2022
Sample Description: **Sample Received as:**
A water samples contained in sealed glass & plastic bottles
Sample Identified by the Client as:
SW-04
1.5L Plastic Bottle, 1L Glass Bottle & 0.5L Plastic Bottle
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 (indicated lines), Fax: (9411)
112622198 & 199
Email: bvps.lanka@bureauveritas.com

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TEST REPORT



Report No: (7422)334-0394

Dec 13, 2022

Page 2 of 2

TEST RESULTS

No.	Parameters	Results	LOQ	Unit	Test Method
1	Free Ammonia (as NH ₃)*	ND	0.02	mg/L	SLS 614 Appendix A: 2013
2	Biological Oxygen Demand (BOD ₅) @ 20°C	1	-	mg/L	APHA 23rd ed: 2017 : 5210D
3	Total Suspended Solids (TSS)	6	-	mg/L	APHA 23rd ed: 2017 : 2540D
4	Salinity*	36	-	‰	By salinity refractometer
5	Nitrate (as NO ₃ -)*	0.3	-	mg/L	APHA 23rd ed: 2017: 4500 -NO ₃ - B
6	Oil & Grease	ND	2.0	mg/L	APHA 23rd ed: 2017 :5520B
7	Arsenic (as As)	ND	0.001	mg/L	CPSD-AN-00581: 2019 V15by ICP-MS
8	Copper (as Cu)	ND	0.001	mg/L	
9	Nickel (as Ni)	ND	0.001	mg/L	
10	Cadmium (as Cd)	ND	0.0001	mg/L	
11	Total Chromium (as Cr)	ND	0.001	mg/L	
12	Lead (as Pb)	ND	0.001	mg/L	
13	Mercury (as Hg)	ND	0.00005	mg/L	
14	Zinc (as Zn)	ND	0.001	mg/L	

*Test not covered ISO 17025: 2017 by Sri Lanka Accreditation Board for conformity assessment.

NOTE:

APHA: American Public Health Association, ND: Not Detected,

LOQ: Limit of Quantification, ‰ : Parts per thousand,

mg/l: milligrams per liter, ICP-MS- Inductively Coupled Plasma Mass Spectrometry.

Contact information for this report (Technical and General Inquiries and Feedback)

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FEED BACK:		
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REVIEWED BY: SHASHI MANOJ

BUREAU VERITAS CONSUMER PRODUCTS SERVICES LANKA (PVT) LTD.
AUTHORIZED SIGNATORY

APPROVED BY: 
RUWANI AMARASINGHE
ASSISTANT MANAGER –
FOOD & MICROBIOLOGY LABORATORY

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TEST REPORT



Report No: (7422)334-0383

Dec 13, 2022

Page 1 of 2

Attn: Servet Burak Ozdemir

Customer: Alke – Alkataş Joint Venture (Pvt) Ltd
Address : H.H. Moomiyaage, 5A, Asarce Hingun 20265, K. Male', Maldives
Date of Sample Received: Nov 30, 2022
Date of Testing Started: Nov 30, 2022
Date of Testing Completed: Dec 13, 2022
Sample Description: **Sample Received as:**
A water samples contained in sealed glass & plastic bottles
Sample Identified by the Client as:
SW-05
1.5L Plastic Bottle, 1L Glass Bottle & 0.5L Plastic Bottle
Sample Drawn By BVCPS: NO

Photo of the Submitted Samples



Bureau Veritas Consumer Products Services Lanka (Pvt) Ltd.

No. 570, Galle Road, Katubedda, Morotawa, Sri Lanka
Tel: (9411) 2350111-115 (dedicated lines), Fax: (9411)
112622198 & 199
Email: lvps.lanka@bureauveritas.com

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TEST REPORT



Report No: (7422)334-0383

Dec 13, 2022

Page 2 of 2

TEST RESULTS

No.	Parameters	Results	LOQ	Unit	Test Method
1	Free Ammonia (as NH ₃)*	ND	0.02	mg/L	SLS 614 Appendix A: 2013
2	Biological Oxygen Demand (BOD ₅) @ 20°C	2	-	mg/L	APHA 23rd ed: 2017 : 5210D
3	Total Suspended Solids (TSS)	3	-	mg/L	APHA 23rd ed: 2017 : 2540D
4	Salinity*	35	-	‰	By salinity refractometer
5	Nitrate (as NO ₃ -)*	0.3	-	mg/L	APHA 23rd ed: 2017: 4500 -NO ₃ - B
6	Oil & Grease	ND	2.0	mg/L	APHA 23rd ed: 2017 :5520B
7	Arsenic (as As)	ND	0.001	mg/L	CPSD-AN-00581: 2019 V15 by ICP-MS
8	Copper (as Cu)	ND	0.001	mg/L	
9	Nickel (as Ni)	ND	0.001	mg/L	
10	Cadmium (as Cd)	ND	0.0001	mg/L	
11	Total Chromium (as Cr)	ND	0.001	mg/L	
12	Lead (as Pb)	ND	0.001	mg/L	
13	Mercury (as Hg)	ND	0.00005	mg/L	
14	Zinc (as Zn)	ND	0.001	mg/L	

*Test not covered ISO 17025: 2017 by Sri Lanka Accreditation Board for conformity assessment.

NOTE:

APHA: American Public Health Association, ND: Not Detected,

LOQ: Limit of Quantification, ‰ : Parts per thousand,

mg/l: milligrams per liter, ICP-MS: Inductively Coupled Plasma Mass Spectrometry.

Contact information for this report (Technical and General Inquiries and Feedback)

GENERAL INQUIRIES:		
JAYAMEE DISSANAYAKE	TEL: +94 768 229 495	E-MAIL: envlab.lanka@bureauveritas.com
TECHNICAL INQUIRIES:		
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FEED BACK:		
KUMUDINI RATHNAYAKE – ASST. QA MANAGER	TEL: +94 768 229 455	E-MAIL: kumudinie.rathnayake@bureauveritas.com

REVIEWED BY: SHASHI MANOJ

BUREAU VERITAS CONSUMER PRODUCTS SERVICES LANKA (PVT) LTD.
AUTHORIZED SIGNATORY

APPROVED BY: 
RUWANI AMARASINGHE
ASSISTANT MANAGER –
FOOD & MICROBIOLOGY LABORATORY

END OF THE REPORT

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TEST REPORT



Report No: (7422)334-0398

Dec 14, 2022

Page 1 of 2

Attn: Servet Burak Ozdemir

Customer: Alke – Alkataş Joint Venture (Pvt) Ltd
Address : H.H. Moomiyaage, 5A, Asaree Hingun 20265, K. Male', Maldives
Date of Sample Received: Nov 30, 2022
Date of Testing Started: Nov 30, 2022
Date of Testing Completed: Dec 14, 2022
Sample Description: **Sample Received as:** A water samples contained in sealed glass & plastic bottles
Sample Identified by the Client as: SW-06
 1.5L Plastic Bottle, 1L Glass Bottle & 0.5L Plastic Bottle
Sample Drawn By BVCPS: NO

Photo of the Submitted Samples



Bureau Veritas Consumer Products Services Lanka (Pvt) Ltd.

No. 570, Galle Road, Kambedda, Morutwa, Sri Lanka
 Tel: (9411) 250113-115 (dedicated lines), Fax: (9411) 112622198 & 199
 Email: bvps.lanka@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/Files/about-us/bvcs-bureauveritas-consumer-products-services-lanka-conditions> and is intended for your exclusive use. Any copying or reproduction of this report in or for any other person is strictly prohibited without 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 single acceptance criteria without taking measurement uncertainty into account, unless otherwise requested in writing. You have 90 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 the report, the tests conducted and the correctness of the report contents.

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TEST REPORT



Report No: (7422)334-0398

Dec 14, 2022

Page 2 of 2

TEST RESULTS

No.	Parameters	Results	LOQ	Unit	Test Method
1	Free Ammonia (as NH ₃)*	ND	0.02	mg/L	SLS 614 Appendix A: 2013
2	Biological Oxygen Demand (BOD ₅) @ 20°C	3	-	mg/L	APHA 23rd ed: 2017 : 5210D
3	Total Suspended Solids (TSS)	3	-	mg/L	APHA 23rd ed: 2017 : 2540D
4	Salinity*	33	-	‰	Salinity-Refractometer
5	Nitrate (as NO ₃ -)*	0.4	-	mg/L	APHA 23rd ed: 2017: 4500 -NO ₃ - E
6	Oil & Grease	ND	2.0	mg/L	APHA 23rd ed: 2017 :5520B
7	Arsenic (as As)	ND	0.001	mg/L	CPSD-AN-00581: 2019 V15 by ICP-MS
8	Copper (as Cu)	ND	0.001	mg/L	
9	Nickel (as Ni)	ND	0.001	mg/L	
10	Cadmium (as Cd)	ND	0.0001	mg/L	
11	Total Chromium (as Cr)	ND	0.001	mg/L	
12	Lead (as Pb)	ND	0.001	mg/L	
13	Mercury (as Hg)	ND	0.00005	mg/L	
14	Zinc (as Zn)	ND	0.001	mg/L	

*Test not covered ISO 17025: 2017 by Sri Lanka Accreditation Board for conformity assessment.

NOTE:

APHA: American Public Health Association, ND: Not Detected,

LOQ: Limit of Quantification, µm: micrometer,

mg/l: milligrams per liter, ‰: Parts per thousand.

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REVIEWED BY: SHASHI MANOJ

BUREAU VERITAS CONSUMER PRODUCTS SERVICES LANKA (PVT) LTD.
AUTHORIZED SIGNATORY

APPROVED BY: 
RUWANI AMARASINGHE
ASSISTANT MANAGER –
FOOD & MICROBIOLOGY LABORATORY

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TEST REPORT



Report No: (7422)334-0401

Dec 14, 2022

Page 1 of 2

Attn: Servet Burak Ozdemir

Customer: Alke – Alkataş Joint Venture (Pvt) Ltd
Address : H.H. Moomiyaage, 5A, Asaree Hingun 20265, K. Male', Maldives
Date of Sample Received: Nov 30, 2022
Date of Testing Started: Nov 30, 2022
Date of Testing Completed: Dec 14, 2022
Sample Description: **Sample Received as:**
A water samples contained in sealed glass & plastic bottles
Sample Identified by the Client as:
SW-07
1.5L Plastic Bottle, 1L Glass Bottle & 0.5L Plastic Bottle
Sample Drawn By BVCPS: NO

Photo of the Submitted Samples



Bureau Veritas Consumer Products Services Lanka (Pvt) Ltd.

No. 570, Galle Road, Kumbura, Morutwa, Sri Lanka
Tel: (9411) 2550113-115 (dedicated lines), Fax: (9411) 112622198 & 199
Email: bvps.lanka@bureauveritas.com

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TEST REPORT



Report No: (7422)334-0401

Dec 14, 2022

Page 2 of 2

TEST RESULTS

No.	Parameters	Results	LOQ	Unit	Test Method
1	Free Ammonia (as NH ₃)*	ND	0.02	mg/L	SLS 614 Appendix A: 2013
2	Biological Oxygen Demand (BOD ₅) @ 20°C	2	-	mg/L	APHA 23rd ed: 2017 : 5210D
3	Total Suspended Solids (TSS)	8	-	mg/L	APHA 23rd ed: 2017 : 2540D
4	Salinity*	36	-	‰	Salinity-Refractometer
5	Nitrate (as NO ₃ -)*	0.4	-	mg/L	APHA 23rd ed: 2017: 4500 -NO ₃ - B
6	Oil & Grease	ND	2.0	mg/L	APHA 23rd ed: 2017 :5520B
7	Arsenic (as As)	ND	0.001	mg/L	CPSD-AN-00581: 2019 V15 by ICP-MS
8	Copper (as Cu)	ND	0.001	mg/L	
9	Nickel (as Ni)	ND	0.001	mg/L	
10	Cadmium (as Cd)	ND	0.0001	mg/L	
11	Total Chromium (as Cr)	ND	0.001	mg/L	
12	Lead (as Pb)	ND	0.001	mg/L	
13	Mercury (as Hg)	ND	0.00005	mg/L	
14	Zinc (as Zn)	ND	0.001	mg/L	

*Test not covered ISO 17025: 2017 by Sri Lanka Accreditation Board for conformity assessment.

NOTE:

APHA: American Public Health Association, ND: Not Detected,

LOQ: Limit of Quantification, µm: micrometer,

mg/l: milligrams per liter, ‰: Parts per thousand.

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REVIEWED BY: SHASHI MANOJ

BUREAU VERITAS CONSUMER PRODUCTS SERVICES LANKA (PVT) LTD.
AUTHORIZED SIGNATORY

APPROVED BY: 
RUWANI AMARASINGHE
ASSISTANT MANAGER –
FOOD & MICROBIOLOGY LABORATORY

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15. Temperature, Salinity, TDS and Fecal Coliform test results need to be provided for the groundwater quality assessments as per the approved ToR

Response: Results of groundwater assessment are given below:

Mole Water & Sewerage Company Pvt Ltd
Water Quality Assurance Laboratory
 10/10/2019, 10:45:00 AM, 10/10/2019, 10:45:00 AM, 10/10/2019, 10:45:00 AM

elaci **APQC**

WATER QUALITY TEST REPORT
 Report No: 0070000

Customer Information:
 A/c No: 10000000000000000000
 00000000

Report Date: 07/10/2019
 Test/Revision/Date: 00700000
 Date of Analysis: 07/10/2019 - 07/10/2019

Sample Description	0000	0001	0001	TEST METHOD	UNIT
Sample Type	Ground Water	Ground Water	Ground Water		
Sample No	00000000	00000000	00000000		
Sampled Date	07/10/2019 00:00	07/10/2019 00:00	07/10/2019 00:00		
ANALYSIS RESULT					
Physical Appearance	Clear & light blue	Clear & light blue	Clear & light blue		
Chloride	60	61	61	in mg/l (as Cl ⁻) (by titrimetric method)	mg/l
Total Hardness	110	110	110	as CaCO ₃ (by titrimetric method)	mg/l
Total Solids	100	100	100	by gravimetric method	mg/l
Calcium	50	50	50	by titrimetric method	mg/l
Magnesium	50	50	50	by titrimetric method	mg/l
Dissolved Oxygen (DO)	8.5	8.5	8.5	by DO meter (DO/DO2)	mg/l
Dissolved Oxygen (DO) (BOD)	0	0	0	by DO meter (DO/DO2)	mg/l
Dissolved Oxygen (DO) (BOD)	0	0	0	by DO meter (DO/DO2)	mg/l
Total Coliforms	10000000000000000000	10000000000000000000	10000000000000000000	by membrane filtration	CFU/100ml

Notes: **mg/L**, **µg/L** or **ppm** (1 µg/L = 0.001 mg/L)

Checked by: **Shankar, S**
 Assistant Quality Manager

Approved by: **Shankar, S**
 Assistant Quality Manager

Notes:
 Sampling Authority: Sampled on-site by WQA Laboratory.
 This report shall be valid only if used within approval of WQA.
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Page 1 of 2

Mole Water & Sewerage Company Pvt Ltd
Water Quality Assurance Laboratory
 10/10/2019, 10:45:00 AM, 10/10/2019, 10:45:00 AM, 10/10/2019, 10:45:00 AM

elaci **APQC**

WATER QUALITY TEST REPORT
 Report No: 0070000

Customer Information:
 A/c No: 10000000000000000000
 00000000

Report Date: 07/10/2019
 Test/Revision/Date: 00700000
 Date of Analysis: 07/10/2019 - 07/10/2019

Sample Description	0000	0001	0001	TEST METHOD	UNIT
Sample Type	Ground Water	Ground Water	Ground Water		
Sample No	00000000	00000000	00000000		
Sampled Date	07/10/2019 00:00	07/10/2019 00:00	07/10/2019 00:00		
ANALYSIS RESULT					
Physical Appearance	Clear & light blue	Clear & light blue	Clear & light blue		
Chloride	60	61	61	in mg/l (as Cl ⁻) (by titrimetric method)	mg/l
Total Hardness	110	110	110	as CaCO ₃ (by titrimetric method)	mg/l
Total Solids	100	100	100	by gravimetric method	mg/l
Calcium	50	50	50	by titrimetric method	mg/l
Magnesium	50	50	50	by titrimetric method	mg/l
Dissolved Oxygen (DO)	8.5	8.5	8.5	by DO meter (DO/DO2)	mg/l
Dissolved Oxygen (DO) (BOD)	0	0	0	by DO meter (DO/DO2)	mg/l
Dissolved Oxygen (DO) (BOD)	0	0	0	by DO meter (DO/DO2)	mg/l
Total Coliforms	10000000000000000000	10000000000000000000	10000000000000000000	by membrane filtration	CFU/100ml

Notes: **mg/L**, **µg/L** or **ppm** (1 µg/L = 0.001 mg/L)

Checked by: **Shankar, S**
 Assistant Quality Manager

Approved by: **Shankar, S**
 Assistant Quality Manager

Notes:
 Sampling Authority: Sampled on-site by WQA Laboratory.
 This report shall be valid only if used within approval of WQA.
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Page 1 of 2

16. Need to consult with URA and need to provide how the issues/concerns highlighted by HDC will be addressed by the proponent.

Response: On 13th February meeting with URA was held at the URA office details are presented below:

Meeting venue: URA meeting room MECCT
Time 10:00-11:00
Date 13th February 2023

Meeting attendees

- 1-Mr. Ali Mishal (Engineer)
- 2- Ms. Fizna Yoosuf
- 3- Mr. Sonel Beken (Project Manager EPC contractor)
- 4- Dr. Mahmood Riyaz (EIA Consultant)

Discussions

The EIA consultant gave a briefing about the project and the STP plant, and discussed about the sludge production and management that has been considered. Mr. Sonel and the consultant provided the description of the STP plant and various chamber in the plant including the oil traps within the system. The meeting agreed as per the process to submit the detail design and the specifications to be shared after the EIA decision note during the applications process for the approval of the STP. They also said that if the effluent that is disposed is within the standard specified by the URA it will be alright. The consultant assured that the effluent will be well below the specified standard. They also suggested that the dried sludge can be used as a fertilizer to grow non-edible plant particularly for landscaping of the site.

Mr. Mishal also indicated that temporary operational license for the STP should be obtained after the installation of the treatment plant. Also he advised obtain operational license for the backup generator for the system which is required to be installed with each STP plant.

Conclusions

The overall conclusion of the meeting is that URA has no issue with the installation of the STP plant, provided that existing processes should be followed and the necessary permissions should be obtained from the government authorities.

As for the HDC request to share the detail designs and methodology statement. The proponent will submit the details design and methodology statement with HDC as per the request.

17. Cost of mitigation measures need to be provided in numerical figures.

Response: Mitigation costs are given in the table below

Impact	Reversibility	Significance	Mitigation cost (MRV)
Excavation; will generate dust and other air pollutants, reducing the overall air quality of the site release of minor amount of Greenhouse Gas emissions (GHGs).	Reversible over short-medium time frame	low-medium cumulative, direct impact and short-term	10,000-15,000

Laying the sewage outfall pipe on the reef - direct irreversible minor negative impact to the ecological habitat in the area and lethal impact on sessile benthic organisms on in the area	Direct irreversible	minor negative site specific particularly for coral reef habitats and marine fauna and flora	15,000-20,000
Dewatering: Direct and short-term as rainfall recharges those saline groundwater zones.	Reversible short term	Small and negligible.	5,000

18. Need to include marine environment monitoring in the monitoring program. Also, need to provide monitoring report submission frequency.

Response: Below please find marine environment monitoring in the monitoring program the Monitoring report submission frequency is quarterly by PMU

Activity	Location	Parameters to be Monitored	Means of Monitoring	Frequency	Implementation Responsibility
Construction and Operational Stage					
Marine water quality monitoring	Pre-identified sampling locations at the northern and southern sides of the construction site (same sampling points as used during baseline data gathering).	BOD, DO, TSS, Oil and Grease, Fecal Coliform	Marine water samples.	Once every quarter	DBO Contractor to implement monitoring activity (PMU to check compliance)
Coral reef survey	M8, M9 & M10, same locations used for pre-construction baseline assessment	Benthic cover, status of coral reef, fish census	Underwater photo quadrat surveys	Once every quarter	DBO Contractor to implement monitoring activity (PMU to check compliance)
