



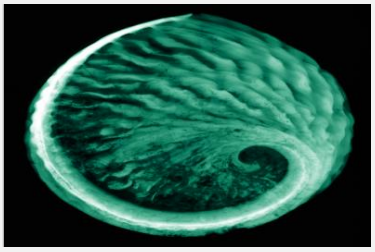

Hong Kong Offshore LNG Terminal Project

Quarterly Environmental Monitoring and Audit (EM&A) Summary Report for January to March 2022

23 May 2022

Project No.: 0505354

The business of sustainability

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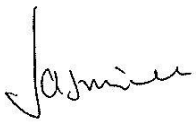
23 May 2022

Hong Kong Offshore LNG Terminal Project

Quarterly Environmental Monitoring and Audit (EM&A) Summary Report for January to March 2022



Dr Jasmine Ng
Managing Partner

ERM-Hong Kong, Limited
2509, 25/F One Harbourfront
18 Tak Fung Street
Hunghom
Kowloon
Hong Kong

Hong Kong Offshore LNG Terminal
Environmental Certification Sheet
FEP-01/558/2018/A, FEP-02/558/2018/A and FEP-03/558/2018/B

Reference Document/Plan

Document/~~Plan~~ to be Certified/~~Verified~~:	Quarterly Environmental Monitoring and Audit (EM&A) Summary Report for January to March 2022
Date of Report:	23 May 2022
Date prepared by ET:	23 May 2022
Date received by IEC:	23 May 2022

Reference EP Requirement

EP Condition:	Condition No. 5.1 of FEP-01/558/2018/A, FEP-02/558/2018/A & FEP-03/558/2018/B

The Permit Holder shall implement the EM&A programme in accordance with the procedures and requirements as set out in the Updated EM&A Manual.

ET Certification

I hereby certify that the above referenced document/~~plan~~ complies with the above referenced condition of FEP-01/558/2018/A, FEP-02/558/2018/A & FEP-03/558/2018/B.

Mr Raymond Chow,
Environmental Team Leader: 

Date: 23 May 2022

IEC Verification

I hereby verify that the above referenced document/~~plan~~ complies with the above referenced condition of FEP-01/558/2018/A, FEP-02/558/2018/A & FEP-03/558/2018/B.

Ms Lydia Chak,
Independent Environmental Checker: 

Date: 23 May 2022

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EXECUTIVE SUMMARY

To support the increased use of natural gas in Hong Kong from 2020 onwards, Castle Peak Power Company Limited (CAPCO) and The Hongkong Electric Co., Ltd. (HK Electric) have identified that the development of an offshore liquefied natural gas (LNG) receiving terminal in Hong Kong using Floating Storage and Regasification Unit (FSRU) technology ('the Project') presents a viable additional gas supply option that will provide energy security through access to competitive gas supplies from world markets. The Project will involve the construction and operation of an offshore LNG import facility to be located in the southern waters of Hong Kong, a double berth jetty, and subsea pipelines that connect to the gas receiving stations (GRS) at the Black Point Power Station (BPPS) and the Lamma Power Station (LPS). To demarcate the works between different parties, the following Further Environmental Permits (FEPs) were issued for the Project:

- the double berth jetty at LNG Terminal under the Hong Kong LNG Terminal Limited (HKLTL), joint venture between CAPCO and HK Electric (FEP-01/558/2018/A) – construction commenced on 27 November 2020;
- the subsea gas pipeline for the BPPS and the associated GRS in the BPPS under CAPCO (FEP-03/558/2018/B) – construction commenced on 23 September 2020; and
- the subsea gas pipeline for the LPS and the associated GRS in the LPS under HK Electric (FEP-02/558/2018/A) – construction commenced on 13 December 2020.

This is the Quarterly EM&A Summary Report presenting the EM&A works carried out during the period from 1 January to 31 March 2022 for the Project in accordance with the Updated EM&A Manual. A summary of monitoring and audit activities conducted in the reporting period is listed below:

Activities	Number of Sessions
For FEP-01/558/2018/A	
Environmental Site Inspection	2
For FEP-02/558/2018/A	
Marine Water Quality Monitoring	14
Marine Mammal Exclusion Zone Monitoring	During jetting operation for construction of LPS Pipeline
Environmental Site Inspection	3
For FEP-03/558/2018/B	
Marine Water Quality Monitoring	35
Marine Mammal Exclusion Zone Monitoring	During jetting operation for construction of BPPS Pipeline
Environmental Site Inspection	10
For FEP-02/558/2018/A and FEP-03/558/2018/B	
Pilot Test on the Efficiency of Silt Curtain System – Floating Silt Curtain for Jetting Operation	1

Environmental auditing works, including regular site inspections of construction works conducted by the ET, audit of implementation of Waste Management Plan, and review of the acceptability of operating speeds and marine travel routes of working vessels, including checking of compliance with the approval conditions given by the Director of Environmental Protection for the entry of working vessels within marine parks and the proposed South Lantau Marine Park (SLMP), in pursuant to Condition 3.1 of FEP-01/558/2018/A, Condition 3.4 of FEP-02/558/2018/A and Condition 3.4 of FEP-03/558/2018/B, were conducted in the reporting period, as appropriate. No non-compliance of environmental statutory requirements was identified.

Breaches of Action and Limit Levels

There were no Project-related Action and Limit Level exceedances for marine water quality monitoring in the reporting period.

Since construction phase marine mammal monitoring was completed in November 2021, there were no breaches of Action and Limit Levels for marine mammal monitoring in the reporting period.

Environmental Complaints, Notification of Summons and Successful Prosecution

There were two environmental complaints received on the absence of silt curtain for post-trenching operation of the LPS Pipeline in the reporting period. Upon investigation, no post-trenching operation was conducted for the LPS Pipeline in the past two weeks upon receipt of complaints (i.e. between 6 and 20 January 2022). Only survey works for confirming seabed profile in the vicinity of the LPS Pipeline were conducted, which did not result in any unacceptable environmental impacts to the surrounding and the works were in compliance with the environmental requirements under FEP-02/558/2018/A and the approved EIA report (Register No.: AEIAR-218/2018). The two complaints on silt curtain not deployed during post-trenching operation are thus considered invalid.

There were no notification of summons and successful prosecutions recorded in the reporting period.

Reporting Changes

There were no reporting changes in the reporting period.

Comments, Recommendations and Conclusions for the Quarter

The recommended environmental mitigation measures for the Project were effectively implemented and the EM&A programme undertaken by the ET has effectively monitored the construction activities as well as ensured proper implementation of mitigation measures in the reporting period.

1. INTRODUCTION

1.1 Background

To support the increased use of natural gas in Hong Kong from 2020 onwards, Castle Peak Power Company Limited (CAPCO) and The Hongkong Electric Co., Ltd. (HK Electric) have identified that the development of an offshore liquefied natural gas (LNG) receiving terminal in Hong Kong using Floating Storage and Regasification Unit (FSRU) technology ('the Project') presents a viable additional gas supply option that will provide energy security through access to competitive gas supplies from world markets. The Project will involve the construction and operation of an offshore LNG import facility to be located in the southern waters of Hong Kong, a double berth jetty, and subsea pipelines that connect to the gas receiving stations (GRS) at the Black Point Power Station (BPPS) and the Lamma Power Station (LPS).

The Environmental Impact Assessment (EIA) Report for the Project was submitted to the Environmental Protection Department (EPD) of the HKSAR Government in May 2018. The EIA Report (EIAO Register No. AEIAR-218/2018) was approved by EPD and the associated Environmental Permit (EP) (EP-558/2018) was issued in October 2018.

An application for Further Environmental Permits (FEPs) were made on 24 December 2019 to demarcate the works between the different parties. The following FEPs were issued on 17 January 2020 and the EP under EP-558/2018 was surrendered on 5 March 2020.

- the double berth jetty at LNG Terminal under the Hong Kong LNG Terminal Limited (HKLTL), joint venture between CAPCO and HK Electric (FEP-01/558/2018/A) [(1)] – construction commenced on 27 November 2020;
- the subsea gas pipeline for the BPPS and the associated GRS in the BPPS under CAPCO (FEP-03/558/2018/B) [(2)] – construction commenced on 23 September 2020; and
- the subsea gas pipeline for the LPS and the associated GRS in the LPS under HK Electric (FEP-02/558/2018/A) [(3)] – construction commenced on 13 December 2020.

The location of these components is shown in ***Figures 1.1***, ***1.2*** and ***1.3***.

1.2 Scope of the EM&A Report

This is the Quarterly EM&A Summary Report for the Project which summarises the key findings of the EM&A programme during the reporting period from 1 January to 31 March 2022 for the construction works for the Project in accordance with the Updated EM&A Manual and the requirements of the Further Environmental Permits (FEP-01/558/2018/A, FEP-02/558/2018/A & FEP-03/558/2018/B).

1.3 Organisation Structure

The organisation structure of the Project is shown in ***Annex A***. The key personnel and contact details are summarised in ***Table 1.1*** below.

(1) Application for variation of an environmental permit for FEP-01/558/2018 was undertaken and the latest FEP (FEP-01/558/2018/A) was issued on 6 November 2020.

(2) Application for variation of an environmental permit for FEP-03/558/2018/A was undertaken and the latest FEP (FEP-03/558/2018/B) was issued on 25 August 2021.

(3) Application for variation of an environmental permit for FEP-02/558/2018 was undertaken and the latest FEP (FEP-02/558/2018/A) was issued on 22 December 2020.

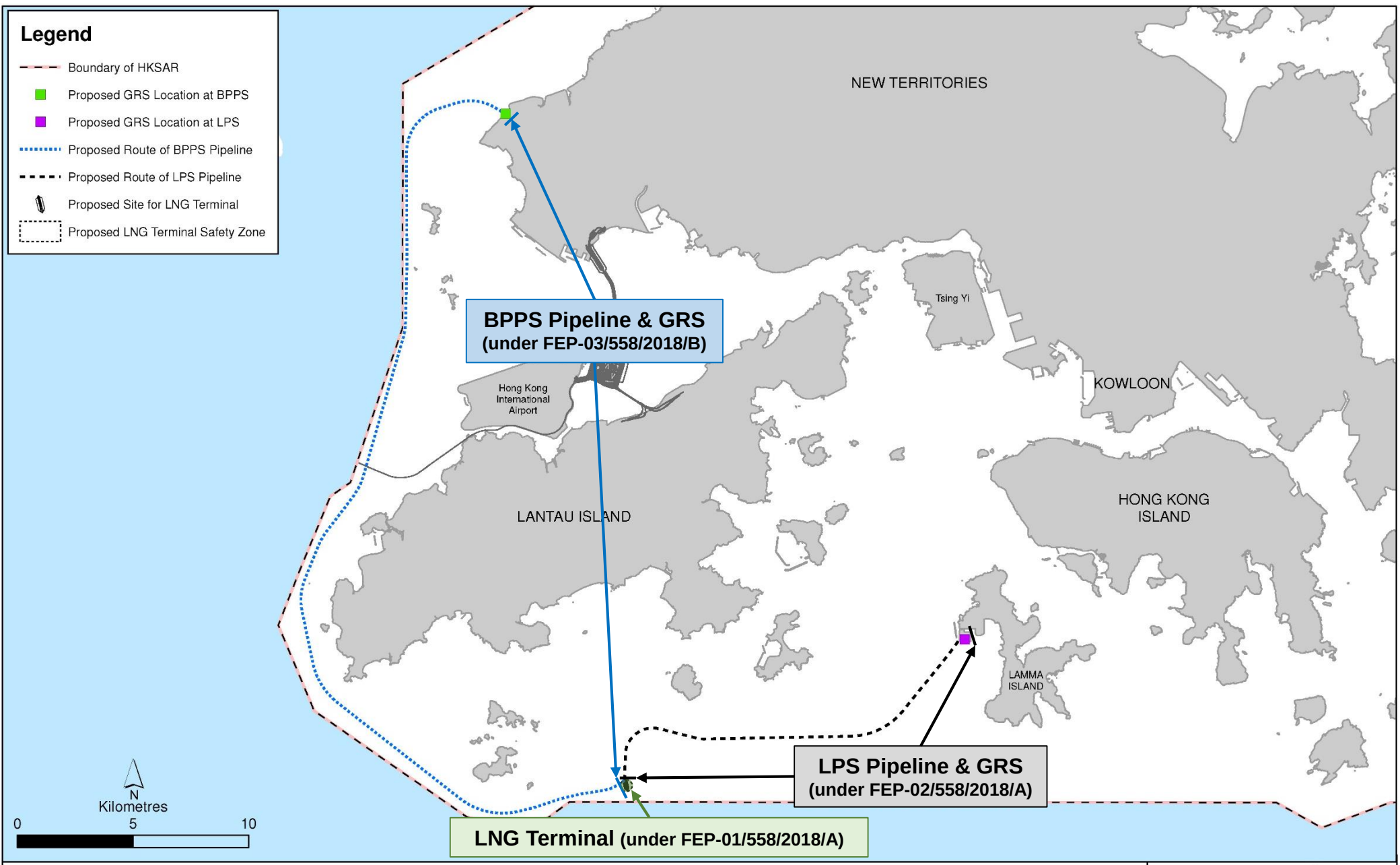


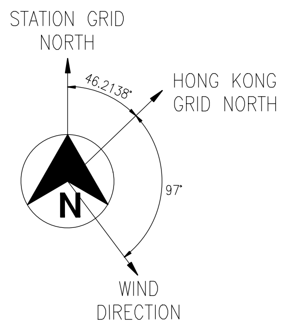
Figure 1.1

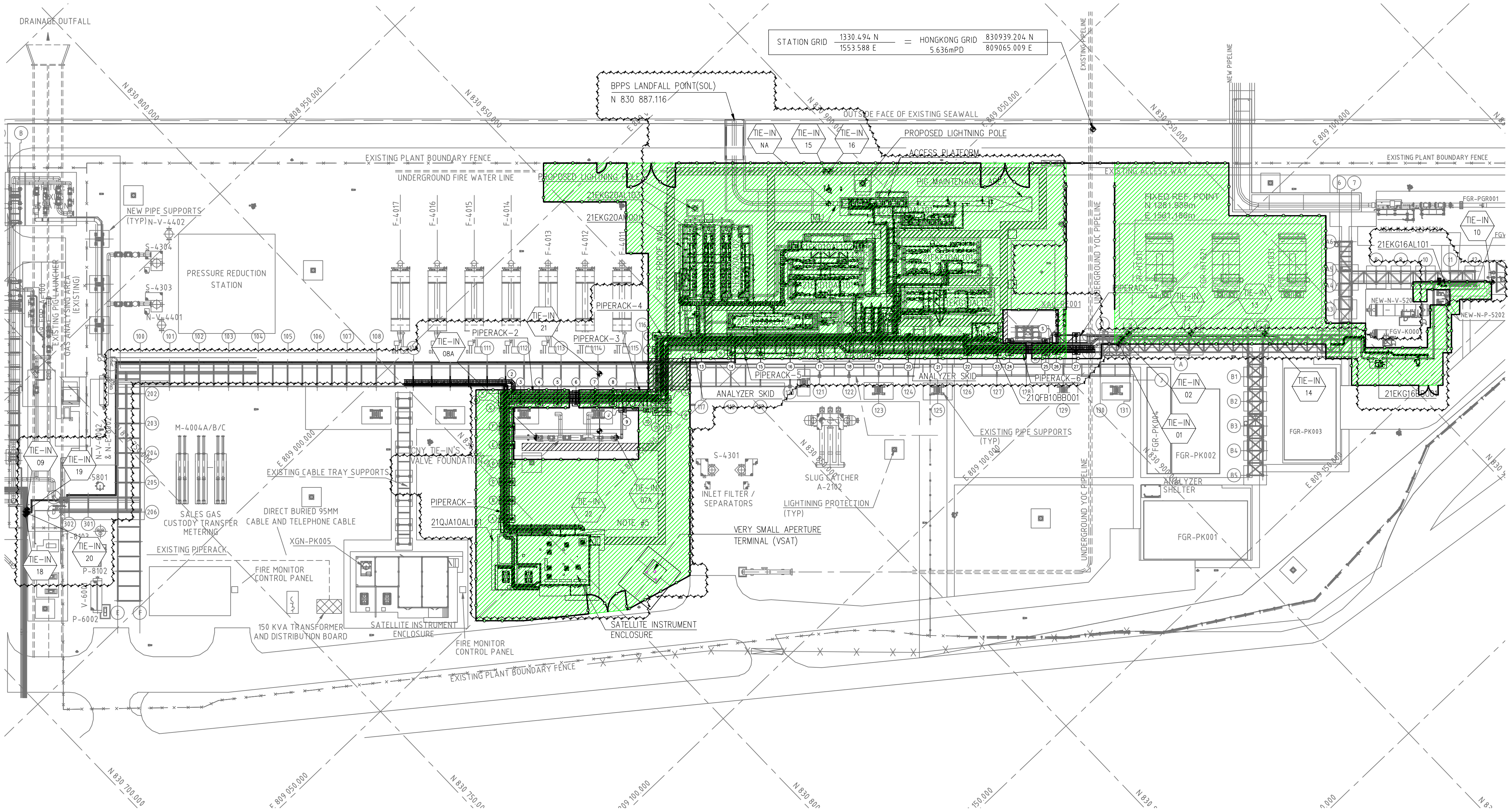
Indicative Location of Key Project Components

File: T:\GIS\CONTRACT\0359722\Mxd\EIA\0359722_Project_Site_with_HZMB.mxd
Date: August 2021

Environmental Resources Management

ERM




DRAINAGE OUTFALL
STATION GRID 1330.494 N 1553.588 E = HONGKONG GRID 830939.204 N 809065.009 E 5.636mPD
BPPS LANDFALL POINT(SOL) N 830 887.116
OUTSIDE FACE OF EXISTING SEAWALL
PROPOSED LIGHTNING POLE
ACCESS PLATFORM
EXISTING PLANT BOUNDARY FENCE
UNDERGROUND FIRE WATER LINE
PROPOSED LIGHTNING POLE
PIG MAINTENANCE AREA
EXISTING ACCESS WAY
FIXED REF. POINT N 1261.889m E 1561.186m
EXISTING PIPELINE
NEW PIPELINE
UNDERGROUND YOC PIPELINE
NEW PIPE SUPPORTS (TYP)
PRESSURE REDUCTION STATION
PIPERACK-1
PIPERACK-2
PIPERACK-3
PIPERACK-4
PIPERACK-5
PIPERACK-6
PIPERACK-7
ANALYZER SKID
21EKG20AN001
21QFB10BB001
21QJA10AL101
21EKG16AL101
EXISTING PIPE SUPPORTS (TYP)
M-4004A/B/C
EXISTING CABLE TRAY SUPPORTS
SALES GAS CUSTODY TRANSFER METERING
DIRECT BURIED 95MM CABLE AND TELEPHONE CABLE
XGN-PK005
EXISTING PIPERACK
FIRE MONITOR CONTROL PANEL
150 KVA TRANSFORMER AND DISTRIBUTION BOARD
SATELLITE INSTRUMENT ENCLOSURE
FIRE MONITOR CONTROL PANEL
EXISTING PLANT BOUNDARY FENCE
SATELLITE INSTRUMENT ENCLOSURE
NOTE #5
S-4301
INLET FILTER / SEPARATORS
SLUG CATCHER A-2102
LIGHTNING PROTECTION (TYP)
VERY SMALL APERTURE TERMINAL (VSAT)
ANALYZER SHELTER
FGR-PK001
FGR-PK002
FGR-PK003
FGR-PGR001
TIE-IN

KEY PLAN

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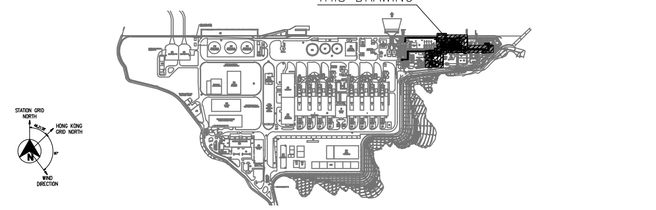


GENERAL NOTES

1. ALL DIMENSIONS ARE IN mm, ELEVATIONS & COORDINATES ARE IN m.
2. NOMINAL GRADE (PIPING DATUM) 0.000m = NOMINAL GRADE (HONG KONG DATUM) 5.700m.
3. RELATIONSHIP OF HONG KONG GRID TO STATION GRID.
   H.K. GRID 808 950.493 E / 828 896.966 N = STATION GRID 0.000 E / 0.000 N
4. PIG RECEIVER DESIGNED FOR INTELLIGENT PIGGING.
5. EXISTING HOSEREEL CABINET AT NEW SIE BUILDING SHALL BE RELOCATED.

LEGEND

- ESCAPE /ACCESS CLEAR WIDTH OF NOT LESS THAN 1.525m AND CLEAR HEIGHT OF 2.3m.
- NEW BPPS GRS SCOPE OF WORK
- SITE BOUNDARY AT THE BPPS GRS

10 0 10 20 30m

REFERENCE DOCUMENTS

DWG. NO.	DRAWING TITLE
HKOLNG-COOEC-21EKG-MPD010-9101	HKOLNG GRS - EQUIPMENT LIST

REVISION No.	DATE	DESCRIPTION	BY	CH'K.	APP'D	CLP
C	03JUN2020	ISSUED FOR REVIEW	AKR	ASD	MF	
B	17APR2020	INTERNALLY APPROVED	AKR	ASD	MF	
A	21FEB2020	DISCIPLINE INTERNAL CHECK	AKR	ASD	MF	

CLIENT: Capco Castle Peak Power Co. Ltd. — Offshore Oil Engineering Co.,Ltd. — FIVENTURES

JOB No. 20ZB-DD02

PROJECT: HONG KONG OFFSHORE LNG TERMINAL PROJECT PACKAGE B

CERTIF. No. A112002816

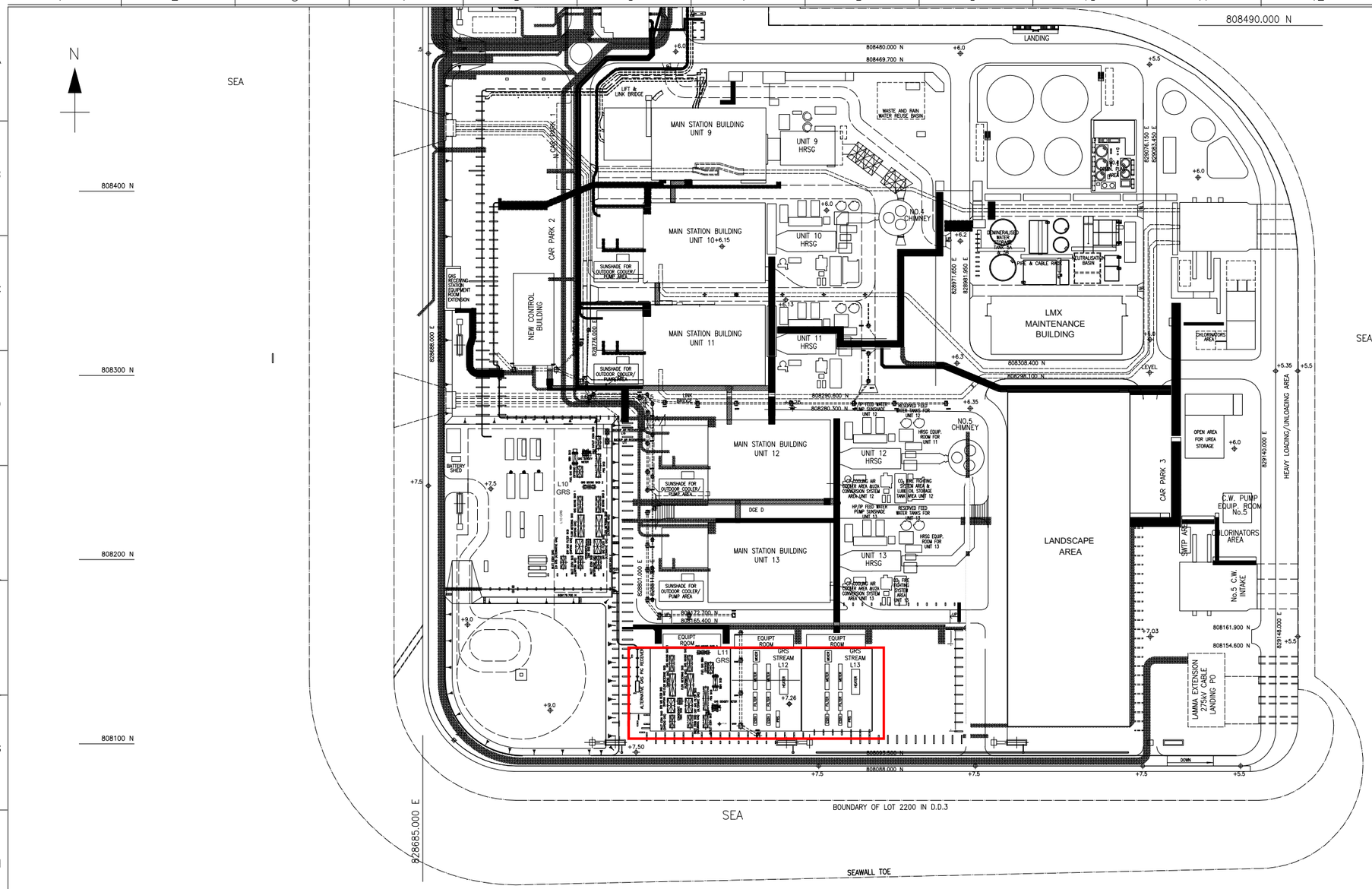
SIGNATURE		DATE
DRAWN	SGB	20AUG2020
DESIGNED	AKR	20AUG2020
CHECKED	ASD	20AUG2020
REVIEWED	TWC	20AUG2020
EXAMINED	TWC	20AUG2020
APPROVED	MF	20AUG2020

DRAWING TITLE: HKOLNG GRS - OVERALL PLOT PLAN GRS

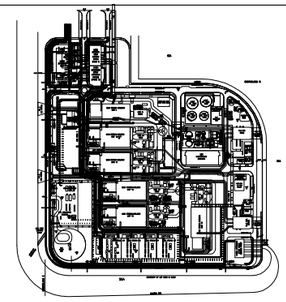
SCALE (A3) 1 : 1000

Figure 1.2

DWG No. HKOLNG-COOEC-21EKG-MLD020-9112 REV. C



KEYPLAN



NOTES

1. ALL DIMENSIONS & CORRDINATES ARE IN MM.

LEGEND

LOCATION AND WORKS AREA OF GRS

DESCRIPTION	DWG NO.	REV	DATE	BY	CHK	APP	DESCRIPTION
LEGEND	REFERENCE DRAWINGS	REVISIONS					

CLIENT:

The Hongkong Electric Co., Ltd.

PROJECT:

HONG KONG OFFSHORE LNG TERMINAL - WORKS ASSOCIATED WITH THE SUBSEA GAS PIPELINE FOR LAMMA POWER STATION (LPS) AND THE ASSOCIATED GAS RECEIVING STATION (GRS) IN LPS (ENVIRONMENTAL PERMIT NO.: FEP-02/558/2018)

TITLE:

LOCATION AND WORKS AREA OF GRS AT LAMMA POWER STATION

SCALE : 1:1000

CONTRACTOR DRAWING NO.

Figure 1.3

REV. 0

DATE. 16/6/2020

PAGE 1 OF 1

Table 1.1 Contact Information of Key Personnel

Party	Position	Name	Telephone
CAPCO / HKLTL (For FEP-01/558/2018/A and FEP-03/558/2018/B)	Senior Environmental Manager	Dr Helen Chiu	2596 4116
HK Electric / HKLTL (For FEP-01/558/2018/A and FEP-02/558/2018/A)	Head of Mechanical Engineering, Projects Division	Norman Chan	3143 3819
Environmental Team (ET) (ERM-Hong Kong, Limited)	ET Leader	Raymond Chow	2271 3281
Independent Environmental Checker (IEC) (Mott MacDonald Hong Kong Limited)	IEC	Lydia Chak	2585 8473
Contractor (CNOOC Offshore Oil Engineering Co. Ltd.)	Environmental Manager	H Y Tang	6111 5789
	Environmental Officer	Kelvin Cheung	9060 1020

1.4 Contact Information for the Project

The contact information for the Project is provided in ***Table 1.2***. The public can contact the project proponents through the following channel for any enquiries and comments on the environmental monitoring data and related information of the Project.

Table 1.2 Contact Information for the Project

Channel	Contact Information
Email	enquiry@env.hkolng.com

1.5 Summary of Construction Activities

The programme of the construction is shown in ***Annex B***.

As informed by the Contractor, details of the major construction activities undertaken in the reporting period are listed in ***Table 1.3*** below:

Table 1.3 Major Construction Activities Undertaken in the Reporting Period

FEP	Land-based Works	Marine-based Works
FEP-01/558/2018/A	▪ Piping installation works	▪ Topsides installation ▪ Piping installation
FEP-02/558/2018/A	▪ Nil	▪ Post-trenching ▪ Rock armour placement
FEP-03/558/2018/B	▪ Backfilling works ▪ Piping installation works	▪ Rock armour placement ▪ Post-trenching

FEP	Land-based Works	Marine-based Works
	▪ Box culvert works ▪ Instrumentation and control installation works ▪ Electrical and telecommunication installation works ▪ System commissioning	▪ Removal of cofferdam

1.6 Summary of EM&A Programme Requirements

The status of EM&A Programme for all environmental aspects required under the Updated EM&A Manual are presented in ***Table 1.4***. The requirements of relevant environmental monitoring, including monitoring parameters, Action and Limit Levels, Event and Action Plan(s), environmental mitigation measures, etc. are presented in *Section 2*.

Table 1.4 Summary of Status for the EM&A Programme under the Updated EM&A Manual

Aspects	Relevant FEP(s)	Status
Water Quality		
Baseline Monitoring	FEP-01/558/2018/A FEP-02/558/2018/A FEP-03/558/2018/B	▪ Completed
Efficiency of Silt Curtain System	FEP-02/558/2018/A FEP-03/558/2018/B	▪ Completed for cage-type silt curtain for dredging operation (under FEP-02/558/2018/A and FEP-03/558/2018/B) ▪ Completed for cage-type silt curtain for jetting operation (under FEP-02/558/2018/A and FEP-03/558/2018/B) ▪ Completed for jetting operation for floating silt curtain (under FEP-02/558/2018/A and FEP-03/558/2018/B)
Construction Phase Monitoring	FEP-02/558/2018/A FEP-03/558/2018/B	▪ On-going for dredging / jetting operations for FEP-02/558/2018/A and FEP-03/558/2018/B
Post-Construction Monitoring	FEP-02/558/2018/A FEP-03/558/2018/B	▪ To be implemented upon completion of construction works for the Project
Monitoring for Hydrotesting for the Subsea Gas Pipelines	FEP-02/558/2018/A FEP-03/558/2018/B	▪ To be implemented during hydrotesting for the subsea gas pipelines
First-year of LNG Terminal Operation	FEP-01/558/2018/A	▪ To be implemented during LNG Terminal operation
Maintenance Dredging	FEP-01/558/2018/A	▪ To be implemented during maintenance dredging
Waste Management		
Audit of Waste Management Practice	FEP-01/558/2018/A FEP-02/558/2018/A FEP-03/558/2018/B	▪ On-going
Ecology		

Aspects	Relevant FEP(s)	Status
Baseline Monitoring (Vessel-based Line Transect Survey and Passive Acoustic Monitoring)	FEP-01/558/2018/A	▪ Completed
Construction Phase Monitoring (Vessel-based Line Transect Survey and Passive Acoustic Monitoring)	FEP-01/558/2018/A	▪ Completed
Post-Construction Monitoring (Vessel-based Line Transect Survey and Passive Acoustic Monitoring)	FEP-01/558/2018/A	▪ To be conducted during post-construction phase
Marine Mammal Exclusion Zone Monitoring	FEP-01/558/2018/A FEP-02/558/2018/A FEP-03/558/2018/B	▪ Completed for FEP-01/558/2018/A (marine mammal exclusion zone with 500m radius) and FEP-02/558/2018/A (marine mammal exclusion zone with 250m radius) ▪ On-going for marine dredging / jetting operations for FEP-03/558/2018/B (marine mammal exclusion zone with 250m radius)
Environmental Site Inspection		
Regular Site Inspection	FEP-01/558/2018/A FEP-02/558/2018/A FEP-03/558/2018/B	▪ On-going
Records of Operating Speeds and Marine Travel Routes for Working Vessels	FEP-01/558/2018/A FEP-02/558/2018/A FEP-03/558/2018/B	▪ On-going
Environmental Log Book	FEP-01/558/2018/A FEP-02/558/2018/A FEP-03/558/2018/B	▪ On-going

1.7 Status of Statutory Environmental Requirements and Compliance with Further Environmental Permit Conditions

The environmental licenses and permits, including further environmental permits, registration as chemical waste producer, construction noise permits, wastewater discharge license, marine dumping permits, etc., which were valid in the reporting period. No non-compliance with environmental statutory requirements, including FEP conditions (status of submission) under the EIA Ordinance was identified. The status of statutory environmental requirements is presented in ***Annex D***.

1.8 Impact Prediction Review

The potential environmental impacts arising from the major construction activities undertaken in the reporting period provided in ***Table 1.3*** were mainly associated with dust emission from construction activities and stockpiles, waste management, site surface runoff, wastewater discharge, and elevation in suspended solids and disturbance to marine mammals due to marine-based works. There were no Project-related Action and Limit Level exceedances and no non-compliance of environmental statutory requirements identified for the environmental monitoring and auditing works conducted in the reporting period, including regular site inspections of construction works conducted by the ET, audit of implementation of Waste Management Plan, review of the acceptability of operating speeds and marine travel routes of working vessels, and checking of compliance with the approval conditions given by EPD for allowing the entry of working vessels within marine parks and the proposed South Lantau Marine Park (SLMP) in pursuant to Condition 3.1 of FEP-01/558/2018/A, Condition 3.4 of FEP-02/558/2018/A and Condition 3.4 of FEP-03/558/2018/B, as appropriate. The recommended

environmental mitigation measures were properly implemented in the reporting period. Excessive variation between the EIA study predictions and the EM&A monitoring results was not found and therefore no investigation and follow-up procedures were considered necessary.

The environmental mitigation implementation schedule (EMIS) is presented in ***Annex C***.

2. SUMMARY OF EM&A RESULTS

The EM&A programme for the Project required environmental monitoring for marine water quality and marine mammals as well as environmental site inspections for air quality, construction noise, water quality, waste management, marine ecology, landscape and visual, and hazard to life impacts. As presented in *Section 1.6*, environmental site inspections, audit on waste management practice, marine water quality monitoring and marine mammal exclusion zone monitoring were conducted during the reporting period, and the findings are presented below. In addition, the passive acoustic monitoring (PAM) data for the marine mammal monitoring during construction phase have been retrieved for further analysis of the activity of FP during both day and night and the findings are presented in *Section 2.5*.

2.1 Environmental Site Inspection

Regular environmental site inspections were carried out with the Contractor and Project Proponents to confirm the implementation of appropriate environmental protection and pollution control mitigation measures for air quality, construction noise, water quality, waste management, marine ecology, landscape and visual, and hazard to life impacts under the Project. In the reporting period, 15 environmental site inspections were carried out on 5, 12, 19, 25, 31 January, 10, 24, 28 February, 9, 16, 23 and 30 March 2022 (4). The Independent Environmental Checker (IEC) attended the environmental site inspections as the IEC audits on 5, 12, 25, 31 January, 10, 24, 28 February, 9, 16, 23 and 30 March 2022 during the reporting period. The key observations from site inspections and Contractor's follow-up actions are summarized in ***Table 2.1***. The environmental mitigation implementation schedule (EMIS) is presented in ***Annex C***.

Table 2.1 Key Observations from Site Inspections and Contractor's Follow-up Actions

Item	Description	Contractor's Follow-up Action(s) Taken
FEP-01/558/2018/A		
January - March 2022		
-	Nil observation.	N/A
FEP-02/558/2018/A		
January - March 2022		
1	Fine and dusty materials generated from rock were left behind on the edge of the working vessel during loading and unloading operations. The Contractor was reminded to clear the materials from the working vessel.	The materials were cleared.
2	A chemical container without provision of drip tray was observed. The Contractor was reminded to provide drip tray to the chemical container.	The chemical container was removed off site properly.
FEP-03/558/2018/B		
January - March 2022		
3	A broken pipe originated from the area for kitchen and laundry was placed at the edge of the working vessel without effluent being discharged. The Contractor was reminded that wastewater, including domestic sewage	The broken pipe was replaced, and wastewater would be collected with use of containers for temporary storage, and collection by the qualified sewage collection contractor for subsequent treatment.

(4) In view of the pandemic situation, the site inspections were conducted by virtual means in March 2022.

Item	Description	Contractor's Follow-up Action(s) Taken
	(e.g. effluent from kitchen and laundry), shall be appropriately collected prior to being treated in onshore wastewater treatment facility, and shall not be directly discharged into marine waters.	
4	Diesel oil leaking out of drip tray for the generator was observed. The Contractor was reminded to provide drip tray without cracks to the generator, and handle the rubble stones contaminated with diesel oil as chemical waste.	Diesel oil was removed.
5	Slurry was accumulated, in presence of temporary blocks (e.g. sand bags) for prevention of surface runoff flowing over the trenches/pits, inside drainage system in the vicinity of excavation works. The Contractor was reminded that slurry should be regularly removed in order to maintain proper and efficient operation of the drainage system at all times.	Slurry was removed.
6	Dusty materials were brought to the area outside the site entrance/ exit by site vehicles. The Contractor was reminded to provide wheel washing device at the site entrance/ exit.	Dusty materials were removed.
7	Dark smoke emission from plants on working vessel, BIN HAI 109, was observed. The Contractor was reminded to maintain all plants and/or machines in a good condition for avoidance of dark smoke emission.	Regular maintenance for plants and/or machines on the vessel was carried out and no dark smoke emission from those plants and/or machines were observed.

2.2 Waste Management Status

Waste management audits were performed with reference to the Waste Management Checklists for the corresponding Waste Management Plans detailed in *Annex E of the associated Monthly EM&A Reports* during the regular environmental site inspections carried out in the reporting period. No non-compliance for Contractor's waste management practices was identified during the audits.

The quantities of different types of waste and marine sediment generated for the three FEPs are summarised in ***Tables 2.2***, ***2.3*** and ***2.4*** with reference to the waste flow tables prepared by the Contractor. General refuse was generated under FEP-01/558/2018/A, FEP-02/558/2018/A and FEP-03/558/2018/B, and inert C&D materials (public fill) were also generated under FEP-03/558/2018/B in the reporting period. Detailed waste flow tables can be referred to *Annex F of the associated Monthly EM&A Reports* for the reporting period.

Table 2.2 Quantities of Waste Generated for FEP-01/558/2018/A

Inert C&D Materials Generated (in '000kg)

Month/Year	Total Quantity Generated	Hard Rock and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill
Jan 2022	0	0	0	0	0	0

Feb 2022	0	0	0	0	0	0
Mar 2022	0	0	0	0	0	0

C&D Wastes Generated

Month/Year	Metals (in '000kg^3)	Paper / Cardboard Packaging (in '000kg^3)	Plastics (in '000kg^3)	Chemical Waste		Other (e.g. general refuse) (in '000kg)
				(in '000kg^3)	(in '000L)	
Jan 2022	0	0	0	0	0	2.49
Feb 2022	0	0	0	0	0	5.35
Mar 2022	0	0	0	0	0	6.35

Table 2.3 Quantities of Waste and Marine Sediment Generated for FEP-02/558/2018/A

Inert C&D Materials Generated (in '000kg)

Month/Year	Total Quantity Generated	Hard Rock and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill
Jan 2022	0	0	0	0	0	0
Feb 2022	0	0	0	0	0	0
Mar 2022	0	0	0	0	0	0

C&D Wastes Generated

Month/Year	Metals (in '000kg^3)	Paper / Cardboard Packaging (in '000kg^3)	Plastics (in '000kg^3)	Chemical Waste		Other (e.g. general refuse) (in '000kg)
				(in '000kg^3)	(in '000L)	
Jan 2022	0	0	0	0	0	13.10
Feb 2022	0	0	0	0	0	3.23
Mar 2022	0	0	0	0	0	0

Marine Sediment Generated (in '000m^3)

Month/Year	Total Quantity of Type L Generated	Total Quantity of Type M Generated	Reused in the Contract	Reused in other Projects	Open Sea Disposal
Jan 2022	0	0	0	0	0
Feb 2022	0	0	0	0	0
Mar 2022	0	0	0	0	0

Table 2.4 Quantities of Waste and Marine Sediment Generated for FEP-03/558/2018/B

Inert C&D Materials Generated (in '000kg)

Month/Year	Total Quantity Generated	Hard Rock and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill
Jan 2022	7.87	0	0	0	7.87	0
Feb 2022	186.90	0	0	0	186.90	0
Mar 2022	225.96	0	0	0	225.96	0

C&D Wastes Generated

Month/Year	Metals (in '000kg^3)	Paper / Cardboard Packaging (in '000kg^3)	Plastics (in '000kg^3)	Chemical Waste		Other (e.g. general refuse) (in '000kg)
				(in '000kg^3)	(in '000L)	
Jan 2022	0	0	0	0	0	55.51
Feb 2022	0	0	0	0	0	8.53
Mar 2022	0	0	0	0	0	36.53

Marine Sediment Generated (in '000m^3)

Month/Year	Total Quantity of Type L Generated	Total Quantity of Type M Generated	Reused in the Contract	Reused in other Projects	Open Sea Disposal
Jan 2022	0	0	0	0	0
Feb 2022	0	0	0	0	0
Mar 2022	0	0	0	0	0

2.3 Marine Water Quality Monitoring

2.3.1 Monitoring Requirements

In accordance with the Updated EM&A Manual, marine water quality monitoring shall be undertaken at the monitoring stations as shown in ***Figure 2.1*** and ***Table 2.5*** three times a week at both mid-ebb and mid-flood tides during periods when there are dredging / jetting operations during construction phase of BPPS Pipeline or LPS Pipeline. The interval between two sets of monitoring would not be less than 36 hours. Two replicates of *in-situ* measurements and samples were collected at each monitored water depth of each monitoring stations. Levels of dissolved oxygen (DO), pH value, salinity, temperature and turbidity were measured *in-situ* whereas the level of suspended solids (SS) were determined by a HOKLAS accredited laboratory. The detailed methodology is presented in the Updated EM&A Manual.

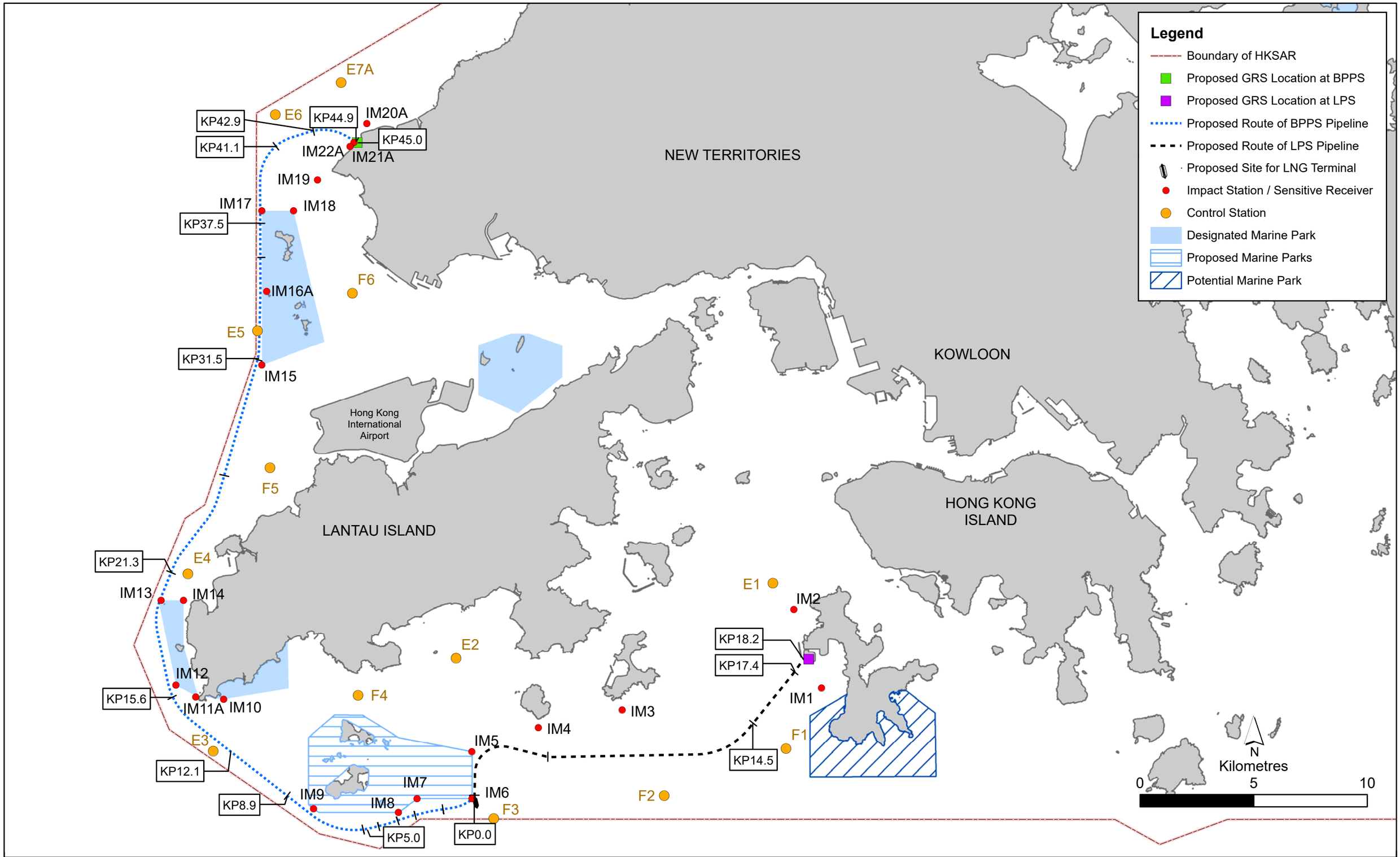


Figure 2.1

Marine Water Quality Monitoring Location

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Date: 1/2/2021

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Table 2.5 Location of Marine Water Quality Monitoring Stations

Station	Easting	Northing	Description
Group 1 – During construction at the pipeline shore approach at LPS (KP17.4 - 18.2), West Lamma Channel (KP14.5 - 17.4)			
IM1	829453	806896	Impact Station for Coastline of South Lamma
IM2	828235	810347	Impact Station for Coastline of North Lamma
E1	827317	811510	Control Station for Ebb Tide
F1	827892	804243	Control Station for Flood Tide
Group 2 – During construction at the Double Berth Jetty to West Lamma Channel (KP0.0 - 14.5)			
IM3	820683	805931	Impact Station for Coastline of South Cheung Chau
IM4	816997	805153	Impact Station for Coastline of South Shek Kwu Chau
IM5	814068	804100	Boundary of Proposed South Lantau Marine Park (MP)
IM6	814073	802029	Boundary of Proposed South Lantau MP
E2	813367	808213	Control Station for Ebb Tide
F2	822532	802161	Control Station for Flood Tide
F3	815032	801161	Control Station for Flood Tide
Group 3 – During construction at the Jetty Approach (KP0.0 - 5.0), South of Soko Islands (KP5.0 - 8.9), Southwest of Soko Islands (KP8.9 - 12.1)			
IM6	814073	802029	Boundary of Proposed South Lantau MP
IM7	811652	802029	Boundary of Proposed South Lantau MP
IM8	810833	801430	Boundary of Proposed South Lantau MP
IM9	807101	801595	Boundary of Proposed South Lantau MP
E3	802686	804123	Control Station for Ebb Tide
F3	815032	801161	Control Station for Flood Tide
Group 4 – During construction at the Adamasta Channel (KP12.1 - 15.6), Southwest Lantau (KP15.6 - 21.3)			
IM10	803145	806407	Boundary of Southwest Lantau MP
IM11A	801914	806510	Boundary of Southwest Lantau MP
IM12	801041	807024	Boundary of Southwest Lantau MP
IM13	800386	810750	Boundary of Southwest Lantau MP
IM14	801376	810750	Boundary of Southwest Lantau MP
E4	801571	811923	Control Station for Ebb Tide
F4	809058	806567	Control Station for Flood Tide
Group 5 – During construction at the West of Tai O to West of HKIA (KP21.3 - 31.5)			
IM15	804820	821110	Boundary of Sha Chau and Lung Kwu Chau MP
E5	804634	822606	Control Station for Ebb Tide
F5	805185	816591	Control Station for Flood Tide
Group 6 – During construction at the West of HKIA to Lung Kwu Chau (KP31.5 - 37.5)			
IM15	804820	821110	Boundary of Sha Chau and Lung Kwu Chau MP
IM17	804865	827855	Boundary of Sha Chau and Lung Kwu Chau MP
IM16A	805039	824343	Coral Colonies at Pak Chau
E6	805418	832113	Control Station for Ebb Tide
F5	805185	816591	Control Station for Flood Tide
Group 7 – During construction at the Lung Kwu Chau to Urmston Anchorage (37.5 - 41.1), Urmston Road (KP41.1 - 42.9)			
IM17	804865	827855	Boundary of Sha Chau and Lung Kwu Chau MP
IM18	806220	827890	Boundary of Sha Chau and Lung Kwu Chau MP
IM19	807274	829250	Impact Station for Coastline of Lung Kwu Tan
E6	805418	832113	Control Station for Ebb Tide
F6	808812	824266	Control Station for Flood Tide
E5	804634	822606	Control Station for Flood Tide
Group 8 – During construction at the West of BPPS (KP42.9 - 44.9), Pipeline shore approach at BPPS (KP44.9 - 45.0)			

Station	Easting	Northing	Description
IM19	807274	829250	Impact Station for Coastline of Lung Kwu Tan
IM20A	809445	831728	Impact Station for Coastline of Deep Bay
IM21A	808879	830900	Coral Colony at Artificial Seawall at BPPS
IM22A	808703	830717	Coral Colony at Artificial Seawall at BPPS
E7A	808313	833524	Control Station for Ebb Tide
F6	808812	824266	Control Station for Flood Tide

Note: Alternative monitoring stations (E7A, IM11A, IM16A, IM20A, IM21A & IM22A) were proposed by the ET in consultation with the IEC and approved by EPD in accordance with the provision in Section 5.1 and Section 5.2.5 of the Updated EM&A Manual.

2.3.2 Action and Limit Levels for Marine Water Quality Monitoring

The Action and Limit Levels for marine water quality monitoring have been established based on the baseline marine water quality monitoring data in accordance with the Updated EM&A Manual. Action and Limit Levels of key assessment parameters for construction phase marine water quality monitoring including DO, turbidity and SS are summarised in ***Table 2.6***.

Table 2.6 Action and Limit Levels for Marine Water Quality Monitoring

Parameter	Action Level	Limit Level
Group 1 – During construction at the pipeline shore approach at LPS (KP17.4 - 18.2), West Lamma Channel (KP14.5 - 17.4)		
DO in mg L^{-1} [a]	Surface and Middle 4.2 mg L^{-1} Bottom 2.4 mg L^{-1}	Surface and Middle 2.9 mg L^{-1} Bottom 1.6 mg L^{-1}
Turbidity in NTU (Depth-averaged [b]) [c]	14.4 NTU, and 120% of the relevant control station's turbidity at the same tide of the same day	19.9 NTU, and 130% of the relevant control station's turbidity at the same tide of the same day
SS in mg L^{-1} (Depth-averaged [b]) [c]	20.8 mg L^{-1}, and 120% of the relevant control station's SS at the same tide of the same day	29.6 mg L^{-1}, and 130% of the relevant control station's SS at the same tide of the same day
Group 2 – During construction at the Double Berth Jetty to West Lamma Channel (KP0.0 - 14.5)		
DO in mg L^{-1} [a]	Surface and Middle 3.4 mg L^{-1} Bottom 1.8 mg L^{-1}	Surface and Middle 2.4 mg L^{-1} Bottom 1.4 mg L^{-1}
Turbidity in NTU (Depth-averaged [b]) [c]	17.1 NTU, and 120% of the relevant control station's turbidity at the same tide of the same day	26.8 NTU, and 130% of the relevant control station's turbidity at the same tide of the same day
SS in mg L^{-1} (Depth-averaged [b]) [c]	25.7 mg L^{-1}, and 120% of the relevant control station's SS at the same tide of the same day	37.1 mg L^{-1}, and 130% of the relevant control station's SS at the same tide of the same day
Group 3 – During construction at the Jetty Approach (KP0.0 - 5.0), South of Soko Islands (KP5.0 - 8.9), Southwest of Soko Islands (KP8.9 - 12.1)		
DO in mg L^{-1} [a]	Surface and Middle 4.1 mg L^{-1} Bottom 2.7 mg L^{-1}	Surface and Middle 3.0 mg L^{-1} Bottom 2.0 mg L^{-1}
Turbidity in NTU (Depth-averaged [b]) [c]	17.0 NTU, and 120% of the relevant control station's turbidity at the same tide of the same day	30.9 NTU, and 130% of the relevant control station's turbidity at the same tide of the same day

Parameter	Action Level	Limit Level
SS in mg L^{-1} (Depth-averaged [b]) [c]	22.3 mg L^{-1}, and 120% of the relevant control station's SS at the same tide of the same day	36.9 mg L^{-1}, and 130% of the relevant control station's SS at the same tide of the same day
Group 4 – During construction at the Adamasta Channel (KP12.1 - 15.6), Southwest Lantau (KP15.6 - 21.3)		
DO in mg L^{-1} [a]	Surface and Middle 3.4 mg L^{-1} Bottom 2.8 mg L^{-1}	Surface and Middle 2.5 mg L^{-1} Bottom 2.0 mg L^{-1}
Turbidity in NTU (Depth-averaged [b]) [c]	63.1 NTU, and 120% of the relevant control station's turbidity at the same tide of the same day	165.7 NTU, and 130% of the relevant control station's turbidity at the same tide of the same day
SS in mg L^{-1} (Depth-averaged [b]) [c]	75.4 mg L^{-1}, and 120% of the relevant control station's SS at the same tide of the same day	121.8 mg L^{-1}, and 130% of the relevant control station's SS at the same tide of the same day
Group 5 – During construction at the West of Tai O to West of HKIA (KP21.3 - 31.5)		
DO in mg L^{-1} [a]	Surface and Middle 4.6 mg L^{-1} Bottom 4.0 mg L^{-1}	Surface and Middle 4.0 mg L^{-1} Bottom 2.0 mg L^{-1}
Turbidity in NTU (Depth-averaged [b]) [c]	31.9 NTU, and 120% of the relevant control station's turbidity at the same tide of the same day	46.6 NTU, and 130% of the relevant control station's turbidity at the same tide of the same day
SS in mg L^{-1} (Depth-averaged [b]) [c]	64.9 mg L^{-1}, and 120% of the relevant control station's SS at the same tide of the same day	72.5 mg L^{-1}, and 130% of the relevant control station's SS at the same tide of the same day
Group 6 – During construction at the West of HKIA to Lung Kwu Chau (KP31.5 - 37.5)		
DO in mg L^{-1} [a]	Surface and Middle 4.4 mg L^{-1} Bottom 3.9 mg L^{-1}	Surface and Middle 3.9 mg L^{-1} Bottom 2.0 mg L^{-1}
Turbidity in NTU (Depth-averaged [b]) [c]	30.7 NTU, and 120% of the relevant control station's turbidity at the same tide of the same day	47.0 NTU, and 130% of the relevant control station's turbidity at the same tide of the same day
SS in mg L^{-1} (Depth-averaged [b]) [c]	49.2 mg L^{-1}, and 120% of the relevant control station's SS at the same tide of the same day	74.0 mg L^{-1}, and 130% of the relevant control station's SS at the same tide of the same day
Group 7 – During construction at the Lung Kwu Chau to Urmston Anchorage (37.5 - 41.1), Urmston Road (KP41.1 - 42.9)		
DO in mg L^{-1} [a]	Surface and Middle 3.8 mg L^{-1} Bottom 3.1 mg L^{-1}	Surface and Middle 3.4 mg L^{-1} Bottom 2.0 mg L^{-1}
Turbidity in NTU (Depth-averaged [b]) [c]	34.5 NTU, and 120% of the relevant control station's turbidity at the same tide of the same day	79.2 NTU, and 130% of the relevant control station's turbidity at the same tide of the same day
SS in mg L^{-1} (Depth-averaged [b]) [c]	37.8 mg L^{-1}, and 120% of the relevant control station's SS at the same tide of the same day	98.2 mg L^{-1}, and 130% of the relevant control station's SS at the same tide of the same day
Group 8 – During construction at the West of BPPS (KP42.9 - 44.9), Pipeline shore approach at BPPS (KP44.9 - 45.0)		

Parameter	Action Level	Limit Level
DO in mg L^{-1} [a]	Surface and Middle 4.3 mg L^{-1} Bottom 3.6 mg L^{-1}	Surface and Middle 3.4 mg L^{-1} Bottom 2.0 mg L^{-1}
Turbidity in NTU (Depth-averaged [b]) [c]	34.3 NTU, and 120% of the relevant control station's turbidity at the same tide of the same day	58.5 NTU, and 130% of the relevant control station's turbidity at the same tide of the same day
SS in mg L^{-1} (Depth-averaged [b]) [c]	42.4 mg L^{-1}, and 120% of the relevant control station's SS at the same tide of the same day	78.2 mg L^{-1}, and 130% of the relevant control station's SS at the same tide of the same day

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

The Event and Action Plan for marine water quality monitoring can be referred to *the Updated EM&A Manual*.

2.3.3 Monitoring Results

A total of 49 monitoring events for construction phase marine water quality monitoring were conducted for construction of BPPS Pipeline and LPS Pipeline within the works area(s) for the associated marine-based activities in the reporting period. Graphical presentations are provided in ***Annex F***. There were no Project-related Action and Limit Level exceedances for marine water quality monitoring in the reporting period.

2.4 Pilot Test on the Efficiency of Silt Curtain System

2.4.1 Monitoring Requirements

According to Condition 2.10 of FEP-02/558/2018/A and FEP-03/558/2018/B, and Section 5.3.2 of the Updated EM&A Manual, pilot tests on the efficiency of silt curtain system shall be conducted during the early stage of construction to confirm the removal efficiency of the silt curtains. The pilot tests on the efficiency of silt curtain system include i) testing of silt removal efficiency of 75% or higher for silt curtain at grab dredger; ii) testing of silt removal efficiency of 85% or higher for silt curtain at jetting machine; and iii) testing of silt removal efficiency of 80% or higher for double layer silt curtain at sensitive receivers, as determined by the difference between the SS levels near marine works area and that outside silt curtain in the event of the dredging / jetting operations being actively undertaken for BPPS Pipeline and/or LPS Pipeline. The detailed methodology of the pilot tests on the efficiency of silt curtain system is presented in the approved Silt Curtain Deployment Plans for the corresponding FEPs.

2.4.2 Monitoring Results

Pilot test on the efficiency of double layer silt curtain (i.e. floating silt curtain) at jetting machine was conducted on 18 January 2022 during the jetting operation of BPPS Pipeline in accordance with the methodology presented in the approved Silt Curtain Deployment Plan. Three rounds of monitoring (i.e. Rounds 1, 2 & 3) for the pilot test covering ebb and flood tides (Round 1 and Round 3 were conducted within mid-ebb tide and mid-flood tide, respectively, while Round 2 was scheduled to be conducted in between mid-ebb tide and mid-flood tide due to the first mid-flood tide of the day occurred before 7:00 AM at which no jetting operation shall be operated in accordance with Condition 3.7 of FEP-03/558/2018/B) were conducted when jetting operation was operated at or close to the maximum productivity for BPPS Pipeline. The jetting work rate was about 30 m/hr, which is

equivalent to 720 m/day for 24 hours work. The monitoring stations for the pilot test are presented in ***Figure 2.2***.

The results of the pilot test have demonstrated that the tested silt curtain system is capable of achieving an efficiency greater than that assumed in the approved EIA Report. As such, the proposed floating silt curtain is effective for the jetting operation for the Project to minimize water quality impacts and no further measures/ recommendations are required. As similar floating silt curtain and jetting machine are used for the construction of the BPPS and LPS Pipelines, this pilot test results of floating silt curtain for jetting works are applicable for the subsea gas pipeline for BPPS under FEP-03/558/2018/B and the subsea gas pipeline for LPS under FEP-02/558/2018/A. The detailed monitoring results can be referred to *Section 2.4 of the Monthly EM&A Report for January 2022*.

2.5 Marine Mammal Monitoring

2.5.1 Monitoring Requirements

2.5.1.1 Passive Acoustic Monitoring (PAM)

In accordance with the Updated EM&A Manual, underwater PAM survey using C-POD (Cetacean-Porpoise Detector) was conducted at five locations as presented in ***Figure 2.3***. C-PODs are left in place during construction of the LNG Terminal. Such duration should allow for a robust record of marine mammal usage of the area to be obtained and allow for the inter-seasonal differences already known for finless porpoises. The C-PODs have to be serviced every two to four months, subject to review on an as-needed basis, to download accumulated data and replace batteries.

2.5.2 Monitoring Results

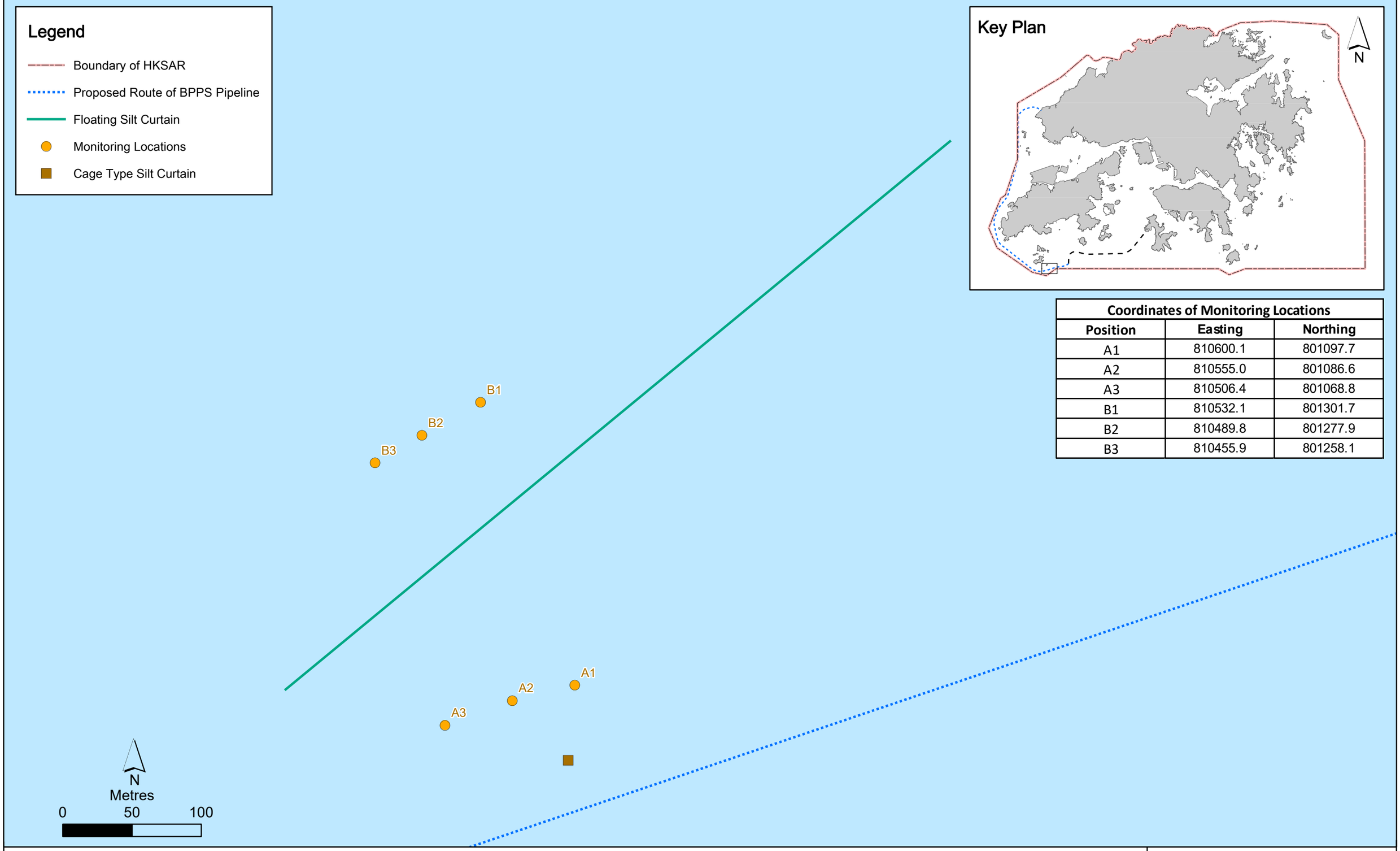
2.5.2.1 Summary of PAM Data Collection

Five C-POD units have been deployed at the five locations since the commencement of construction for FEP-01/558/2018/A and PAM data were analysed during the period of piling works of the Project in December 2020 and in July 2021 to early November 2021. The summaries of deployment data are presented in ***Table 2.7*** below. The PAM deployment statistics for each location are provided in ***Annex G***.

Variations in porpoise activity per day were observed at all five locations during the period of piling works of the Project in December 2020 and in July 2021 to early November 2021 (see ***Figure 2.4***). The mean porpoise DPM per day at the five locations ranged from 14.9 (Location 5) to 137.9 (Location 2) for the analysed period. Location 5 (Shek Kwu Chau) recorded the least porpoise activity amongst the five locations. Further analysis will be conducted to compare the finless porpoise detection numbers between the baseline, construction and post-construction monitoring upon completion of the post-construction monitoring.

Legend

- Boundary of HKSAR
- Proposed Route of BPPS Pipeline
- Floating Silt Curtain
- Monitoring Locations
- Cage Type Silt Curtain



Key Plan

Coordinates of Monitoring Locations		
Position	**Easting**	**Northing**
A1	810600.1	801097.7
A2	810555.0	801086.6
A3	810506.4	801068.8
B1	810532.1	801301.7
B2	810489.8	801277.9
B3	810455.9	801258.1

Figure 2.2

Monitoring Locations for Floating Silt Curtain Pilot Test for Jetting Operation

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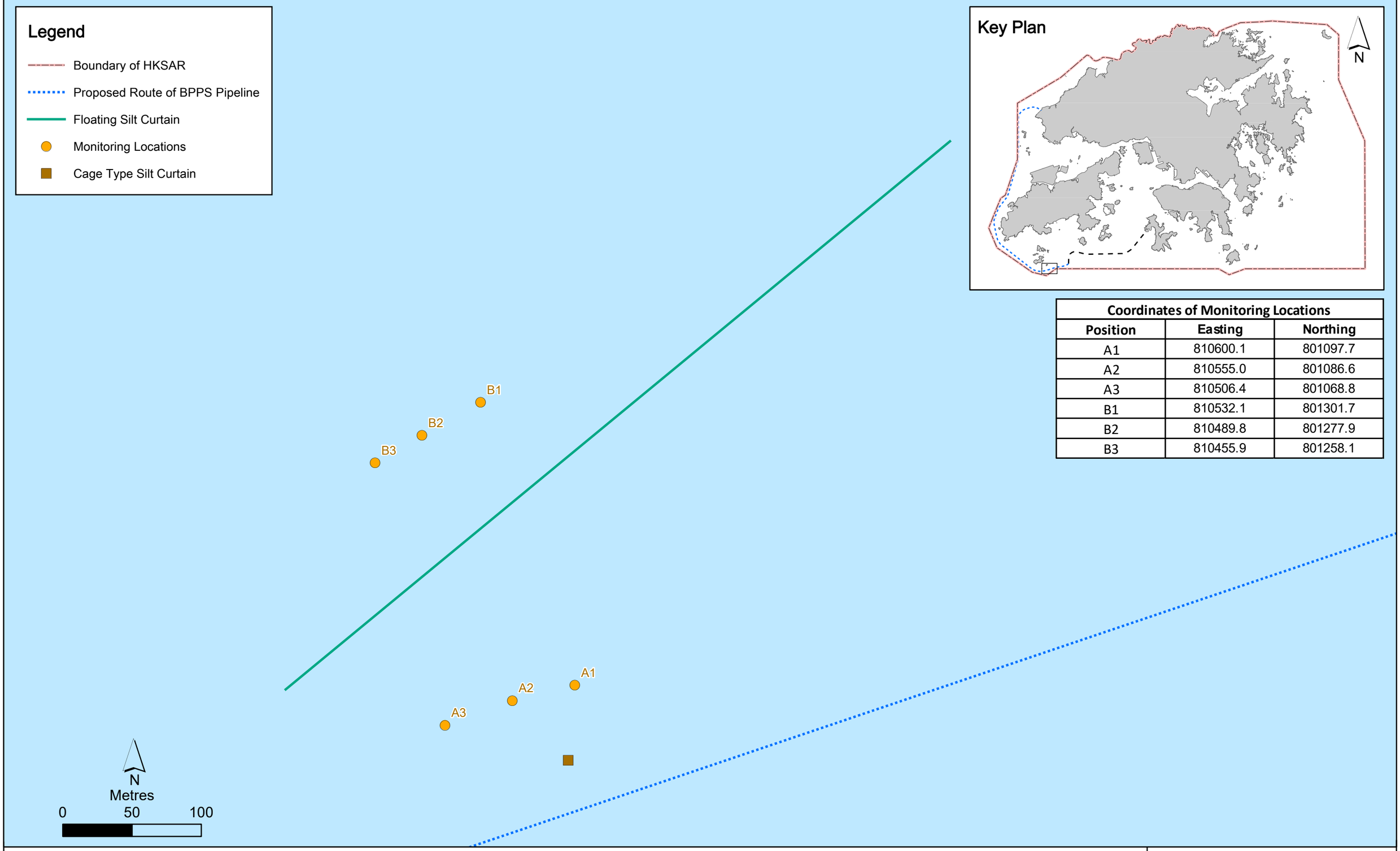
Date: 24/1/2022

Environmental Resources Management

ERM

Legend

- Boundary of HKSAR
- Proposed Route of BPPS Pipeline
- Floating Silt Curtain
- Monitoring Locations
- Cage Type Silt Curtain



Key Plan

Coordinates of Monitoring Locations		
Position	**Easting**	**Northing**
A1	810600.1	801097.7
A2	810555.0	801086.6
A3	810506.4	801068.8
B1	810532.1	801301.7
B2	810489.8	801277.9
B3	810455.9	801258.1

Figure 2.2

Monitoring Locations for Floating Silt Curtain Pilot Test for Jetting Operation

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Date: 24/1/2022

Environmental Resources Management

ERM

Legend

- Boundary of HKSAR
- Proposed Route of BPPS Pipeline
- Proposed Route of LPS Pipeline
- Proposed Site for LNG Terminal
- Proposed South Lantau Marine Park
- Open Sea Disposal Area
- Proposed Safety Zone
- C-POD Deployment Location
- Submarine Cable
- Power Lines
- Pipeline

C-POD Deployment Location			
ID	Longitude	Latitude	Water Depth (m)
1	113° 55' 10.201" E	22° 09' 46.379" N	13
2	113° 56' 43.723" E	22° 09' 30.563" N	14
3	113° 57' 09.118" E	22° 09' 30.592" N	14.7
4	113° 57' 13.030" E	22° 10' 23.959" N	14.1
5	113° 59' 50.741" E	22° 11' 26.794" N	14

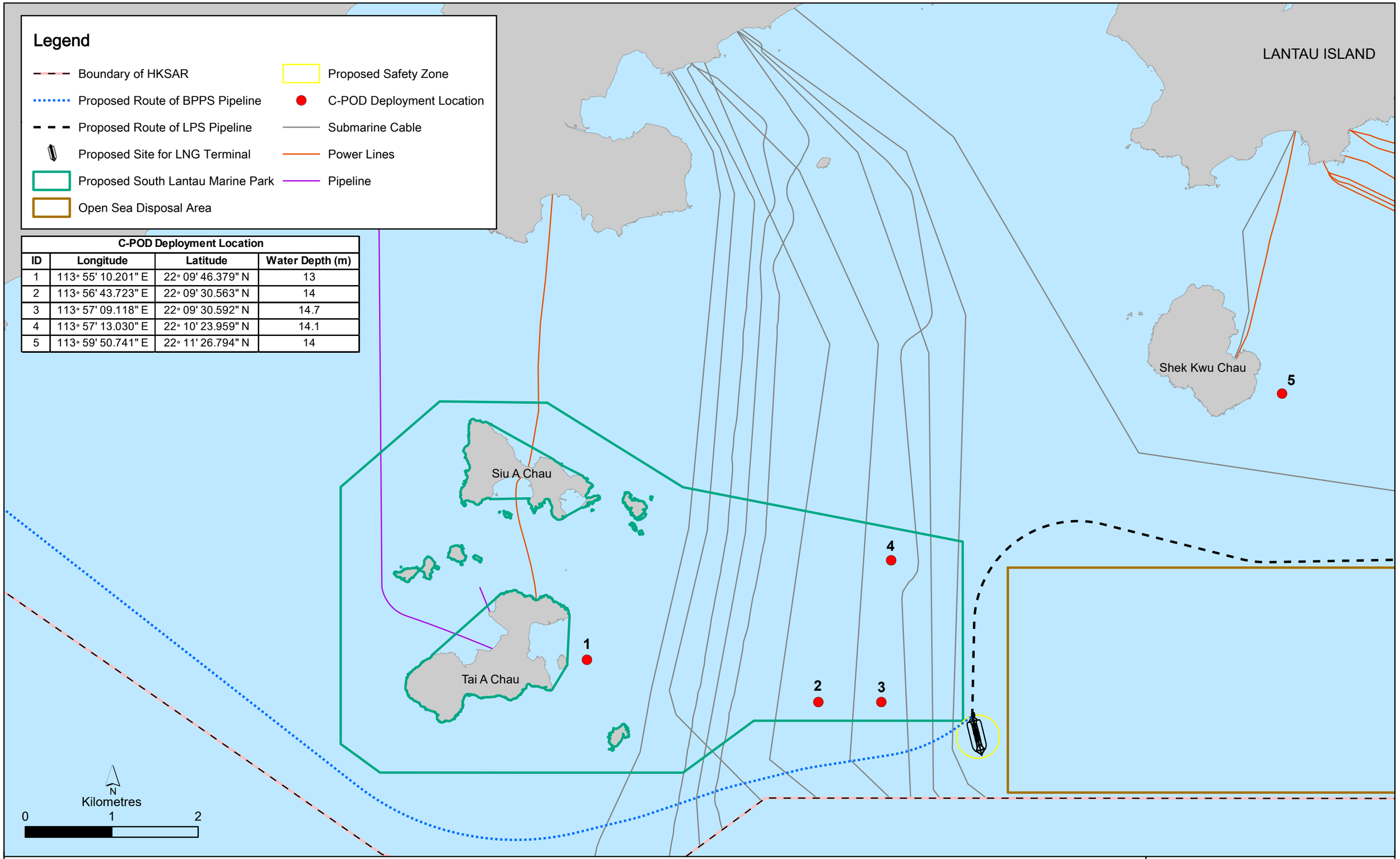

Figure 2.3

Underwater PAM Survey Location

File: T:\GIS\CONTRACT\0505354\mxd\0505354_Proposed_Underwater_PAM_Survey_Location.mxd
Date: 2/8/2021

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Table 2.7 Summary of PAM data for each Location

Location	Data Period (Notes 1, 2 and 3)	No. of Logged Days	Detection Positive Days as a percentage of Logged Days (DPD% of days)	Detection Positive Minutes (DPM)	DPM / Logged Days
Location 1 (East of Tai A Chau)	1-31 Dec 2020 5 Jul – 4 Nov 2021	154	99.4%	17049	110.7
Location 2 (FSRU-W)	1-31 Dec 2020 5 Jul – 25 Oct 2021	144	100%	19854	137.9
Location 3 (FSRU-E)	1-31 Dec 2020 4 Jul – 4 Nov 2021	155	100%	14826	95.7
Location 4 (FSRU-N)	23-31 Dec 2020 4 Jul – 5 Nov 2021	134	97.8%	10762	80.3
Location 5 (Shek Kwu Chau)	23-31 Dec 2020 4 Jul – 5 Nov 2021	134	68.7%	2003	14.9

Notes:

(1) As checked with the marine mammal expert, the PAM data for Location 2 after 25 October 2021 could not be retrieved due to malfunction of the C-POD.

(2) Due to adverse weather, servicing of C-PODs at Locations 4 and 5 was conducted on 22 December 2020 and the data analysed for December 2020 covered the period between 23 and 31 December 2020.

(3) The jacket installation works (i.e. piling works) of the Project were conducted in December 2020, July to early November 2021 and completed on 10 November 2021. The data period presented above covered the majority of the piling works period and are representative to evaluate marine mammal usage of the area and allow for the inter-seasonal differences already known for finless porpoises.

2.5.2.2 Evaluation of Detection Errors, Loss of Click Detections and Boat Sonar

Visual validation was used to assess the overall rate of false positive porpoise DPM as identified by the KERNO classifier. Such false positives were found to be 0% (with 95% confidence level) at Locations 1-3 (East of Tai A Chau, FSRU-W and FSRU-E), 0-2% at Location 4 (FSRU-N) and 1% at Location 5 (Shek Kwu Chau) during the deployment periods. Inspection of the sampled porpoise DPM found that the majority of false positive were most likely due to misclassified boat sonar.

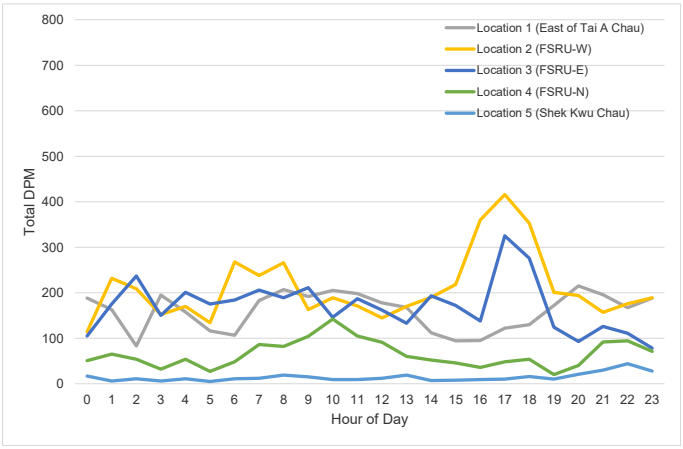
Notably, the minute click limit can be exceeded in very noisy environments, meaning that no further clicks will be detected until the start of the next minutes. However, no time was lost for the deployment periods at all five locations. Moreover, boat sonar was detected throughout the deployment periods at the five locations, and this was generally around 50 kHz.

2.5.2.3 Diel Patterns on Porpoise Occurrences

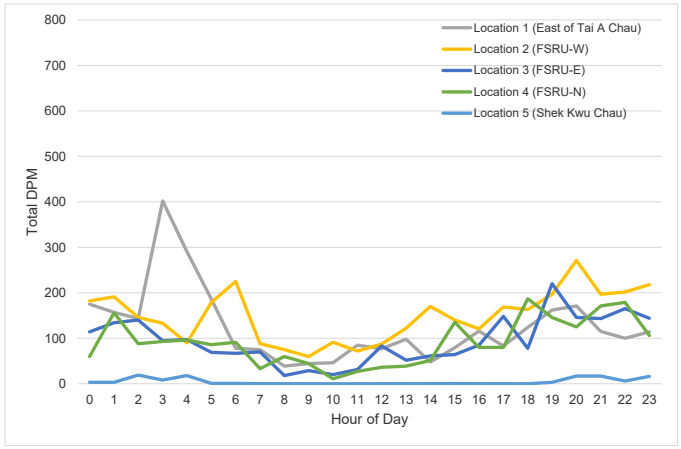
FP activity in different hours of the day at the five locations has been examined and comparison was made on the diel patterns among the five locations by each month in December 2020 and July to October 2021 [(5)] and during the period of piling works of the Project (***Figures 2.5-2.6***). Diel patterns were more distinguishable for Locations 1-4 and there was a decline in porpoise activity from late morning to the middle of the day to some extent. The diel pattern at Location 5 (Southeast of Shek Kwu Chau) was less distinguishable and the total DPM recorded during the period of piling works of the Project were lower than other locations.

(5) As the data analysed for November 2021 covered a few days up to 5 November 2021, the monthly data for November 2021 are not presented in Figure 2.5.

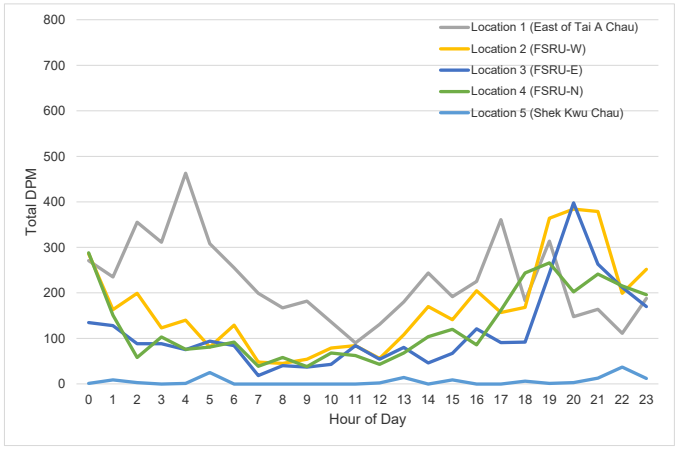
December 2020



July 2021

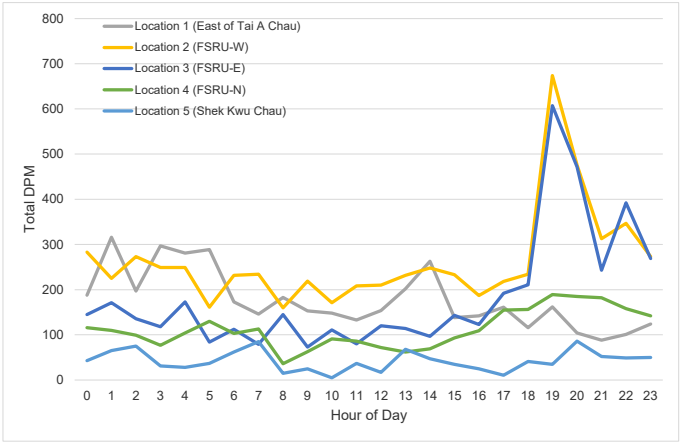


August 2021



Remarks: The data for Locations 4 and 5 covered the period between 23 and 31 December 2020.

September 2021



October 2021

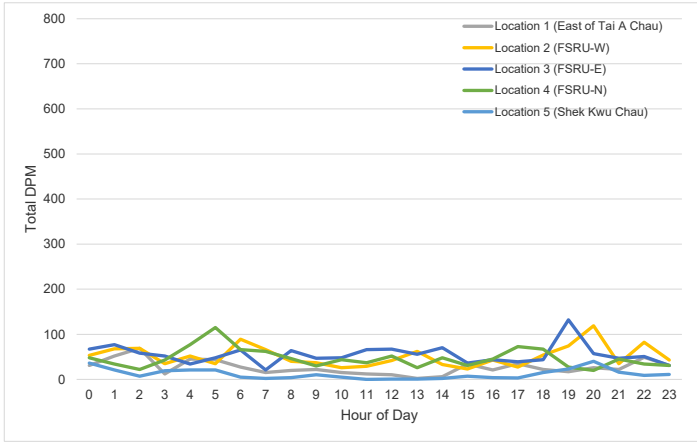


Figure 2.5

Monthly Comparisons on DPM Diel Patterns of Finless Porpoises among the Five Deployment Locations in December 2020 and July – October 2021

DATE: MAY 2022

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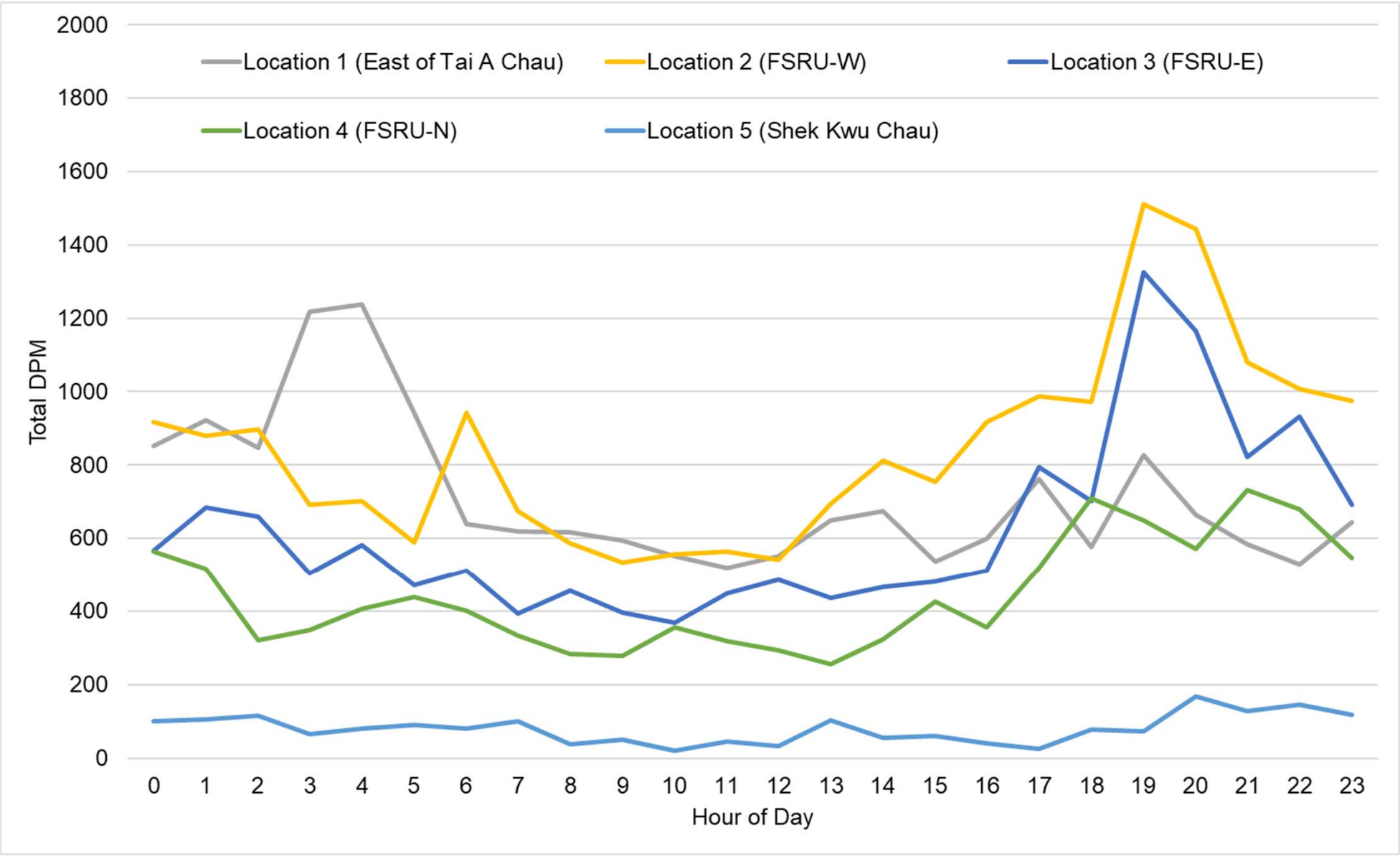

Figure 2.6 DPM Diel Patterns of Finless Porpoises among the Five Deployment Locations during the period of piling works of the Project

DATE: MAY 2022

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2.6 Marine Mammal Exclusion Zone Monitoring

2.6.1 Monitoring Requirements

According to Condition 3.7 of FEP-02/558/2018/A, Condition 3.8 of FEP-03/558/2018/B, Section 9.11.3 of the approved EIA Report and Section 7 of the Updated EM&A Manual, marine mammal exclusion zone monitoring is required during dredging / jetting operations for construction of BPPS Pipeline or LPS Pipeline. Marine mammal exclusion zone requirements are presented in ***Table 2.8***.

Table 2.8 Marine Mammal Exclusion Zone Requirements

Activity	Exclusion Zone	Requirement
Marine dredging or jetting operations for construction of BPPS Pipeline or LPS Pipeline	250m	Before pipeline dredging or jetting commence, the exclusion zone must have been continuously clear of marine mammals for 30 minutes. During pipeline dredging/ jetting, if marine mammals are spotted within the exclusion zone, pipeline dredging/ jetting works will cease and will not resume until the observer confirms that the zone has been continuously clear of marine mammals for a period of 30 minutes.

2.6.2 Monitoring Results

Marine mammal exclusion zone monitoring was conducted during the reporting period when marine jetting operation for construction of BPPS / LPS Pipeline was undertaken. No sightings of marine mammals were observed during marine mammal exclusion zone monitoring in the reporting period. The monitoring results for marine mammal exclusion zone monitoring in the reporting period is summarised in ***Table 2.9***.

Table 2.9 Monitoring Results for Marine Mammal Exclusion Zone Monitoring

Date	Active works activities	Monitoring results
28-30 Jan 2022	Marine jetting operation at Double Berth Jetty to South of Shek Kwu Chau for LPS Pipeline	No sightings of marine mammals
4, 5, 9-14, 27, 28 Feb 2022		
1-6 Mar 2022		
8-19 (1), 23-26 Jan 2022	Marine jetting operation at South of Shek Kwu Chau to West Lamma Channel for LPS Pipeline	
16-30 Jan 2022	Marine jetting operation at Jetty Approach for BPPS Pipeline	
3, 6-10, 12-16, 18-24, 26, 28 Feb 2022		
1-14, 17-31 Mar 2022		
9-15 Jan 2022	Marine jetting operation at South of Soko Islands for BPPS Pipeline	
4-5 Feb 2022		
1-4 Jan 2022	Marine jetting operation at Southwest of Soko Islands for BPPS Pipeline	
13-18 Mar 2022	Marine jetting operation at Southwest Lantau for BPPS Pipeline	
7-12 Mar 2022	Marine jetting operation at West of Tai O to West of HKIA for BPPS Pipeline	
1-4, 7-12, 14-30 Jan 2022	Marine jetting operation at West of HKIA to Lung Kwu Chau for BPPS Pipeline	
24-26 Mar 2022		
1-17, 23-25 Feb 2022	Marine jetting operation at Lung Kwu Chau to Urmston Anchorage and Urmston Road for BPPS Pipeline	
26-28 Feb 2022	Marine jetting operation at West of BPPS for BPPS Pipeline	
1-22 Mar 2022		

Note:
(1) Only preparation works for marine jetting operation were conducted between 8 and 19 January 2022.

2.7 Records of Operating Speeds and Marine Travel Routes of Working Vessels

The operating speeds and marine travel routes of working vessels for construction of the Project within the reporting period were checked and reviewed. A total of 28 working vessels were used for the construction of the Jetty, LPS Pipeline and BPPS Pipeline under FEP-01/558/2018/A, FEP-02/558/2018/A and FEP-03/558/2018/B, respectively, during the reporting period. All these working vessels were operated at a speed lower than 10 knots when moving within the areas frequented by marine mammals, including the waters near Sha Chau and Lung Kwu Chau Marine Park, the waters at the west of Lantau Island and the waters between Soko Islands and Shek Kwu Chau, and followed the relevant marine travel requirements stipulated in the FEP. No non-compliance on the operating speeds and marine travel routes of working vessels was identified. Records of operating speeds and marine travel routes of working vessels for construction of the Project provided by the Contractor can be referred to the *relevant Annexes of the associated Monthly EM&A Reports* for the reporting period.

The compliance status on approval conditions given by the Director of Environmental Protection for the entry of working vessels (i.e. anchor handling tugs (AHTs)) within marine parks and the proposed SLMP in pursuant to Condition 3.1 of FEP-01/558/2018/A for anchoring activities for topsides installation for construction of the Jetty, Condition 3.4 of FEP-02/558/2018/A and Condition 3.4 of FEP-03/558/2018/B for anchoring activities for pipelaying and/or post-trenching processes for construction of LPS and BPPS Pipelines, respectively, as appropriate within the reporting period was checked. A total of six AHTs with 74 entries to the marine parks and the proposed SLMP were recorded within the reporting period. No non-compliance on the approval conditions was identified. Records of entry events of working vessels within the marine parks and the proposed SLMP provided by the Contractor can be referred to *relevant Annexes of the associated Monthly EM&A Reports for the reporting period*.

2.8 Implementation Status of Environmental Mitigation Measures

A summary of the Environmental Mitigation Implementation Schedule (EMIS) is presented in ***Annex C***. The necessary mitigation measures were implemented properly for the Project.

2.9 Summary of Exceedances of the Environmental Quality Performance Limit

There were no Project-related Action and Limit Level exceedances for marine water quality monitoring in the reporting period.

Since construction phase marine mammal monitoring was completed in November 2021, there were no breaches of Action and Limit Levels for marine mammal monitoring in the reporting period.

Cumulative statistics on exceedance is provided in ***Annex E***.

2.10 Summary of Environmental Complaints, Notification of Summons and Successful Prosecutions

There were two environmental complaints referred by EPD on 20 and 21 January 2022 in the reporting period. The nature of two complaints is similar, mentioning that no silt curtain was deployed when post-trenching operation was undertaken by the working vessel “ZHONG YOU HAI 101”. Upon receipt of the complaints, the ET immediately notified HK Electric about the complaints, and discussed with HK Electric and COOEC to investigate and determine the validity of the complaints.

It is noted that the concerned vessel “ZHONG YOU HAI 101” has been deployed to support the subsea gas pipeline installation works for the LPS Pipeline under the Further Environmental Permit FEP-02/558/2018/A. With reference to Condition 3.3 of FEP-02/558/2018/A, cage-type silt curtain shall be installed enclosing the jetting machine during construction of the subsea gas pipeline while floating silt curtain shall also be deployed at the time of jetting operation being undertaken between

KP0.1 and KP5.0 as stated in the Pipeline Laying Method Plan under Condition 2.9 of FEP-02/558/2018/A.

Upon investigation, no post-trenching operation was conducted for the LPS Pipeline in the past two weeks upon receipt of complaints (i.e. between 6 and 20 January 2022). Only survey works for confirming seabed profile in the vicinity of the LPS Pipeline were conducted, which did not result in any unacceptable environmental impacts to the surrounding and the works were in compliance with the environmental requirements under FEP-02/558/2018/A and the approved EIA report (Register No.: AEIAR-218/2018). The two complaints on silt curtain not deployed during post-trenching operation are thus considered invalid.

There were no notification of summons and successful prosecutions recorded in the reporting period.

Statistics on environmental complaints, notification of summons and successful prosecutions are summarised in ***Annex E***.

3. CONCLUSION AND RECOMMENDATIONS

This Quarterly EM&A Summary Report presents the key findings of the EM&A works during the reporting period from 1 January to 31 March 2022 for the construction works for the Project in accordance with the Updated EM&A Manual and the requirements of the Further Environmental Permits (FEP-01/558/2018/A, FEP-02/558/2018/A & FEP-03/558/2018/B).

Environmental auditing works, including regular site inspections of construction works conducted by the ET, audit of implementation of Waste Management Plan, and review of the acceptability of operating speeds and marine travel routes of working vessels, including checking of compliance with the approval conditions given by EPD for allowing the entry of working vessels within marine parks and the proposed SLMP in pursuant to Condition 3.1 of FEP-01/558/2018/A, Condition 3.4 of FEP-02/558/2018/A and Condition 3.4 of FEP-03/558/2018/B, were conducted in the reporting period, as appropriate. No non-compliance of environmental statutory requirements was identified.

Marine water quality monitoring was conducted during the reporting period in accordance with the Updated EM&A Manual. No Project-related Action and Limit Level exceedances were recorded.

Pilot test on the efficiency of silt curtain system (floating silt curtain for jetting operation) was conducted during the reporting period in accordance with the approved Silt Curtain Deployment Plan. The results of the pilot test have demonstrated that the tested silt curtain system is capable of achieving an overall efficiency greater than that assumed in the approved EIA Report. As such, the proposed floating silt curtain is effective for the jetting operation for the Project to minimize water quality impacts and no further measures/recommendations are required. As similar floating silt curtain and jetting machine are used for the construction of the BPPS and LPS Pipelines, this pilot test results of floating silt curtain for jetting works are applicable for the subsea gas pipeline for BPPS under FEP-03/558/2018/B and the subsea gas pipeline for LPS under FEP-02/558/2018/A.

Since construction phase marine mammal monitoring was completed in November 2021, no breaches of Action and Limit Levels were recorded.

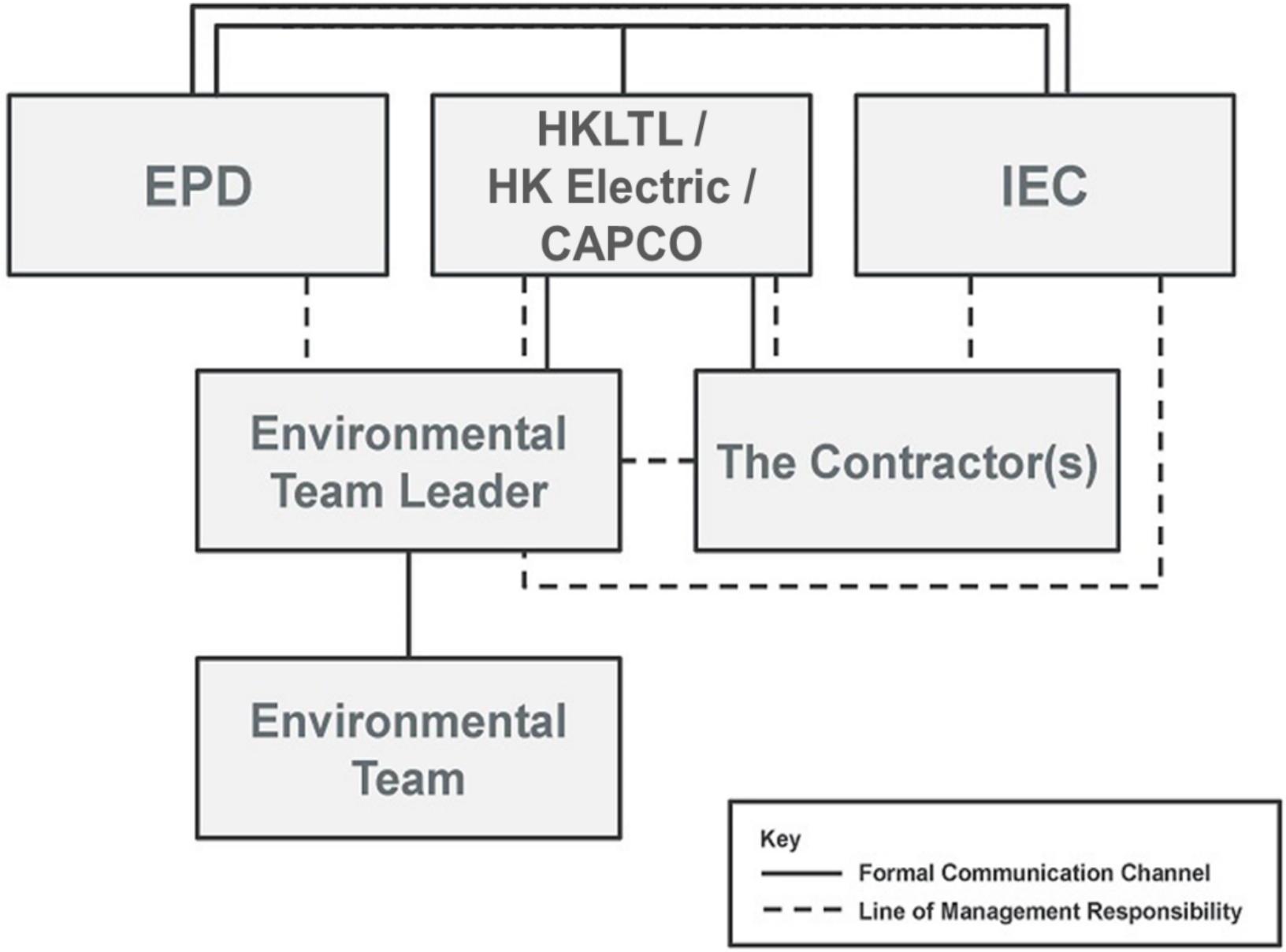
There were two environmental complaints received on the absence of silt curtain for post-trenching operation of the LPS Pipeline in the reporting period. Upon investigation, no post-trenching operation was conducted for the LPS Pipeline in the past two weeks upon receipt of complaints (i.e. between 6 and 20 January 2022). Only survey works for confirming seabed profile in the vicinity of the LPS Pipeline were conducted, which did not result in any unacceptable environmental impacts to the surrounding and the works were in compliance with the environmental requirements under FEP-02/558/2018/A and the approved EIA report (Register No.: AEIAR-218/2018). The two complaints on silt curtain not deployed during post-trenching operation are thus considered invalid.

There were no notification of summons and successful prosecutions recorded in the reporting period.

The recommended environmental mitigation measures for the Project were effectively implemented and the EM&A programme undertaken by the ET has effectively monitored the construction activities as well as ensured proper implementation of mitigation measures in the reporting period.

ANNEX A

PROJECT ORGANISATION



Annex A

Project Organisation

DATE: NOV 2020

Environmental Resources Management

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ANNEX B

CONSTRUCTION PROGRAMME

Schedule of Works associated with the double berth jetty at LNG Terminal								
WORK	**Q3 2020**	**Q4 2020**	**Q1 2021**	**Q2 2021**	**Q3 2021**	**Q4 2021**	**Q1 2022**	**Q2 2022**
Preparation Phase								
Pre-survey								
Construction Phase								
Jacket Installation								
Topsides Construction								

Annex B

Construction Programme for FEP-01/558/2018/A

DATE: APR 2022

Environmental Resources Management

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Schedule of the works associated with the subsea gas pipeline for Lamma Power Station (LPS) and the associated Gas Receiving Station (GRS) in LPS								
WORK	**Q3 2020**	**Q4 2020**	**Q1 2021**	**Q2 2021**	**Q3 2021**	**Q4 2021**	**Q1 2022**	**Q2 2022**
Preparation Phase								
Pre-survey								
Removal of obstructions								
Construction Phase								
Pre-trenching including Deployment of Silt Curtain and Pilot Test								
De-burial of pre-installed pipeline by Mass Flow Excavator								
Pipeline Laying								
Intermediate Hydrotesting for Pipeline								
Post-trenching including Deployment of Silt Curtain and Pilot Test								
Rock Armour Placement								
Final Hydrotesting for Pipeline								
Gas Receiving Station (GRS) including pipe rack construction, preparation works at the vent header for tie-in of the new GRS, fencing, new gas receiving facility and new pipeline connection, and pre-commissioning, commissioning and start up								

Remarks:
Pilot tests on the efficiency of silt curtain system shall be conducted during the early stage of construction to confirm the removal efficiency of the silt curtains.

Annex B

Construction Programme for FEP-02/558/2018/A

DATE: APR 2022

Environmental Resources Management

ERM

Schedule of the works associated with the subsea gas pipeline for Black Point Power Station (BPPS) and the associated Gas Receiving Station (GRS) in BPPS								
WORK	**Q3 2020**	**Q4 2020**	**Q1 2021**	**Q2 2021**	**Q3 2021**	**Q4 2021**	**Q1 2022**	**Q2 2022**
Preparation Phase								
Pre-survey								
Removal of obstructions								
Construction Phase								
Pre-trenching including Deployment of Silt Curtain and Pilot Test								
Cofferdam and Sheet Pile Construction								
Pipeline Laying								
Post-trenching including Deployment of Silt Curtain and Pilot Test								
Rock Armour Placement								
Intermediate and Final Hydrotesting for Pipeline								
Gas Receiving Station (GRS) including pipe rack construction, preparation works at the vent header for tie-in of the new GRS, fencing, new gas receiving facility and new pipeline connection, and pre-commissioning, commissioning and start up								

Remarks:
Pilot tests on the efficiency of silt curtain system shall be conducted during the early stage of construction to confirm the removal efficiency of the silt curtains.

Annex B

Construction Programme for FEP-03/558/2018/B

DATE: APR 2022

Environmental Resources Management

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ANNEX C

ENVIRONMENTAL MITIGATION IMPLEMENTATION SCHEDULE (EMIS)

TABLE C.1 IMPLEMENTATION SCHEDULE OF RECOMMENDED MITIGATION MEASURES

EIA Reference	EM&A Reference	Recommended Environmental Protection Measures/ Mitigation Measures	Location/ duration of recommended measures & timing of completion of recommended measures	Implementation Agent	Implementation Stage [1]			Relevant Legislation & Guidelines	Implementation Status
					D	C	O		
Air Quality									
S4.10.1	S2.1	Impervious sheet will be provided for skip hoist for material transport.	Land sites for GRSs within BPPS and LPS / During construction, particularly dry season	Contractor(s)		✓		*Air Pollution Control (Construction Dust) Regulation*	✓ for GRS in BPPS N/A for GRS in LPS
S4.10.1	S2.1	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 sites for GRSs within BPPS and LPS / During construction	Contractor(s)		✓		*Air Pollution Control (Construction Dust) Regulation*	✓ for GRS in BPPS N/A for GRS in LPS
S4.10.1	S2.1	All dusty materials should be sprayed with water or a dust suppression chemical immediately prior to any loading, unloading or transfer operation.	Land sites for GRSs within BPPS and LPS / During construction	Contractor(s)		✓		*Air Pollution Control (Construction Dust) Regulation*	✓ for GRS in BPPS N/A for GRS in LPS An observation was given for LPS Pipeline

[1] D = Design Phase; C = Construction Phase; O = Operational Phase

EIA Reference	EM&A Reference	Recommended Environmental Protection Measures/ Mitigation Measures	Location/ duration of recommended measures & timing of completion of recommended measures	Implementation Agent	Implementation Stage (1)			Relevant Legislation & Guidelines	Implementation Status
					D	C	O		
S4.10.1	S2.1	Dropping heights for excavated materials should be controlled to a practical height to minimise the fugitive dust arising from unloading.	Land sites for GRSs within BPPS and LPS / During construction	Contractor(s)		✓		*Air Pollution Control (Construction Dust) Regulation*	✓ for GRS in BPPS N/A for GRS in LPS
S4.10.1	S2.1	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 sites for GRSs within BPPS and LPS / During construction	Contractor(s)		✓		*Air Pollution Control (Construction Dust) Regulation*	N/A
S4.10.1	S2.1	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 sites for GRSs within BPPS and LPS / During construction	Contractor(s)		✓		*Air Pollution Control (Construction Dust) Regulation*	An observation was given for GRS in BPPS N/A for GRS in LPS
S4.10.1	S2.1	Road sections between vehicle-wash areas and vehicular entrance will be paved.	Land sites for GRSs within BPPS and LPS / During construction	Contractor(s)		✓		*Air Pollution Control (Construction Dust) Regulation*	✓ for GRS in BPPS N/A for GRS in LPS
S4.10.1	S2.1	Haul roads will be kept clear of dusty materials and will be sprayed with water so as to	Land sites for GRSs within BPPS	Contractor(s)		✓		*Air Pollution Control*	✓ for GRS in BPPS

EIA Reference	EM&A Reference	Recommended Environmental Protection Measures/ Mitigation Measures	Location/ duration of recommended measures & timing of completion of recommended measures	Implementation Agent	Implementation Stage (1)			Relevant Legislation & Guidelines	Implementation Status
					D	C	O		
		maintain the entire road surface wet at all times.	and LPS / During construction					*(Construction Dust) Regulation*	N/A for GRS in LPS
S4.10.1	S2.1	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 sites for GRSs within BPPS and LPS / During construction	Contractor(s)		✓		*Air Pollution Control (Construction Dust) Regulation*	✓ for GRS in BPPS N/A for GRS in LPS
S4.10.1	S2.1	Stockpiles of more than 20 bags of cement and dusty construction materials will be covered entirely by impervious sheeting sheltered on top and 3-sides.	Land sites for GRSs within BPPS and LPS / During construction	Contractor(s)		✓		*Air Pollution Control (Construction Dust) Regulation*	N/A
S4.10.1	S2.1	All exposed areas will be kept wet to minimise dust emission.	Land sites for GRSs within BPPS and LPS / During construction	Contractor(s)		✓		*Air Pollution Control (Construction Dust) Regulation*	✓ for GRS in BPPS N/A for GRS in LPS
S4.10.1	S2.1	Ultra-low-sulphur diesel (ULSD), defined as diesel fuel containing not more than 0.005% sulphur by weight, will be used for all construction plant on-site.	Land sites for GRSs within BPPS and LPS / During construction/ During operation	Contractor(s) / CAPCO / HK Electric		✓	✓	*Environment, Transport and Works Bureau Technical Circular (ETWB-TC(W)) No 19/2005 on Environmental Management on Construction Sites*	✓ for GRS in BPPS N/A for GRS in LPS

EIA Reference	EM&A Reference	Recommended Environmental Protection Measures/ Mitigation Measures	Location/ duration of recommended measures & timing of completion of recommended measures	Implementation Agent	Implementation Stage (1)			Relevant Legislation & Guidelines	Implementation Status
					D	C	O		
S4.10.1	S2.1	The engine of the construction equipment during idling will be switched off.	Land sites for GRSs within BPPS and LPS / During construction	Contractor(s)		✓		*Air Pollution Control (Construction Dust) Regulation*	✓ for GRS in BPPS N/A for GRS in LPS
S4.10.1	S2.1	Regular maintenance of construction equipment deployed on-site will be conducted to prevent black smoke emission.	Land sites for GRSs within BPPS and LPS / During construction	Contractor(s)		✓		*Air Pollution Control (Construction Dust) Regulation*	✓ for GRS in BPPS N/A for GRS in LPS An observation was given for BPPS Pipeline
S4.10.1	S2.1	All marine vessels fuelled in Hong Kong are required to operate using marine light diesel with sulphur content lower than 0.05%.	Marine sites for the LNG Terminal, the BPPS Pipeline and the LPS Pipeline / During construction/ During operation	Contractor(s) / Project Proponents		✓	✓	*Air Pollution Control (Marine Light Diesel) Regulation*	✓ for LPS Pipeline, BPPS Pipeline and LNG Terminal
S4.10.1	S2.1	Non-road mobile machinery (NRMMs), e.g. mobile generator and air compressor, shall comply with the prescribed emission standards and approved with a proper label by EPD.	Land sites for GRSs within BPPS and LPS and marine sites for the LNG Terminal, the BPPS Pipeline and	Contractor(s)		✓		*Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation*	✓ for GRS in BPPS and BPPS Pipeline N/A for GRS in LPS, LNG

EIA Reference	EM&A Reference	Recommended Environmental Protection Measures/ Mitigation Measures	Location/ duration of recommended measures & timing of completion of recommended measures	Implementation Agent	Implementation Stage (1)			Relevant Legislation & Guidelines	Implementation Status
					D	C	O		
			the LPS Pipeline / During construction						Terminal and LPS Pipeline
S4.10.1	S2.1	To ensure proper implementation of the recommended dust mitigation measures and good construction site practices during the construction phase of the GRSs and the BPPS and the LPS, environmental site audits on monthly basis is recommended throughout the construction period.	Land sites for GRSs within BPPS and LPS / During construction	Contractor(s)/ Environmental Team (ET) & Independent Environmental Checker (IEC)		✓		-	✓ for GRS in BPPS N/A for GRS in LPS
S4.10.2	S2.2	LNGCs shall comply with the fuel restriction requirement under the *Air Pollution Control (Ocean Going Vessels) (Fuel at berth) Regulation.*	Marine site for the LNG Terminal / During operation	HKLTL			✓	*Air Pollution Control (Ocean Going Vessels) (Fuel at berth) Regulation*	N/A
Hazard to Life									
S5.3.3	S3	All personnel within the BPPS shall comply with CLP safety policy and requirements.	Land site for the GRS within BPPS / During construction / During operation	Contractor(s) / CAPCO		✓	✓	-	✓
S5.3.3	S3	All personnel within the LPS shall comply with HK Electric safety policy and requirements.	Land site for the GRS within LPS / During construction / During operation	Contractor(s) / HK Electric		✓	✓	-	N/A

EIA Reference	EM&A Reference	Recommended Environmental Protection Measures/ Mitigation Measures	Location/ duration of recommended measures & timing of completion of recommended measures	Implementation Agent	Implementation Stage (1)			Relevant Legislation & Guidelines	Implementation Status
					D	C	O		
S5.3.3	S3	All operation work procedures shall be complied with the operating plant procedures or guidelines and regulatory requirements.	Land sites for GRSs within BPPS and LPS / During construction / During operation	Contractor(s) / CAPCO / HK Electric		✓	✓	-	✓ for GRS in BPPS N/A for GRS in LPS
S5.3.3	S3	All personnel shall be equipped with appropriate personal protective equipment (PPE) when working at the BPPS and LPS facilities.	Land sites for GRSs within BPPS and LPS / During construction / During operation	Contractor(s) / CAPCO / HK Electric		✓	✓	-	✓ for GRS in BPPS N/A for GRS in LPS
S5.3.3	S3	Safety training and briefings shall be provided to all personnel.	Land sites for GRSs within BPPS and LPS / During construction / During operation	Contractor(s) / CAPCO / HK Electric		✓	✓	-	✓ for GRS in BPPS N/A for GRS in LPS
S5.3.3	S3	Regular site safety inspections/ audits shall be conducted.	Land sites for GRSs within BPPS and LPS / During construction/ During operation	Contractor(s) / CAPCO / HK Electric		✓	✓	-	✓ for GRS in BPPS N/A for GRS in LPS
S5.3.3	S3	Method statements and risk assessments shall be prepared and safety control measures shall be in place before commencement of work.	Land sites for GRSs within BPPS and LPS / During construction	Contractor(s)		✓		-	✓ for GRS in BPPS N/A for GRS in LPS

EIA Reference	EM&A Reference	Recommended Environmental Protection Measures/ Mitigation Measures	Location/ duration of recommended measures & timing of completion of recommended measures	Implementation Agent	Implementation Stage (1)			Relevant Legislation & Guidelines	Implementation Status
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S5.3.3	S3	Work permit system, on-site pre-work risk assessment and emergency response procedure shall be in place before commencement of work.	Land sites for GRSs within BPPS and LPS / During construction	Contractor(s)		✓		-	✓ for GRS in BPPS N/A for GRS in LPS
S5.3.3	S3	All construction workers shall be under close site supervision during the construction phase of the GRSs.	Land sites for GRSs within BPPS and LPS / During construction	Contractor(s)		✓		-	✓ for GRS in BPPS N/A for GRS in LPS
S5.4.1	S3	An emergency response plan will be put in place which fully documents the procedures to be followed in the event of an emergency.	Transit of the LNGC and FSRU Vessel under Emergency Situation / During operation	HKLTL			✓	-	N/A
S5.3.3	S3	Method statements and risk assessments shall be prepared and safety control measures should be in place before the commencement of construction works.	LNG Terminal / During construction	Contractor(s)		✓		-	✓
S5.3.3	S3	Work permit system, on-site pre-work risk assessment and emergency response procedure shall be in place before	LNG Terminal / During construction	Contractor(s)		✓		-	✓

EIA Reference	EM&A Reference	Recommended Environmental Protection Measures/ Mitigation Measures	Location/ duration of recommended measures & timing of completion of recommended measures	Implementation Agent	Implementation Stage (1)			Relevant Legislation & Guidelines	Implementation Status
					D	C	O		
		commencement of construction works.							
S5.3.3	S3	All construction workers shall be under close site supervision during the construction phase of the LNG Terminal.	LNG Terminal / During construction	Contractor(s)		✓		-	✓
S5.3.3	S3	All personnel within the LNG Terminal shall comply with relevant safety policy and requirements.	LNG Terminal / During operation	HKLTL			✓	-	N/A
S5.3.3	S3	All operation work procedures shall be complied with relevant codes and standards (e.g. SIGTTO) and regulatory requirements.	LNG Terminal / During operation	HKLTL			✓	-	N/A
S5.3.3	S3	Work permit system and emergency response procedure shall be in place.	LNG Terminal / During operation	HKLTL			✓	-	N/A
S5.3.3	S3	Robust and extended process control system, safety control system, fire-fighting system and security system shall be provided.	LNG Terminal / During operation	HKLTL			✓	-	N/A

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					D	C	O		
S5.3.3	S3	Sufficient and trained / competent staff shall be provided to operate the LNG Terminal.	LNG Terminal / During operation	HKLTL			✓	-	N/A
S5.3.3	S3	Regular safety inspections/audits shall be conducted.	LNG Terminal / During operation	HKLTL			✓	-	N/A
Noise									
S6.7	S4	N/A							N/A
Water Quality									
S7.9.1	S5	A detailed hydrotesting procedure for subsea pipelines will be developed that will detail how the process will be carried out, how it will be carefully controlled and monitored, and how the intake and subsequent discharge of the seawater will be managed. Water quality monitoring for commissioning hydrotest for the subsea pipelines is presented in Section 5.3.5 of the Updated EM&A Manual.	LNG Terminal / During construction	Contractor(s)		✓		TM Standard under the *WPCO*, *WPCO* license requirements, WQO	✓
S7.9.1	S5	Adoption of appropriate dredging and jetting rates, plant numbers and silt curtains at the plant and WSRs, where applicable (***Table***	Marine Dredging & Jetting for the BPPS Pipeline and	Contractor(s)		✓		-	✓ for BPPS Pipeline and LPS Pipeline

EIA Reference	EM&A Reference	Recommended Environmental Protection Measures/ Mitigation Measures	Location/ duration of recommended measures & timing of completion of recommended measures	Implementation Agent	Implementation Stage (1)			Relevant Legislation & Guidelines	Implementation Status
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		7.18 of the EIA Report, reprovided as ***Table A.2*** below).	the LPS Pipeline / During construction						
S7.9.1	S5	Grab dredging can be conducted concurrently with one TSHD.	Marine Dredging for the BPPS Pipeline and the LPS Pipeline / During construction	Contractor(s)		✓		-	N/A for BPPS Pipeline and LPS Pipeline
S7.9.1	S5	One jetting machine will be working on each pipeline. No more than two jetting machines will be working on BPPS Pipeline.	Marine Jetting for the BPPS Pipeline and the LPS Pipeline / During construction	Contractor(s)		✓		-	✓ for LPS Pipeline and BPPS Pipeline
S7.9.1	S5	Cofferdam construction and removal at landfalls of BPPS and LPS (where required) should not be conducted concurrently with the nearby pipeline dredging sections (BPPS KP44.9 - 45.0 and LPS KP17.4-18.2). Silt curtain surrounding the works areas for cofferdam construction and removal at pipeline landfalls of the BPPS and the LPS should also be implemented.	Pipeline landfalls for the BPPS Pipeline and the LPS Pipeline / During construction	Contractor(s)		✓		-	✓ for BPPS Pipeline N/A for LPS Pipeline

EIA Reference	EM&A Reference	Recommended Environmental Protection Measures/ Mitigation Measures	Location/ duration of recommended measures & timing of completion of recommended measures	Implementation Agent	Implementation Stage (1)			Relevant Legislation & Guidelines	Implementation Status
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S7.9.1/ S7.9.2	S5	The following measures shall be followed for provision of silt curtain: • The silt curtain shall be formed and installed in such a way that tidal rise and fall are accommodated, with the silt curtains always extending from the surface to the bottom of the water column and held with anchor blocks. • Schematic diagrams on silt curtain deployment are provided in ***Figures 7.4*** and ***7.5*** of the EIA Report. • The contractor shall regularly inspect the silt curtains and check that they are moored and marked to avoid danger to marine traffic. • Regular inspection on the integrity of the silt curtain should be carried out by the contractor and any damage to the silt curtain shall be repaired by the contractor promptly. • Relevant marine works shall only be undertaken when the repair is fixed to the satisfaction of the engineer.	Marine Dredging & Jetting for the BPPS Pipeline and the LPS Pipeline / During construction Marine Maintenance Dredging (LNG Terminal) / During operation	Contractor(s)		✓	✓	-	✓ for BPPS Pipeline and LPS Pipeline

EIA Reference	EM&A Reference	Recommended Environmental Protection Measures/ Mitigation Measures	Location/ duration of recommended measures & timing of completion of recommended measures	Implementation Agent	Implementation Stage (1)			Relevant Legislation & Guidelines	Implementation Status
					D	C	O		
S7.9.1 / S7.9.2	S5	All vessels should be well maintained and inspected before use to limit any potential discharges to the marine environment.	Marine Dredging for the BPPS Pipeline and the LPS Pipeline / During construction Marine Maintenance Dredging (LNG Terminal) / During operation	Contractor(s)		✓	✓	-	N/A for BPPS Pipeline N/A for LPS Pipeline
S7.9.1	S5	All vessels must have a clean ballast system.	Marine Dredging for the BPPS Pipeline and the LPS Pipeline / During construction	Contractor(s)		✓		-	N/A for BPPS Pipeline N/A for LPS Pipeline
S7.9.1 / S7.9.2	S5	No overflow is permitted from the trailing suction hopper dredger and the Lean Mixture Overboard (LMOB) system will only be in operation at the beginning and end of the dredging cycle when the drag head is being lowered and raised.	Marine Dredging for the BPPS Pipeline and the LPS Pipeline / During construction Marine Maintenance Dredging (LNG Terminal) / During operation	Contractor(s)		✓	✓	-	N/A for BPPS Pipeline N/A for LPS Pipeline

EIA Reference	EM&A Reference	Recommended Environmental Protection Measures/ Mitigation Measures	Location/ duration of recommended measures & timing of completion of recommended measures	Implementation Agent	Implementation Stage (1)			Relevant Legislation & Guidelines	Implementation Status
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S7.9.1 / S7.9.2	S5	Dredged marine mud will be disposed of in a gazetted marine disposal area in accordance with the Dumping at Sea Ordinance (DASO) permit conditions.	Marine Dredging for the BPPS Pipeline and the LPS Pipeline / During construction Marine Maintenance Dredging (LNG Terminal) / During operation	Contractor(s)		✓	✓	-	N/A for LPS Pipeline N/A for BPPS Pipeline
S7.9.1 / S7.9.2	S5	Dredgers will maintain adequate clearance between vessels and the seabed at all states of the tide and reduce operations speed to ensure that excessive turbidity is not generated by turbulence from vessel movement or propeller wash.	Marine Dredging for the BPPS Pipeline and the LPS Pipeline / During construction Marine Maintenance Dredging (LNG Terminal) / During operation	Contractor(s)		✓	✓	-	N/A for LPS Pipeline N/A for BPPS Pipeline
S7.9.1 / S7.9.2	S5	Marine works shall not cause foam, oil, grease, litter or other objectionable matter to be present in the water within and adjacent to the works site. Wastewater from potentially contaminated area on working vessels should be	Marine Dredging for the BPPS Pipeline and the LPS Pipeline / During construction / During operation	Contractor(s)		✓	✓	-	An observation was given for BPPS Pipeline N/A for LPS Pipeline

EIA Reference	EM&A Reference	Recommended Environmental Protection Measures/ Mitigation Measures	Location/ duration of recommended measures & timing of completion of recommended measures	Implementation Agent	Implementation Stage (1)			Relevant Legislation & Guidelines	Implementation Status
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		minimised and collected. These kinds of wastewater should be brought back to port and discharged at appropriate collection and treatment system.							
S7.9.1 / S7.9.2	S5	No solid waste is allowed to be disposed overboard.	Marine Dredging for the BPPS Pipeline and the LPS Pipeline / During construction / During operation	Contractor(s)		✓	✓	-	N/A for BPPS Pipeline N/A for LPS Pipeline
S7.9.1	S5	Appropriate infiltration control, such as cofferdam wall, should be adopted to limit groundwater inflow to the excavation works areas in the Project site. Groundwater pumped out from excavation area should be discharged into the storm system via silt removal facilities.	Land sites & drainages for GRSs within BPPS and LPS / During construction	Contractor(s)		✓		-	✓ for GRS in BPPS N/A for GRS in LPS
S7.9.1	S5	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	Land sites & drainages for GRSs within BPPS and LPS / During construction	Contractor(s)		✓		*ProPECC PN 1/94*, TM Standard under the *WPCO*	An observations was given for GRS in BPPS N/A for GRS in LPS

EIA Reference	EM&A Reference	Recommended Environmental Protection Measures/ Mitigation Measures	Location/ duration of recommended measures & timing of completion of recommended measures	Implementation Agent	Implementation Stage (1)			Relevant Legislation & Guidelines	Implementation Status
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		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.							
S7.9.1	S5	Earthworks to form the final surfaces will be followed up with surface protection and drainage works to prevent erosion caused by rainstorms.	Land sites & drainages for GRSs within BPPS and LPS / During construction	Contractor(s)		✓		-	✓ for GRS in BPPS N/A for GRS in LPS
S7.9.1	S5	Appropriate surface drainage will be designed and provided where necessary.	Land sites & drainages for GRSs within BPPS and LPS / During construction	Contractor(s)		✓		-	N/A for GRS in BPPS N/A for GRS in LPS
S 7.9.1	S5	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 sites & drainages for GRSs within BPPS and LPS / During construction	Contractor(s)		✓		*ProPECC PN 1/94*	✓ for GRS in BPPS N/A for GRS in LPS

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					D	C	O		
S7.9.1	S5	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 sites & drainages for GRSs within BPPS and LPS / During construction	Contractor(s)		✓		-	✓ for GRS in BPPS N/A for GRS in LPS
S7.9.1	S5	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 sites & drainages for GRSs within BPPS and LPS / During construction	Contractor(s)		✓		-	✓ for GRS in BPPS N/A for GRS in LPS
S7.9.1	S5	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 sites & drainages for GRSs within BPPS and LPS / During construction	Contractor(s)		✓		-	N/A
S7.9.1	S5	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. No onsite discharge	Land sites & drainages for GRSs within BPPS and LPS / During construction	Contractor(s)		✓		-	✓ for GRS in BPPS N/A for GRS in LPS

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		from these chemical toilets would be allowed.							
S 7.9.2	S5	Mitigation measures for maintenance dredging at the LNG Terminal in form of controlled dredging rate (maximum of 5,500m^3 day^{-1}) as well as silt curtain should be implemented for the control of sediment dispersion and the protection of the nearby WSRs.	Marine Maintenance Dredging (LNG Terminal) / During operation	Contractor(s) / HKLTL			✓	-	N/A
S 7.9.2 / S9.11.3	S5 / S7	A project-specific contingency plan (including protocols for avoidance, containment, remediation and reporting accidental fuel spill event) will be prepared and implemented to contain and clean up the spilled or leaked fuels or chemicals at the LNG Terminal, surrounding waters and marine parks.	Fuel spillage for the LNG Terminal / During operation	Contractor(s) / HKLTL			✓		N/A
S7.12.1	S5.2-S5.5	Marine water quality monitoring at selected WSRs is recommended for marine dredging and jetting works for the pipeline construction.	Designated monitoring stations as defined in EM&A Manual / During marine construction period	Environmental Team (ET)		✓		-	✓

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S7.12.1	S5.2-S5.5	To ensure proper implementation of the recommended mitigation measures and good construction site practices during marine-based construction works, environmental site audits on a regular basis is recommended throughout the construction period.	Marine sites for the LNG Terminal, the BPPS Pipeline and the LPS Pipeline / During construction	Contractor(s)/ Environmental Team (ET) & Independent Environmental Checker (IEC)		✓		-	✓ for BPPS Pipeline, LPS Pipeline and LNG Terminal
S7.12.2	S5.2-S5.5	Water quality monitoring at the selected nearby WSRs is recommended for first year of operation of the LNG Terminal.	During operation for the LNG Terminal	Environmental Team (ET)/ HKLTL			✓	TM Standard under the *WPCO*, *WPCO* license requirements, WQO	N/A
S7.12.2	S5.2-S5.5	During maintenance dredging at the LNG Terminal, water quality monitoring at the selected nearby WSRs would be required.	Marine Maintenance Dredging (LNG Terminal) / During operation	Contractor(s) / HKLTL			✓	TM Standard under the *WPCO*, *WPCO* license requirements, WQO	N/A
Waste Management									
S8.5	S6.2	The contractor(s) will nominate approved personnel to be responsible for good site practices, arrangements for collection and effective disposal to an appropriate facility of all wastes generated at the site.	All areas / During construction / During operation	Contractor(s)/ Project Proponents		✓	✓	-	✓

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S8.5	S6.2	Good waste management practices should be implemented: • Training of site personnel in proper waste management and chemical handling procedures; • Separation of chemical wastes for special handling and appropriate treatment at the Chemical Waste Treatment Centre; • Encourage collection of aluminium cans and waste paper by individual collectors during construction with separate labelled bins provided to segregate these wastes from other general refuse by the workforce; • Any unused chemicals, and those with remaining functional capacity, be recycled as far as possible; • Prior to disposal of C&D materials, 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 in a landfill;	All areas / During construction / During operation	Contractor(s)/ Project Proponents		✓	✓	-	✓ for 1st, 3rd, 5th, 6th & 7th bullet points for GRS in BPPS ✓ for 1st, 3rd & 6th bullet points for BPPS Pipeline ✓ for 1st bullet point for LPS Pipeline and LNG Terminal N/A for 2nd & 4th bullet points for GRS in BPPS N/A for 2nd, 4th & 5th & 7th bullet points for BPPS Pipeline N/A for 2nd to 7th bullet points for LPS Pipeline and LNG Terminal N/A for GRS in LPS

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		• Proper storage and site practices to reduce the potential for damage or contamination of construction materials; and • Plan and stock construction materials carefully to reduce amount of waste generated and avoid unnecessary generation of waste.							
S8.5	Table 6.1	The contractor(s) must provide sufficient waste disposal points. Wastes will be collected and removed from site in a timely manner.	All areas / During construction / During operation	Contractor(s) / Project Proponents		✓	✓	-	✓
S8.5	Table 6.1	The contractor(s) will have appropriate measures to reduce windblown/ floating litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers.	All areas / During construction / During operation	Contractor(s) / Project Proponents		✓	✓	-	N/A
S8.5	Table 6.1	The contractor(s) will take and keep records of quantities of wastes generated, recycled and disposed of and the disposal sites.	All areas / During construction / During operation	Contractor(s) / Project Proponents		✓	✓	-	✓

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S8.5	Table 6.1	The contractor(s) must segregate and store different types of waste in different containers, skips or stockpiles to enhance reuse and recycling of material and proper disposal of waste.	All areas / During construction / During operation	Contractor(s) / Project Proponents		✓	✓	-	A reminder was given for BPPS Pipeline
S8.5	S6.2	The contractor(s) will use reusable non-timber formwork to reduce the amount of C&D materials.	All areas / During construction	Contractor(s)		✓		-	✓ for GRS in BPPS N/A for GRS in LPS, BPPS Pipeline, LPS Pipeline and LNG Terminal
S8.5	Table 6.1	The contractor(s) must ensure that all the necessary waste disposal and marine dumping permits or licences are obtained prior to the commencement of the construction works.	During construction	Contractor(s)		✓		-	✓
S8.5	S6.2	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.	During construction	Contractor(s)		✓		*Cap 354N Waste Disposal (Charges for Disposal of Construction Waste) Regulation*	✓

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					D	C	O		
S8.5	S6.2	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.	During construction	Contractor(s)		✓		*DEVB TC(W) No. 6/2010, Trip Ticket System for Disposal of Construction & Demolition Materials*	✓
S8.5	S6.2	A WMP as stated in the *PNAP ADV-19* 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 areas / During construction	Contractor(s)		✓		*PNAP ADV-19*	✓
S8.5	Table 6.1	The management of dredged marine sediment requirement from *PNAP ADV-21* will be incorporated in the Contract for the construction and maintenance dredging during the operation of the Project.	Marine works / During construction / During operation	Contractor(s)/ Project Proponents		✓	✓	*PNAP ADV-21* and *Dumping at Sea Ordinance (DASO)*	N/A

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S8.5/ S7.9	S6.2 / S5	Disposal vessels will be fitted with tight bottom seals in order to prevent leakage of material during transport.	Dredged areas / During construction	Contractor(s)/ Project Proponents		✓		*Dumping at Sea Ordinance (DASO)*	N/A
S8.5/ S7.9	S6.2 / S5	Barges will be filled to a level, which ensures that of marine sediment and marine sediment laden water does not spill over during loading or transport to the disposal site and that adequate freeboard is maintained to ensure that the decks are not washed by wave action.	Dredged areas / During construction	Contractor(s)/ Project Proponents		✓		*Dumping at Sea Ordinance (DASO)*	N/A
S8.5/ S7.9	S6.2 / S5	After dredging, any excess materials will be cleaned from decks and exposed fittings before the vessel is moved from the dredging area.	Dredged areas / During construction	Contractor(s)/ Project Proponents		✓		*Dumping at Sea Ordinance (DASO)*	N/A
S8.5/ S7.9	S6.2 / S5	When the dredged material has been unloaded at the disposal areas, any material that has accumulated on the deck or other exposed parts of the vessel will be removed and placed in the hold or a hopper. Under no circumstances will decks be washed clean in a way that	Dredged areas / During construction	Contractor(s)/ Project Proponents		✓			N/A

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					D	C	O		
		permits material to be released overboard.							
S8.5	S6.2	Dredgers will maintain adequate clearance between vessels and the seabed at all states of the tide and reduce operations speed to ensure that excessive turbidity is not generated by turbulence from vessel movement or propeller wash.	Dredged areas / During construction	Contractor(s)/ Project Proponents		✓			N/A
S8.5	Table 6.1	C&D materials will be segregated on-site into public fill and non-inert C&D materials and stored in different containers or skips to facilitate reuse of the public fill and proper disposal of the construction waste. Specific areas of the land and marine-based construction sites will be designated for such segregation and storage if immediate use is not practicable. Prefabrication will be adopted as far as practicable to reduce the construction waste arisings.	During construction	Contractor(s)		✓		-	✓
S8.5	Table 6.1	The contractor(s) will register as a chemical waste producer with the EPD. Chemical waste will be handled in accordance with the *Code of Practice on the*	All areas / During construction / During operation	Contractor(s)/ Project Proponents		✓	✓	*Waste Disposal (Chemical Waste) (General) Regulation; Code of Practice on the*	✓

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		Packaging, Labelling and Storage of Chemical Wastes.						*Packaging, Labelling and Storage of Chemical Wastes*	
S8.5	Table 6.1	Containers used for storage of chemical wastes will: • Be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition, and securely closed; • Have a capacity of less than 450 L unless the specifications have been approved by the EPD; and • Display a label in English and Chinese in accordance with instructions prescribed in Schedule 2 of the Regulations.	All areas / During construction / During operation	Contractor(s)/ Project Proponents		✓	✓	*Waste Disposal (Chemical Waste) (General) Regulation; Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes*	✓
S8.5	Table 6.1	The storage area for chemical wastes will: • Be clearly labelled and used solely for the storage of chemical waste; • Be enclosed on at least 3 sides;	All areas / During construction / During operation	Contractor(s)/ Project Proponents		✓	✓	*Waste Disposal (Chemical Waste) (General) Regulation; Code of Practice on the Packaging, Labelling and*	✓ for 1st, 3rd, 4th & 6th bullet points for BPPS Pipeline ✓ for 1st bullet point for LPS Pipeline

EIA Reference	EM&A Reference	Recommended Environmental Protection Measures/ Mitigation Measures	Location/ duration of recommended measures & timing of completion of recommended measures	Implementation Agent	Implementation Stage (1)			Relevant Legislation & Guidelines	Implementation Status
					D	C	O		
		• 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; • Have adequate ventilation; • Be covered to prevent rainfall entering (water collected within the bund must be tested and disposed of as chemical waste, if necessary); and • Be arranged so that incompatible materials are appropriately separated.						*Storage of Chemical Wastes*	✓ for 1st, 2nd, 4th, 5th & 6th bullet points for GRS in BPPS An observation was given for 3rd bullet point for LPS Pipeline and GRS in BPPS N/A for 2nd bullet point for BPPS Pipeline N/A for 2nd to 6th bullet points for LPS Pipeline N/A for LNG Terminal
S8.5	Table 6.1	Chemical waste will be disposed of: • Via a licensed waste collector; and • To a facility licensed to receive chemical waste, such as the Chemical Waste Treatment Facility which also	All areas / During construction / During operation	Contractor(s)/ Project Proponents		✓	✓	*Waste Disposal (Chemical Waste) (General) Regulation; Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes*	N/A

EIA Reference	EM&A Reference	Recommended Environmental Protection Measures/ Mitigation Measures	Location/ duration of recommended measures & timing of completion of recommended measures	Implementation Agent	Implementation Stage (1)			Relevant Legislation & Guidelines	Implementation Status
					D	C	O		
		offers a chemical waste collection service and can supply the necessary storage containers.							
S8.5	Table 6.1	General refuse (including the floating refuse collected) will be stored in enclosed bins separately from C&D materials and chemical wastes. Floating refuse will be collected on an 'as needed' basis for disposal as general refuse. Workers will be prohibited from throwing rubbish into the sea and adequate bins will be provided on both land and marine-based sites and marine vessels. General refuse will be delivered separately from C&D materials and chemical wastes for offsite disposal on a regular basis to reduce odour, pest and litter impacts. General refuse from the marine vessels will be collected and disposed on shore.	All areas / During construction / During operation	Contractor(s)/ Project Proponents		✓	✓	-	✓ Reminders were given for BPPS Pipeline
S8.5	Table 6.1	Recycling bins will be provided at strategic locations within the land and marine-based construction site and marine vessels to facilitate recovery of recyclable materials (including aluminium	All areas / During construction / During operation	Contractor(s)/ Project Proponents		✓	✓	-	A reminder was given for BPPS Pipeline

EIA Reference	EM&A Reference	Recommended Environmental Protection Measures/ Mitigation Measures	Location/ duration of recommended measures & timing of completion of recommended measures	Implementation Agent	Implementation Stage (1)			Relevant Legislation & Guidelines	Implementation Status
					D	C	O		
		can, waste paper, glass bottles and plastic bottles) from the Project Site. Materials recovered will be sold for recycling.							N/A for material recovered being sold for recycling
S8.5	S6.2	To avoid any odour and litter impact, appropriate number of portable toilets will be provided for workers on-site.	All areas / During construction / During operation	Contractor(s)		✓	✓	-	✓
S8.5	S6.2	At the commencement of the construction works and operations, training will be provided to workers on the concepts of site cleanliness and on appropriate waste management procedures, including waste reduction, reuse and recycling. In particular, the training will emphasize no dumping of waste into the sea is allowed, particularly at marine-based work sites and on marine vessels.	All areas / During construction / During operation	Contractor(s)/ Project Proponents		✓	✓	-	✓
S8.5	S6.2	Industrial waste arising from maintenance activities will be segregated. Scrap metals and recyclables will be sent for recycling to reduce the overall	All areas / During operation	Project Proponents			✓	-	N/A

EIA Reference	EM&A Reference	Recommended Environmental Protection Measures/ Mitigation Measures	Location/ duration of recommended measures & timing of completion of recommended measures	Implementation Agent	Implementation Stage (1)			Relevant Legislation & Guidelines	Implementation Status
					D	C	O		
		quantity of waste disposed from these activities.							
S8.7	S6.1	It is recommended that monthly audits of the waste management practices be carried out during the construction phase land-based work sites (at the GRSs at the BPPS and the LPS), and at marine-based work sites (on marine vessels and Jetty) to determine if wastes are being managed in accordance with the recommended good site practices and WMP. The audits will include all aspects of waste management including waste generation, storage, handling, recycling, transportation and disposal, to prevent any dumping of waste into the sea or malpractice of waste disposal.	All areas / During construction	Contractor(s)/ Environmental Team (ET) & Independent Environmental Checker (IEC)		✓		-	✓
Ecology									
S9.11.2	S7	The vessel operators will be required to control and manage all effluent from vessels. These kinds of wastewater shall be brought back to port where possible and discharged at appropriate collection and treatment system to	Marine works / During construction / During operation	Contractor(s)/ Project Proponents		✓	✓	-	✓

EIA Reference	EM&A Reference	Recommended Environmental Protection Measures/ Mitigation Measures	Location/ duration of recommended measures & timing of completion of recommended measures	Implementation Agent	Implementation Stage (1)			Relevant Legislation & Guidelines	Implementation Status
					D	C	O		
		prevent avoidable water quality impact.							
S9.11.2	S7	A policy of no dumping of rubbish, food, oil, or chemicals will be strictly enforced. This will also be covered in the contractor briefings.	Marine works / During construction / During operation	Contractor(s) / Project Proponents		✓	✓	-	✓
S9.11.2	S7	Only well-maintained and inspected vessels would be used to limit any potential discharges to the marine environment.	Marine works / During construction / During operation	Contractor(s) / Project Proponents		✓	✓	-	✓
S9.11.2	S7	Standard site practices outlined in *ProPECC PN 1/94 "Construction Site Drainage"* will be followed as far as practicable in order to reduce surface runoff, minimise erosion, and also to retain and reduce any SS prior to discharge.	Marine works / During construction / During operation	Contractor(s) / Project Proponents		✓	✓	*ProPECC PN 1/94*	✓
S9.11.3	S7	Pipeline dredging/ jetting works between North of Tai O and Fan Lau (BPPS KP21.3 to 15.6) will avoid the peak months of Chinese White Dolphin (CWD) calving (May and June).	Marine works (Dredging/ jetting works between North of Tai O and Fan Lau along the BPPS Pipeline) / During construction	Contractor(s)		✓		-	✓

EIA Reference	EM&A Reference	Recommended Environmental Protection Measures/ Mitigation Measures	Location/ duration of recommended measures & timing of completion of recommended measures	Implementation Agent	Implementation Stage (1)			Relevant Legislation & Guidelines	Implementation Status
					D	C	O		
S9.11.3	S7	Pipeline dredging/ jetting works between South of Soko Islands and the LNG Terminal (BPPS KP8.9 to 0.0) will be restricted to a daily maximum of 12 hours with daylight (0700 – 1900) operations.	Marine works (Dredging/ jetting works between South of Soko Islands and the LNG Terminal along the BPPS Pipeline) / During construction	Contractor(s)		✓		-	✓
S9.11.3	S7	Pipeline dredging/ jetting from LNG Terminal to South of Shek Kwu Chau (LPS KP0.0 to 5.0) will be restricted to a daily maximum of 12 hours with daytime (0700 – 1900) operations.	Marine works (Dredging/ jetting works between from LNG Terminal to South of Shek Kwu Chau along the LPS Pipeline) / During construction	Contractor(s)		✓		-	✓
S9.11.3	S7	Use of vibratory/ hydraulic pushing method to vibrate / push the open-ended steel tubular pile for the upper layer of the seabed and only use hydraulic hammer (if needed) to install the remainder of the pile length through the lower layer of the seabed. During underwater percussive piling works:	Marine works (Piling at the LNG Terminal) / During construction	Contractor(s)		✓		-	N/A

EIA Reference	EM&A Reference	Recommended Environmental Protection Measures/ Mitigation Measures	Location/ duration of recommended measures & timing of completion of recommended measures	Implementation Agent	Implementation Stage (1)			Relevant Legislation & Guidelines	Implementation Status
					D	C	O		
		• Quieter hydraulic hammers should be used instead of the noisier diesel hammers; • Use of Noise Reduction System for hydraulic hammering; • Acoustic decoupling of noisy equipment on work barges should be undertaken; • Using ramp-up piling procedures. This comprises of low energy driving for a period of time prior to commencement of full piling. This will promote avoidance of the area by marine mammals when sounds levels are not injurious. Blow frequency during this ramping up period should replicate the intensity that would be undertaken during full piling (e.g. one blow every two seconds) to provide cues for marine mammals to localize the sound source. Pile blow energy should be ramped up gradually over the 'soft start' period. Activities will be continuous without short-breaks and avoiding sudden							

EIA Reference	EM&A Reference	Recommended Environmental Protection Measures/ Mitigation Measures	Location/ duration of recommended measures & timing of completion of recommended measures	Implementation Agent	Implementation Stage (1)			Relevant Legislation & Guidelines	Implementation Status
					D	C	O		
		random loud sound emissions; • Underwater percussive piling should be conducted inside a bubble curtain so as to ameliorate underwater sound level transmission; • The percussive pile driving will be conducted during the daytime (0700 – 1900) for a maximum of 12 hours, avoiding generation of underwater sounds at night time; and • Underwater percussive piling works for the Jetty construction will avoid the peak season of FP (December to May).							
S9.11.3	S7	The vessel operators of this Project will be required to use predefined and regular routes (that do not encroach into existing and proposed marine parks), make use of designated fairways to access the works areas, and would avoid traversing sensitive habitats such as existing and proposed marine parks (with the exception of the FSRU Vessel which will need to transit through	Marine works / During construction / During operation	Contractor(s) / Project Proponents		✓	✓	-	✓

EIA Reference	EM&A Reference	Recommended Environmental Protection Measures/ Mitigation Measures	Location/ duration of recommended measures & timing of completion of recommended measures	Implementation Agent	Implementation Stage (1)			Relevant Legislation & Guidelines	Implementation Status
					D	C	O		
		the proposed SLMP during manoeuvring to the Jetty and after typhoon event due to its safe operational requirement).							
S9.11.3	S7	Any anchoring/ anchor spread requirements during Project construction will avoid encroachment into the existing and proposed marine parks, unless otherwise agreed by the Director of Environmental Protection.	Marine works (on existing, planned and potential marine parks) / During construction	Contractor(s)/ Project Proponents		✓		-	✓
S9.11.3	S7	Silt curtain deployment during Project construction and maintenance dredging will avoid encroachment into the existing and proposed marine parks, unless otherwise agreed by the Director of Environmental Protection.	Marine works (on existing, planned and potential marine parks) / During construction / During operation	Contractor(s)/ Project Proponents		✓	✓	-	✓
S9.11.3	S7	No stopping over or anchoring activity of vessels related to the Project should be conducted within existing and proposed marine parks, even before, during and after typhoon, unless	Marine works (on existing, planned and potential marine parks) / During construction / During operation	Contractor(s)/ Project Proponents		✓	✓	-	✓

EIA Reference	EM&A Reference	Recommended Environmental Protection Measures/ Mitigation Measures	Location/ duration of recommended measures & timing of completion of recommended measures	Implementation Agent	Implementation Stage (1)			Relevant Legislation & Guidelines	Implementation Status
					D	C	O		
		otherwise agreed by the Director of Environmental Protection.							
S9.11.3	S7	Use of appropriate dredging and jetting rates with the use of silt curtain where needed as recommended in the Water Quality section (***Section 7*** of the EIA Report) to reduce potential water quality impacts from elevated suspended solids (SS) due to the proposed marine works.	Marine works / During construction / During operation	Contractor(s) / Project Proponents		✓	✓	-	✓
S9.11.3	S7	Silt curtain will be checked and maintained to ensure its effectiveness in mitigating water quality impacts on existing, planned and potential marine parks.	Marine works / During construction / During operation	Contractor(s) / Project Proponents		✓	✓	-	✓
S9.11.3	S7	All vessel operators working on the Project will be given a briefing, alerting them to the locations of the existing, proposed and potential marine parks and the regulations for marine parks, the possible presence of dolphins and porpoises in the marine works areas, and the guidelines for safe vessel operation in the presence of cetaceans. The vessels will	Marine works / During construction / During operation	Contractor(s) / Project Proponents		✓	✓	-	✓

EIA Reference	EM&A Reference	Recommended Environmental Protection Measures/ Mitigation Measures	Location/ duration of recommended measures & timing of completion of recommended measures	Implementation Agent	Implementation Stage (1)			Relevant Legislation & Guidelines	Implementation Status
					D	C	O		
		avoid using high speed as far as possible. By observing the guidelines, vessels will be operated in an appropriate manner so that marine mammals will not be subject to undue disturbance or harassment.							
S9.11.3	S7	All vessels used in this Project will be required to slow down to 10 knots around the Project's marine works areas and areas with high dolphin and porpoise usage, including existing and proposed marine parks. With implementation of this measure, the chance of vessel strike resulting in physical injury or mortality of marine mammals will be extremely unlikely.	Marine works / During construction / During operation	Contractor(s) / Project Proponents		✓	✓	-	✓
S9.11.3	S7	During underwater percussive piling works, a marine mammal exclusion zone within a radius of 500m radius will be implemented during underwater percussive piling works. Qualified observer(s) will scan an exclusion zone of 500m radius around the work area for at least 30 minutes prior to the start of piling. If a marine mammal is observed in the	Marine works / During construction	Contractor(s) / Project Proponents		✓		-	N/A

EIA Reference	EM&A Reference	Recommended Environmental Protection Measures/ Mitigation Measures	Location/ duration of recommended measures & timing of completion of recommended measures	Implementation Agent	Implementation Stage (1)			Relevant Legislation & Guidelines	Implementation Status
					D	C	O		
		exclusion zone, piling will be delayed until they have left the area. This measure will ensure the area in the vicinity of the underwater percussive piling work is clear of marine mammals prior to the commencement of works and will serve to reduce any disturbance to marine mammals. When a marine mammal is spotted by qualified personnel within the exclusion zone, piling works will cease and will not resume until the observer confirms that the zone has been continuously clear of the marine mammal for a period of 30 minutes. This measure will ensure the area in the vicinity of the piling is clear of the marine mammal during works and will serve to reduce any disturbance to marine mammals.							
S9.11.3	S7	During marine dredging or jetting operations, a marine mammal exclusion zone within a radius of 250m from dredger or jetting machine will be implemented. Qualified observer(s) will scan an exclusion zone of 250m radius around the work area for at least	Marine works / During construction / During operation	Contractor(s) / Project Proponents		✓	✓	-	✓ A reminder was given for BPPS Pipeline

EIA Reference	EM&A Reference	Recommended Environmental Protection Measures/ Mitigation Measures	Location/ duration of recommended measures & timing of completion of recommended measures	Implementation Agent	Implementation Stage (1)			Relevant Legislation & Guidelines	Implementation Status
					D	C	O		
		30 minutes prior to the start of dredging or jetting. If cetaceans or other megafauna are observed in the exclusion zone, dredging or jetting will be delayed until they have left the area. This measure will ensure the area in the vicinity of the dredging or jetting work is clear of marine mammals prior to the commencement of works and will serve to reduce any disturbance to marine mammals. When a marine mammal is spotted by qualified personnel within the exclusion zone, dredging or jetting works will cease and will not resume until the observer confirms that the zone has been continuously clear of the marine mammal for a period of 30 minutes. This measure will ensure the area in the vicinity of the works is clear of the marine mammal during works and will serve to reduce any disturbance to marine mammals. If necessary, for night-time works, exclusion zone monitoring for FP by underwater acoustic means would be explored to supplement the exclusion zone monitoring by trained observers. A site trial will							

EIA Reference	EM&A Reference	Recommended Environmental Protection Measures/ Mitigation Measures	Location/ duration of recommended measures & timing of completion of recommended measures	Implementation Agent	Implementation Stage (1)			Relevant Legislation & Guidelines	Implementation Status
					D	C	O		
		be conducted to demonstrate its practicability/ effectiveness before actual implementation during the night-time works.							
S9.11.3	S7	Implementation of a contingency plan to contain and clean up the spilled or leaked fuels or chemicals at the LNG Terminal, surrounding waters and marine parks.	Marine site for the LNG Terminal / During operation	Contractor(s) / HKLTL			✓	-	N/A
S9.15.1	S7	Baseline, impact and post-construction monitoring of marine mammal using vessel-based line transect surveys and passive acoustic monitoring (PAM) will be undertaken to keep track of potential changes in the usage of waters in the vicinity of the Project's works areas by FP. Prior to the commencement of monitoring, methods will be agreed with the AFCD.	Marine site / During construction	Contractor(s) / ET/ Project Proponents		✓		-	✓
Fisheries									
S10.8	S8	The mitigation measures designed to mitigate impacts to water quality to acceptable levels (compliance with assessment criteria) and marine ecological	During construction and operation	Contractor(s) / Project Proponents / Environmental Team (ET) & Independent		✓	✓	-	✓

EIA Reference	EM&A Reference	Recommended Environmental Protection Measures/ Mitigation Measures	Location/ duration of recommended measures & timing of completion of recommended measures	Implementation Agent	Implementation Stage (1)			Relevant Legislation & Guidelines	Implementation Status
					D	C	O		
		impacts are expected to mitigate impacts to fisheries resources.		Environmental Checker (IEC)					
S10.8	S8	Impingement and entrainment of fisheries resources will be reduced through appropriate design of the intake screens on the cooling water intake.	During operation for the LNG Terminal	Contractor(s) / HKLTL			✓	-	N/A
Visual									
S11.8	S9	Sensitive architectural design of the new facilities. This should take into account material texture, colour, finished to structure and the context of the site to ensure the GRSs at the BPPS and LPS blend into the existing context, cause least disturbance to the existing land. LNG Terminal will be designed for marine safety and operations, in accordance with relevant standards and regulations and sensitive architectural design will be considered where practicable.	All areas / Detailed design / During construction / During operation	Design Contractor / Project Proponents	✓	✓	✓	-	✓
S11.8	S9	Pre-construction and construction period for the GRSs and LNG Terminal should be reduced as far as practical to lower visual impact.	All areas / During construction	Contractor(s)		✓		-	✓ for GRS in BPPS, GRS in LPS and LNG Terminal

EIA Reference	EM&A Reference	Recommended Environmental Protection Measures/ Mitigation Measures	Location/ duration of recommended measures & timing of completion of recommended measures	Implementation Agent	Implementation Stage (1)			Relevant Legislation & Guidelines	Implementation Status
					D	C	O		
S11.8	S9	Following construction, land areas temporarily affected by the construction works, will be reinstated to their former state.	Land sites for the GRSs within BPPS and LPS / During construction	Contractor(s)		✓		-	✓ for GRS in BPPS and GRS in LPS
S11.8	S9	Light intensity and beam directional angle should be controlled at the GRSs and the LNG Terminal at the design stage to reduce light pollution and glare (e.g. hooded lights, specific directional focus, etc.).	All areas / Detailed design / During operation	Design Contractor / Project Proponents	✓		✓	-	N/A
S11.8	S9	Any plants to be affected by the GRSs at the BPPS and the LPS should be preserved and care taken to ensure the existing health status of the vegetation is maintained or enhanced after construction.	All areas / During construction	Contractor(s)		✓		-	✓ for GRS in BPPS and GRS in LPS
Cultural Heritage									
S12.7	S10	N/A							N/A

TABLE C.2 SUMMARY OF MITIGATION MEASURES FOR PIPELINE CONSTRUCTION WORKS

Work Location	Plants Involved	Allowed Maximum Work Rate	Silt Curtain at Plants	Silt Curtain at Water Sensitive Receivers	Other Measures	Implementation Status
LPS Pipeline (under FEP-02/558/2018/A)						
Pipeline shore approach at LPS (KP17.4 - 18.2)	1 Grab Dredger	1,600m^3 day^{-1} for 24 hours each day	Yes	Not required		N/A
West Lamma Channel (KP14.5 - 17.4)	1 Jetting Machine	1,000m day^{-1} for 24 hours each day	Yes	Not required		N/A
South of Shek Kwu Chau to West Lamma Channel (KP5.0 - 14.5)	1 Jetting Machine	7,000m day^{-1} for 24 hours each day	Yes	Not required		✓
Double Berth Jetty to South of Shek Kwu Chau (KP0.1 - 5.0)	1 Jetting Machine	720m day^{-1} for 24 hours each day	Yes	Two layers at Eastern Boundary of the Proposed South Lantau Marine Park (KP0.1 - 5.0)	Daily maximum of 12 hours with daylight (0700 – 1900)	✓
Pipeline Riser Sections at Double Berth Jetty (under FEP-02/558/2018/A and FEP-03/558/2018/B)						
Pipeline Riser (KP0.0 - 0.1 for both pipelines)	1 Grab Dredger	8,000m^3 day^{-1} for 24 hours each day	Yes	Not required	Daily maximum of 12 hours with daylight (0700 – 1900)	N/A
BPPS Pipeline (under FEP-03/558/2018/B)						
Jetty Approach (KP0.1 - 5.0), excluding Subsea Cable Sterile Corridors	1 Jetting Machine (Note 1)	1,000m day^{-1} for 24 hours each day	Yes	Not required for grab dredging; Two layers at Southern Boundary of the Proposed South Lantau Marine Park (KP0.1 - 8.9) for jetting	Daily maximum of 12 hours with daylight (0700 – 1900)	✓
Subsea Cable Sterile Corridors (KP1.49 - 2.75 & KP3.55 - 4.43)	2 Grab Dredgers, followed by 1 Jetting Machine	8,000m^3 day^{-1} for 24 hours each day for each dredger 720m day^{-1} for 24 hours each day jetting machine	Yes			✓

Work Location	Plants Involved	Allowed Maximum Work Rate	Silt Curtain at Plants	Silt Curtain at Water Sensitive Receivers	Other Measures	Implementation Status
South of Soko Islands (KP5.0 - 8.9)	1 Jetting Machine (Note 1)	1,000m day^{-1} for 24 hours each day	Yes			✓
Southwest of Soko Islands (KP8.9 - 12.1)	1 Jetting Machine (Note 1)	1,000m day^{-1} for 24 hours each day	Yes	Not required		✓
Adamasta Channel (KP12.1 - 15.6)	1 Jetting Machine (Note 1)	1,000m day^{-1} for 24 hours each day	Yes	Not required		N/A
Southwest Lantau (KP15.6 - 21.3)	1 Jetting Machine (Note 1)	1,500 m day^{-1} for 24 hours each day	Yes	Not required	Avoid the peak months of Chinese White Dolphin (CWD) calving (May and June)	✓
West of Tai O to West of HKIA (KP21.3 - 31.5)	1 Jetting Machine (Note 1)	1,500m day^{-1} for 24 hours each day from KP KP26.2 to 21.3 720m day^{-1} for 24 hours each day from KP31.5 to 26.2	Yes	Not required		✓
Sha Chau to Lung Kwu Chau (KP31.5 - 36.0)	1 Jetting Machine (Note 1)	720m day^{-1} for 24 hours each day	Yes	Two layers at Western Boundary of the Sha Chau and Lung Kwu Chau Marine Park (KP31.5 - 36.0)		✓
Sha Chau to Lung Kwu Chau (KP36.0 - 37.5)	1 Jetting Machine (Note 1)	720m day^{-1} for 24 hours each day	Yes	Two layers at Western Boundary of the Sha Chau and Lung Kwu Chau Marine Park (KP36.0 - 37.5)		✓

Work Location	Plants Involved	Allowed Maximum Work Rate	Silt Curtain at Plants	Silt Curtain at Water Sensitive Receivers	Other Measures	Implementation Status
Lung Kwu Chau to Urmston Anchorage (KP37.5 - 41.1)	1 Jetting Machine (Note 1)	1,000m day^{-1} for 24 hours each day	Yes	Two layers at Northwestern corner of Sha Chau and Lung Kwu Chau Marine Park (KP37.5 - 41.1)		✓
Urmston Road (KP41.1 - 42.9)	1 Grab Dredger	8,000m^3 day^{-1} for 24 hours each day	Yes	Not required		✓
West of BPPS (KP42.9 - 44.9)	1 Jetting Machine (Note 1)	1,000m day^{-1} for 24 hours each day	Yes	Two layers at CR1, CR2 (Note 2)		✓
Pipeline shore approach at BPPS (KP44.9 - 45.0)	1 Grab Dredger	1,500m^3 day^{-1} for 24 hours each day	Yes	Two layers at CR1, CR2 (Note 2)		N/A

Notes:

(1) No more than two jetting machines will be used for the construction of the subsea gas pipeline of the Project. In addition to existing relevant mitigation measures, the minimum separation distance between the two jetting machines for avoiding cumulative impact is 5km for most of the pipeline sections, except when one jetting machine is working at the subsea cable sterile corridors (i.e. KP1.49 – KP2.75 and KP3.55 – KP4.43). When one jetting machine is working at the subsea cable sterile corridors, no other jetting machine will work concurrently within KP0.0-KP14.25, i.e., between the Jetty and Adamasta Channel.

(2) CR1 and CR2 denote the coral colonies identified at the artificial seawall at BPPS.

ANNEX D

STATUS OF STATUTORY ENVIRONMENTAL REQUIREMENTS

TABLE D.1 STATUS OF STATUTORY ENVIRONMENTAL REQUIREMENTS FOR WHOLE PROJECT (FEP-01/558/2018/A, FEP-02/558/2018/A & FEP-03/558/2018/B)

Item	Description	Ref. No.	Date of Expiry	Status
1	Notification Pursuant to Section 3(1) of *Air Pollution Control (Construction Dust) Regulation*	454879	N/A	Valid
2	Billing Account under *Waste Disposal (Charges for Disposal of Construction Waste) Regulation*	7037035	N/A	Valid
3	Registration as Chemical Waste Producer under *Waste Disposal (Chemical Waste) (General) Regulation*	WPN 5213-912-C4445-01 (Note 1)	N/A	Registration completed on 12 May 2020
4	Registration as Chemical Waste Producer under *Waste Disposal (Chemical Waste) (General) Regulation*	WPN 5218-934-C4445-03 (Note 2)	N/A	Registration completed on 22 July 2021
5	Construction Noise Permit (for construction site for the Hong Kong Offshore LNG Terminal Project) under *Noise Control Ordinance*	GW-RS0732-21 (Note 3)	31 Mar 2022	Validity from 1 Oct 2021 to 31 Mar 2022
6	Construction Noise Permit (for construction site for the Hong Kong Offshore LNG Terminal Project) under *Noise Control Ordinance*	GW-RS0175-22	30 Sep 2022	Validity from 1 Apr 2022 to 30 Sep 2022

Notes:
(1) The location/premises where the waste is produced (i.e. Working Vessel – Lan Jiang, Lan Jing, Hai Yang Shi You 202) as per the registration.
(2) The location/premises where the waste is produced (i.e. Working Vessel – Mencast Offshore 1, Bin Hai 109, Coastal Supreme, CPOE-101) as per the registration.
(3) Construction Noise Permit GW-RS0732-21 has been replaced by GW-RW0175-22 since 1 April 2022.

TABLE D.2 STATUS OF STATUTORY ENVIRONMENTAL REQUIREMENTS FOR FEP-01/558/2018/A

Item	Description	Ref. No.	Date of Expiry	Status
1	Further Environmental Permit under *EIA Ordinance*	FEP-01/558/2018	N/A	Issued on 17 Jan 2020
2	Further Environmental Permit under *EIA Ordinance*	FEP-01/558/2018/A	N/A	Issued on 6 Nov 2020
3	Certificate of Approval on Installation of Chimneys/Flues connected to Emergency Generator under *Air Pollution Control (Furnaces, Ovens and Chimneys) (Installation and Alteration Regulations*	(7) in 475740 (Note 1)	N/A	Approval issued on 6 Jan 2022

Notes:
(1) The location/premises where the chimney/flue is installed (i.e. The Offshore LNG Terminal) as per the certificate.

TABLE D.3 STATUS OF STATUTORY ENVIRONMENTAL REQUIREMENTS FOR FEP-02/558/2018/A

Item	Description	Ref. No.	Date of Expiry	Status
1	Further Environmental Permit under *EIA Ordinance*	FEP-02/558/2018	N/A	Issued on 17 Jan 2020
2	Further Environmental Permit under *EIA Ordinance*	FEP-02/558/2018/A	N/A	Issued on 22 Dec 2020
3	Wastewater Discharge License under *Water Pollution Control Ordinance*	WT00039668-2021 (Note 1)	31 Jan 2024	Validity from 17 Jan 2022 to 31 Jan 2024

Notes:
(1) The location/premises where the industrial trade effluent is discharged into marine water (i.e. Jetty Platform (MD1) of offshore LNG Terminal located at about 936m distance from South-West Hong Kong Water Boundary) as per the license.

TABLE D.4 STATUS OF STATUTORY ENVIRONMENTAL REQUIREMENTS FOR FEP-03/558/2018/B

Item	Description	Ref. No.	Date of Expiry	Status
1	Further Environmental Permit under *EIA Ordinance*	FEP-03/558/2018	N/A	Issued on 17 Jan 2020
2	Further Environmental Permit under *EIA Ordinance*	FEP-03/558/2018/A	N/A	Issued on 22 Jan 2021
3	Further Environmental Permit under *EIA Ordinance*	FEP-03/558/2018/B	N/A	Issued on 25 Aug 2021
4	Registration as Chemical Waste Producer under *Waste Disposal (Chemical Waste) (General) Regulation*	WPN 5293-431-P2781-26 (Note 1)	N/A	Registration completed on 1 Dec 2020
5	Wastewater Discharge License under *Water Pollution Control Ordinance*	WT00037473-2021 (Note 2)	31 Mar 2026	Validity from 9 Mar 2021 to 31 Mar 2026
6	Wastewater Discharge License under *Water Pollution Control Ordinance*	WT00037750-2021 (Notes 3, 4)	31 Oct 2023	Validity from 12 Oct 2021 to 31 Mar 2023
7	Construction Noise Permit (for construction site near Eastern Road, BPPS, Yung Long Road, Tuen Mun) under *Noise Control Ordinance*	GW-RW0340-21 (Note 5)	6 Mar 2022	Validity from 7 Sep 2021 to 6 Mar 2022
8	Construction Noise Permit (for offshore construction site near Urmston Road, Tuen Mun) under *Noise Control Ordinance*	GW-RW0363-21 (Note 6)	31 Mar 2022	Validity from 1 Oct 2021 to 31 Mar 2022
9	Construction Noise Permit (for construction site near Eastern Road, BPPS, Yung Long Road, Tuen Mun) under *Noise Control Ordinance*	GW-RW0552-21	9 Jun 2022	Validity from 31 Dec 2021 to 9 Jun 2022
10	Construction Noise Permit (for construction site near Eastern Road, BPPS, Yung Long Road, Tuen Mun) under *Noise Control Ordinance*	GW-RW0152-22	30 Sep 2022	Validity from 1 Apr 2022 to 30 Sep 2022

Notes:
(1) The location/premises where the waste is produced (i.e. Black Point Power Station) as per the registration.
(2) The location/premises where the industrial trade effluent is discharged into communal storm water drain (i.e. construction site at Black Point Power Station, Tuen Mun) as per the license.
(3) The location/premises where the industrial trade effluent is discharged into marine water (i.e. Jetty Platform (MD1) of offshore LNG Terminal located at about 936m distance from South-West Hong Kong Water Boundary) as per the license.
(4) The wastewater discharge license has been withdrawn.
(5) Construction Noise Permit GW-RW0340-21 has been replaced by GW-RW0552-21 since 31 December 2021.
(5) Construction Noise Permit GW-RW0363-21 has been replaced by GW-RW0152-22 since 1 April 2022.

TABLE D.5 STATUS OF SUBMISSIONS UNDER FURTHER ENVIRONMENTAL PERMITS

EP Condition	Submission	Status
FEP-01/558/2018/A		
2.4 2.5 2.6 2.7 2.8 2.9 2.10 2.11 4.10 5.3	Management Organization Updated EM&A Manual Location Plan Construction Works Schedule Piling Installation Plan Review Report on Finless Porpoise Peak Occurrence Season Baseline Study Report on Phytoplankton, Zooplankton and Benthic Organisms Waste Management Plan Environmental Enhancement Plan Baseline Monitoring Report	Accepted / approved by EPD
5.4 4.4 4.6 4.8	Monthly EM&A Reports Marine Routing Plan of the FSRU Vessel Design Plan of the FSRU Seawater Intake Mitigation Proposal for Emergency Gas Discharge and Accidental Spillage	Submitted to EPD
4.2 4.9	Safety Management Plan Emergency Response Plan	To be submitted no later than 3 months before the commencement of operation of the Project
4.11	Maintenance Dredging Plan	To be submitted no later than 6 months before the commencement of maintenance dredging works for the Project
FEP-02/558/2018/A		
2.4 2.5 2.6 2.7 2.8 2.9 2.10 2.11 4.6 5.3	Management Organization Updated EM&A Manual Location Plan Construction Works Schedule Pipeline Construction Plan Pipeline Laying Method Plan Silt Curtain Deployment Plan Waste Management Plan Environmental Enhancement Plan Baseline Monitoring Report	Accepted / approved by EPD
5.4	Monthly EM&A Reports	Submitted to EPD
4.2 4.5	Safety Management Plan Emergency Response Plan	To be submitted no later than 3 months before the

EP Condition	Submission	Status
		commencement of operation of the Project
FEP-03/558/2018/B		
2.4 2.5 2.6 2.7 2.8 2.9 2.10 2.11 4.6 5.3	Management Organization Updated EM&A Manual Location Plan Construction Works Schedule Pipeline Construction Plan Pipeline Laying Method Plan Silt Curtain Deployment Plan Waste Management Plan Environmental Enhancement Plan Baseline Monitoring Report	Accepted / approved by EPD
5.4	Monthly EM&A Reports	Submitted to EPD
4.2 4.5	Safety Management Plan Emergency Response Plan	To be submitted no later than 3 months before the commencement of operation of the Project

ANNEX E

CUMULATIVE STATISTICS ON EXCEEDANCES, ENVIRONMENTAL COMPLAINTS, NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTION

TABLE E.1 CUMULATIVE STATISTICS ON EXCEEDANCES FOR FEP-01/558/2018/A

Monitoring Parameter	Level of Exceedance	Total no. recorded in this reporting period [1]	Total no. recorded since project commencement
Marine Mammal (STG & ANI) (running quarterly)	Action	0	0
	Limit	0	0

TABLE E.2 CUMULATIVE STATISTICS ON ENVIRONMENTAL COMPLAINTS, NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS FOR FEP-01/558/2018/A

Reporting Period	Cumulative Statistics		
	Environmental Complaints	Notification of Summons	Successful Prosecutions
This Reporting Period (1 Jan to 31 Mar 2022)	0	0	0
Total no. recorded since project commencement	0	0	0

[1] Exceedances, which are non-project related, are not shown in this table.

TABLE E.3 CUMULATIVE STATISTICS ON EXCEEDANCES FOR FEP-02/558/2018/A

Monitoring Parameter	Level of Exceedance	Total no. recorded in this reporting period [1]	Total no. recorded since project commencement
Marine Water Quality (DO) (surface & middle)	Action	0	0
	Limit	0	0
Marine Water Quality (DO) (bottom)	Action	0	0
	Limit	0	0
Marine Water Quality (Turbidity) (depth-averaged)	Action	0	0
	Limit	0	0
Marine Water Quality (SS) (depth-averaged)	Action	0	0
	Limit	0	0

TABLE E.4 CUMULATIVE STATISTICS ON ENVIRONMENTAL COMPLAINTS, NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS FOR FEP-02/558/2018/A

Reporting Period	Cumulative Statistics		
	Environmental Complaints	Notification of Summons	Successful Prosecutions
This Reporting Period (1 Jan to 31 Mar 2022)	2	0	0
Total no. recorded since project commencement	2	0	0

[1] Exceedances, which are non-project related, are not shown in this table.

TABLE E.5 CUMULATIVE STATISTICS ON EXCEEDANCES FOR FEP-03/558/2018/B

Monitoring Parameter	Level of Exceedance	Total no. recorded in this reporting period [1]	Total no. recorded since project commencement
Marine Water Quality (DO) (surface & middle)	Action	0	0
	Limit	0	0
Marine Water Quality (DO) (bottom)	Action	0	0
	Limit	0	0
Marine Water Quality (Turbidity) (depth-averaged)	Action	0	0
	Limit	0	0
Marine Water Quality (SS) (depth-averaged)	Action	0	0
	Limit	0	0

TABLE E.6 CUMULATIVE STATISTICS ON ENVIRONMENTAL COMPLAINTS, NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS FOR FEP-03/558/2018/B

Reporting Period	Cumulative Statistics		
	Environmental Complaints	Notification of Summons	Successful Prosecutions
This Reporting Period (1 Jan to 31 Mar 2022)	0	0	0
Total no. recorded since project commencement	0	0	0

[1] Exceedances, which are non-project related, are not shown in this table.

ANNEX F

GRAPHICAL PRESENTATION OF CONSTRUCTION PHASE MARINE WATER QUALITY MONITORING RESULTS

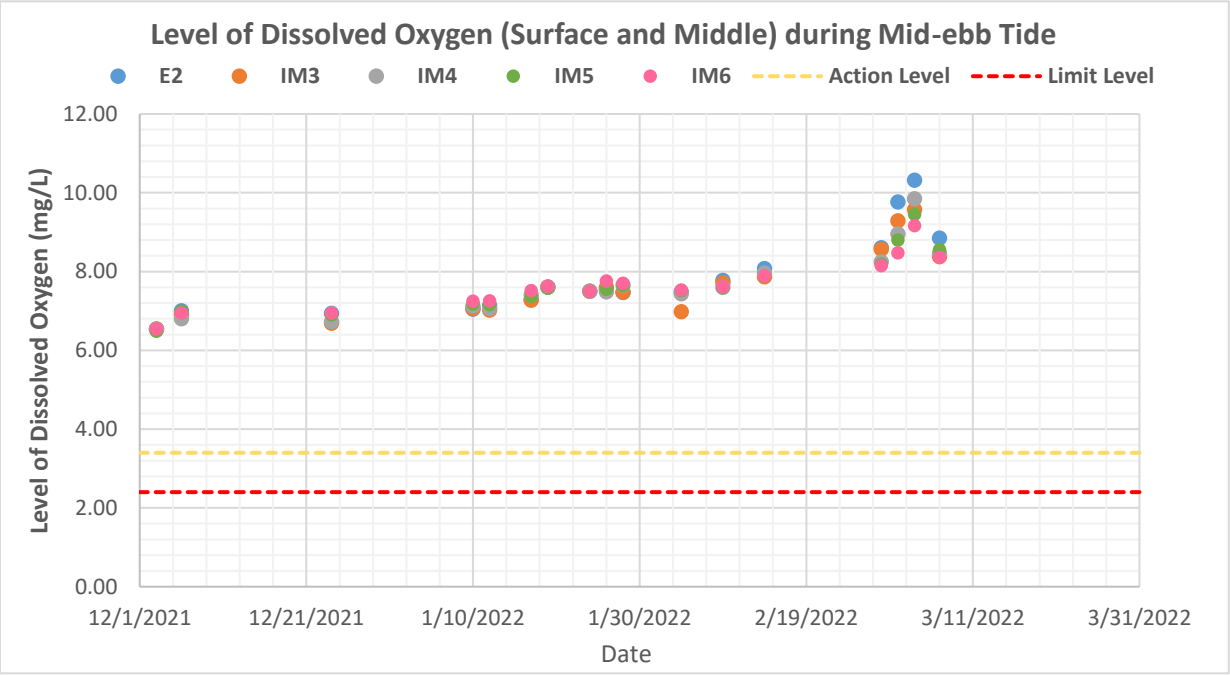

Figure F1a: Levels of Surface and Middle Dissolved Oxygen (mg/L) at control station (E2) and impact stations (IM3-IM6) under Group 2 during mid-ebb tides in the past four months (i.e. December 2021 to March 2022)

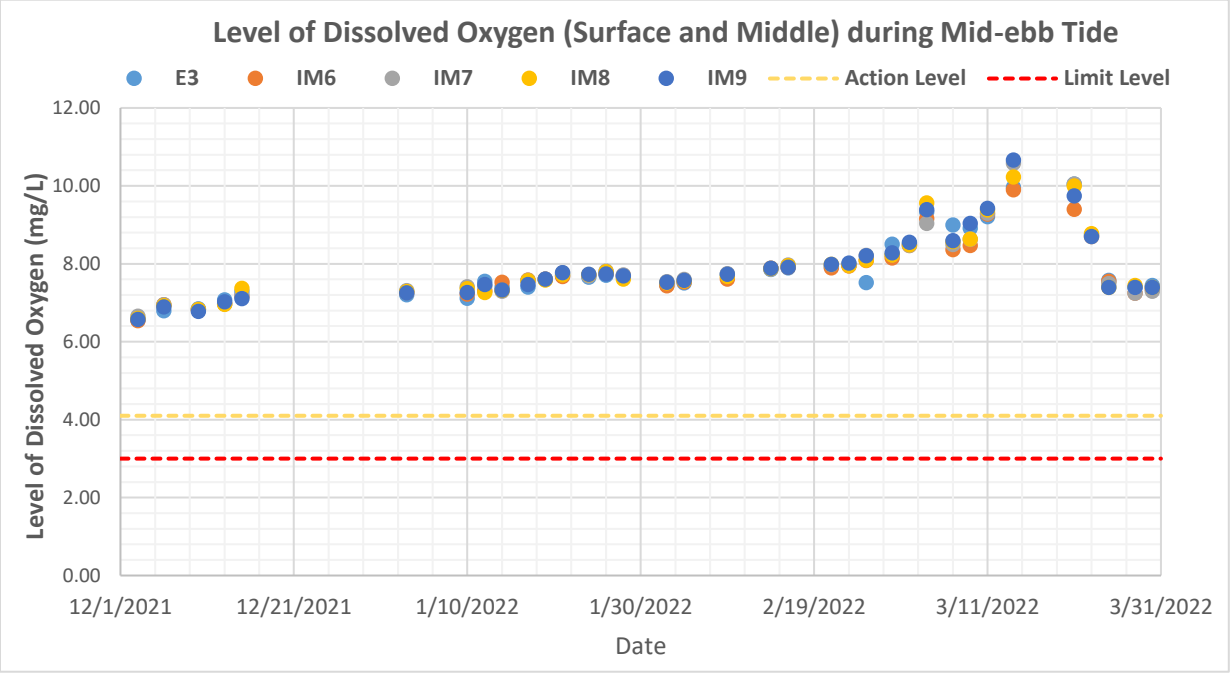

Figure F1b: Levels of Surface and Middle Dissolved Oxygen (mg/L) at control station (E3) and impact stations (IM6-IM9) under Group 3 during mid-ebb tides in the past four months (i.e. December 2021 to March 2022)

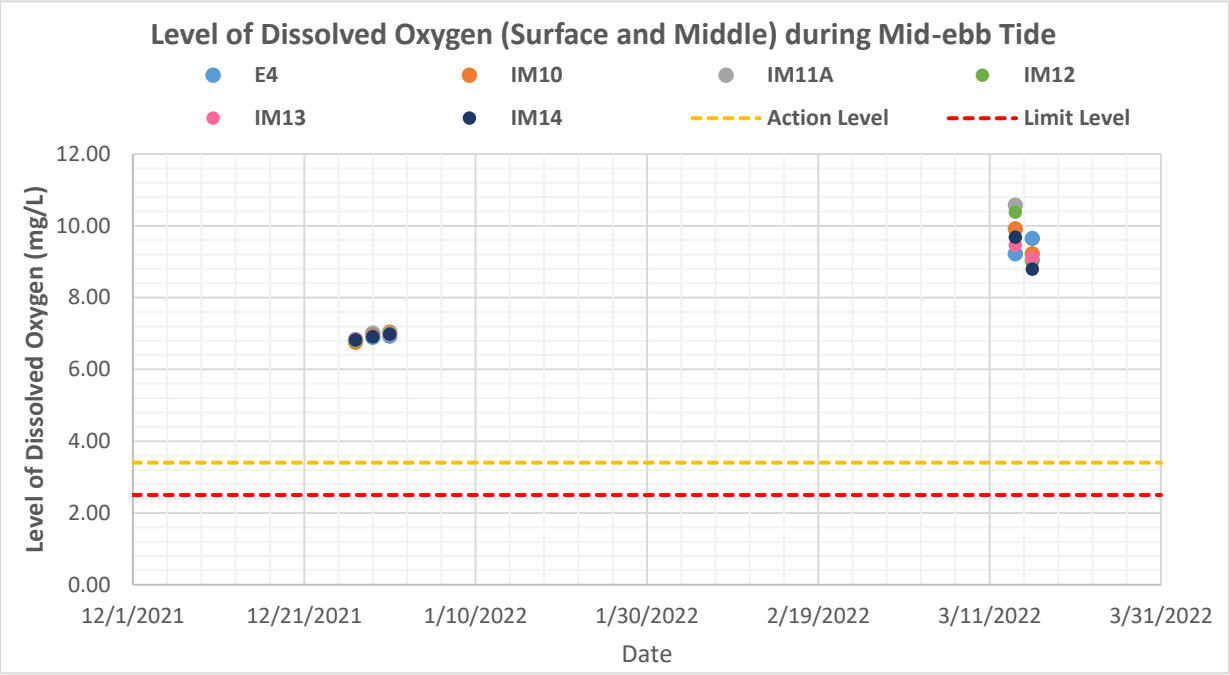

Figure F1c: Levels of Surface and Middle Dissolved Oxygen (mg/L) at control station (E4) and impact stations (IM10-IM14) under Group 4 during mid-ebb tides in the past four months (i.e. December 2021 to March 2022)

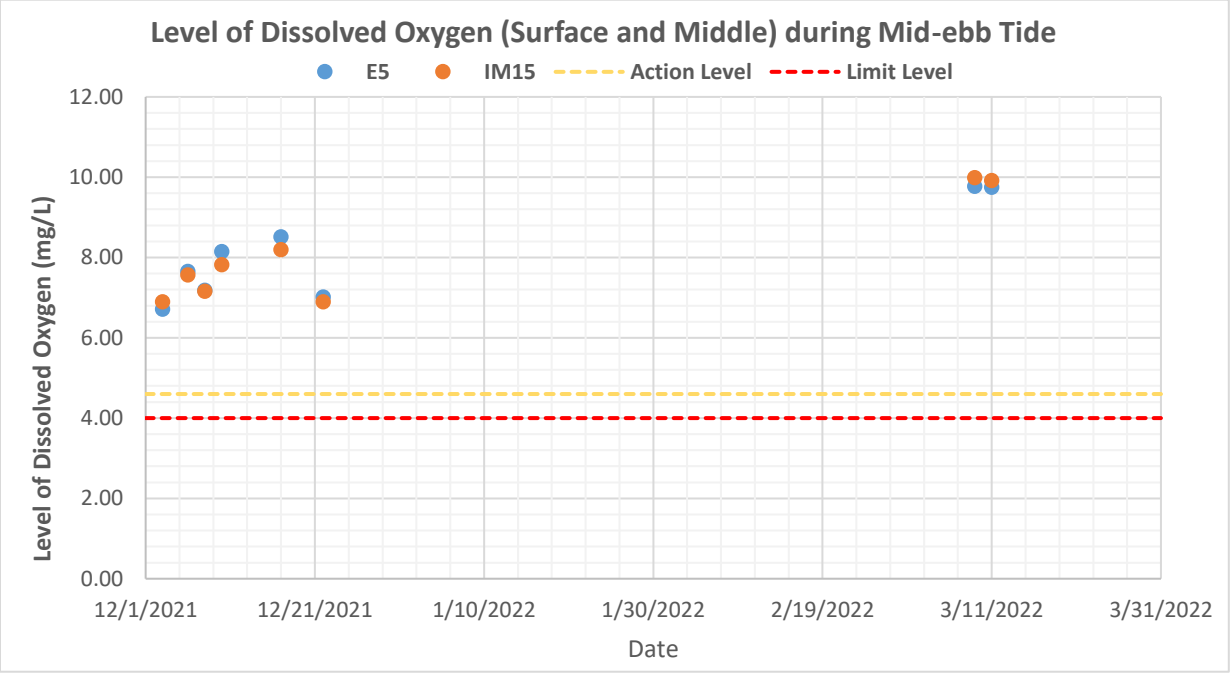

Figure F1d: Levels of Surface and Middle Dissolved Oxygen (mg/L) at control station (E5) and impact station (IM15) under Group 5 during mid-ebb tides in the past four months (i.e. December 2021 to March 2022)

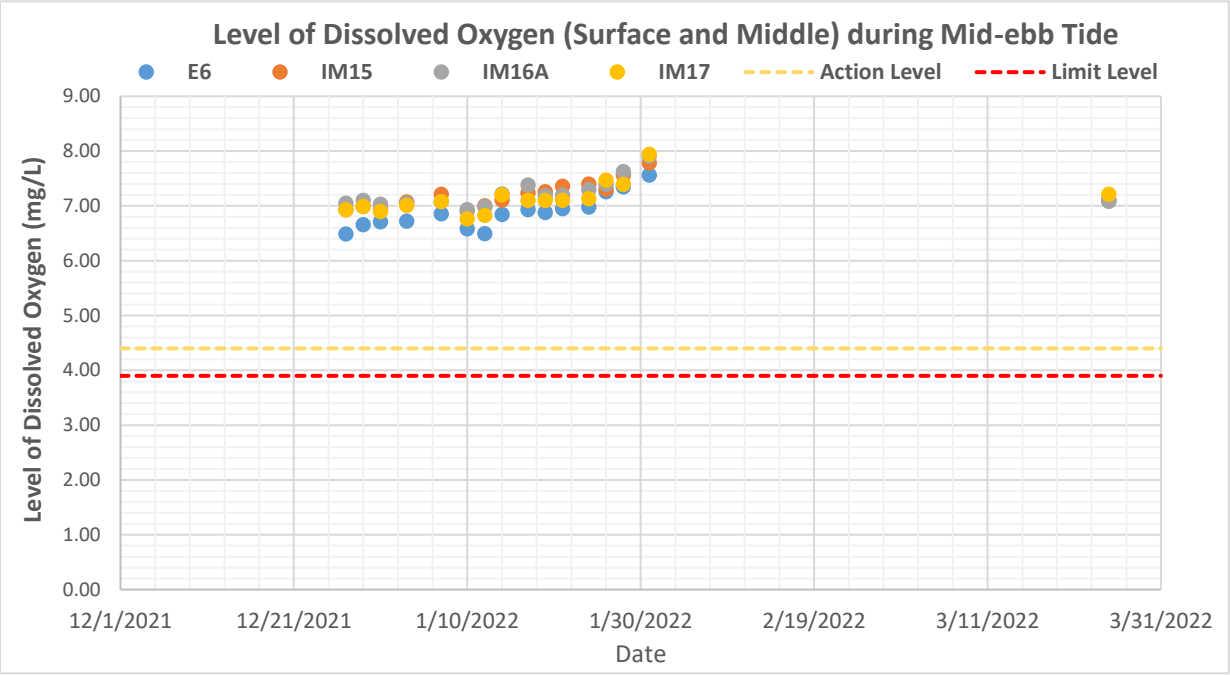

Figure F1e: Levels of Surface and Middle Dissolved Oxygen (mg/L) at control station (E6) and impact stations (IM15-IM17) under Group 6 during mid-ebb tides in the past four months (i.e. December 2021 to March 2022)

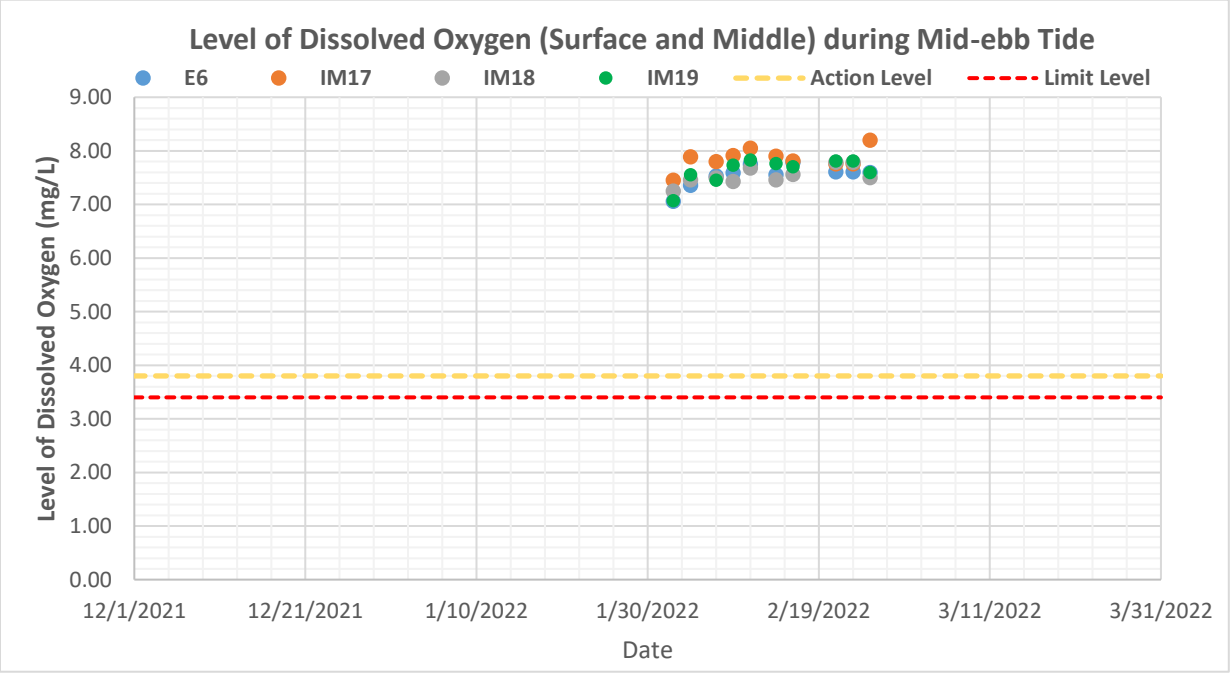

Figure F1f: Levels of Surface and Middle Dissolved Oxygen (mg/L) at control station (E6) and impact stations (IM17-IM19) under Group 7 during mid-ebb tides in the past four months (i.e. December 2021 to March 2022)

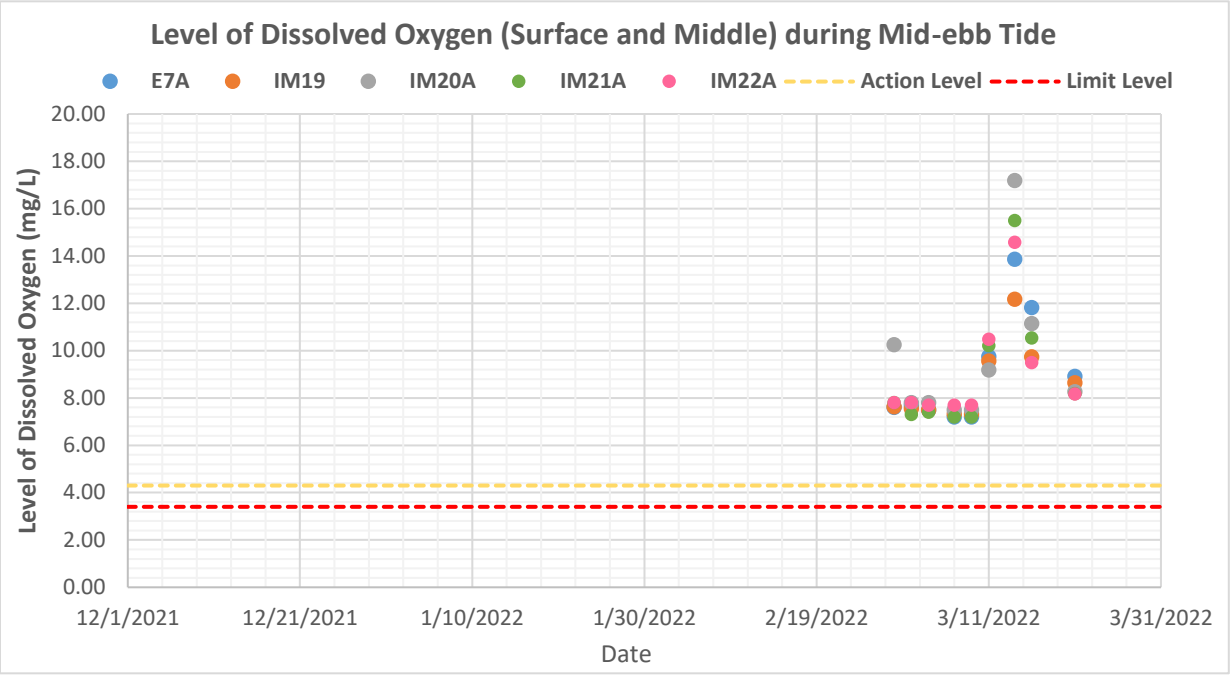

Figure F1g: Levels of Surface and Middle Dissolved Oxygen (mg/L) at control station (E7A) and impact stations (IM19-IM22A) under Group 8 during mid-ebb tides in the past four months (i.e. December 2021 to March 2022)

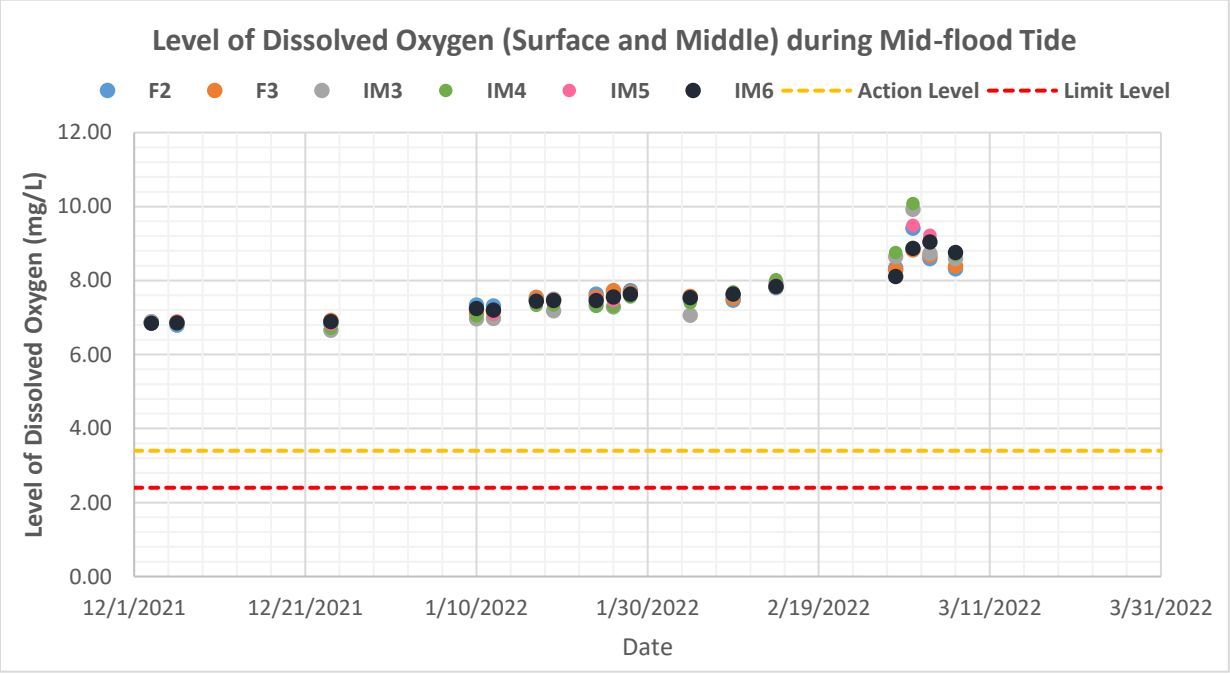

Figure F1h: Levels of Surface and Middle Dissolved Oxygen (mg/L) at control stations (F2-F3) and impact stations (IM3-IM6) under Group 2 during mid-flood tides in the past four months (i.e. December 2021 to March 2022)

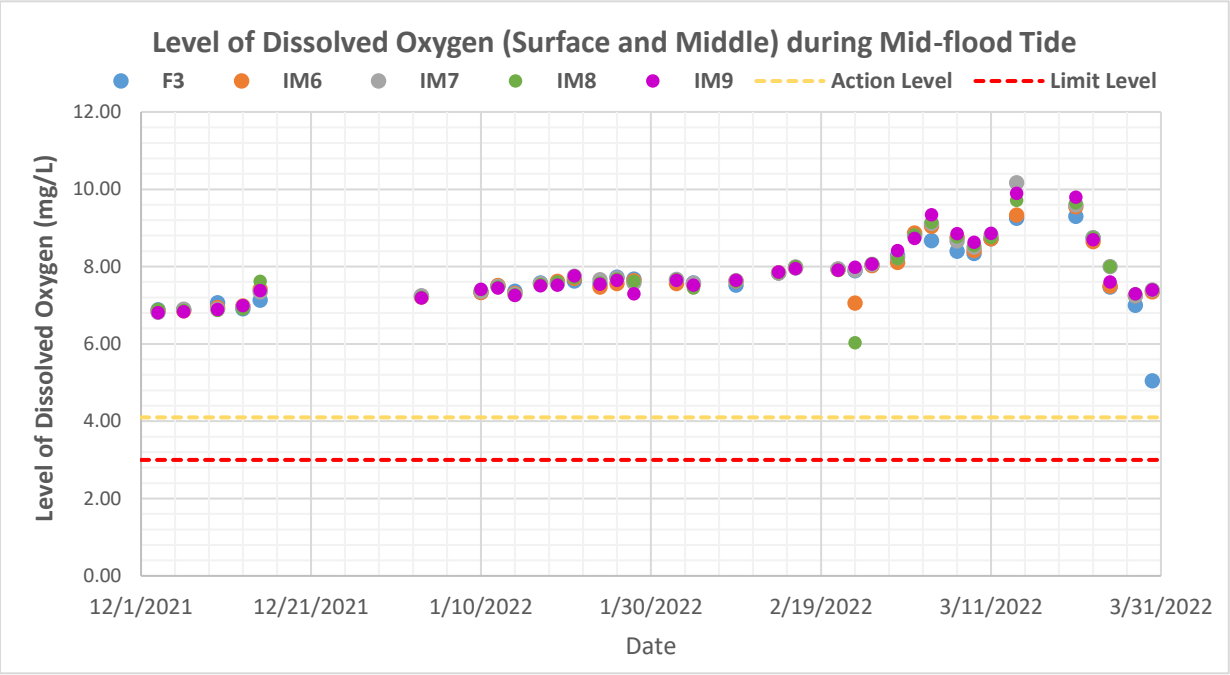

Figure F1i: Levels of Surface and Middle Dissolved Oxygen (mg/L) at control station (F3) and impact stations (IM6-IM9) under Group 3 during mid-flood tides in the past four months (i.e. December 2021 to March 2022)

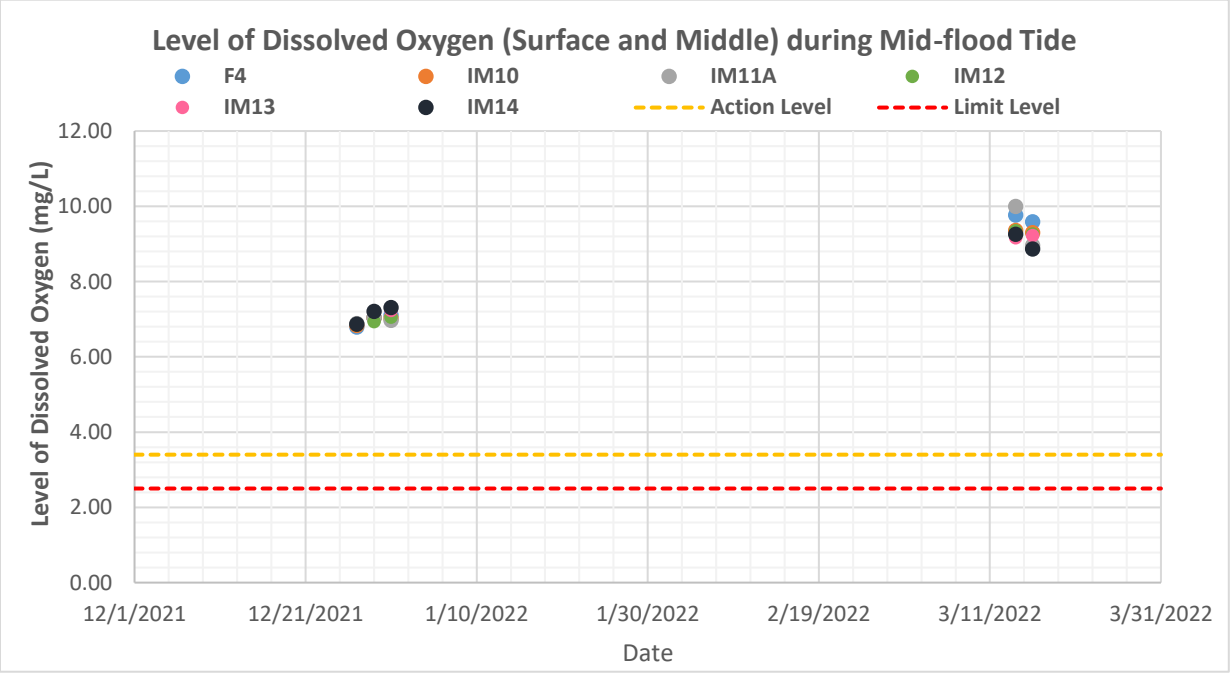

Figure F1j: Levels of Surface and Middle Dissolved Oxygen (mg/L) at control station (F4) and impact stations (IM10-IM14) under Group 4 during mid-flood tides in the past four months (i.e. December 2021 to March 2022)

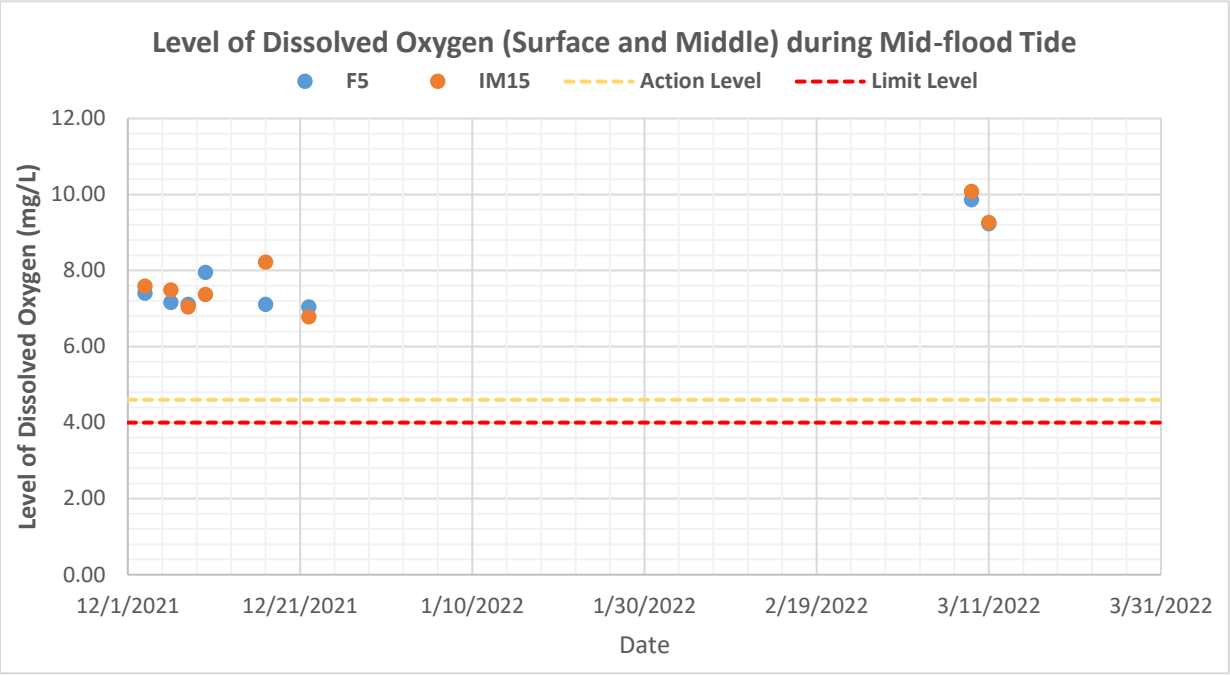

Figure F1k: Levels of Surface and Middle Dissolved Oxygen (mg/L) at control station (F5) and impact station (IM15) under Group 5 during mid-flood tides in the past four months (i.e. December 2021 to March 2022)

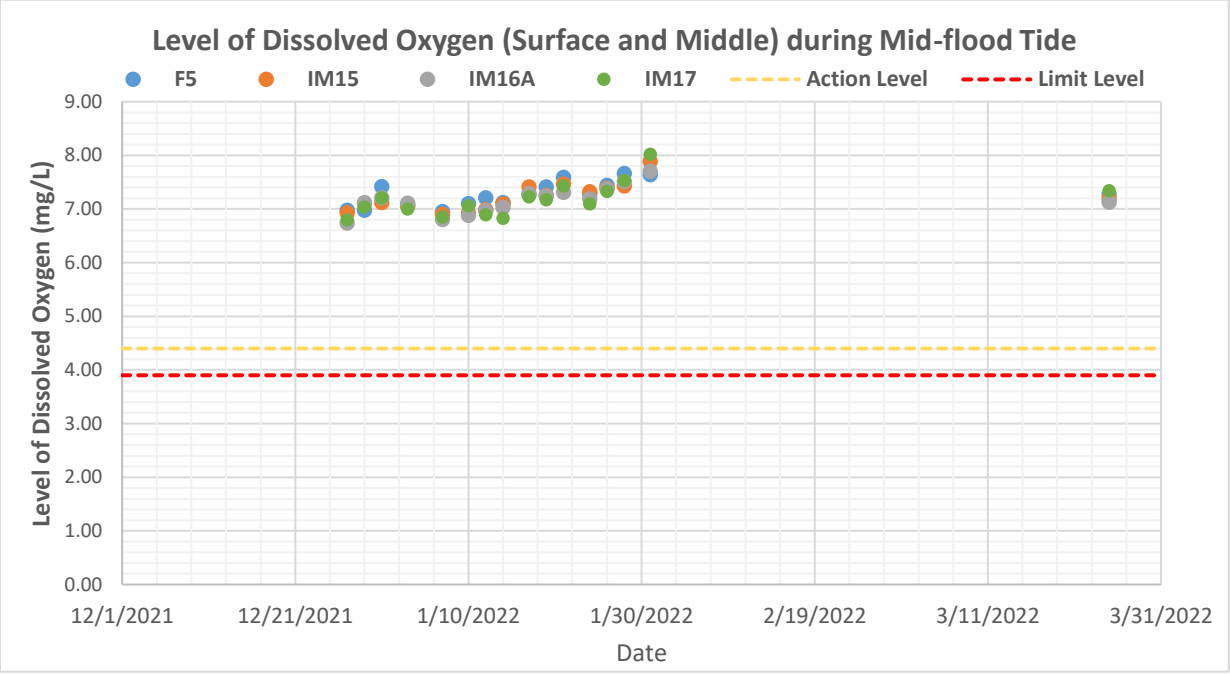

Figure F1l: Levels of Surface and Middle Dissolved Oxygen (mg/L) at control station (F5) and impact stations (IM15-IM17) under Group 6 during mid-flood tides in the past four months (i.e. December 2021 to March 2022)

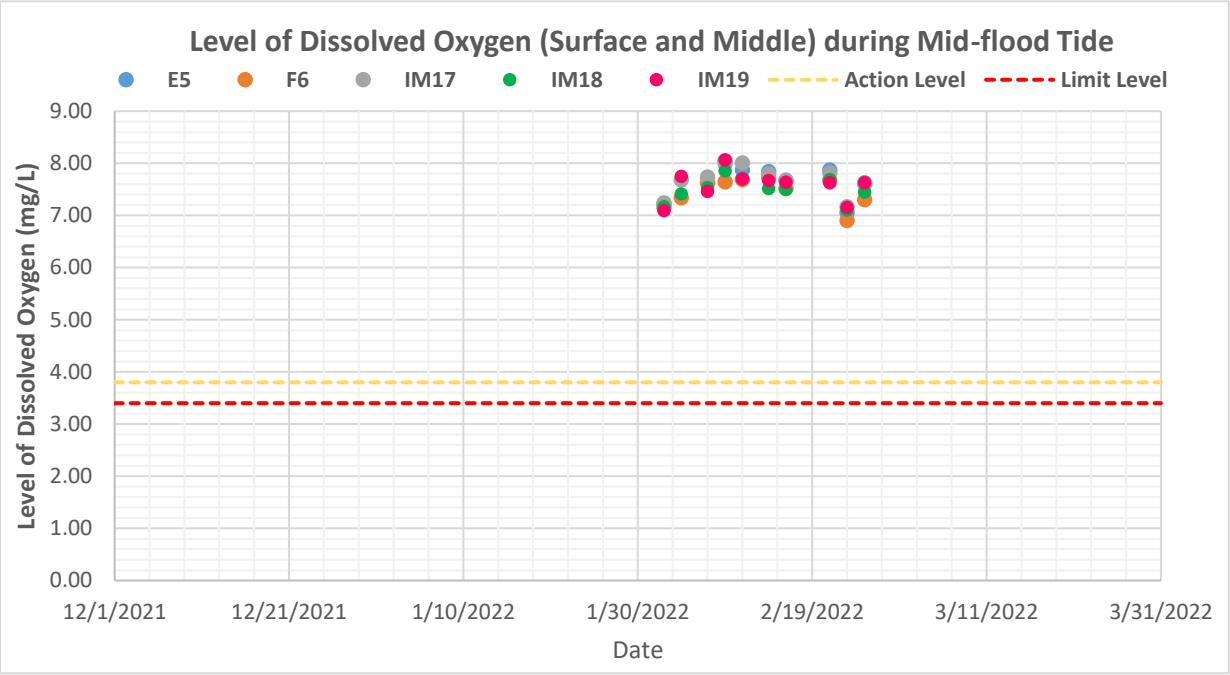

Figure F1m: Levels of Surface and Middle Dissolved Oxygen (mg/L) at control stations (E5, F6) and impact stations (IM17-IM19) under Group 7 during mid-flood tides in the past four months (i.e. December 2021 to March 2022)

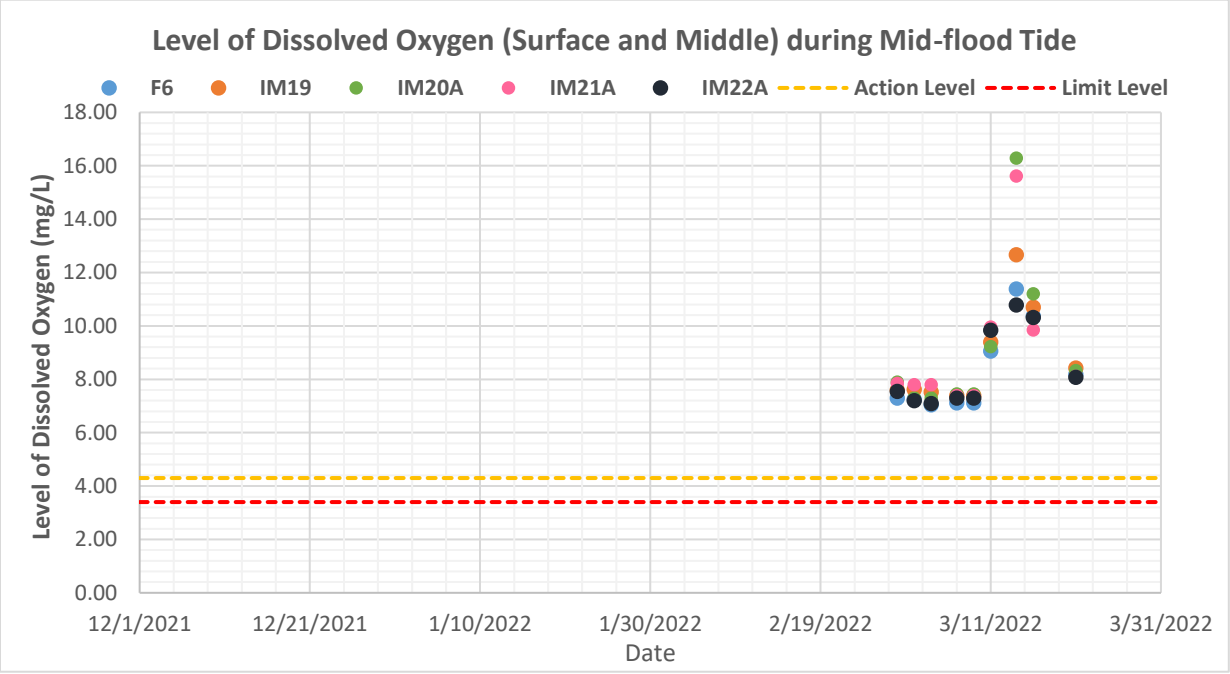

Figure F1n: Levels of Surface and Middle Dissolved Oxygen (mg/L) at control station (F6) and impact stations (IM19-IM22A) under Group 8 during mid-flood tides in the past four months (i.e. December 2021 to March 2022)

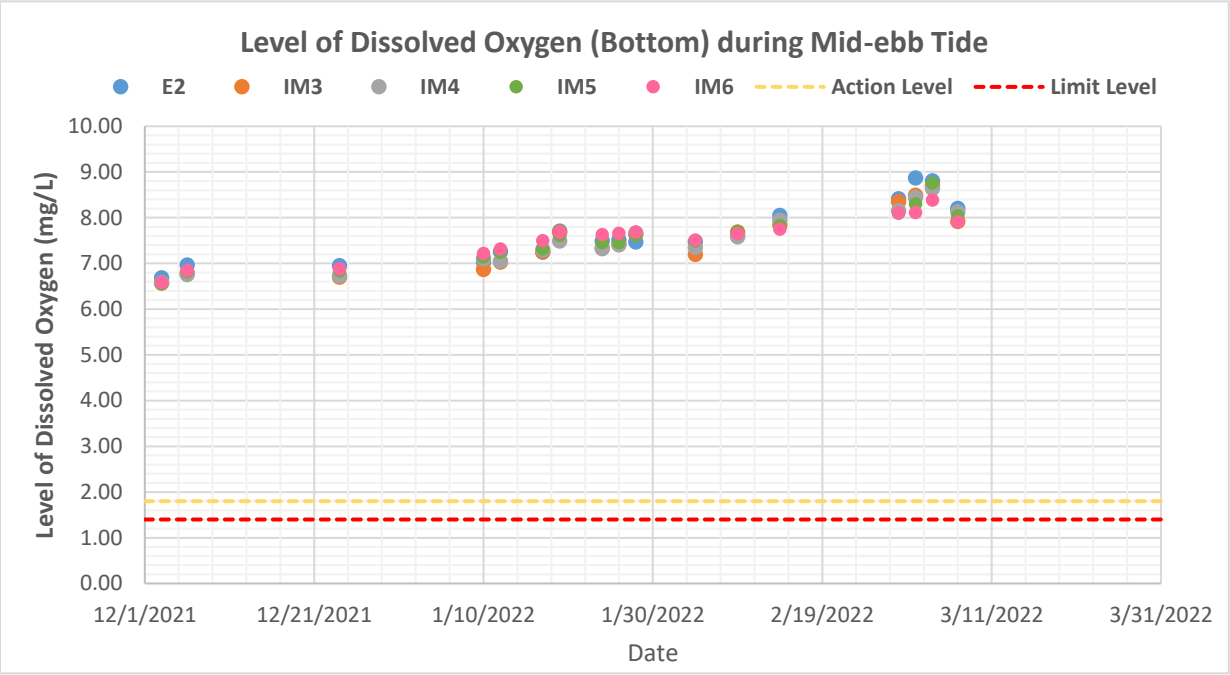

Figure F2a: Levels of Bottom Dissolved Oxygen (mg/L) at control station (E2) and impact stations (IM3-IM6) under Group 2 during mid-ebb tides in the past four months (i.e. December 2021 to March 2022)

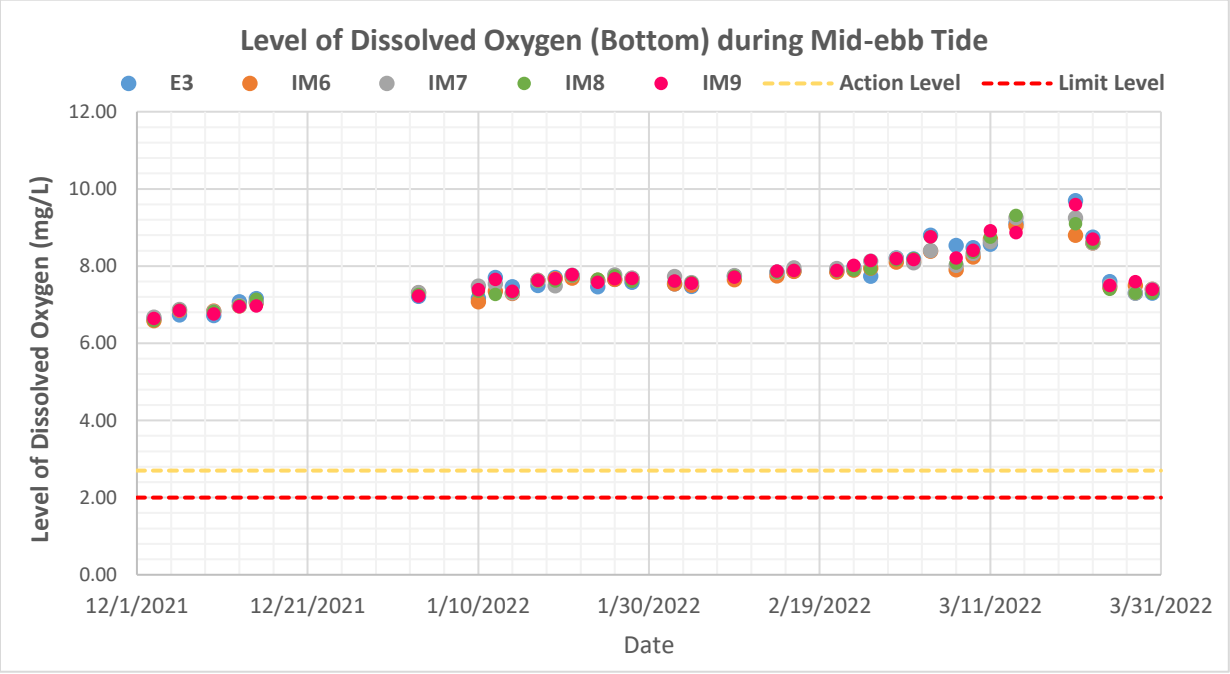

Figure F2b: Levels of Bottom Dissolved Oxygen (mg/L) at control station (E3) and impact stations (IM6-IM9) under Group 3 during mid-ebb tides in the past four months (i.e. December 2021 to March 2022)

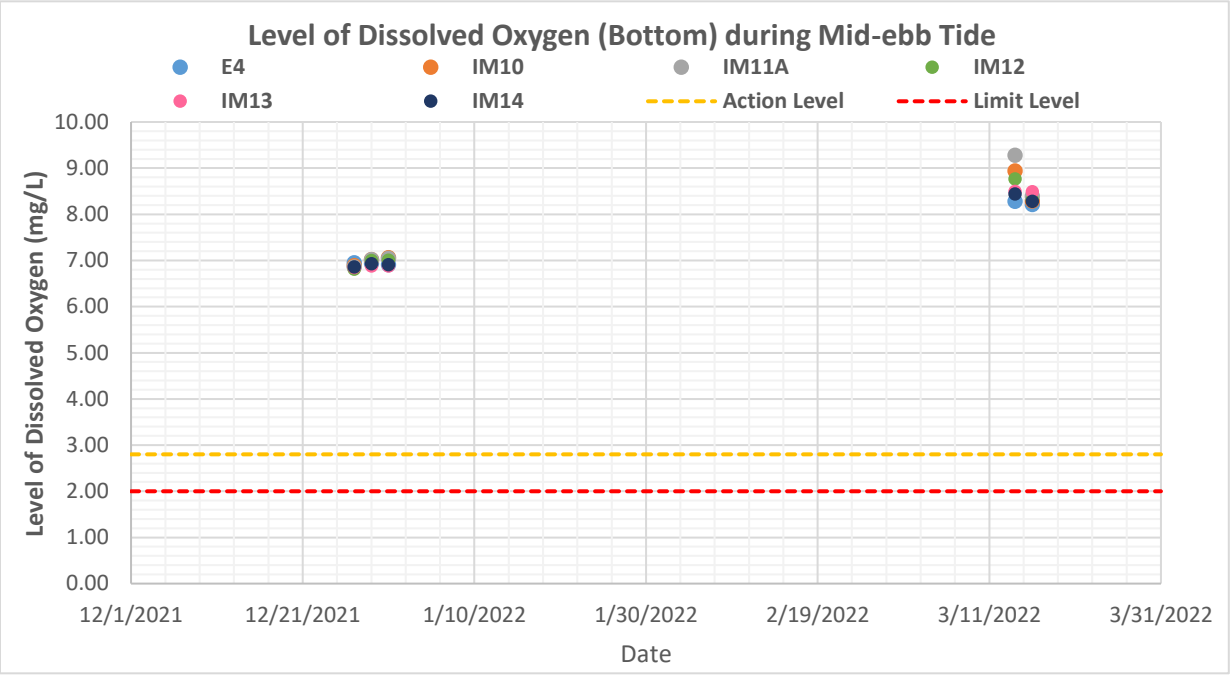

Figure F2c: Levels of Bottom Dissolved Oxygen (mg/L) at control station (E4) and impact stations (IM10-IM14) under Group 4 during mid-ebb tides in the past four months (i.e. December 2021 to March 2022)

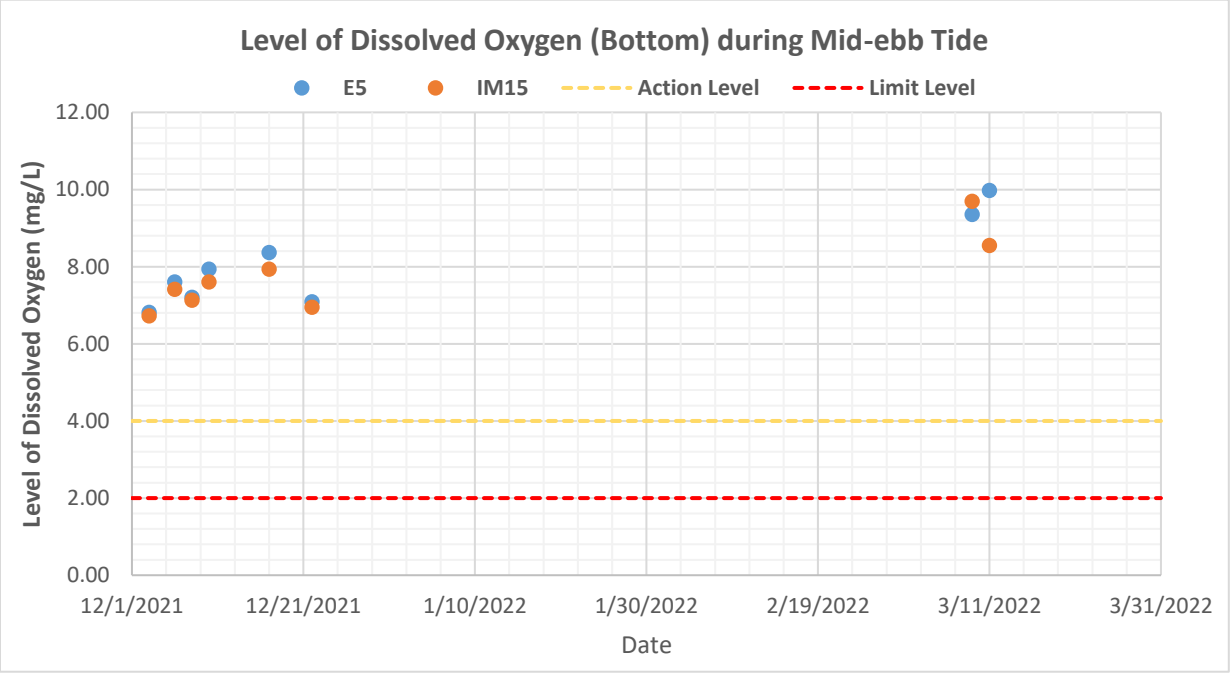

Figure F2d: Levels of Bottom Dissolved Oxygen (mg/L) at control station (E5) and impact station (IM15) under Group 5 during mid-ebb tides in the past four months (i.e. December 2021 to March 2022)

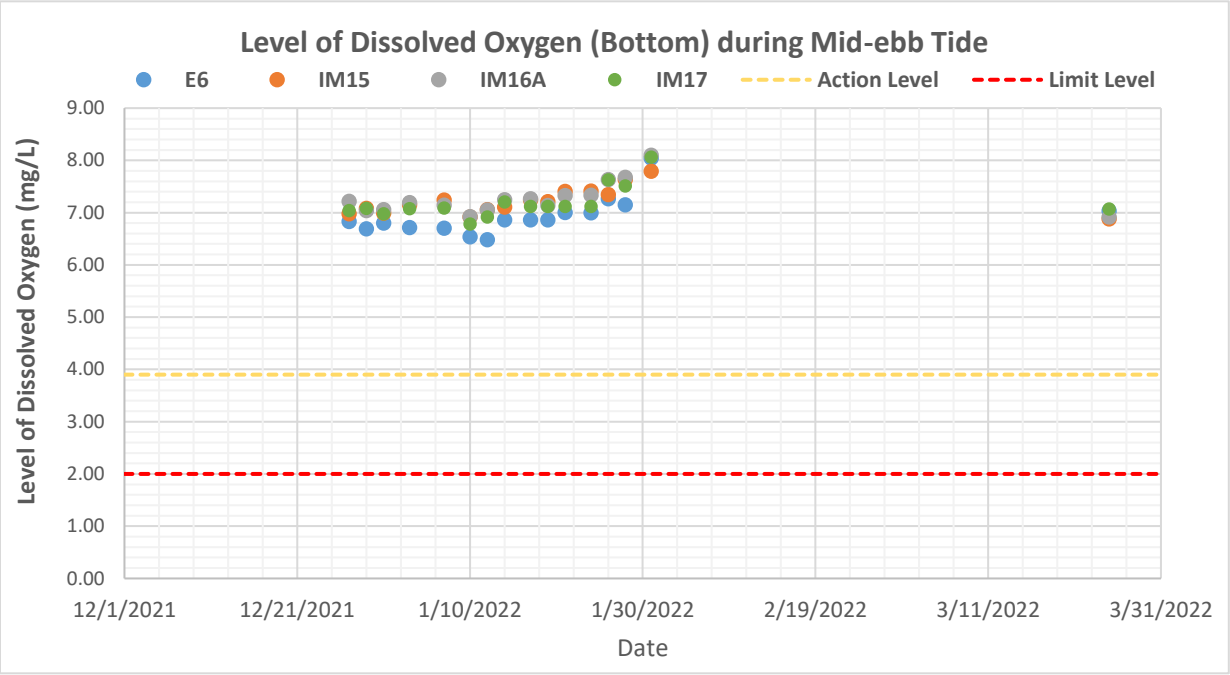

Figure F2e: Levels of Bottom Dissolved Oxygen (mg/L) at control station (E6) and impact stations (IM15-IM17) under Group 6 during mid-ebb tides in the past four months (i.e. December 2021 to March 2022)

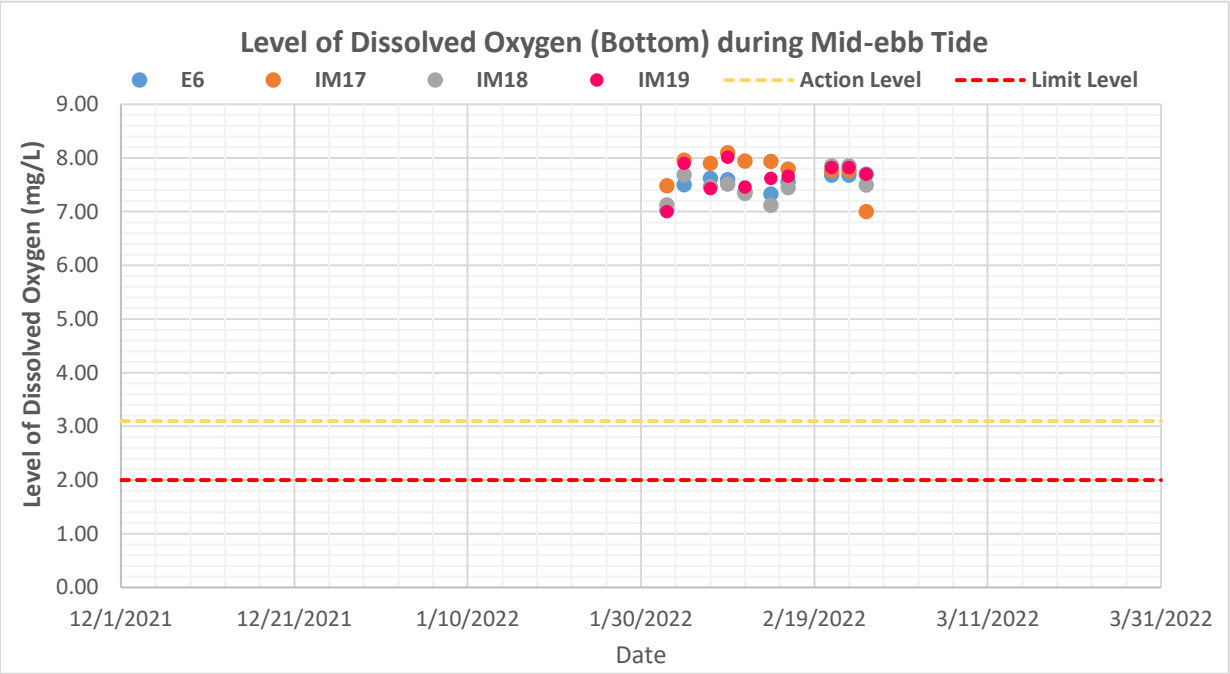

Figure F2f: Levels of Bottom Dissolved Oxygen (mg/L) at control station (E6) and impact stations (IM17-IM19) under Group 7 during mid-ebb tides in the past four months (i.e. December 2021 to March 2022)

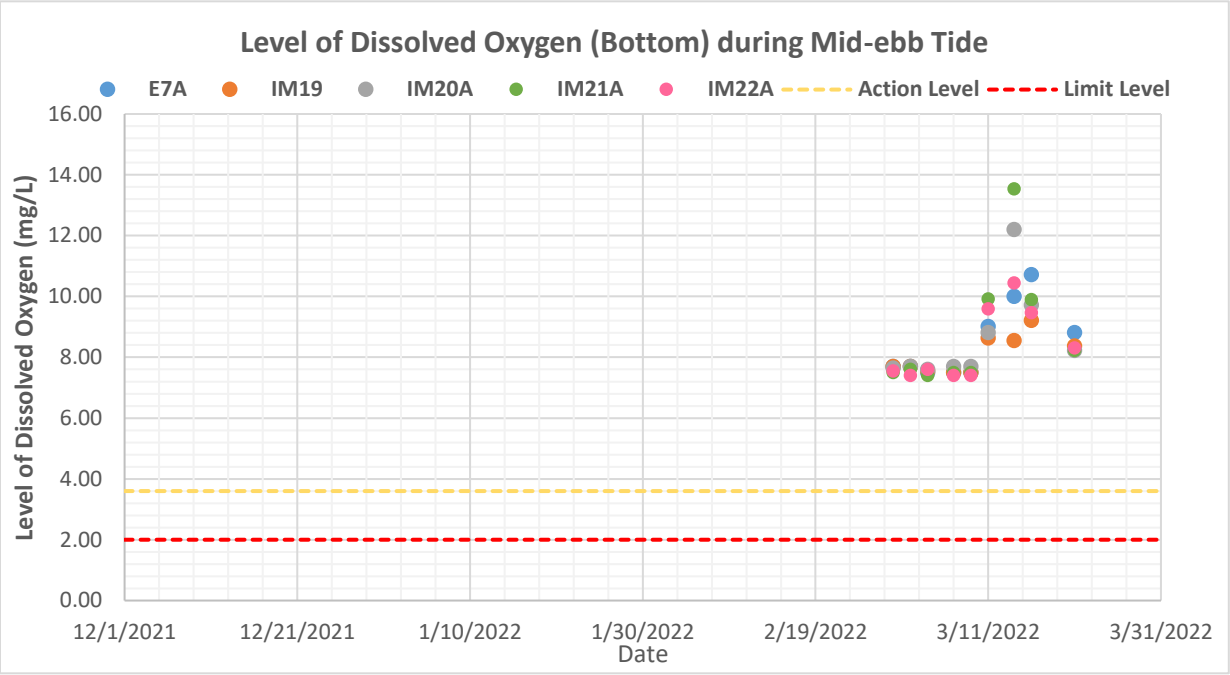

Figure F2g: Levels of Bottom Dissolved Oxygen (mg/L) at control station (E7A) and impact stations (IM19-IM22A) under Group 8 during mid-ebb tides in the past four months (i.e. December 2021 to March 2022)

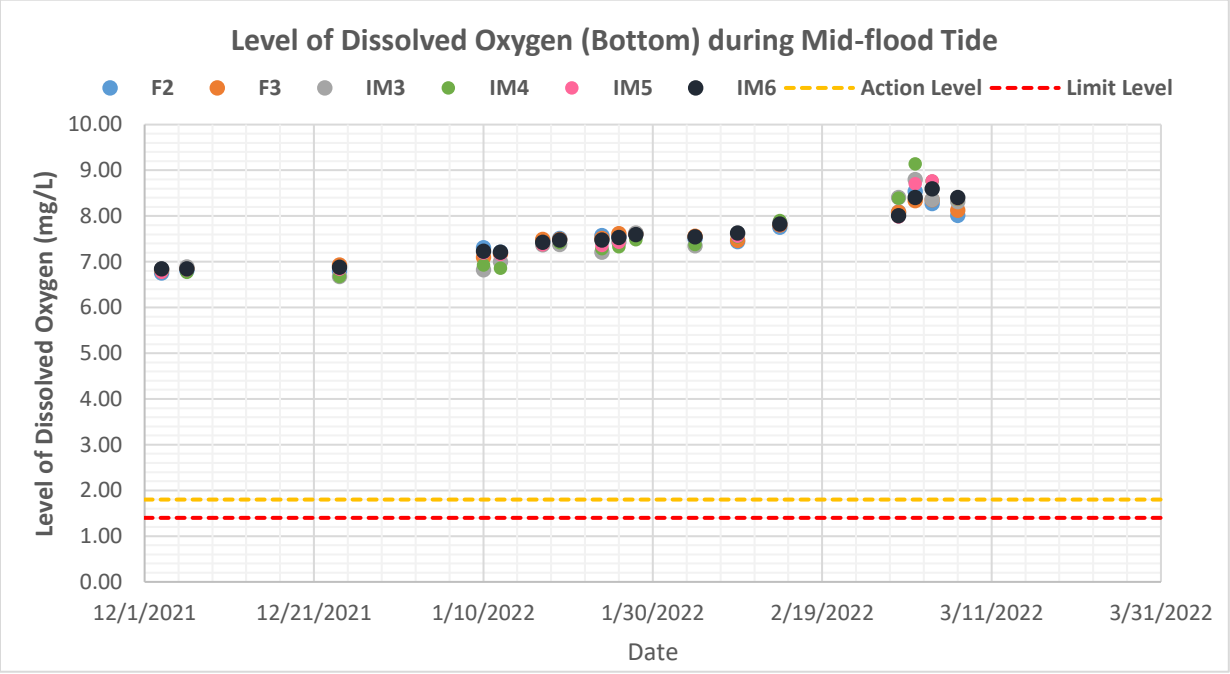

Figure F2h: Levels of Bottom Dissolved Oxygen (mg/L) at control stations (F2-F3) and impact stations (IM3-IM6) under Group 2 during mid-flood tides in the past four months (i.e. December 2021 to March 2022)

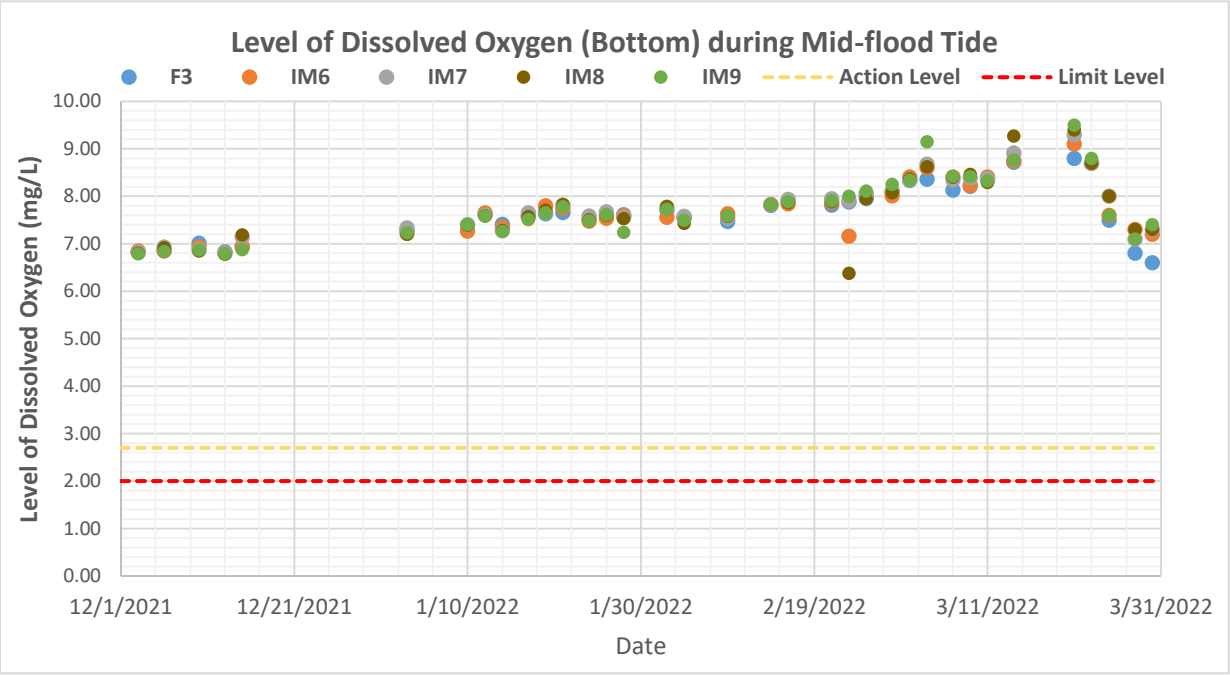

Figure F2i: Levels of Bottom Dissolved Oxygen (mg/L) at control station (F3) and impact stations (IM6-IM9) under Group 3 during mid-flood tides in the past four months (i.e. December 2021 to March 2022)

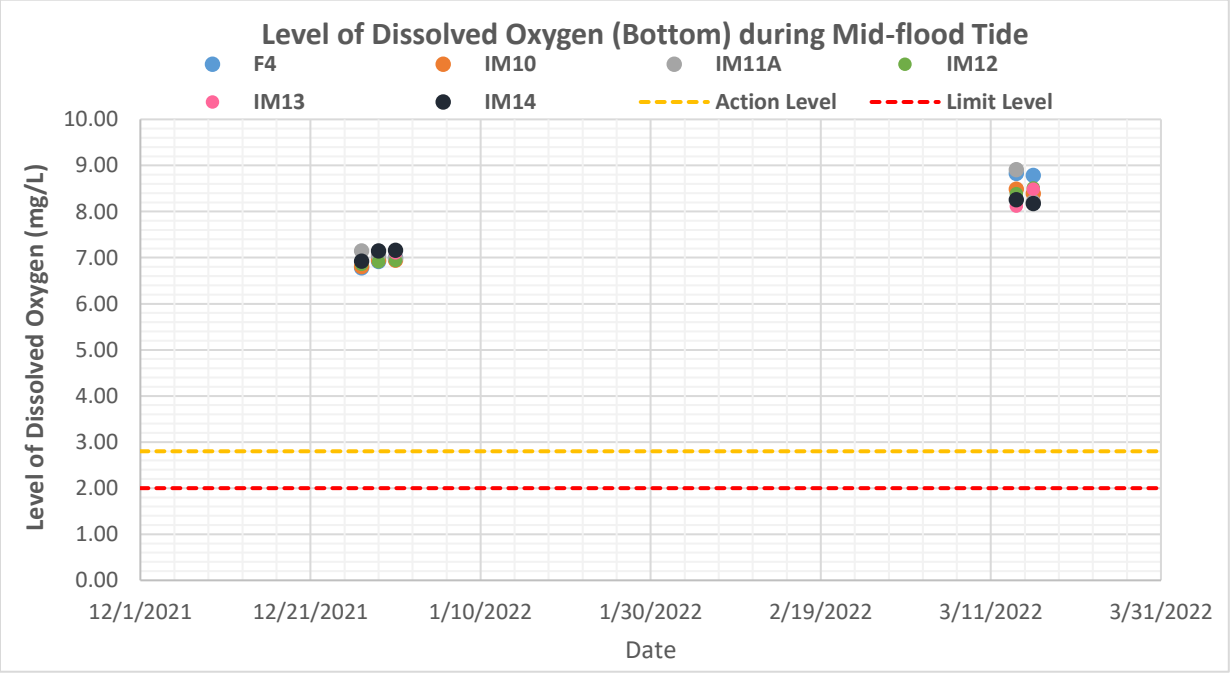

Figure F2j: Levels of Bottom Dissolved Oxygen (mg/L) at control station (F4) and impact stations (IM10-IM14) under Group 4 during mid-flood tides in the past four months (i.e. December 2021 to March 2022)

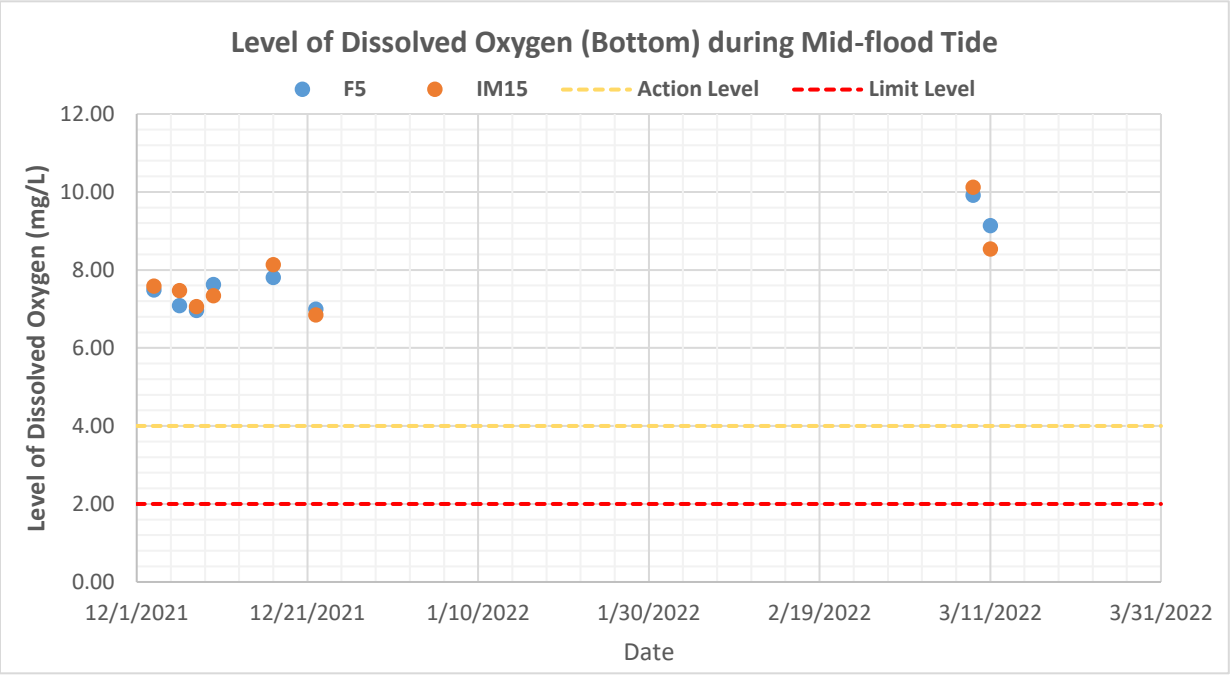

Figure F2k: Levels of Bottom Dissolved Oxygen (mg/L) at control station (F5) and impact station (IM15) under Group 5 during mid-flood tides in the past four months (i.e. December 2021 to March 2022)

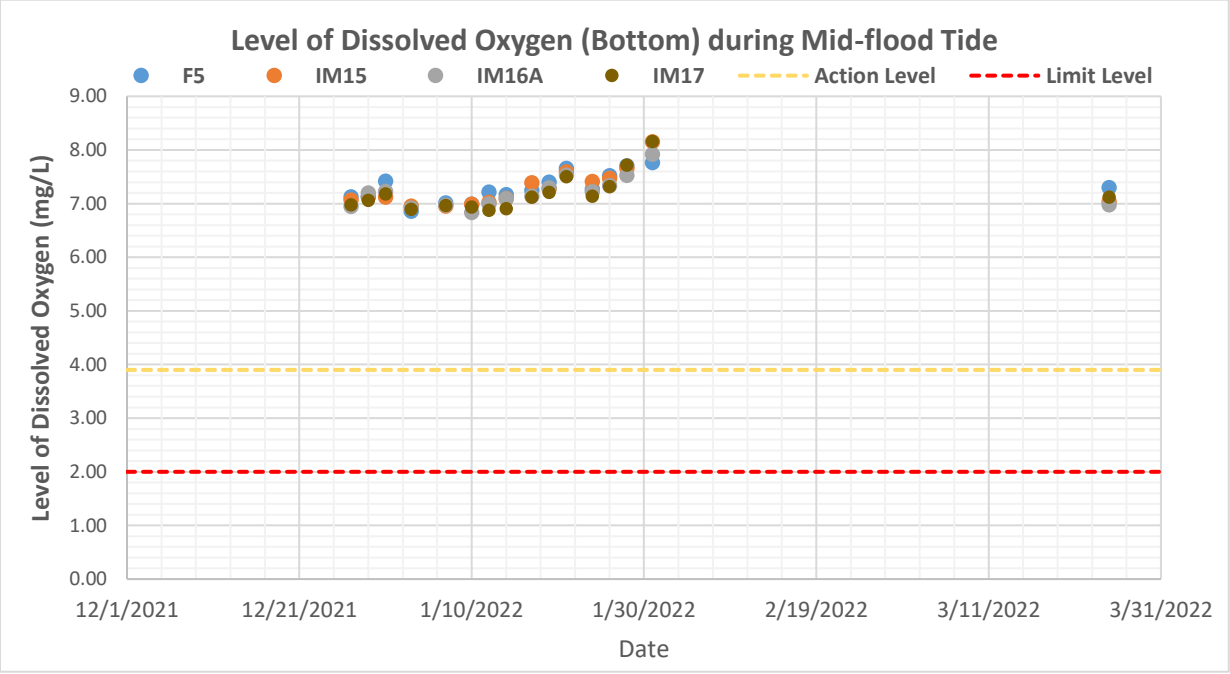

Figure F2l: Levels of Bottom Dissolved Oxygen (mg/L) at control station (F5) and impact stations (IM15-IM17) under Group 6 during mid-flood tides in the past four months (i.e. December 2021 to March 2022)

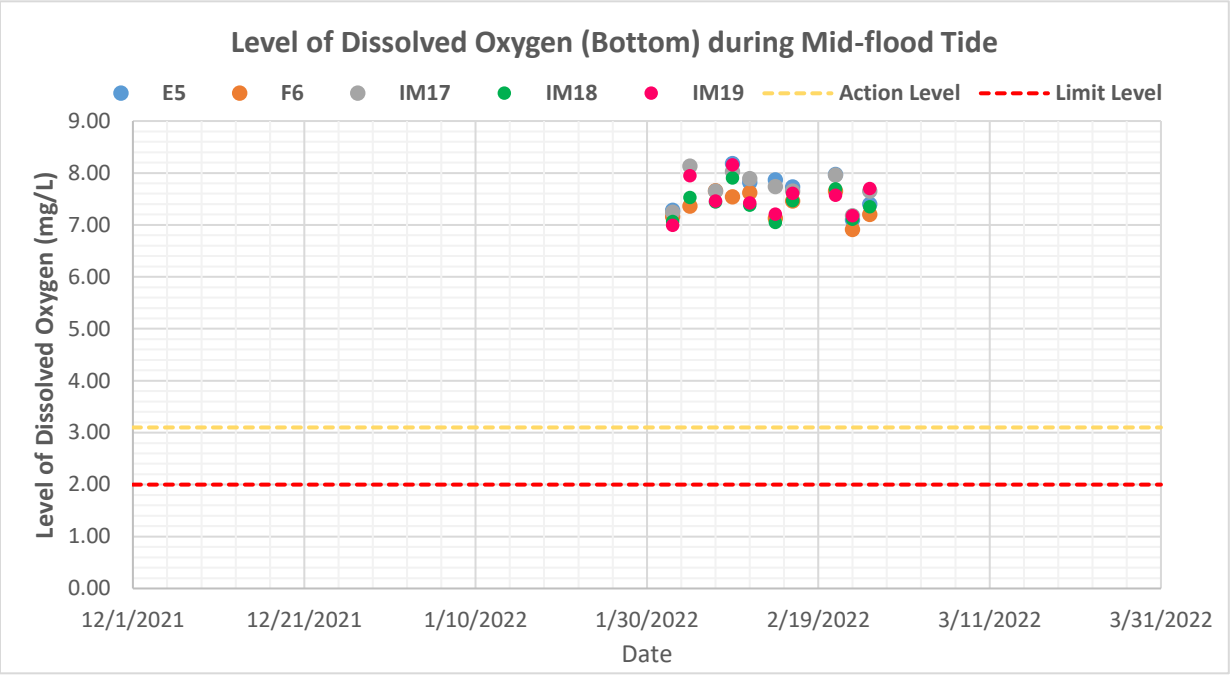

Figure F2m: Levels of Bottom Dissolved Oxygen (mg/L) at control stations (E5, F6) and impact stations (IM17-IM19) under Group 7 during mid-flood tides in the past four months (i.e. December 2021 to March 2022)

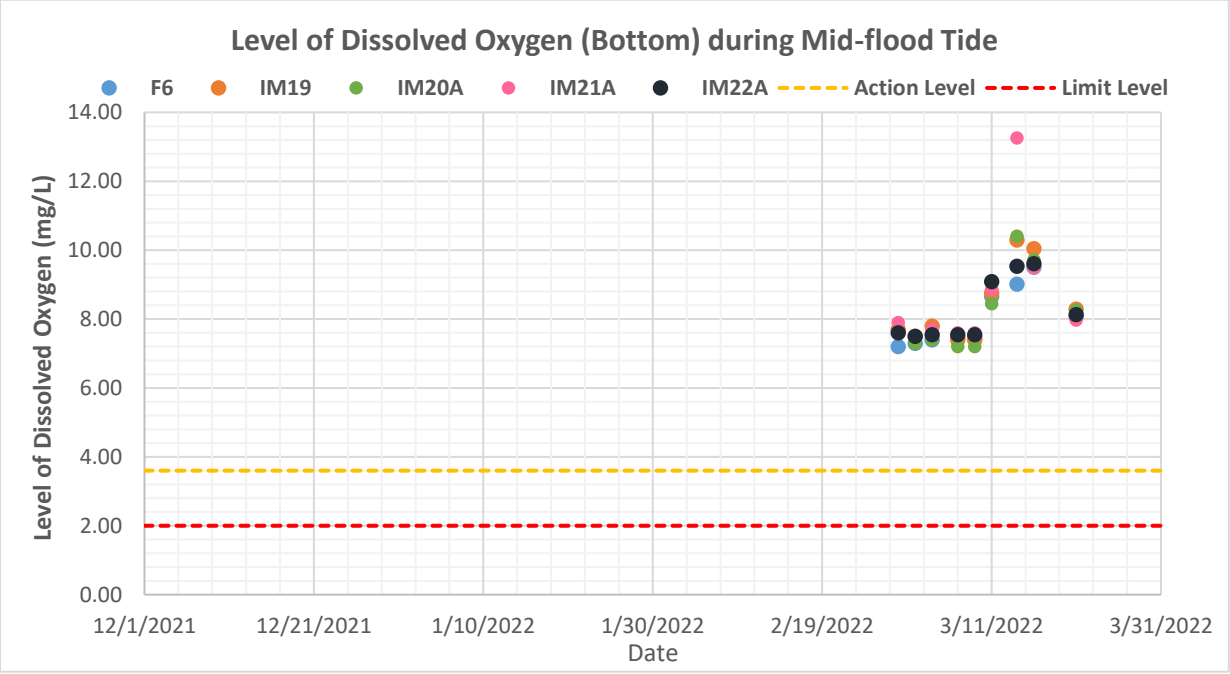

Figure F2n: Levels of Bottom Dissolved Oxygen (mg/L) at control station (F6) and impact stations (IM19-IM22A) under Group 8 during mid-flood tides in the past four months (i.e. December 2021 to March 2022)

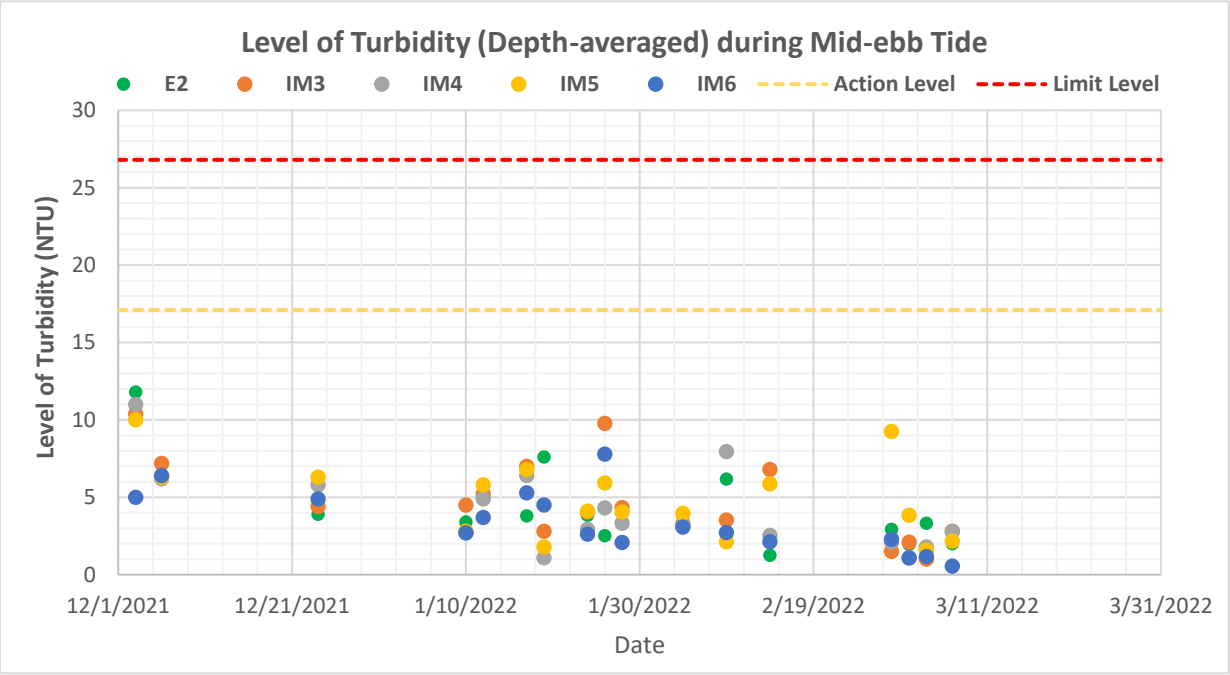

Figure F3a: Levels of Depth-averaged Turbidity (NTU) at control station (E2) and impact stations (IM3-IM6) under Group 2 during mid-ebb tides in the past four months (i.e. December 2021 to March 2022)

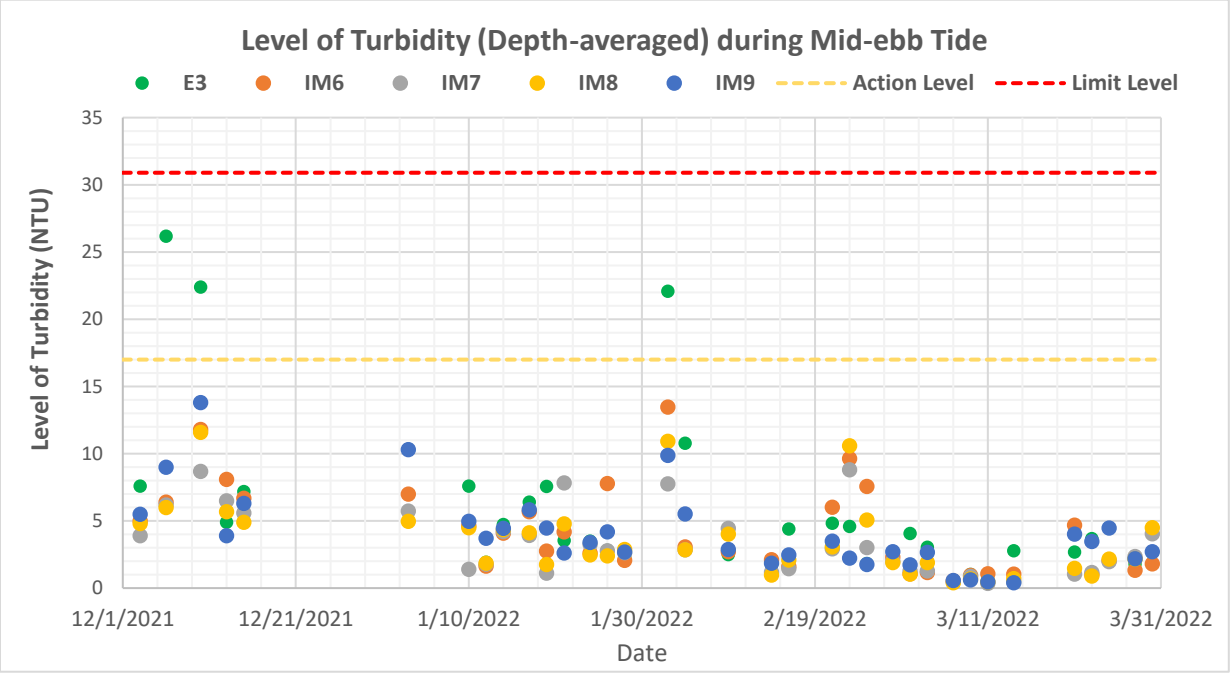

Figure F3b: Levels of Depth-averaged Turbidity (NTU) at control station (E3) and impact stations (IM6-IM9) under Group 3 during mid-ebb tides in the past four months (i.e. December 2021 to March 2022)

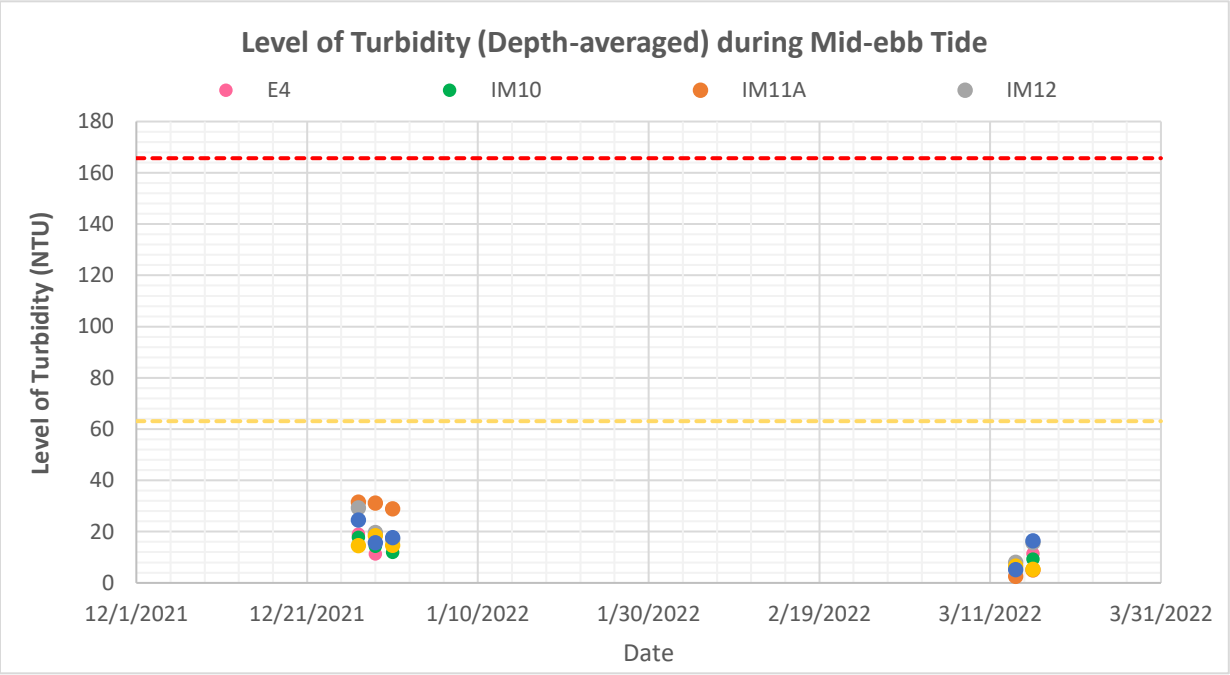

Figure F3c: Levels of Depth-averaged Turbidity (NTU) at control station (E4) and impact stations (IM10-IM14) under Group 4 during mid-ebb tides in the past four months (i.e. December 2021 to March 2022)

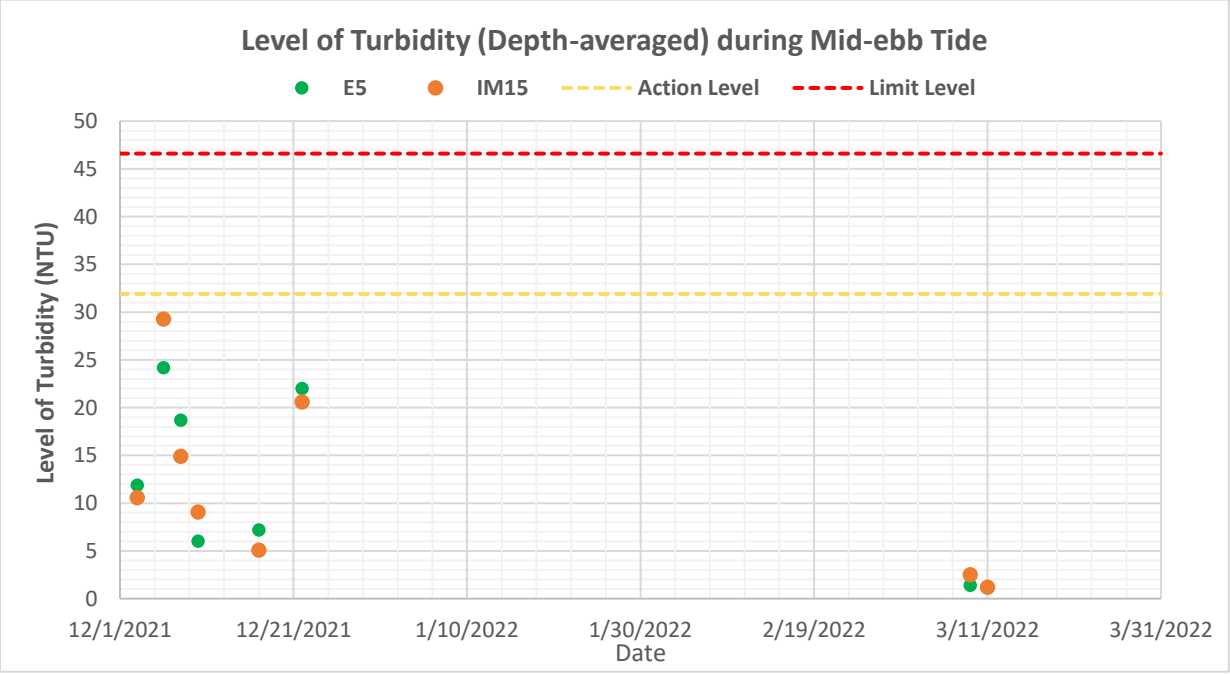

Figure F3d: Levels of Depth-averaged Turbidity (NTU) at control station (E5) and impact station (IM15) under Group 5 during mid-ebb tides in the past four months (i.e. December 2021 to March 2022)

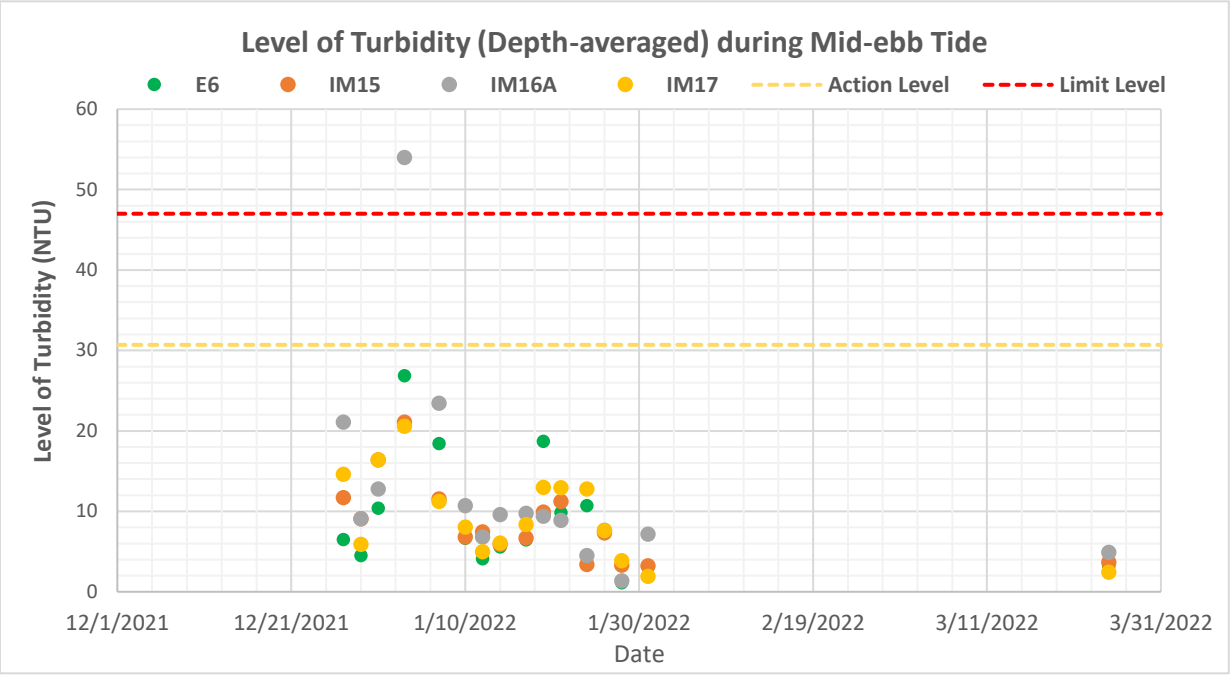

Figure F3e: Levels of Depth-averaged Turbidity (NTU) at control station (E6) and impact stations (IM15-IM17) under Group 6 during mid-ebb tides in the past four months (i.e. December 2021 to March 2022)

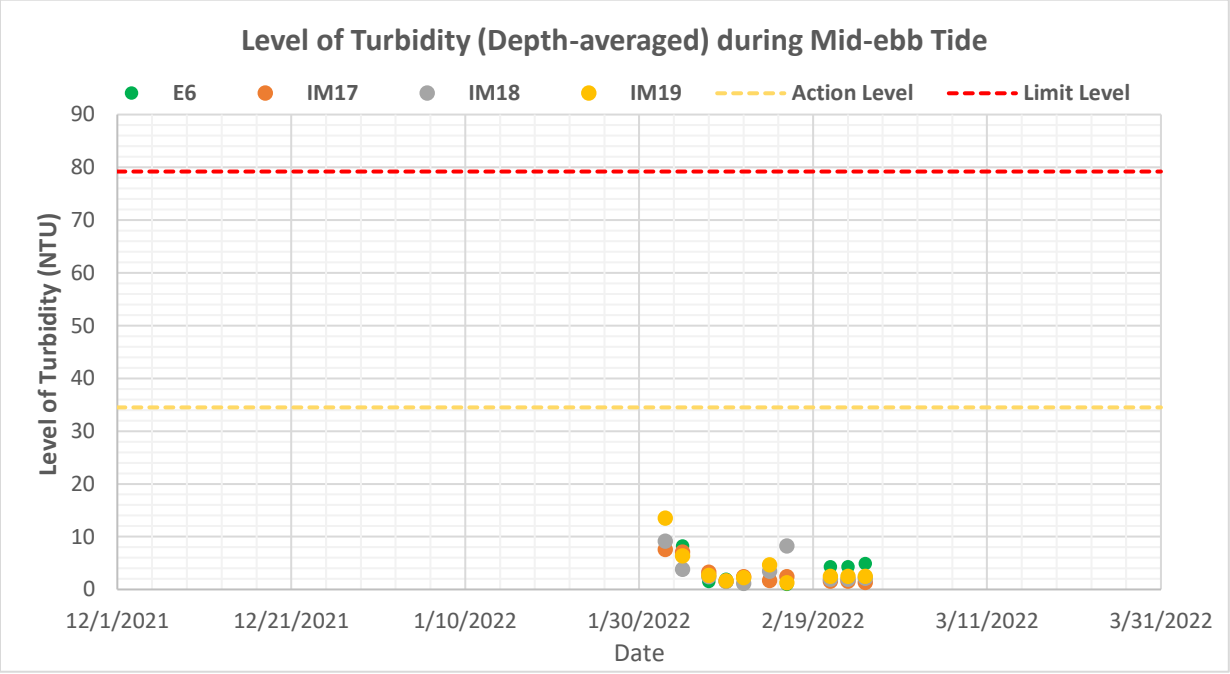

Figure F3f: Levels of Depth-averaged Turbidity (NTU) at control station (E6) and impact stations (IM17-IM19) under Group 7 during mid-ebb tides in the past four months (i.e. December 2021 to March 2022)

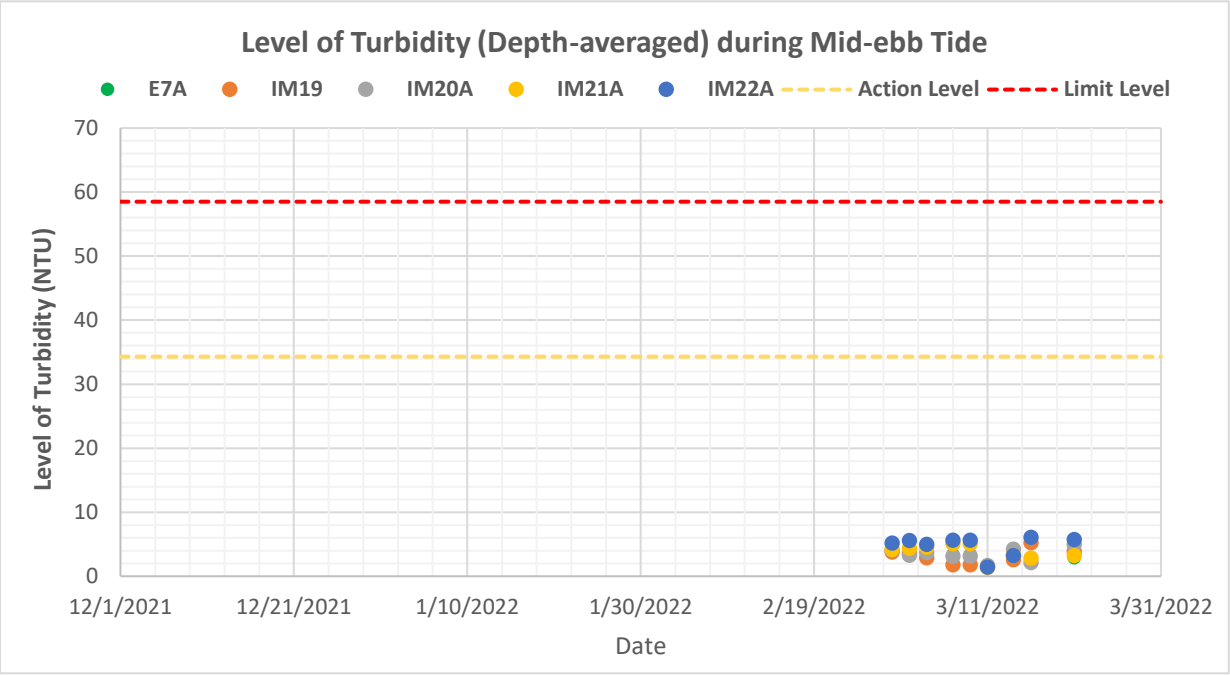

Figure F3g: Levels of Depth-averaged Turbidity (NTU) at control station (E7A) and impact stations (IM19-IM22A) under Group 8 during mid-ebb tides in the past four months (i.e. December 2021 to March 2022)

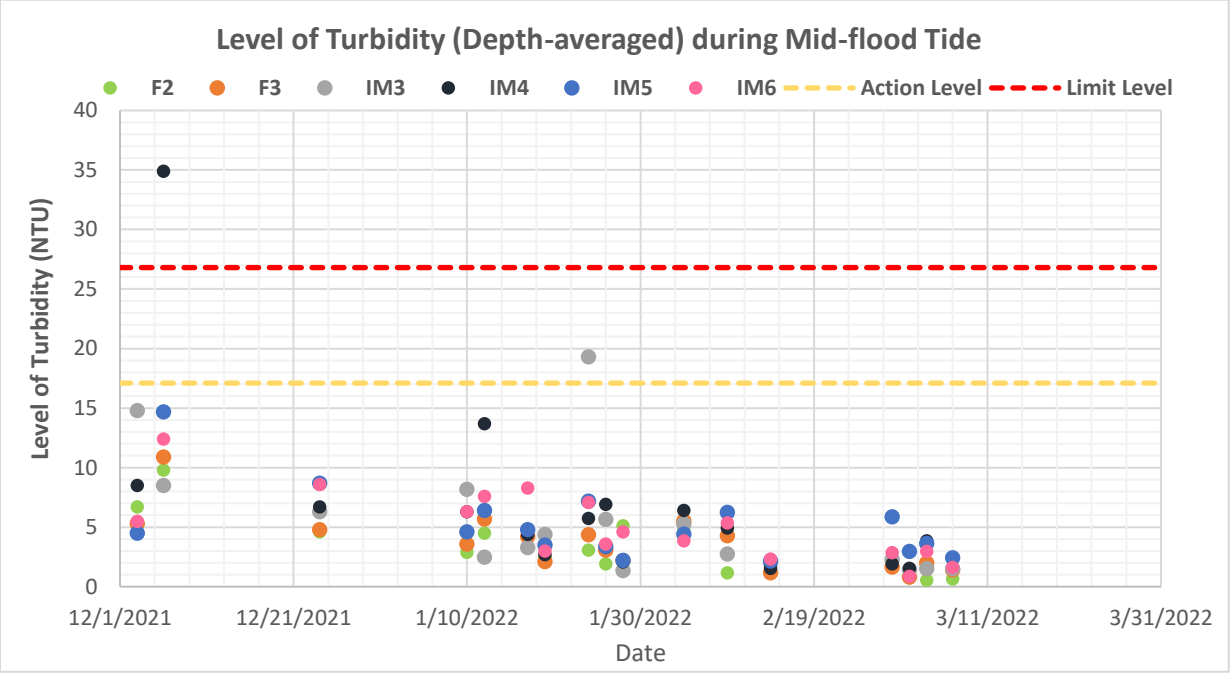

Figure F3h: Levels of Depth-averaged Turbidity (NTU) at control stations (F2-F3) and impact stations (IM3-IM6) under Group 2 during mid-flood tides in the past four months (i.e. December 2021 to March 2022)

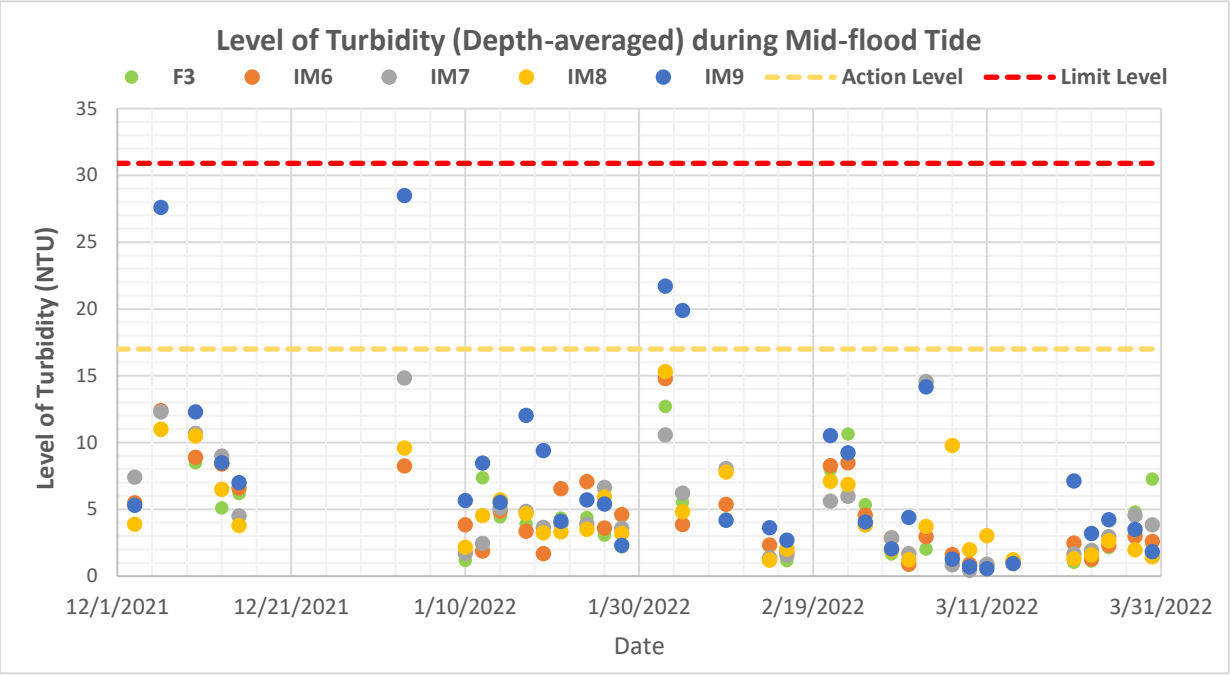

Figure F3i: Levels of Depth-averaged Turbidity (NTU) at control station (F3) and impact stations (IM6-IM9) under Group 3 during mid-flood tides in the past four months (i.e. December 2021 to March 2022)

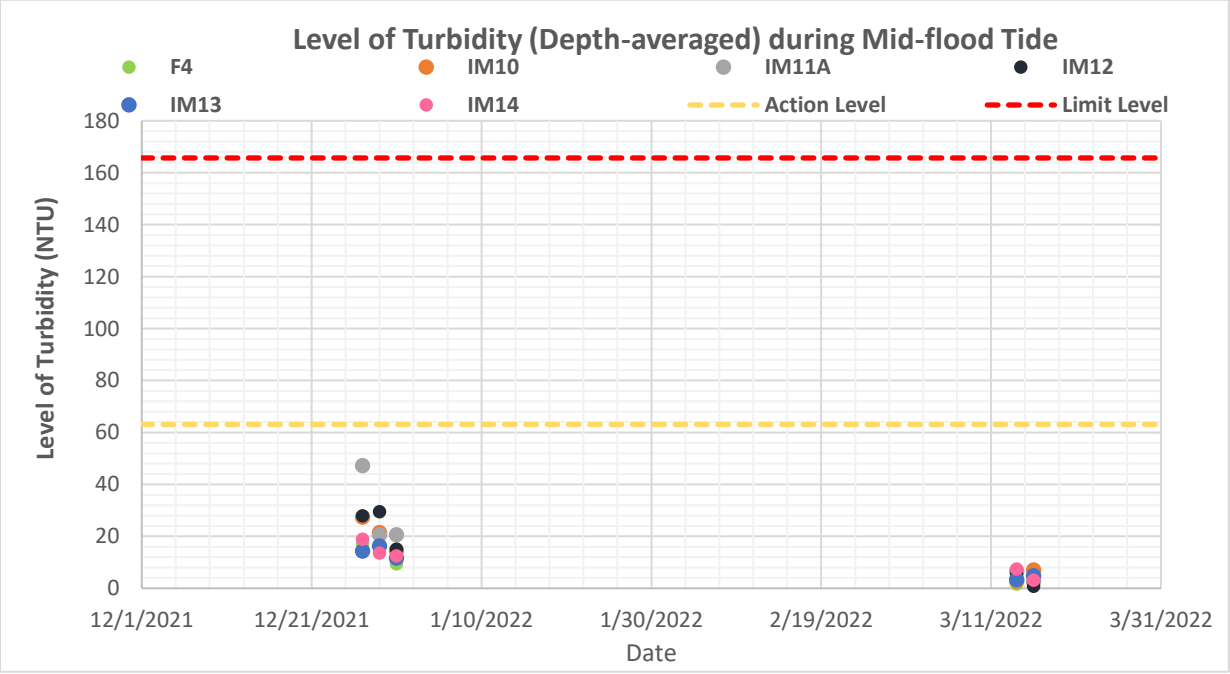

Figure F3j: Levels of Depth-averaged Turbidity (NTU) at control station (F4) and impact stations (IM10-IM14) under Group 4 during mid-flood tides in the past four months (i.e. December 2021 to March 2022)

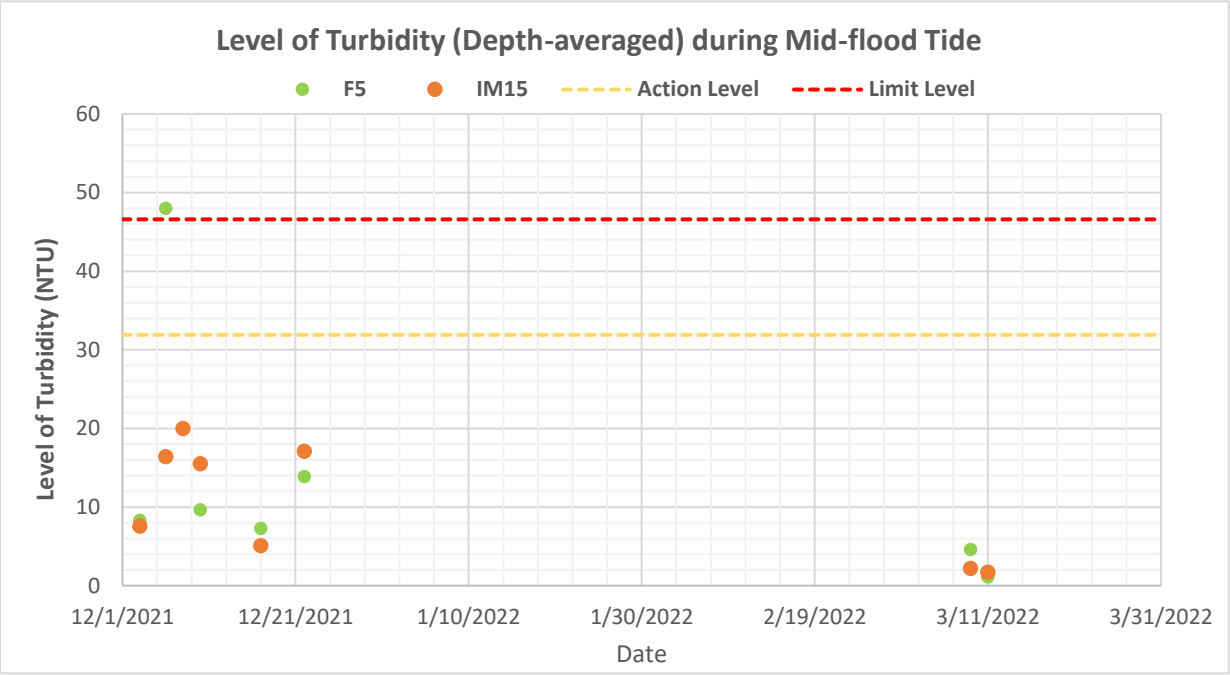

Figure F3k: Levels of Depth-averaged Turbidity (NTU) at control station (F5) and impact station (IM15) under Group 5 during mid-flood tides in the past four months (i.e. December 2021 to March 2022)

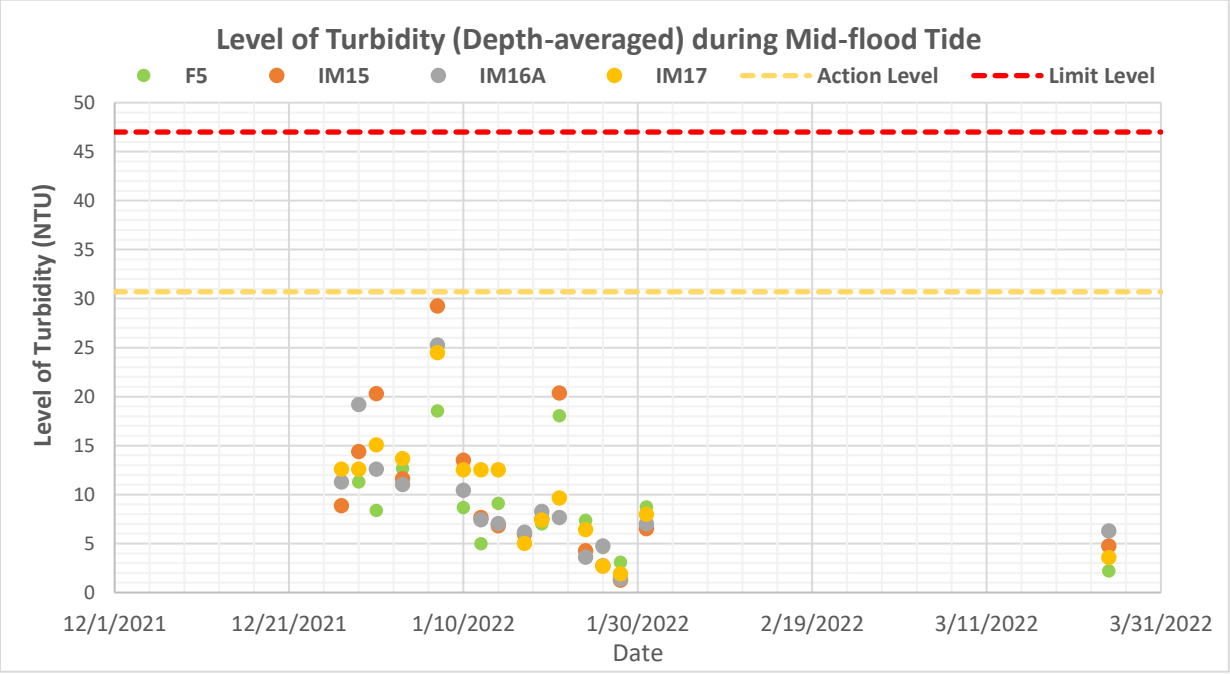

Figure F3l: Levels of Depth-averaged Turbidity (NTU) at control station (F5) and impact stations (IM15-IM17) under Group 6 during mid-flood tides in the past four months (i.e. December 2021 to March 2022)

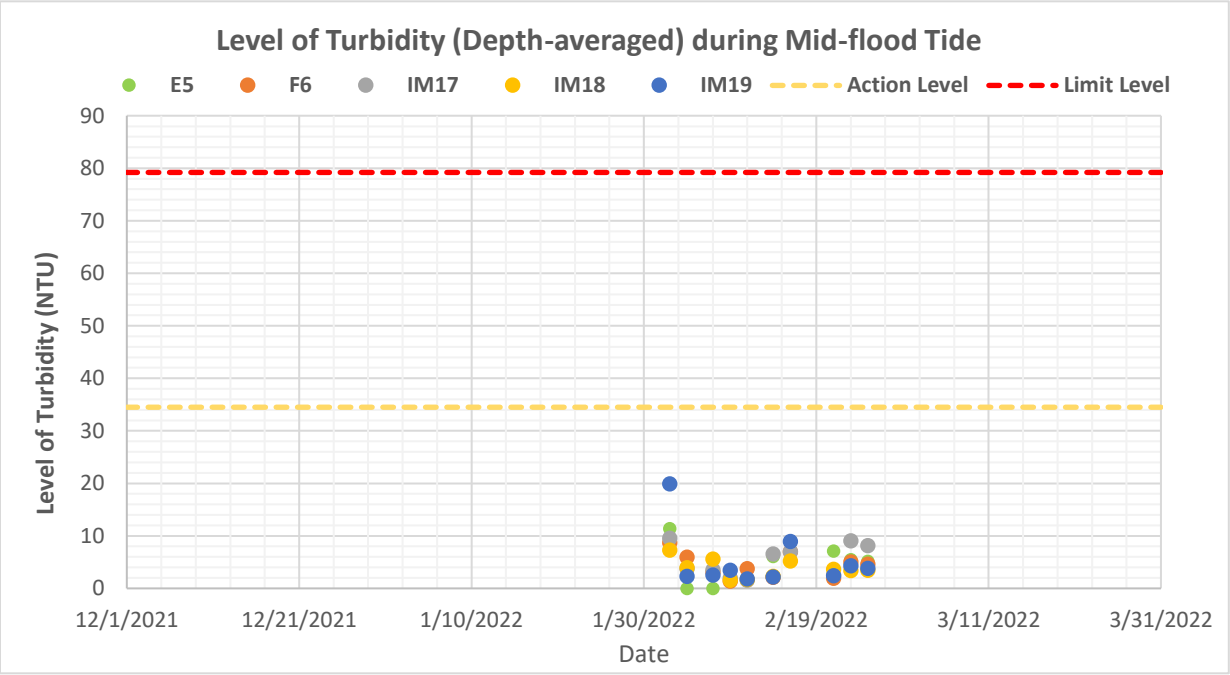

Figure F3m: Levels of Depth-averaged Turbidity (NTU) at control stations (E5, F6) and impact stations (IM17-IM19) under Group 7 during mid-flood tides in the past four months (i.e. December 2021 to March 2022)

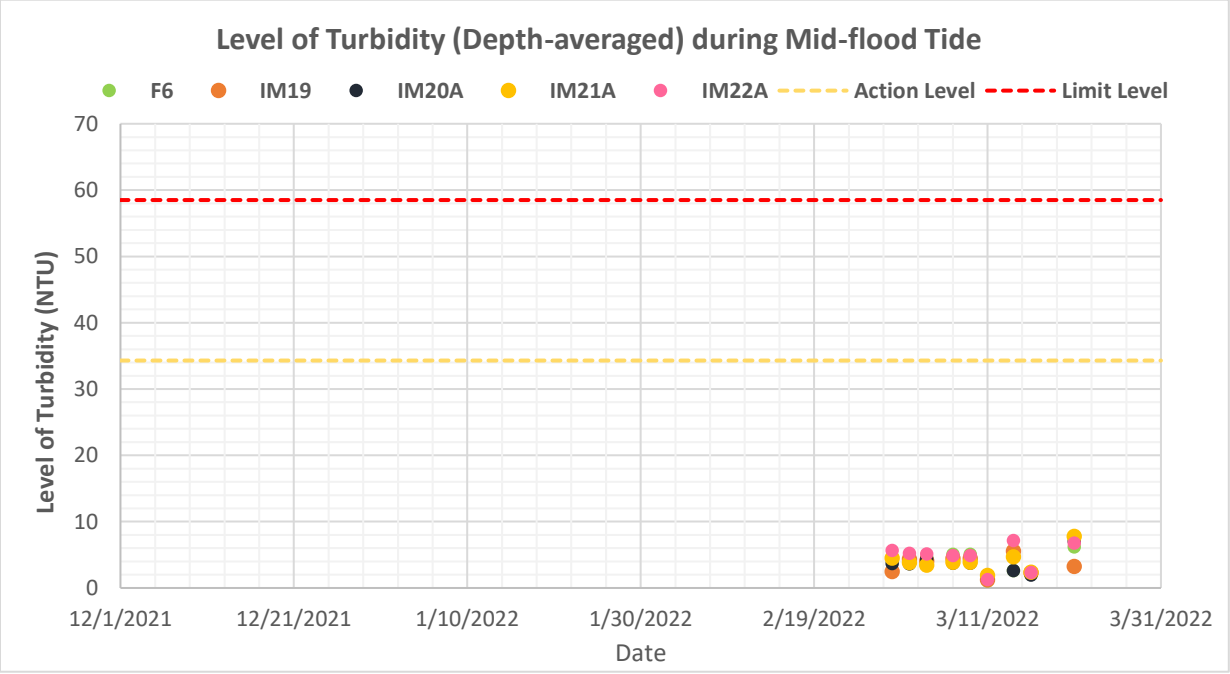

Figure F3n: Levels of Depth-averaged Turbidity (NTU) at control station (F6) and impact stations (IM19-IM22A) under Group 8 during mid-flood tides in the past four months (i.e. December 2021 to March 2022)

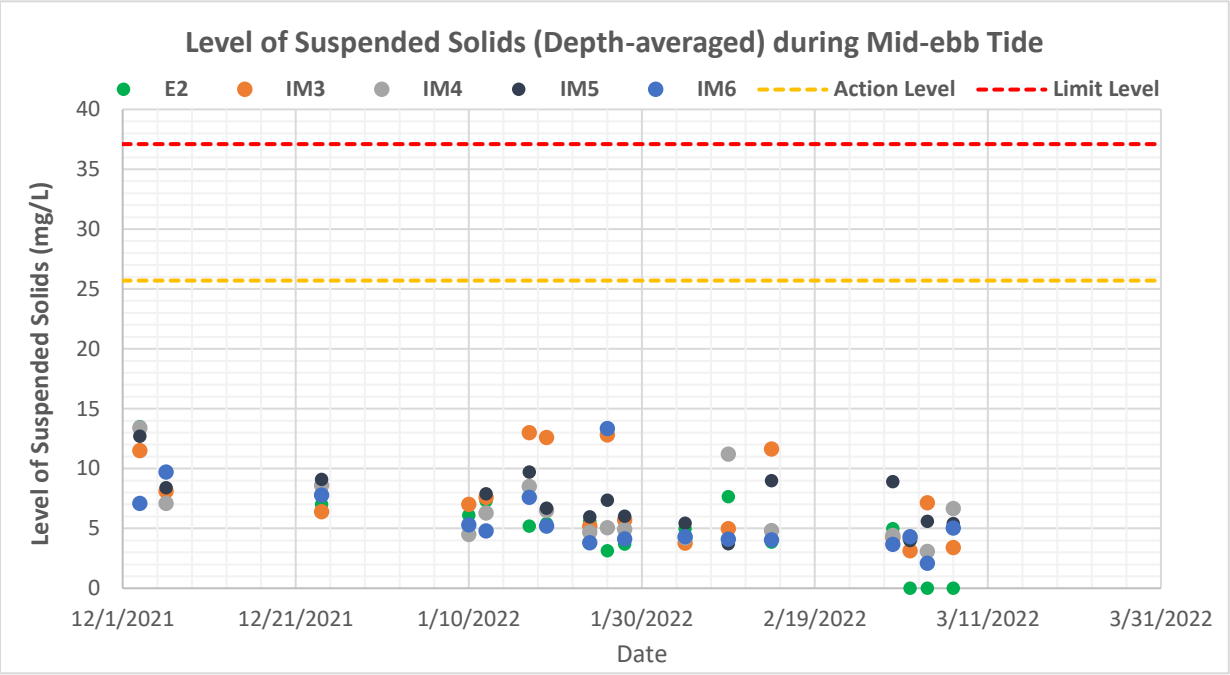

Figure F4a: Levels of Depth-averaged Suspended Solids (mg/L) at control station (E2) and impact stations (IM3-IM6) under Group 2 during mid-ebb tides in the past four months (i.e. December 2021 to March 2022)

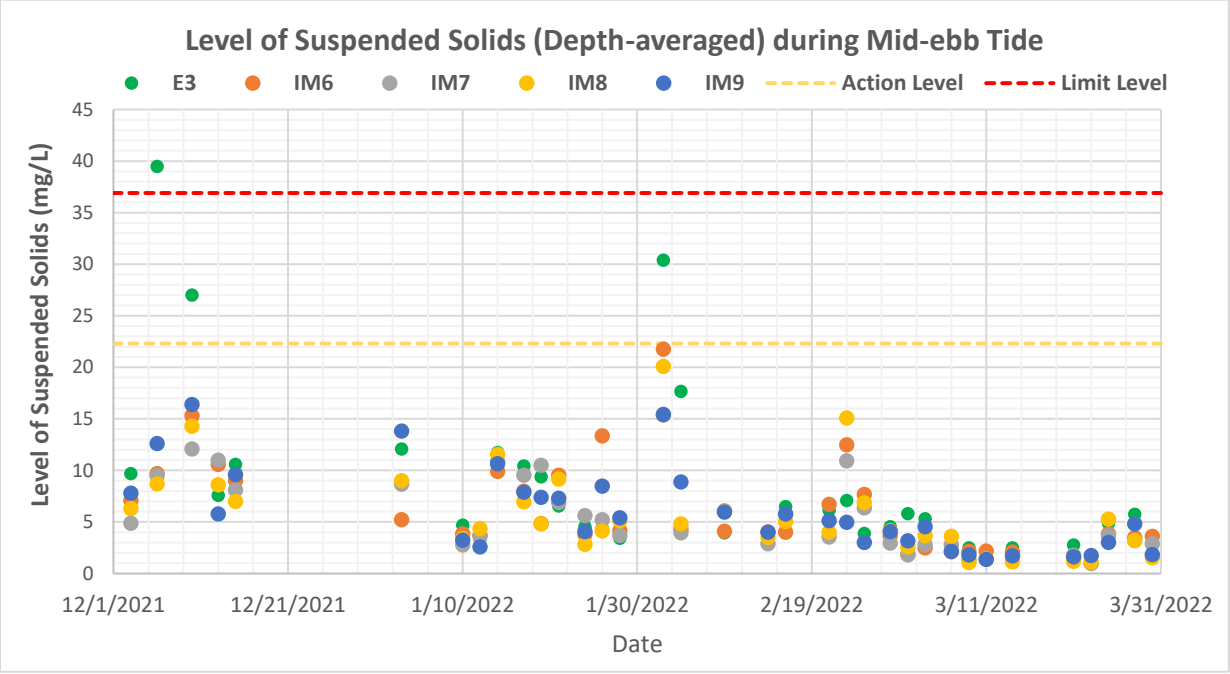

Figure F4b: Levels of Depth-averaged Suspended Solids (mg/L) at control station (E3) and impact stations (IM6-IM9) under Group 3 during mid-ebb tides in the past four months (i.e. December 2021 to March 2022)

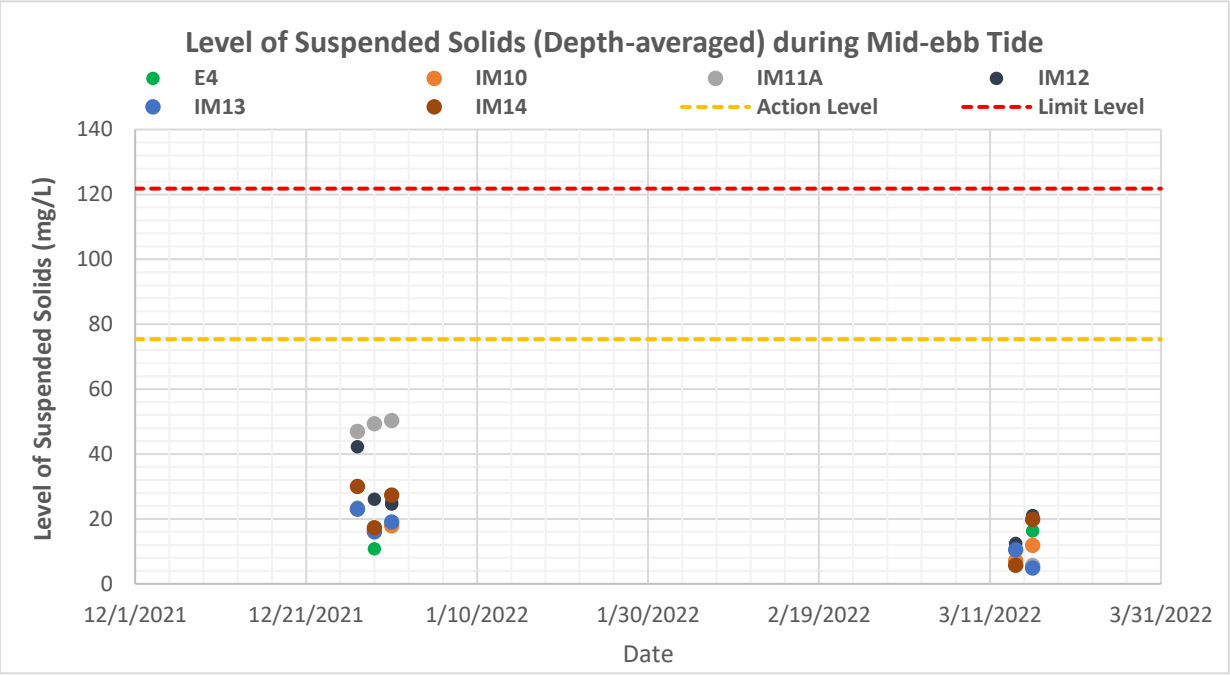

Figure F4c: Levels of Depth-averaged Suspended Solids (mg/L) at control station (E4) and impact stations (IM10-IM14) under Group 4 during mid-ebb tides in the past four months (i.e. December 2021 to March 2022)

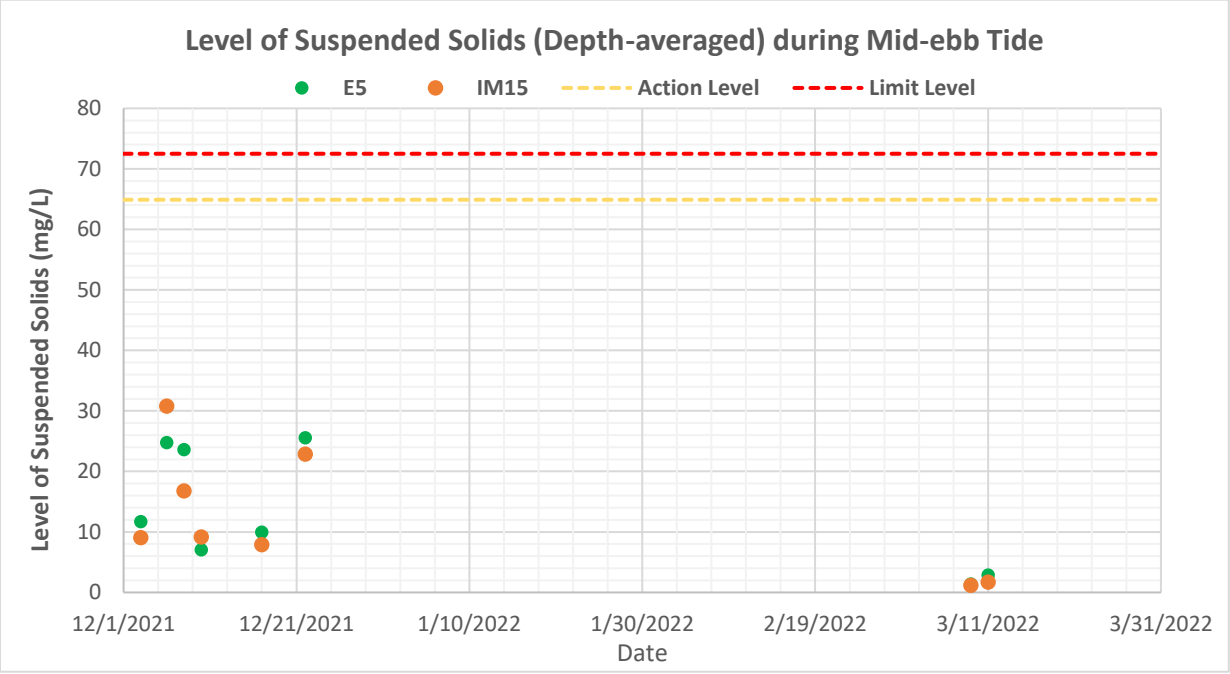

Figure F4d: Levels of Depth-averaged Suspended Solids (mg/L) at control station (E5) and impact station (IM15) under Group 5 during mid-ebb tides in the past four months (i.e. December 2021 to March 2022)

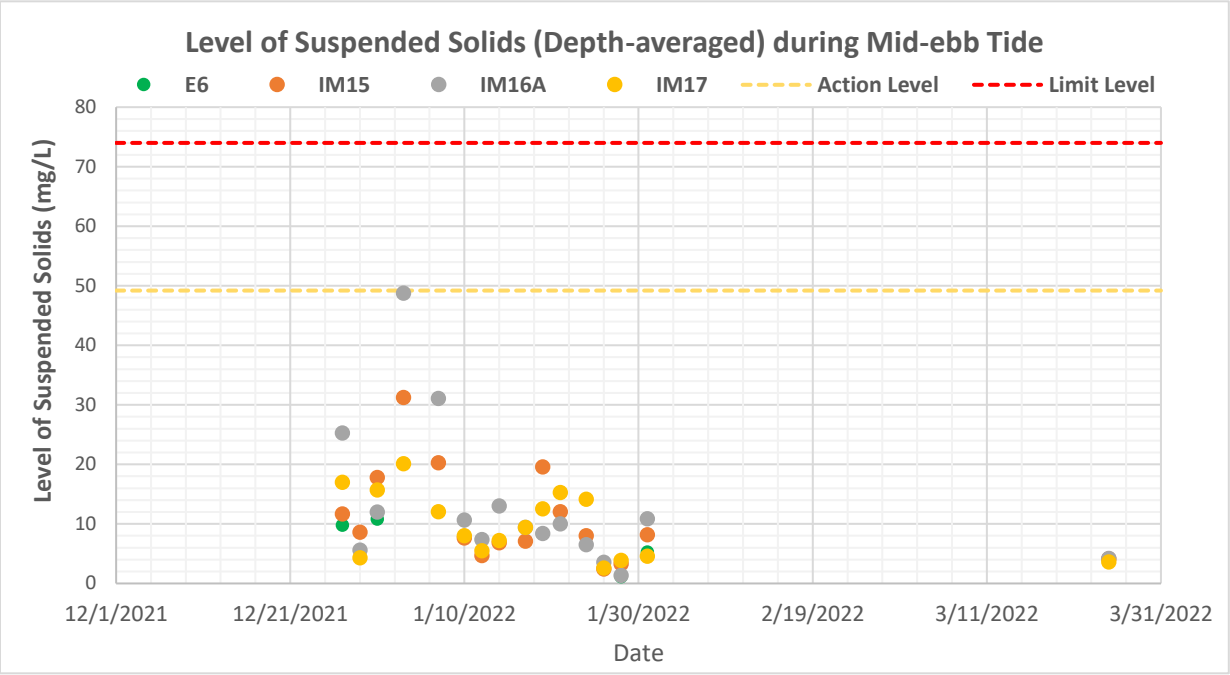

Figure F4e: Levels of Depth-averaged Suspended Solids (mg/L) at control station (E6) and impact stations (IM15-IM17) under Group 6 during mid-ebb tides in the past four months (i.e. December 2021 to March 2022)

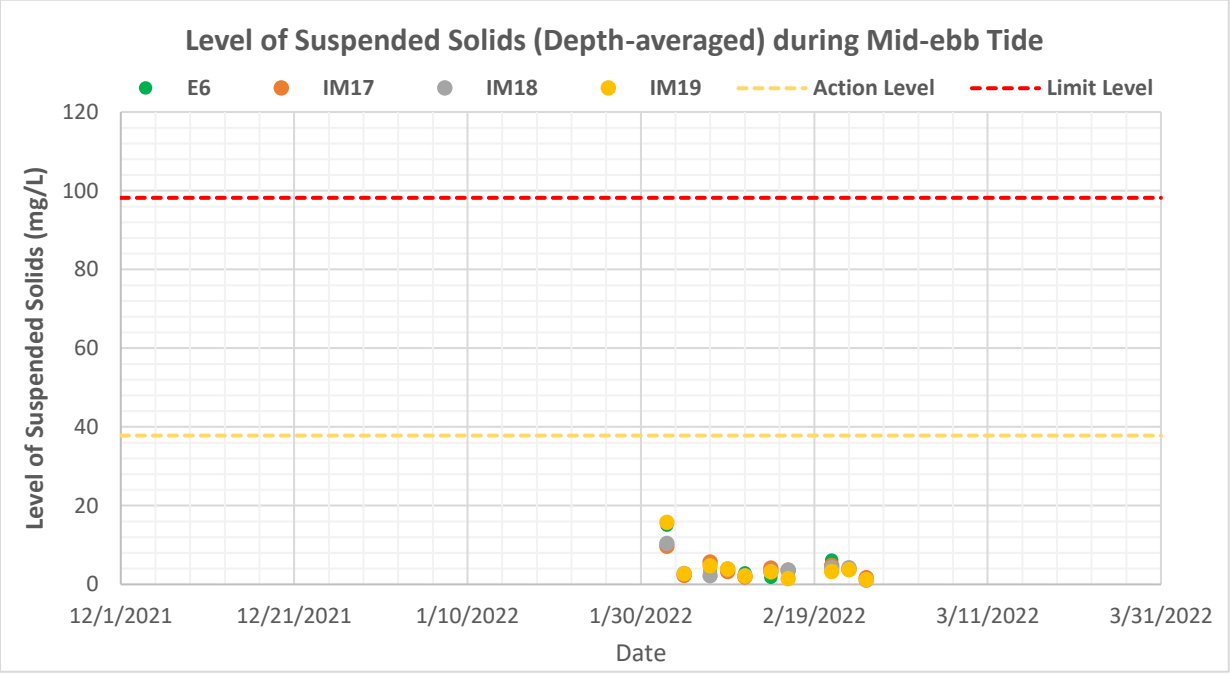

Figure F4f: Levels of Depth-averaged Suspended Solids (mg/L) at control station (E6) and impact stations (IM17-IM19) under Group 7 during mid-ebb tides in the past four months (i.e. December 2021 to March 2022)

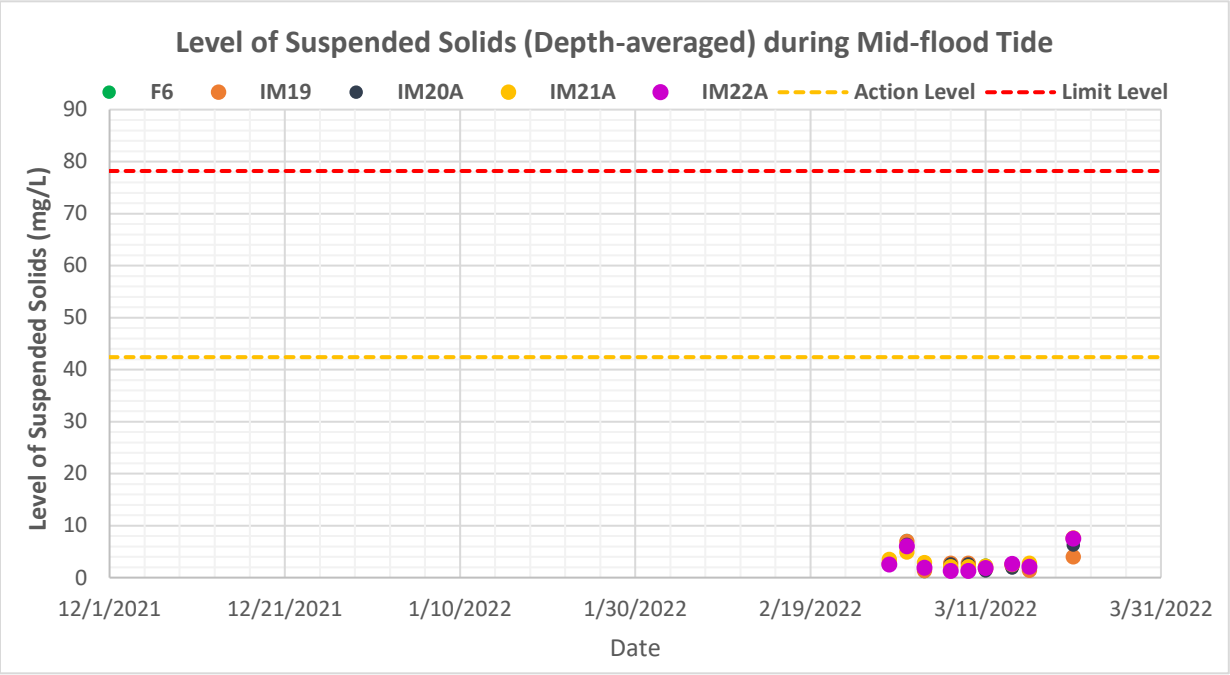

Figure F4g: Levels of Depth-averaged Suspended Solids (mg/L) at control station (E7A) and impact stations (IM19-IM22A) under Group 8 during mid-ebb tides in the past four months (i.e. December 2021 to March 2022)

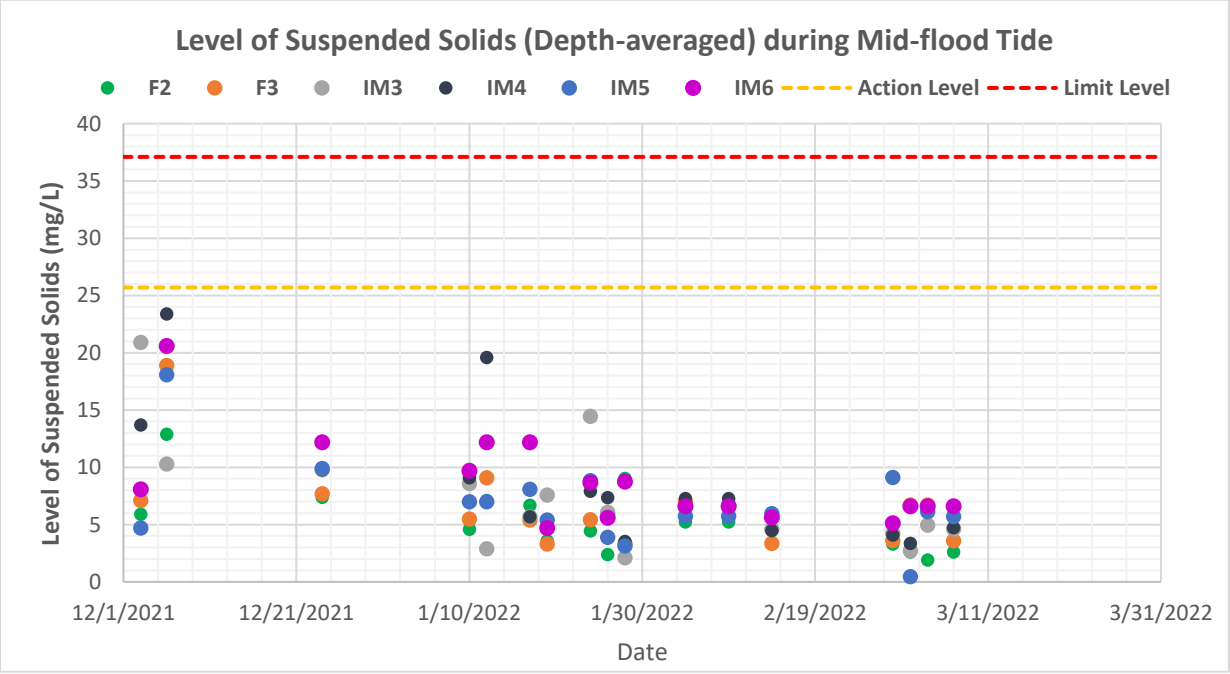

Figure F4h: Levels of Depth-averaged Suspended Solids (mg/L) at control stations (F2-F3) and impact stations (IM3-IM6) under Group 2 during mid-flood tides in the past four months (i.e. December 2021 to March 2022)

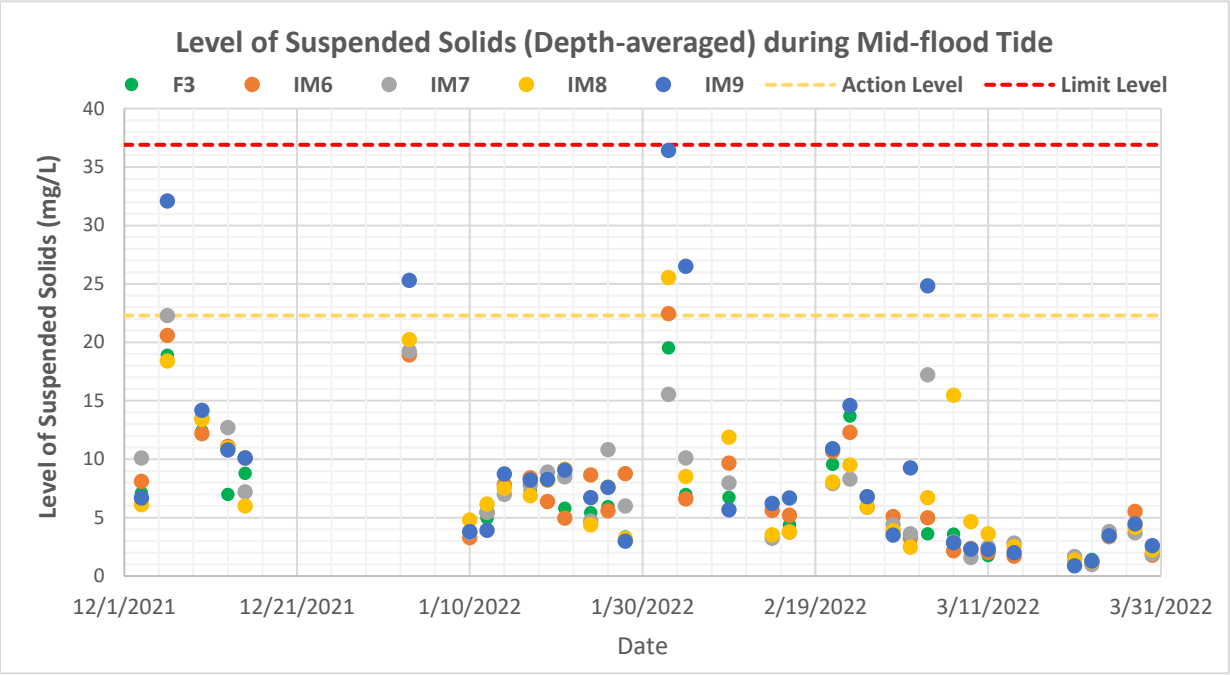

Figure F4i: Levels of Depth-averaged Suspended Solids (mg/L) at control station (F3) and impact stations (IM6-IM9) under Group 3 during mid-flood tides in the past four months (i.e. December 2021 to March 2022)

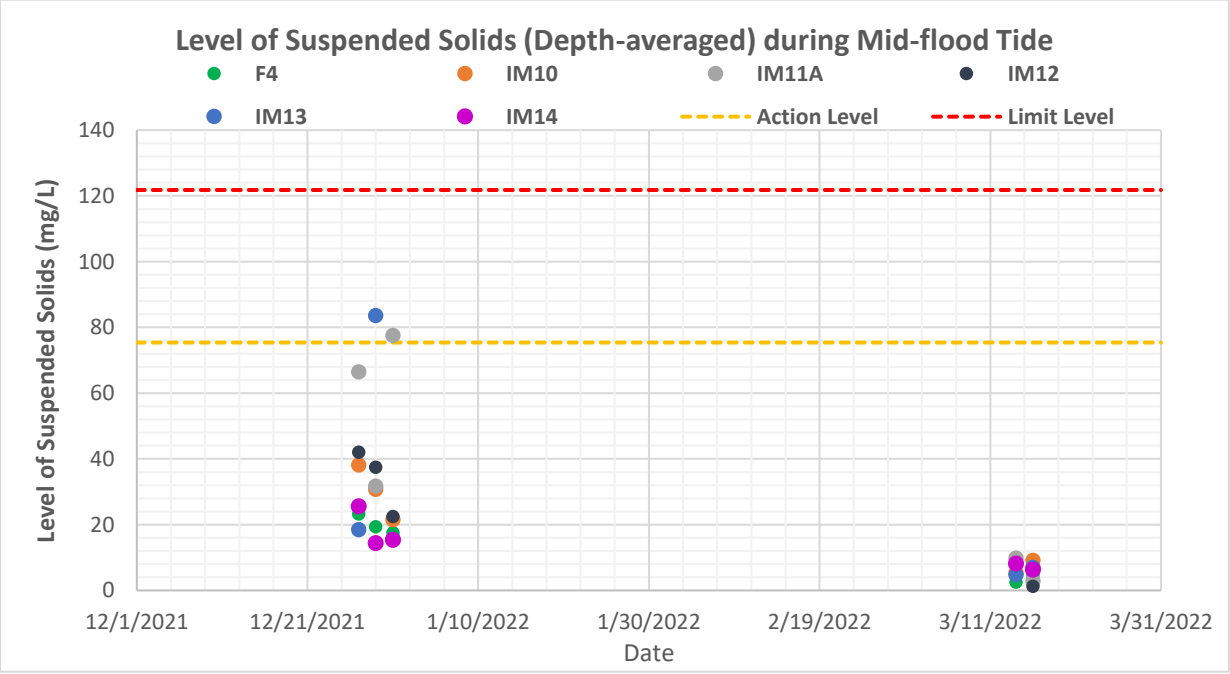

Figure F4j: Levels of Depth-averaged Suspended Solids (mg/L) at control station (F4) and impact stations (IM10-IM14) under Group 4 during mid-flood tides in the past four months (i.e. December 2021 to March 2022)

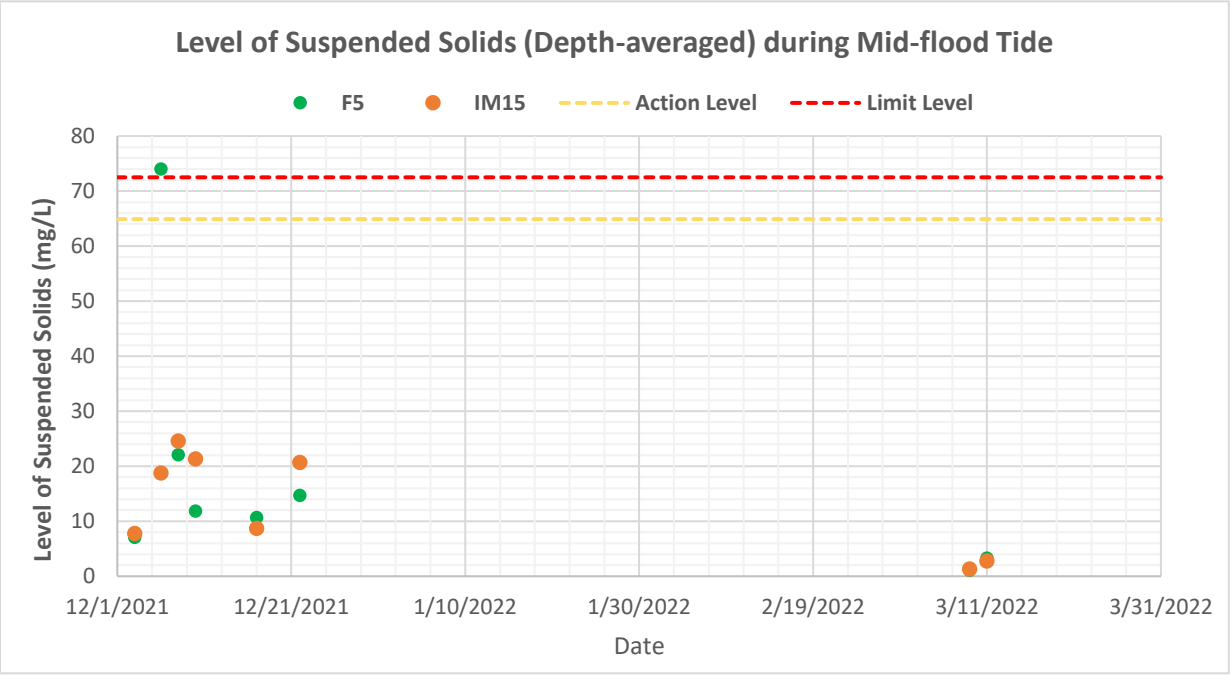

Figure F4k: Levels of Depth-averaged Suspended Solids (mg/L) at control station (F5) and impact station (IM15) under Group 5 during mid-flood tides in the past four months (i.e. December 2021 to March 2022)

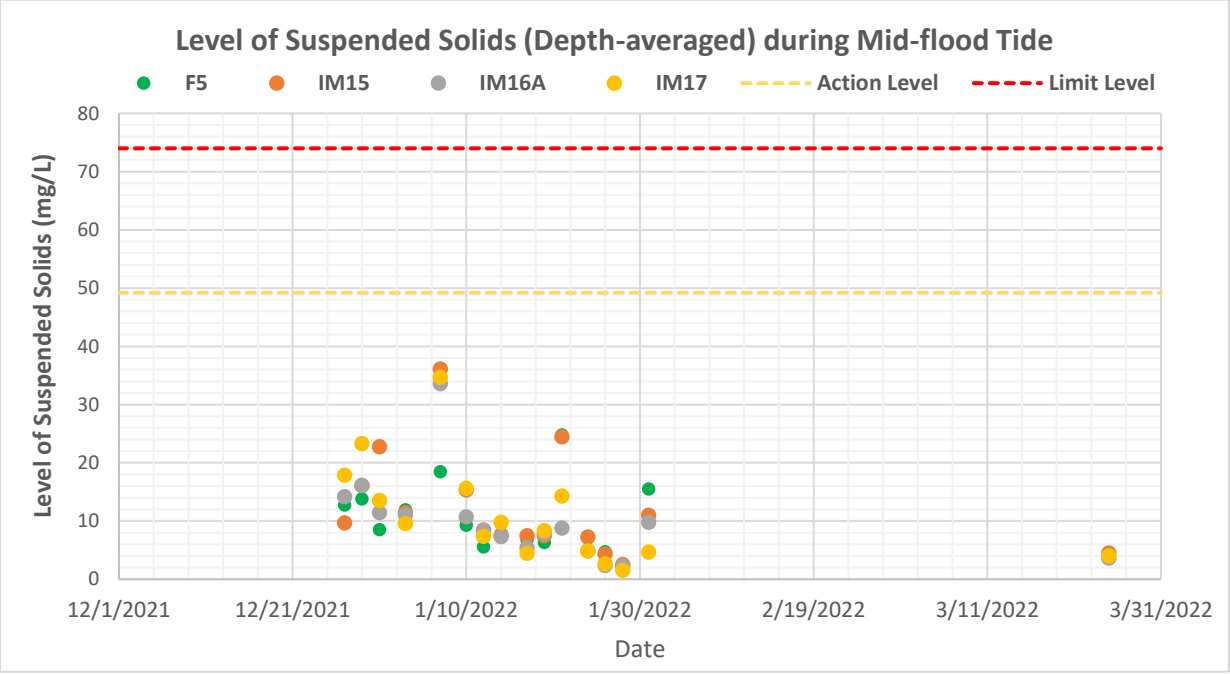

Figure F4l: Levels of Depth-averaged Suspended Solids (mg/L) at control station (F5) and impact stations (IM15-IM17) under Group 6 during mid-flood tides in the past four months (i.e. December 2021 to March 2022)

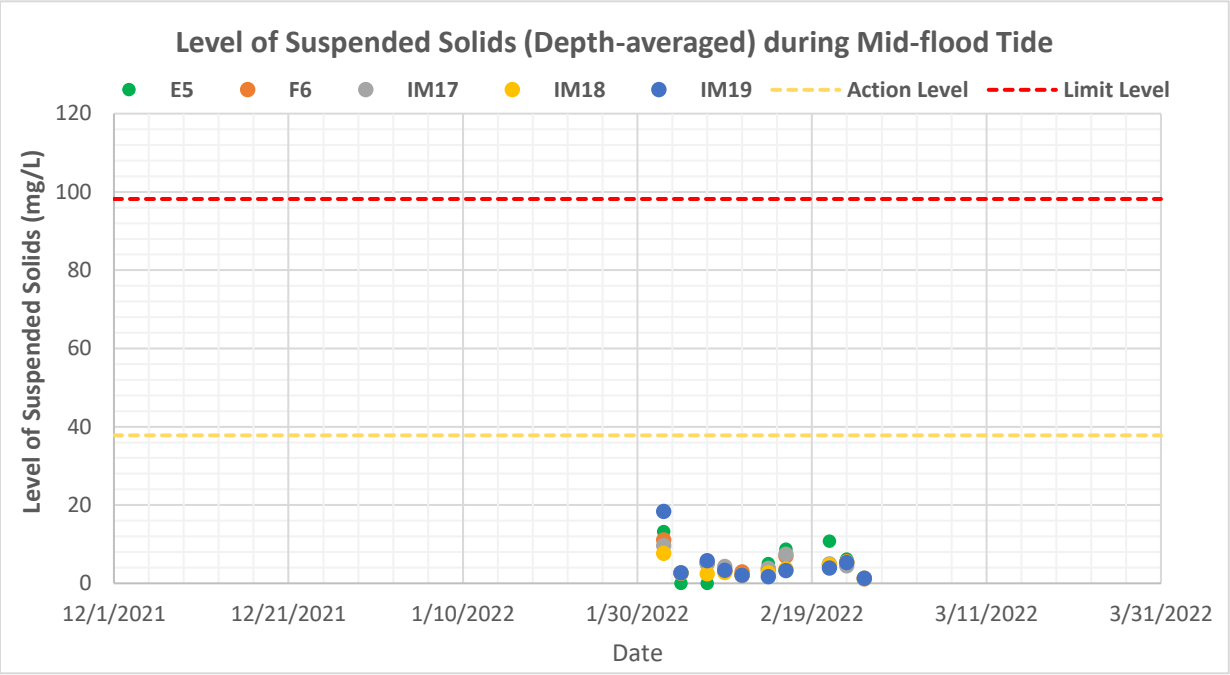

Figure F4m: Levels of Depth-averaged Suspended Solids (mg/L) at control stations (E5, F6) and impact stations (IM17-IM19) under Group 7 during mid-flood tides in the past four months (i.e. December 2021 to March 2022)

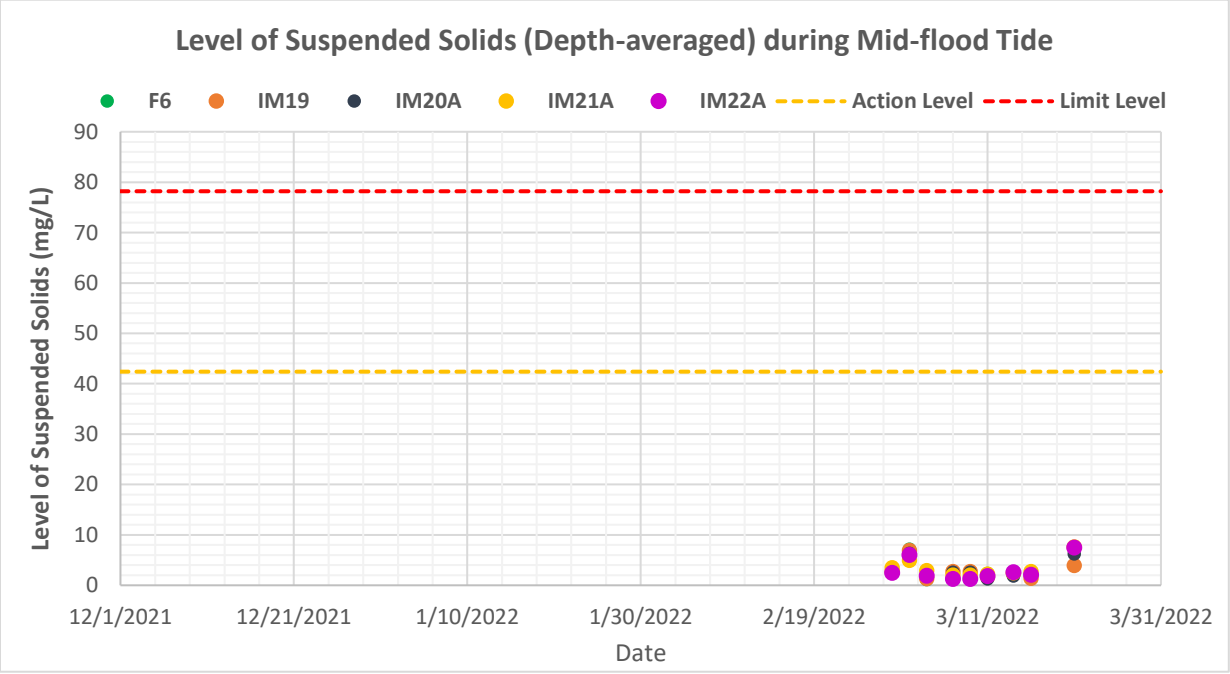

Figure F4n: Levels of Depth-averaged Suspended Solids (mg/L) at control station (F6) and impact stations (IM19-IM22A) under Group 8 during mid-flood tides in the past four months (i.e. December 2021 to March 2022)

Annotations:

- Key marine-based activities of the Project undertaken for construction of BPPS Pipeline included:
  i. post-trenching works in terms of jetting operation in the vicinity of marine water quality monitoring stations under Group 3 on 1 to 4, 9 to 30 January, 3 to 10, 12 to 16, 18 to 24, 26, 28 February, 1 to 14 and 17 to 31 March 2022;
  ii. post-trenching works in terms of jetting operation in the vicinity of marine water quality monitoring stations under Group 4 on 13 to 18 March 2022;
  iii. post-trenching works in terms of jetting operation in the vicinity of marine water quality monitoring stations under Group 5 on 7 to 12 March 2022;
  iv. post-trenching works in terms of jetting operation in the vicinity of marine water quality monitoring stations under Group 6 on 1 to 4, 7 to 12, 14 to 30 January and 24 to 26 March 2022;
  v. post-trenching works in terms of jetting operation in the vicinity of marine water quality monitoring stations under Group 7 on 1 to 17 and 23 to 25 February 2022; and
  vi. post-trenching works in terms of jetting operation in the vicinity of marine water quality monitoring stations under Group 8 on 26 to 28 February and 1 to 22 March 2022.
- Key marine-based activities of the Project undertaken for construction of LPS Pipeline included:
  i. post-trenching works in terms of jetting operation in the vicinity of marine water quality monitoring stations under Group 2 on 8 to 19, 23 to 26, 28 to 30 January, 4, 5, 9 to 14, 27, 28 February and 1 to 6 March 2022 (1).
- Marine water quality monitoring was conducted at monitoring stations i) under Group 2 on 10, 12, 14, 17, 19, 24, 26, 28 January, 4, 9, 11, 14, 28 February, 2, 4 and 7 March 2022 (2)(3); ii) under Group 3 on 3, 10, 12, 14, 17, 19, 21, 24, 26, 28 January, 2, 4, 7, 9, 11, 14, 16, 18, 21, 23, 25, 28 February, 2, 4, 7, 9, 11, 14, 21, 23, 25, 28 and 30 March 2022 (3)(4)(5); iii) under Group 4 on 14 and 16 March 2022 (6); iv) under Group 5 on 9 and 11 March 2022; v) under Group 6 on 3, 7, 10, 12, 14, 17, 19, 21, 24, 26, 28, 31 January and 25 March 2022 (7); vi) under Group 7 on 2, 4, 7, 9 ,11, 14, 16, 18, 21, 23, 25 and 28 February 2022 (5); and vii) under Group 8 on 28 February, 2, 4, 7, 9, 11, 14, 16 and 21 March 2022 (6).
- Weather conditions during the monitoring period ranged from fine to rainy, with sea conditions ranged from calm to rough. Detailed meteorological conditions can be referred to *Annex G of the associated Monthly EM&A Reports* for the reporting period.
- No special phenomena and/or other factors which might affect the monitoring results were observed and recorded during the monitoring period.

Notes:

(1) Only preparation works for marine jetting operation were conducted between 8 and 19 January 2022.
(2) Marine water quality monitoring for Group 2 scheduled on 14 January 2022 was cancelled due to adverse weather.
(3) Marine water quality monitoring for Group 2 and Group 3 scheduled on 11 February 2022 was cancelled as the sampling team had to arrange COVID-19 tests and conduct disinfection on the survey vessel on 10-11 February 2022 due to potential COVID-19 confirmed cases on the survey vessel.
(4) Marine water quality monitoring for Group 3 scheduled on 7 February 2022 was cancelled due to adverse weather.
(5) Marine water quality monitoring for Group 3 and Group 7 scheduled on 18 February 2022 was cancelled due to adverse weather.
(6) Marine water quality monitoring for Group 3, Group 4 and Group 8 scheduled on 18 March 2022 was cancelled due to adverse weather.
(7) Marine water quality monitoring was scheduled to be carried out on 31 January 2022 for the 24-hr marine jetting operation for 30 January 2022 which was completed during daytime period of the next day.

ANNEX G

PAM DEPLOYMENT STATISTICS

Annex G: **Summary deployment data and statistics on detection of finless porpoises for HKOLNG EM&A construction phase monitoring study**

(Note: "Days": number of logged days the CPOD was on and recording; "DPD% of days": detection positive days as a percentage of logged days; DPM: detection positive minutes, minutes where at least one porpoise train was detected; "Mins on": number of minutes the CPOD was on a logging data; % Time lost: percentage of time lost because the minute click limit has been reached and no data was recorded for that minute)

SITE	POD#	Start	End	Days	DPD % of days	DPM	DPM/day	% FP DPM	% Time lost
#1 (TAI A CHAU E)	3455	20-Nov-20	10-Mar-21	110.0	100.00%	15387	139.85	0.00%	0.00%
#1 (TAI A CHAU E)	3455	4-Jul-21	5-Nov-21	124.0	99.20%	13255	106.88	0.00%	0.00%
#2 (FSRU-W)	3456	20-Nov-20	30-Mar-21	130.0	100.00%	24221	186.36	0.00%	0.00%
#2 (FSRU-W)	3456	4-Jul-21	26-Oct-21	113.9	100.00%	14884	130.72	0.00%	0.00%
#3 (FSRU-E)	3457	20-Nov-20	29-Mar-21	128.9	100.00%	26034	202.04	0.00%	0.00%
#3 (FSRU-E)	3457	3-Jul-21	5-Nov-21	125.0	100.00%	10754	86.01	0.00%	0.00%
#4 (FSRU-N)	3458	22-Dec-20	29-Mar-21	97.0	100.00%	24728	254.90	0.00%	0.00%
#4 (FSRU-N)	3458	3-Jul-21	6-Nov-21	125.9	97.64%	9247	73.46	2.00%	0.00%
#5 (SHEK KWU CHAU)	3459	22-Dec-20	29-Mar-21	97.1	100.00%	7575	78.00	1.00%	0.00%
#5 (SHEK KWU CHAU)	3459	3-Jul-21	6-Nov-21	125.9	66.67%	1685	13.38	1.00%	0.00%
TOTAL				**1177.7**		**147770**			