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Contract No. 13/WSD/17

Design, Build and Operate First Stage of Tseung Kwan O Desalination Plant

Quarterly EM&A Report No.10
(Period from 1 June to 31 August 2022)

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Date:	30 December 2022	30 December 2022

ANEWR

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New Works Branch
Consultants Management Division
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Your reference:

Our reference: HKWSD202/50/108523

Date: 4 January 2023

Attention: Mr Sam Hui/ Mr H L Lai

BY EMAIL & POST
(email: wl_hui@wsd.gov.hk/
jack_hl_lai@wsd.gov.hk)

Dear Sirs

Agreement No. CE 5/2019 (EP)
Independent Environmental Checker for First Stage of
Tseung Kwan O Desalination Plant– Investigation
Verification of Quarterly EM&A Report No.10 (June 2022 – August 2022)

We refer to emails of 29 November, 30 December 2022 and 4 January 2023 attaching Quarterly EM&A Report No.10 (June 2022 – August 2022) for the captioned project prepared by the ET.

We have no further comments and hereby verify the captioned report.

Should you have any queries regarding the above, please do not hesitate to contact the undersigned on 2618 2831.

Yours faithfully
ANEWR CONSULTING LIMITED

Louis Kwan
Independent Environmental Checker

KSYL/lsmt

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EXECUTIVE SUMMARY

INTRODUCTION

A1. The Project, Design, Build and Operate First Stage of Tseung Kwan O Desalination Plant (TKODP), is a Designated Project under the Environmental Impact Assessment Ordinance (Cap. 499) (EIAO) and is currently governed by a Further Environmental Permit (EP No. FEP – 01/503/2015/A) for the construction and operation of the Contract.

A2. In accordance with the Environmental Monitoring and Audit (EM&A) Manual for the Contract, EM&A works for marine water quality, noise, waste management and ecology should be carried out by Environmental Team (ET), Acuity Sustainability Consulting Limited (ASCL), during the construction phase of the Contract.

A3. This is the 10th Quarterly EM&A Report, prepared by ASCL, for the Contract summarizing the monitoring results and audit findings of the EM&A programme at and around Tseung Kwan O Area 137 (TKO 137) during the reporting period from 1 June to 31 August 2022.

A4. The EM&A programme for this contract has covered environmental monitoring on construction noise level at selected NSRs and Contractor's environmental performance auditing in the aspects of construction dust, construction noise, water quality, waste management, Landscape and Visual and Ecology.

SUMMARY OF MAIN WORKS UNDERTAKEN & KEY MITIGATION MEASURES IMPLEMENTED

A5. Key activities carried out in this reporting period for the Project included the followings:

ActiDAFF
- Underground utility (UU) Construction Work
- Water proofing work on roof of Cartridge Filter Plant Room and Construction of kiosk and installation of louvre
- Construction of Side Tanks No. 5 - 8
- Installation of GRP Casts in Media Chambers co. 9 - 16

CLP 132kV Substation
- Underground utility (UU) Construction Work
- Construction of temporary emergency vehicular access (eva)

On-Site Chlorine Generation Building (OSCG Bldg)
- Internal finishing work
- Water tightness test of water tank & flat roof

CO_2 Tank Area
- Internal finishing work

Administration Building
- Construction of parapet and internal finishes at G/F, 1/F and 2/F
- Installation of hoarding on 2/F
- Construction of 3/F to 4/F walls and columns
- Installation of curtain wall supports

Inspection corridor
- Construction of stair tower and Steel fixing works for segment 6 and segment 4
- Construction of columns and beams of FT-5, FT6, FT7 and FT-8

Post Treatment Building (PTB)
- Construction of Sludge thickener, Post Treatment Building
- Water tightness test of water tank & flat roof

Product Water Storage Tank (PWST)
- Underground utility (UU) Construction Work
- Carbon steel pipe installation Work
- Design for Manufacturing and Assembly (DfMA) installation at PWST South side
- Water tightness test of water tank & flat roof

Chemical Building
- Underground utility (UU) Construction Work
- Water proofing work on roof
- Carrying out of Finishing works in the Plant Room

Reverse Osmosis (RO) Building
- Underground utility (UU) Construction Work
- Staircases and internal finishing work
- DfMA installation at RO Building North side
- Water tightness test of water tank & flat roof

Main Electrical and Central Chiller Plant building (MECCP)
- Installation of louvre, metal doors and timber doors
- Water tightness test of water tank & flat roof

Outfall Shaft
- Install marine outfall structure, concreting, GRP Pipe installation, Dredging for diffuser
- Bulkhead installation at Outfall tunnel

Intake Shaft
- Levelling of formation level & install marine intake structure
- General cleaning for finial inspection and flooded by seawater at Intake tunnel

Combined Shaft
- Permanent structure construction from +4.9mPD to +15.3mPD

Pump room
- Permanent structure Wall construction from +6.8 to 14.3mPD

Open Channel

- Trench excavation and structure installation, grouting and backfill

Slope

- Excavation at slope toe and access erection, mini piles construction

EM&A Works

- Installation of building services, Lifting of steel tanks at Chemical Building
- Installation of building services at Administration Building
- Installation of building services, Lifting of lime silo, filter press and piping at PTB
- Installation of building services, mechanical equipment, steel pipe at PWST
- Installation of building services, steel pipe, Glass fiber reinforced plastics pipe pipe and lifting of electrical switchboard at RO Building
- Installation of chillers, building services and electrical switchboard at MECCP
- Scaffolding, installation of mechanical equipment and piping at ActiDAFF

A6. The major environmental impacts brought by the above construction works include:

- Construction dust and noise generation from marine construction works, excavation works, excavation works, construction works, rock cutting works and pipe pilling driving works;
- Waste generation from the construction activities
- Impact on water quality from marine construction works and inland construction works

A7. The key environmental mitigation measures implemented for the Project in this reporting period associated with the above construction works include:

- Dust suppression by regular wetting and water spraying for construction works;
- Reduction of noise from equipment and machinery on-site and regularly inspection to machinery and plants/vehicles on-site to ensure proper functioning;
- Sorting and storage of general refuse and construction waste; and
- Deployment of temporary silt curtain in the area where marine construction works were conducted and deployment of water sedimentation tanks for treatment of wastewater at inland areas before discharge

SUMMARY OF EXCEEDANCE & INVESTIGATION & FOLLOW-UP

A8. No noise monitoring was conducted during the reporting period since there are no project-related construction activities undertaken within a radius of 300m from the monitoring locations. No exceedance of the Action Level was recorded during the reporting period.

A9. The EM&A works for water quality were conducted during the reporting period in accordance with the EM&A Manual.

A10. Water quality monitoring was conducted as schedule in the reporting period. Forty -four (44) action level exceedances and twenty-five (25) limit level exceedances for suspended solids (SS) of impact water quality monitoring were recorded in the reporting period. All action and limit level exceedances were concluded non-project related.

A11. As commented by EPD on the determination of action and limit level exceedance for water quality monitoring, the monitoring result is considered as exceedance if it exceeds either the 95%-ile of baseline data or 20% exceedance of value at any impact station compared with corresponding data from control station.

A12. In view of that all water quality monitoring result from March 2021 to August 2022 were reviewed using the above-mentioned determination method to reassess the number of action and limit level exceedances since the commencement of water quality monitoring.

A13. Total one thousand one hundred and sixty-nine (1169) action level exceedances and five hundred and sixty-two (562) limit level exceedances for turbidity were recorded during mid flood tide since the commencement of the water quality monitoring and one thousand two hundred and thirty-seven (1237) action level exceedances, and six hundred and five (605) limit level exceedances for turbidity were recorded during mid ebb tide since the commencement of the water quality monitoring. Whenever a data exceedance occurred, remeasurement at the same monitoring location was immediately conducted. Fortunately, no average turbidity data exceedances have ever been identified after such remeasurement.

A14. Total six hundred and ninety-seven (697) action level exceedances and five hundred and sixteen (516) limit level exceedances for suspended solids were recorded during mid flood tide since the commencement of the water quality monitoring and eight hundred and sixteen (816) action level exceedances and six hundred and ten (610) limit level exceedances for suspended solids were recorded during mid ebb tide since the commencement of the water quality monitoring.

A15. In this reporting period, 104 times of landfill gas monitoring were recorded at Wan Po Road (Ch1+513 – Ch1+625). No action and limit level exceedance for methane, oxygen and carbon dioxide was recorded.

A16. Weekly site inspections of the construction works were also carried out by ET to audit the mitigation measures implementation status. Thirteen (13) times of weekly Joint site inspections were carried out by ET and IEC.

A17. A summary of the EM&A activities in this reporting period is listed in **Table I** and summary of the environmental exceedance of the reporting period is tabulated in **Table II**.

Table I Summary Table for EM&A Activities in the Reporting Period

EM&A Activities	June 2022	July 2022	August 2022
Noise Monitoring	N/A	N/A	N/A
Water Quality Monitoring	2, 4, 7, 9, 11, 13, 15, 17 20, 22, 24, 28 and 30 Jun 2022	5, 7, 9, 12, 14, 16, 19, 21, 23, 26, 28 and 30 Jul 2022	2, 4, 6, 9, 11, 13, 15, 17, 21, 23, 27 and 30 Aug 2022
Landfill Gas monitoring	N/A	2, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15, 16, 18, 19, 20, 21, 22, 23, 25, 26, 27, 28, 29 and 30 Jul 2022	1, 2, 3, 4, 5, 6, 8, 9, 10, 11, 12, 13, 15, 16, 17, 18, 19, 20, 22, 23, 24, 25, 26, 27, 29, 30 and 31 Aug 2022
Environmental Site Inspection	7, 14, 21 and 28 Jun 2022	5, 12, 19 and 29 Jul 2022	2, 9, 16, 23 and 31 Aug 2022

Table II Summary Table for Exceedance in the Reporting Period

Environmental Monitoring	Parameter	No. of non-Project related exceedance		Total No. of non-Project related exceedance	No. of Project related exceedance		Total No. of Project related exceedance
		AL	LL		AL	LL	
Noise	$L_{eq\ (30min)}$	N/A	N/A	N/A	N/A	N/A	N/A
Water	DO	0	0	0	0	0	0
	Turbidity	0	0	0	0	0	0
	SS	44	25	69	0	0	0
	pH	0	0	0	0	0	0
	Salinity	0	0	0	0	0	0
Landfill Gas	O_2	0	0	0	0	0	0
	CH_4	0	0	0	0	0	0
	CO_2	0	0	0	0	0	0

COMPLAINT HANDLING AND PROSECUTION

A18. One environmental complaint was received from the EPD in the reporting period, no notifications of summons and prosecution was received during the reporting period.

REPORTING CHANGE

A19. There was no change to be reported that may affect the on-going EM&A programme.

1. BASIC PROJECT INFORMATION

1.1. BACKGROUND

The Acciona Agua, S.A. Trading, Jardine Engineering Corporation Limited and China State Construction Engineering (Hong Kong) Limited and as AJC Joint Venture (AJCJV) is contracted to carry out the Design, Build and Operate First Stage of Tseung Kwan O Desalination Plant (DPTKO) under Contract No. 13/WSD/17 (the Contract).

Acuity Sustainability Consulting Limited (ASCL) is commissioned by AJCJV to undertake the Environmental Team (ET) services as required and/or implied, both explicitly and implicitly, in the Environmental Permit (EP), Environmental Impact Assessment Report (EIA Report) (Register No. AEIAR-192/2015) and Environmental Monitoring and Audit Manual (EM&A Manual) for the Contract; and to carry out the Environmental Monitoring and Audit (EM&A) programme in fulfillment of the EIA Report's EM&A requirements and Contract No. 13/WSD/17 Specification requirements.

Pursuant to the Environmental Impact Assessment Ordinance (EIAO), the Director of Environmental Protection granted the Environmental Permit (No. EP-01/503/2015) and Variation of Environmental Permit (No. EP-01/503/2015/A) to Water Supplies Department (WSD); and granted the Further Environmental Permit (No. FEP-01/503/2015/A) to AJCJV for the Contract.

1.2. THE REPORTING SCOPE

This is the 10th Quarterly EM&A Report for the Project which summarizes the key findings of the EM&A programme during the reporting period from 1 June 2022 to 31 August 2022.

1.3. PROJECT ORGANIZATION

The Project Organization structure for Construction Phase is presented in **Figure 1.1**.

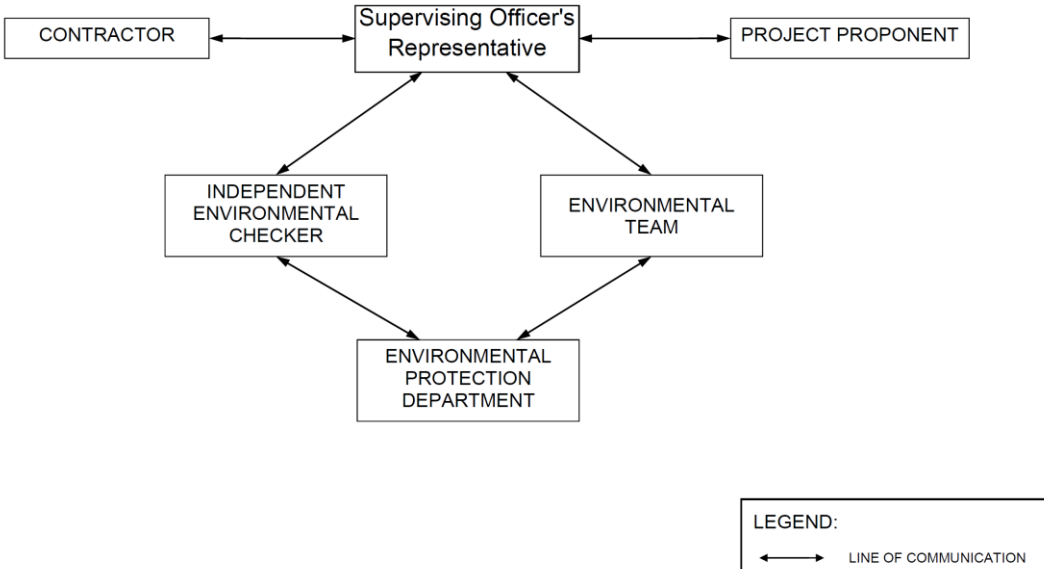

Figure 1.1 Project Organization Chart

Contact details of the key personnel are presented in **Table 1.1** below:

Table 1.1 Contact Details of Key Personnel

Party	Position	Name	Telephone no.
Project Proponent	SE/CM2	Benny Lam	2634-3573
Supervising Officer (Binnies Hong Kong Limited)	Project Manager	Christina Ko	2608-7302
	Chief Resident Engineer	Roger Wu	6343-1002
The Jardine Engineering Corporation, Limited, China State Construction Engineering (Hong Kong) Limited and Acciona Agua, S.A. Trading	Project Manager	Stephen Yeung	2807-4665
	Environmental Monitoring Manager	Brian Kam	9456-9541
Acuity Sustainability Consulting Limited	Environmental Team Leader	Jacky Leung	2698-6833
ANewR Consulting Limited	Independent Environmental Checker (IEC)	Louis Kwan	2618-2831

1.4. SUMMARY OF CONSTRUCTION WORKS

Details of the major construction activities undertaken in this reporting period are shown as below. The construction programme is presented in **Appendix A**.

ActiDAFF

- Underground utility (UU) Construction Work
- Water proofing work on roof of Cartridge Filter Plant Room and Construction of kiosk and installation of louvre
- Construction of Side Tanks No. 5 - 8
- Installation of GRP Casts in Media Chambers co. 9 - 16

CLP 132kV Substation

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- Internal finishing work
- Water tightness test of water tank & flat roof

CO_2 Tank Area

- Internal finishing work

Administration Building

- Construction of parapet and internal finishes at G/F, 1/F and 2/F
- Installation of hoarding on 2/F
- Construction of 3/F to 4/F walls and columns
- Installation of curtain wall supports

Inspection corridor

- Construction of stair tower and Steel fixing works for segment 6 and segment 4
- Construction of columns and beams of FT-5, FT6, FT7 and FT-8

Post Treatment Building (PTB)

- Construction of Sludge thickener, Post Treatment Building
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- Water tightness test of water tank & flat roof

Main Electrical and Central Chiller Plant building (MECCP)

- Installation of louvre, metal doors and timber doors
- Water tightness test of water tank & flat roof

Outfall Shaft

- Install marine outfall structure, concreting, GRP Pipe installation, Dredging for diffuser
- Bulkhead installation at Outfall tunnel

Intake Shaft

- Levelling of formation level & install marine intake structure
- General cleaning for finial inspection and flooded by seawater at Intake tunnel

Combined Shaft

- Permanent structure construction from +4.9mPD to +15.3mPD

Pump room

- Permanent structure Wall construction from +6.8 to 14.3mPD

Open Channel

- Trench excavation and structure installation, grouting and backfill

Slope

- Excavation at slope toe and access erection, mini piles construction

EM&A Works

- Installation of building services, Lifting of steel tanks at Chemical Building
- Installation of building services at Administration Building
- Installation of building services, Lifting of lime silo, filter press and piping at PTB
- Installation of building services, mechanical equipment, steel pipe at PWST
- Installation of building services, steel pipe, Glass fiber reinforced plastics pipe pipe and lifting of electrical switchboard at RO Building
- Installation of chillers, building services and electrical switchboard at MECCP
- Scaffolding, installation of mechanical equipment and piping at ActiDAFF

1.5. SUMMARY OF ENVIRONMENTAL STATUS

A summary of the valid permits, licences, and /or notifications on environmental protection for this Project is presented in **Table 1.2**.

Table 1.2 Summary of the Status of Valid Environmental Licence, Notification, Permit and Documentations

Permit/ Licenses/ Notification	Reference	Validity Period
Environmental Permit	FEP – 01/503/2015/A	Throughout the Contract
Notification of Construction Works under the Air Pollution Control (Construction Dust) Regulation (Form NA)	Ref. No.: 451539	-
Billing Account for Disposal of Construction Waste	7036276	Throughout the Contract
Chemical Waste Producer Registration	5213-839-A2987-01	Throughout the Contract
Wastewater Discharge Licence (Land and Marine works)	WT00035775-2020	24/07/2020 - 31/07/2025
Construction Noise Permit for general works, TBM at combined shaft and marine works	GW-RE0337-22	01/05/2022 – 31/10/2022
	GW-RE0627-22	29/06/2022 – 21/12/2022

The status for all environmental aspects is presented in **Table 1.3**.

Table 1.3 Summary of Status for Key Environmental Aspects under the EM&A Manual

Parameters	Status
Water Quality	
Baseline Monitoring under EM&A Manual	The baseline water quality monitoring was conducted between 12 May 2020 and 6 June 2020
Impact Monitoring	On-going
Noise	
Baseline Monitoring	The baseline noise monitoring result has been reported in Baseline Monitoring Report and submitted to EPD under EP Condition 3.4
Impact Monitoring	On-going
Waste Management	
Mitigation Measures in Waste Management Plan	On-going
Landfill Gas	
Regular Monitoring when Construction Works are within the 250m Consultation Zone	In this reporting period, 104 times of landfill gas monitoring were recorded at Wan Po Road (Ch1+360 – Ch1+513). No exceedance of action and limit level for methane, oxygen and carbon dioxide was observed.
Environmental Audit	
Site Inspection covering Measures of Air Quality, Noise Impact, Water Quality, Waste, Ecological Quality, Fisheries, Landscape and Visual	On-going

Other than the EM&A work by ET, environmental briefings, trainings and regular environmental management meetings were conducted, in order to enhance environmental awareness and closely monitor the environmental performance of the contractors.

The EM&A programme has been implemented in accordance with the recommendations presented in the approved EIA Report and the EM&A Manual. A summary of implementation status of the environmental mitigation measures for the construction phase of the Project during the reporting period is provided in **Appendix C**.

2. NOISE

2.1. MONITORING REQUIREMENTS

To ensure no adverse noise impact, construction noise monitoring is recommended to be carried out within 300m radius from the nearby noise sensitive receivers (NSRs), during construction phase. The NSRs selected as monitoring station are (i) NSR4 – Creative Secondary School, (ii) NSR24 – PLK Laws Foundation College, and (iii) NSR31 – School of Continuing and Professional Studies – CUHK respectively.

No impact construction noise monitoring was conducted in the reporting period due to the overly distant monitoring station from the works location, where they were farther than 1 km from the closet monitoring station NSR4 to the works location.

2.2. MONITORING PARAMETERS, FREQUENCY AND DURATION

Construction noise level would be measured in terms of the A-weighted equivalent continuous sound pressure level (LAeq). Leq_{30min} was used as the monitoring parameter for the time period between 0700 and 1900 on normal weekdays. **Table 2.1** summarizes the monitoring parameters, frequency and duration of the impact noise monitoring.

Table 2.1 Noise Monitoring Parameters, Time, Frequency and Duration

Time	Duration	Interval	Parameters
Daytime: 0700-1900	Day time: 0700-1900 (during normal weekdays)	Continuously in $L_{eq\ 5min}$/$L_{eq\ 30min}$ (average of 6 consecutive $L_{eq\ 5min}$)	$L_{eq\ 30min}$ $L_{10\ 30min}$ & $L_{90\ 30min}$

2.3. MONITORING LOCATIONS

The monitoring locations should normally be made at a point 1m from the exterior of the NSRs building façade and be at a position 1.2m above the ground. A correction of +3dB(A) should be made to the free-field measurements.

According to the environmental findings detailed in the EIA report and Baseline Monitoring Report, the designated locations for the construction noise monitoring are listed in **Table 2.2** below.

Table 2.2 Noise Sensitive Receivers

NSR ID	Noise Sensitive Receivers	Monitoring Location	Position
NSR 4	Creative Secondary School	Roof Floor	1 m from facade
NSR 24	PLK Laws Foundation College	Pedestrian Road on Ground Floor	Free-field
NSR 31	School of Continuing and Professional Studies - CUHK	Roof Floor	1 m from facade

The monitoring locations should normally be made at a point 1m from the exterior of the NSRs building façade and be at a position 1.2m above the ground. A correction of +3dB(A) should be made to the free-field measurements. Three noise monitoring locations for impact monitoring at the nearby sensitive receivers are shown in **Figure 2.1-2.3**.

Figure 2.1 NSR4 Creative Secondary School

Figure 2.2 NSR24 PLK Laws Foundation College

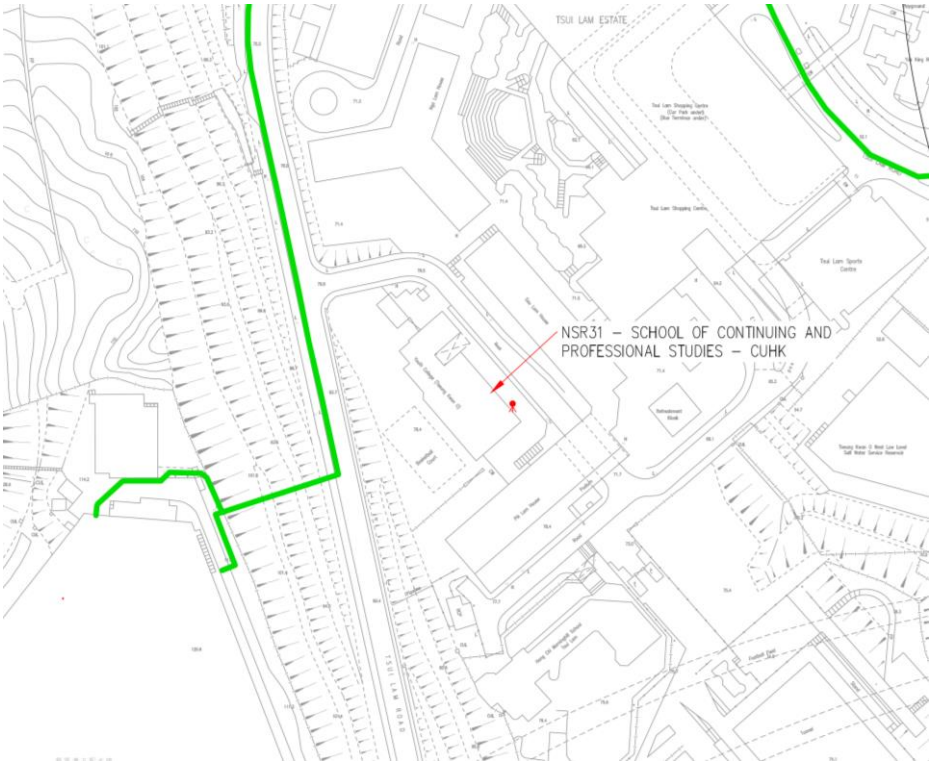


Figure 2.3 NSR31 School of Continuing and Professional Studies - CUHK

2.4. ACTION AND LIMIT LEVELS

The Action/Limit Levels are in line with the criteria of Practice Note for Professional Persons (ProPECC PN 2/93) "Noise from Construction Activities – Non-statutory Controls" and Technical Memorandum on Environmental Impact Assessment Process issued by HKSAR Environmental Protection Department ["EPD"] under the Environmental Impact Assessment Ordinance, Cap 499, S.16 are presented in **Table 2.3**.

Table 2.3 Action and Limit Levels for Construction Noise Monitoring per EM&A Manual

Time Period	Action Level	Limit Level (dB(A))
0700-1900 on normal weekdays	When one documented complaint is received from any one of the noise sensitive receivers	• 70 dB(A) for school and • 65 dB(A) during examination period

Notes: Limits specified in the GW-TM and IND-TM for construction and operation noise, respectively.

If exceedances were found during noise monitoring, the actions in accordance with the Event and Action Plan shall be carried out according to **Appendix E**.

2.5. MONITORING RESULTS AND OBSERVATIONS

Referring to EM&A manual Section 4.1.2, the impact noise monitoring should be carried out when there are project-related construction activities undertaken within a radius of 300m from the monitoring stations. No noise monitoring station was located within a radius of 300m of the Project site as shown in **Figure 2.4**, no impact monitoring for noise impact was conducted in the reporting period.

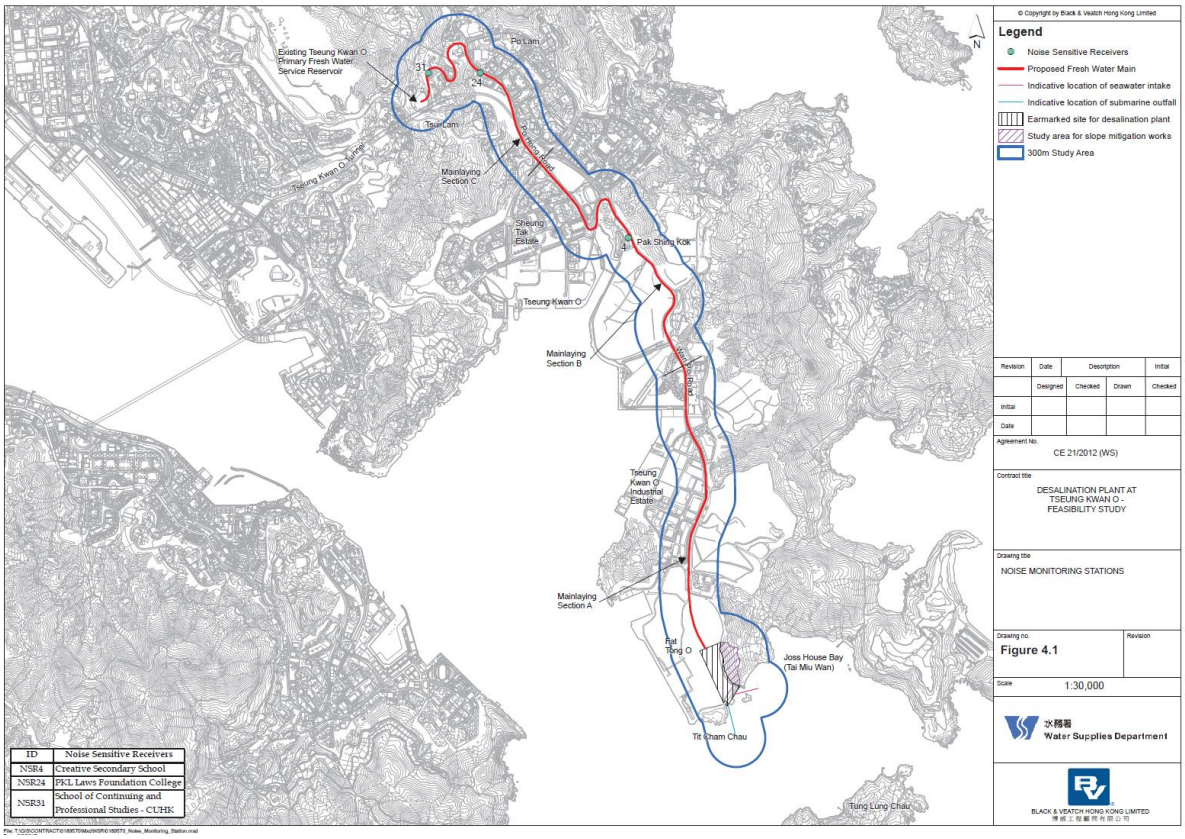


Figure 2.4 Site Layout Plan with Noise Sensitive Receivers and Desalination Plant

3. WATER QUALITY

In accordance with the recommendations of the EIA, water quality monitoring is required during dredging for the submarine pipelines and, during operation phase. In addition, baseline water quality monitoring was conducted prior to the commencement of marine construction activities.

The following Section provides details of the water quality monitoring to be undertaken by the Environmental Team (ET) to verify the distance of sediment and brine plume dispersion and to identify whether the potential exists for any indirect impacts to occur to ecological sensitive receivers. The water quality monitoring programme was carried out to allow any deteriorating water quality to be readily detected and timely action taken to rectify the situation.

Water quality monitoring for the Project can be divided into the following stages:

- Dredging activities during construction phase;
- Discharge of effluent from main disinfection during construction phase;
- Operation phase – first year upon commissioning; and,
- Continuous monitoring of effluent quality.

3.1. WATER QUALITY PARAMETERS

The parameters that have been selected for measurement in situ and in the laboratory are those that were either determined in the EIA to be those with the most potential to be affected by the construction works or are a standard check on water quality conditions. Parameters measured in the impact monitoring are listed in **Table 3.1**

Table 3.1 Parameters measured in the impact marine water quality monitoring

Parameters	Unit	Abbreviation
In-situ measurements		
Dissolved oxygen	mg/L	DO
Temperature	^{o}C	-
pH	-	-
Turbidity	NTU	-
Salinity	$^{0}/_{00}$	-
Laboratory measurements		
Suspended Solids	mg/L	SS

In addition to the water quality parameters, other relevant data were measured and recorded in Water Quality Monitoring Logs, including the location of the sampling stations, water depth, time, weather conditions, sea conditions, tidal stage, current direction and velocity, special phenomena and work activities undertaken around the monitoring and works area that may influence the monitoring results.

3.2. MONITORING LOCATIONS

The impact water quality monitoring locations are detailed in **Table 3.2** and shown in **Figure 3.1** below.

Table 3.2 Location of Impact Water Quality Monitoring Station

Station	Easting	Northing	Description
CE	843550	815243	Upstream control station at ebb tide
CF	846843	810193	Upstream control station at flood tide
WSR1	846864	812014	Ecological sensitive receiver at Tung Lung Chau
WSR2	847645	812993	Fisheries sensitive receiver at Tung Lung Chau
WSR3	848023	813262	Ecological sensitive receiver at Tung Lung Chau
WSR4	847886	814154	Ecological sensitive receiver at Tai Miu Wan
WSR16	845039	815287	Ecological sensitive receiver at Fat Tong Chau
WSR33	847159	814488	Ecological sensitive receiver at Tai Miu Wan
WSR36	846878	814081	Ecological sensitive receiver at Kwun Tsai
WSR37	846655	813810	Ecological sensitive receiver at Tit Cham Chau
NF1	846542	813614	Edge of mixing zone, ~ 200m west of outfall diffuser
NF2	846942	813614	Edge of mixing zone, ~ 200m east of outfall diffuser
NF3	846742	813414	Edge of mixing zone, ~ 200m south of outfall diffuser

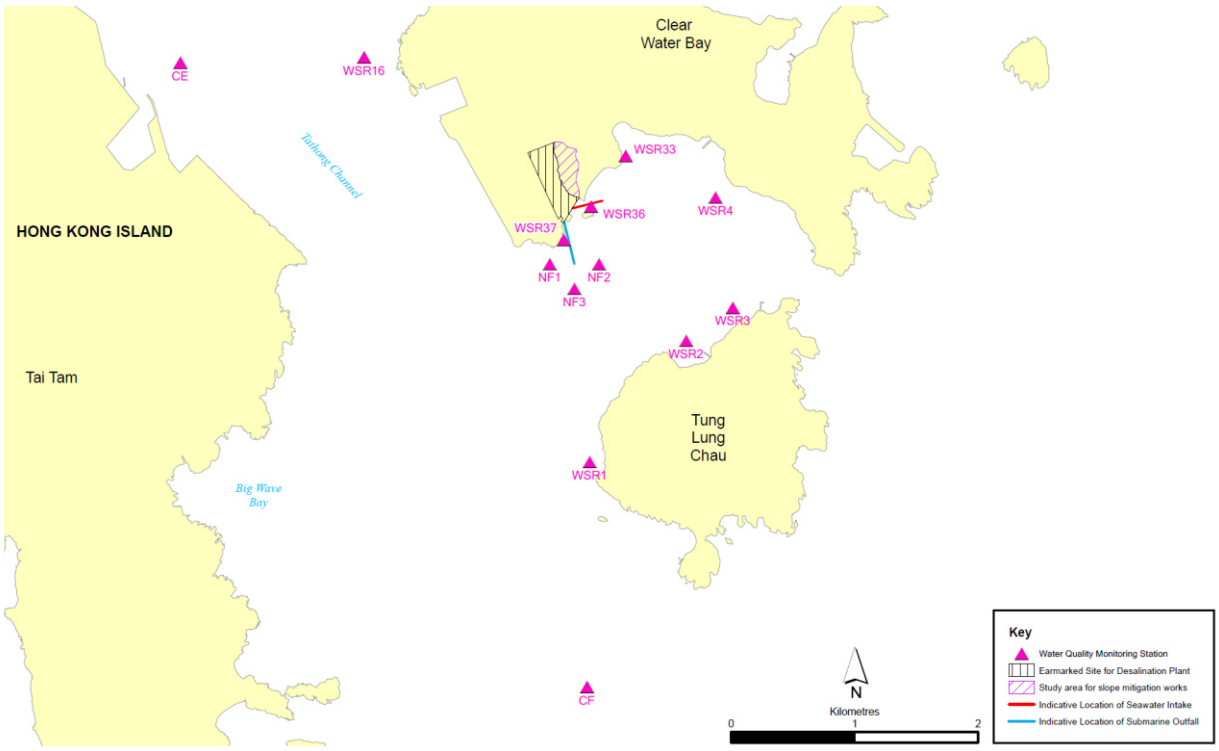


Figure 3.1 Impact Water Quality Monitoring Locations under EM&A Manual

3.3. Monitoring Equipment, Methodology and QA/QC Procedures

The monitoring methodology, equipment used, and QA/QC procedures could be referring to Section 3.1.2 -3.1.4, 3.1.6-3.1.7 and 3.2 of the Monthly EM&A Report.

3.4. Action and Limit Levels

The Action and Limit Levels have been set based on the derivation criteria specified in the EM&A Manual and based on the baseline water quality monitoring data and the derivation criteria, the Action/Limit Levels have been derived and are presented in **Table 3.3**.

Table 3.3 Derived Action and Limit Levels for Water Quality

Parameters	Action	Limit
Construction Phase Impact Monitoring		
DO in mg/L	Surface and Middle 7.30 mg L^{-1} Bottom 7.31 mg L^{-1} Tung Lung Chau Fish Culture Zone 5.1 mgL^{-1} or level at control station (Whichever the lower)	Surface and Middle 4 mg L^{-1} Bottom 2 mg L^{-1} Tung Lung Chau Fish Culture Zone 5.0 mgL^{-1} or level at control station (Whichever the lower)
SS in mg/L (Depth-averaged)	5.00 mg L^{-1} or 20% exceedance of value at any impact station compared with corresponding data from control station	6.00 mg L^{-1} or 30% exceedance of value at any impact station compared with corresponding data from control station
Turbidity in NTU (Depth-averaged)	2.41 NTU or 20% exceedance of value at any impact station compared with corresponding data from control station	2.84 NTU or 30% exceedance of value at any impact station compared with corresponding data from control station

Notes:
i. "Depth-averaged" is calculated by taking the arithmetic means of reading of all three depths.
ii. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
iii. For Turbidity, SS, iron and Salinity, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.

3.5. Monitoring Results and Observations

General water quality monitoring at the ten monitoring stations (CE, CF, WSR1, WSR2, WSR3, WSR4, WSR16, WSR33, WSR36 and WSR37) were conducted as schedule in the reporting month.

Forty -four (44) of the general water quality monitoring results of suspended solids (SS) obtained had exceeded the Action Level. Twenty-five (25) of the general water quality monitoring results of SS obtained during the reporting quarter had exceeded the Limit Level.

Investigation on the reason of exceedance has been carried out, where the exceedances of SS were concluded to be unrelated to the project. Details of the instigation could be referring to Monthly EM&A Report **Appendix O**.

As commented by EPD on the determination of action and limit level exceedance for water quality monitoring, the monitoring result is considered as exceedance if it exceeds either the 95%-ile of baseline data or 20% exceedance of value at any impact station compared with corresponding data from control station.

In view of that all water quality monitoring result from March 2021 to August 2022 were reviewed using the above-mentioned determination method to reassess the number of action and limit level exceedances since the commencement of water quality monitoring.

Total one thousand one hundred and sixty-nine (1169) action level exceedances and five hundred and sixty-two (562) limit level exceedances for turbidity were recorded during mid flood tide since the commencement of the water quality monitoring and one thousand two hundred and thirty-seven (1237) action level exceedances, and six hundred and five (605) limit level exceedances for turbidity were recorded during mid ebb tide since the commencement of the water quality monitoring. Whenever a data exceedance occurred, remeasurement at the same monitoring location was immediately conducted. Fortunately, no average turbidity data exceedances have ever been identified after such remeasurement.

Total six hundred and ninety-seven (697) action level exceedances and five hundred and sixteen (516) limit level exceedances for suspended solids were recorded during mid flood tide since the commencement of the water quality monitoring and eight hundred and sixteen (816) action level exceedances and six hundred and ten (610) limit level exceedances for suspended solids were recorded during mid ebb tide since the commencement of the water quality monitoring.

Algal Bloom and red tide were observed at the marine water near CEDD pier, Outfall Shaft and Intake Shaft on 21 July 2022, 1 August 2022 by the Contractor. According to Agriculture, Fisheries and Conservation Department (AFCD) previous red tide occurrences record, five red tides were spotted in Hong Kong including Tung Lung Chau fish culture zone and Junk Bay on 21 July 2022. Also, as reported by the Contractor on 26 August 2022, silty plume was observed originated from the beach adjacent to the Country Park. No evidence shown that the silty plume was caused / related to the Project. It is concluded that the incident was non-Project related. ET will closely monitor the water quality and the implementation of water mitigation measure, to ensure no adverse impact to water quality and ecology.

AFCD Previous Red Tide Occurrences Record:
https://www.afcd.gov.hk/english/fisheries/hkredtide/update/redtide_prev_record.html

Table 3.4 Summary of Regular Impact Water Quality Monitoring Results (Mid-Flood)

Location		Parameter																				
		Salinity (ppt)			Dissolved Oxygen (mg/L)						pH			Turbidity (NTU)			Suspended Solids (mg/L)			Temp. (°C)		
					Surface & Middle			Bottom														
		Jun	Jul	Aug	Jun	Jul	Aug	Jun	Jul	Aug	Jun	Jul	Aug	Jun	Jul	Aug	Jun	Jul	Aug	Jun	Jul	Aug
CE	Avg.	31.5	30.9	30.6	9.1	9.2	8.9	9.1	9.2	8.9	8.2	8.2	8.2	3.9	3.2	3.4	3.4	3.1	3.8	26.6	28.2	28.4
	Min.	30.2	29.4	28.4	8.2	8.2	8.5	8.3	8.4	8.4	8.1	8.1	8.0	2.6	2.6	2.8	2.5	2.5	2.5	21.5	21.5	21.5
	Max	32.8	32.8	32.9	9.8	10.2	9.7	9.7	10.1	9.6	8.4	8.5	8.4	6.2	4.2	4.4	6.0	6.0	19.0	28.5	30.4	30.6
CF	Avg.	31.2	30.7	30.3	9.0	9.0	8.8	8.9	9.0	8.8	8.2	8.2	8.2	4.5	3.8	3.8	3.9	3.2	3.8	26.9	28.8	29.2
	Min.	29.6	29.4	28.1	8.1	8.5	8.2	8.1	8.6	8.4	8.1	8.1	8.0	3.1	2.9	3.0	2.5	2.5	2.5	25.2	27.7	28.6
	Max	32.5	32.4	31.7	9.7	9.6	9.7	9.7	9.5	9.6	8.4	8.4	8.3	6.6	5.0	4.8	10.0	8.0	9.0	28.2	30.4	30.1
WSR1	Avg.	31.2	30.9	30.5	9.0	9.1	9.0	9.0	9.1	9.0	8.2	8.2	8.2	3.3	2.5	2.6	3.8	3.3	3.8	27.0	28.9	29.3
	Min.	30.0	29.2	28.7	8.1	8.2	8.1	8.1	8.2	8.1	8.1	8.1	8.0	2.1	1.8	2.0	2.5	2.5	2.5	25.3	27.9	28.5
	Max	33.0	32.5	32.1	10.0	10.0	9.7	9.9	9.9	9.8	8.4	8.4	8.4	5.3	3.9	3.4	8.0	9.0	9.0	28.5	30.7	30.3
WSR2	Avg.	31.4	30.7	30.2	9.0	8.9	8.9	9.0	8.9	8.9	8.3	8.2	8.2	2.6	2.5	2.3	3.7	3.1	4.0	27.0	28.9	29.1
	Min.	30.2	29.3	28.8	8.2	8.4	8.5	8.2	8.3	8.5	8.1	8.0	8.1	1.9	1.9	1.8	2.5	2.5	2.5	25.3	27.8	28.1
	Max	32.9	32.1	32.7	9.8	9.5	9.5	9.6	9.5	9.3	8.4	8.4	8.3	4.3	3.8	3.3	9.0	6.0	9.0	28.5	30.3	30.2
WSR3	Avg.	31.3	30.8	30.5	9.1	9.1	8.9	9.1	9.1	8.9	8.2	8.2	8.2	3.1	2.6	2.7	3.4	3.4	4.5	26.8	28.8	29.2
	Min.	29.4	29.3	28.2	8.2	8.5	8.0	8.2	8.6	8.1	8.1	8.0	8.1	1.9	1.9	2.2	2.5	2.5	2.5	25.2	28.0	28.4
	Max	32.4	32.6	31.8	9.9	10.2	10.0	10.0	10.2	9.8	8.4	8.4	8.3	5.6	3.4	3.5	5.0	8.0	9.0	28.0	30.5	30.1
WSR4	Avg.	31.4	30.7	30.5	8.9	8.9	8.9	8.9	8.9	8.9	8.3	8.2	8.2	3.4	2.6	2.5	3.8	3.5	4.3	26.9	28.8	29.1
	Min.	30.0	29.5	29.2	8.3	8.4	8.2	8.4	8.4	8.2	8.1	8.1	8.1	2.2	1.9	2.0	2.5	2.5	2.5	25.2	27.6	28.2
	Max	32.6	32.3	32.3	10.0	9.7	9.5	9.9	9.5	9.4	8.4	8.3	8.4	5.4	3.5	3.5	9.0	9.0	10.0	28.7	30.8	30.6
WSR16	Avg.	31.3	30.7	30.4	9.0	9.0	9.0	9.0	9.0	9.0	8.3	8.2	8.2	3.2	2.7	2.7	3.7	3.5	3.7	27.0	28.9	29.2
	Min.	30.3	29.5	28.9	8.1	8.2	8.5	8.2	8.3	8.6	8.1	8.0	8.0	1.9	1.9	2.0	2.5	2.5	2.5	25.6	27.7	28.5
	Max	32.4	32.8	31.9	9.8	10.1	9.8	9.8	10.1	9.9	8.4	8.3	8.4	5.8	3.9	3.6	8.0	10.0	9.0	28.3	30.7	30.1
WSR33	Avg.	31.1	30.8	30.4	9.2	8.9	8.8	9.2	8.9	8.9	8.3	8.2	8.2	3.1	2.6	2.7	4.8	3.3	3.9	27.0	28.8	29.2
	Min.	29.8	28.9	28.9	8.4	8.3	8.3	8.4	8.4	8.3	8.1	8.1	8.0	2.0	1.8	2.0	2.5	2.5	2.5	25.1	27.7	28.5
	Max	32.5	32.7	32.3	10.1	9.8	9.5	9.9	9.7	9.5	8.4	8.4	8.3	5.2	3.8	3.9	35.0	8.0	8.0	28.8	30.7	30.0
WSR36	Avg.	31.3	30.8	30.4	8.9	9.1	8.9	8.9	9.1	8.9	8.2	8.2	8.2	3.1	2.5	2.8	4.3	3.3	3.6	26.9	28.8	29.1
	Min.	29.9	29.5	28.1	8.3	8.4	8.3	8.3	8.5	8.3	8.1	8.0	8.0	2.0	1.9	2.0	2.5	2.5	2.5	25.1	27.9	28.6
	Max	32.7	32.5	32.4	10.0	9.5	9.6	10.0	9.6	9.5	8.3	8.4	8.4	4.8	3.4	4.1	25.0	8.0	9.0	28.0	30.2	30.3
WSR37	Avg.	31.4	31.0	30.5	8.9	8.9	8.9	8.9	8.9	8.9	8.2	8.2	8.2	3.2	2.8	2.7	3.9	3.6	3.5	27.1	28.8	29.3
	Min.	30.4	28.9	28.2	8.3	8.4	8.4	8.3	8.4	8.4	8.1	8.0	8.0	1.9	2.1	2.1	2.5	2.5	2.5	25.6	27.8	28.3
	Max	33.0	32.9	31.8	9.9	9.6	9.6	9.9	9.6	9.7	8.4	8.4	8.4	5.2	3.7	3.7	7.0	9.0	8.0	28.6	30.7	30.6

Table 3.5 Summary of Regular Impact Water Quality Monitoring Results (Mid-Ebb)

Location		Parameter																				
		Salinity (ppt)			Dissolved Oxygen (mg/L)						pH			Turbidity (NTU)			Suspended Solids (mg/L)			Temp. (°C)		
					Surface & Middle			Bottom														
		Jun	Jul	Aug	Jun	Jul	Aug	Jun	Jul	Aug	Jun	Jul	Aug	Jun	Jul	Aug	Jun	Jul	Aug	Jun	Jul	Aug
CE	Avg.	31.3	30.7	30.8	8.9	9.1	8.9	8.9	9.1	8.9	8.2	8.2	8.2	4.4	3.8	3.8	3.7	3.8	5.4	27.0	28.8	29.2
	Min.	29.6	29.3	29.0	8.1	8.6	8.3	8.0	8.6	8.3	8.0	8.0	8.0	3.1	2.3	3.2	2.5	2.5	2.5	25.2	27.5	28.3
	Max	33.1	32.4	32.8	9.9	10.0	9.8	9.8	10.1	9.7	8.4	8.4	8.4	6.5	5.6	5.0	10.0	16.0	14.0	29.1	30.3	30.4
CF	Avg.	31.5	30.7	30.6	9.0	9.0	8.7	9.0	9.0	8.7	8.2	8.2	8.2	3.7	3.2	3.3	3.8	3.4	5.3	27.0	28.9	29.2
	Min.	30.3	29.4	28.0	8.2	8.4	8.1	8.3	8.5	8.1	8.0	8.1	8.0	2.5	2.0	2.6	2.5	2.5	2.5	25.4	27.8	28.2
	Max	33.0	32.7	31.8	9.8	10.1	9.5	9.8	10.0	9.4	8.4	8.4	8.4	5.9	4.7	4.4	7.0	9.0	14.0	29.0	30.4	30.2
WSR1	Avg.	31.4	30.8	30.6	8.7	8.9	8.8	8.7	9.0	8.9	8.2	8.2	8.2	3.1	2.6	2.6	3.9	3.4	5.1	27.0	28.8	29.2
	Min.	29.8	29.1	28.2	8.1	8.3	8.1	8.1	8.5	8.1	8.1	8.0	8.0	2.0	1.9	2.0	2.5	2.5	2.5	25.8	27.7	28.2
	Max	32.6	32.4	32.1	9.7	10.0	9.7	9.6	10.1	9.7	8.5	8.4	8.4	5.1	3.7	3.6	14.0	9.0	16.0	28.6	30.3	30.1
WSR2	Avg.	31.2	30.9	30.6	8.9	8.9	8.8	9.0	8.9	8.8	8.2	8.3	8.2	2.5	2.3	2.3	3.5	3.3	5.4	27.0	28.8	29.2
	Min.	29.6	29.5	29.2	8.2	8.2	8.1	8.2	8.2	8.0	8.1	8.0	8.0	1.8	1.5	1.8	2.5	2.5	2.5	25.8	27.9	28.3
	Max	32.9	32.1	32.2	10.2	9.9	9.5	10.1	9.6	9.4	8.4	8.4	8.4	4.8	3.6	3.9	7.0	7.0	18.0	28.6	30.4	30.3
WSR3	Avg.	31.3	30.8	30.5	8.9	8.9	8.7	8.9	8.9	8.7	8.2	8.2	8.2	3.2	2.7	2.6	3.8	3.1	5.3	27.0	28.8	29.2
	Min.	30.3	29.6	29.2	8.0	8.1	8.1	8.0	8.3	8.1	8.1	8.1	7.9	2.0	2.0	2.0	2.5	2.5	2.5	25.2	28.0	28.2
	Max	32.3	32.1	31.7	9.7	9.5	9.1	9.6	9.6	9.1	8.3	8.4	8.4	4.6	3.7	3.7	18.0	7.0	15.0	28.8	30.4	30.3
WSR4	Avg.	31.5	30.8	30.6	8.8	9.0	8.9	8.8	9.0	8.9	8.2	8.2	8.2	3.1	2.8	2.6	4.2	3.3	5.6	27.0	28.8	29.2
	Min.	30.3	29.7	29.2	8.1	8.3	8.3	8.2	8.6	8.3	8.0	8.1	8.0	2.0	2.0	2.0	2.5	2.5	2.5	25.8	27.9	28.3
	Max	32.9	32.3	32.0	9.5	9.4	9.7	9.5	9.4	9.8	8.4	8.4	8.4	5.2	4.0	3.8	18.0	7.0	19.0	29.1	30.2	30.7
WSR16	Avg.	31.3	30.9	30.6	9.0	9.0	9.0	9.0	9.0	9.0	8.2	8.2	8.2	3.2	2.6	2.7	4.0	3.3	4.7	26.9	28.9	29.1
	Min.	30.2	29.5	29.0	8.2	8.3	8.3	8.3	8.3	8.4	8.0	8.0	8.0	1.9	1.6	2.0	2.5	2.5	2.5	25.7	28.1	28.3
	Max	32.6	32.7	32.5	9.7	9.7	9.7	9.6	9.4	9.6	8.4	8.4	8.3	5.1	4.3	4.0	16.0	7.0	14.0	28.7	30.7	30.7
WSR33	Avg.	31.3	30.7	30.5	9.1	8.9	8.7	9.1	9.0	8.7	8.2	8.2	8.2	3.0	2.7	2.7	3.9	3.8	4.2	27.0	28.7	29.3
	Min.	30.1	29.4	28.9	8.1	8.4	8.1	8.1	8.5	8.1	8.1	8.1	7.9	2.0	1.8	2.0	2.5	2.5	2.5	25.9	28.0	28.2
	Max	32.4	32.0	32.4	10.1	9.5	9.6	10.1	9.5	9.5	8.4	8.4	8.4	5.1	4.3	3.6	13.0	11.0	13.0	28.9	30.2	30.6
WSR36	Avg.	31.3	30.7	30.6	8.9	8.9	8.8	8.8	9.0	8.7	8.2	8.2	8.2	3.3	2.6	2.6	3.9	3.4	4.2	27.0	28.9	29.0
	Min.	29.4	28.9	28.9	8.1	8.1	8.2	8.1	8.2	8.2	8.1	8.1	8.1	2.0	2.0	2.0	2.5	2.5	2.5	25.9	27.7	28.2
	Max	32.8	31.9	31.8	9.9	9.8	9.7	9.9	10.0	9.7	8.4	8.4	8.4	4.9	3.8	4.0	17.0	10.0	12.0	28.7	30.3	30.2
WSR37	Avg.	31.4	30.7	30.5	8.8	9.1	8.6	8.8	9.1	8.6	8.2	8.2	8.2	3.2	2.5	2.6	3.7	3.5	4.8	26.9	28.9	29.3
	Min.	30.0	29.4	28.1	8.2	8.2	8.2	8.2	8.3	8.2	8.1	8.1	8.0	2.1	1.9	1.9	2.5	2.5	2.5	25.9	27.5	28.0
	Max	32.6	32.5	32.2	9.8	10.3	9.6	9.8	10.2	9.6	8.3	8.4	8.4	4.9	3.8	3.5	7.0	9.0	14.0	29.0	30.6	30.6

4. WASTE

The waste generated from this Project includes inert construction and demolition (C&D) materials, and non-inert C&D materials. Non-inert C&D materials are made up of general refuse, vegetative wastes, and recyclable wastes such as plastics and paper/cardboard packaging waste. Steel materials generated from the project are also grouped into non-inert C&D materials as the materials were not disposed of with other inert C&D materials. With reference to relevant handling records and trip tickets of this Project, the quantities of different types of waste generated in the reporting period are summarized in **Table 4.1**. Details of cumulative waste management data are presented as a waste flow table in **Appendix G.**

Table 4.1 Quantities of Waste Generated from the Project during reporting period

Reporting Months	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Hard Rock and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper / cardboard packaging	Plastics (1)	Chemical Waste	Others, e.g. general refuse
	(in ,000kg)	(in ,000kg)	(in ,000kg)	(in ,000kg)	(in ,000kg)	(in ,000kg)	(in ,000kg)	(in ,000kg)	(in ,000kg)	(in ,000kg)	(in ,000kg)
June 2022	80.960	0.000	0.000	0.000	80.960	0.000	0.000	0.124	0.004	0.000	271.000
July 2022	2794.730	0.000	0.000	0.000	2794.730	0.000	0.000	0.000	0.000	0.000	252.740
August 2022	10429.730	0.000	0.000	0.000	10429.730	0.000	0.000	0.170	0.090	0.000	240.470

Notes: (1) Plastics refer to plastic bottles / containers, plastic sheets / foam from packaging material

5. LANDFILL GAS MONITORING

5.1. MONITORING REQUIREMENT

In accordance with Section 11 of the EM&A Manual, monitoring of landfill gas is required for construction works within the 250m Consultation Zone. Part of the desalination plant and the indicative area of natural slope mitigation works fall within the SENT Landfill Extension Consultation Zone; and part of the 1,200 mm diameter fresh water mains along Wan Po Road falls within the SENT Landfill and SENT Landfill Extension Consultation Zones, TKO Stage II/III Restored Landfill and TKO Stage I Restored Landfill Consultation Zones.

5.2. MONITORING LOCATION

Monitoring of oxygen, methane, carbon dioxide and barometric pressure was performed for excavations at 1m depth or more within the consultation Zone.

During construction of works within the consultation zones, excavations of 1m depth or more was monitored:

- At the ground surface before excavation commences;
- Immediately before any worker enters the excavation;
- At the beginning of each working day for the entire period the excavation remains open; and
- Periodically through the working day whilst workers are in the excavation.

For excavations between 300mm and 1m deep, measurements should be carried out:

- Directly after the excavation has been completed; and
- Periodically whilst the excavation remains open.

5.3. MONITORING PARAMETERS

LFG monitoring was carried out to identify any migration between the landfill and the Project and to ensure the safety of the construction, operation and maintenance personnel working on-site, visitors and any other person within the Project area.

The following parameters were monitored:

- Methane.
- Oxygen.
- Carbon Dioxide.
- Barometric Pressure.

5.4. MONITORING LOCATION

The area required to be monitored for landfill gas in the reporting period is shown in **Figure 5.1**.

Figure 5.1 Overview of the SENT Extension Consultation Zone and the Project Site Area

5.5. ACTION AND LIMIT LEVEL

Action and Limit Level are provided in **Table 5.1**.

Table 5.1 Action and Limit Level for Landfill Gas Monitoring

Parameters	Action Level	Limit Level
Oxygen (O_2)	<19% O_2	<19% O_2
Methane (CH_4)	>10% LEL	>20% LEL
Carbon Dioxide (CO_2)	>0.5% CO_2	>1.5% CO_2

5.6. MONITORING EQUIPMENT

The monitoring equipment used in the reporting period could be referring to Section 5.10 – 5.11 of the Monthly EM&A Report.

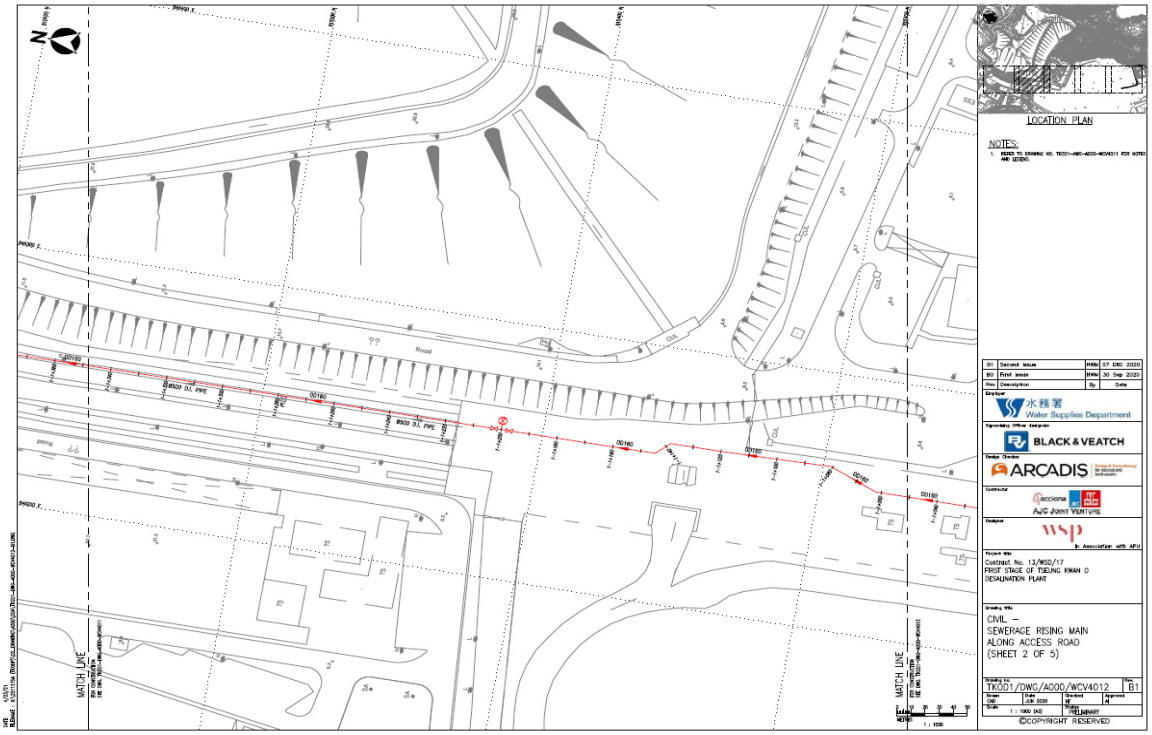


Figure 5.1 Location Map for Landfill Gas Monitoring at Wan Po Road

In this reporting period, 104 times of landfill gas monitoring were recorded at Wan Po Road (Ch1+513 – Ch1+625). No exceedance of action and limit levels for methane, oxygen and carbon dioxide was observed. Monitoring was conducted during excavations at 1m depth or more within the consultation zone and whenever workers entered the excavation on the day.

6. SUMMARY OF EXCEEDANCE, COMPLAINT, NOTIFICATION OF SUMMONS AND PROSECUTIONS

The Environmental Complaint Handling Procedure is shown in below **Figure 6.1:**

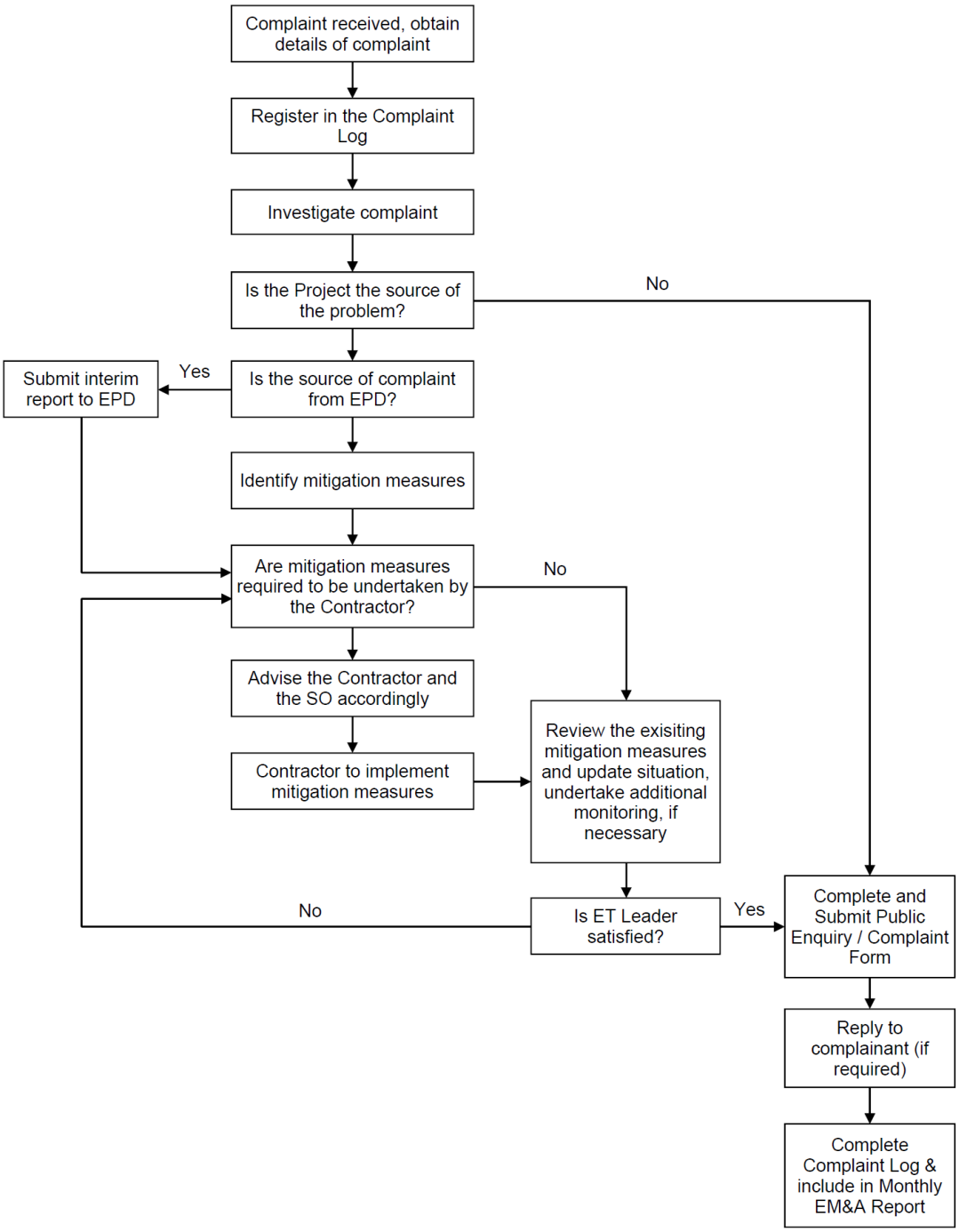


Figure 6.1 Environmental Complaint Handling Procedures

No noise monitoring was conducted during the reporting period since there are no Contract-related construction activities undertaken within a radius of 300m from the monitoring locations. No Action Level exceedance was recorded during the reporting period.

The EM&A works for water quality were conducted during the reporting period in accordance with the EM&A Manual.

During the reporting period, Forty -four (44) of the general water quality monitoring results of SS obtained had exceeded the Action Level. Twenty-five (25) of the general water quality monitoring results of SS obtained during the reporting quarter had exceeded the Limit Level.

After investigation, all exceedances were considered non-project related.

As commented by EPD on the determination of action and limit level exceedance for water quality monitoring, the monitoring result is considered as exceedance if it exceeds either the 95%-ile of baseline data or 20% exceedance of value at any impact station compared with corresponding data from control station.

In view of that all water quality monitoring result from March 2021 to August 2022 were reviewed using the above-mentioned determination method to reassess the number of action and limit level exceedances since the commencement of water quality monitoring.

Total one thousand one hundred and sixty-nine (1169) action level exceedances and five hundred and sixty-two (562) limit level exceedances for turbidity were recorded during mid flood tide since the commencement of the water quality monitoring and one thousand two hundred and thirty-seven (1237) action level exceedances, and six hundred and five (605) limit level exceedances for turbidity were recorded during mid ebb tide since the commencement of the water quality monitoring. Whenever a data exceedance occurred, remeasurement at the same monitoring location was immediately conducted. Fortunately, no average turbidity data exceedances have ever been identified after such remeasurement.

Total six hundred and ninety-seven (697) action level exceedances and five hundred and sixteen (516) limit level exceedances for suspended solids were recorded during mid flood tide since the commencement of the water quality monitoring and eight hundred and sixteen (816) action level exceedances and six hundred and ten (610) limit level exceedances for suspended solids were recorded during mid ebb tide since the commencement of the water quality monitoring.

In this reporting period, 104 times of landfill gas monitoring were recorded at Wan Po Road (Ch1+513 – Ch1+625). No exceedance of action and limit levels for methane, oxygen and carbon dioxide was observed. Monitoring was conducted during excavations at 1m depth or more within the consultation zone and whenever workers entered the excavation on the day.

Algal Bloom, red tide and silty plume were observed at the marine water near CEDD pier, Outfall Shaft and Intake Shaft on 21 July 2022, 1 and 26 August 2022 by the Contractor. Detail could be referring to Section 3.5.

ET will keep closely monitoring the performance of Contractor, implementation of water quality mitigation measure and other contamination issue around the Project site, to ensure the EM&A requirement is properly implemented.

One environmental complaint was received from EPD on 22 July 2022 in the reporting period, detail of the complaint could be referred to **Appendix J** of the Monthly EM&A Report.

No notification of summons and prosecution was received in the reporting period.

Statistics on complaints and regulatory compliance are summarized in **Appendix H**.

7. EM&A Site Inspection

Site inspections were carried out on a weekly basis to monitor the implementation of proper environmental pollution control and mitigation measures under the Contract.

Joint site inspections were also carried out by ET and IEC on 7, 14, 21, 28 June 2022, 5, 12, 19, 29 July 2022 and 2, 9, 16, 23, 31 August 2022.

Minor deficiencies were observed during weekly site inspection. Key observations during the site inspections are summarized below:

- General refuse, food package and plastic bottle were found around the site OSCG Bldg, the Contractors are reminded to clean up immediately.
- Chemical tanks were found placed near the RO Building without drip tray or proper storage. The contractors are reminded to store the chemicals tanks properly.
- There are two oil tanks found near the Administration Building without proper storage or drip tray. The Contractor is reminded to provide a proper storage asap.
- Chemical containers found near the chemical Building shall be placed / stored on a drip tray to avid oil leakage or spillage.
- General refuse (lunch box) should be disposed of properly at a proper waste storage point (Product Water Storage Tank)

The Contractor has rectified the observations identified during environmental site inspections in the reporting period.

According to the EIA Study Report, Environmental Permit, contract documents and EM&A Manual, the mitigation measures detailed in the documents should be implemented as much as practical during the reporting period. An updated Implementation Status of Environmental Mitigation Measures (EMIS) is provided in **Appendix C**.

8. CONCLUSIONS AND RECOMMENDATIONS

This is the 10th Quarterly EM&A Report for the Project which summarizes the key findings of the EM&A programme during the reporting period from 1 June to 31 August 2022, in accordance with the EM&A Manual and the requirement under FEP-01/503/2015/A.

No noise monitoring was conducted in the reporting period due to the over distant monitoring station from the works location.

During the reporting period, forty -four (44) of the general water quality monitoring results of SS obtained had exceeded the Action Level. Twenty-five (25) of the general water quality monitoring results of SS obtained during the reporting quarter had exceeded the Limit Level.

After investigation, all exceedances were considered non-project related.

In this reporting period, 104 times of landfill gas monitoring were recorded at Wan Po Road (Ch1+513 – Ch1+625). No exceedance of action and limit levels for methane, oxygen and carbon dioxide was observed. Monitoring was conducted during excavations at 1m depth or more within the consultation zone and whenever workers entered the excavation on the day.

As commented by EPD on the determination of action and limit level exceedance for water quality monitoring, the monitoring result is considered as exceedance if it exceeds either the 95%-ile of baseline data or 20% exceedance of value at any impact station compared with corresponding data from control station.

In view of that all water quality monitoring result from March 2021 to August 2022 were reviewed using the above-mentioned determination method to reassess the number of action and limit level exceedances since the commencement of water quality monitoring.

Total one thousand one hundred and sixty-nine (1169) action level exceedances and five hundred and sixty-two (562) limit level exceedances for turbidity were recorded during mid flood tide since the commencement of the water quality monitoring and one thousand two hundred and thirty-seven (1237) action level exceedances, and six hundred and five (605) limit level exceedances for turbidity were recorded during mid ebb tide since the commencement of the water quality monitoring. Whenever a data exceedance occurred, remeasurement at the same monitoring location was immediately conducted. Fortunately, no average turbidity data exceedances have ever been identified after such remeasurement.

Total six hundred and ninety-seven (697) action level exceedances and five hundred and sixteen (516) limit level exceedances for suspended solids were recorded during mid flood tide since the commencement of the water quality monitoring and eight hundred and sixteen (816) action level exceedances and six hundred and ten (610) limit level exceedances for suspended solids were recorded during mid ebb tide since the commencement of the water quality monitoring.

Algal Bloom, red tide and silty plume were observed at the marine water near CEDD pier, Outfall Shaft and Intake Shaft on 21 July 2022, 1 and 26 August 2022 by the Contractor. No evidence

shown that the silty plume was caused / related to the Project. Detail could be referring to Section 3.5.

Weekly environmental site inspection was conducted during the reporting period. Minor deficiency was observed during site inspection and was rectified. The environmental performance of the project was therefore considered satisfactory.

According to the environmental site inspections performed in the reporting period, the Contractor is reminded to pay attention on maintaining proper materials storage.

One environmental complaint was received from EPD on 22 July 2022 in the reporting period, detail of the complaint could be referred to **Appendix J** of the Monthly EM&A Report.

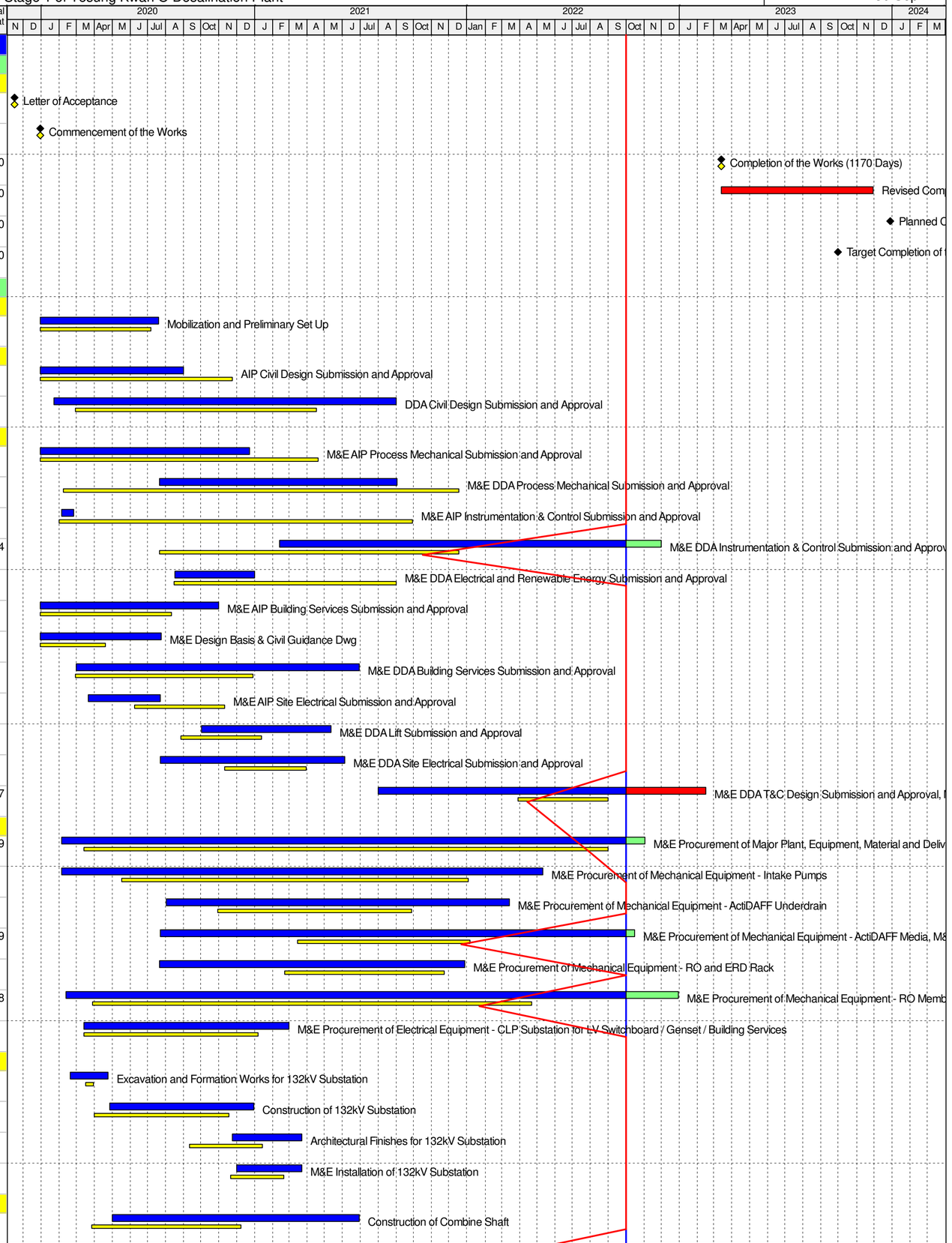
No notification of summons or prosecution was received since commencement of the Contract.

The ET will keep track on the construction works to confirm compliance of environmental requirements and the proper implementation of all necessary mitigation measures.

Appendix A

Master Programme

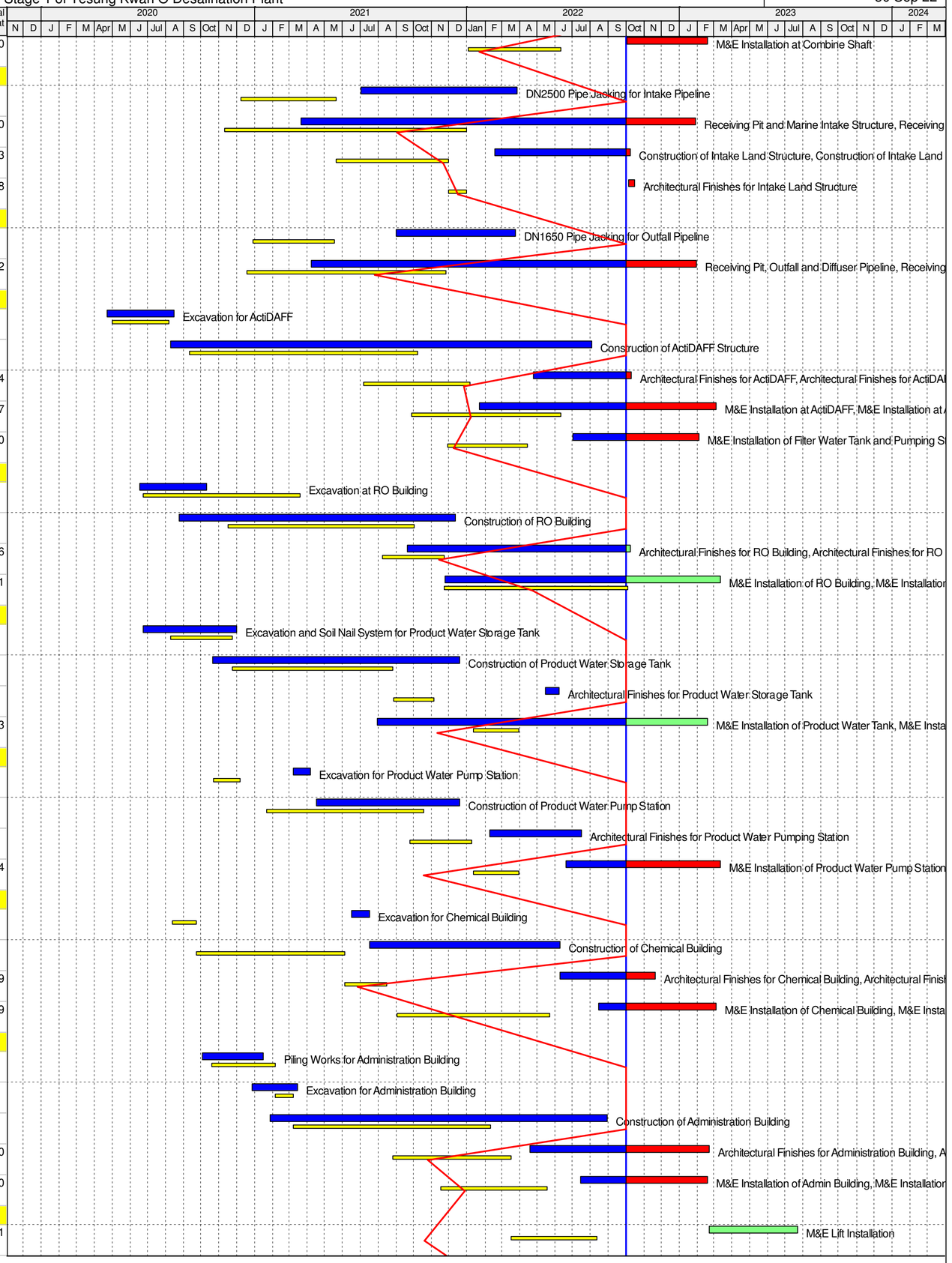
Activity ID	Activity Name	Baseline Duration	Baseline Start	Baseline Finish	Remaining Duration	Actual / Planned Start	Actual / Planned Finish	Actual % Complete	Variance Finish Date	Total Float
Project Programme Updated as at_30 September 2022 (Level 2)										
Key Dates										
Commencement and Completion Date										
KD0000100	Letter of Acceptance	0	15-Nov-19		0	15-Nov-19 A		100%	0	
KD0000110	Commencement of the Works	0	30-Dec-19		0	30-Dec-19 A		100%	0	
KD0000120	Completion of the Works (1170 Days)	0		13-Mar-23	0		13-Mar-23	0%	0	0
KD0000130	Revised Completion of the Works (261 Days EOT Granted)	0			261	14-Mar-23	29-Nov-23	0%		0
KD0000510	Planned Completion of the Works	0			0		29-Dec-23	0%		-30
KD0000520	Target Completion of the Works (Best Endeavour)	0			0		30-Sep-23	0%		60
Executive Summaries										
Preliminary Setup										
ES0001000	Mobilization and Preliminary Set Up	191	30-Dec-19	07-Jul-20	0	30-Dec-19 A	20-Jul-20 A	100%	-13	
Civil Design AIP and DDA										
ES0001010	AIP Civil Design Submission and Approval	330	30-Dec-19	23-Nov-20	0	30-Dec-19 A	31-Aug-20 A	100%	84	
ES0001020	DDA Civil Design Submission and Approval	414	28-Feb-20	16-Apr-21	0	22-Jan-20 A	01-Sep-21 A	100%	-138	
M&E Design AIP and DDA										
ES0002000	M&E AIP Process Mechanical Submission and Approval	477	30-Dec-19	19-Apr-21	0	30-Dec-19 A	22-Dec-20 A	100%	118	
ES0002010	M&E DDA Process Mechanical Submission and Approval	679	08-Feb-20	17-Dec-21	0	21-Jul-20 A	02-Sep-21 A	100%	106	
ES0002020	M&E AIP Instrumentation & Control Submission and Approval	607	31-Jan-20	28-Sep-21	0	04-Feb-20 A	25-Feb-20 A	100%	581	
ES0002030	M&E DDA Instrumentation & Control Submission and Approval	514	22-Jul-20	17-Dec-21	61	13-Feb-21 A	30-Nov-22	99.35%	-348	74
ES0002050	M&E DDA Electrical and Renewable Energy Submission and Approval	382	16-Aug-20	01-Sep-21	0	17-Aug-20 A	31-Dec-20 A	100%	244	
ES0002060	M&E AIP Building Services Submission and Approval	226	30-Dec-19	11-Aug-20	0	30-Dec-19 A	30-Oct-20 A	100%	-80	
ES0002065	M&E Design Basis & Civil Guidance Dwg	112	30-Dec-19	19-Apr-20	0	30-Dec-19 A	24-Jul-20 A	100%	-96	
ES0002070	M&E DDA Building Services Submission and Approval	306	28-Feb-20	29-Dec-20	0	01-Mar-20 A	30-Jun-21 A	100%	-183	
ES0002085	M&E AIP Site Electrical Submission and Approval	155	09-Jun-20	10-Nov-20	0	21-Mar-20 A	22-Jul-20 A	100%	111	
ES0002090	M&E DDA Lift Submission and Approval	140	27-Aug-20	13-Jan-21	0	01-Oct-20 A	12-May-21 A	100%	-119	
ES0002095	M&E DDA Site Electrical Submission and Approval	140	11-Nov-20	30-Mar-21	0	23-Jul-20 A	04-Jun-21 A	100%	-66	
ES0002100	M&E DDA T&C Design Submission and Approval	155	29-Mar-22	30-Aug-22	138	01-Aug-21 A	15-Feb-23	50%	-169	-27
Procurement of Major Plant & Equipment Schedule										
ES0002320	M&E Procurement of Major Plant, Equipment, Material and Delivery	901	14-Mar-20	31-Aug-22	33	04-Feb-20 A	02-Nov-22	95.63%	-63	89
ES2420	M&E Procurement of Mechanical Equipment - Intake Pumps	595	18-May-20	02-Jan-22	0	04-Feb-20 A	11-May-22 A	100%	-129	
ES2430	M&E Procurement of Mechanical Equipment - ActiDAFF Underdrain	333	30-Oct-20	27-Sep-21	0	02-Aug-20 A	14-Mar-22 A	100%	-168	
ES2440	M&E Procurement of Mechanical Equipment - ActiDAFF Media	298	15-Mar-21	06-Jan-22	15	23-Jul-20 A	15-Oct-22	98.07%	-282	29
ES2450	M&E Procurement of Mechanical Equipment - RO and ERD Rack	274	22-Feb-21	22-Nov-21	0	22-Jul-20 A	28-Dec-21 A	100%	-36	
ES2460	M&E Procurement of Mechanical Equipment - RO Membrane	755	29-Mar-20	22-Apr-22	91	12-Feb-20 A	30-Dec-22	85%	-252	128
ES2470	M&E Procurement of Electrical Equipment - CLP Substation for LV Switchboard / Genset / Building Services	300	14-Mar-20	07-Jan-21	0	14-Mar-20 A	28-Feb-21 A	100%	-52	
132kV Substation										
ES0001460	Excavation and Formation Works for 132kV Substation	15	16-Mar-20	30-Mar-20	0	19-Feb-20 A	23-Apr-20 A	100%	-24	
ES0001470	Construction of 132kV Substation	233	31-Mar-20	18-Nov-20	0	27-Apr-20 A	30-Dec-20 A	100%	-42	
ES0001480	Architectural Finishes for 132kV Substation	126	11-Sep-20	14-Jan-21	0	23-Nov-20 A	22-Mar-21 A	100%	-67	
ES0002240	M&E Installation of 132kV Substation	93	20-Nov-20	20-Feb-21	0	01-Dec-20 A	22-Mar-21 A	100%	-30	
Combine Shaft										
ES0001060	Construction of Combine Shaft	257	27-Mar-20	08-Dec-20	0	02-May-20 A	30-Jun-21 A	100%	-204	



Summary Bar | Actual Work | Target Milestone
Actual Level of Effort | Early Bar | Milestone
Target Bar | Critical Bar

acciona JEC CSEC AJC JOINT VENTURE

Activity ID	Activity Name	Baseline Duration	Baseline Start	Baseline Finish	Remaining Duration	Actual / Planned Start	Actual / Planned Finish	Actual % Complete	Variance Finish Date	Total Float
ES0002120	M&E Installation at Combine Shaft	160	03-Jan-22	11-Jun-22	139	03-Oct-22	18-Feb-23	0%	-252	-30
Intake										
ES0001070	DN2500 Pipe Jacking for Intake Pipeline	163	09-Dec-20	20-May-21	0	02-Jul-21 A	28-Mar-22 A	100%	-312	
ES0001080	Receiving Pit and Marine Intake Structure	416	11-Nov-20	31-Dec-21	120	22-Mar-21 A	28-Jan-23	75%	-393	0
ES0001110	Construction of Intake Land Structure	193	21-May-21	29-Nov-21	8	17-Feb-22 A	08-Oct-22	98%	-313	-3
ES0001120	Architectural Finishes for Intake Land Structure	32	30-Nov-21	31-Dec-21	10	06-Oct-22	15-Oct-22	0%	-288	-18
OutFall										
ES0001090	DN1650 Pipe Jacking for Outfall Pipeline	140	29-Dec-20	17-May-21	0	01-Sep-21 A	24-Mar-22 A	100%	-311	
ES0001100	Receiving Pit, Outfall and Diffuser Pipeline	343	18-Dec-20	25-Nov-21	122	08-Apr-21 A	30-Jan-23	82%	-431	-2
ActiDAFF										
ES0001140	Excavation for ActiDAFF	97	02-May-20	06-Aug-20	0	22-Apr-20 A	15-Aug-20 A	100%	-9	
ES0001150	Construction of ActiDAFF Structure	393	11-Sep-20	08-Oct-21	0	10-Aug-20 A	03-Aug-22 A	100%	-299	
ES0001160	Architectural Finishes for ActiDAFF	183	07-Jul-21	05-Jan-22	10	25-Apr-22 A	10-Oct-22	94%	-278	-14
ES0002130	M&E Installation at ActiDAFF	257	28-Sep-21	11-Jun-22	155	22-Jan-22 A	04-Mar-23	11.75%	-266	-7
ES0002140	M&E Installation of Filter Water Tank and Pumping Station	137	29-Nov-21	14-Apr-22	126	01-Jul-22 A	03-Feb-23	24.64%	-295	0
Reverse Osmosis Building										
ES0001170	Excavation at RO Building	270	24-Jun-20	20-Mar-21	0	18-Jun-20 A	10-Oct-20 A	100%	161	
ES0001180	Construction of RO Building	321	16-Nov-20	02-Oct-21	0	25-Aug-20 A	11-Dec-21 A	100%	-70	
ES0001190	Architectural Finishes for RO Building	106	09-Aug-21	22-Nov-21	8	20-Sep-21 A	08-Oct-22	98%	-320	16
ES0002150	M&E Installation of RO Building	315	23-Nov-21	03-Oct-22	163	24-Nov-21 A	12-Mar-23	37.1%	-160	31
Product Water Storage Tank										
ES0001240	Excavation and Soil Nail System for Product Water Storage Tank	106	10-Aug-20	23-Nov-20	0	24-Jun-20 A	01-Dec-20 A	100%	-8	
ES0001250	Construction of Product Water Storage Tank	276	24-Nov-20	26-Aug-21	0	21-Oct-20 A	18-Dec-21 A	100%	-114	
ES0001260	Architectural Finishes for Product Water Storage Tank	70	27-Aug-21	04-Nov-21	0	16-May-22 A	07-Jun-22 A	100%	-215	
ES0002210	M&E Installation of Product Water Tank	78	12-Jan-22	30-Mar-22	140	31-Jul-21 A	17-Feb-23	30%	-324	3
Product Water Pumping Station										
ES0001270	Excavation for Product Water Pump Station	47	22-Oct-20	07-Dec-20	0	08-Mar-21 A	07-Apr-21 A	100%	-121	
ES0001280	Construction of Product Water Pump Station	270	22-Jan-21	18-Oct-21	0	17-Apr-21 A	18-Dec-21 A	100%	-61	
ES0001290	Architectural Finishes for Product Water Pumping Station	106	25-Sep-21	08-Jan-22	0	08-Feb-22 A	16-Jul-22 A	100%	-189	
ES0002215	M&E Installation of Product Water Pump Station	78	12-Jan-22	30-Mar-22	163	20-Jun-22 A	12-Mar-23	15.37%	-347	-24
Chemical Building										
ES0001300	Excavation for Chemical Building	42	12-Aug-20	22-Sep-20	0	17-Jun-21 A	17-Jul-21 A	100%	-298	
ES0001310	Construction of Chemical Building	255	23-Sep-20	04-Jun-21	0	17-Jul-21 A	09-Jun-22 A	100%	-370	
ES0001320	Architectural Finishes for Chemical Building	73	05-Jun-21	16-Aug-21	50	09-Jun-22 A	19-Nov-22	70%	-460	-29
ES0002220	M&E Installation of Chemical Building	264	02-Sep-21	23-May-22	155	15-Aug-22 A	04-Mar-23	36%	-285	-29
Administration Building										
ES0001330	Piling Works for Administration Building	110	19-Oct-20	05-Feb-21	0	03-Oct-20 A	16-Jan-21 A	100%	20	
ES0001340	Excavation for Administration Building	31	06-Feb-21	08-Mar-21	0	28-Dec-20 A	15-Mar-21 A	100%	-7	
ES0001350	Construction of Administration Building	339	09-Mar-21	10-Feb-22	0	28-Jan-21 A	29-Aug-22 A	100%	-200	
ES0001360	Architectural Finishes for Administration Building	204	26-Aug-21	17-Mar-22	143	19-Apr-22 A	20-Feb-23	54%	-340	-30
ES0002230	M&E Installation of Admin Building	184	16-Nov-21	18-May-22	141	15-Jul-22 A	18-Feb-23	4.5%	-276	-30
Building Services & Lift Installation										
ES0002270	M&E Lift Installation	147	18-Mar-22	11-Aug-22	152	21-Feb-23	22-Jul-23	0%	-345	21

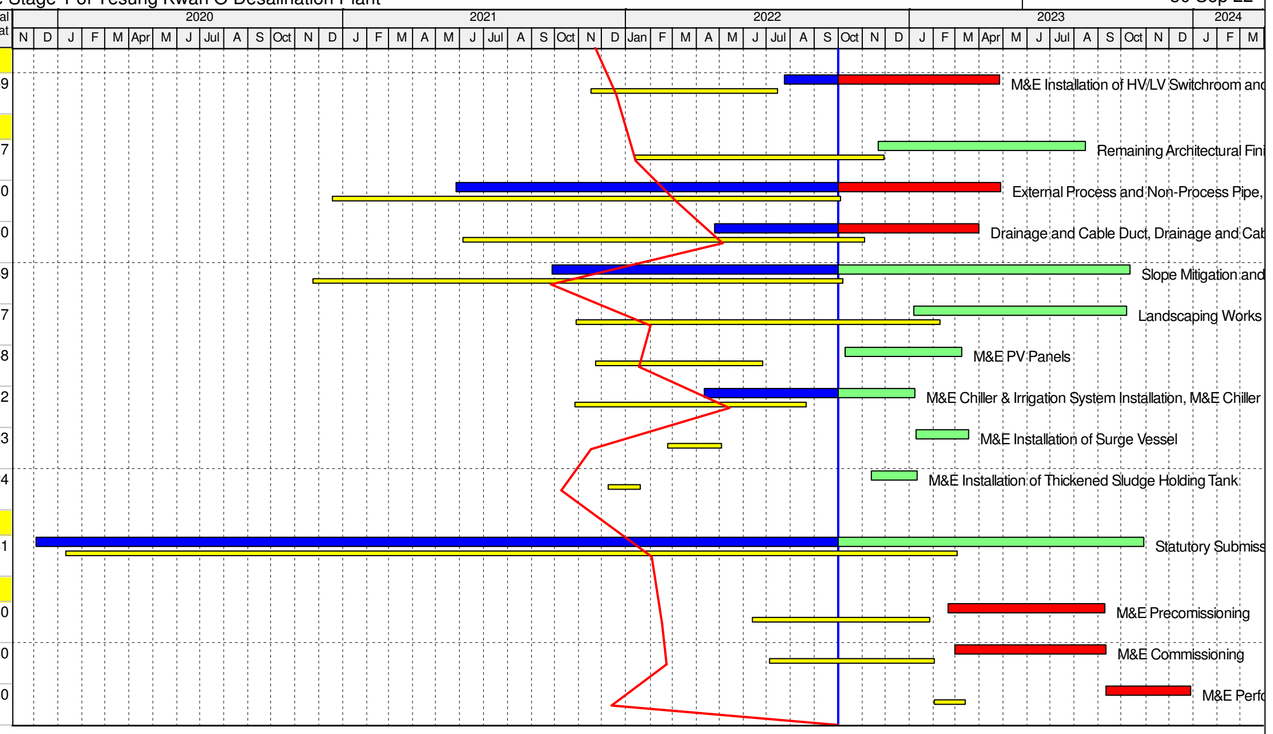


Summary Bar · Actual Work · Target Milestone
Actual Level of Effort · Early Bar · Milestone
Target Bar · Critical Bar

Activity ID	Activity Name	Baseline Duration	Baseline Start	Baseline Finish	Remaining Duration	Actual / Planned Start	Actual / Planned Finish	Actual % Complete	Variance Finish Date	Total Float
ES0002280	M&E Installation of Building Services	676	27-Nov-20	03-Oct-22	271	01-Dec-20 A	28-Jun-23	22.95%	-268	45
OSCG Building										
ES0001400	Excavation for On-site Chlorine Generation Building	25	11-Dec-20	04-Jan-21	0	01-Apr-21 A	09-Apr-22 A	100%	-460	
ES0001410	Construction of On-site Chlorine Generation Building	291	05-Jan-21	22-Oct-21	0	05-Jul-21 A	15-Jun-22 A	100%	-236	
ES0001420	Architectural Finishes for On-site Chlorine Generation Building	59	23-Oct-21	20-Dec-21	0	16-Jun-22 A	28-Sep-22 A	100%	-282	
ES0002200	BS Installation of On-site Chlorine Generation Building (DG inspection)	162	21-Dec-21	31-May-22	168	21-Dec-22	06-Jun-23	0%	-371	0
Post Treatment Building										
ES0001210	Excavation and ELS for Post Treatment Building	126	19-Dec-20	23-Apr-21	0	03-Dec-20 A	01-Sep-21 A	100%	-131	
ES0001220	Construction of Post Treatment Building	209	14-Apr-21	08-Nov-21	0	17-Dec-20 A	19-May-22 A	100%	-192	
ES0001230	Architectural Finishes for Post Treatment Building	59	11-Oct-21	08-Dec-21	0	22-Jul-22 A	16-Sep-22 A	100%	-282	
ES0002180	M&E Installation of Post Treatment Building	199	09-Dec-21	25-Jun-22	176	29-Oct-22	22-Apr-23	0%	-301	51
Sludge Thickener										
ES0001680	Excavation and ELS for Sludge Thickener	73	19-Apr-21	30-Jun-21	0	02-Oct-21 A	16-Oct-21 A	100%	-108	
ES0001690	Construction of Sludge Thickener	121	02-Jul-21	30-Oct-21	0	08-Oct-21 A	26-Jul-22 A	100%	-269	
ES0001700	Architectural Finishes for Sludge Thickener	44	01-Nov-21	14-Dec-21	48	29-Jul-22 A	17-Nov-22	0%	-338	22
ES0002190	M&E Installation of Sludge Thickener	141	15-Dec-21	04-May-22	135	20-Oct-22	03-Mar-23	0%	-303	-15
Workshop										
ES0001560	Excavation for Workshop	7	21-May-21	27-May-21	4	15-Nov-22	18-Nov-22	0%	-540	-17
ES0001570	Construction of Workshop	179	28-May-21	22-Nov-21	99	19-Nov-22	25-Feb-23	0%	-460	-17
ES0001580	Architectural Finishes for Workshop	81	17-Nov-21	05-Feb-22	17	20-Feb-23	08-Mar-23	0%	-396	-18
Inspection Corridor										
ES0001590	Piling for Elevated Walkway	60	09-Jan-21	09-Mar-21	0	15-Dec-20 A	19-Jan-21 A	100%	49	
ES0001600	Excavation for Inspection Corridor	121	14-Apr-21	12-Aug-21	0	26-Mar-21 A	28-May-22 A	100%	-289	
ES0001610	Construction of Inspection Corridor	299	06-May-21	28-Feb-22	96	12-Apr-21 A	04-Jan-23	50%	-310	8
ES0001620	Architectural Finishes for Inspection Corridor	99	08-Feb-22	17-May-22	65	23-Mar-23	26-May-23	0%	-374	93
Main Electrical and Central Chiller Plant Building										
ES0001430	Excavation for Main Electrical and Central Chiller Plant Building	20	11-Jan-21	30-Jan-21	0	18-Jan-21 A	06-Feb-21 A	100%	-7	
ES0001440	Construction of Main Electrical and Central Chiller Plant Building	227	01-Feb-21	15-Sep-21	0	01-Feb-21 A	20-Oct-21 A	100%	-35	
ES0001450	Architectural Finishes for Main Electrical and Central Chiller Plant Building	99	20-Jul-21	26-Oct-21	0	06-Nov-21 A	25-Jun-22 A	100%	-242	
ES0002260	M&E Installation of LV/HV Cabling and Field Panels	152	25-Jan-22	25-Jun-22	76	27-Jul-22 A	15-Dec-22	35.38%	-173	-1
Guard House										
ES0001490	Excavation for Guard House at Main Gate	7	15-Sep-21	21-Sep-21	5	21-Oct-22	25-Oct-22	0%	-399	-13
ES0001500	Construction of Guard House at Main Gate	149	23-Sep-21	18-Feb-22	105	26-Oct-22	07-Feb-23	0%	-354	-19
ES0001510	Architectural Finishes for Guard House at Main Gate	76	19-Feb-22	05-May-22	28	01-Feb-23	28-Feb-23	0%	-299	-6
ES0001520	Excavation for Guard House near Pier	8	21-May-21	28-May-21	6	22-Oct-22	27-Oct-22	0%	-517	-15
ES0001530	Construction of Guard House near Pier	147	29-May-21	22-Oct-21	105	28-Oct-22	09-Feb-23	0%	-475	-21
ES0001540	Architectural Finishes for Guard House near Pier	74	23-Oct-21	04-Jan-22	35	03-Feb-23	09-Mar-23	0%	-429	104
CO2 Tank										
ES0001370	Filling to Formation for CO2 Tanks Area	29	22-Jun-21	20-Jul-21	0	14-Dec-21 A	17-Dec-21 A	100%	-150	
ES0001380	Construction of CO2 Tanks Area	116	21-Jul-21	13-Nov-21	0	21-Dec-21 A	10-Mar-22 A	100%	-117	
ES0002170	M&E Installation of CO2 Tank	84	27-Jan-22	20-Apr-22	129	11-Mar-22 A	06-Feb-23	15.85%	-292	108
Diesel Emergency Generator										
ES0002250	M&E Diesel Emergency Generator	57	25-Feb-22	22-Apr-22	57	14-Jan-23	11-Mar-23	0%	-323	153

Summary Bar | Actual Work | Target Milestone
Actual Level of Effort | Early Bar | Milestone
Target Bar | Critical Bar

Activity ID	Activity Name	Baseline Duration	Baseline Start	Baseline Finish	Remaining Duration	Actual / Planned Start	Actual / Planned Finish	Actual % Complete	Variance Finish Date	Total Float
Switch Room and Transformer Installation										
ES0002300	M&E Installation of HV/LV Switchroom and Transformer	242	16-Nov-21	15-Jul-22	208	24-Jul-22 A	26-Apr-23	50%	-285	-9
Miscellaneous										
ES0001630	Remaining Architectural Finishes for All Buildings	322	11-Jan-22	28-Nov-22	268	21-Nov-22	15-Aug-23	0%	-260	17
ES0001640	External Process and Non-Process Pipe	655	18-Dec-20	03-Oct-22	210	27-May-21 A	28-Apr-23	45%	-207	-30
ES0001650	Drainage and Cable Duct	518	04-Jun-21	03-Nov-22	182	25-Apr-22 A	31-Mar-23	30%	-148	-30
ES0001660	Slope Mitigation and Maintenance Access	684	23-Nov-20	07-Oct-22	376	28-Sep-21 A	11-Oct-23	5%	-369	49
ES0001670	Landscaping Works	469	28-Oct-21	08-Feb-23	275	06-Jan-23	07-Oct-23	0%	-241	7
ES0002290	M&E PV Panels	215	23-Nov-21	25-Jun-22	150	10-Oct-22	08-Mar-23	0%	-256	148
ES0002310	M&E Chiller & Irrigation System Installation	298	27-Oct-21	20-Aug-22	99	12-Apr-22 A	07-Jan-23	17.96%	-140	12
ES0002350	M&E Installation of Surge Vessel	70	24-Feb-22	04-May-22	69	09-Jan-23	18-Mar-23	0%	-318	123
ES0002390	M&E Installation of Thickened Sludge Holding Tank	42	09-Dec-21	19-Jan-22	60	12-Nov-22	10-Jan-23	0%	-356	24
Statutory Submission & Inspection										
ES0002330	Statutory Submission & Inspection	1148	11-Jan-20	03-Mar-23	394	03-Dec-19 A	29-Oct-23	64.42%	-240	31
Testing and Commissioning										
ES0002400	M&E Precommissioning	229	12-Jun-22	26-Jan-23	203	19-Feb-23	09-Sep-23	0%	-226	-30
ES0002410	M&E Commissioning	213	04-Jul-22	01-Feb-23	194	01-Mar-23	10-Sep-23	0%	-221	-30
ES0002420	M&E Performance Test	40	02-Feb-23	13-Mar-23	110	11-Sep-23	29-Dec-23	0%	-291	-30



Summary Bar
Actual Level of Effort
Target Bar
Actual Work
Early Bar
Critical Bar
Target Milestone
Milestone

Appendix B

Overview of Desalination Plant in Tseung Kwan O

N

846 500 E

847 000 E

814 500 N

814 000 N

TEMPORARY WORKS AREA 1

GLA-TSK 692 TGLA

GLA-TSK 692 TGLA

GLA/TRD-088

ROW FOR GLA/TRD-088

GLA-TSK 745 TGLA

GLA-TSK 567

PORTION A

PORTION B

PROPOSED WORKS LIMIT FOR SLOPE MITIGATION WORKS IN COUNTRY PARK

INDICATIVE LOCATION OF PROPOSED SEAWATER INTAKE

INDICATIVE LOCATION OF PROPOSED OUTFALL

A B C D E F G H I J K L M N O

LEGEND:

- BOUNDARY OF SENT LANDFILL EXTENSION
- BOUNDARY OF WORKS AREA FOR TKO DESALINATION PLANT
- SITE PHASING
- ALLOCATED LAND BOUNDARIES

GLA-TSK 692 TGLA

NOTE: TEMPORARY WORKS AREA 1 WILL BE HANDED OVER AT +6 MPD WITH A TOLERANCE OF ±500mm.

POINT	EASTING	NORTHING
A	846581.93	814505.03
B	846610.11	813979.23
C	846614.73	813975.12
D	846629.09	813997.84
E	846644.75	813986.74
F	846646.80	813985.28
G	846677.24	814034.67
H	846686.56	814028.89
I	846766.21	814158.11
J	846459.65	814448.83
K	846578.45	814048.11
L	846613.89	814105.63
M	846614.60	814117.96
N	846676.84	814207.77
O	846756.68	814164.57

PRELIMINARY – NOT FOR CONSTRUCTION

Revision	Date	Description	Initial
B	10/03	UPDATE NOTES	YLC
A	07/18	UPDATE COORDINATES	YLC

	Designed	Checked	Drawn	Checked
Initial	YLC	CKH	SZ	WLS
Date	02/18	02/18	02/18	02/18

Approved

Agreement No.
CE 8/2015 (WS)

Contract No.
13/WSD/17

Contract Title
DESIGN, BUILD AND OPERATE FIRST STAGE OF TSEUNG KWAN O DESALINATION PLANT

Drawing Title
SITE HANDOVER WORKS AREAS

Drawing No.
190495/K/TEND/10/0003

Revision
B

Scale
A1 1 : 1500
A3 1 : 3000

水務署
Water Supplies Department

BLACK & VEATCH HONG KONG LIMITED
博威工程顧問有限公司

BUILDINGS IN FIRST STAGE

CODE	NAME OF BUILDING	TOTAL G.F.A. (m^2)	SITE COVERAGE (m^2)
B	COMBINE SHAFT	759,876	759,876
C	ACTIDAFF	10027,547	5455,346
G	REVERSE OSMOSIS BUILDING AND ELECTRICAL BUILDING	4511,455	5367,935
H	CO2 TANKS AREA	-	-
J	PRODUCT WATER STORAGE TANK, PUMP STATION AND ELECTRICAL BUILDING	1974,610	2833,980
K	SLUDGE TREATMENT BUILDING, TANK AND PUMP ROOM	2531,044	1228,361
M	ADMINISTRATION BUILDING & ELECTRICAL BUILDING C	2459,713	1114,062
N	MAIN ELECTRICAL AND CENTRAL CHILLER PLANT BUILDING	-	459,893
R1	ELECTROCHLORINATION BUILDING & ELECTRICAL BUILDING A	657,992	525,776
S	132 kV SUBSTATION	-	943,560
T	IRRIGATION WATER TANK AND PUMP ROOM	-	156,148
R2	CHEMICAL BUILDING	813,056	813,056
V	VISITOR GALLERY	1330,410	1330,410
X1	GUARD HOUSE AND FS CONTROL ROOM	39,585	39,585
X2	GUARD HOUSE	22,035	22,035
Y	R + D OUTDOOR	-	-
Z	WASTE WATER TREATMENT PLANT	48,000	48,000
	TOTAL =	25175,323	21498,023

LEGEND / ABBREVIATION

H/L WINDOW	HIGH LEVEL WINDOW
M.L.	METAL LOUVRES
C.L.	CAT LADDER
A.U.T.	ACCESSIBLE UNISEX TOILET
⊕	PROPOSED FINISH FLOOR LEVEL IN METER ABOVE P.D.
⊕	STRUCTURAL FLOOR LEVEL IN METER ABOVE P.D.
MV/AL	MECHANICAL VENTILATION & ARTIFICIAL LIGHTING
F.E.	4.5kg CO^2 FIRE EXTINGUISHER
H.R.	HOSE REEL
Ⓐ	FIREMAN'S LIFT
Ⓓ	LIFT FOR THE BARRIER FREE ACCESS
P.D.	PIPE DUCT

PLOT RATIO & SITE COVERAGE CALCULATION:

SITE AREA OF THE FIRST STAGE = 56108 m²

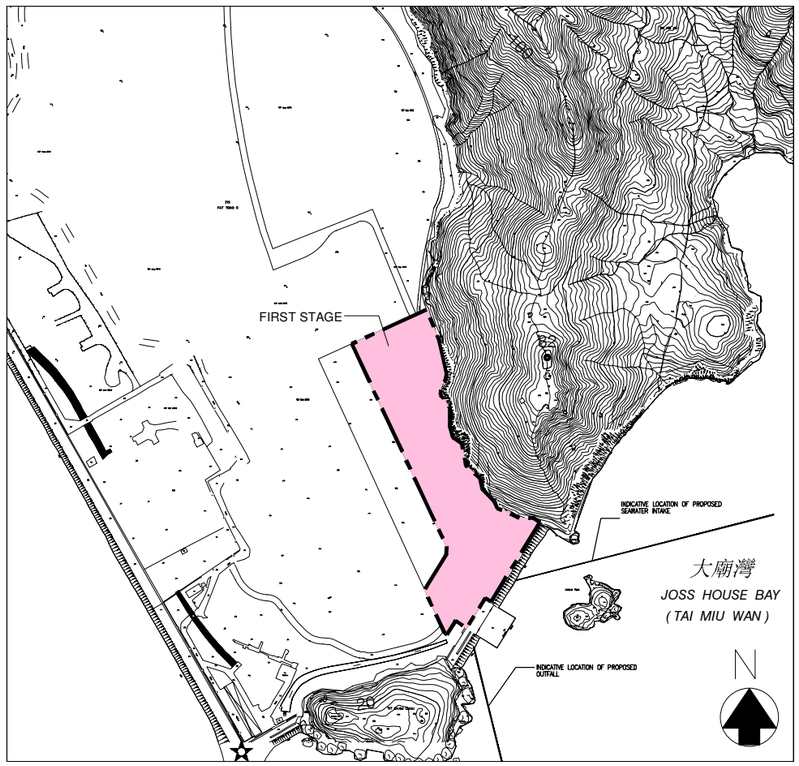
TOTAL G.F.A. = 25092.141 m²
TOTAL SITE COVERAGE = 21414.841 m²

PLOT RATIO = 25092.141 / 56108
= 0.447 < PERMITTED

SITE COVERAGE = 21414.841 / 56108 x 100
= 38.167%

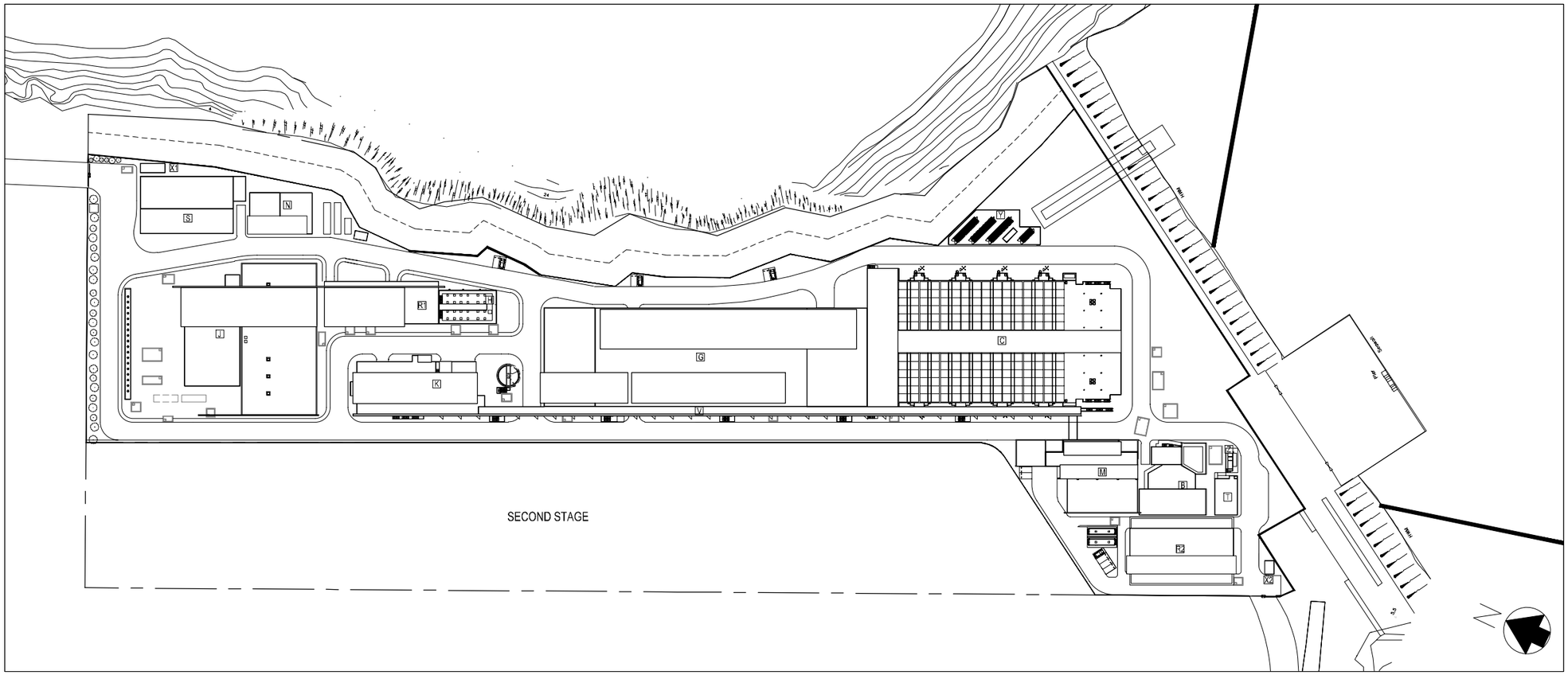
SITE LOCATION PLAN

1 : 5000



FIRST STAGE OF TSEUNG KWAN O DESALINATION PLANT

1 : 1000



Rev	Description	By	Date
0	TENDER SUBMISSION	CAD	JAN 19

Employer
水務署
Water Supplies Department

Employer's Consultant
BLACK & VEATCH

Tenderer
acciona Agua JEC CRCC
AJC JOINT VENTURE

Designer
wsp

Project title
CONTRACT NO. 13/WSD/17

DESIGN, BUILD AND OPERATE
FIRST STAGE OF TSEUNG KWAN O
DESALINATION PLANT

Drawing title
ARCHITECTURAL –
PLOT RATIO AND SITE COVERAGE CALCULATION, LEGEND ABBREVIATION

Drawing no.	Rev.
TKO/AJC/W/A000/AR/001	0

Drawn	Date	Checked	Approved
CKAL	JAN 19	S.C.	T.C.

Scale: N.T.S.
Status: –

Appendix C

Summary of Implementation Status of Environmental Mitigation

EIA Reference	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main concerns to address	Implementation Agent	Implementation Stage			Implementation status	Relevant Legislation & Guidelines
				D	C	O		
Air Quality								
S4.8.1	Impervious dust screen or sheeting will be provided to enclose scaffolding from the ground floor level of building for construction of superstructure of the new buildings.	Land site/ During Construction	Contractor(s)		✓		Implemented	Air Pollution Control (Construction Dust)
S4.8.1	Impervious sheet will be provided for skip hoist for material transport.	Land site/ During Construction	Contractor(s)		✓		NA	-
S4.8.1	The area where dusty work takes place should be sprayed with water or a dust suppression chemical immediately prior to, during and immediately after dusty activities as far as practicable.	Land site/ During Construction	Contractor(s)		✓		Implemented	-
S4.8.1	All dusty materials should be sprayed with water or a dust suppression chemical immediately prior to any loading, unloading or transfer operation.	Land site/ During Construction	Contractor(s)		✓		Implemented, reminder issued	-
S4.8.1	Dropping heights for excavated materials should be controlled to a practical height to minimize the fugitive dust arising from unloading.	Land site/ During Construction	Contractor(s)		✓		Implemented	-
S4.8.1	During transportation by truck, materials should not be loaded to a level higher than the side and tail boards and should be dampened or covered before transport.	Land site/ During Construction	Contractor(s)		✓		Implemented	-
S4.8.1	Wheel washing device should be provided at the exits of the work sites. Immediately before leaving a construction site, every vehicle shall be washed to remove any dusty material from its body and wheels as far as practicable.	Land site/ During Construction	Contractor(s)		✓		Implemented	-
S4.8.1	Road sections between vehicle-wash areas and vehicular entrance will be paved.	Land site/ During Construction	Contractor(s)		✓		Implemented	-
S4.8.1	Hoarding of not less than 2.4m high from ground level will be provided along the length of the Project Site boundary.	Land site/ During construction	Contractor(s)	✓	✓		N/A	-
S4.8.1	Haul roads will be kept clear of dusty materials and will be sprayed with water so as to maintain the entire road surface wet at all times.	Land site/ During construction	Contractor(s)		✓		Implemented	-
S4.8.1	Temporary stockpiles of dusty materials will be either covered entirely by impervious sheets or sprayed with water to maintain the entire surface wet all the time.	Land site/ During construction	Contractor(s)		✓		Implemented, reminder issued	-

EIA Reference	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main concerns to address	Implementation Agent	Implementation Stage			Implementation status	Relevant Legislation & Guidelines
				D	C	O		
S4.8.1	Stockpiles of more than 20 bags of cement, dry pulverized fuel ash and dusty construction materials will be covered entirely by impervious sheeting sheltered on top and 3-sides.	Land site/ During construction	Contractor(s)		✓		N/A	-
S4.8.1	All exposed areas will be kept wet always to minimize dust emission.	Land site/ During construction	Contractor(s)		✓		Implemented	-
S4.8.1	Ultra-low-Sulphur diesel (ULSD) will be used for all construction plant on-site, as defined as diesel fuel containing not more than 0.005% Sulphur by weight) as stipulated in Environment, Transport and Works Bureau Technical Circular (ETWB-TC(W)) No 19/2005 on Environmental Management on Construction Sites.	Land site/ During construction/ During Operation	Contractor(s)		✓	✓	Implemented	Environment, Transport and Works Bureau Technical Circular (ETWB-TC(W)) No 19/2005 on Environmental Management on Construction Sites
S4.8.1	The engine of the construction equipment during idling will be switched off.	Land site/ During construction	Contractor(s)		✓		Implemented	-
S4.8.1	Concrete batching plant will be required on site. control measures recommended in the Guidance Note on a Best Practicable Means for Cement Works (Concrete Batching Plant) (BPM 3/2 (93)) will be implemented. The control measures recommended in the Guidance Note on a Best Practicable Means for Cement Works (Concrete Batching Plant) (BPM 3/2 (93)) will be implemented.	Land site/ During construction	Contractor(s)		✓		N/A	-
S4.8.1	Regular maintenance of construction equipment deployed on-site will be conducted to prevent black smoke emission.	Land site/ During construction	Contractor(s)		✓		Implemented	-
S4.10	To ensure proper implementation of the recommended dust mitigation measures and good construction site practices during the construction phase, environmental site audits on weekly basis is recommended throughout the construction period.	Land site/ During construction	Contractor(s)/ Environmental Team (ET) & Independent Environmental Checker (IEC)		✓		Implemented	-

Note: D – Design stage C – Construction O – Operation

EIA Reference	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main concerns to address	Implementation Agent	Implementation Stage			Implementation status	Relevant Legislation & Guidelines
				D	C	O		
Noise								
S5.7	Only well-maintained plant will be operated on-site and plant will be serviced regularly during the construction phase.	All area/ During construction	Contractor(s)		✓		Implemented	A Practical Guide for the Reduction of Noise from Construction Works A Practical Guide for the Reduction of Noise from Construction Works
S5.7	Silencers or mufflers on construction equipment will be utilized and will be properly maintained during the construction phase.	Noise control/ During construction	Contractor(s)		✓		N/A	
S5.7	Mobile plant, if any, will be sited as far away from NSRs as possible.	Noise control/ During construction	Contractor(s)		✓		N/A	
S5.7	Machines and plant (such as trucks) that may be in intermittent use will be shut down between work periods or will be throttled down to a minimum.	Noise control/ During construction	Contractor(s)		✓		Implemented	
S5.7	Plants known to emit noise strongly in one direction will, wherever possible, be orientated so that the noise is directed away from the nearby NSRs.	Noise control/ During construction	Contractor(s)		✓		N/A	
S5.7	Material stockpiles and other structures will be effectively utilized, wherever practicable, in screening noise from on-site construction activities.	Noise control/ During construction	Contractor(s)		✓		N/A	
S5.7	Use of Quite Powered Mechanical Equipment (QPME).	Noise control/ During construction	Contractor(s)		✓		Implemented	
S5.7	Movable noise barriers of 3m in height with skid footing should be used and located within a few meters of stationary plant and mobile plant such that the line of sight to the NSR is blocked by the barriers. The length of the barrier should be at least five times greater than its height. The noise barrier material should have a superficial surface density of at least 7 kg m-2 and have no o or gappeningss.	Noise control/ During construction	Contractor(s)		✓		N/A	
S5.7	The noise insulating sheet should be deployed such that there would be no opening or gaps on the joints.	Noise control/ During construction	Contractor(s)		✓		N/A	
S5.7	Construction activities (e.g. excavation/shoring, reinstatement (asphalt), and pipe jacking) will be planned and carried out in sequence, such that items of PME proposed for these activities will not be operated simultaneously.	Noise control/ During construction	Contractor(s)	✓	✓		Implemented	
S5.7	PMEs will not be used at the works areas near educational institutions with residual impact (ie the "influence area" within a radius of 40m) during school hours in order to reduce impact to the educational institutions.	Noise control / During construction	Contractor(s)		✓		N/A	

EIA Reference	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main concerns to address	Implementation Agent	Implementation Stage			Implementation status	Relevant Legislation & Guidelines
				D	C	O		
S5.7	Noise enclosures or acoustic sheds would be used to cover stationary PME such as generators. Portable/Movable noise enclosure made of material with superficial surface density of at least 7 kg m-2 may be used for screening the noise from operation of the saw/groover, concrete.	Noise control/ Pre-construction/ During construction	Contractor(s)	✓	✓		N/A	-
S5.9	Sawcutting pavement, breaking up of pavement, excavation /shoring, pipe laying, backfilling, reinstatement (concrete) and pipe jacking shall be scheduled outside the examination period.	Noise control/ Pre-construction/ During construction	Contractor(s)	✓	✓		N/A	-
S5.9	In view the duration of noise exceedance at Creative Secondary School, PLK Laws Foundation College, TKO Kei Tak Primary School and School of Continuing and Professional Studies-CUHK is limited to 8 weeks, the construction work in the influence areas near the four schools shall be scheduled during long school holidays (eg summer holiday, Easter holiday or Christmas holiday, etc) as far as practicable. Scheduling the construction work for the four schools.	Noise control/ Pre-construction/ During construction	Contractor(s)	✓	✓		N/A	-
S5.10	A noise monitoring programme shall be implemented for the construction phase.	Designated monitoring stations as defined in EM&A Manual/During construction phase	Environmental Team		✓		N/A	-
S5.10	The effectiveness of on-site control measures could also be evaluated through the regular site audits.	All facilities/ During construction	Contractor(s)/ ET & Independent Environmental Checker (IEC)		✓		Implemented	-

Note: D – Design stage C – Construction O – Operation

EIA Reference	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main concerns to address	Implementation Agent	Implementation Stage			Implementation status	Relevant Legislation & Guidelines
				D	C	O		
Water Quality								
S6.9	Dredged marine sediment will be disposed of in a gazetted marine disposal area in accordance with marine dumping permit conditions of the Dumping at Sea Ordinance (DASO).	Marine Dredging/ During construction	Contractor(s)		✓		Implemented	Dumping at Sea Ordinance (DASO)
S6.9	Disposal vessels will be fitted with tight bottom seals in order to prevent leakage of material during transport.	Marine Dredging/ During construction	Contractor(s)		✓		Implemented	-
S6.9	Barges will be filled to a level, which ensures that material does not spill over during transport to the disposal site and that adequate freeboard is maintained to ensure that the decks are not washed by wave action.	Marine Dredging/ During construction	Contractor(s)		✓		Implemented	-
S6.9	After dredging, any excess materials will be cleaned from decks and exposed fittings before the vessel is moved from the dredging area.	Marine Dredging/ During construction	Contractor(s)		✓		Implemented	-
S6.9	All vessels should be well maintained and inspected before use to limit any potential discharges to the marine environment.	Marine Dredging/ During construction	Contractor(s)		✓		Implemented	-
S6.9	All vessels must have a clean ballast system.	Marine Dredging/ During construction	Contractor(s)		✓		Implemented	-
S6.9	No discharge of sewage/grey wastewater should be allowed. Waste water from potentially contaminated area on working vessels should be minimized and collected. These kinds of wastewater should be brought back to port and discharged at appropriate collection and treatment system.	Marine Dredging/ During construction	Contractor(s)		✓		Implemented	-
S6.9	No soil waste is allowed to be disposed overboard.	Marine Dredging/ During construction	Contractor(s)		✓		N/A	-
S6.9	Silt removal facilities such as silt traps or sedimentation facilities will be provided to remove silt particles from runoff to meet the requirements of the TM standard under the WPCO. The design of silt removal facilities will be based on the guidelines provided in ProPECC PN 1/94. All drainage facilities and erosion and sediment control structures will be inspected on a regular basis and maintained to confirm proper and efficient operation at all times and particularly during rainstorms. Deposited silt and grit will be removed regularly.	Land site & drainage/ During construction	Contractor(s)		✓		Implemented, reminder issued	ProPECC PN 1/94 TM Standard under the WPCO

EIA Reference	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main concerns to address	Implementation Agent	Implementation Stage			Implementation status	Relevant Legislation & Guidelines
				D	C	O		
S6.9	Earthworks to form the final surfaces will be followed up with surface protection and drainage works to prevent erosion caused by rainstorms.	Land site & drainage/ During construction	Contractor(s)		✓		Implemented	-
S6.9	Appropriate surface drainage will be designed and provided where necessary.	Land site & drainage/ During construction	Contractor(s)		✓		Implemented	-
S6.9	The precautions to be taken at any time of year when rainstorms are likely together with the actions to be taken when a rainstorm is imminent or forecasted and actions to be taken during or after rainstorms are summarised in Appendix A2 of ProPECC PN 1/94.	Land site & drainage/ During construction	Contractor(s)	✓	✓		Implemented	ProPECC PN 1/94
S6.9	Oil interceptors will be provided in the drainage system where necessary and regularly emptied to prevent the release of oil and grease into the storm water drainage system after accidental spillages.	Land site & drainage/ During construction	Contractor(s)		✓		N/A	-
S6.9	Temporary and permanent drainage pipes and culverts provided to facilitate runoff discharge, if any, will be adequately designed for the controlled release of storm flows.	Land site & drainage/ During construction	Contractor(s)		✓		Implemented	-
S6.9	The temporary diverted drainage, if any, will be reinstated to the original condition when the construction work has finished or when the temporary diversion is no longer required.	Land site & drainage/ During construction	Contractor(s)		✓		N/A	-
S6.9	Appropriate numbers of portable toilets shall be provided by a licensed contractor to serve the construction workers over the construction site to prevent direct disposal of sewage into the water environment.	Land site & drainage/ During construction	Contractor(s)		✓		Implemented	-
S6.9 and S6.12	The sterilization water should be dechlorinated with total residual chlorine (TRC) level below 1 mg/L before discharge to public sewer. In situ testing of TRC should also be conducted for the discharge of chlorinated water for pipeline disinfection to ensure sufficient dechlorination before discharge to public sewer.	Sterilization of water mains prior to commissioning	Contractor(s)		✓	✓	N/A	Technical Memorandum for Effluents Discharged into Drainage and Sewerage Systems Inland and Coastal Waters

EIA Reference	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main concerns to address	Implementation Agent	Implementation Stage			Implementation status	Relevant Legislation & Guidelines
				D	C	O		
S6.9	The cleaning and flushing water should also be treated and desilted to the relevant discharge requirement stipulated in TM-DSS before discharging.	Sterilization of water mains prior to commissioning	Contractor(s)		✓	✓	N/A	Technical Memorandum for Effluents Discharged into Drainage and Sewerage Systems Inland and Coastal Waters
S6.9	Site drainage should be well maintained, and good construction practices should be observed to ensure that oil, fuels, solvents and other chemicals are managed, stored and handled properly and do not enter the nearby water streams.	Land site & drainage/ During construction/ During operation	Contractor(s)		✓	✓	Implemented, reminder issued	-
S6.12	Regular site inspections will be carried out in order to confirm that regulatory requirements are being met and that contractors are implementing the standard site practice and mitigation measures as proposed to reduce potential impacts to water quality.	During construction	Contractor(s)/ ET & IEC		✓		Implemented, reminder issued	-

Note: D – Design stage C – Construction O – Operation

EIA Reference	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main concerns to address	Implementation Agent	Implementation Stage			Implementation Status	Relevant Legislation & Guidelines
				D	C	O		
Waste Management								
S8.5	Nomination of approved personnel to be responsible for standard site practices, arrangements for collection and effective disposal to an appropriate facility of all wastes generated at the site.	Contract mobilization/ During construction	Contractor(s)		✓		Implemented	-
S8.5	Training of site personnel in proper waste management and chemical handling procedures. Training will be provided to workers on the concepts of site cleanliness and appropriate waste management procedures, including waste reduction, reuse and recycling at the beginning of the construction works.	Contract mobilization/ During construction	Contractor(s)		✓		Implemented	-
S8.5	Provision of sufficient waste disposal points and regular collection for disposal.	All area/ During construction/ During operation	Contractor(s)		✓	✓	Implemented, reminder issued	DEVB TC(W) No. 8/2010, Enhanced Specification for Site Cleanliness and Tidiness.
S8.5	Appropriate measures to reduce windblown litter and dust transportation of waste by either covering trucks or by transporting wastes in enclosed containers.	All area/ During construction	Contractor(s)		✓		Implemented	DEVB TC(W) No. 8/2010, Enhanced Specification for Site Cleanliness and Tidiness.
S8.5	A waste management plan (WMP) as stated in the "ETWB TC(W) No. 19/2005, Environmental Management on Construction Sites" for the amount of waste generated, recycled and disposed of (including the disposal sites) will be established and implemented during the construction phase as part of the Environmental Management Plan (EMP). The Contractor will be required to prepare the EMP and submits it to the Architect/ Engineer under the Contract for approval prior to implementation.	All area/ During construction	Contractor(s)		✓		Implemented	ETWB TC(W) No. 19/2005, Environmental Management on Construction Sites
S8.5	Separation of chemical wastes for special handling and appropriate treatment at the Chemical Waste Treatment Centre at Tsing Yi.	All area/ During construction	Contractor(s)		✓		Implemented	Chapters 2 & 3 Code of Practice on the Packaging, Labelling & Storage of Chemical Wastes published under the Waste Disposal Ordinance (Cap 354), Section 35

EIA Reference	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main concerns to address	Implementation Agent	Implementation Stage			Implementation Status	Relevant Legislation & Guidelines
				D	C	O		
S8.5	Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors.	Land site/ During construction	Contractor(s)		✓		Implemented	Waste Disposal Ordinance (Cap 354)
S8.5	A recording system for the amount of wastes generated/ recycled and disposal sites. The trip- ticket system will be included as one of the contractual requirements and implemented by the contractor(s).	Land site/ During construction	Contractor(s)		✓		Implemented	DEVB TC(W) No. 6/2010, Trip Ticket System for Disposal of Construction & Demolition Materials
S8.5	Segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of material and their proper disposal.	Land site/ During construction/ During operation	Contractor(s)		✓		Implemented	WBTC 32/92, The Use of Tropical Hard Wood on Construction Site
S8.5	Encourage collection of aluminium cans and wastepaper by individual collectors during construction with separate labelled bins provided to segregate these wastes from other general refuse by the workforce.	Land site/ During construction	Contractor(s)		✓		Implemented	ETWB TCW No. 33/2002, Management of Construction and Demolition Material Including Rock
S8.5	Any unused chemicals and those with remaining functional capacity will be recycled as far as possible.	Land site/ During construction	Contractor(s)		✓		N/A	-
S8.5	Use of reusable non-timber formwork to reduce the amount of C&D materials.	All areas/ During construction	Contractor(s)		✓		Implemented	WBTC 32/92, The Use of Tropical Hard Wood on Construction Site
S8.5	Prior to disposal of construction waste, wood, steel and other metals will be separated to the extent practical, for re-use and/or recycling to reduce the quantity of waste to be disposed of to landfill.	All areas/ During construction	Contractor(s)		✓		Implemented	DEVB TC(W) No. 6/2010, Trip Ticket System for Disposal of Construction & Demolition Materials
S8.5	Proper storage and site practices to reduce the potential for damage or contamination of construction materials.	All areas/ During construction	Contractor(s)		✓		Implemented	-
S8.5	Plan and stock construction materials carefully to reduce amount of waste generated and avoid unnecessary generation of waste.	All areas/ During construction	Contractor(s)		✓		Implemented	-

EIA Reference	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main concerns to address	Implementation Agent	Implementation Stage			Implementation Status	Relevant Legislation & Guidelines
				D	C	O		
S8.5	A Sediment Quality Report (SQR) for sampling and chemical testing of the sediment will be prepared and submitted to the EPD for approval. The approved detailed sampling and chemical testing will be carried out prior to the commencement of the dredging activities to confirm the sediment disposal method.	Marine works/ During construction	Contractor(s)		✓		N/A	ETWB TC(W) No. 34/2002 and Dumping at Sea Ordinance (DASO)
S8.5	The management of dredged/ excavated sediment management requirement from ETWB TC(W) No. 34/2002 will be incorporated in the Specification of the Contract Documents.	Marine works/ During construction	WSD/ Contractor(s)		✓		Implemented	ETWB TC(W) No. 34/2002 and Dumping at Sea Ordinance (DASO)
S8.5	The contractor will open a billing account with EPD in accordance with the Waste Disposal (Charges for Disposal of Construction Waste) Regulation for the payment of disposal charges.	Contract mobilization/ During construction	Contractor(s)		✓		Implemented	Cap 354N Waste Disposal (Charges for Disposal of Construction Waste) Regulation
S8.5	A trip-ticket system will be established in accordance with DEVB TC(W) No. 6/2010 to monitor the reuse of surplus excavated materials off-site and disposal of construction waste and general refuse at transfer facilities/ landfills, and to control fly-tipping.	Contract mobilization/ During construction	Contractor(s)		✓		Implemented	DEVB TC(W) No. 6/2010, Trip Ticket System for Disposal of Construction & Demolition Materials
S8.5	The project proponent will also conduct regular inspection of the waste management measures implemented on site as described in the Waste Management Plan.	All area/ During construction	Contractor(s)/ Environmental Team (ET) & Independent Environmental Checker (IEC)		✓		Implemented	ETWB TC(W) No. 19/2005, Environmental Management on Construction Sites
S8.5	A recording system (similar to summary table as shown in Annex 5 and Annex 6 of Appendix G of ETWB TC(W) No. 19/2005) for the amount of waste generated, recycled and disposed of (including the disposal sites) will be established during the construction phase.	All area/ During construction	Contractor(s)		✓		Implemented	Annex 5 and Annex 6 of Appendix G of ETWB TC(W) No. 19/2005
S8.5	Inert C&D materials (public fill) will be reused within the Project as far as practicable.	All area/ During construction	Contractor(s)		✓		Implemented	-
S8.5	Public fill and construction waste shall be segregated and stored in different containers or skips to facilitate reuse or recycling of materials and their proper disposal.	All area/ During construction	Contractor(s)		✓		Implemented	-
S8.5	Specific areas of the work site will be designated for such segregation and storage if immediate use is not practicable.	All area/ During construction	Contractor(s)		✓		Implemented	-

EIA Reference	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main concerns to address	Implementation Agent	Implementation Stage			Implementation Status	Relevant Legislation & Guidelines
				D	C	O		
S8.5	To reduce the potential dust and water quality impacts of site formation works, C&D materials will be wetted as quickly as possible to the extent practice after filling.	All area/ During construction	Contractor(s)		✓		Implemented	Air Pollution Control (Construction Dust) Regulation (Cap 311R); WPCO (Cap 358)
S8.5	Open stockpiles of excavated/ fill materials or construction wastes on-site should be covered with tarpaulin or similar fabric.	Land site/ During Construction, particularly dry season	Contractor(s)		✓		Implemented	Air Pollution Control (Construction Dust) Regulation (Cap 311R)
S8.5	Chemical waste container shall be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition, and securely closed.	All area/ During construction/ During operation	Contractor(s)/ WSD		✓	✓	Implemented	Waste Disposal (Chemical Waste) (General) Regulation; Code of Practice on the Packaging, Handling and Storage of Chemical Wastes
S8.5	Chemical waste container shall have a capacity of less than 450 L unless the specifications have been approved by the EPD.	All area/ During construction/ During operation	Contractor(s)/ WSD		✓	✓	Implemented	
S8.5	A label in English and Chinese shall be displayed on the chemical container in accordance with instructions prescribed in Schedule 2 of the Regulations.	All area/ During construction/ During operation	Contractor(s)/ WSD		✓	✓	Implemented	
S8.5	Storage areas for chemical waste shall be enclosed on at least 3 sides.	All area/ During construction/ During operation	Contractor(s)/ WSD		✓	✓	Implemented	
S8.5	Storage areas for chemical waste shall have an impermeable floor and bunding, of capacity to accommodate 110% of the volume of the largest container or 20% by volume of the chemical waste stored in that area, whichever is the greatest.	All area/ During construction/ During operation	Contractor(s)/ WSD		✓	✓	Implemented	
S8.5	Storage areas for chemical waste shall have adequate ventilation.	All area/ During construction/ During operation	Contractor(s)/ WSD		✓	✓	Implemented	
S8.5	Storage areas for chemical waste shall be covered to prevent rainfall entering (water collected within the bund must be tested and disposed of as chemical waste, if necessary).	All area/ During construction/ During operation	Contractor(s)/ WSD		✓	✓	Implemented	
S8.5	Storage areas for chemical waste shall be arranged so that incompatible materials are appropriately separated.	All area/ During construction/ During operation	Contractor(s)/ WSD		✓	✓	Implemented	
S8.5	General refuse will be stored in enclosed bins or compaction units separately from construction and chemical wastes.	All area/ During construction/ During operation	Contractor(s)/ WSD		✓	✓	Implemented, reminder and observation issued	

EIA Reference	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main concerns to address	Implementation Agent	Implementation Stage			Implementation Status	Relevant Legislation & Guidelines
				D	C	O		
S8.5	Adequate number of waste containers will be provided to avoid over-spillage of waste.	All area/ During construction/ During operation	Contractor(s)/ WSD		✓	✓	Implemented	DEVB TC(W) No. 8/2010 Enhanced Specification for Site Cleanliness and Tidiness.
S8.5	A reputable waste collector will be employed by the Contractor to remove general refuse from the site, separately from construction and chemical wastes, on a daily basis to minimise odour, pest and litter impacts.	All area/ During construction/ During operation	Contractor(s)/ WSD		✓	✓	Implemented	-
S8.5	Recycling bins will be provided at strategic locations within the Site to facilitate recovery of recyclable materials (including aluminum can, waste paper, glass bottles and plastic bottles) from the Site. Materials recovered will be sold for recycling.	All area/ During construction/ During operation	Contractor(s)/ WSD		✓	✓	Implemented	-
S8.5	To avoid any odour and litter impact, accurate number of portable toilets will be provided for workers on-site.	All area/ During construction	Contractor(s)		✓		Implemented	-
S8.5	The burning of refuse on construction sites is prohibited by law.	All area/ During construction	Contractor(s)		✓		Implemented	Air Pollution Control Ordinance (Cap 311)
S8.7	To facilitate monitoring and control over the contractors' performance on waste management, a waste inspection and audit programme will be implemented throughout the construction phase.	All facilities/ During construction	ET/ IEC		✓		Implemented	-

Note: D – Design stage C – Construction O – Operation

EIA Reference	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main concerns to address	Implementation Agent	Implementation Stage			Implementation Status	Relevant Legislation & Guidelines
				D	C	O		
Ecology								
S9.7	For slope mitigation works within the Clear Water Bay Country Park, to avoid tree felling and damages to trees, the exact locations of the flexible barrier foundation plates, soil nails and rock dowels can be adjusted during detailed design, and a setback distance from existing trees is recommended to be maintained as far as practical. A detailed specification describing the exact locations of the flexible barrier foundation plates, soil nails and rock dowels will be prepared to illustrate how the setback distance from existing trees would be implemented for tree avoidance.	Slope mitigation works area/ During detailed design/ During construction	Contractor(s)	✓	✓		N/A	-
S9.7	Pruning of tree canopies along the alignment of the flexible barriers shall be limited to a minimum.	Slope mitigation works area/ During construction	Contractor(s)		✓		N/A	
S9.7	The alignment of flexible barriers shall be optimized to preserve all species of conservation interest and minimize the impact to the existing vegetation as far as practicable. All individuals of *Marsdenia lachnostoma* within the slope mitigation areas shall be retained *in- situ*, by positioning the alignment of flexible barrier at a minimum 1.5m in a radius away from these individuals.	Slope mitigation works area/ During detailed design/ During construction	Contractor(s)	✓	✓		N/A	-
S9.7 and 9.10	At the detailed design stage prior to the commencement of the slope mitigation works, a vegetation survey shall be carried out at the slope mitigation areas within the Clear Water Bay Country Park to assess the condition and identify the location of each individual of *Marsdenia lachnostoma* and other flora species of conservation interest that may be directly affected by the construction works.	Slope mitigation works area/ During detailed design/ During construction	Contractor(s)	✓			Implemented	-
S9.7	Temporary fencing will be installed to fence off the concerned species either in groups of individually within the works area and in the close proximity to prevent from being damaged and disturbed during construction. A sign identifying the site shall be attached to the fence and flagging tape shall be attached to the individuals to visualize their locations.	Slope mitigation works area/ During construction	Contractor(s)		✓		N/A	-
S9.7 and S9.10	A specification for fencing and demarcating individuals of *Marsdenai lachnostoma* (or other flora species of conservation interest, if found) adjacent to the proposed alignment of the flexible barriers will be prepared to protect the species.	Slope mitigation works area/ During construction	Contractor(s)		✓		N/A	-
S9.7	Induction training shall also be provided to all site personnel in order to brief them on this flora of conservation interest including the locations and their importance.	Slope mitigation works area/ During construction	Contractor(s)		✓		N/A	-
S9.7	The resident site supervisory staff will closely monitor the	Slope mitigation works area/	Contractor(s)		✓		N/A	-

EIA Reference	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main concerns to address	Implementation Agent	Implementation Stage			Implementation Status	Relevant Legislation & Guidelines
				D	C	O		
	conditions of concerned individuals during construction of flexible barriers in the close proximity.	During construction						
S9.7	Erect fences along the boundary of the works area before the commencement of works to prevent vehicle movements and encroachment of personnel onto adjacent areas.	All area/ During construction	Contractor(s)		✓		Implemented	-
S9.7	Regularly check the work site boundaries to ensure that they are not breached and that damage does not occur to surrounding areas.	All area/ During construction	Contractor(s)/ ET		✓		Implemented.	-
S9.7	Avoid any damage and disturbance, particularly those caused by filling and illegal dumping, to the surrounding habitats through proper management of waste disposal.	All area/ During construction	Contractor(s)		✓		Implemented	-
S9.7	Reinstate temporarily affected areas, particularly the habitats of plantation and shrubland-grassland immediately after completion of construction works, through on-site tree/shrub planting. The tree/shrub species will be chosen with reference to those in the surrounding area.	All area/ During construction	Contractor(s)		✓		N/A	-
S9.7	Affected habitats within the Clear Water Bay Country Bay shall be reinstated by hydro-seeding and planting of climbers and native shrub seedlings where practical upon completion of the slope mitigation works.	All area/ During construction	Contractor(s)		✓		N/A	-

Note: D – Design stage C – Construction O – Operation

EIA Reference	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main concerns to address	Implementation Agent	Implementation Stage			Implementation Status	Relevant Legislation & Guidelines
				D	C	O		
Landscape & Visual								
S11.10 & 11.11	The construction area and area allowed for temporary structures, such as the contractor's office, will be minimized to a practical minimum. (MM1)	All area/ Detailed design/ During construction/ During operation	WSD/ Contractor(s)	✓	✓	✓	Implemented	-
S11.10 & 11.11	At the detailed design stage, the design team will seek to minimize the landscape footprint of the Project and above ground facilities, while satisfying all other requirements. (MM2)	All area/ Detailed design/ During construction/ During operation	WSD/ Contractor(s)	✓	✓	✓	Implemented	-
S11.10 & 11.11	Design principles will be adopted to take into account the surrounding area, particularly Clear Water Bay Country Park behind and the nearby waterfront, with due consideration given to: - green roofs where practical (i.e. without equipment on the roof); - roadside planting; - aesthetic treatment of all structures; - vertical greening; - screen planting along application site; and - landscape enhancement with amenity planting where practical including planting along the edge (site boundary) fence with native shrubs where feasible, to reduce their visual impact and blend them into the surrounding landscape. (MM3)	All area/ Detailed design/ During construction/ During operation	WSD/ Contractor(s)	✓	✓	✓	Implemented	-
S11.10 & 11.11	All trees within the Project Site or the potential slope mitigation works area will be carefully protected during construction according to DEVB TCW No. 10/2013 – Tree Preservation (MM4)	All area/ Detailed design/ During construction/ During operation	WSD/ Contractor(s)	✓	✓	✓	Implemented, reminder issued	ETWB TCW No. 3/2006 - Tree Preservation.
S11.10 & 11.11	No tree within the Country Park will be felled. Trees within the Site unavoidably affected by the works will be transplanted where necessary and practical. For trees that need to be felled, compensatory planting will be provided to the satisfaction of relevant Government departments. A compensatory tree planting proposal including locations of tree compensation will be submitted to seek relevant government department's approval, in accordance with DEVB TC(W) No. 10/2013. (MM5)	All area/ Detailed design/ During construction/ During operation	WSD/ Contractor(s)	✓	✓	✓	Implemented	DEVB TC(W) No. 10/2013
S11.10 & 11.11	Any slope mitigation works necessary to address natural terrain hazards, will be minimized to minimize any potential environmental impact to the Country Park e.g. soil nailing and rock stabilization will aim to avoid existing trees e.g. should any restoration of vegetation be necessary, the best planting matrix with native species will be established, with the aim of resembling the existing vegetation. (MM6)	All area/ Detailed design/ During construction/ During operation	WSD/ Contractor(s)	✓	✓	✓	N/A	

EIA Reference	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main concerns to address	Implementation Agent	Implementation Stage			Implementation Status	Relevant Legislation & Guidelines
				D	C	O		
S11.10 & 11.11	Dredging works for the installation of intake structures and outfall diffusers should be minimized to avoid or reduce any potential environmental impacts to as low as reasonably practicable (ALARP). The intake and outfall structures (e.g. intake openings and diffuser heads) will be prefabricated and transferred to site for installation. (MM7)	All area/ Detailed design/ During construction/ During operation	WSD/ Contractor(s)	✓	✓	✓	Implemented	
S11.10 & 11.11	All night-time lighting will be reduced to a practical minimum both in terms of number of level and will be hooded and directional. (MM8) units and lux level and will be hooded and directional. (MM8)	All area/ Detailed design/ During construction/ During operation	WSD/ Contractor(s)	✓	✓	✓	Implemented	-

Note: D – Design stage C – Construction O – Operation

EIA Reference	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main concerns to address	Implementation Agent	Implementation Stage			Implementation Status	Relevant Legislation & Guidelines
				D	C	O		
Landfill Gas Hazard								
S12.7	During all works, safety procedures should be implemented to minimise the risks of fires and explosions, asphyxiation of workers and toxicity effects resulting from contact with contaminated soil and groundwater.	All area/ Detailed design/ During construction/ During operation	Contractor(s)	✓	✓	✓	Implemented	-
S12.7	During trenching and excavation as well as creation of confined spaces at near to or below ground level, precautions should be clearly laid down and rigidly Gas detection equipment and appropriate breathing apparatus should be available and used when entering confined spaces or trenches deeper than 1 meter.	All area/ Detailed design/ During construction/ During operation	Contractor(s)	✓	✓	✓	Implemented	
S12.7	The Contractor should make the workers are aware of potential hazards of working in confined spaces (any chamber, manhole or culvert which is large enough to permit access to personnel). Such work in confined spaces is controlled by the Factories and Industrial Undertakings (Confined Spaces) Regulations of the Factories and Industrial Undertakings Ordinance. Following the Safety Guide to Working in Confined Spaces ensures compliance with the above regulations.	All area/ Detailed design/ During construction/ During operation	Contractor(s)	✓	✓	✓	Implemented	
S12.7	Safety officers, specifically trained with regard to landfill gas and leachate related hazards and the appropriate actions to take in adverse circumstances, should be present on the site throughout the works, in particular, when works are undertaken below grade.	All area/ Detailed design/ During construction/ During operation	Contractor(s)	✓	✓	✓	Implemented	
S12.7	All personnel who work on site and all visitors to the site should be made aware of the possibility of ignition of gas in the vicinity of the works, the possible presence of contaminated water and the need to avoid physical contact with it.	All area/ Detailed design/ During construction/ During operation	Contractor(s)	✓	✓	✓	Implemented	
S12.7	Monitoring for landfill gas should be undertaken in all excavations, manholes, chambers (particularly during pipe jacking) and any confined spaces through the use of an intrinsically safe portable instrument, appropriately calibrated and capable of measuring the concentrations of methane. carbon dioxide and oxygen.	All area/ Detailed design/ During construction/ During operation	Contractor(s)	✓	✓	✓	Implemented	
S12.7	Monitoring frequency and areas to be monitored should be specified prior to commencement of groundwork, either by the Safety Officer, or by an appropriately qualified person. All measurements should be recorded and documented.	All area/ Detailed design/ During construction/ During operation	Contractor(s)	✓	✓	✓	Implemented	

EIA Reference	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main concerns to address	Implementation Agent	Implementation Stage			Implementation Status	Relevant Legislation & Guidelines
				D	C	O		
S12.7	Proceed drilling with adequate care and precautions against the potential hazards which may be encountered.	All area/ Detailed design/ During construction/ During operation	Contractor(s)	✓	✓	✓	Implemented	
S12.7	Prior to the commencement of the site works, the drilling contractor should devise a 'method-of- working' statement covering all normal and emergency procedures (including but not limited to number of operatives, experience and special skills of operatives, normal method of operations, emergency procedures, supervisors responsibilities, storage and use of safety equipment, safety procedures and signs, barriers and guarding). The site supervisor and all operatives must be familiar with this statement.	All area/ During construction/ During operation	Contractor(s)	✓	✓	✓	Implemented	
S12.7	Where below ground service entries are necessary to the Incoming Switchgear Room, 132 kV Substation and Chlorine Store (I) and (II), the entry point should be sealed to prevent gas entry. In addition, any below grade cable trenches entering the Incoming Switchgear Room and 132 kV Substation can become the pathway for landfill gas and hence grilled metal covers should be used.	All area/ Detailed design/ During construction/ During operation	Contractor(s)	✓	✓	✓	N/A	
S12.7	It is recommended regular landfill gas monitoring should be carried out at the Incoming Switchgear Room, 132 kV Substation and Chlorine Store (I) and (II). The monitoring frequency will be monthly for the first year of operation. If the monitoring results show no sign of landfill gas migration, reduce the monitoring frequency to once every six months.	All area/ Detailed design/ During construction/ During operation	Contractor(s)	✓	✓	✓	N/A	
S12.7	The manholes and utility pits within the Project Site and along the freshwater mains. Each manhole/ utility pit should be monitored with two measurements (at mid depth and base). Each measurement should be monitored for a minimum of 10 minutes. A steady reading and peak reading should be recorded at each manhole/ utility pit and for each measurement. The need for venting the manhole/ utility pit and further monitoring will be reviewed after the initial monitoring.	All area/ Detailed design/ During construction/ During operation	Contractor(s)	✓	✓	✓	Implemented	
S12.7	All construction, operation and maintenance personnel working on-site as well as visitors should be made aware of the hazards of landfill gas and its possible presence on-site. This should be achieved through a combination of posting warning signs in prominent places and also by access to detailed information on landfill gas hazards and the designs and procedural means by which these hazards are being minimized on-site.	All area/ Detailed design/ During construction/ During operation	Contractor(s)	✓	✓	✓	Implemented	

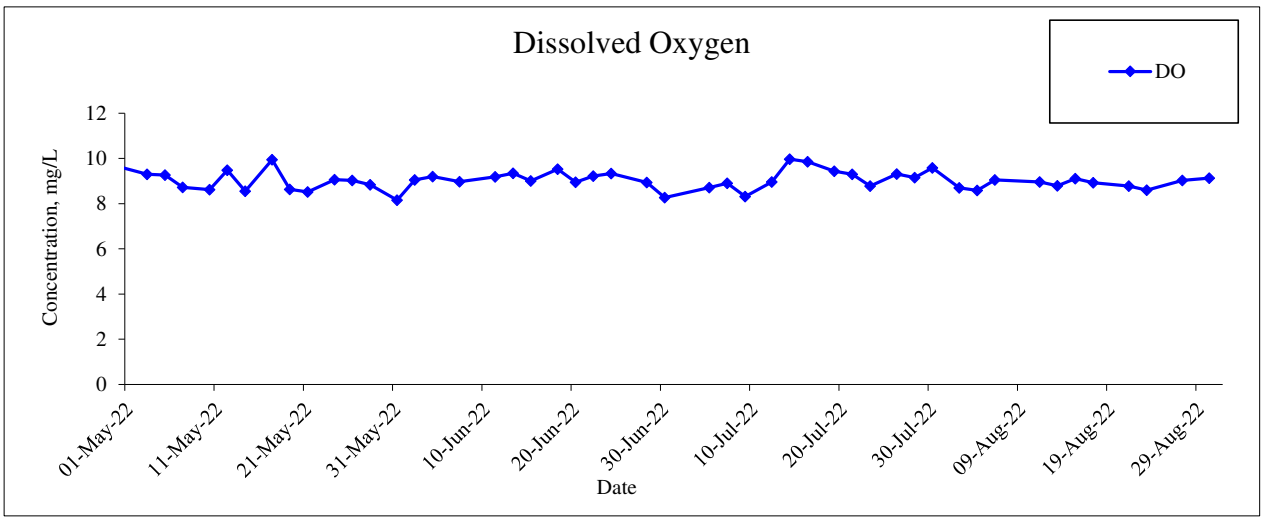
Note: D – Design stage C – Construction O – Operation

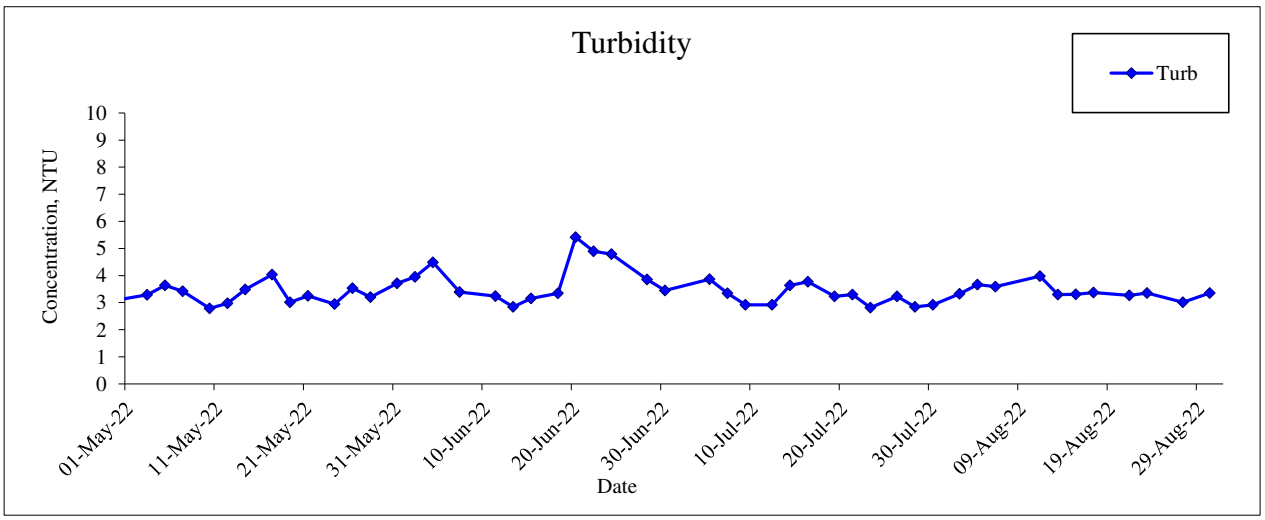
Appendix D

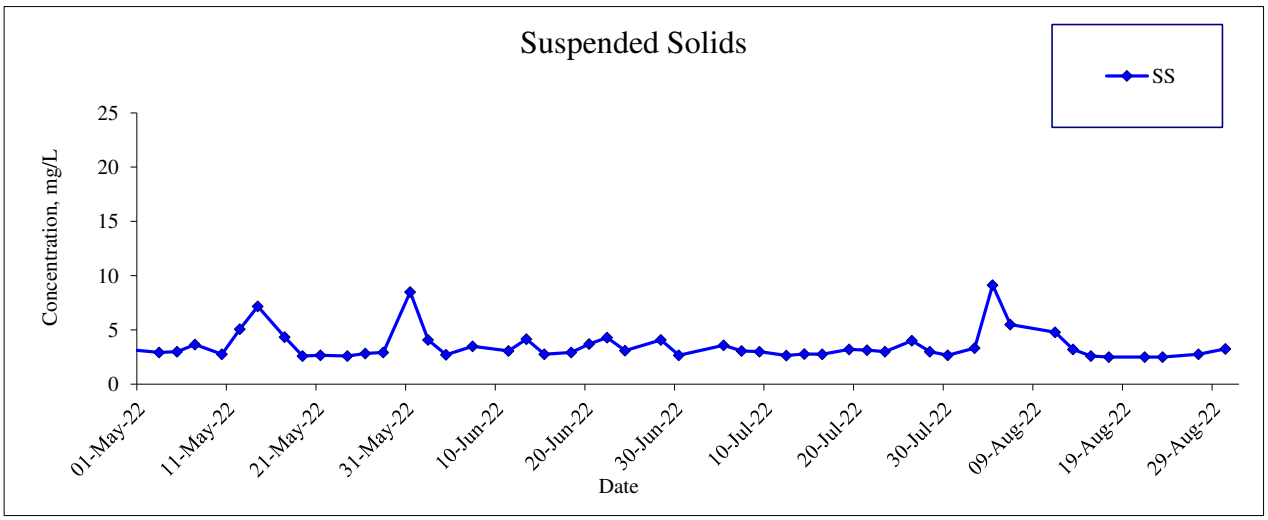
Water Quality Monitoring Graphical Presentation

Middle Flood Tide

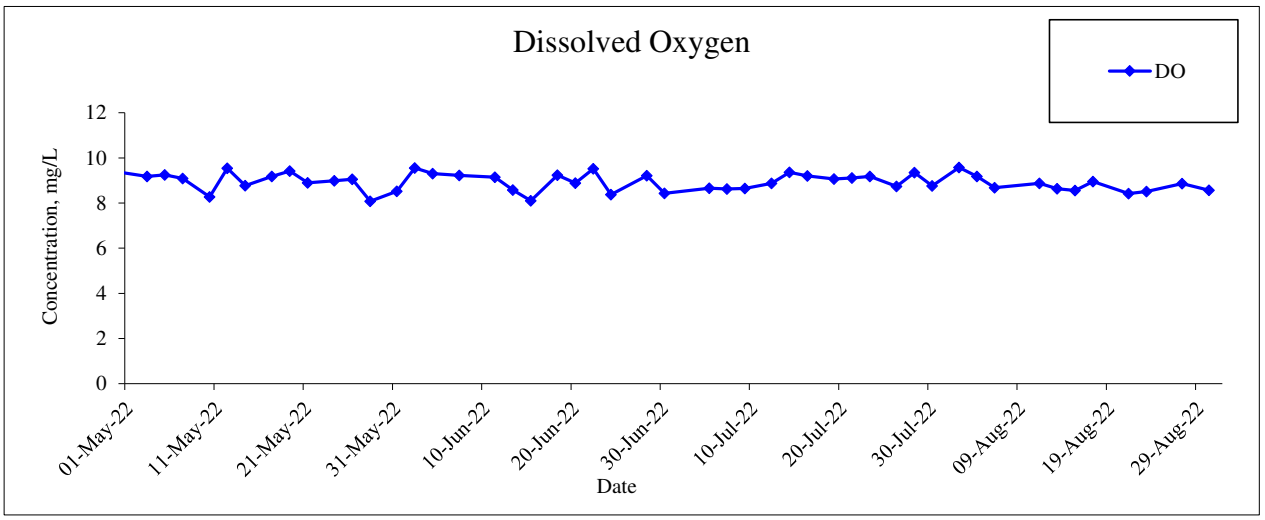
Monitoring Location: CE

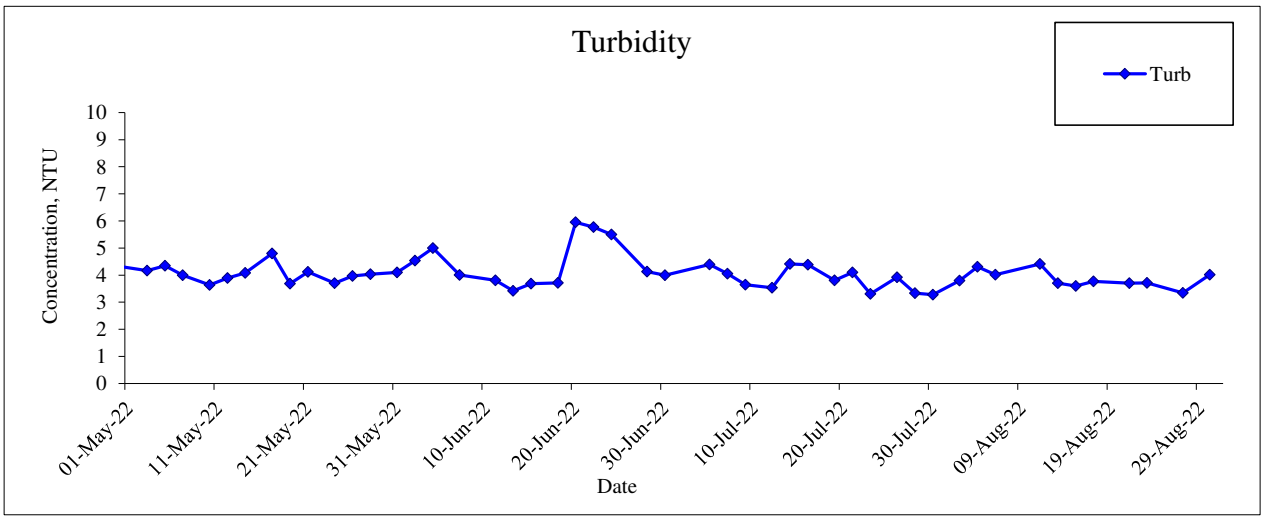


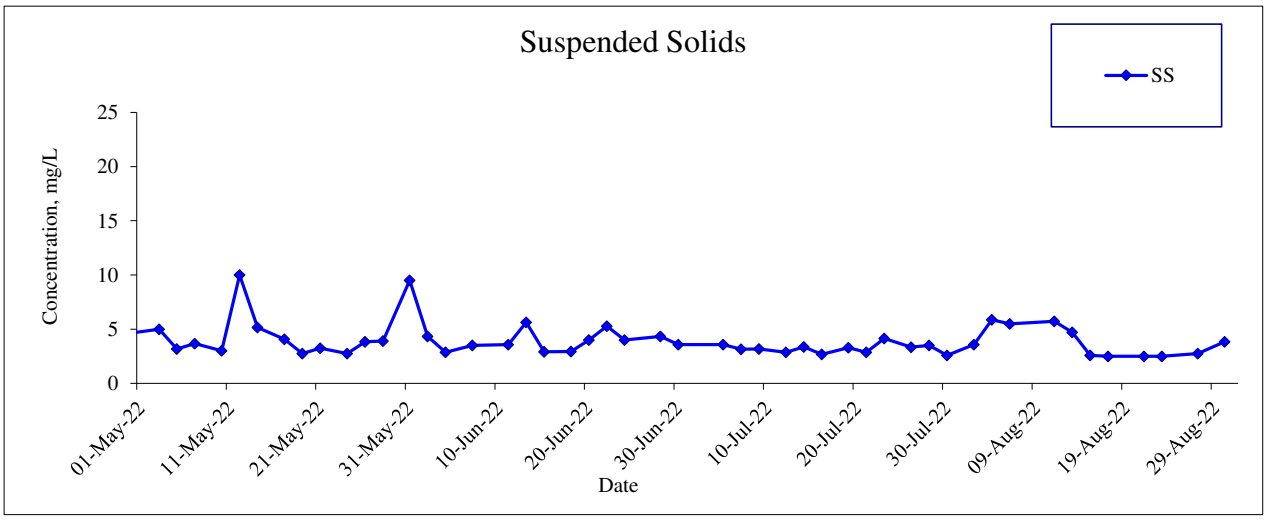




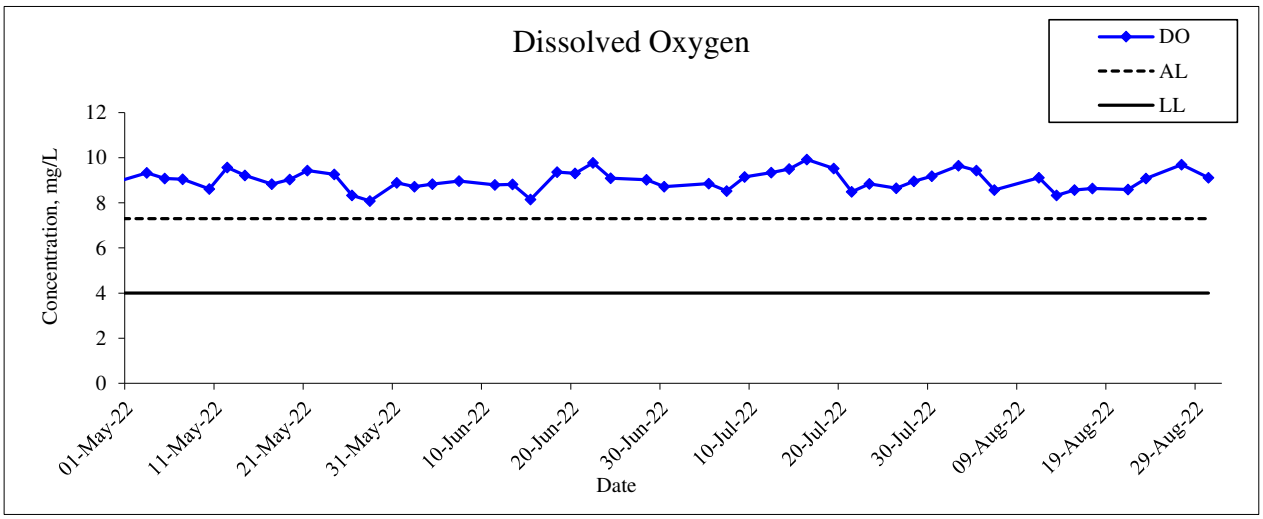
Monitoring Location: CF

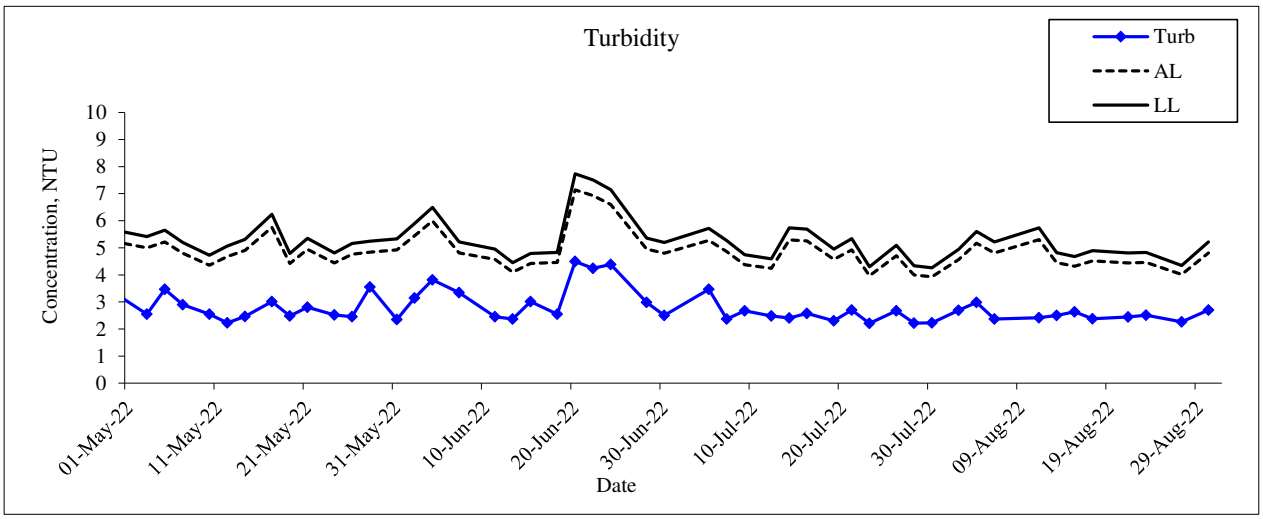


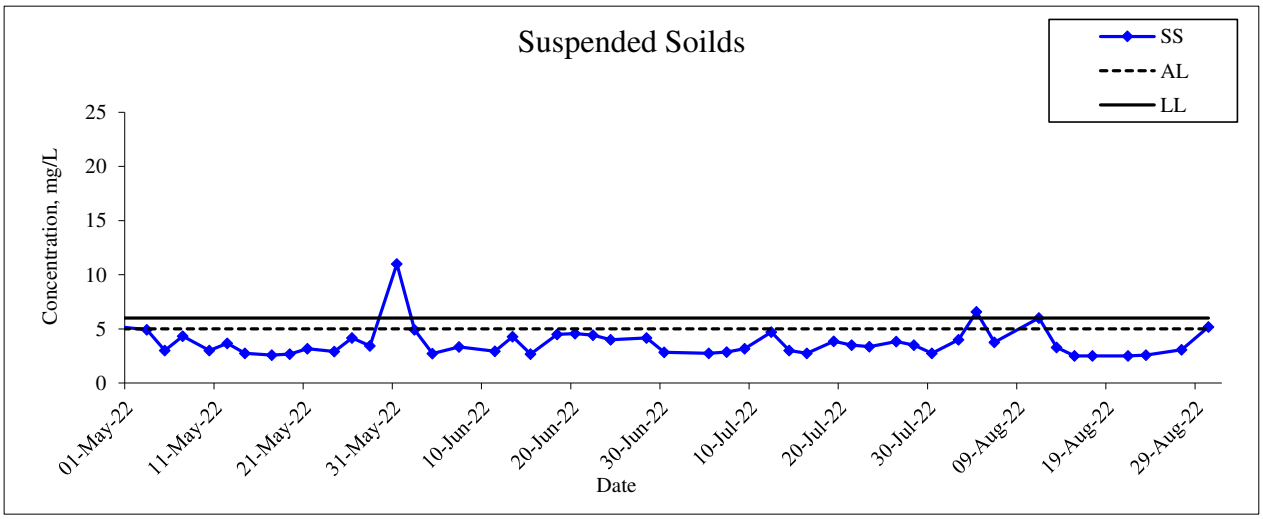




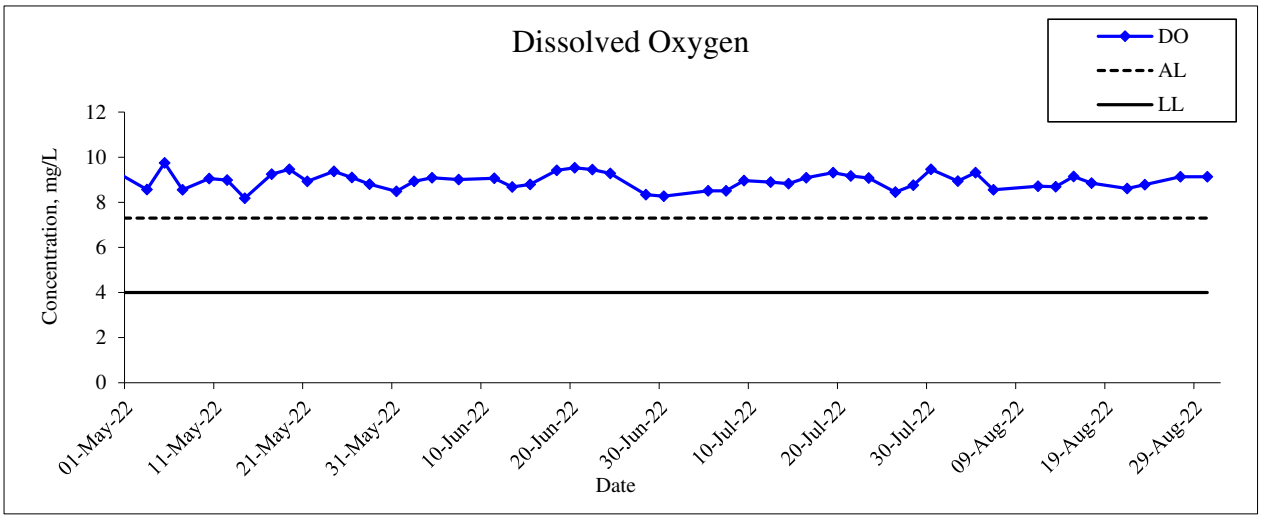
Monitoring Location: WSR1

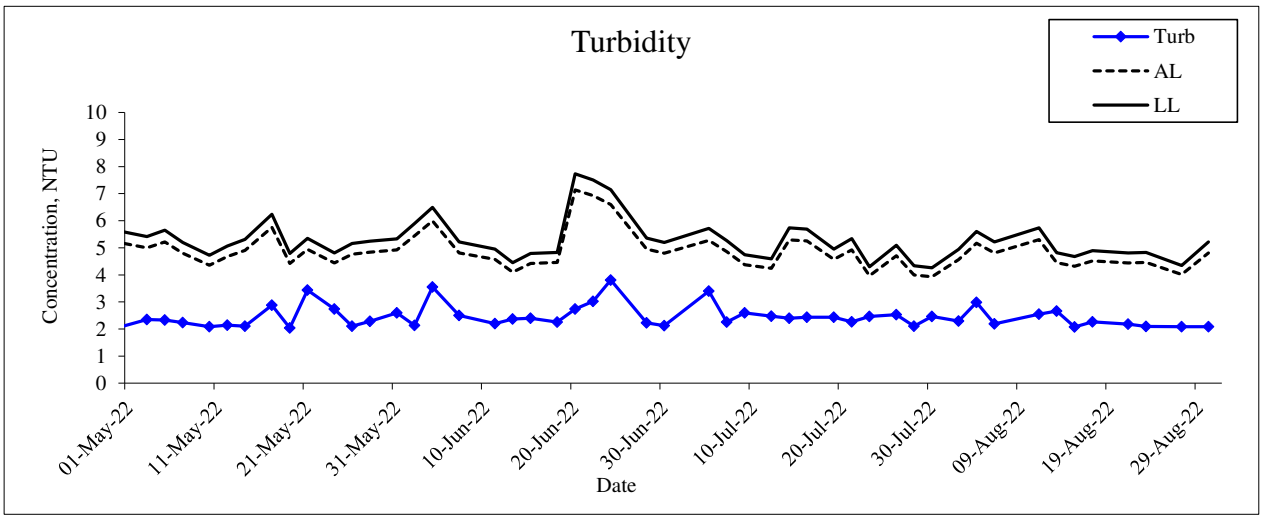


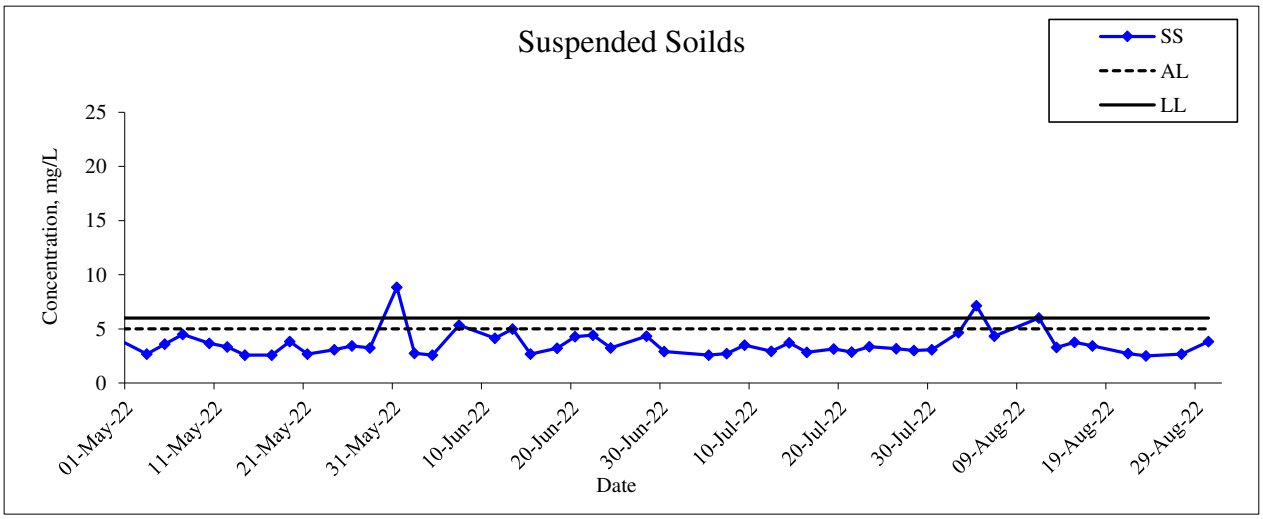




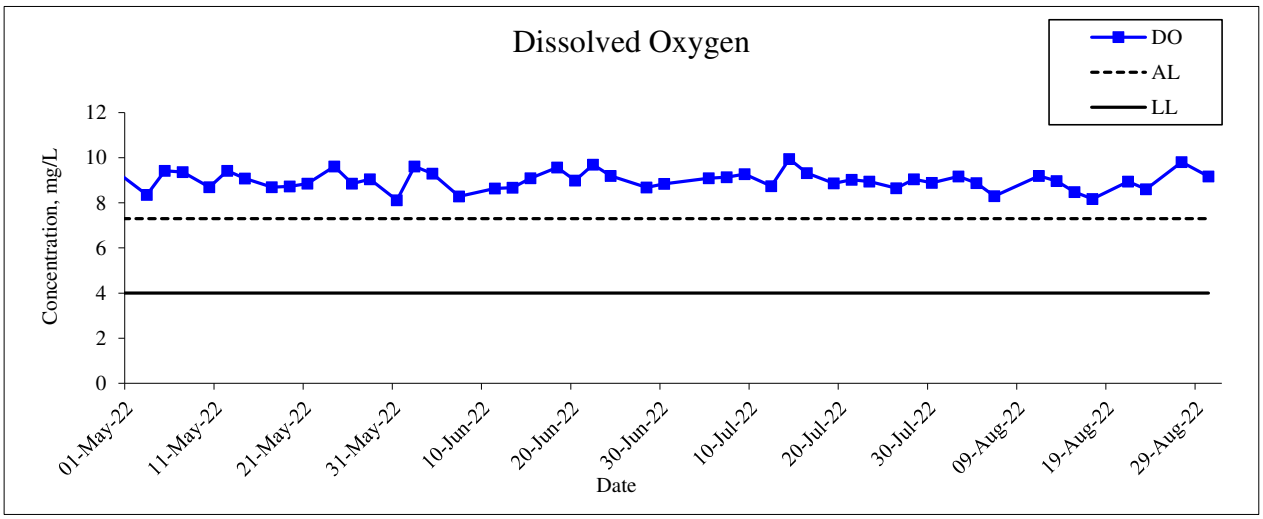
Monitoring Location: WSR2

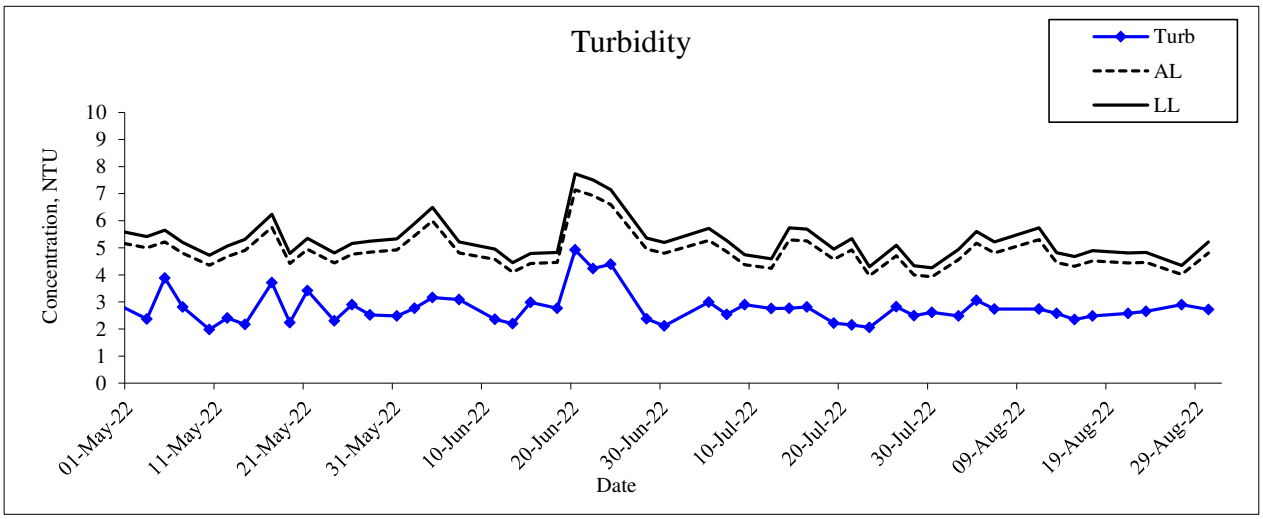


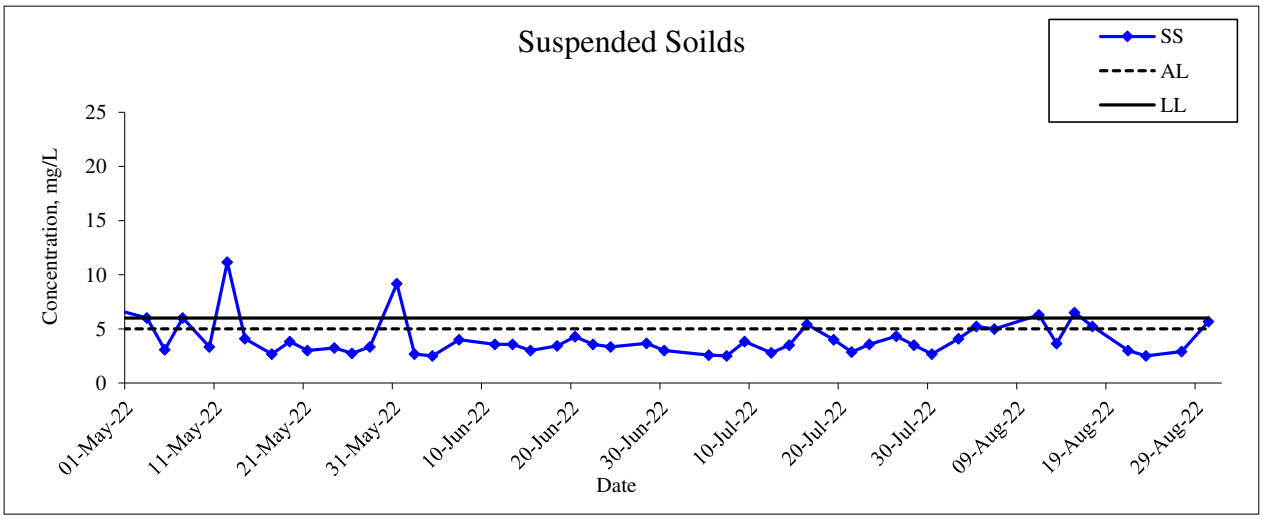




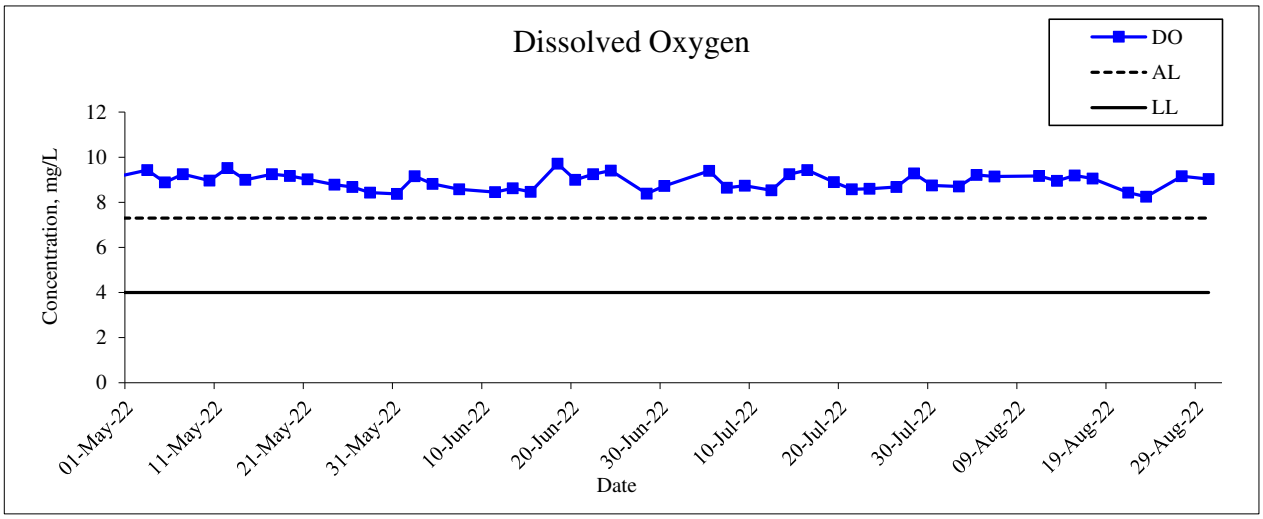
Monitoring Location: WSR3

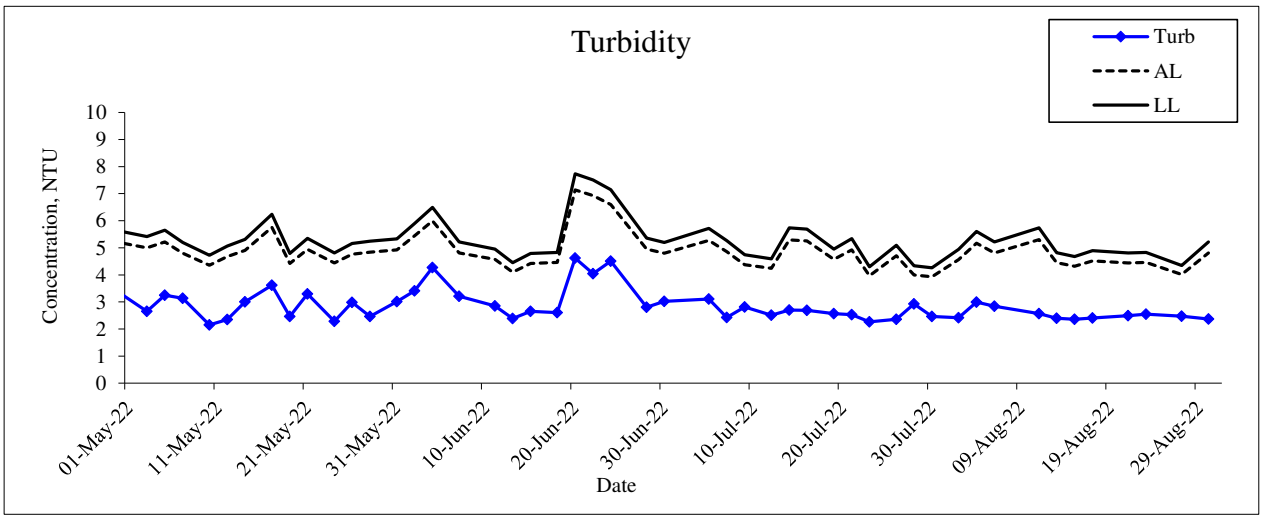


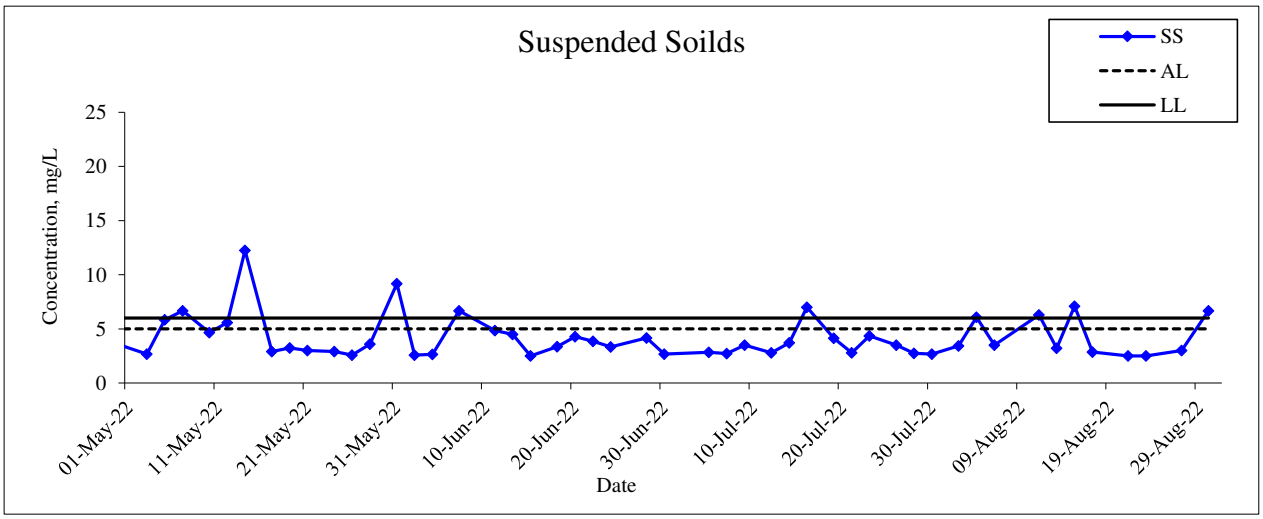




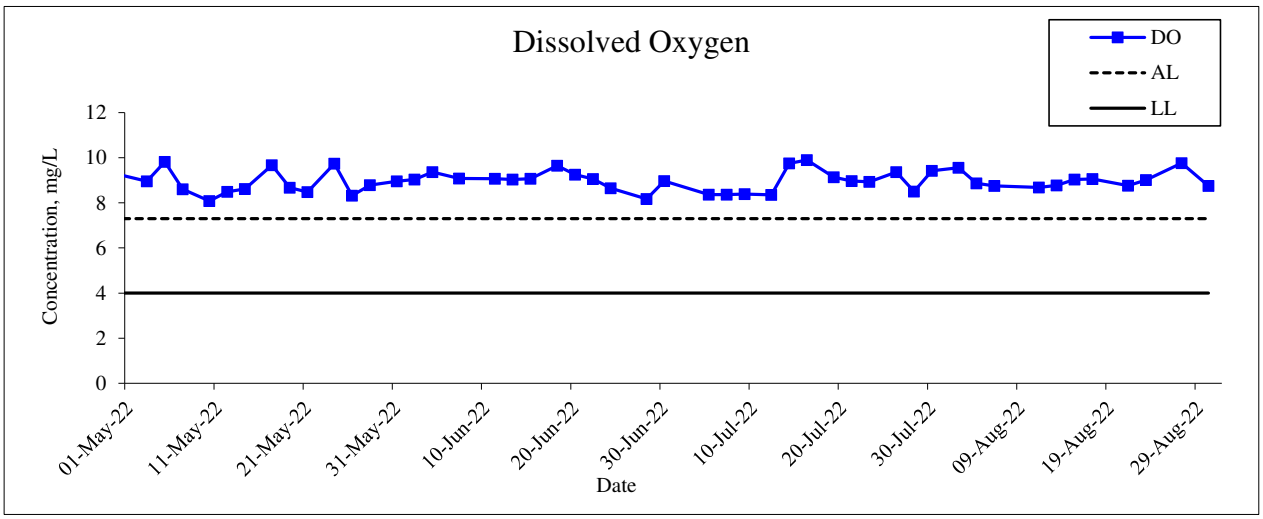
Monitoring Location: WSR4

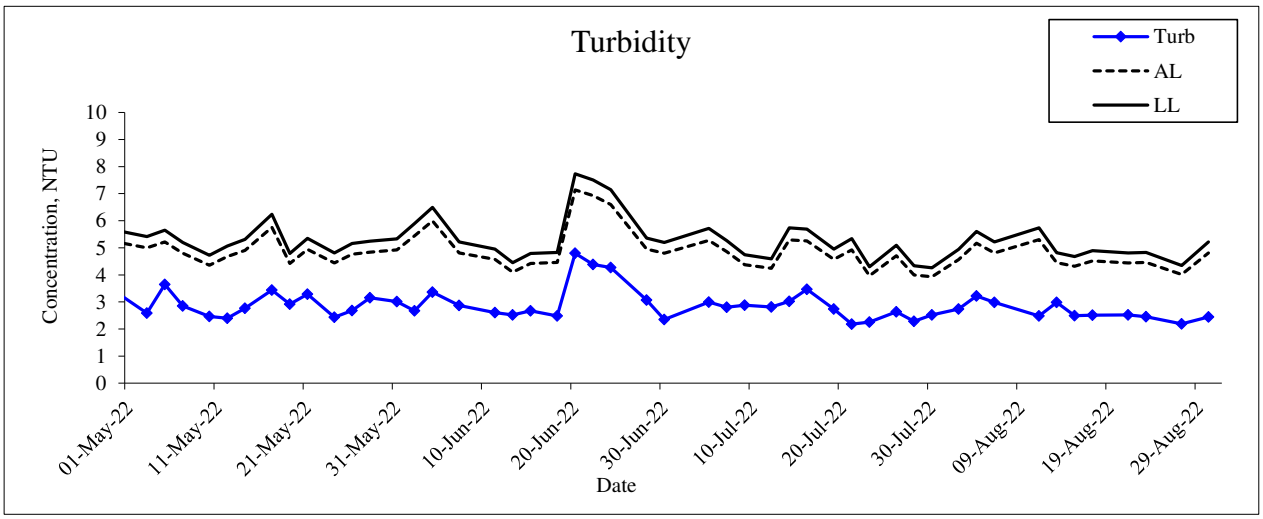


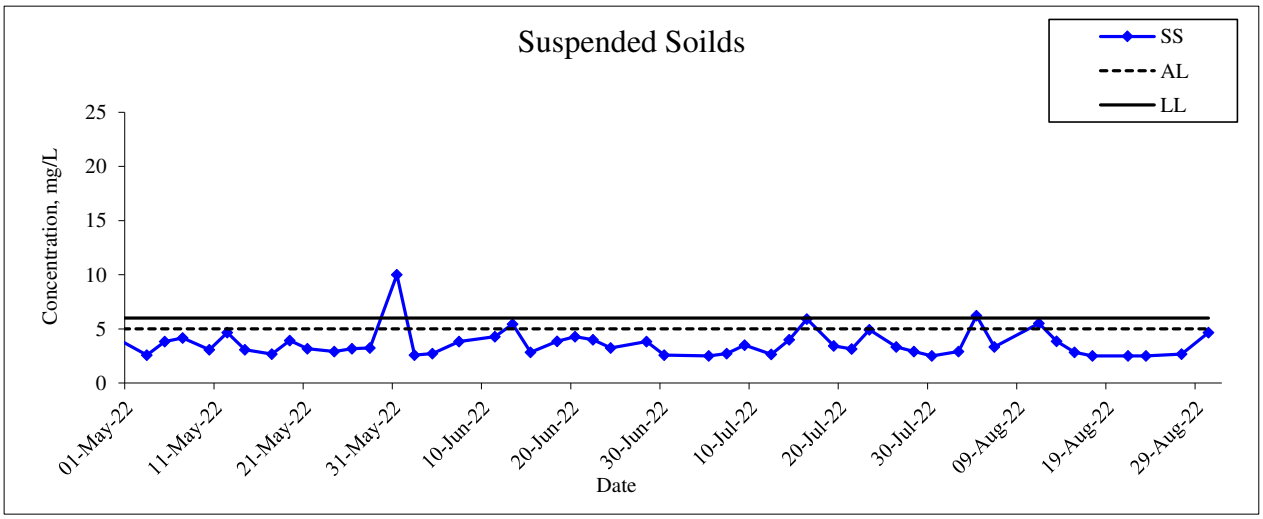




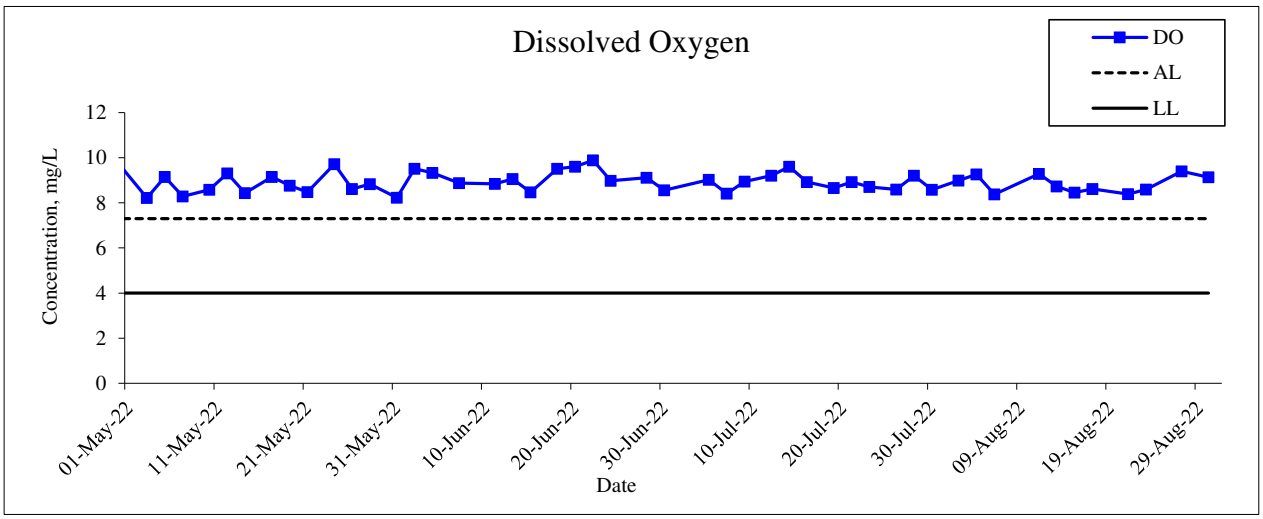
Monitoring Location: WSR16

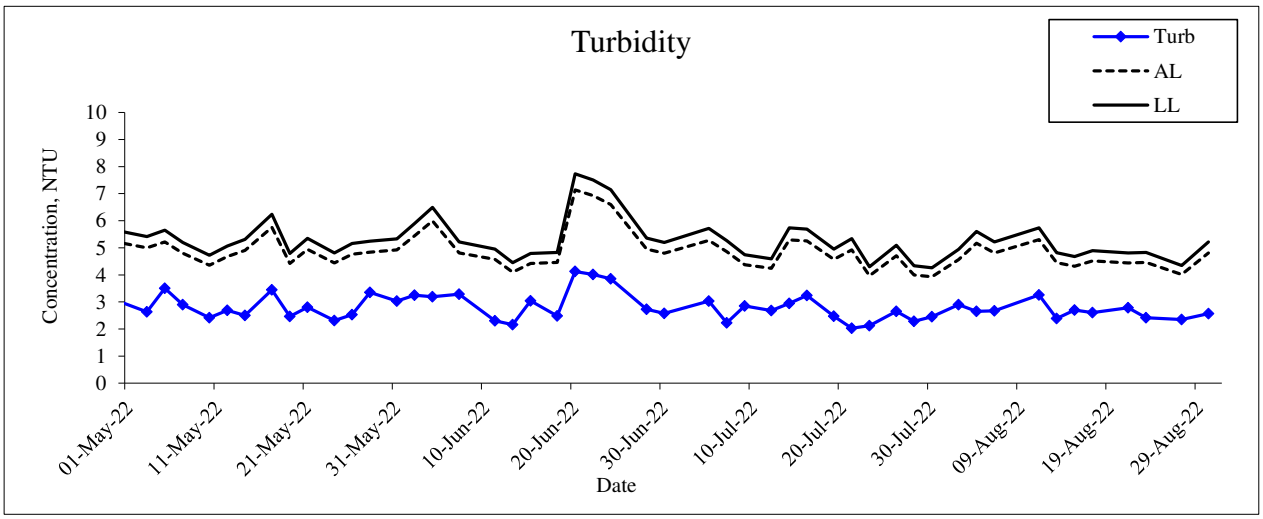


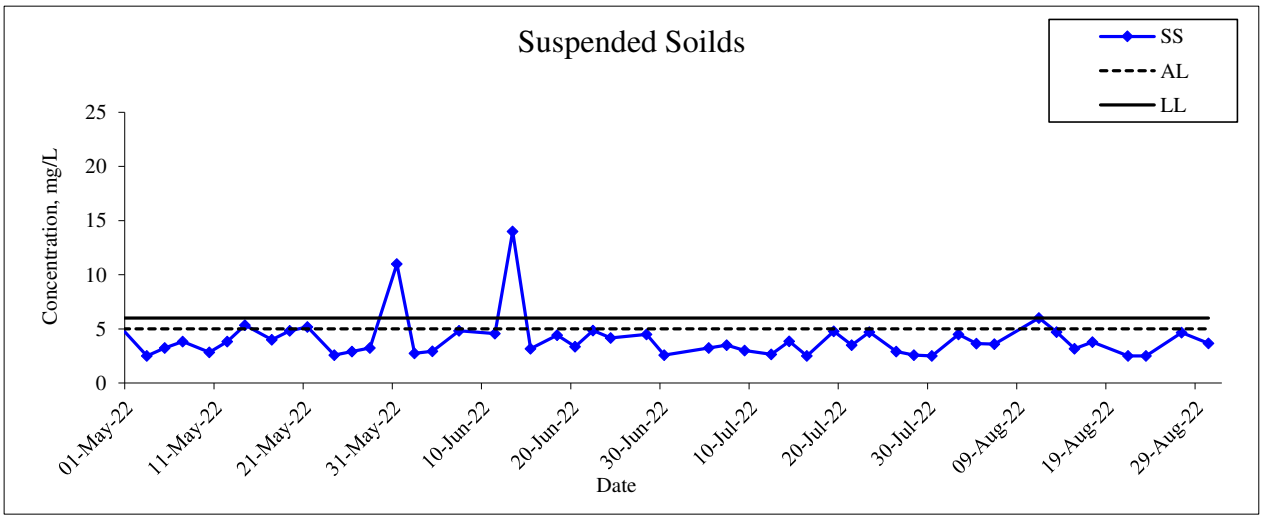




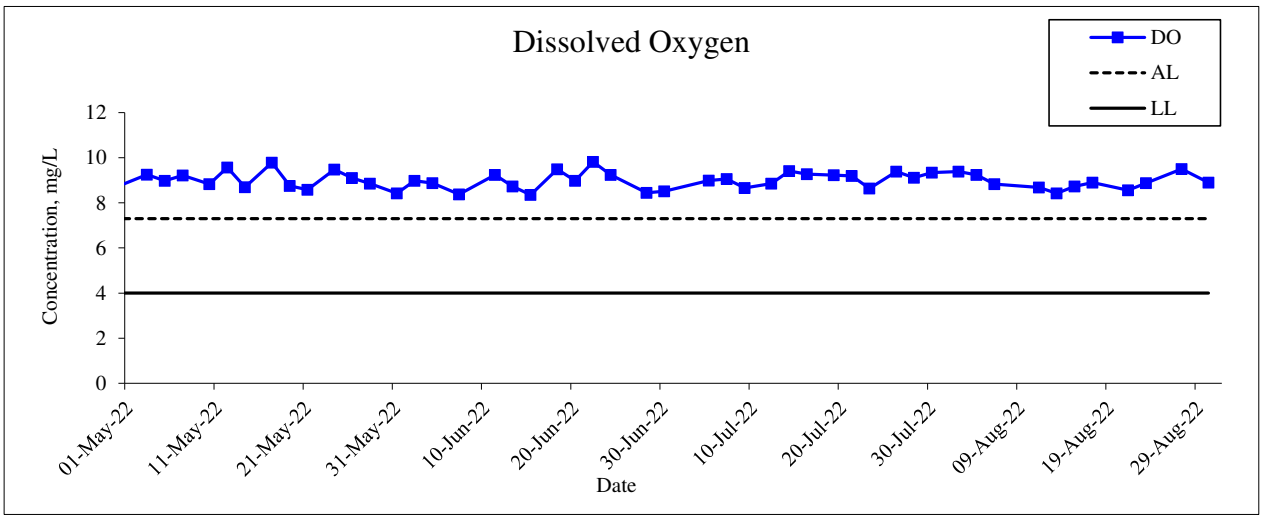
Monitoring Location: WSR33

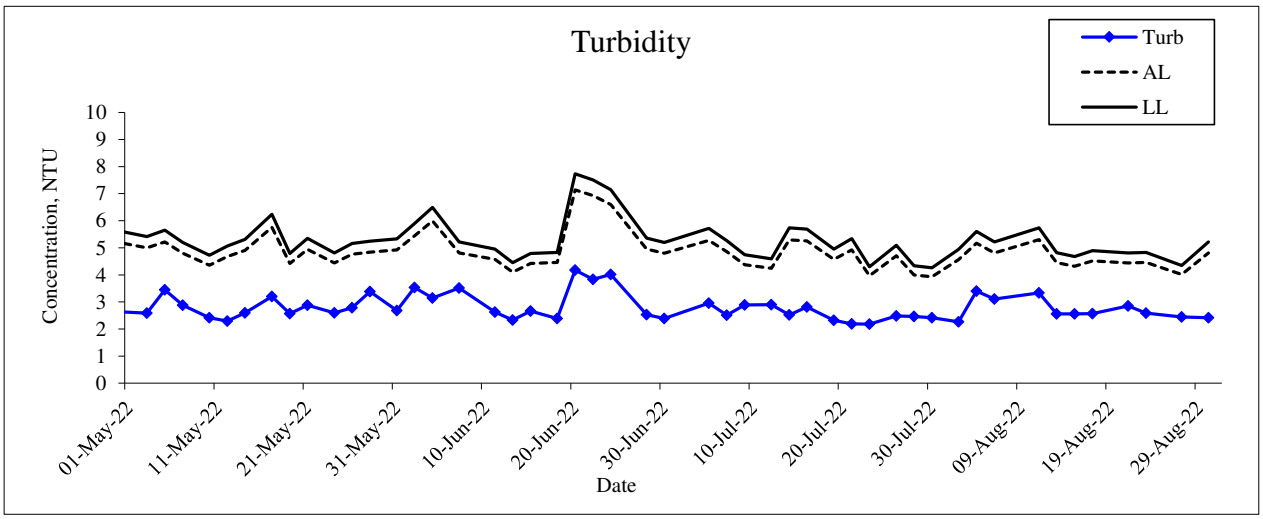


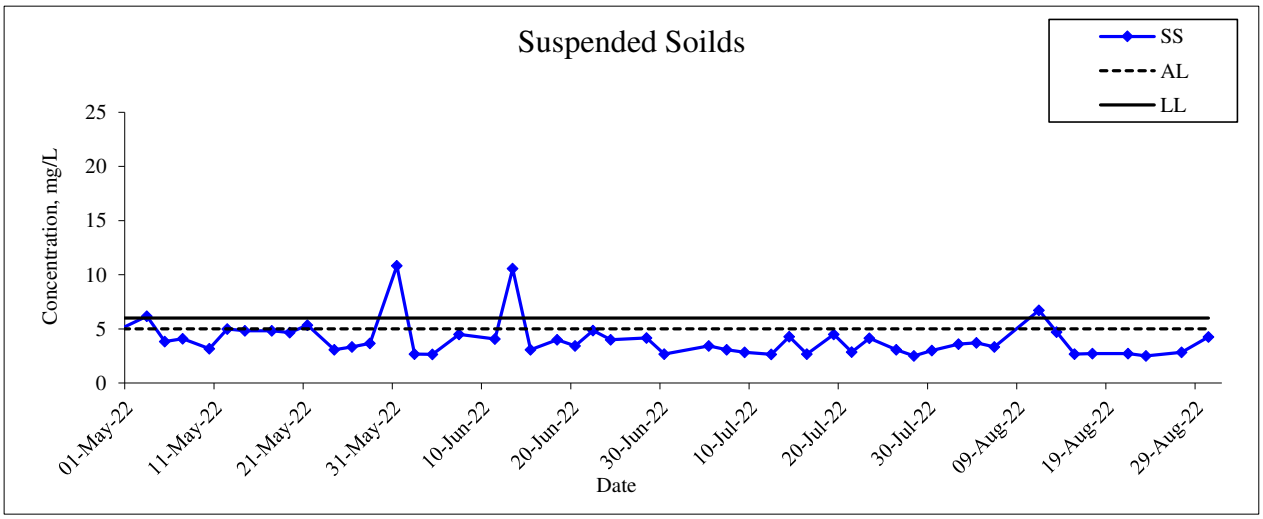




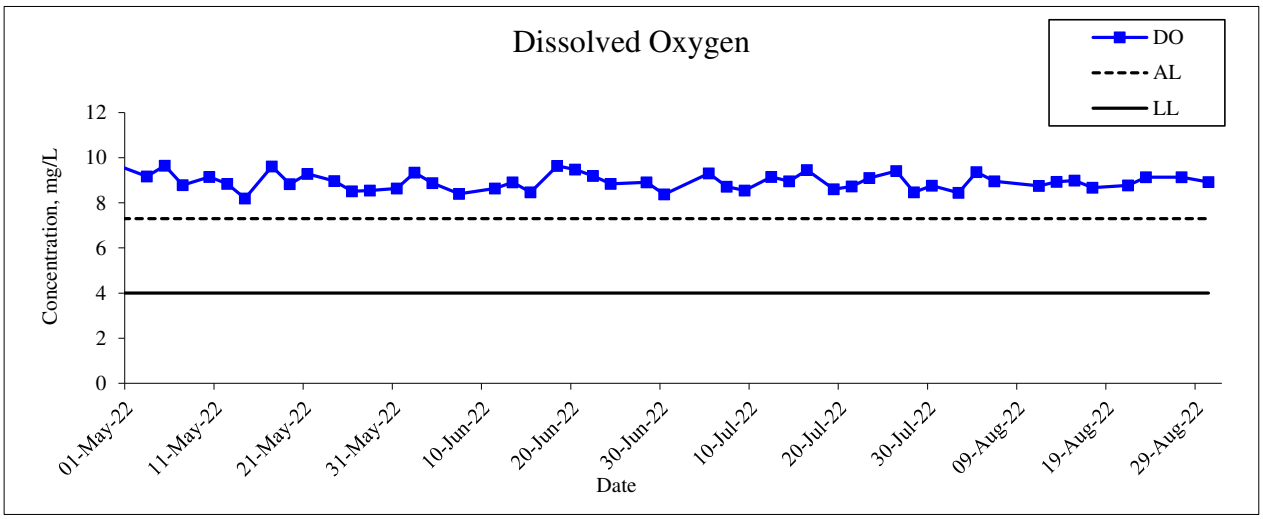
Monitoring Location: WSR36

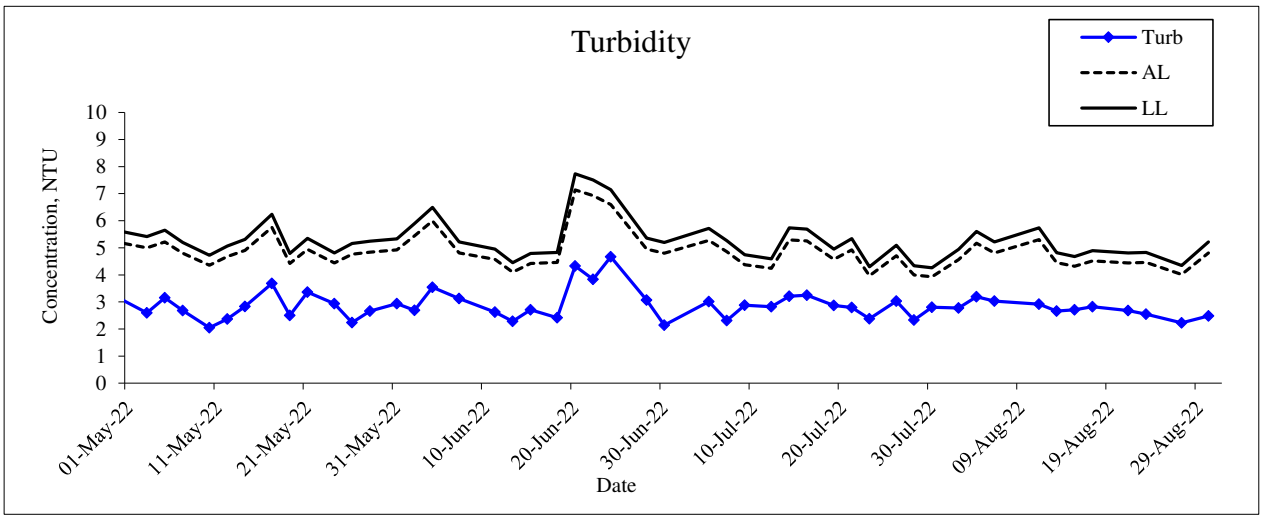


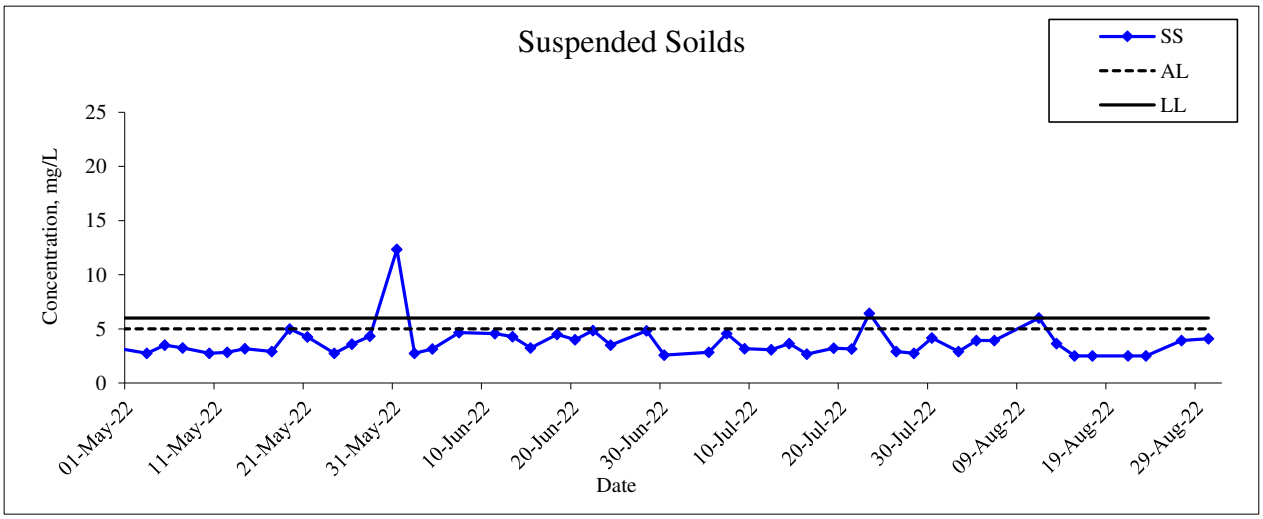




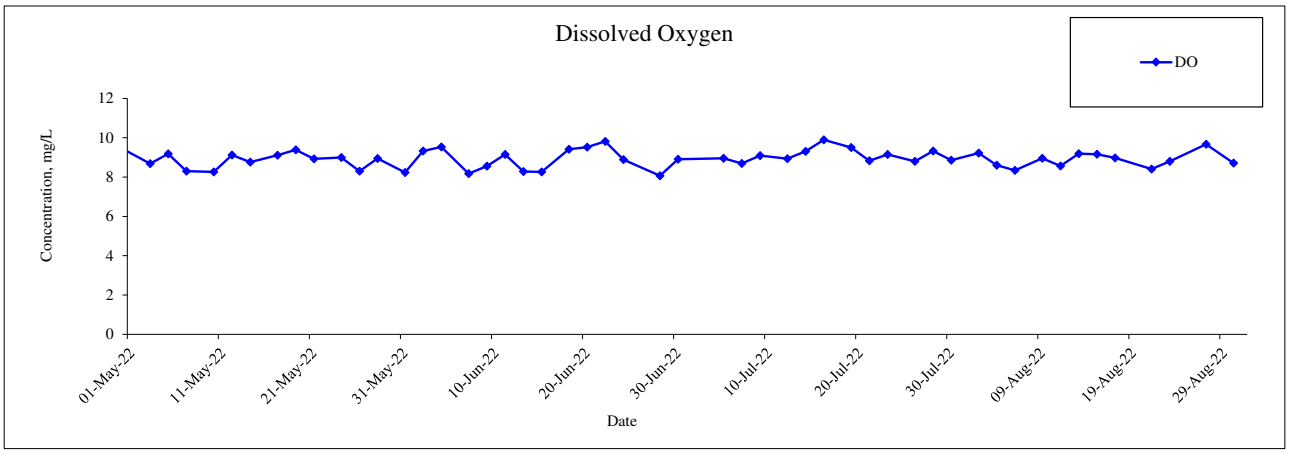
Monitoring Location: WSR37

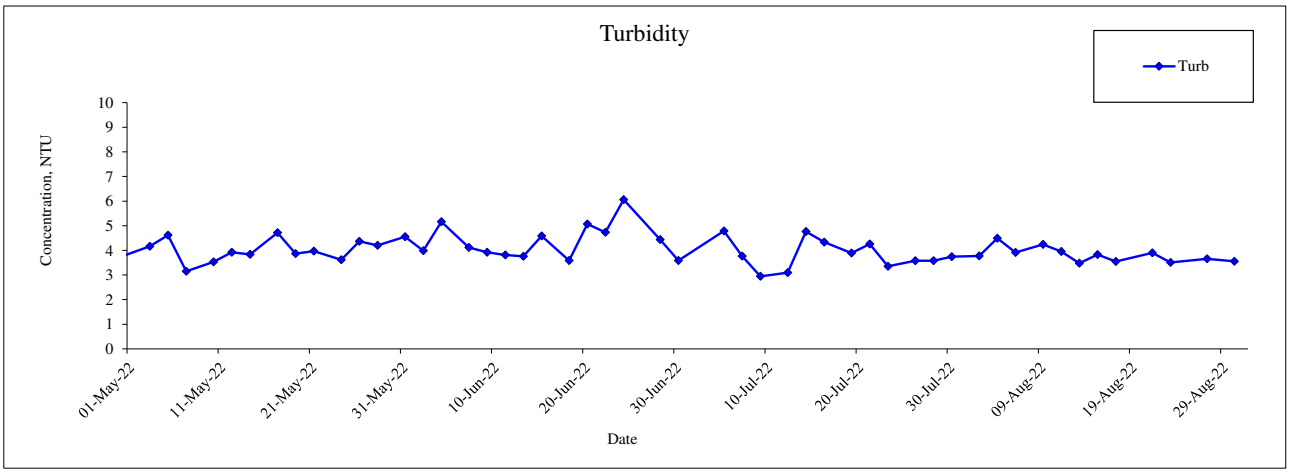


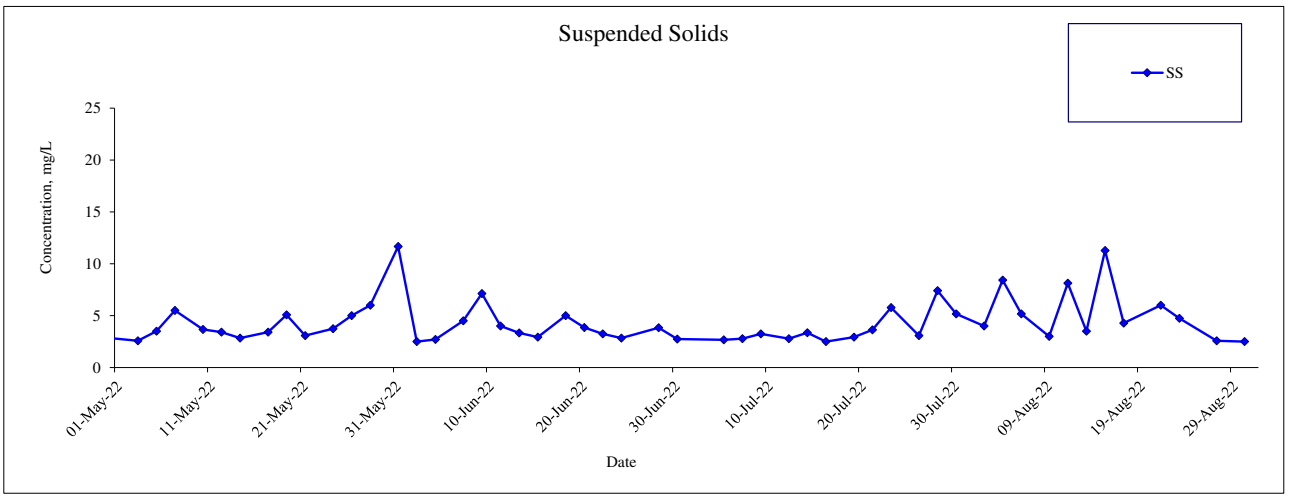




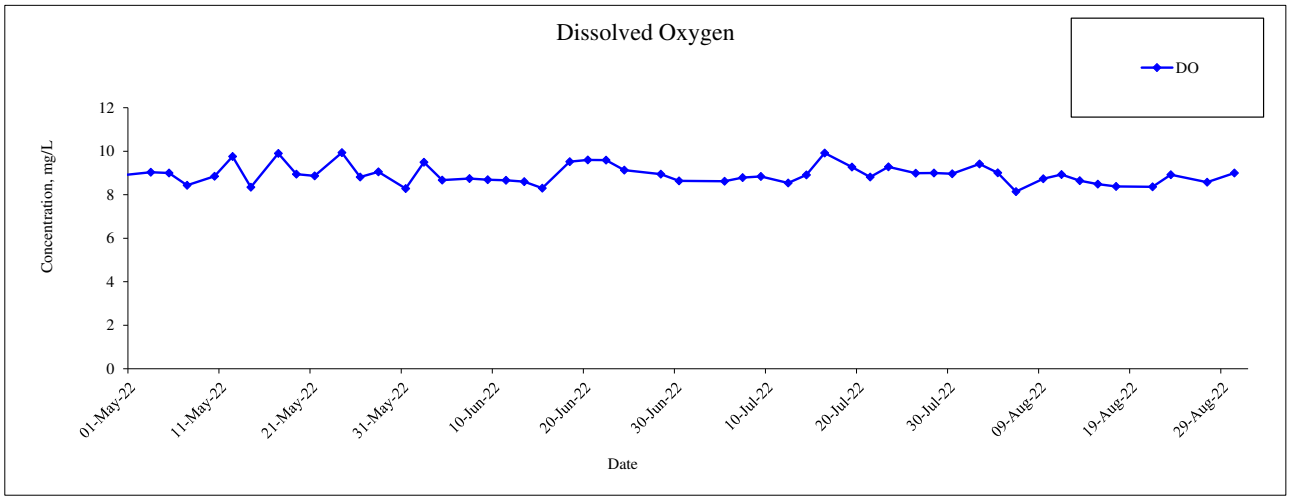
Middle Ebb Tide
Monitoring Location: CE

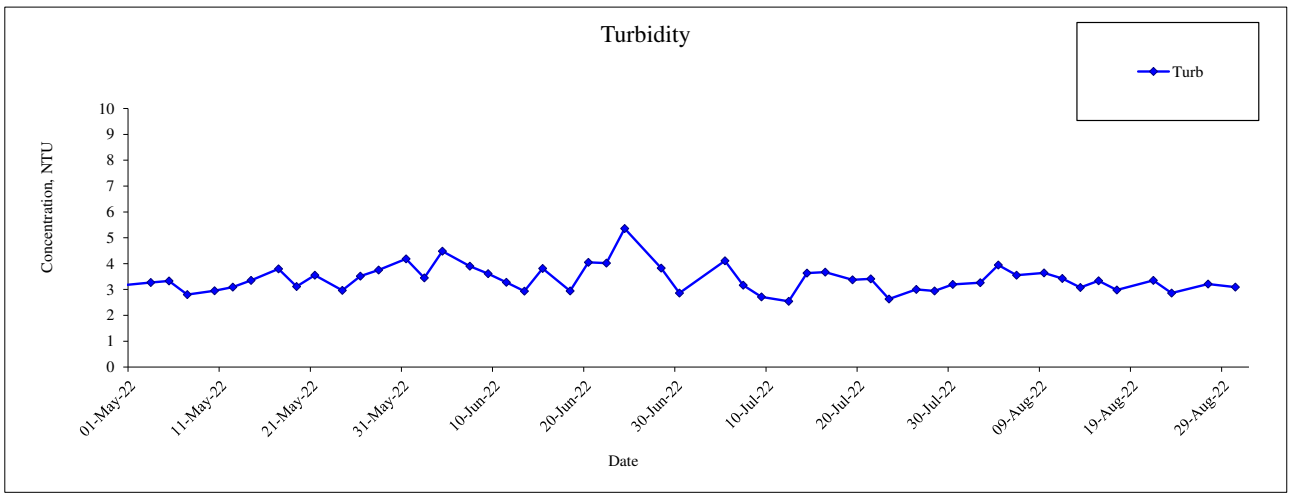


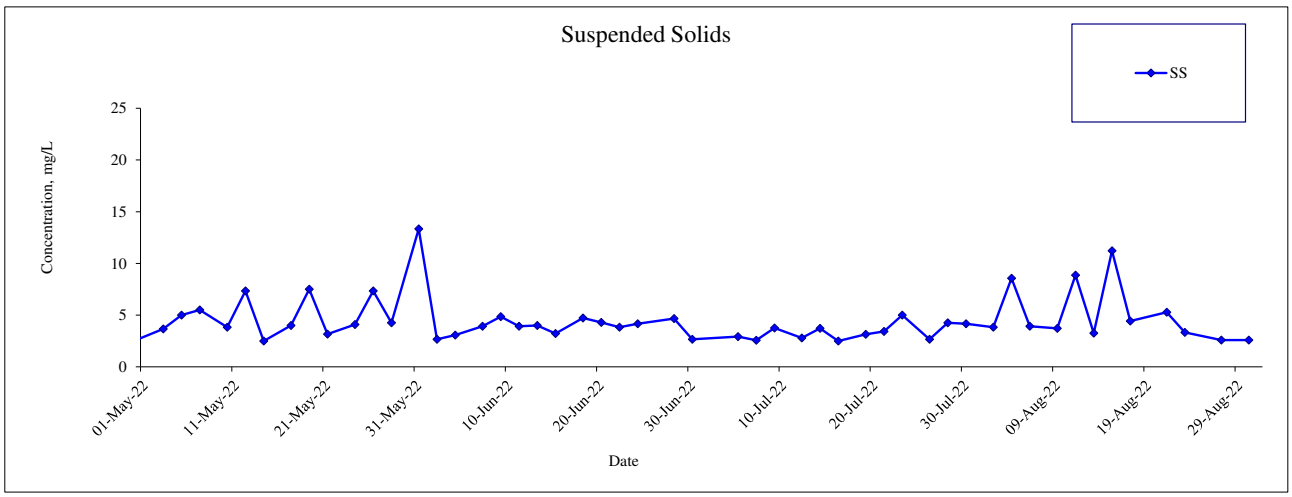




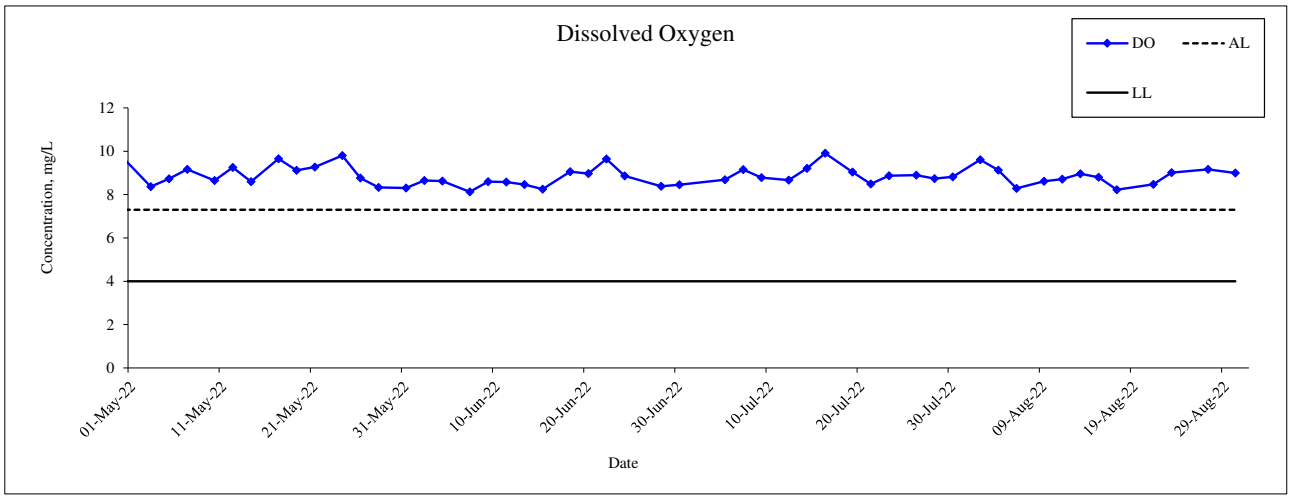
Monitoring Location: CF

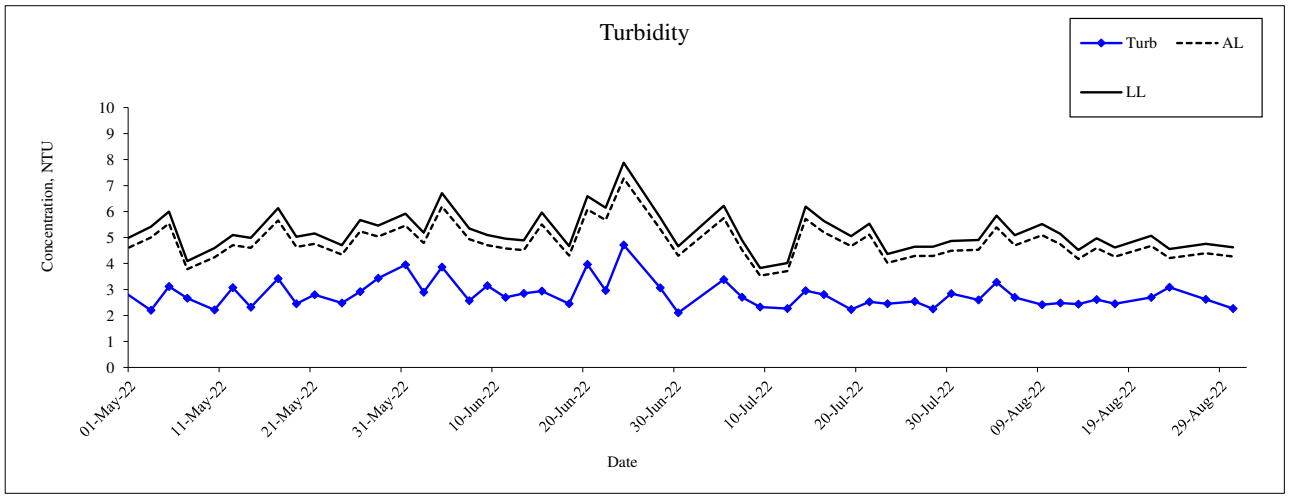


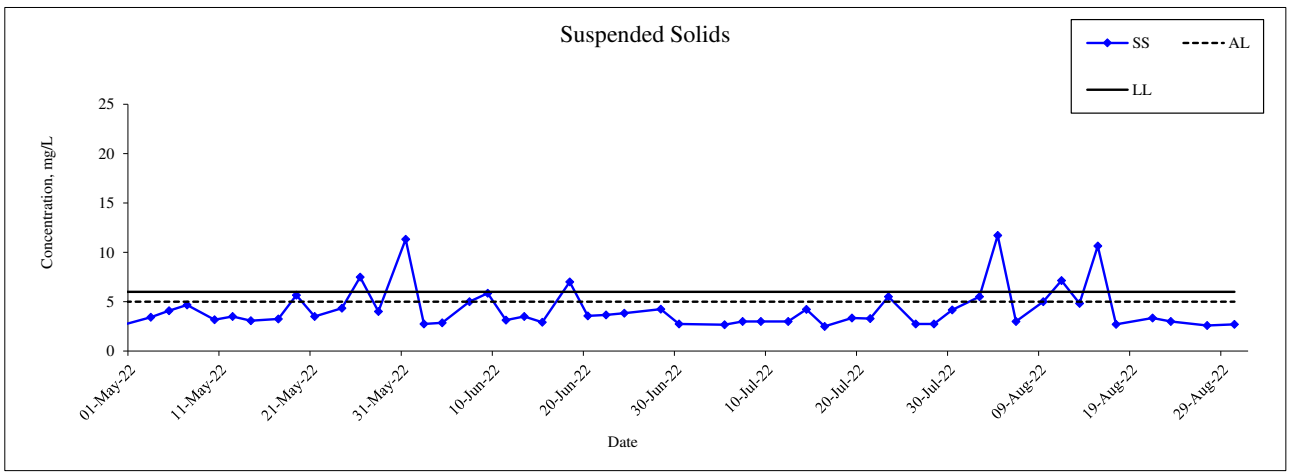




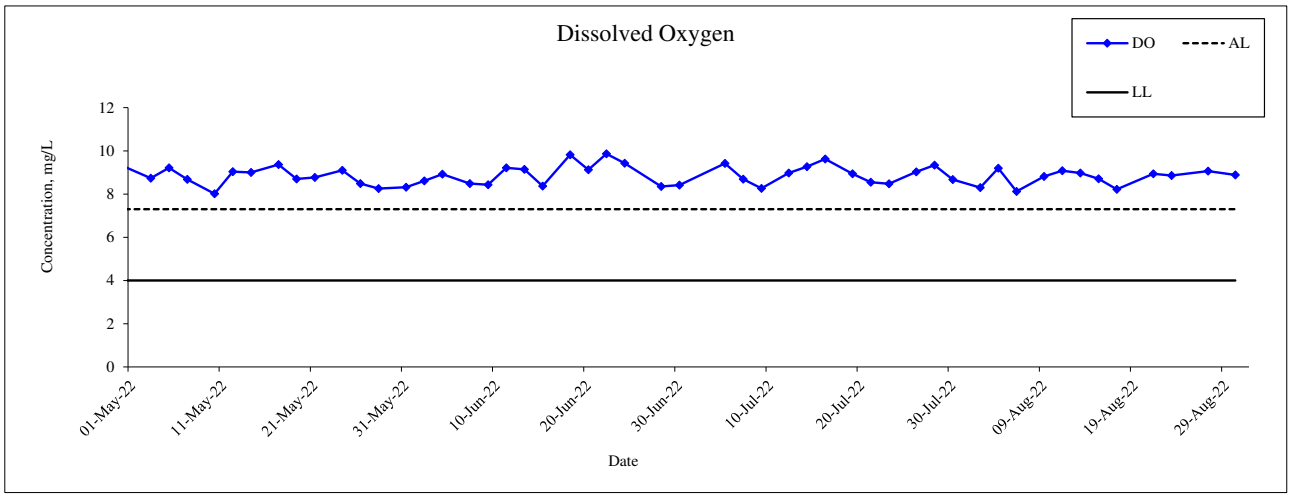
Monitoring Location: WSR1

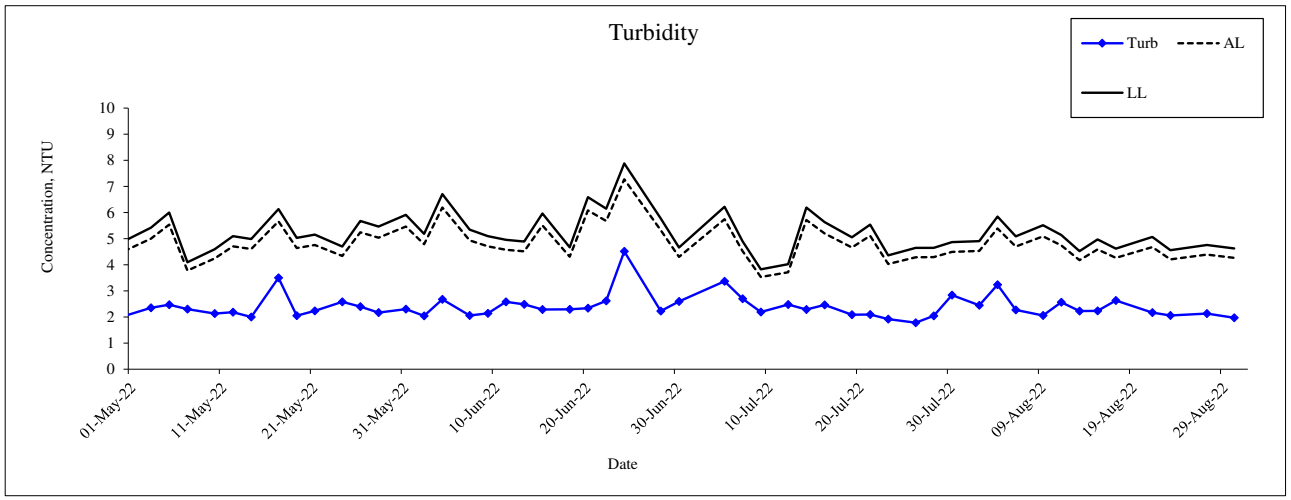


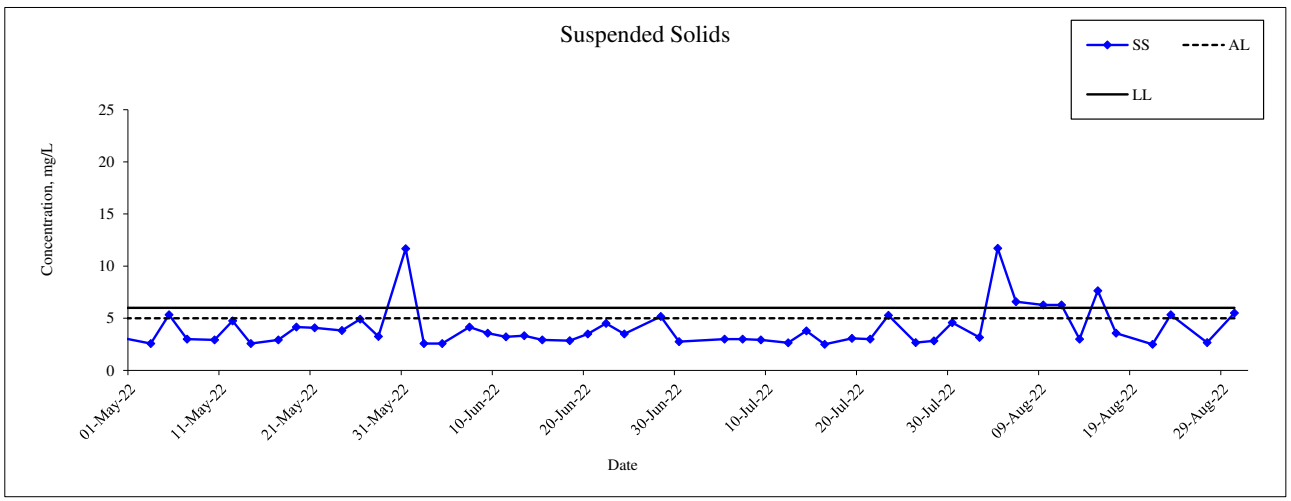




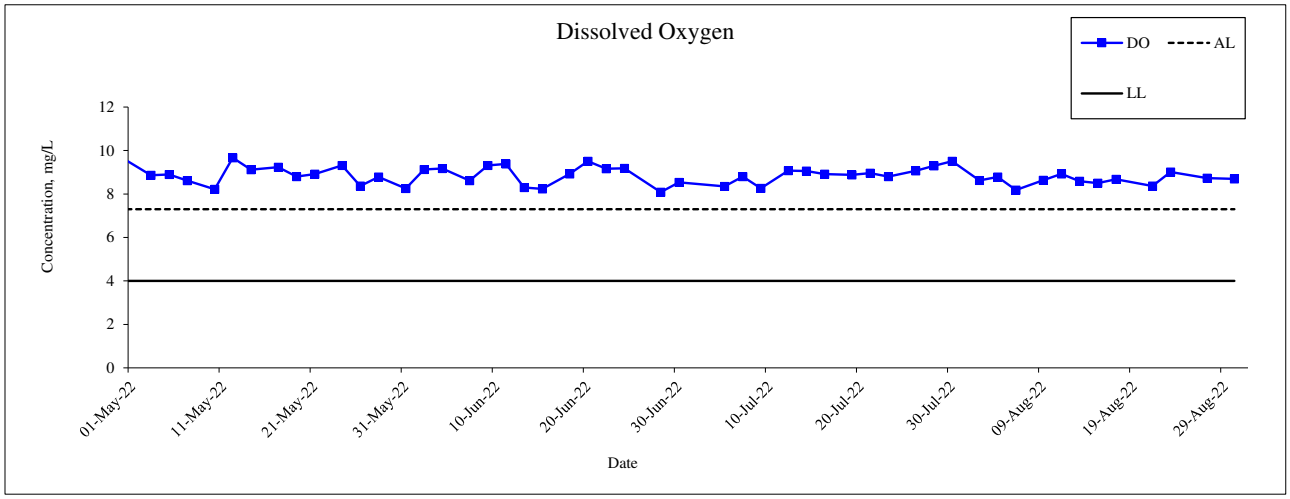
Monitoring Location: WSR2

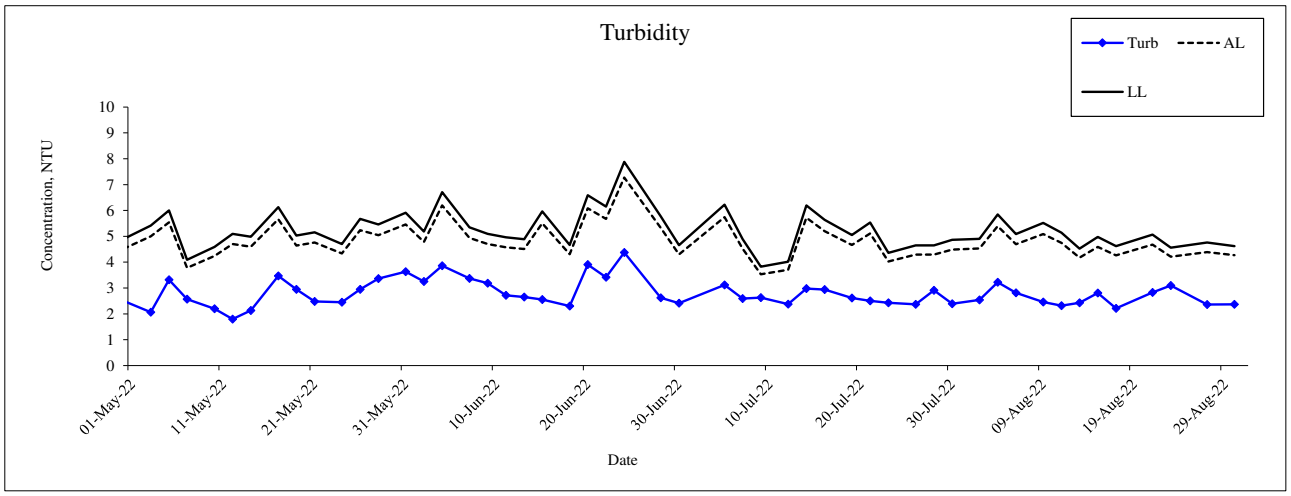


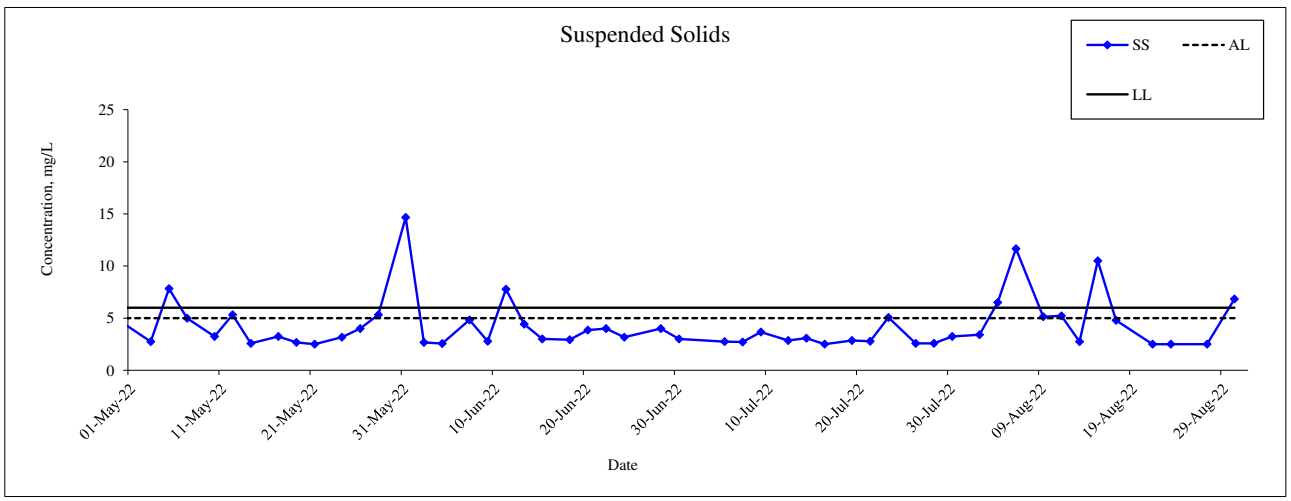




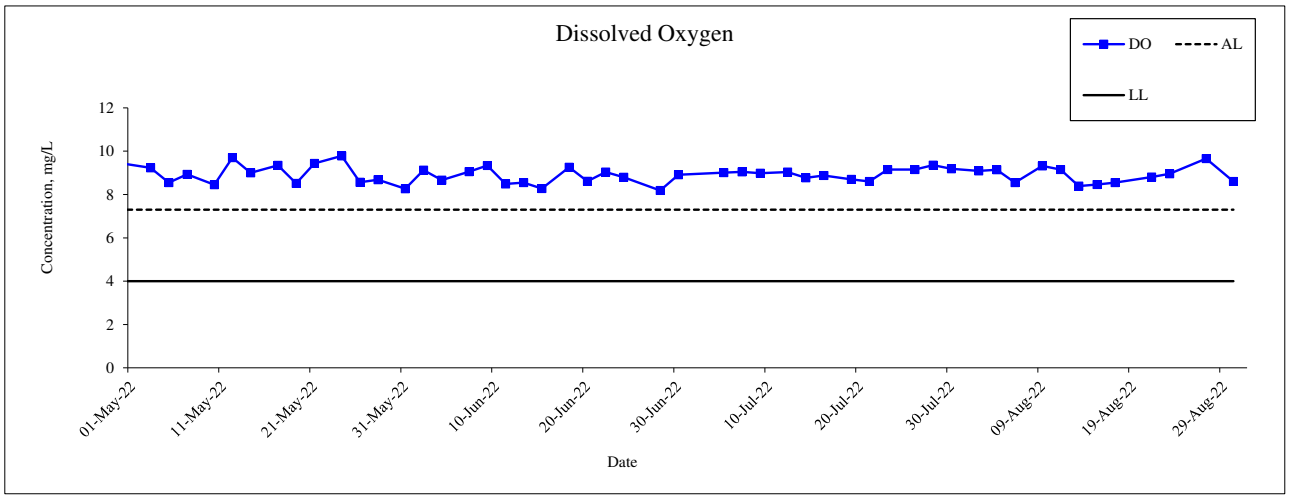
Monitoring Location: WSR3

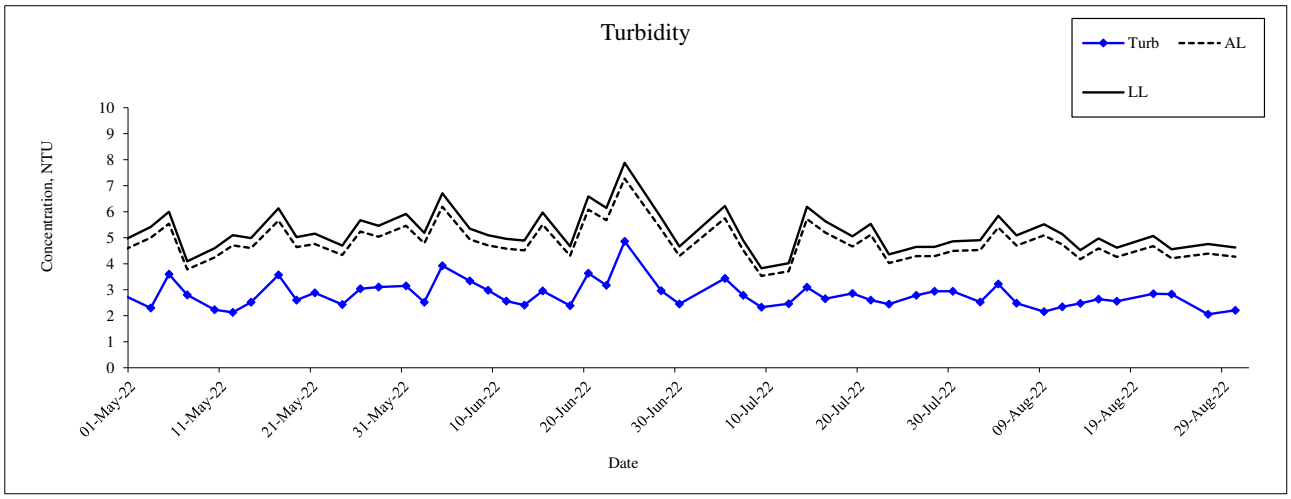


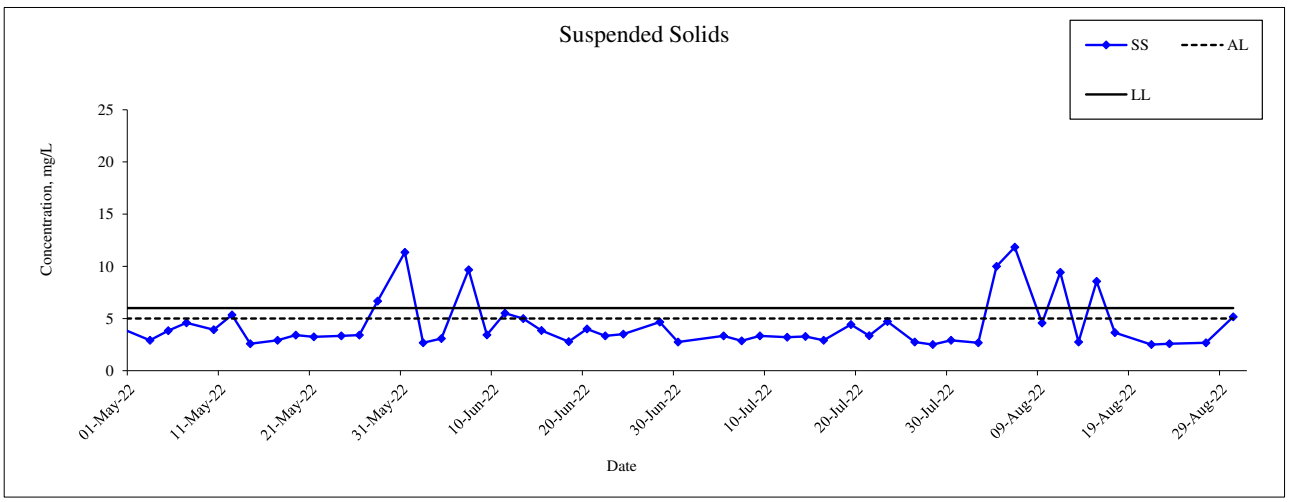




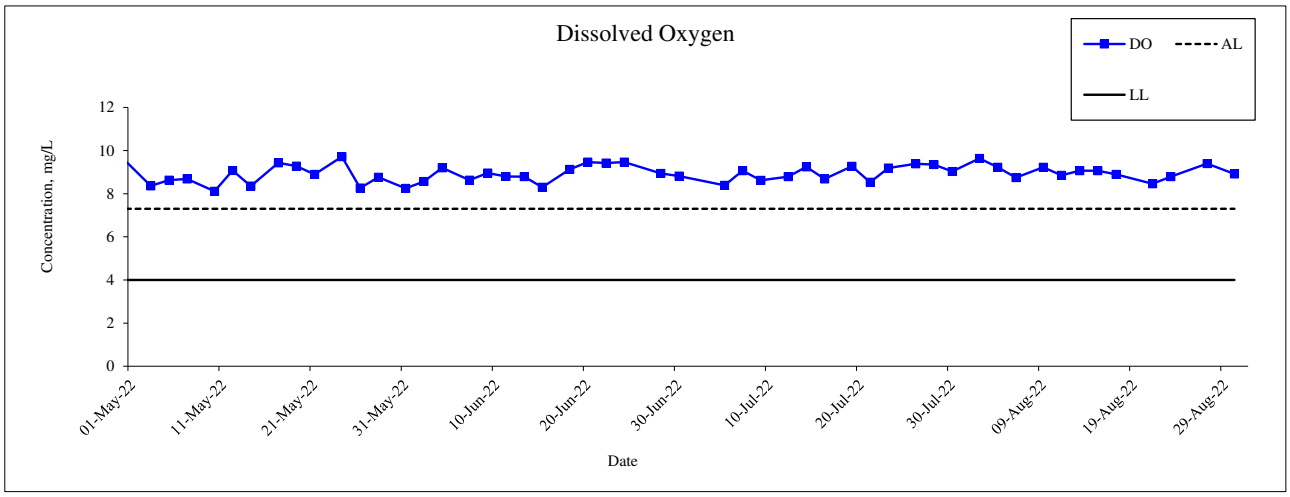
Monitoring Location: WSR4

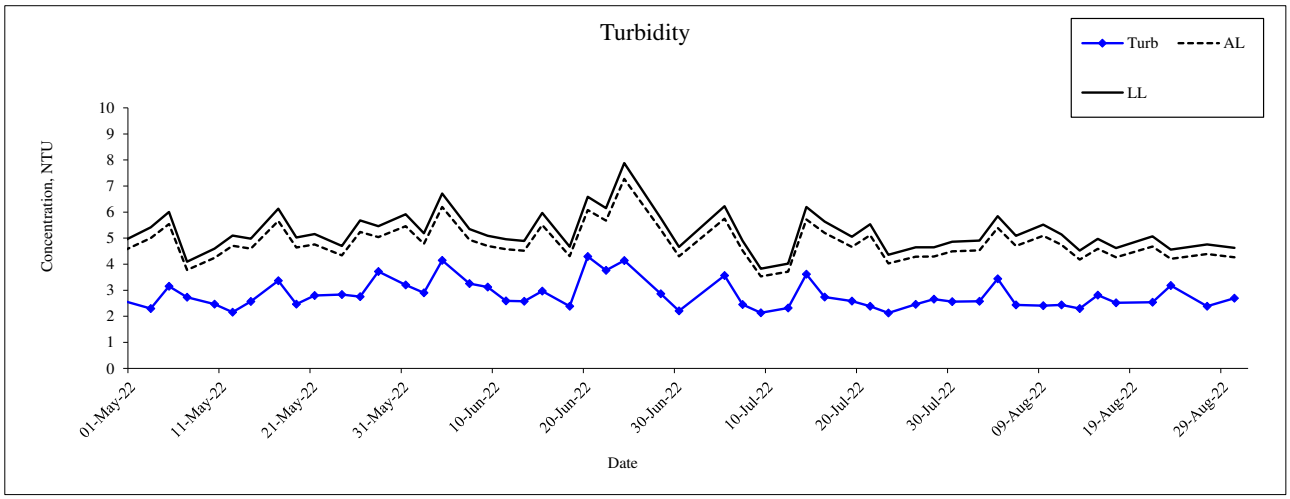


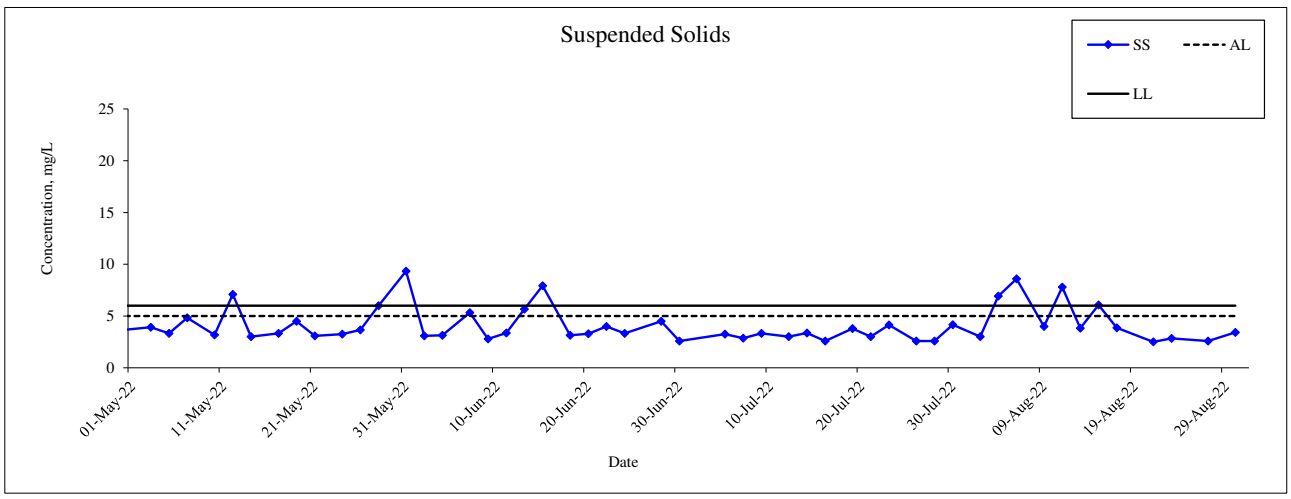




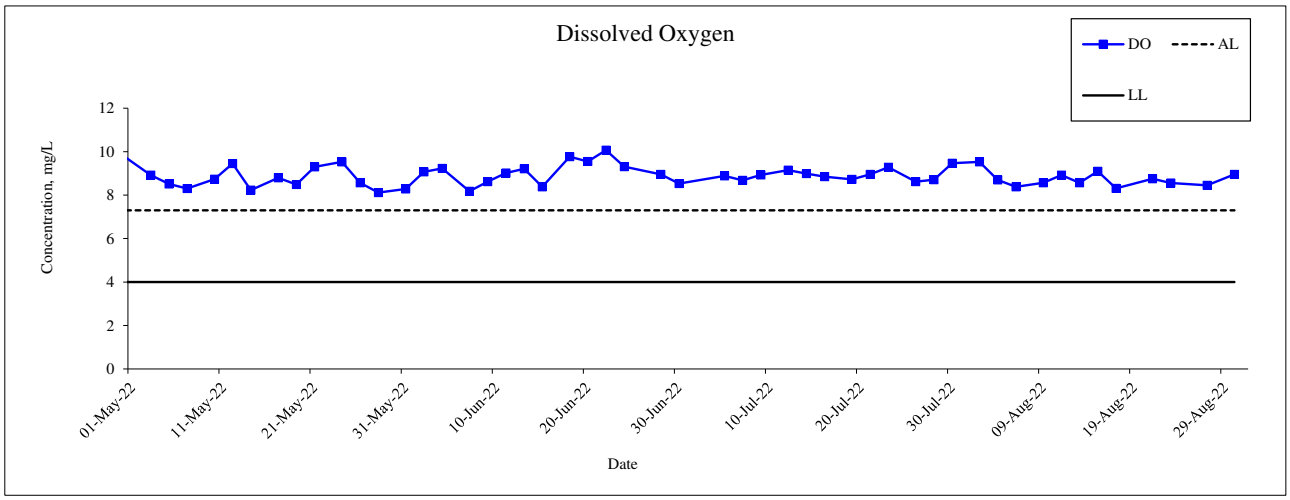
Monitoring Location: WSR16

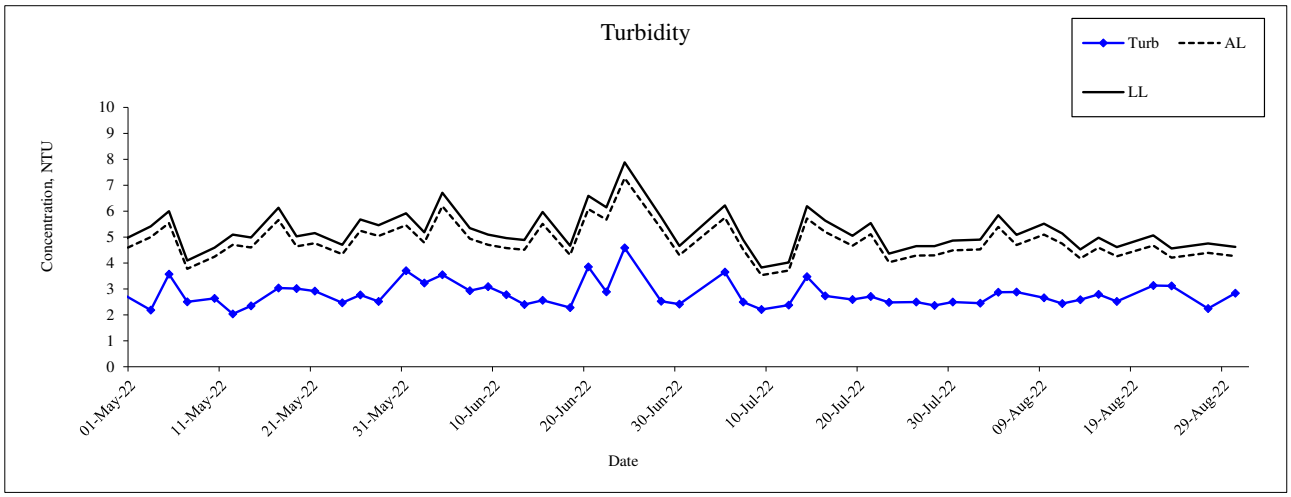


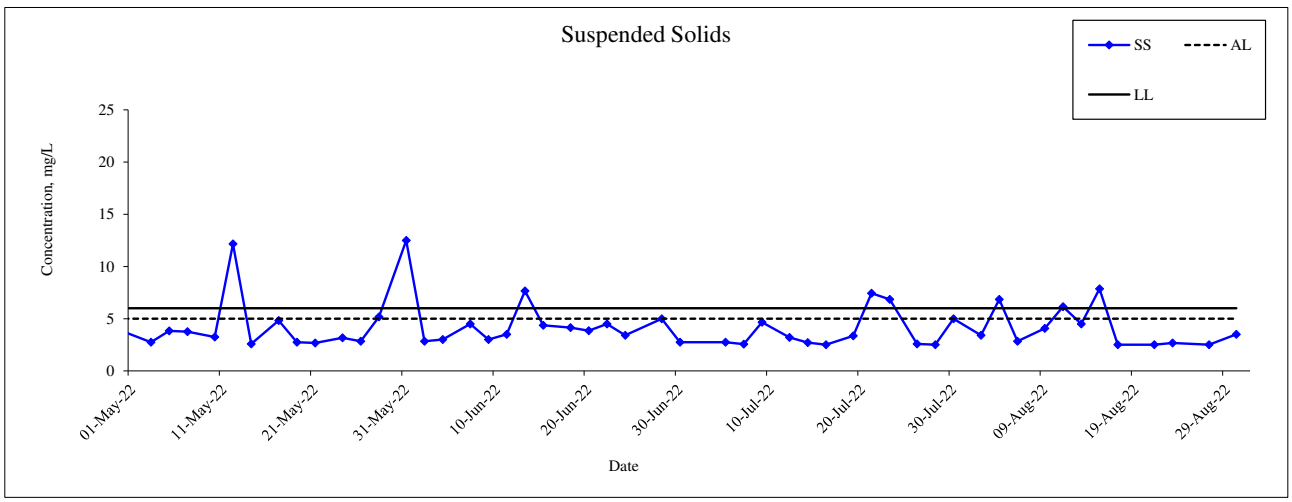




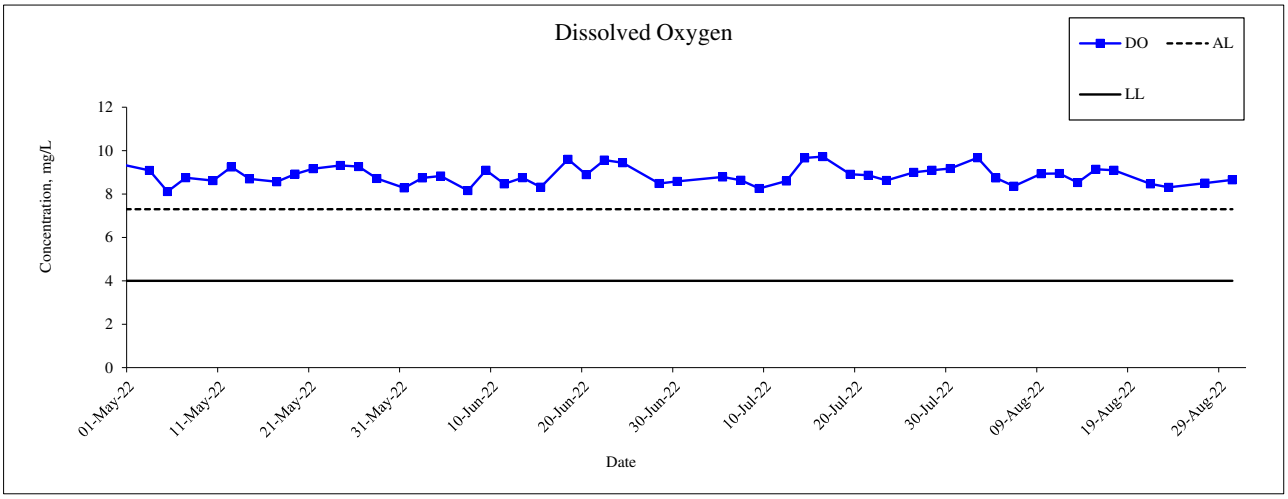
Monitoring Location: WSR33

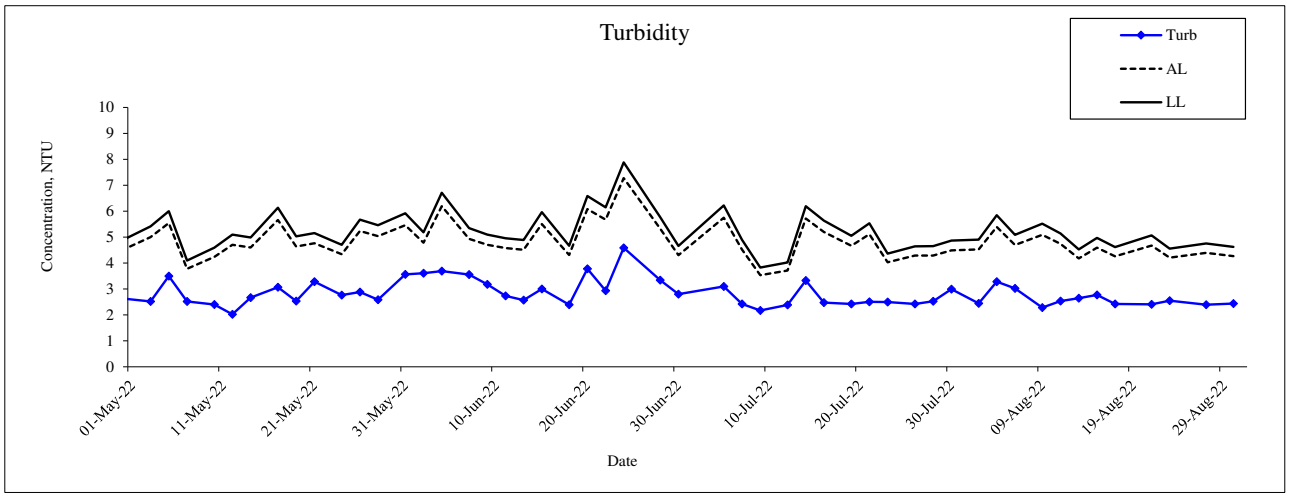


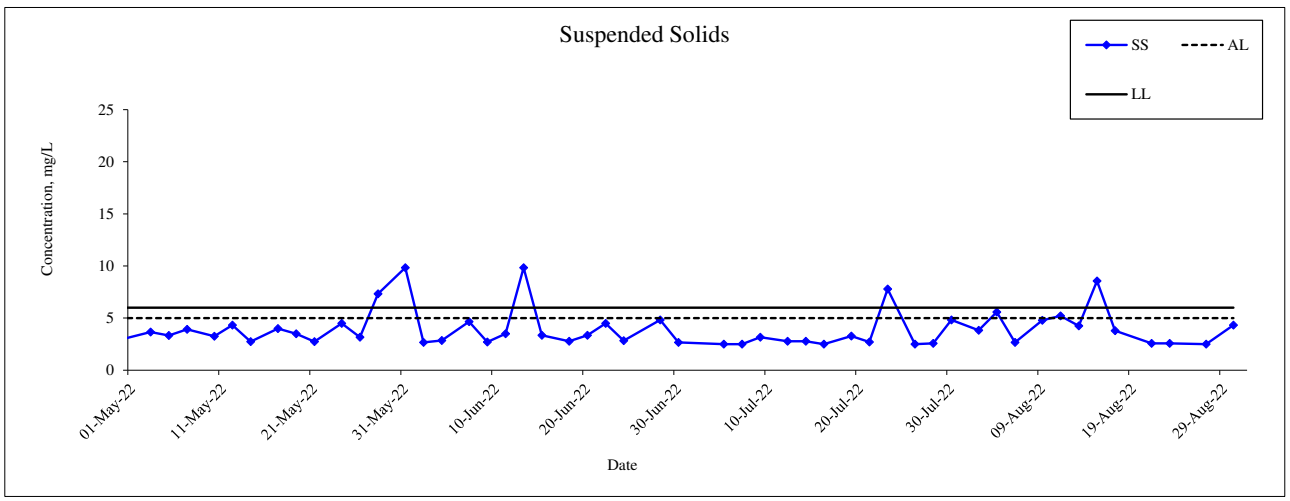




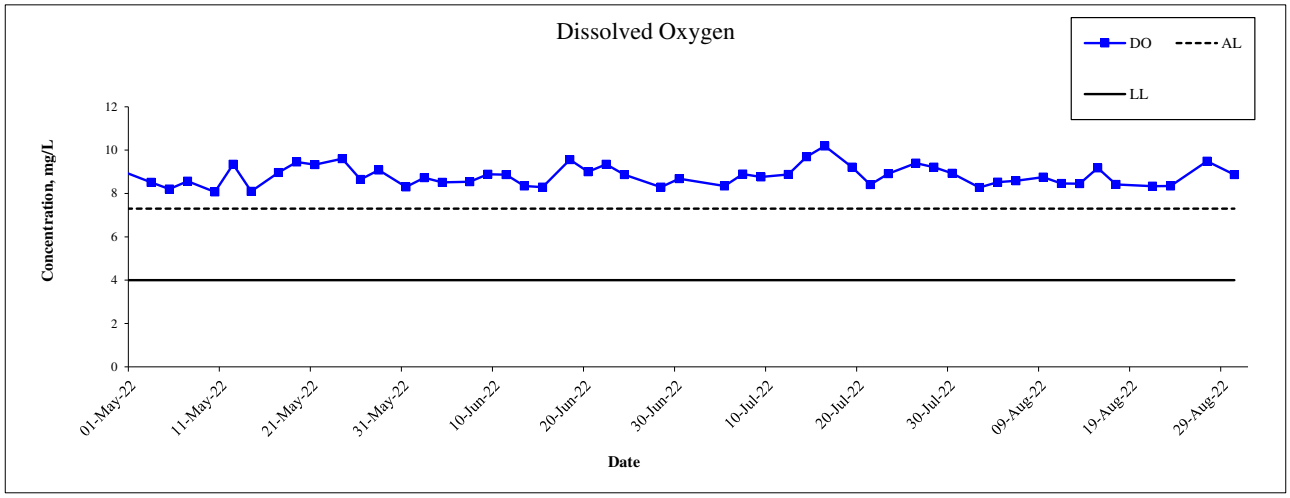
Monitoring Location: WSR36

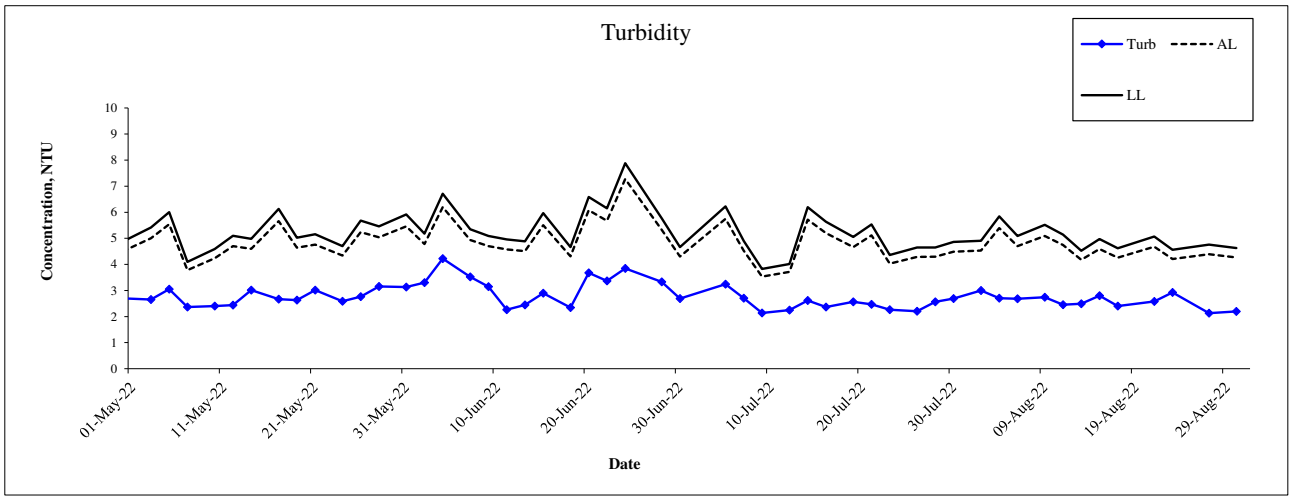


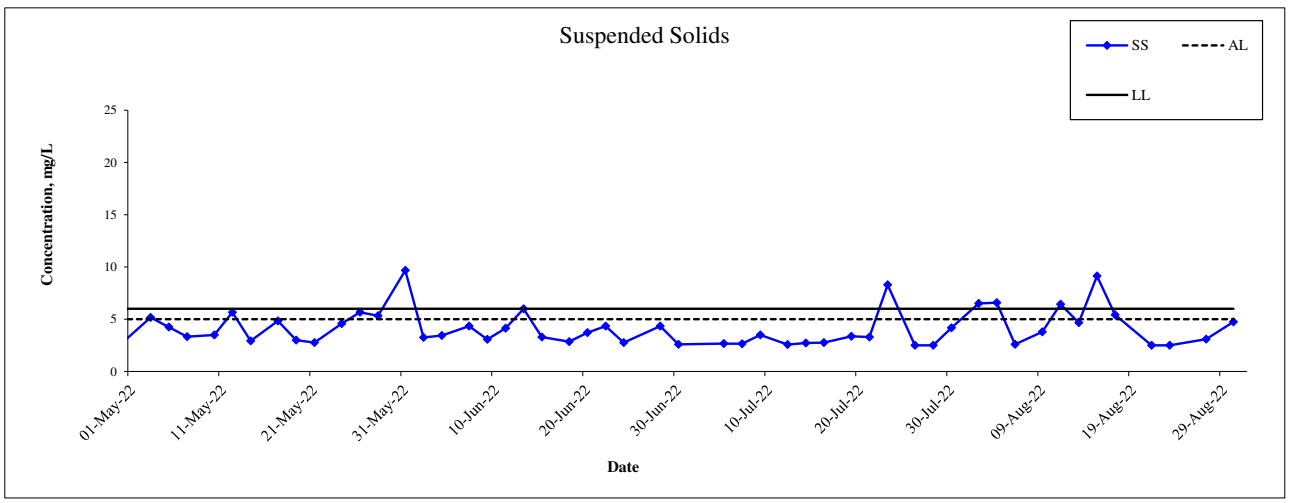




Monitoring Location: WSR37







Appendix E

Summary of Exceedances

Table E1 Summary of Exceedance in June 2022

Date	Station	Tide	SS Level (mg/L)	Action Level	Limit Level
07/06/2022	WSR2	Mid-Flood	5.3	Y	N
07/06/2022	WSR4	Mid-Flood	6.7	Y	Y
07/06/2022	WSR4	Mid-Ebb	9.7	Y	Y
11/06/2022	WSR3	Mid-Ebb	8.7	Y	Y
11/06/2022	WSR4	Mid-Ebb	6.0	Y	N
13/06/2022	WSR33	Mid-Flood	15.7	Y	Y
13/06/2022	WSR36	Mid-Flood	11.7	Y	Y
13/06/2022	WSR16	Mid-Ebb	5.7	Y	N
13/06/2022	WSR33	Mid-Ebb	7.7	Y	Y
13/06/2022	WSR36	Mid-Ebb	9.8	Y	Y
13/06/2022	WSR37	Mid-Ebb	6.0	Y	N
15/06/2022	WSR16	Mid-Ebb	8.1	Y	Y
17/06/2022	WSR1	Mid-Ebb	7.7	Y	Y
28/06/2022	WSR2	Mid-Ebb	5.2	Y	N

Table E2 Summary of Exceedance in July 2022

Date	Station	Tide	SS Level (mg/L)	Action Level	Limit Level
16/07/2022	WSR3	Mid-Flood	5.4	Y	N
16/07/2022	WSR4	Mid-Flood	7.0	Y	Y
16/07/2022	WSR16	Mid-Flood	5.9	Y	N
19/07/2022	WSR33	Mid-Flood	5.2	Y	N
21/07/2022	WSR33	Mid-Flood	8.0	Y	Y
23/07/2022	WSR16	Mid-Flood	5.3	Y	N
23/07/2022	WSR37	Mid-Flood	7.0	Y	Y
23/07/2022	WSR36	Mid-Ebb	8.7	Y	Y
23/07/2022	WSR37	Mid-Ebb	8.7	Y	Y

Table E3 Summary of Exceedance in August 2022

Date	Station	Tide	SS Level (mg/L)	Action Level	Limit Level
02/08/2022	WSR37	Mid-Ebb	6.5	Y	Y
04/08/2022	WSR1	Mid-Ebb	13.0	Y	Y
04/08/2022	WSR2	Mid-Ebb	13.0	Y	Y
04/08/2022	WSR4	Mid-Ebb	11.2	Y	N
06/08/2022	WSR2	Mid-Ebb	6.6	Y	N
06/08/2022	WSR3	Mid-Ebb	11.7	Y	Y
06/08/2022	WSR4	Mid-Ebb	11.8	Y	Y
06/08/2022	WSR16	Mid-Ebb	8.6	Y	Y
09/08/2022	WSR2	Mid-Ebb	5.5	Y	N
09/08/2022	WSR36	Mid-Ebb	5.2	Y	N
11/08/2022	WSR3	Mid-Flood	6.8	Y	N
11/08/2022	WSR4	Mid-Flood	6.7	Y	N
11/08/2022	WSR36	Mid-Flood	7.3	Y	Y
15/08/2022	WSR3	Mid-Flood	6.5	Y	Y

Date	Station	Tide	SS Level (mg/L)	Action Level	Limit Level
15/08/2022	WSR4	Mid-Flood	7.1	Y	Y
30/08/2022	WSR1	Mid-Ebb	5.2	Y	N
30/08/2022	WSR3	Mid-Ebb	5.7	Y	N
30/08/2022	WSR4	Mid-Ebb	6.7	Y	Y
30/08/2022	WSR2	Mid-Flood	5.5	Y	N
30/08/2022	WSR3	Mid-Flood	6.8	Y	Y
30/08/2022	WSR4	Mid-Flood	5.2	Y	N

Appendix F

Waste Flow Table

Monthly Summary Waste Flow Table for 2022 (year)

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Genertaed	Hard Rock and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ carboard packaging	Plastics	Chemcial Waste	Other, e.g. general refuse
	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)
Jan	233.850	0.000	0.000	0.000	233.850	0.000	0.000	0.069	0.005	0.000	109.020
Feb	175.850	0.000	0.000	0.000	175.850	0.000	0.000	0.000	0.000	0.296	293.110
Mar	68.790	0.000	0.000	0.000	68.790	0.000	0.000	0.000	0.000	0.000	54.140
Apr	29.050	0.000	0.000	0.000	29.050	0.000	0.001	0.165	0.004	0.000	113.780
May	6.300	0.000	0.000	0.000	6.300	0.000	0.000	0.000	0.000	0.000	139.130
Jun	80.960	0.000	0.000	0.000	80.960	0.000	0.000	0.124	0.004	0.000	271.000
Sub-total	594.800	0.000	0.000	0.000	594.800	0.000	0.001	0.357	0.013	0.296	980.180
Jul	2794.730	0.000	0.000	0.000	2794.730	0.000	0.000	0.000	0.000	0.000	252.740
Aug	10429.730	0.000	0.000	0.000	10429.730	0.000	0.000	0.000	0.009	0.000	240.470
Sep											
Oct											
Nov											
Dec											
Total	13819.260	0.000	0.000	0.000	13819.260	0.000	0.001	0.358	0.022	0.296	1473.390

Notes: (1) Plastics refer to plastic bottles/ containers, plastic sheets / foam from packaging material

Appendix G

Complaint Log

Table G1 Statistical Summary of Environmental Complaints

Reporting Period	Environmental Complaint Statistics		
	Frequency	Cumulative	Complaint Nature
01 June 2022 - 31 August 2022	1	1	Air Quality & Water Quality

Table G2 Statistical Summary of Environmental Summons

Reporting Period	Environmental Summons Statistics		
	Frequency	Cumulative	Details
01 June 2022 - 31 August 2022	0	0	N/A

Table G3 Statistical Summary of Environmental Prosecution

Reporting Period	Environmental Prosecution Statistics		
	Frequency	Cumulative	Details
01 June 2022 - 31 August 2022	0	0	N/A

Appendix H

Event/ Action Plan for Water Quality Exceedance

Table G1 Event and Action Plan for Water Quality Monitoring

Event	Action			
	ET	IEC	Contractor(s)	ER
Action Level being exceeded by one sampling day	1. Repeat *in situ* measurement on the next day of exceedance to confirm findings; 2. Check monitoring data, plant, equipment and Contractor(s)'s working methods; 3. Identify source(s) of impact and record in notification of exceedance; 4. Inform IEC, Contractor(s) and ER.	1. Check monitoring data submitted by ET and Contractor(s)'s working methods; 2. Inform EPD.	1. Confirm receipt of notification of exceedance in writing; 2. Check plant and equipment and rectify unacceptable practice	1. Confirm receipt of notification of exceedance in writing.
Action Level being exceeded by two or more consecutive sampling days	1. Repeat *in situ* measurement on the next day of exceedance to confirm findings; 2. Check monitoring data, plant, equipment and Contractor(s)'s working methods; 3. Identify source(s) of impact and record in notification of exceedance; 4. Inform IEC, Contractor(s) and ER; 5. Discuss with IEC and Contractor(s) on additional mitigation measures and ensure that they are implemented	1. Check monitoring data submitted by ET and Contractor(s)'s working methods; 2. Inform EPD; 3. Discuss with ET and Contractor(s) on additional mitigation measures and advise ER accordingly; 4. Assess the effectiveness of the implemented mitigation measures.	1. Confirm receipt of notification of exceedance in writing; 2. Check plant and equipment and rectify unacceptable practice; 3. Consider changes of working methods; 4. Discuss with ET and IEC on additional mitigation measures and propose them to ER within 3 working days; 5. Implement the agreed mitigation measures.	1. Confirm receipt of notification of exceedance in writing; 2. Discuss with the IEC on the proposed additional mitigation measures and agree on the mitigation measures to be implemented. 3. Ensure additional mitigation measures are properly implemented.
Limit Level being exceeded by one sampling day	1. Repeat *in situ* measurement on the next day of exceedance to confirm findings; 2. Check monitoring data, plant, equipment and Contractor(s)'s working methods; 3. Identify source(s) of impact and record in notification of exceedance; 4. Inform IEC, Contractor(s) and ER; 5. Discuss with IEC and Contractor(s) on additional mitigation measures and ensure that they are implemented	1. Check monitoring data submitted by ET and Contractor(s)'s working methods; 2. Inform EPD; 3. Discuss with ET and Contractor(s) on additional mitigation measures and advise ER accordingly; 4. Assess the effectiveness of the implemented mitigation measures.	1. Confirm receipt of notification of exceedance in writing; 2. Check plant and equipment and rectify unacceptable practice; 3. Critically review the need to change working methods; 4. Discuss with ET and IEC on additional mitigation measures and propose them to ER within 3 working days; 5. Implement the agreed mitigation measures.	1. Confirm receipt of notification of exceedance in writing; 2. Discuss with the IEC on the proposed additional mitigation measures and agree on the mitigation measures to be implemented. 3. Ensure additional mitigation measures are properly implemented. 4. Request Contractor(s) to critically review the working methods.
Limit Level being exceeded by two or more consecutive sampling days	1. Repeat *in situ* measurement on the next day of exceedance to confirm findings; 2. Check monitoring data, plant, equipment and Contractor(s)'s working methods; 3. Identify source(s) of impact and record in notification of exceedance; 4. Inform IEC, Contractor(s) and ER; 5. Discuss with IEC and Contractor(s) on additional mitigation measures and ensure that they are implemented	1. Check monitoring data submitted by ET and Contractor(s)'s working methods; 2. Inform EPD; 3. Discuss with ET and Contractor(s) on additional mitigation measures and advise ER accordingly; 4. Assess the effectiveness of the implemented mitigation measures.	1. Confirm receipt of notification of exceedance in writing; 2. Check plant and equipment and rectify unacceptable practice; 3. Critically review the need to change working methods; 4. Discuss with ET and IEC on additional mitigation measures and propose them to ER within 3 working days; 5. Implement the agreed mitigation measures. 6. As directed by ER, slow down or stop all or part of the marine construction works/ production volume of the desalination plant until no exceedance of Limit Level.	1. Confirm receipt of notification of exceedance in writing; 2. Discuss with the IEC on the proposed additional mitigation measures and agree on the mitigation measures to be implemented. 3. Ensure additional mitigation measures are properly implemented. 4. Request Contractor(s) to critically review the working methods; 5. Consider and instruct, if necessary, the Contractor(s) to slow down or to stop all or part of the marine construction works/ production volume of the desalination plant until no exceedance of Limit Level.

Notes : ET = Environmental Team, IEC = Independent Environmental Checker; ER = Engineering Representatives
The above actions should be taken within 1 working day after the exceedance is identified during operation phase.

Appendix I

Event/ Action Plan for Construction Noise Exceedance

Table E1 Event and Action Plan for Construction Noise Monitoring

Event	Action			
	ET	IEC	ER	Contractor
Action Level	1. Carry out investigation to identify the source and cause of the complaint/ exceedance(s) 2. Notify IEC, ER, and Contractor and report the results of investigation to the Contractor, ER and the IEC 3. Discuss with the Contractor and IEC for remedial measures required 4. If the complaint is related to the Project, conduct additional monitoring for checking mitigation effectiveness and report the findings and results to the IEC, ER and the Contractor	1. Review the analyzed results submitted by the ET 2. Review the proposed remedial measures by the Contractor and advise the ER accordingly 3. Supervise the implementation of remedial measures	1. Confirm receipt of Notification of Exceedance in writing 2. Require Contractor to propose remedial measures for the analysed noise problem 3. Ensure remedial measures are properly implemented	1. Submit noise mitigation proposals, if required, to the IEC and ER 2. Implement noise mitigation proposals.
Limit Level	1. Carry out investigation to identify the source and cause of the exceedance 2. Notify IEC, ER, Project Proponent, EPD and Contractor 3. Repeat measurements to confirm findings 4. Provide investigation report to IEC, ER, EPD and Contractor he causes of the exceedances 5. If the exceedance is related to the Project, assess effectiveness by additional monitoring. 6. Report the remedial action implemented and the additional monitoring results to IEC, EPD, ER and Contractor 7. If exceedance stops, cease additional monitoring	1. Review the analyzed results submitted by the ET 2. Discuss the potential remedial measures with ER, ET Leader and Contractor 3. Review Contractors remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly 4. Supervise the implementation of remedial measures	1. Confirm receipt of Notification of Exceedance in writing 2. Require the Contractor to propose remedial measures for the analysed noise problem 3. Ensure remedial measures are properly implemented 4. If exceedance continues, consider what activity of the work is responsible and instruct the Contractor, in agreement with the Project Proponent, to stop that activity of work until the exceedance is abated	1. Take immediate action to avoid further exceedance 2. Submit proposals for remedial actions to IEC and ER within 3 working days of notification 3. Implement the agreed proposals 4. Resubmit proposals if problem still not under control 5. Stop the relevant activity of works as determined by the Project Proponent until the exceedance is abated

Notes : ET = Environmental Team, IEC = Independent Environmental Checker; ER = Engineering Representatives