

Capco 青山發電有限公司
Castle Peak Power Company Limited

港燈
HK Electric

HKLTL

Hong Kong Offshore LNG Terminal Project

Annual Environmental Monitoring and Audit (EM&A) Review Report for October 2020 to September 2021

11 April 2022

Project No.: 0505354

Document details	
Document title	Hong Kong Offshore LNG Terminal Project
Document subtitle	Annual Environmental Monitoring and Audit (EM&A) Review Report for October 2020 to September 2021
Project No.	0505354
Date	11 April 2022
Version	0
Author	RY
Client Name	CAPCO, HK Electric, HKLTL

Document history

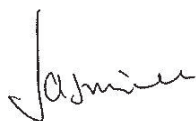
	Revision	Author	Reviewed by	ERM approval to issue		Comments
				Name	Date	
	0	RY	RC	JN	11/4/2022	N/A

Signature Page

11 April 2022

Hong Kong Offshore LNG Terminal Project

Annual Environmental Monitoring and Audit (EM&A) Review Report for
October 2020 to September 2021



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**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 :	Annual Environmental Monitoring and Audit (EM&A) Review Report for October 2020 to September 2021
Date of Report:	11 April 2022
Date prepared by ET:	11 April 2022
Date received by IEC:	11 April 2022

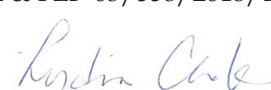
Reference EP Requirement

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: 11 April 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: 11 April 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 Annual EM&A Review Report presenting the EM&A works carried out during the period from 23 September 2020 to 30 September 2021 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	
Marine Mammal Monitoring (vessel-based line transect survey)	24
Passive Acoustic Monitoring (C-POD deployment)	On-going
Marine Mammal Exclusion Zone Monitoring	During percussive piling works for construction of the Jetty
Environmental Site Inspection	5
For FEP-02/558/2018/A	
Marine Water Quality Monitoring	34
Marine Mammal Exclusion Zone Monitoring	During dredging / jetting operation for construction of LPS Pipeline
Pilot Test on the Efficiency of Silt Curtain System – Cage-type Silt Curtain for Dredging Operation	1
Environmental Site Inspection	10
For FEP-03/558/2018/B	
Marine Water Quality Monitoring	32

Activities	Number of Sessions
Marine Mammal Exclusion Zone Monitoring	During dredging / jetting operation for construction of BPPS Pipeline
Pilot Test on the Efficiency of Silt Curtain System – Cage-type Silt Curtain for Dredging Operation	1
Environmental Site Inspection	39
<i>For FEP-02/558/2018/A and FEP-03/558/2018/B</i>	
Pilot Test on the Efficiency of Silt Curtain System – Cage-type 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.

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 no environmental complaints, 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 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. The monitoring and audit activities conducted in the reporting period have been reviewed and are considered effective. As such, no change to the monitoring methodology is recommended. Based on the EM&A findings for the reporting period, the environmental performance for the construction of the Project is generally in line with the EIA predictions and considered acceptable.

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**.

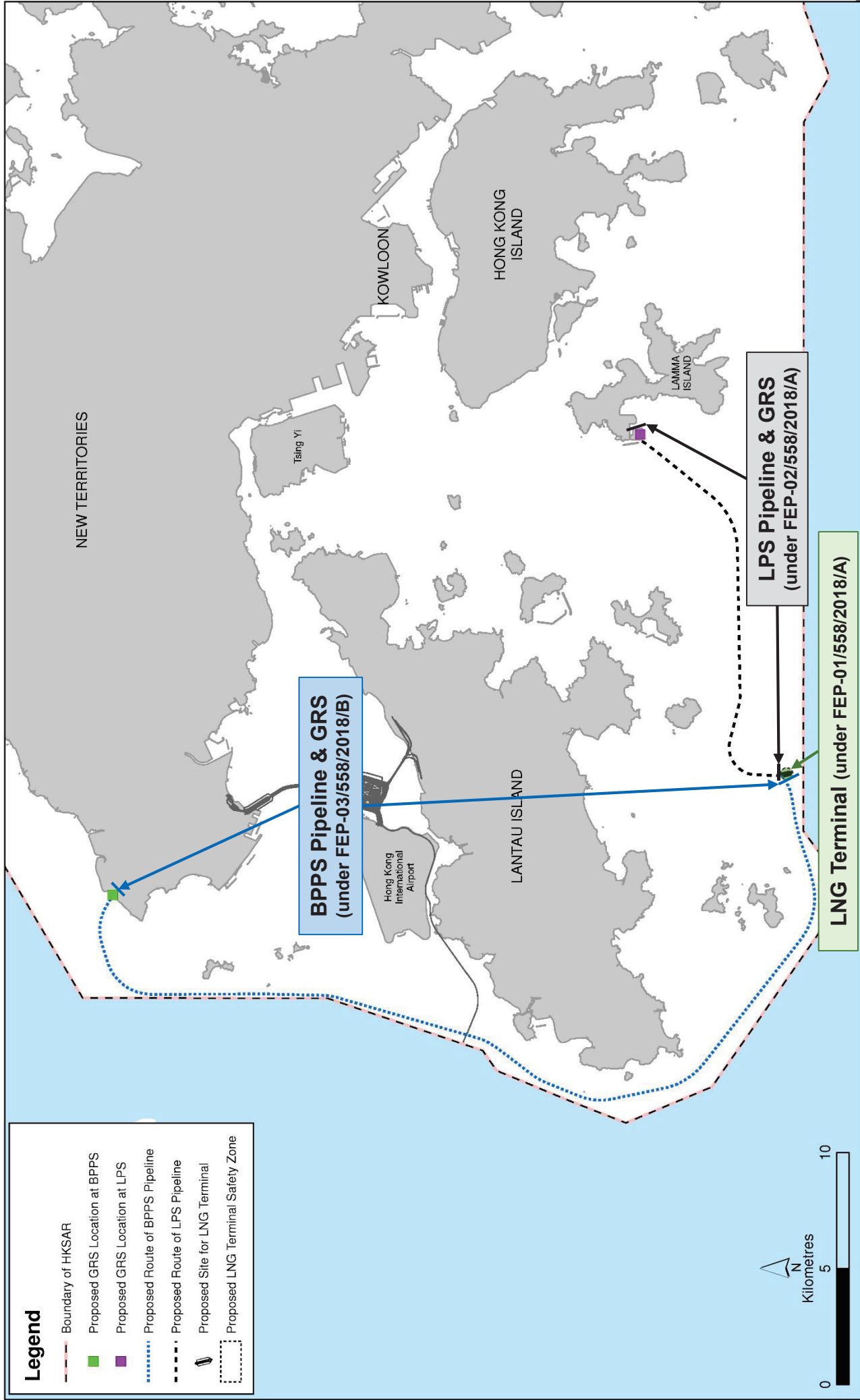
1.2 Scope of the EM&A Report

This is the Annual EM&A Review Report for the Project which summarises the key findings of the EM&A programme during the reporting period from 23 September 2020 to 30 September 2021 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

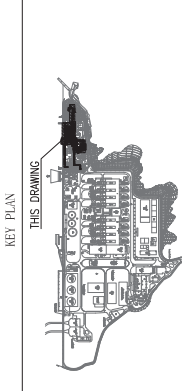
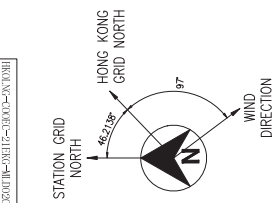
The organisation structure of the Project is shown in **Annex A**. The key personnel and contact details are summarised in **Table 1.1** below.

-
- (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.



Indicative Location of Key Project Components

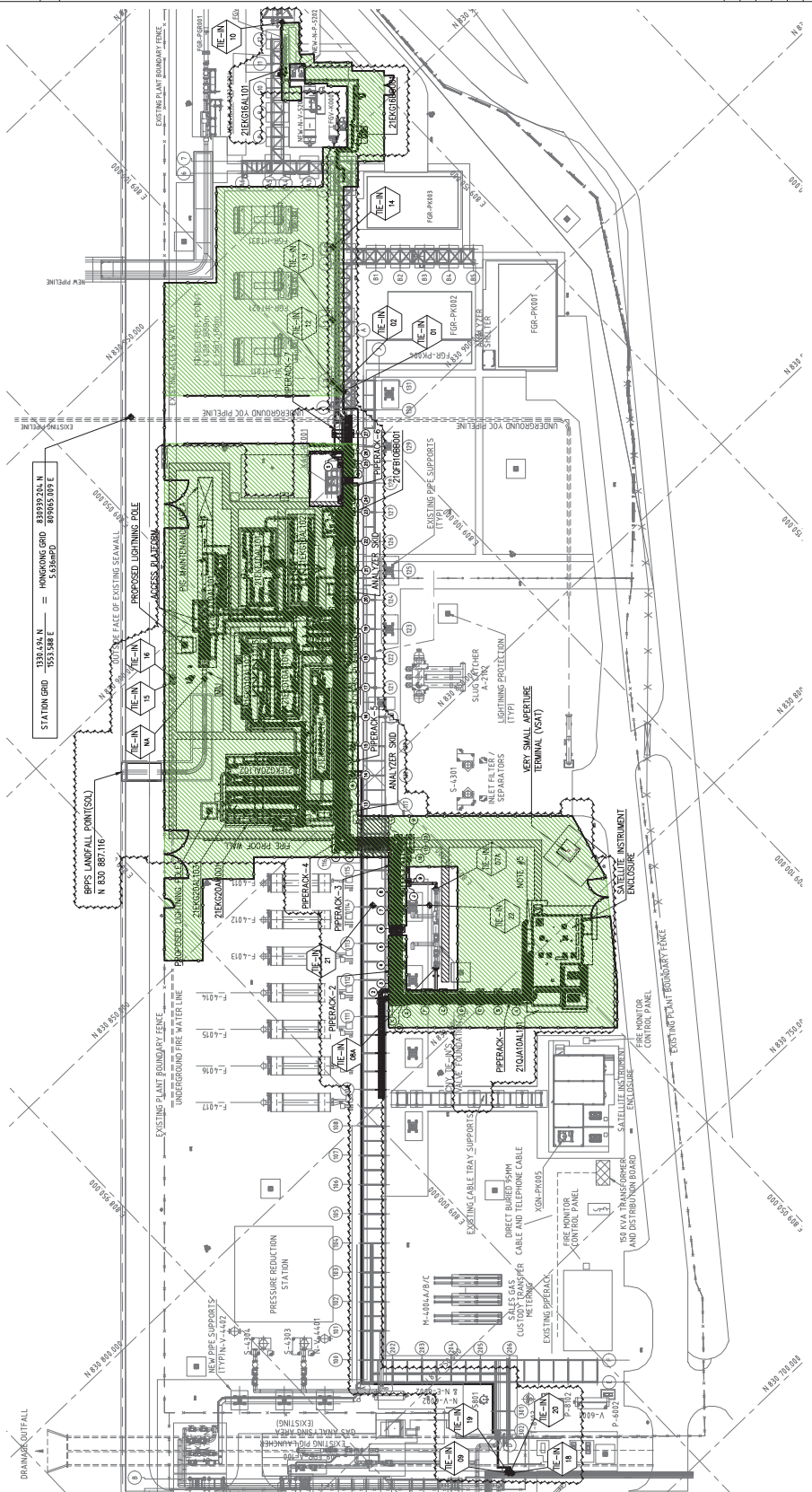
Figure 1.1



GENERAL NOTES

- ALL DIMENSIONS ARE IN METERS. ELEVATIONS & COORDINATES ARE IN "m".
- NOMINAL GRADE (PIPING DATUM) 0.000m = NOMINAL GRADE (HONG KONG DATUM) 5.700m.
- RELATIONSHIP OF HONG KONG GRID TO STATION GRID.
H.K. GRID 808.950,493 E = STATION GRID 0.000 E
828.896,966 N = STATION GRID 0.000 N
- PG RECEIVER DESIGNED FOR INTELLIGENT PIGGING.
- EXISTING HOSECELL CABINET AT NEW SITE BUILDING SHALL BE RELOCATED.

- LEGEND
- ██████ ESCAPE / ACCESS CLEAR HEIGHT OF NOT LESS THAN 1.925m AND CLEAR HEIGHT OF 2.3m.
 - ▭ NEW BPPS GRS SCOPE OF WORK
 - ▨ SITE BOUNDARY AT THE BPPS GRS

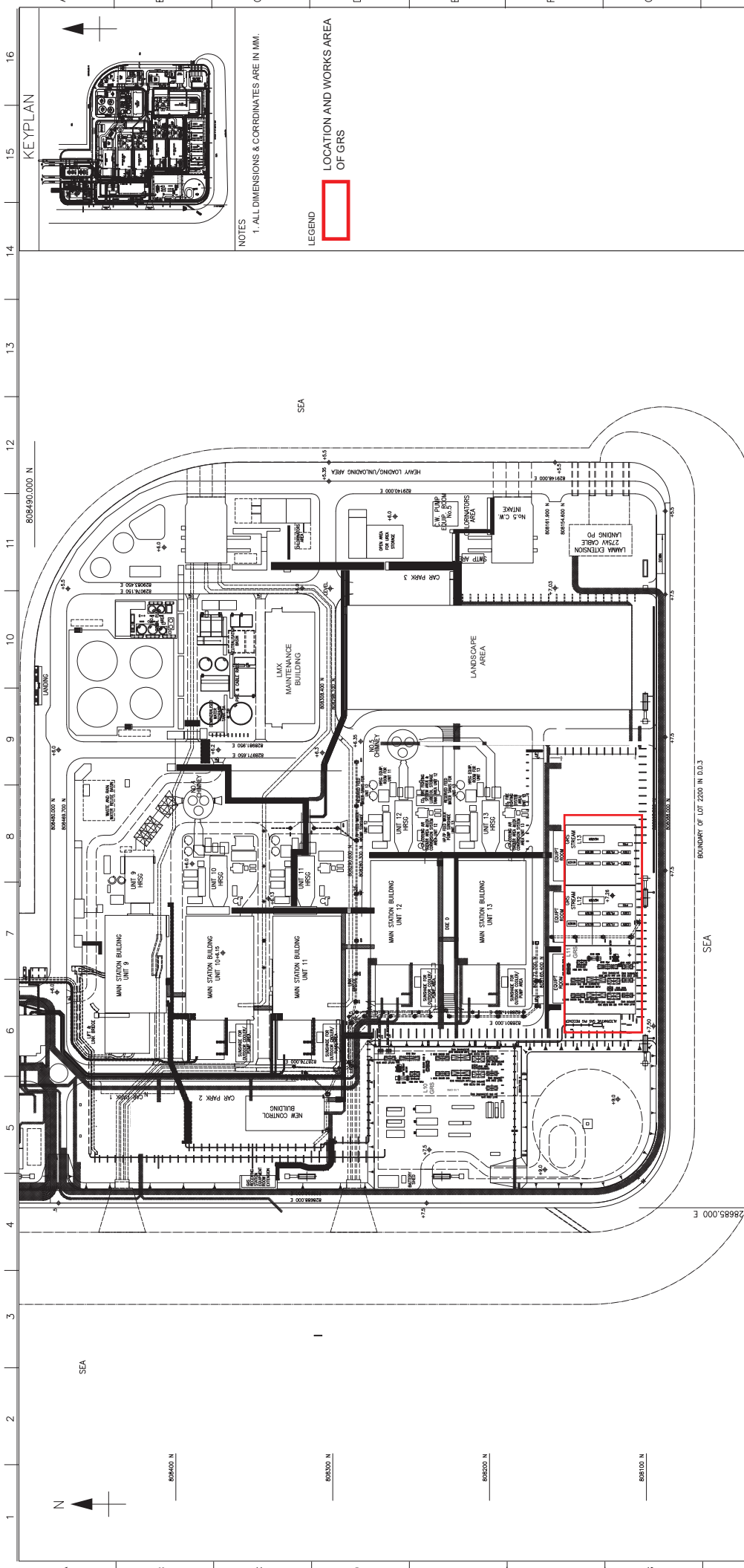


IRKUM-0000-0122-0122-01	DWG. NO.	IRKUM GRS - EQUIPMENT LIST	DRAWING TITLE
-------------------------	----------	----------------------------	---------------

REFERENCE DOCUMENTS

No.	DATE	DESCRIPTION	BY	APP'D	CLP
1	20/10/2024	ISSUED FOR REVIEW	ARR	ASH	MF
2	20/10/2024	INTERNALLY APPROVED	ARR	ASH	MF
3	20/10/2024	DISCIPLINE INTERNAL CHECK	ARR	ASH	MF
4	20/10/2024		BY	CH K.	

<p>CLIENT: AMCON OFFSHORE</p> <p>ENGINEERING: AMECON ENGINEERING CO., LTD.</p>	SIGNATURE	DATE	PROJECT	JOB No.
	DESIGNED	20/10/2024	IRKUM GRS - OFFSHORE LNG TERMINAL PROJECT	2025-1002
	CHECKED	20/10/2024	PACKAGE B	CERTIF. No.
	REVIEWED	20/10/2024		AM12002810
	APPROVED	20/10/2024		SCALE 0:A0
DRAWING TITLE: IRKUM GRS - OVERALL PLOT PLAN GRS			SCALE	1 : 1000
			FIGURE	Figure 1.2
			DWG. No.	IRKUM-0000-0122-0112
			REV.	C



NOTES
1. ALL DIMENSIONS & COORDINATES ARE IN MM.

LEGEND
LOCATION AND WORKS AREA OF GRS

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-02/558/2016)

TITLE: LOCATION AND WORKS AREA OF GRS AT LAMMA POWER STATION

SCALE: 1:1,000
CONTRACTOR DRAWING NO. Figure 1.3

DATE: 16/02/2020
REV: 0
PAGE: 1 OF 1

NO.	DESCRIPTION	DATE	BY	CHK	APP

NO.	DESCRIPTION	DWG NO.	REV	DATE	BY	CHK	APP

NO.	DESCRIPTION	REFERENCE DRAWINGS

NO.	DESCRIPTION

NO.	DESCRIPTION

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	Arthur Lo ^(Note 1)	2828 5757
		Lydia Chak ^(Note 2)	2585 8473
Contractor (CNOOC Offshore Oil Engineering Co. Ltd.)	Environmental Manager	H Y Tang	6111 5789
	Environmental Officer	Kelvin Cheung	9060 1020

Notes:

(1) The duties of IEC were discharged up to 11 June 2021; and (2) The duties of IEC had been discharged since 12 June 2021.

1.4 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 1.2** below:

Table 1.2 Major Construction Activities Undertaken in the Reporting Period

FEP	Land-based Works	Marine-based Works
FEP-01/558/2018/A	<ul style="list-style-type: none"> ▪ Nil 	<ul style="list-style-type: none"> ▪ Jacket installation ▪ Pile installation
FEP-02/558/2018/A	<ul style="list-style-type: none"> ▪ Preparation of intermediate hydrotesting for pipeline 	<ul style="list-style-type: none"> ▪ Pre-trenching ▪ Dredging works ▪ De-burial (pre-trenching) of pre-installed pipeline by Mass Flow Excavator ⁽¹⁾ ▪ Pipe-laying works ▪ Intermediate hydrotesting for pipeline ▪ Post-trenching
FEP-03/558/2018/B	<ul style="list-style-type: none"> ▪ Preparation works at the new GRS (including set-up of site offices, erection of hoarding and mobilisation of wastewater treatment facilities) ▪ Plate Load Test – Pipe Rack 	<ul style="list-style-type: none"> ▪ Pipe-laying works ▪ Pre-trenching ▪ Sheet pile installation ▪ Post-trenching

FEP	Land-based Works	Marine-based Works
	<ul style="list-style-type: none"> ▪ Cable pulling ▪ Construction of reinforced concrete foundation ▪ Underground drainage works ▪ Drainage installation ▪ Seawall construction ▪ Backfill and permanent paving works ▪ Excavation, drainage and backfilling works ▪ Pipe rack – erection and assembly ▪ Building superstructure works 	

Remark: (1) Mass flow excavator is a variance of jetting machine.

1.5 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 1.3**. 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 1.3 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	<ul style="list-style-type: none"> ▪ Completed
Efficiency of Silt Curtain System	FEP-02/558/2018/A FEP-03/558/2018/B	<ul style="list-style-type: none"> ▪ 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) ▪ To be implemented upon early stage of construction works 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	<ul style="list-style-type: none"> ▪ 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	<ul style="list-style-type: none"> ▪ 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	<ul style="list-style-type: none"> ▪ To be implemented during hydrotesting for the subsea gas pipelines
First-year of LNG Terminal Operation	FEP-01/558/2018/A	<ul style="list-style-type: none"> ▪ To be implemented during LNG Terminal operation
Maintenance Dredging	FEP-01/558/2018/A	<ul style="list-style-type: none"> ▪ To be implemented during maintenance dredging
Waste Management		

Aspects	Relevant FEP(s)	Status
Audit of Waste Management Practice	FEP-01/558/2018/A FEP-02/558/2018/A FEP-03/558/2018/B	<ul style="list-style-type: none"> ■ On-going
Ecology		
Baseline Monitoring (Vessel-based Line Transect Survey and Passive Acoustic Monitoring)	FEP-01/558/2018/A	<ul style="list-style-type: none"> ■ Completed
Construction Phase Monitoring (Vessel-based Line Transect Survey and Passive Acoustic Monitoring)	FEP-01/558/2018/A	<ul style="list-style-type: none"> ■ On-going (for percussive piling works for construction of the Jetty between July and December)
Post-Construction Monitoring (Vessel-based Line Transect Survey and Passive Acoustic Monitoring)	FEP-01/558/2018/A	<ul style="list-style-type: none"> ■ To be implemented upon completion of construction works for the Project
Marine Mammal Exclusion Zone Monitoring	FEP-01/558/2018/A FEP-02/558/2018/A FEP-03/558/2018/B	<ul style="list-style-type: none"> ■ On-going for FEP-01/558/2018/A (marine mammal exclusion zone with 500m radius) ■ On-going for marine dredging / jetting operations for FEP-02/558/2018/A and 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	<ul style="list-style-type: none"> ■ 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	<ul style="list-style-type: none"> ■ On-going
Environmental Log Book	FEP-01/558/2018/A FEP-02/558/2018/A FEP-03/558/2018/B	<ul style="list-style-type: none"> ■ On-going

1.6 Status of Other Statutory Environmental Requirements

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 was identified. The status of statutory environmental requirements is presented in **Annex D**.

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 1.5*, environmental site inspections and audit on waste management practice, marine water quality monitoring, including pilot tests on the efficiency of silt curtain system, marine mammal monitoring (i.e. vessel-based line transect survey and passive acoustic monitoring) and marine mammal exclusion zone monitoring were conducted during the reporting period, and the findings are summarised below.

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, 54 environmental site inspections were carried out, of which 5 sessions were for FEP-01/558/2018/A, 10 sessions were for FEP-02/558/2018/A and 39 sessions were for FEP-03/558/2018/B. The Independent Environmental Checker (IEC) attended 25 environmental site inspections as the IEC audits during the reporting period. Aspects for the key observations recorded during site inspections are summarised in **Table 2.1**. Details of observations recorded can be referred to *the associated Monthly EM&A Reports* for the reporting period. The environmental mitigation implementation schedule (EMIS) is presented in **Annex C**.

Table 2.1 Summary of Aspects for Key Observations Recorded during Site Inspections

Aspect	Number of Observations	Cumulative Number of Observations
FEP-01/558/2018/A ⁽¹⁾⁽²⁾		
<i>Oct-Dec 2020</i>		
Air quality	0	0
Water quality	0	0
Waste management	0	0
Ecology	0	0
Visual	0	0
Hazard to life	0	0
Others	0	0
<i>Jan-Mar 2021</i>		
Air quality	0	0
Water quality	0	0
Waste management	0	0
Ecology	0	0
Visual	0	0
Hazard to life	0	0
Others	0	0
<i>Apr-Jun 2021</i>		
Air quality	0	0

Aspect	Number of Observations	Cumulative Number of Observations
Water quality	0	0
Waste management	0	0
Ecology	0	0
Visual	0	0
Hazard to life	0	0
Others	0	0
<i>Jul-Sep 2021</i>		
Air quality	0	0
Water quality	0	0
Waste management	0	0
Ecology	0	0
Visual	0	0
Hazard to life	0	0
Others	0	0
	Total	0
FEP-02/558/2018/A ⁽³⁾ ⁽⁴⁾		
<i>Oct-Dec 2020</i>		
Air quality	0	0
Water quality	0	0
Waste management	0	0
Ecology	0	0
Visual	0	0
Hazard to life	0	0
Others	0	0
<i>Jan-Mar 2021</i>		
Air quality	0	0
Water quality	0	0
Waste management	0	0
Ecology	0	0
Visual	0	0
Hazard to life	0	0
Others	0	0
<i>Apr-Jun 2021</i>		
Air quality	0	0
Water quality	0	0
Waste management	0	0
Ecology	0	0
Visual	0	0
Hazard to life	0	0
Others	0	0

Aspect	Number of Observations	Cumulative Number of Observations
<i>Jul-Sep 2021</i>		
Air quality	1	1
Water quality	0	0
Waste management	0	0
Ecology	0	0
Visual	0	0
Hazard to life	0	0
Others	0	0
	Total	1
FEP-03/558/2018/B ⁽⁵⁾		
<i>Oct-Dec 2020</i>		
Air quality	0	0
Water quality	0	0
Waste Management	1	1
Ecology	0	0
Visual	0	0
Hazard to life	0	0
Others	0	0
<i>Jan-Mar 2021</i>		
Air quality	2	2
Water quality	0	0
Waste Management	1	2
Ecology	0	0
Visual	0	0
Hazard to life	0	0
Others	1	1
<i>Apr-Jun 2021</i>		
Air quality	4	6
Water quality	2	2
Waste Management	4	6
Ecology	0	0
Visual	0	0
Hazard to life	0	0
Others	0	1
<i>Jul-Sep 2021</i>		
Air quality	3	9
Water quality	1	3
Waste Management	2	8
Ecology	0	0
Visual	0	0

Aspect	Number of Observations	Cumulative Number of Observations
Hazard to life	0	0
Others	1	2
	Total	22

Notes:

- (1) Commencement date of construction for FEP-01/558/2018/A was 27 November 2020.
- (2) The piling installation vessel for construction of the jetty was under quarantine from 19 November 2020 to 2 December 2020 in Hong Kong waters. Therefore, no marine-based works for FEP-01/558/2018/A was undertaken in November 2020. Marine-based works for FEP-01/558/2018/A commenced in December 2020.
- (3) Commencement date of construction for FEP-02/558/2018/A was 13 December 2020.
- (4) The preparation works for marine-based works for FEP-02/558/2018/A (e.g. approval of marine dumping permit) were undertaken in December 2020. Therefore, no marine-based works for FEP-02/558/2018/A were undertaken in December 2020. Marine-based works for FEP-02/558/2018/A are expected to commence in January 2021.
- (5) Commencement date of construction for FEP-03/558/2018/B was 23 September 2020.

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 the three FEPs. Inert C&D materials (public fill) and marine sediment were generated under FEP-03/558/2018/B of which the excavated marine sediment was either disposed of in the dedicated disposal grounds properly or delivered to other project as re-use while all the excavated marine sediment under FEP-02/558/2018/A was disposed of in the dedicated disposal grounds properly. 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
Oct 2020	N/A	N/A	N/A	N/A	N/A	N/A
Nov 2020 ⁽¹⁾	0	0	0	0	0	0
Dec 2020	0	0	0	0	0	0
Jan 2021	0	0	0	0	0	0
Feb 2021	0	0	0	0	0	0
Mar 2021	0	0	0	0	0	0
Apr 2021	0	0	0	0	0	0
May 2021	0	0	0	0	0	0
Jun 2021	0	0	0	0	0	0
Jul 2021	0	0	0	0	0	0

Aug 2021	0	0	0	0	0	0
Sep 2021	0	0	0	0	0	0
Total	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)	
Oct 2020	N/A	N/A	N/A	N/A	N/A	N/A
Nov 2020 ⁽¹⁾	0	0	0	0	0	0
Dec 2020	0	0	0	0	0	6.910
Jan 2021	0	0	0	0	0	0
Feb 2021	0	0	0	0	0	0
Mar 2021	0	0	0	0	0	0
Apr 2021	0	0	0	0	0	0
May 2021	0	0	0	0	0	0
Jun 2021	0	0	0	0	0	0
Jul 2021	0	0	0	0	0	5.140
Aug 2021	0	0	0	0	0	8.000
Sep 2021	0	0	0	0	0	19.030
Total	0	0	0	0	0	39.080

Note:

(1) Commencement date of construction for FEP-01/558/2018/A was 27 November 2020.

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
Oct 2020	N/A	N/A	N/A	N/A	N/A	N/A
Nov 2020	N/A	N/A	N/A	N/A	N/A	N/A
Dec 2020 ⁽¹⁾	0	0	0	0	0	0
Jan 2021	0	0	0	0	0	0
Feb 2021	0	0	0	0	0	0
Mar 2021	0	0	0	0	0	0
Apr 2021	0	0	0	0	0	0

May 2021	0	0	0	0	0	0
Jun 2021	0	0	0	0	0	0
Jul 2021	0	0	0	0	0	0
Aug 2021	0	0	0	0	0	0
Sep 2021	0	0	0	0	0	0
Total	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)	
Oct 2020	N/A	N/A	N/A	N/A	N/A	N/A
Nov 2020	N/A	N/A	N/A	N/A	N/A	N/A
Dec 2020 ⁽¹⁾	0	0	0	0	0	0
Jan 2021	0	0	0	0	0	26.930
Feb 2021	0	0	0	0	0	21.500
Mar 2021	0	0	0	0	0	26.230
Apr 2021	0	0	0	0	0	0
May 2021	0	0	0	0	0	0
Jun 2021	0	0	0	0	0	0
Jul 2021	0	0	0	0	0	0
Aug 2021	0	0	0	0	0	5.460
Sep 2021	0	0	0	0	0	4.920
Total	0	0	0	0	0	85.04

Marine Sediment Generated (in '000m³)

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
Oct 2020	N/A	N/A	N/A	N/A	N/A
Nov 2020	N/A	N/A	N/A	N/A	N/A
Dec 2020 ⁽¹⁾	0	0	0	0	0
Jan 2021	0	0	0	0	0
Feb 2021	4.388	0	0	0	4.388
Mar 2021	0	0	0	0	0
Apr 2021	0	0	0	0	0
May 2021	0	0	0	0	0

Jun 2021	0	0	0	0	0
Jul 2021	0	0	0	0	0
Aug 2021	0	0	0	0	0
Sep 2021	0	0	0	0	0
Total	4.388	0	0	0	4.388

Note:

(1) Commencement date of construction for FEP-02/558/2018/A was 13 December 2020.

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
Sep 2020 ⁽¹⁾	0	0	0	0	0	0
Oct 2020	0	0	0	0	0	0
Nov 2020	0	0	0	0	0	0
Dec 2020	0	0	0	0	0	0
Jan 2021	244.400	0	0	0	244.400	0
Feb 2021	360.640	0	0	0	360.640	0
Mar 2021	1,274.410	0	0	0	1,274.410	0
Apr 2021	622.900	0	0	0	622.900	0
May 2021	3,077.620	0	0	0	3,077.620	0
Jun 2021	785.540	0	0	0	785.540	0
Jul 2021	1,211.060	0	0	0	1,211.060	0
Aug 2021	2,269.600	0	0	0	2,269.600	0
Sep 2021	767.130	0	0	0	767.130	0
Total	10,613.300	0	0	0	10,613.300	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)	
Sep 2020 ⁽¹⁾	0	0	0	0	0	0
Oct 2020	0	0	0	0	0	0
Nov 2020	0	0	0	0	0	0
Dec 2020	0	0	0	0	0	0

Jan 2021	0	0	0	0	0	0
Feb 2021	0	0	0	0	0	0
Mar 2021	0	0	0	0	0	0
Apr 2021	0	0	0	0	0	41.230
May 2021	0	0	0	0	0	52.280
Jun 2021	0	0	0	0	0	28.500
Jul 2021	0	0	0	0	0	24.720
Aug 2021	0	0	0	0	0	40.550
Sep 2021	0	0	0	0	0	53.990
Total	0	0	0	0	0	241.270

Marine Sediment Generated (in '000m³)

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
Sep 2020 ⁽¹⁾	0	0	0	0	0
Oct 2020	0	0	0	0	0
Nov 2020	0	0	0	0	0
Dec 2020	0	0	0	0	0
Jan 2021	0	0	0	0	0
Feb 2021	0	0	0	0	0
Mar 2021	0	0	0	0	0
Apr 2021	3.438	0	0	0	3.438
May 2021	79.672	23.169	0	1.602	101.239
Jun 2021	3.650	35.771	0	0	39.421
Jul 2021	0	0	0	0	0
Aug 2021	0	0.556	0	0	0.556
Sep 2021	0.282	0.114	0	0	0.396
Total	87.042	59.610	0	1.602	145.050

Note:

(1) Commencement date of construction for FEP-03/558/2018/B was 23 September 2020.

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

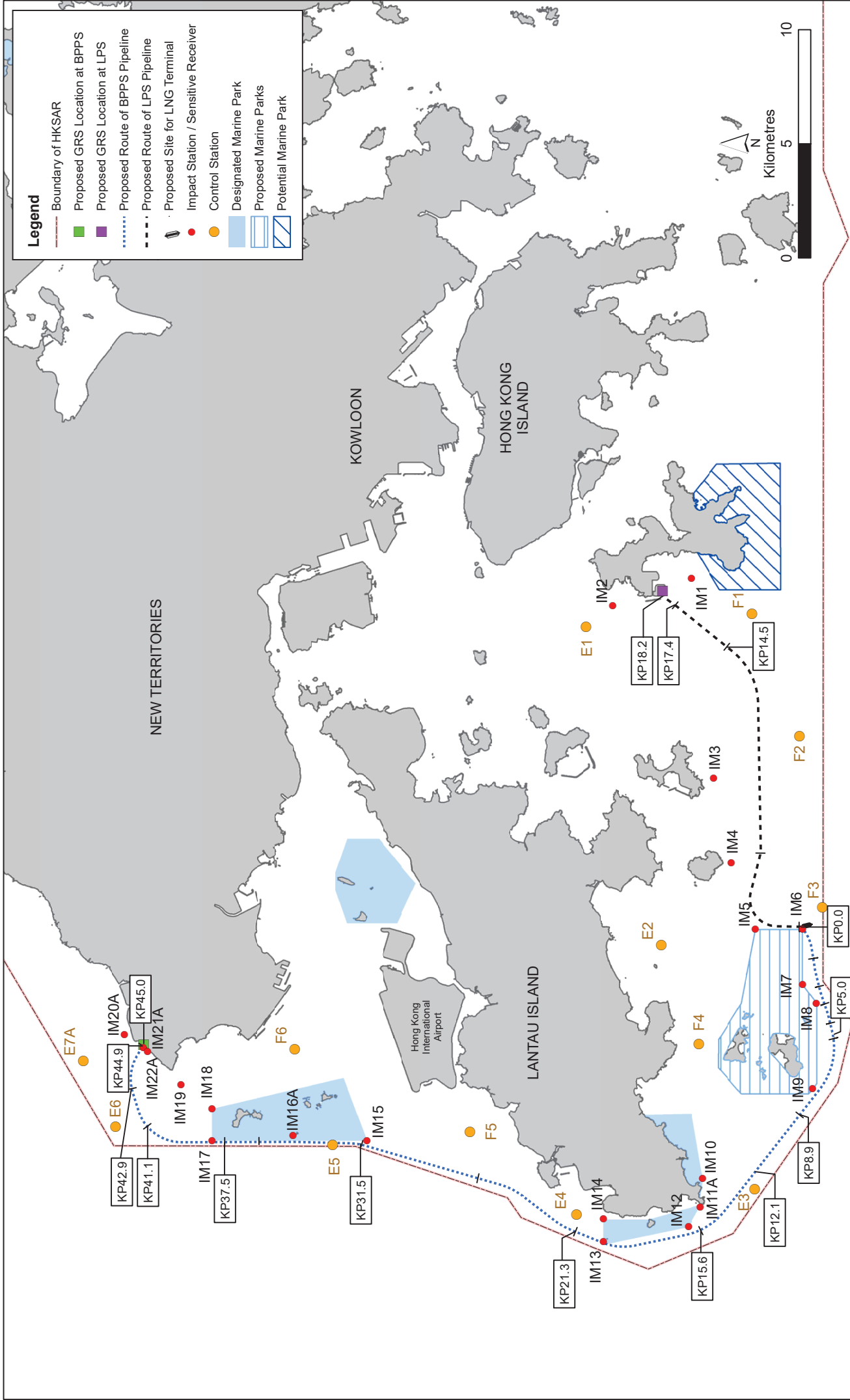


Figure 2.1
Marine Water Quality Monitoring Location

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.

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

Station	Easting	Northing	Description
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)			
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	Surface and Middle 2.9 mg L ⁻¹
	Bottom 2.4 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
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	Surface and Middle 2.4 mg L ⁻¹
	Bottom 1.8 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
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	Surface and Middle 3.0 mg L ⁻¹
	Bottom 2.7 mg L ⁻¹	Bottom 2.0 mg L ⁻¹

Parameter	Action Level	Limit Level
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
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	<u>Surface and Middle</u> 3.4 mg L ⁻¹	<u>Surface and Middle</u> 2.5 mg L ⁻¹
	<u>Bottom</u> 2.8 mg L ⁻¹	<u>Bottom</u> 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	<u>Surface and Middle</u> 4.6 mg L ⁻¹	<u>Surface and Middle</u> 4.0 mg L ⁻¹
	<u>Bottom</u> 4.0 mg L ⁻¹	<u>Bottom</u> 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	<u>Surface and Middle</u> 4.4 mg L ⁻¹	<u>Surface and Middle</u> 3.9 mg L ⁻¹
	<u>Bottom</u> 3.9 mg L ⁻¹	<u>Bottom</u> 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	<u>Surface and Middle</u> 3.8 mg L ⁻¹	<u>Surface and Middle</u> 3.4 mg L ⁻¹
	<u>Bottom</u> 3.1 mg L ⁻¹	<u>Bottom</u> 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	<u>Surface and Middle</u> 4.3 mg L ⁻¹	<u>Surface and Middle</u> 3.4 mg L ⁻¹
	<u>Bottom</u> 3.6 mg L ⁻¹	<u>Bottom</u> 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:

- For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
- "Depth-averaged" is calculated by taking the arithmetic means of reading of all three depths.
- 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 66 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. The percentage compliance of marine water quality monitoring results within the corresponding Action and Limit Levels is presented in **Table 2.7**. There were no Project-related Action and Limit Level exceedances for marine water quality monitoring in the reporting period. Graphical presentations are provided in **Annex F**.

Table 2.7 Percentage Compliance of Marine Water Quality Monitoring Data within Action and Limit Levels

Month/Year	DO (Surface and Middle)	DO (Bottom)	Turbidity	SS
Group 1 – During construction at the pipeline shore approach at LPS (KP17.4 - 18.2), West Lamma Channel (KP14.5 - 17.4)				
Oct 2020	N/A	N/A	N/A	N/A
Nov 2020	N/A	N/A	N/A	N/A
Dec 2020	N/A	N/A	N/A	N/A
Jan 2021	N/A	N/A	N/A	N/A
Feb 2021	100%	100%	100%	100%
Mar 2021	100%	100%	100%	100%
Apr 2021	N/A	N/A	N/A	N/A
May 2021	N/A	N/A	N/A	N/A
Jun 2021	N/A	N/A	N/A	N/A
Jul 2021	100%	83.3%	100%	100%
Aug 2021	N/A	N/A	N/A	N/A
Sep 2021	N/A	N/A	N/A	N/A
Total	100%	94.4%	100%	100%
Group 2 – During construction at the Double Berth Jetty to West Lamma Channel (KP0.0 - 14.5)				
Oct 2020	N/A	N/A	N/A	N/A
Nov 2020	N/A	N/A	N/A	N/A
Dec 2020	N/A	N/A	N/A	N/A
Jan 2021	100%	100%	100%	100%
Feb 2021	100%	100%	100%	100%
Mar 2021	N/A	N/A	N/A	N/A
Apr 2021	N/A	N/A	N/A	N/A
May 2021	N/A	N/A	N/A	N/A
Jun 2021	N/A	N/A	N/A	N/A

Month/Year	DO (Surface and Middle)	DO (Bottom)	Turbidity	SS
Jul 2021	N/A	N/A	N/A	N/A
Aug 2021	100%	89.3%	100%	100%
Sep 2021	100%	87.5%	100%	100%
Total	100%	94.2%	100%	100%
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)				
Oct 2020	N/A	N/A	N/A	N/A
Nov 2020	N/A	N/A	N/A	N/A
Dec 2020	N/A	N/A	N/A	N/A
Jan 2021	N/A	N/A	N/A	N/A
Feb 2021	N/A	N/A	N/A	N/A
Mar 2021	N/A	N/A	N/A	N/A
Apr 2021	100%	100%	100%	100%
May 2021	100%	100%	100%	97.9%
Jun 2021	N/A	N/A	N/A	N/A
Jul 2021	N/A	N/A	N/A	N/A
Aug 2021	N/A	N/A	N/A	N/A
Sep 2021	N/A	N/A	N/A	N/A
Total	100%	100%	100%	99.0%
Group 4 – During construction at the Adamasta Channel (KP12.1 - 15.6), Southwest Lantau (KP15.6 - 21.3)				
Oct 2020	N/A	N/A	N/A	N/A
Nov 2020	N/A	N/A	N/A	N/A
Dec 2020	N/A	N/A	N/A	N/A
Jan 2021	N/A	N/A	N/A	N/A
Feb 2021	N/A	N/A	N/A	N/A
Mar 2021	N/A	N/A	N/A	N/A
Apr 2021	N/A	N/A	N/A	N/A
May 2021	N/A	N/A	N/A	N/A
Jun 2021	N/A	N/A	N/A	N/A
Jul 2021	N/A	N/A	N/A	N/A
Aug 2021	N/A	N/A	N/A	N/A
Sep 2021	N/A	N/A	N/A	N/A
Total	N/A	N/A	N/A	N/A
Group 5 – During construction at the West of Tai O to West of HKIA (KP21.3 - 31.5)				
Oct 2020	N/A	N/A	N/A	N/A
Nov 2020	N/A	N/A	N/A	N/A
Dec 2020	N/A	N/A	N/A	N/A
Jan 2021	N/A	N/A	N/A	N/A
Feb 2021	N/A	N/A	N/A	N/A
Mar 2021	N/A	N/A	N/A	N/A
Apr 2021	N/A	N/A	N/A	N/A
May 2021	N/A	N/A	N/A	N/A
Jun 2021	N/A	N/A	N/A	N/A
Jul 2021	N/A	N/A	N/A	N/A
Aug 2021	N/A	N/A	N/A	N/A
Sep 2021	100%	100%	100%	100%
Total	100%	100%	100%	100%
Group 6 – During construction at the West of HKIA to Lung Kwu Chau (KP31.5 - 37.5)				
Oct 2020	N/A	N/A	N/A	N/A
Nov 2020	N/A	N/A	N/A	N/A
Dec 2020	N/A	N/A	N/A	N/A
Jan 2021	N/A	N/A	N/A	N/A
Feb 2021	N/A	N/A	N/A	N/A
Mar 2021	N/A	N/A	N/A	N/A
Apr 2021	N/A	N/A	N/A	N/A
May 2021	N/A	N/A	N/A	N/A
Jun 2021	N/A	N/A	N/A	N/A

Month/Year	DO (Surface and Middle)	DO (Bottom)	Turbidity	SS
Jul 2021	N/A	N/A	N/A	N/A
Aug 2021	N/A	N/A	N/A	N/A
Sep 2021	N/A	N/A	N/A	N/A
Total	N/A	N/A	N/A	N/A
Group 7 – During construction at the Lung Kwu Chau to Urmston Anchorage (37.5 - 41.1), Urmston Road (KP41.1 - 42.9)				
Oct 2020	N/A	N/A	N/A	N/A
Nov 2020	N/A	N/A	N/A	N/A
Dec 2020	N/A	N/A	N/A	N/A
Jan 2021	N/A	N/A	N/A	N/A
Feb 2021	N/A	N/A	N/A	N/A
Mar 2021	N/A	N/A	N/A	N/A
Apr 2021	100%	100%	83.3%	83.3%
May 2021	100%	100%	93.9%	95.5%
Jun 2021	100%	100%	90.0%	93.3%
Jul 2021	N/A	N/A	N/A	N/A
Aug 2021	N/A	N/A	N/A	N/A
Sep 2021	N/A	N/A	N/A	N/A
Total	100%	100%	89.1%	90.7%
Group 8 – During construction at the West of BPPS (KP42.9 - 44.9), Pipeline shore approach at BPPS (KP44.9 - 45.0)				
Oct 2020	N/A	N/A	N/A	N/A
Nov 2020	N/A	N/A	N/A	N/A
Dec 2020	N/A	N/A	N/A	N/A
Jan 2021	N/A	N/A	N/A	N/A
Feb 2021	N/A	N/A	N/A	N/A
Mar 2021	N/A	N/A	N/A	N/A
Apr 2021	N/A	N/A	N/A	N/A
May 2021	N/A	N/A	N/A	N/A
Jun 2021	N/A	N/A	N/A	N/A
Jul 2021	N/A	N/A	N/A	N/A
Aug 2021	100%	95.8%	100%	100%
Sep 2021	100%	100%	93.8%	93.8%
Total	100%	97.9%	96.9%	96.9%

Notes:

- (1) The figures in percentage are calculated with reference to the number of depth-averaged data with the corresponding Action and Limit Levels divided by the total number of depth-averaged data for each monitoring parameter.
- (2) N/A denotes that no marine water quality monitoring (WQM) was required to be conducted in the month.

Amongst the eight groupings for marine water quality monitoring (WQM) (i.e. Groups 1 to 8), no marine WQM was required to be conducted for Group 4 and Group 6 as no marine dredging / jetting operations were undertaken within the respective works areas for construction of BPPS Pipeline in the reporting period while marine WQM data of the four monitoring parameters (i.e. DO (Surface and Middle), DO (Bottom), turbidity and SS) for Group 5 recorded in the reporting period were within the corresponding Action and Limit Levels.

In general, the levels of DO, turbidity and SS complied with the Action and Limit Levels during most of the time (~ >90%). Investigations on all the Action and/or Limit Levels exceedances were carried out in accordance with the Event and Action Plan for marine WQM, and all the exceedances were considered non-Project related based on the investigation results which have been presented in *the corresponding Monthly EM&A Reports for the reporting period*.

Notwithstanding, the Contractor was reminded to ensure the mitigation measures for water quality impacts as set out in the Updated EM&A Manual are fully and properly implemented.

2.3.4 Comparison of Monitoring Results with EIA Predictions

SS and DO levels in terms of SS elevation and DO depletion, respectively, at each sensitive receiver as a result of marine-based construction activities were assessed and predicted in the approved EIA Report. With reference to *Figures 7.2 and 7.3* of the approved EIA Report, 22 impact stations and the corresponding sensitive receivers and/or model observation points are presented in **Table 2.8**.

Table 2.8 Impact Stations for Marine Water Quality Monitoring and the Corresponding Sensitive Receivers and Model Observation Points

Impact Station	Fisheries Sensitive Receiver	Ecological Sensitive Receiver	Water Quality Sensitive Receiver	Model Observation Point
Group 1 – During construction at the pipeline shore approach at LPS (KP17.4 - 18.2), West Lamma Channel (KP14.5 - 17.4)				
IM1	<ul style="list-style-type: none"> ▪ Fisheries Spawning/Nursery Grounds in South Lantau (B8, B9, MPE) 	<ul style="list-style-type: none"> ▪ Potential South Lamma MP (MPE) ▪ Corals at Hung Shing Yeh and Ha Mei Wan (CR20, CR21) 	<ul style="list-style-type: none"> ▪ Gazetted Beaches at Hung Shing Yeh Beach and Lo So Shing Beach (B8, B9) ▪ Seawater Intake at Lamma Power Station (C13) 	<ul style="list-style-type: none"> ▪ N/A
IM2	<ul style="list-style-type: none"> ▪ N/A 	<ul style="list-style-type: none"> ▪ Corals at Shek Kok Tsui and Pak Kok (CR12, CR13) 	<ul style="list-style-type: none"> ▪ N/A 	<ul style="list-style-type: none"> ▪ N/A
Group 2 – During construction at the Double Berth Jetty to West Lamma Channel (KP0.0 - 14.5)				
IM3	<ul style="list-style-type: none"> ▪ Fisheries Spawning/Nursery Grounds in South Lantau (NB9) 	<ul style="list-style-type: none"> ▪ N/A 	<ul style="list-style-type: none"> ▪ Non-gazetted Beaches at Po Yue Wan (NB9) 	<ul style="list-style-type: none"> ▪ N/A
IM4	<ul style="list-style-type: none"> ▪ Fisheries Spawning/Nursery Grounds in South Lantau (CR4) 	<ul style="list-style-type: none"> ▪ Corals at Shek Kwu Chau (CR4) 	<ul style="list-style-type: none"> ▪ N/A 	<ul style="list-style-type: none"> ▪ N/A
IM5	<ul style="list-style-type: none"> ▪ N/A 	<ul style="list-style-type: none"> ▪ N/A 	<ul style="list-style-type: none"> ▪ N/A 	<ul style="list-style-type: none"> ▪ Boundary of existing and proposed MPs (MPD-6)
IM6	<ul style="list-style-type: none"> ▪ N/A 	<ul style="list-style-type: none"> ▪ N/A 	<ul style="list-style-type: none"> ▪ N/A 	<ul style="list-style-type: none"> ▪ Boundary of existing and proposed MPs (MPD-5)
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	<ul style="list-style-type: none"> ▪ N/A 	<ul style="list-style-type: none"> ▪ N/A 	<ul style="list-style-type: none"> ▪ N/A 	<ul style="list-style-type: none"> ▪ Boundary of existing and proposed MPs (MPD-5)
IM7	<ul style="list-style-type: none"> ▪ N/A 	<ul style="list-style-type: none"> ▪ N/A 	<ul style="list-style-type: none"> ▪ N/A 	<ul style="list-style-type: none"> ▪ Boundary of existing and proposed MPs (MPD-4)
IM8	<ul style="list-style-type: none"> ▪ N/A 	<ul style="list-style-type: none"> ▪ N/A 	<ul style="list-style-type: none"> ▪ N/A 	<ul style="list-style-type: none"> ▪ Boundary of existing and proposed MPs (MPD-3)
IM9	<ul style="list-style-type: none"> ▪ N/A 	<ul style="list-style-type: none"> ▪ N/A 	<ul style="list-style-type: none"> ▪ N/A 	<ul style="list-style-type: none"> ▪ Boundary of existing and proposed MPs (MPD-2)
Group 4 – During construction at the Adamasta Channel (KP12.1 - 15.6), Southwest Lantau (KP15.6 - 21.3)				

Impact Station	Fisheries Sensitive Receiver	Ecological Sensitive Receiver	Water Quality Sensitive Receiver	Model Observation Point
IM10	▪ N/A	▪ Intertidal Mudflats/ Mangroves/ Horseshoe Crab Nursery Grounds at Fan Lau Tung Wan (MPC-5)	▪ Non-gazetted Beaches at Fan Lau Tung Wan (NB4)	▪ Boundary of existing and proposed MPs (MPC-5)
IM11A	▪ N/A	▪ N/A	▪ Non-gazetted Beaches at Fan Lau Sai Wan (NB3)	▪ Boundary of existing and proposed MPs (MPC-4)
IM12	▪ N/A	▪ N/A	▪ N/A	▪ Boundary of existing and proposed MPs (MPC-3)
IM13	▪ N/A	▪ N/A	▪ N/A	▪ Boundary of existing and proposed MPs (MPC-2)
IM14	▪ N/A	▪ N/A	▪ N/A	▪ Boundary of existing and proposed MPs (MPC-1)
Group 5 – During construction at the West of Tai O to West of HKIA (KP21.3 - 31.5)				
IM15	▪ N/A	▪ N/A	▪ N/A	▪ Boundary of existing and proposed MPs (MPA-3)
Group 6 – During construction at the West of HKIA to Lung Kwu Chau (KP31.5 - 37.5)				
IM15	▪ N/A	▪ N/A	▪ N/A	▪ Boundary of existing and proposed MPs (MPA-3)
IM16A	▪ Fisheries Spawning Ground in North Lantau (CR3) ▪ Artificial Reef Deployment Area at Sha Chau and Lung Kwu Chau (AR1)	▪ Sha Chau and Lung Kwu Chau MP (MPA- 5) ▪ Corals at Pak Chau (CR3)	▪ N/A	▪ N/A
IM17	▪ N/A	▪ N/A	▪ N/A	▪ Boundary of existing and proposed MPs (MPA-2)
Group 7 – During construction at the Lung Kwu Chau to Urmston Anchorage (37.5 - 41.1), Urmston Road (KP41.1 - 42.9)				
IM17	▪ N/A	▪ N/A	▪ N/A	▪ Boundary of existing and proposed MPs (MPA-2)
IM18	▪ N/A	▪ N/A	▪ N/A	▪ Boundary of existing and proposed MPs (MPA-1)
IM19	▪ N/A	▪ Intertidal Mudflats/ Mangroves/ Horseshoe Crab Nursery Grounds at Lung Kwu Sheung Tan (NB1)	▪ Non-gazetted Beaches at Lung Kwu Sheung Tan (NB1)	▪ N/A
Group 8 – During construction at the West of BPPS (KP42.9 - 44.9), Pipeline shore approach at BPPS (KP44.9 - 45.0)				

Impact Station	Fisheries Sensitive Receiver	Ecological Sensitive Receiver	Water Quality Sensitive Receiver	Model Observation Point
IM19	▪ N/A	▪ Intertidal Mudflats/ Mangroves/ Horseshoe Crab Nursery Grounds at Lung Kwu Sheung Tan (NB1)	▪ Non-gazetted Beaches at Lung Kwu Sheung Tan (NB1)	▪ N/A
IM20A	▪ N/A	▪ Intertidal Mudflats/ Mangroves/ Horseshoe Crab Nursery Grounds at Ha Pak Nai (H1) ▪ Seagrass Beds at Ha Pak Nai (H1)	▪ Seawater Intake at Sludge Treatment Facilities (C1)	▪ N/A
IM21A	▪ N/A	▪ Corals at Artificial Seawall at BPPS (CR1)	▪ N/A	▪ N/A
IM22A	▪ N/A	▪ Corals at Artificial Seawall at BPPS (CR2)	▪ N/A	▪ N/A

2.3.4.1 Suspended Solids Elevation

For the marine WQM stations under Group 1 and Group 2 (i.e. IM1 and IM2 for Group 1; and IM3, IM4, IM5 and IM6 for Group 2), all SS levels at these marine WQM stations in the reporting period were within the corresponding Action/Limit Levels resulting in being in line with the EIA predictions (i.e. compliance with Water Quality Objective (WQO) for SS in terms of percentage in both dry and wet seasons under Dredging Scenario C01A and Jetting Scenario C06 as reported in *Table 7C.1* and *Table 7C.8* of *Annex 7C* in the approved EIA Report, respectively).

For the marine WQM stations under Group 3 (i.e. IM6, IM7, IM8, IM9), all SS levels at these marine WQM stations in the reporting period were within the corresponding Action/Limit Levels except that at IM9 on 24 May 2021 with an Action Level exceedance recorded, resulting in 99.0% being within the corresponding Action/Limit Levels within the reporting period. Given the Action Level exceedance in SS recorded at IM9 on 24 May 2021 was considered non-Project related upon investigation, all SS levels were considered being generally in line with the EIA predictions (i.e. compliance with WQO for SS in terms of percentage in both dry and wet seasons under Dredging Scenario C01A as reported in *Table 7C.1* of *Annex 7C* in the approved EIA Report).

For the marine WQM station under Group 5 (i.e. IM15), all SS levels at this marine WQM station in the reporting period were within the corresponding Action/Limit Levels resulting in being in line with the EIA predictions (i.e. compliance with WQO for SS in terms of percentage in both dry and wet seasons under Jetting Scenario C04 as reported in *Table 7C.6* of *Annex 7C* in the approved EIA Report).

For the marine WQM stations under Group 7 (i.e. IM17, IM18 and IM19), most of the SS levels at these stations in the reporting period were within the corresponding Action/Limit Levels except those at IM17 and IM18 on 28 April 2021; at IM18 and IM19 on 10 May 2021; at IM18 on 26 May 2021; at IM18 on 7 June 2021; and at IM19 on 9 June 2021 with Action/Limit Level exceedances recorded, resulting in 90.7% being within the corresponding Action/Limit Levels within the reporting period. Given the Action/Limit Level exceedances in SS recorded at the marine WQM stations on these dates were considered non-Project related upon investigation, all SS levels were considered being generally in line with the EIA predictions (i.e. compliance with WQO for SS in terms of percentage in both dry and wet seasons under Dredging Scenario C01C as reported in *Table 7C.3* of *Annex 7C* in the approved EIA Report).

For the marine WQM stations under Group 8 (i.e. IM19, IM20A, IM21A and IM22A), most of the SS levels at these stations in the reporting period were within the corresponding Action/Limit Levels except the one at IM19 on 6 September 2021 with Action Level exceedance recorded, resulting in 96.9% being within the corresponding Action/Limit Levels within the reporting period. Given the Action Level exceedances in SS recorded at IM19 on these dates were considered non-Project related upon investigation, all SS levels were considered being generally in line with the EIA predictions (i.e. compliance with WQO for SS in terms of percentage in both dry and wet seasons under Dredging Scenario C01A as reported in *Table 7C.1* of *Annex 7C* in the approved EIA Report).

In addition, the SS levels at the corresponding marine WQM stations (e.g. IM6, IM15, IM16A, IM21A, IM22A, etc.) in the reporting period were all in line with the EIA predictions under mitigated scenarios (i.e. implementation of the recommended mitigation measures for water quality impacts for associated with marine-based construction activities such as deployment of silt curtains during the course of dredging/ jetting operations) with reference to *Tables 7C.10, 7C.12, 7C.15* and *7C.17* of *Annex 7C* in the approved EIA Report.

2.3.4.2 Dissolved Oxygen Depletion

According to *Annex 7D* of the approved EIA Report, the predicted maximum DO depletion values for all sensitive receivers associated with marine-based construction activities are well below their corresponding allowable DO depletion values, of which the maximum DO depletion of 0.2 mg/L amongst all sensitive receivers was predicted and no unacceptable depletion of DO from the marine-based construction activities was also anticipated as documented in the approved EIA Report (see *Section 7.7.1*).

Despite the Action/Limit Level exceedances in DO were recorded throughout the reporting period, all were considered non-Project related upon investigation, implying that the DO levels at the relevant sensitive receivers were considered being generally in line with the EIA predictions as reported in *Table 7D.1* of *Annex 7D* in the approved EIA Report.

2.3.4.3 Review of Monitoring Methodology for Marine Water Quality

The monitoring methodology for marine water quality was reviewed, including the routine operations of marine water quality monitoring associated with construction phase marine water quality monitoring data within the reporting period, the monitoring was able to detect change in water quality with reference to the EIA predictions based on the monitoring data in terms of DO and SS levels. Therefore, the monitoring methodology for marine water quality is considered effective and no change to monitoring methodology is recommended.

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 tests on the efficiencies of cage-type silt curtain at grab dredgers for LPS Pipeline and BPPS Pipeline were conducted on 2 February and 7 June 2021, respectively, while pilot test on the efficiency of cage-type silt curtain at jetting machine for both LPS and BPPS Pipelines was conducted on 26 August 2021. The monitoring stations for the pilot tests are presented in **Figures 2.2, 2.3** and **2.4**.

The monitoring results of the pilot tests are summarised in **Table 2.9**, which shows that the silt removal efficiencies of cage-type silt curtains were greater than the EIA assumptions (75% and 85% for cage-type silt curtain at grab dredger and jetting machine, respectively) demonstrating that the tested silt curtains are capable of achieving efficiencies greater than the required as assumed in the approved EIA Report for the Project. As such, the proposed cage-type silt curtains are effective for the dredging and jetting operations for the Project to minimize water quality impacts and no further measures/recommendations are required.

Table 2.9 Efficiencies of Cage-type Silt Curtains for Dredging and Jetting Operations

Round	Silt Curtain Efficiency (%)	
	Individual	Overall-average
For silt curtain at grab dredger for LPS Pipeline		
1	N/A	87.01 (*)
2	87.25	
3	86.77	
For silt curtain at grab dredger for BPPS Pipeline		
1	83.89	92.59
2	96.27	
3	97.61	
For silt curtain at jetting machine for both BPPS and LPS Pipelines		
1	99.74	96.05
2	99.88	
3	88.54	

Remark: (*) Only representative SS data for Rounds 2 and 3 of the pilot test were used for determination of silt curtain efficiency with respect to fact that the relatively low SS levels were detected inside silt curtain for the dredging operation during Round 1 of the pilot test.

2.5 Marine Mammal Monitoring

2.5.1 Monitoring Requirements

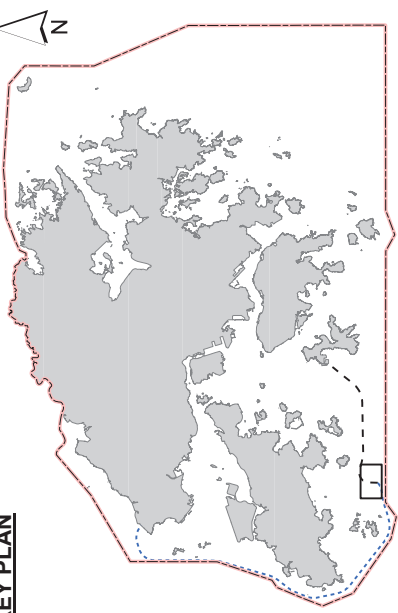
2.5.1.1 Vessel-based Line Transect Survey

In accordance with the Updated EM&A Manual, vessel-based marine mammal survey by means of systematic line-transect boat survey was undertaken to examine the distribution and encounter rate of Finless Porpoise (FP) in southern Lantau where a majority of Project construction works would take place. Survey transects covered three survey areas for line-transect boat surveys, namely Southwest Lantau (SWL), Southeast Lantau (SEL) and Lamma (LM) are presented in **Figure 2.5**. The methodology of the survey is consistent and compatible with that adopted in the EIA baseline surveys as well as the long-term marine mammal monitoring programme conducted by AFCD since 1995 to allow potential comparisons and pooling data for analysis. Vessel-based line transect marine mammal surveys are conducted during construction of the LNG Terminal. Each transect line is surveyed twice per month. The detailed methodology is presented in the Updated EM&A Manual.

Legend

- ⋯ Proposed Route of BPPS Pipeline
- Proposed Route of LPS Pipeline
- Monitoring Locations for Silt Curtain Pilot Test
- Cage-type Silt Curtain
- Boundary of HKSAR

KEY PLAN



Coordinates of Monitoring Stations			
Position	Easting	Northing	
A1	814188.60	802071.00	
B1	814155.21	802115.87	
B2	814246.59	802074.45	
B3	814231.89	802017.91	
B4	814117.20	802067.40	

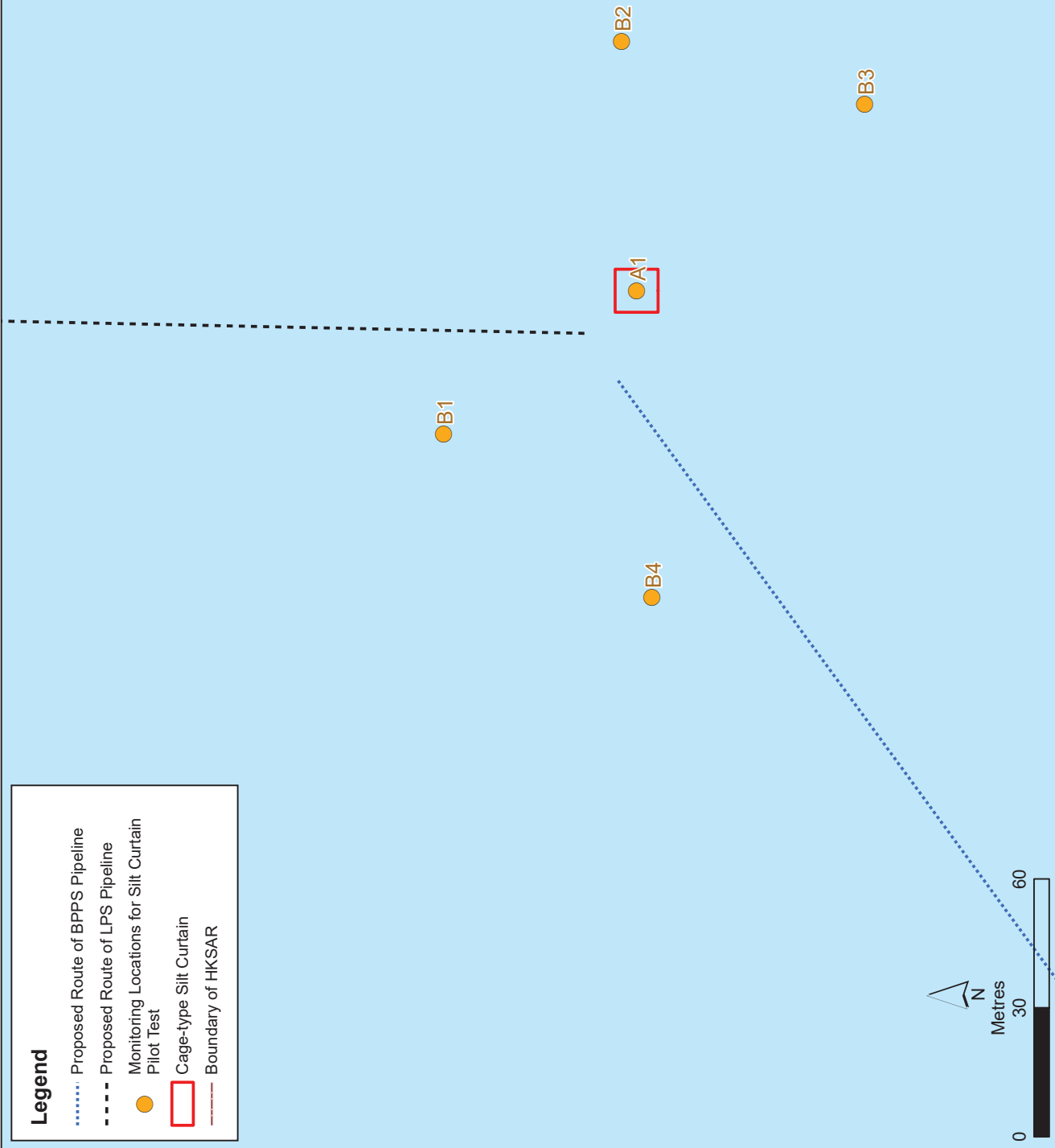
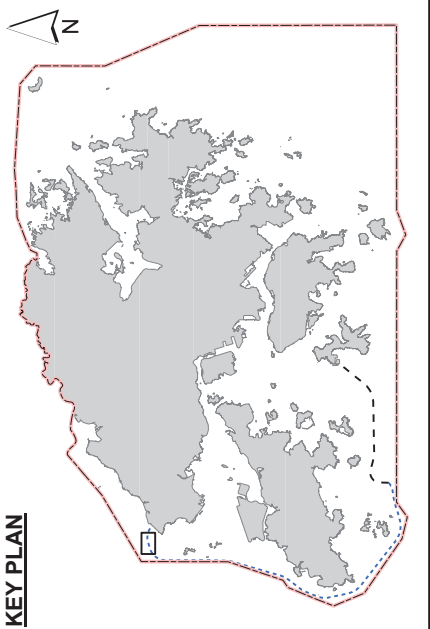


Figure 2.2

Monitoring Locations for Silt Curtain Pilot Test for Dredging Operation

Legend

- Proposed Route of BPPS Pipeline
- Monitoring Locations for Silt Curtain Pilot Test
- Boundary of HKSAR



Coordinates of Monitoring Stations

Position	Easting	Northing
A1	806851	831284
B1	806853	831330
B2	806904	831283
B3	806800	831286
B4	806855	831233

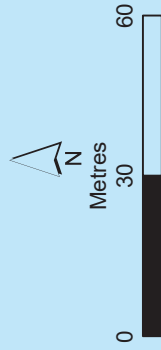
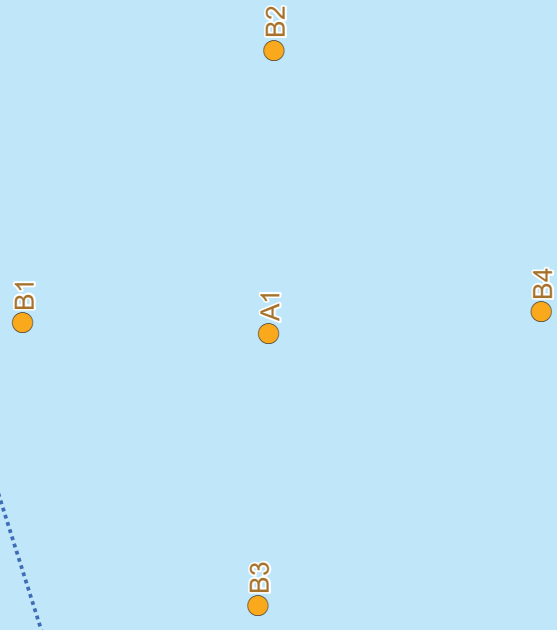


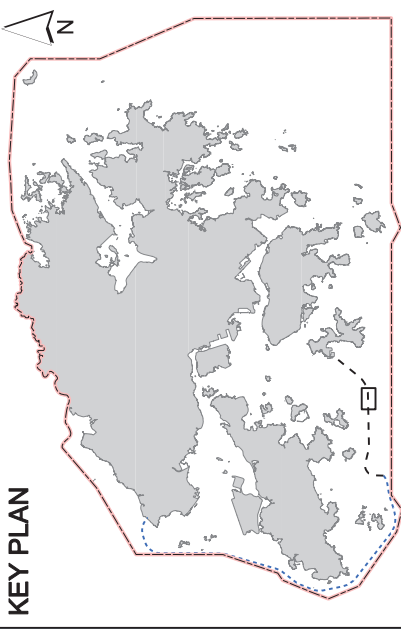
Figure 2.3

Monitoring Locations for Silt Curtain Pilot Test for Dredging Operation

Legend

- - - - Proposed Route of LPS Pipeline
- Monitoring Locations for Silt Curtain Pilot Test
- - - - Boundary of HKSAR

KEY PLAN



Coordinates of Monitoring Locations			
Position	Easting	Northing	
A1	824393.5	803988.1	
B1	824468.1	804008.0	
B2	824355.4	803929.9	
B3	824418.6	804042.6	
B4	824292.4	803972.8	

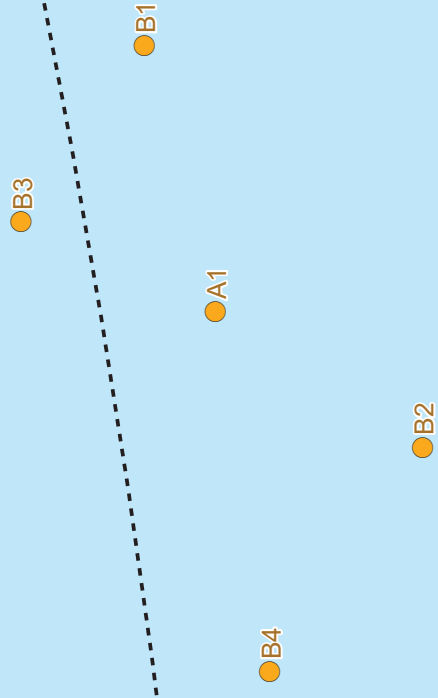


Figure 2.4

Monitoring Locations for Silt Curtain Pilot Test for Jetting Operation

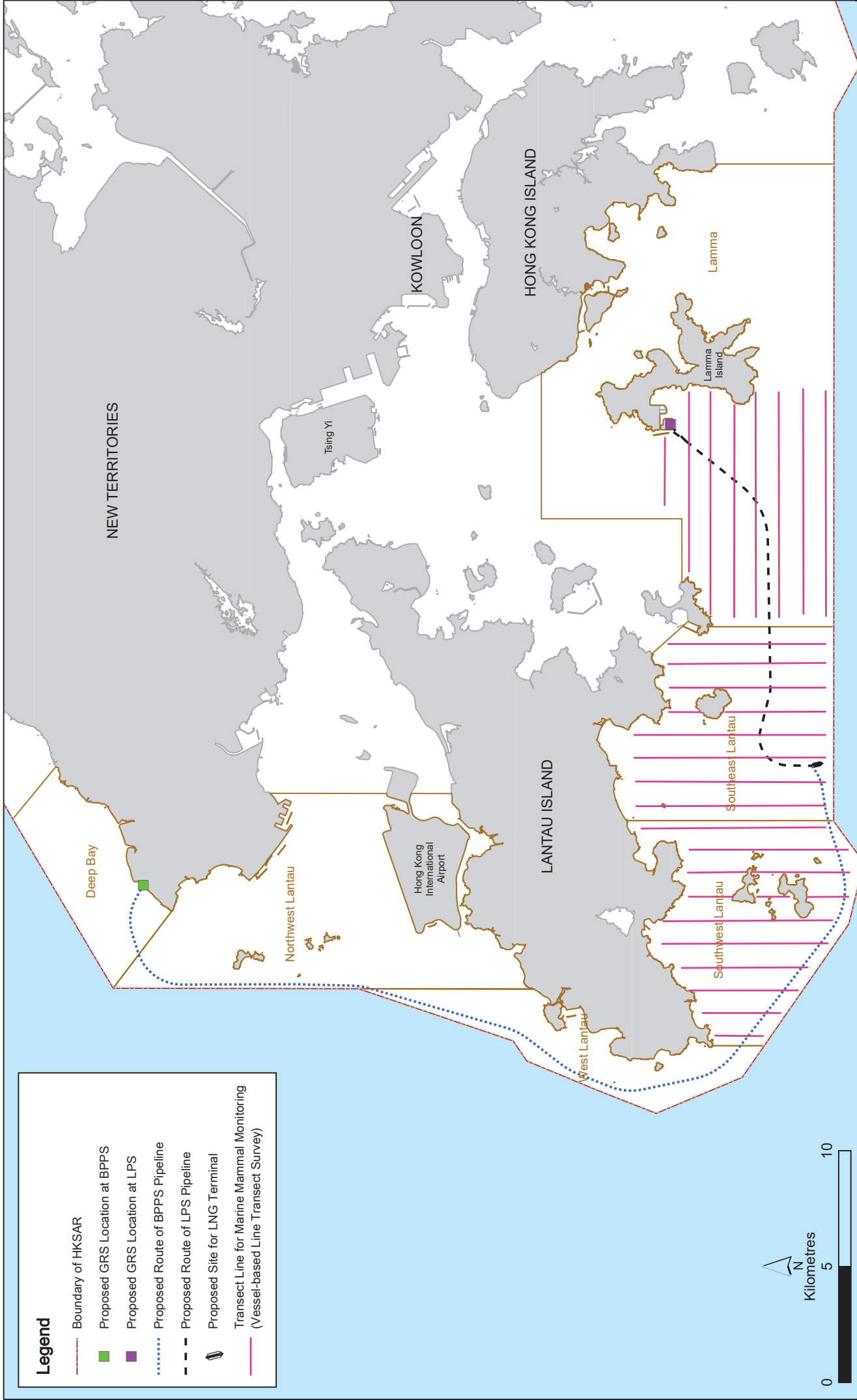


Figure 2.5

Vessel-Based Marine Mammal Survey Location

2.5.1.2 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 2.6**. 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 Action and Limit Levels for Marine Mammal Monitoring

The Action and Limit Levels for marine mammal monitoring are established using encounter rate calculated from the six-month baseline vessel-based line transect surveys from the three survey areas as a whole in accordance with the Updated EM&A Manual. The combined baseline encounter rate will be used to compare with the encounter rate obtained during construction phase monitoring calculated from last three month's monitoring data (i.e. running quarterly value). This approach would allow natural seasonal fluctuations in FP encounter rate to be accounted for, and allow data to be reviewed every month such as appropriate remedial actions could be taken timely if the threshold values are triggered. The Action and Limit Levels are provided in **Table 2.10**.

Table 2.10 Action and Limit Levels for Marine Mammal Monitoring

Monitoring Area	Action Level	Limit Level
SWL, SEL and LM as a whole	Running quarterly STG < 1.12 & ANI < 2.18	Two consecutive running quarterly STG < 1.12 & ANI < 2.18

Notes:

STG = Encounter Rate of Number of Porpoise Sightings

ANI = Encounter Rate of Number of Porpoises

Action / Limit Levels will be triggered if both STG and ANI fall below the criteria.

The Event and Action Plan for marine mammal monitoring can be referred to *relevant Annexes of the associated Monthly EM&A Reports for the reporting period*.

2.5.3 Monitoring Results

2.5.3.1 Vessel-based Line Transect Survey

A total of 24 vessel-based line transect surveys were conducted during the reporting period. The FPs sighted in the three survey areas, SWL, SEL and LM, in the reporting period are presented in **Figure 2.7**.

The running quarterly STG and ANI for the combined survey areas from SWL, SEL and LM during the reporting period are summarised in **Table 2.11**.

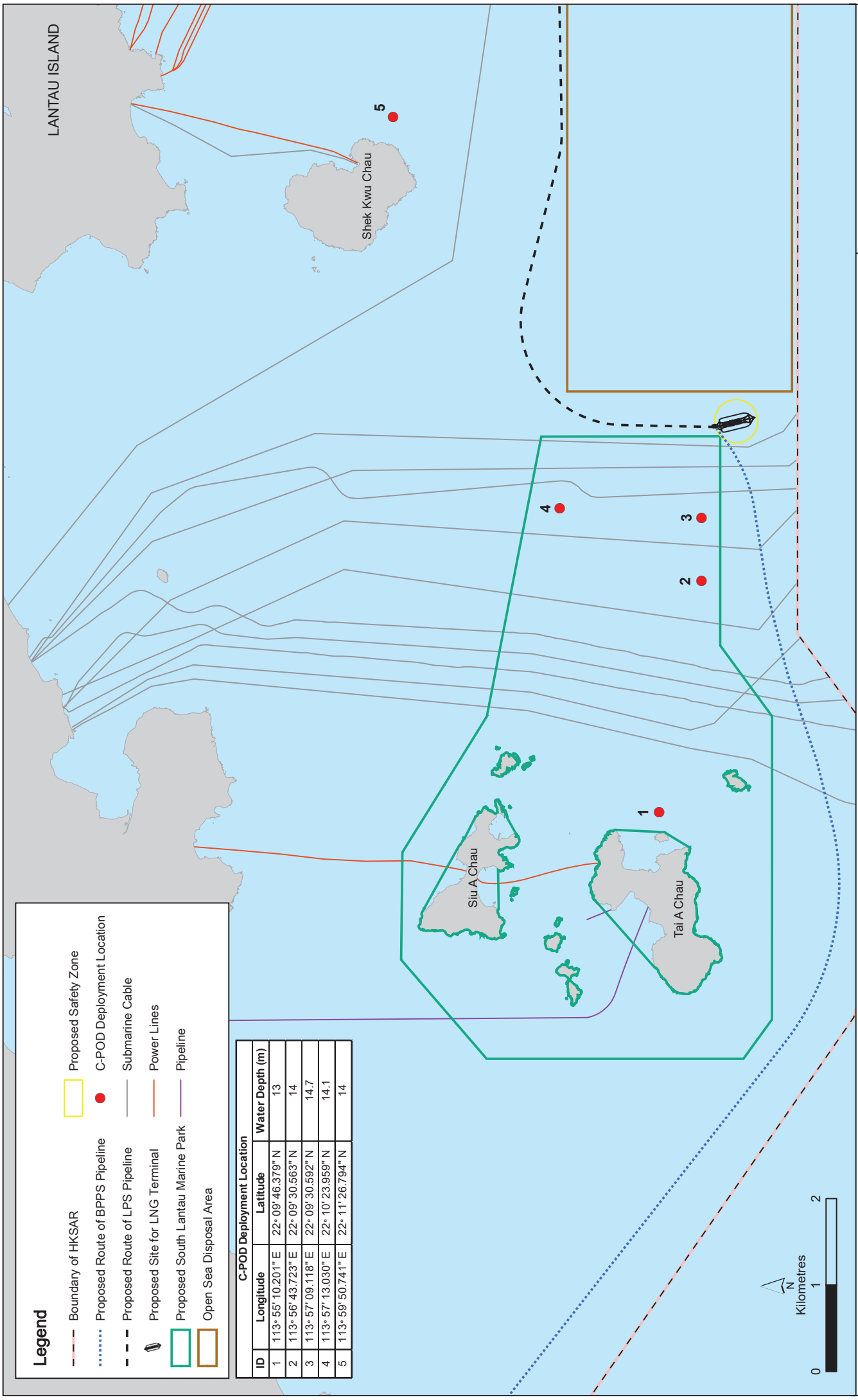
Table 2.11 Running Quarterly STG and ANI for Finless Porpoise

Survey Period	On-effort (km)	No. of Sighting	No. of Porpoise	STG	ANI	Running STG	Running ANI
Dec 2020	219.30	3	7	1.36	3.18	-	-
Jul 2021	375.86	0	0	0.00	0.00	0.83	2.95
Aug 2021	379.00	2	10	0.53	2.64		
Sep 2021	331.64	7	22	2.11	6.63		

Notes:

Only data collected at Beaufort Sea State 2 or below were included for encounter rate analysis.

Running STG and Running ANI were calculated by combining three consecutive survey months data (i.e. running STG/ANI for Sep 2021 were calculated by combining the data in Jul – Sep 2021).



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

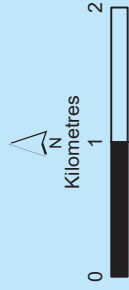


Figure 2.6

Underwater PAM Survey Location

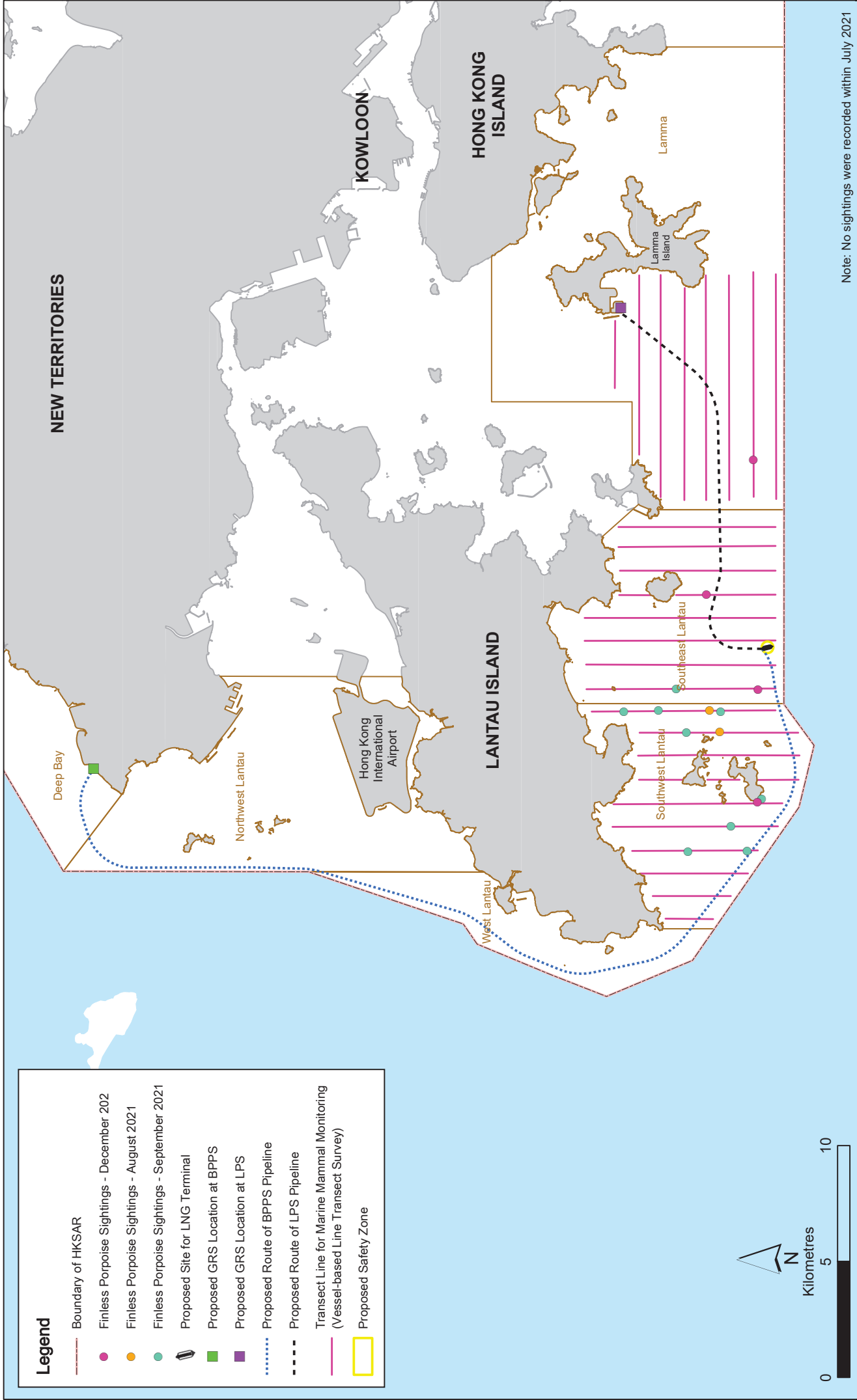


Figure 2.7
Distribution of Finless Porpoise Sightings in December 2020 and July to September 2021

File: T:\GIS\CONTRACT\0605354\mxd\CWDFP\0605354_FP_202012&202107-202109.mxd
Date: 22/2/2022

The running quarterly values of encounter rate in terms of STG and ANI were 0.83 and 2.95, respectively. Therefore, there were no breaches of Action and Limit Levels for marine mammal monitoring in the reporting period.

2.5.3.2 Underwater PAM Survey

Five C-POD units have been deployed at the five locations since the commencement of construction for FEP-01/558/2018/A on 27 November 2020. These units will be serviced every two to four months, subject to review on an as-needed basis, to download accumulated data and replace batteries. The latest round of C-POD servicing was conducted in early July 2021.

2.5.4 Comparison of Monitoring Results with EIA Predictions

The results of the vessel-based line transect marine mammal surveys within the reporting period indicated that there were no breaches of Action and Limit Levels for marine mammal monitoring, indicating that there were no unacceptable/ unforeseen changes in FP distribution as a result of jacket installation works. It should be noted that with implementation of the recommended mitigation measures during construction phase of the Project, no unacceptable impacts on FPs were anticipated as documented in the approved EIA Report. The recommended mitigation measures have been implemented/ adopted during the course of piling works, including the use of structural jacket and bubble curtain to enclose the pile installation work, acoustic decoupling of noisy equipment on work barges, piling with ramp-up procedures; use of hydraulic hammering with noise reduction system; avoidance of underwater percussive piling at night time and during the peak occurrence season of FP; and monitoring of marine mammal exclusion zone with a radius of 500m. The review on the encounter rates of FP (i.e. 0.83 for running STG and 2.95 for running ANI) for the reporting period, at which no Action / Limit Level exceedances in marine mammal monitoring were triggered during the piling works. Therefore, variation between the EIA study predictions and the EM&A monitoring results was not found.

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 and during percussive piling works for construction of the Jetty. Marine mammal exclusion zone requirements are presented in **Table 2.12**.

Table 2.12 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.
Percussive piling works for construction of the Jetty	500m	Before percussive piling commences, the exclusion zone must have been continuously clear of marine mammals for 30 minutes. During percussive piling, if marine mammals are spotted within the exclusion zone, percussive piling 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 dredging / jetting operations for construction of BPPS / LPS Pipeline and percussive piling works for construction of the Jetty were 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 2.13**.

Table 2.13 Monitoring Results for Marine Mammal Exclusion Zone Monitoring

Date	Active works activities	Monitoring results
11, 12, 14-16, 18, 19, 21 Dec 2020	Percussive piling works for construction of the Jetty	No sightings of marine mammals within the marine mammal exclusion zone
2, 3, 5, 7, 12, 14-17 Jul 2021		
5-7, 9, 11, 13, 14, 21, 23-27 Aug 2021		
13, 16, 18 Sep 2021		
27 Jan 2021	Marine dredging operation at Double Berth Jetty for LPS Pipeline ⁽¹⁾	
1, 2, 4 Feb 2021		
23, 26, 27 Feb 2021	De-burial (pre-trenching) of pre-installed pipeline by Mass Flow Excavator for LPS Pipeline	
5, 6, 13-15 Mar 2021		
24 Apr 2021	Marine dredging operation at Subsea Cable Sterile Corridors for BPPS Pipeline	
16-28 May 2021		
28-30 Apr 2021	Marine dredging operation at Urmston Road for BPPS Pipeline	
1-26, 30, 31 May 2021		
1-12 Jun 2021		
5, 6, 8-18, 22-26 Jul 2021	Marine jetting operation at West Lamma Channel for LPS Pipeline	
8-16, 24-31 Aug 2021	Marine jetting operation at South of Shek Kwu Chau to Lamma Channel for LPS Pipeline	
1-8, 12-14, 17-23 Sep 2021		
26-31 Aug 2021	Marine dredging operation at Pipeline Shore Approach at BPPS for BPPS Pipeline	
1, 8, 9 Sep 2021		
18-30 Sep 2021	Marine jetting operation at West of Tai O to West of HKIA for BPPS Pipeline	

Note:

- (1) Pre-trenching works was not undertaken on 27 January 2021 due to adverse weather and malfunction of the grab dredger.

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 29 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 piling operation and jacket 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 three AHTs with 34 entries to 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 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.

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 no environmental complaints, 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 Annual EM&A Review Report presents the key findings of the EM&A works during the reporting period from 23 September 2020 to 30 September 2021 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. Marine water quality monitoring data within the reporting period were reviewed with reference to the approved EIA Report. The results were generally in line with the EIA predictions. The monitoring methodology for marine water quality was reviewed and no change to monitoring methodology is recommended.

Pilot tests on the efficiencies of silt curtain system (cage-type silt curtain for dredging / jetting operations) were conducted during the reporting period in accordance with the approved Silt Curtain Deployment Plans. The results of the pilot tests have demonstrated that the tested cage-type silt curtains for dredging / jetting operations is capable of achieving an efficiency greater than 75% and 85% for dredging operation and jetting operation, respectively, as assumed in the approved EIA Report for the Project. As such, the proposed cage-type silt curtains are effective for the dredging / jetting operations for the Project to minimize water quality impacts and no further measures/recommendations are required.

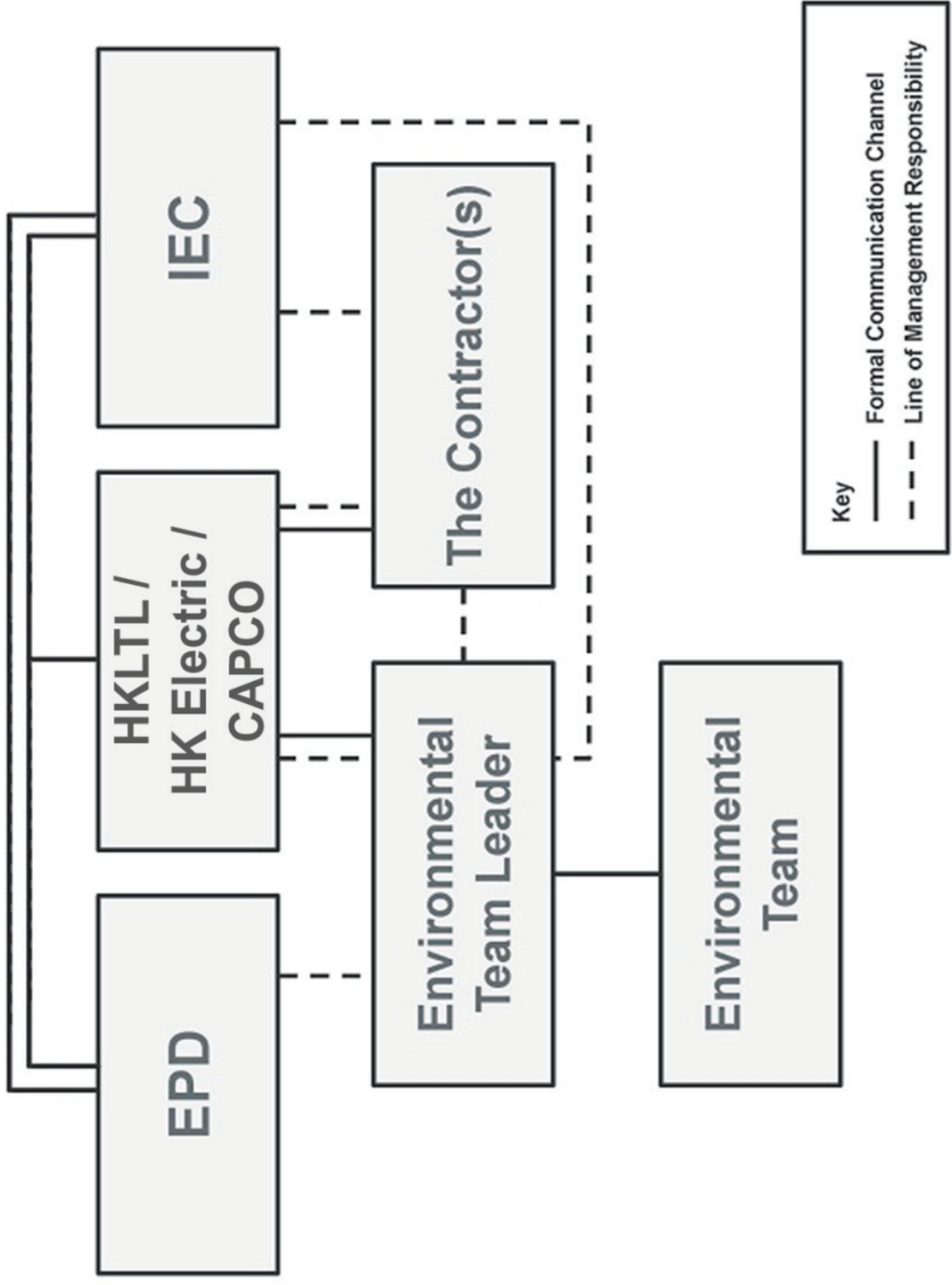
Marine mammal monitoring (vessel-based line transect survey and passive acoustic monitoring) was conducted during the reporting period in accordance with the Updated EM&A Manual. No breaches of Action and Limit Levels were recorded. Variation between the EIA study predictions and the EM&A monitoring results was not found.

There were no environmental complaints, 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. The monitoring and audit activities conducted in the reporting period have been reviewed and are considered effective. As such, no change to the monitoring methodology is recommended. Based on the EM&A findings for the reporting period, the environmental performance for the construction of the Project is generally in line with the EIA predictions and considered acceptable.

ANNEX A

PROJECT ORGANISATION



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
Preparation Phase							
Pre-survey							
Construction Phase							
Jacket Installation							
Topsides Construction							

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
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.

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 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	An observation was given 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
S4.10.1	S2.1	Dropping heights for excavated materials should be controlled to a practical height to minimise	Land sites for GRSS within BPPS	Contractor(s)	✓			Air Pollution Control	✓ for GRS in BPPS N/A for GRS in LPS

⁽¹⁾ D = Design Phase; C = Construction Phase; O = Operational Phase

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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 fugitive dust arising from unloading.	and LPS / During construction					(Construction Dust) Regulation	
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	Observation and reminders were given for GRSS in BPPS N/A for GRSS 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	N/A
S4.10.1	S2.1	Haul roads will be kept clear of dusty materials and will be sprayed with water so as to maintain the entire road surface wet at all times.	Land sites for GRSS within BPPS and LPS / During construction	Contractor(s)		✓		Air Pollution Control (Construction Dust) Regulation	An observation and a reminder were given for GRSS in BPPS N/A for GRSS in LPS

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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	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	Observations and reminder were given 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

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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 A reminder was given for marine-based works for LPS Pipeline Observations were given for BPPS and LPS Pipelines	
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	Land sites for GRSS within BPPS and LPS and marine sites for the LNG Terminal, the	Contractor(s)		✓		Air Pollution Control (Non-road Mobile Machinery) Observations were given for GRS in BPPS	

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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	To ensure proper implementation of the recommended dust mitigation measures and good construction site practices during the construction phase of the GRSSs and the BPPS and the LPS, environmental site audits on monthly basis is recommended throughout the construction period.	BPPS Pipeline and the LPS Pipeline / During construction	Contractor(s)/ Environmental Team (ET) & Independent Environmental Checker (IEC)	✓			✓ for BPPS Pipeline N/A for GRSS in LPS, LNG Terminal and LPS Pipeline	
S4.10.2	S2.2	LNGCs shall comply with the fuel restriction requirement under the <i>Air Pollution Control (Ocean Going Vessels) (Fuel at berth) Regulation</i> .	Marine site for the LNG Terminal / During operation	HKLTL			✓	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 GRSS within BPPS / During	Contractor(s) / CAPCO	✓		✓	✓	

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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 personnel within the LPS shall comply with HK Electric safety policy and requirements.	construction / During operation	Contractor(s) / Electric	✓	✓	✓	-	N/A
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

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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	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
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 GRSSs.	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

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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 commencement of construction works.	LNG Terminal/ During construction	Contractor(s)	✓			-	✓
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

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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
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	LNG Terminal/ During construction	Contractor(s)			✓	TM Standard under the WPCO, WPCO license	Rinsing LPS Pipeline with seawater; injection of hydrotest chemical into LPS Pipeline; and provision

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S7.9.1	S5	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.						requirements, WQO	of wastewater facilities at LPS GRS and Mooring Dolphin 1 of the proposed Jetty for future discharge of hydrotest water.
S7.9.1	S5	Adoption of appropriate dredging and jetting rates, plant numbers and silt curtains at the plant and WSRs, where applicable (Table 7.18 of the EIA Report, reprovided as Table A.2 below).	Marine Dredging & Jetting for the BPPS Pipeline and the LPS Pipeline / During construction	Contractor(s)		✓		-	✓ for BPPS Pipeline and LPS Pipeline
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.	Marine Jetting for the BPPS Pipeline and the LPS	Contractor(s)		✓		-	✓ for LPS Pipeline and BPPS Pipeline

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S7.9.1	S5	No more than two jetting machines will be working on BPPS pipeline. 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 / During construction	Contractor(s)	✓		-	A reminder was given for BPPS Pipeline N/A for LPS Pipeline	
S7.9.1/ S7.9.2	S5	The following measures shall be followed for provision of silt curtain: <ul style="list-style-type: none"> 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 	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 Observations were given for 4 th bullet point for BPPS Pipeline	

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		<p>provided in Figures 7.4 and 7.5 of the EIA Report.</p> <ul style="list-style-type: none"> 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. 							
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)	Contractor(s)	✓	✓	-	✓ for BPPS Pipeline and LPS Pipeline	

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S7.9.1	S5	All vessels must have a clean ballast system.	Terminal) / During operation	Contractor(s)	✓			✓ for BPPS Pipeline and 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)	✓	✓	-	✓ for BPPS Pipeline and LPS Pipeline	
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	Contractor(s)	✓	✓	-	✓ for BPPS Pipeline and LPS Pipeline	

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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 Maintenance Dredging (LNG Terminal) / During operation	Contractor(s)	✓	✓	✓	-	A reminder was given for LPS Pipeline ✓ 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 minimised and collected. These kinds of wastewater should be brought back to port and discharged at	Marine Dredging for the BPPS Pipeline and the LPS Pipeline / During construction / During operation	Contractor(s)	✓	✓	✓	-	✓ for BPPS Pipeline and LPS Pipeline

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					D	C	O		
S7.9.1 / S7.9.2	S5	appropriate collection and treatment system. 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)	✓	✓	✓	-	✓ for BPPS Pipeline and 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)	✓			-	A reminder was given for GRSS in BPPS N/A for GRSS 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 facilities and	Land sites & drainages for GRSS within BPPS and LPS / During construction	Contractor(s)	✓			ProPECC PN 1/94, TM Standard under the WPCO	✓ for GRSS in BPPS N/A for GRSS in LPS

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					D	C	O		
S7.9.1	S5	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.		Contractor(s)		✓		-	N/A
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 BPPS and LPS / During construction	Contractor(s)		✓		-	N/A
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	Land sites & drainages for BPPS and LPS / During construction	Contractor(s)		✓		ProPECC PN 1/94	A reminder was given for GRS in BPPS N/A for GRS in LPS

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					D	C	O		
		are summarised in Appendix A2 of ProPECC PN 1/94.							
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)	✓		-	N/A	
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	Land sites & drainages for GRSS within BPPS	Contractor(s)	✓		-	✓ for GRS in BPPS	

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					D	C	O		
		construction workers over the construction site to prevent direct disposal of sewage into the water environment. No onsite discharge from these chemical toilets would be allowed.	and LPS / During construction					N/A for GRS in LPS	
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	

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					D	C	O		
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)	✓			✓	
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				N/A	
S7.12.2	S5.2-S5.5	During maintenance dredging at the LNG Terminal, water quality monitoring at the selected	Marine Maintenance Dredging (LNG)	Contractor(s) / HKLTL				N/A	

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					D	C	O		
		nearby WSRs would be required.	Terminal) / During operation					requirements, WQO	
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	✓	✓	✓	-	✓
S8.5	S6.2	Good waste management practices should be implemented: <ul style="list-style-type: none"> • 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 	All areas / During construction / During operation	Contractor(s)/ Project Proponents	✓	✓	✓	-	<ul style="list-style-type: none"> ✓ for 1st, 2nd, 5th, 6th & 7th bullet points for GRS in BPPS ✓ for 1st, 2nd, 5th, 6th & 7th bullet points for BPPS Pipeline and LPS Pipeline ✓ for 1st, 2nd, 3rd, 5th, 6th & 7th bullet points for LNG Terminal N/A for 2nd & 4th bullet points for GRS in BPPS

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					D	C	O		
		<p>labelled bins provided to segregate these wastes from other general refuse by the workforce;</p> <ul style="list-style-type: none"> 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; 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. 							<p>N/A for 3rd & 4th bullet points for BPPS Pipeline and LPS Pipeline</p> <p>N/A for 4th bullet point for LNG Terminal</p> <p>N/A for GRS in LPS</p>

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					D	C	O		
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	✓	✓	✓	-	An observation was given for GRS in BPPS
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	✓	✓	✓	-	✓
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	✓	✓	✓	-	✓

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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 <i>Waste Disposal (Charges for Disposal of Construction Waste) Regulation</i> for the payment of disposal charges.	During construction	Contractor(s)	✓		Cap 354N Waste Disposal (Charges for Disposal of Construction Waste) Regulation	✓	
S8.5	S6.2	A trip-ticket system will be established in accordance with <i>DEVB TC(W) No. 6/2010</i> to monitor the reuse of surplus excavated materials off-site and disposal of construction waste and general refuse at transfer	During construction	Contractor(s)	✓		<i>DEVB TC(W) No. 6/2010, Trip Ticket System for Disposal of Construction & Demolition Materials</i>	✓	

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S8.5	S6.2	facilities/ landfills, and to control fly-tipping. 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)	✓
S8.5/ S7.9	S6.2 / S5	Disposal vessels will be fitted with tight bottom seals in order	Dredged areas / During construction	Contractor(s)/ Project Proponents	✓		✓	Dumping at Sea Ordinance (DASO)	✓

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					D	C	O		
		to prevent leakage of material during transport.							
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		✓		Observations were given for BPPS Pipeline A reminder was given for LPS Pipeline	
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		✓		Observations were given for BPPS Pipeline A reminder was given for LPS Pipeline	
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	Dredged areas / During construction	Contractor(s)/ Project Proponents		✓		Observations were given for BPPS Pipeline A reminder was given for LPS Pipeline	

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					D	C	O		
		that 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		✓		✓	
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)		✓	-	✓	

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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 <i>Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes</i> .	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	A reminder and an observation were given for GRS in BPPS
S8.5	Table 6.1	Containers used for storage of chemical wastes will: <ul style="list-style-type: none"> 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	✓

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					D	C	O		
S8.5	Table 6.1	<p>The storage area for chemical wastes will:</p> <ul style="list-style-type: none"> • Be clearly labelled and used solely for the storage of chemical waste; • Be enclosed on at least 3 sides; • 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. 	All areas / During construction / During operation	Contractor(s)/ Project Proponents	✓	✓	✓	Waste Disposal (Chemical Waste) (General) Regulation; Code of Practice on the Labelling and Storage of Chemical Wastes	✓ 3 rd bullet point: A reminder and an observation were given for GRS in BPPS

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					D	C	O		
S8.5	Table 6.1	Chemical waste will be disposed of: <ul style="list-style-type: none"> Via a licensed waste collector; and To a facility licensed to receive chemical waste, such as the Chemical Waste Treatment Facility which also offers a chemical waste collection service and can supply the necessary storage containers. 	All areas / During construction / During operation	Contractor(s)/ Project Proponents	✓	✓	✓	Waste Disposal (Chemical Waste) (General) Regulation; Code of Practice on the Labelling and Storage of Chemical Wastes	N/A
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	All areas / During construction / During operation	Contractor(s)/ Project Proponents	✓	✓	✓	-	✓ A reminder and an observation were given for GRS in BPPS

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					D	C	O		
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 can, waste paper, glass bottles and plastic bottles) from the Project Site. Materials recovered will be sold for recycling.	All areas / During construction / During operation	Contractor(s)/ Project Proponents	✓	✓	✓	-	✓ for provision of recycling bins 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	All areas / During construction / During operation	Contractor(s)/ Project Proponents	✓	✓	✓	-	✓

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					D	C	O		
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 quantity of waste disposed from these activities.	All areas / During operation	Project Proponents			✓	-	N/A
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,	All areas / During construction	Contractor(s)/ Environmental Team (ET) & Independent Environmental Checker (IEC)		✓		-	✓

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					D	C	O		
		recycling, transportation and disposal, to prevent any dumping of waste into the sea or malpractice of waste disposal.							
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 prevent avoidable water quality impact.	Marine works / During construction / During operation	Contractor(s) / Project Proponents	✓	✓	-	✓	
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	✓	✓	-	✓	

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					D	C	O		
S9.11.2	S7	Standard site practices outlined in <i>ProPECC PN 1/94</i> "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	✓	✓	✓	<i>ProPECC PN 1/94</i>	✓
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)	✓			-	N/A
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)	✓			-	N/A
S9.11.3	S7	Pipeline dredging/ jetting from LNG Terminal to South of Shek	Marine works (Dredging/ jetting	Contractor(s)	✓			-	✓

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					D	C	O		
		Kwu Chau (LPS KP0.0 to 5.0) will be restricted to a daily maximum of 12 hours with daytime (0700 – 1900) operations.	works between from LNG Terminal to South of Shek Kwu Chau along the LPS Pipeline) / During construction						
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: <ul style="list-style-type: none"> 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 	Marine works (Piling at the LNG Terminal) / During construction	Contractor(s)	✓		-	✓	

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					D	C	O		
		<p>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 random loud sound emissions;</p> <ul style="list-style-type: none"> 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 							

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					D	C	O		
S9.11.3	S7	<p>the daytime (0700 – 1900) for a maximum of 12 hours, avoiding generation of underwater sounds at night time; and</p> <ul style="list-style-type: none"> Underwater percussive piling works for the Jetty construction will avoid the peak season of FP (December to May). <p>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 the proposed SLMP during manoeuvring to the Jetty and after typhoon event due to its safe operational requirement).</p>	Marine works / During construction / During operation	Contractor(s) / Project Proponents	✓	✓	✓	-	✓

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					D	C	O		
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 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	✓	✓	-	✓	

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					D	C	O		
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 avoid using high	Marine works / During construction / During operation	Contractor(s) / Project Proponents	✓	✓	✓	-	✓

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					D	C	O		
S9.11.3	S7	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.	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	Marine works / During construction	Contractor(s) / Project Proponents	✓	✓	✓	-	✓

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					D	C	O		
		start of piling. If a marine mammal is observed in the 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	Marine works / During	Contractor(s) / Project Proponents	✓	✓	-	✓	

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					D	C	O		
		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 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	construction / During operation						

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					D	C	O		
		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 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	Marine site / During construction	Contractor(s) / ET/ Project Proponents			✓	-	✓

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					D	C	O		
		areas by FP. Prior to the commencement of monitoring, methods will be agreed with the AFCD.							
Fisheries									
S10.8	S8	The mitigation measures designed to mitigate impacts to water quality to acceptable levels (compliance with assessment criteria) and marine ecological impacts are expected to mitigate impacts to fisheries resources.	During construction and operation	Contractor(s) / Project Proponents / Environmental Team (ET) & Independent 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	All areas / Detailed design / During construction / During operation	Design Contractor / Project Proponents	✓	✓	-	✓	

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					D	C	O		
S11.8	S9	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 / During construction	Contractor(s)	✓			✓ for GRS in BPPS and LNG Terminal N/A for GRS in LPS	
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.	Land sites for the GRSs within BPPS and LPS / During construction	Contractor(s)	✓			✓ for GRS in BPPS N/A for 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	

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					D	C	O		
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 N/A for 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		✓
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)	N/A
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)	✓ for FEP-02/558/2018/A N/A for FEP-03/558/2018/B
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)	N/A
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			N/A
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		N/A
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)	N/A
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)		N/A
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)		N/A

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 ³ 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)		N/A
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 ³ day ⁻¹ for 24 hours each day	Yes	Two layers at CR1, CR2 (Note 2)		N/A
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)		✓

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 <i>Air Pollution Control (Construction Dust) Regulation</i>	454879	N/A	Valid
2	Billing Account under <i>Waste Disposal (Charges for Disposal of Construction Waste) Regulation</i>	7037035	N/A	Valid
3	Registration as Chemical Waste Producer under <i>Waste Disposal (Chemical Waste) (General) Regulation</i>	WPN 5213-912-C4445-01 (Note 1)	N/A	Registration completed on 12 May 2020
4	Registration as Chemical Waste Producer under <i>Waste Disposal (Chemical Waste) (General) Regulation</i>	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 <i>Noise Control Ordinance</i>	GW-RS0743-20 (Note 3)	19 Mar 2021	Validity from 2 Oct 2020 to 19 Mar 2021
6	Construction Noise Permit (for construction site for the Hong Kong Offshore LNG Terminal Project) under <i>Noise Control Ordinance</i>	GW-RS0911-20 (Note 4)	3 Jun 2021	Validity from 4 Dec 2020 to 3 Jun 2021
7	Construction Noise Permit (for construction site for the Hong Kong Offshore LNG Terminal Project) under <i>Noise Control Ordinance</i>	GW-RS0955-20 (Note 5)	13 Jun 2021	Validity from 17 Dec 2020 to 13 Jun 2021
8	Construction Noise Permit (for construction site for the Hong Kong Offshore LNG Terminal Project) under <i>Noise Control Ordinance</i>	GW-RS0203-21	30 Sep 2021	Validity from 1 Apr to 30 Sep 2021

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-RS0743-20 has been withdrawn and replaced by GW-RS0911-20.
- (4) Construction Noise Permit GW-RS0911-20 has been withdrawn and replaced by GW-RS0955-20.
- (5) Construction Noise Permit GW-RS0955-20 has been withdrawn and replaced by GW-RS0203-21.

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 <i>EIA Ordinance</i>	FEP-01/558/2018	N/A	Issued on 17 Jan 2020
2	Further Environmental Permit under <i>EIA Ordinance</i>	FEP-01/558/2018/A	N/A	Issued on 6 Nov 2020

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Item	Description	Ref. No.	Date of Expiry	Status
3	Construction Noise Permit (for construction site of the water space between South of Shek Kwu Chau and East of Soko Islands, offshore area near boundary of Hong Kong) under <i>Noise Control Ordinance</i>	PP-RS0011-20 (Note 1)	30 Sep 2020	Validity from 1 to 30 Sep 2020
4	Construction Noise Permit (for construction site of the water space between South of Shek Kwu Chau and East of Soko Islands, offshore area near boundary of Hong Kong) under <i>Noise Control Ordinance</i>	PP-RS0013-20 (Note 2)	31 Dec 2020	Validity from 9 Oct to 31 Dec 2020
5	Construction Noise Permit (for construction site of the water space between South of Shek Kwu Chau and East of Soko Islands offshore area near boundary of Hong Kong) under <i>Noise Control Ordinance</i>	PP-RS0008-21	31 Dec 2021	Validity from 2 Jul to 31 Dec 2021

Notes:

(1) Construction Noise Permit PP-RS0011-20 has been withdrawn and replaced by PP-RS0013-20.

(2) Construction Noise Permit PP-RS0013-20 has been withdrawn and replaced by PP-RS0008-21.

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 <i>EIA Ordinance</i>	FEP-02/558/2018	N/A	Issued on 17 Jan 2020
2	Further Environmental Permit under <i>EIA Ordinance</i>	FEP-02/558/2018/A	N/A	Issued on 22 Dec 2020
3	Marine Dumping Permit under <i>Dumping at Sea Ordinance</i>	EP/MD/21-055	12 Jul 2021	Issued on 13 Jan 2021

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 <i>EIA Ordinance</i>	FEP-03/558/2018	N/A	Issued on 17 Jan 2020
2	Further Environmental Permit under <i>EIA Ordinance</i>	FEP-03/558/2018/A	N/A	Issued on 22 Jan 2021
3	Further Environmental Permit under <i>EIA Ordinance</i>	FEP-03/558/2018/B	N/A	Issued on 25 Aug 2021
4	Registration as Chemical Waste Producer under <i>Waste Disposal (Chemical Waste) (General) Regulation</i>	WPN 5293-431- P2781-26 (Note 1)	N/A	Registration completed on 1 Dec 2020

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Item	Description	Ref. No.	Date of Expiry	Status
5	Wastewater Discharge License under <i>Water Pollution Control Ordinance</i>	WT00037473-2021 (Note 2)	31 Mar 2026	Validity from 9 Mar 2021 to 31 Mar 2026
6	Construction Noise Permit (for offshore construction site near Urmston Road, Tuen Mun) under <i>Noise Control Ordinance</i>	GW-RW0389-20 (Note 3)	14 Feb 2021	Validity from 28 Aug 2020 to 14 Feb 2021
7	Construction Noise Permit (for construction site near Eastern Road, BPPS, Yung Long Road, Tuen Mun) under <i>Noise Control Ordinance</i>	GW-RW0407-20 (Note 4)	6 Mar 2021	Validity from 11 Sept 2020 to 6 Mar 2021
8	Construction Noise Permit (for offshore construction site near Urmston Road, Tuen Mun) under <i>Noise Control Ordinance</i>	GW-RW0037-21 (Note 5)	30 Jun 2021	Validity from 15 Feb 2021 to 30 Jun 2021
9	Construction Noise Permit (for construction site near Eastern Road, BPPS, Yung Long Road, Tuen Mun) under <i>Noise Control Ordinance</i>	GW-RW0067-21 (Note 6)	6 Sep 2021	Validity from 7 Mar to 6 Sep 2021
10	Construction Noise Permit (for offshore construction site near Urmston Road, Tuen Mun) under <i>Noise Control Ordinance</i>	GW-RW0104-21	30 Sep 2021	Validity from 5 Apr to 30 Sep 2021
11	Construction Noise Permit (for construction site near Eastern Road, BPPS, Yung Long Road, Tuen Mun) under <i>Noise Control Ordinance</i>	GW-RW0340-21	6 Mar 2022	Validity from 7 Sep 2021 to 6 Mar 2022
12	Marine Dumping Permit under <i>Dumping at Sea Ordinance</i>	EP/MD/21-046	11 Oct 2021	Issued on 9 Apr 2021
13	Marine Dumping Permit under <i>Dumping at Sea Ordinance</i>	EP/MD/21-050 (Note 7)	11 May 2021	Issued on 9 Apr 2021
14	Marine Dumping Permit under <i>Dumping at Sea Ordinance</i>	EP/MD/21-127	11 Oct 2021	Issued on 9 Apr 2021
15	Marine Dumping Permit under <i>Dumping at Sea Ordinance</i>	EP/MD/22-004 (Note 8)	11 Jun 2021	Issued on 10 May 2021
16	Marine Dumping Permit under <i>Dumping at Sea Ordinance</i>	EP/MD/22-011	20 Nov 2021	Issued on 21 May 2021
17	Marine Dumping Permit under <i>Dumping at Sea Ordinance</i>	EP/MD/22-018	11 Jul 2021	Issued on 11 Jun 2021
18	Marine Dumping Permit under <i>Dumping at Sea Ordinance</i>	EP/MD/22-047	19 Sep 2021	Issued on 19 Aug 2021

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) Construction Noise Permit GW-RW0389-20 has been replaced by GW-RW0037-21 since 15 February 2021.
- (4) Construction Noise Permit GW-RW0407-20 has been replaced by GW-RW0067-21 since 7 March 2021.
- (5) Construction Noise Permit GW-RW0037-21 has been replaced by GW-RW0104-21 since 5 April 2021.
- (6) Construction Noise Permit GW-RW0067-21 has been replaced by GW-RW0340-21 since 7 September 2021.
- (7) Marine Dumping Permit EP/MD/21-050 has been renewed to a separate permit (EP/MD/22-004) in the reporting period.
- (8) Marine Dumping Permit EP/MD/22-004 has been renewed to a separate permit (EP/MD/22-018) in the reporting period.

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 – Jul to Sep 2021)	Action Limit	0 0	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 (23 Sep 2020 to 30 Sep 2021)	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 Limit	0 0	0 0
Marine Water Quality (DO) (bottom)	Action Limit	0 0	0 0
Marine Water Quality (Turbidity) (depth-averaged)	Action Limit	0 0	0 0
Marine Water Quality (SS) (depth-averaged)	Action Limit	0 0	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 (23 Sep 2020 to 30 Sep 2021)	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.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 (23 Sep 2020 to 30 Sep 2021)	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

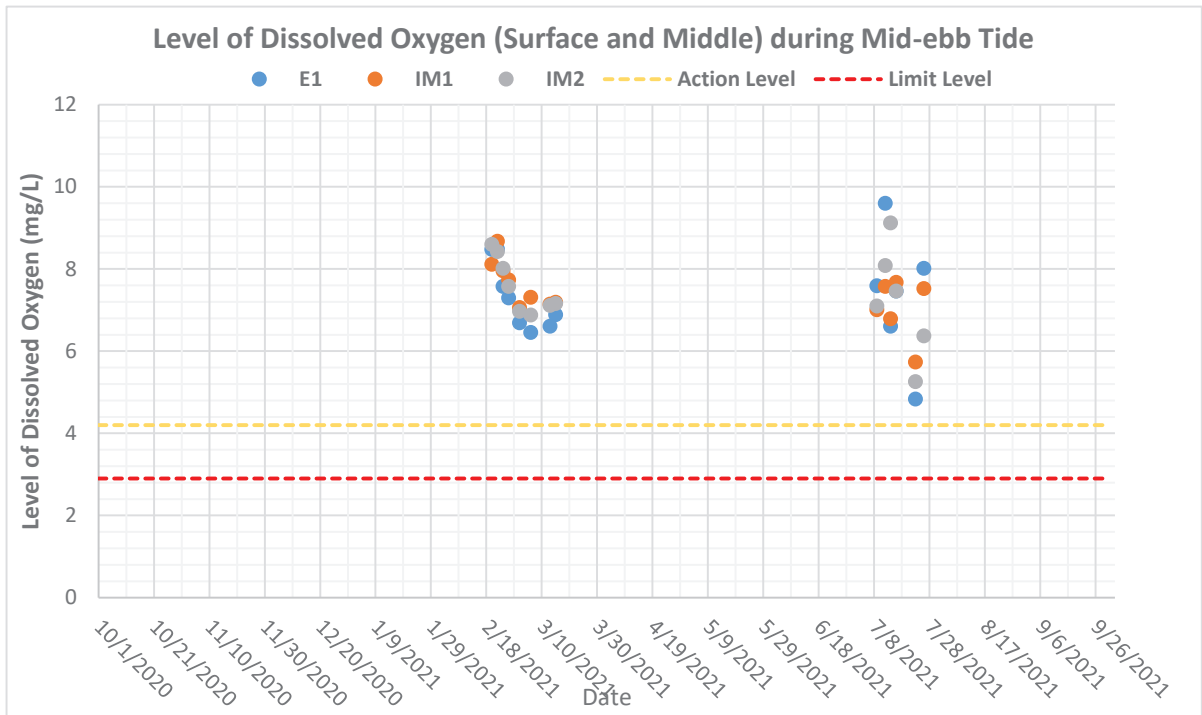


Figure F1a: Levels of Surface and Middle Dissolved Oxygen (mg/L) at control station (E1) and impact stations (IM1-IM2) under Group 1 during mid-ebb tides between October 2020 and September 2021

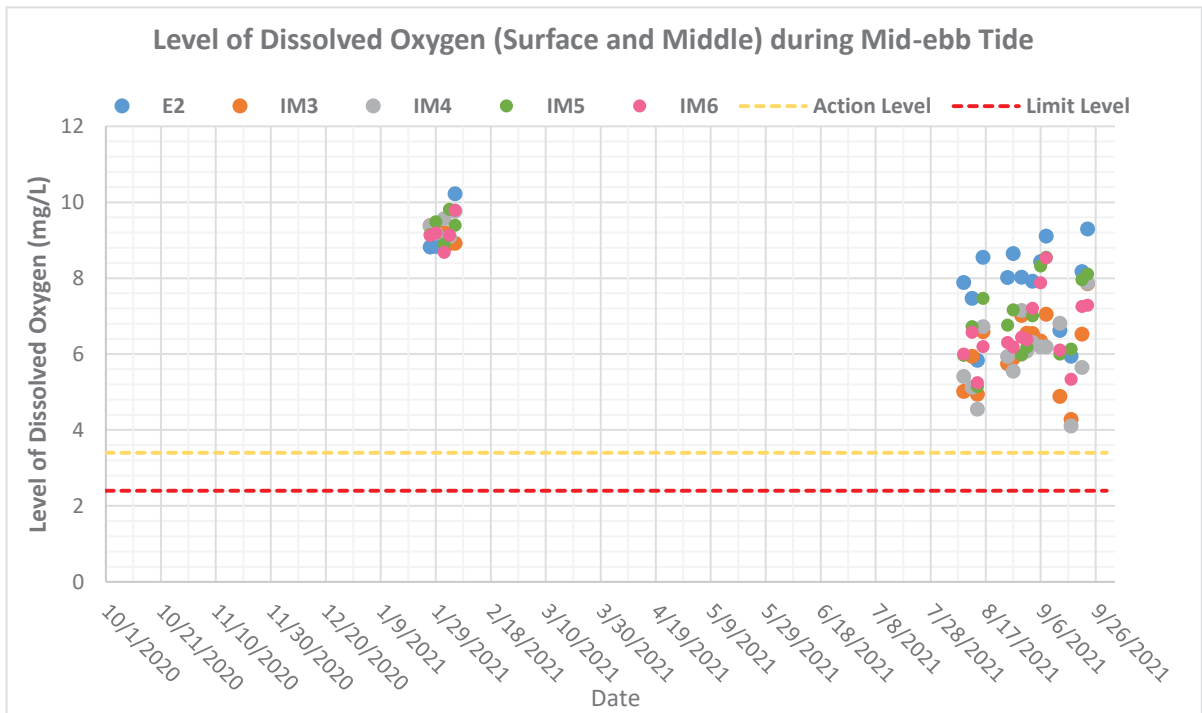


Figure F1b: Levels of Surface and Middle Dissolved Oxygen (mg/L) at control station (E2) and impact stations (IM3-IM6) under Group 2 during mid-ebb tides between October 2020 and September 2021

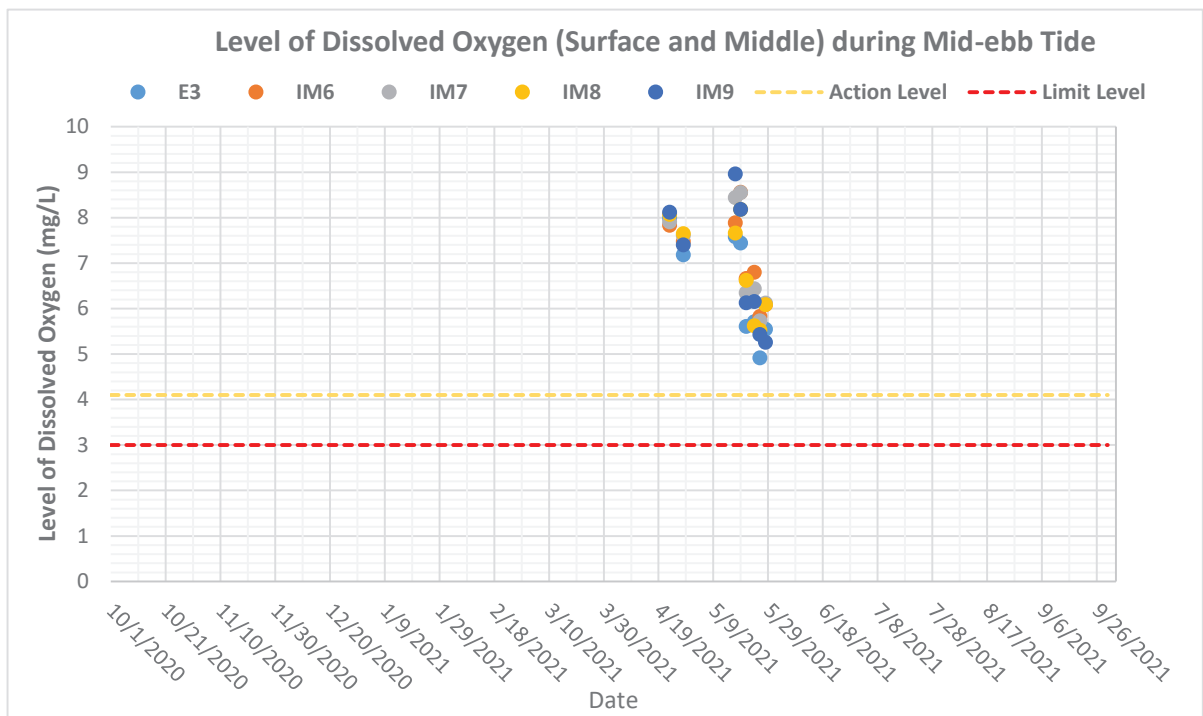


Figure F1c: Levels of Surface and Middle Dissolved Oxygen (mg/L) at control station (E3) and impact stations (IM6-IM9) under Group 3 during mid-ebb tides between October 2020 and September 2021

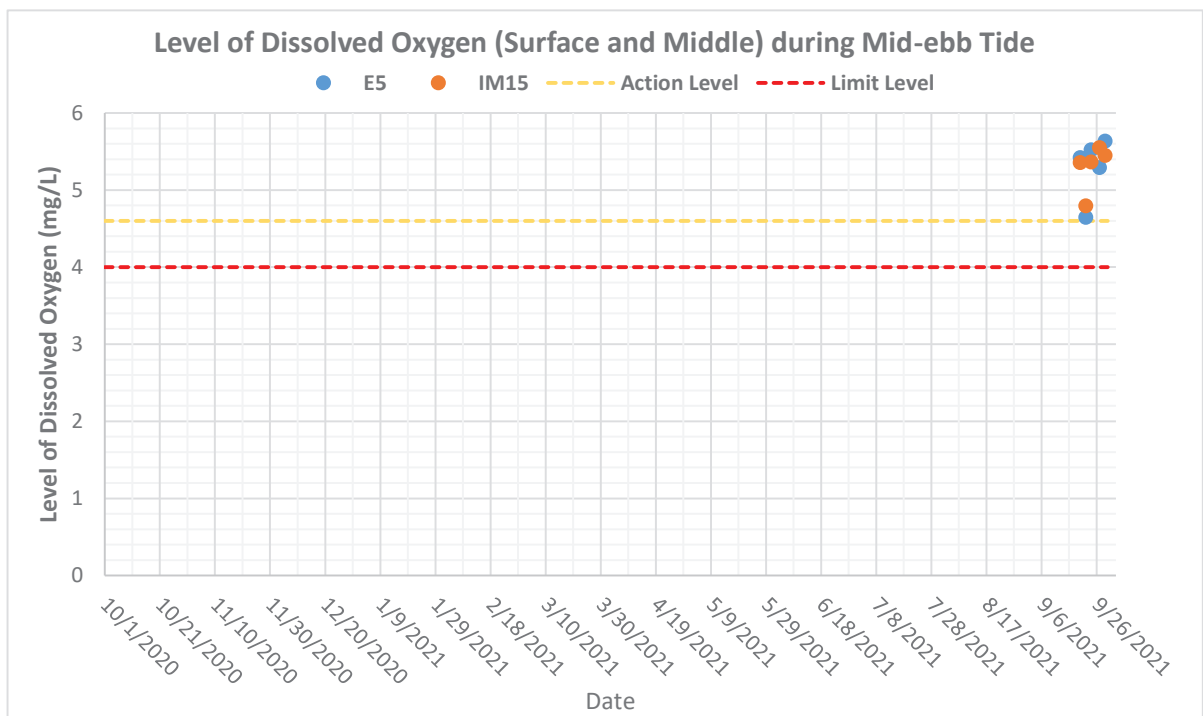


Figure F1d: Levels of Surface and Middle Dissolved Oxygen (mg/L) at control station (E5) and impact station (IM15) under Group 5 during mid-ebb tides between October 2020 and September 2021

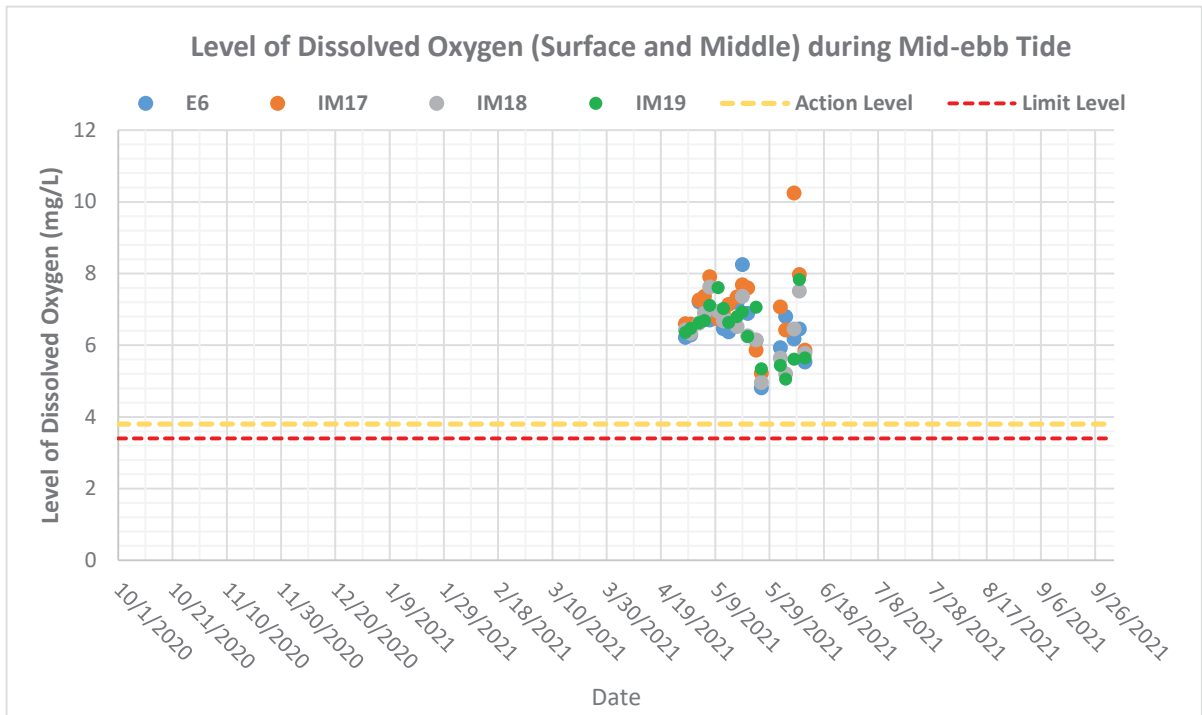


Figure F1e: Levels of Surface and Middle Dissolved Oxygen (mg/L) at control station (E6) and impact stations (IM17-IM19) under Group 7 during mid-ebb tides between October 2020 and September 2021

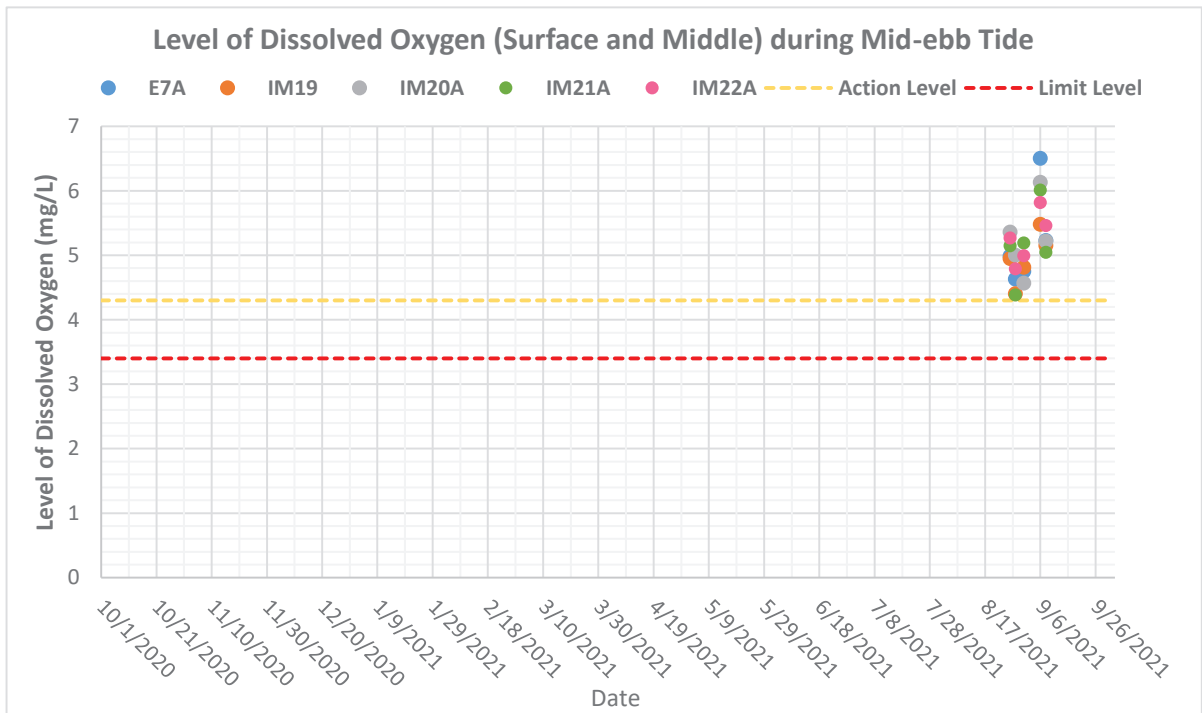


Figure F1f: Levels of Surface and Middle Dissolved Oxygen (mg/L) at control station (E7A) and impact stations (IM19-IM22A) under Group 8 during mid-ebb tides between October 2020 and September 2021

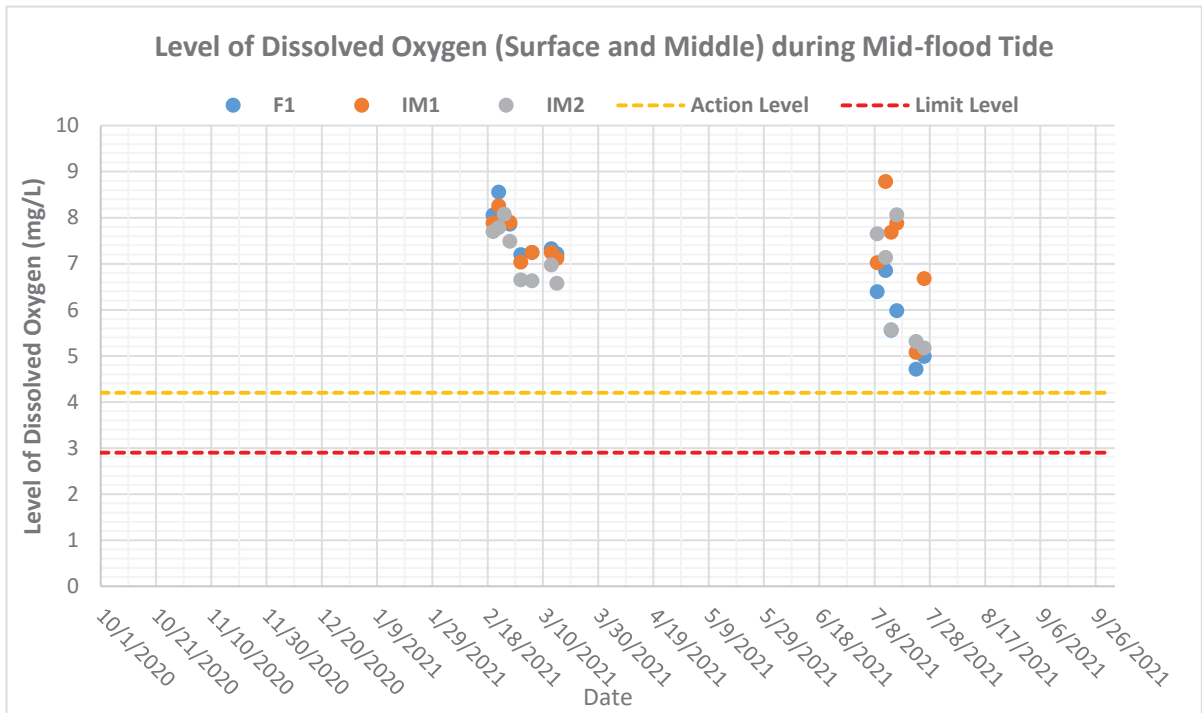


Figure F1g: Levels of Surface and Middle Dissolved Oxygen (mg/L) at control station (F1) and impact stations (IM1-IM2) under Group 1 during mid-flood tides between October 2020 and September 2021

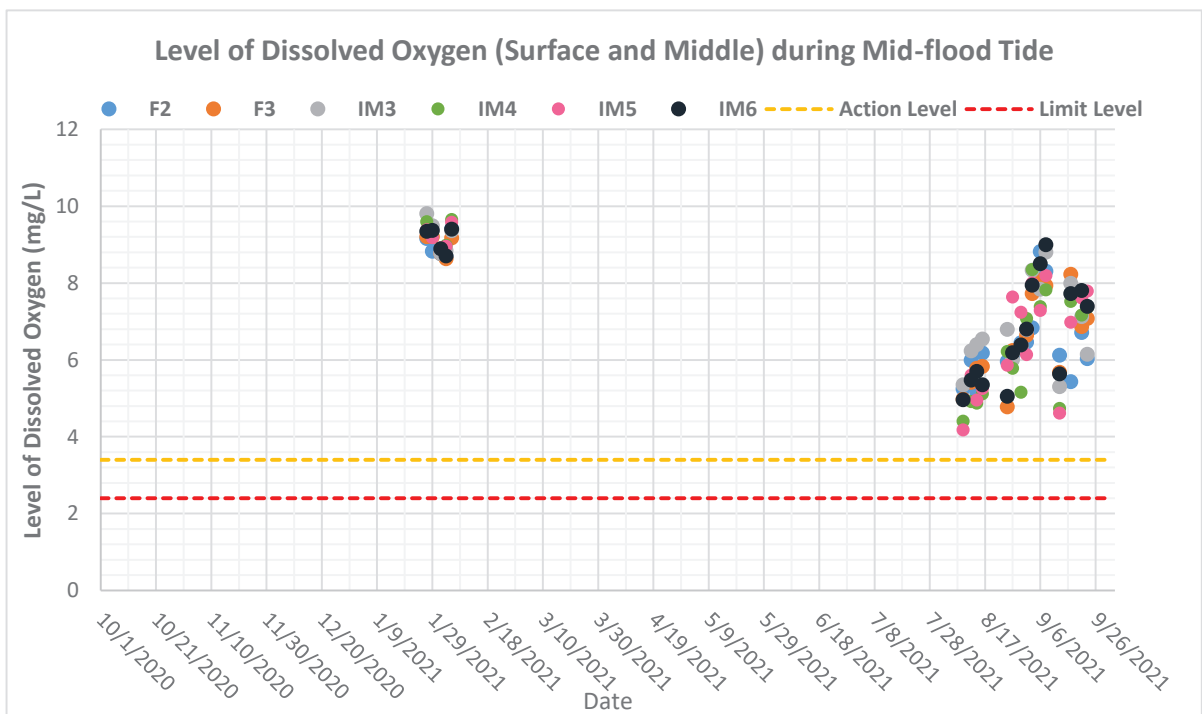


Figure F1h: Levels of Surface and Middle Dissolved Oxygen (mg/L) at control stations (F2-F3) and impact stations (IM3-IM6) under Group 2 during mid-flood tides between October 2020 and September 2021

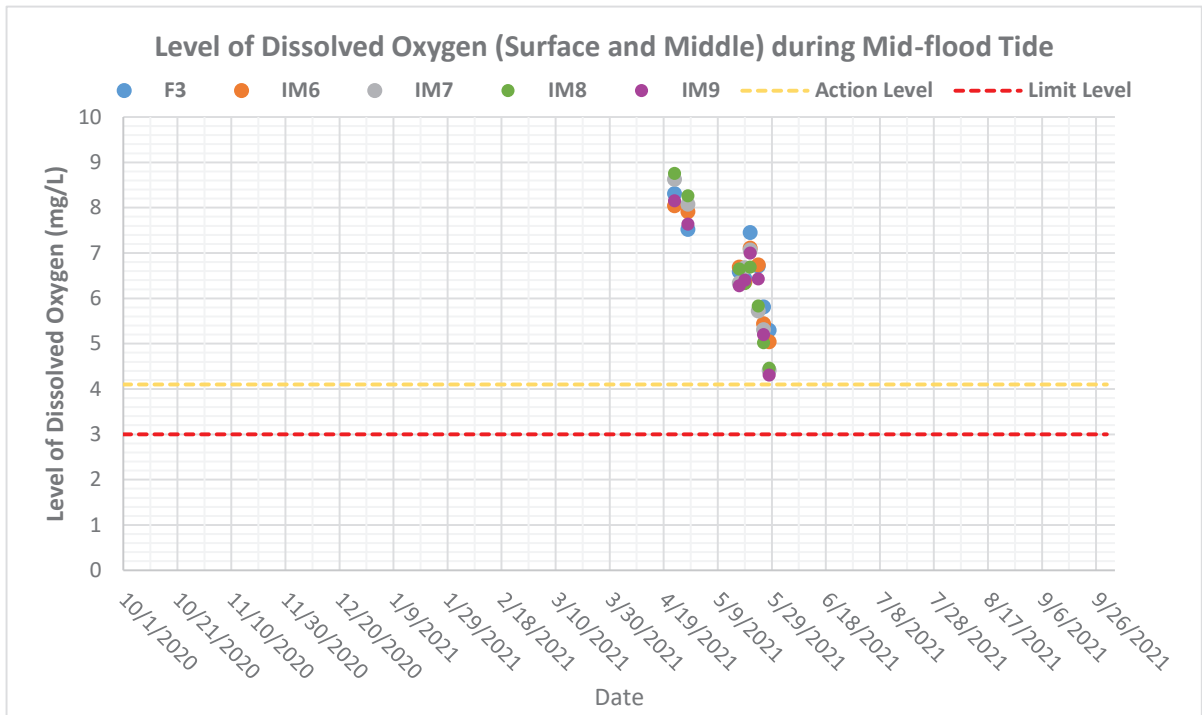


Figure F1i: Levels of Surface and Middle Dissolved Oxygen (mg/L) at control station (F3) and impact stations (IM6-IM9) under Group 3 during mid-flood tides between October 2020 and September 2021

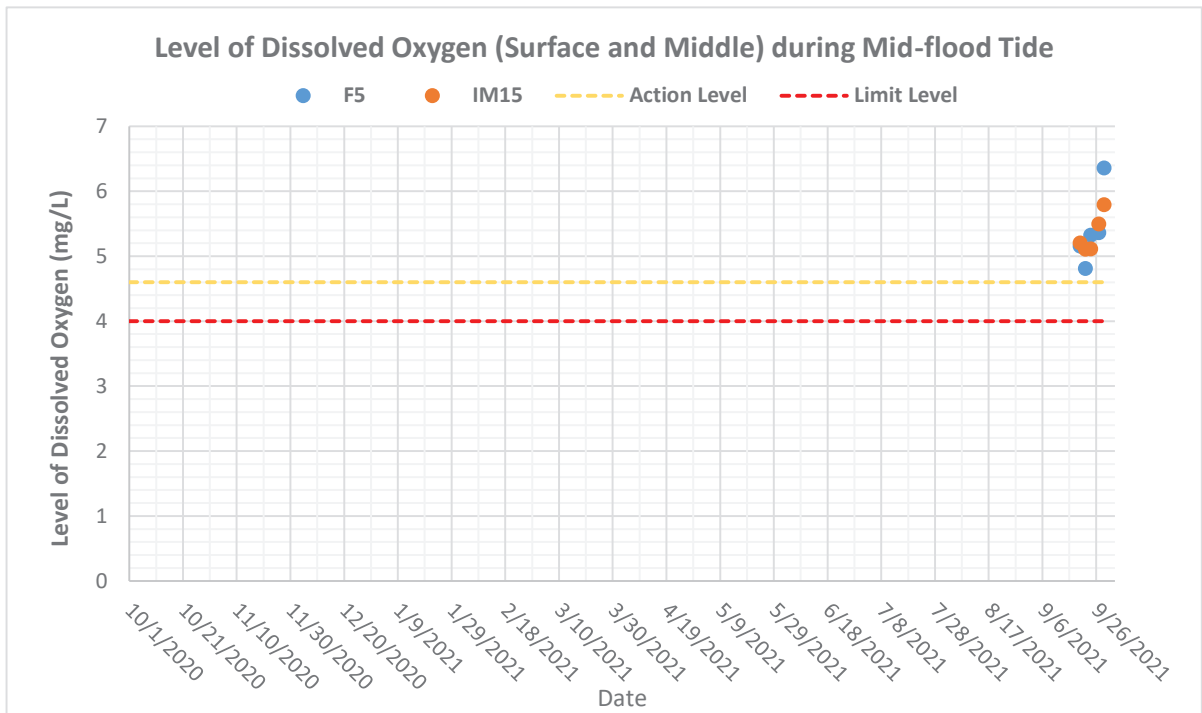


Figure F1j: Levels of Surface and Middle Dissolved Oxygen (mg/L) at control station (F5) and impact station (IM15) under Group 5 during mid-flood tides between October 2020 and September 2021

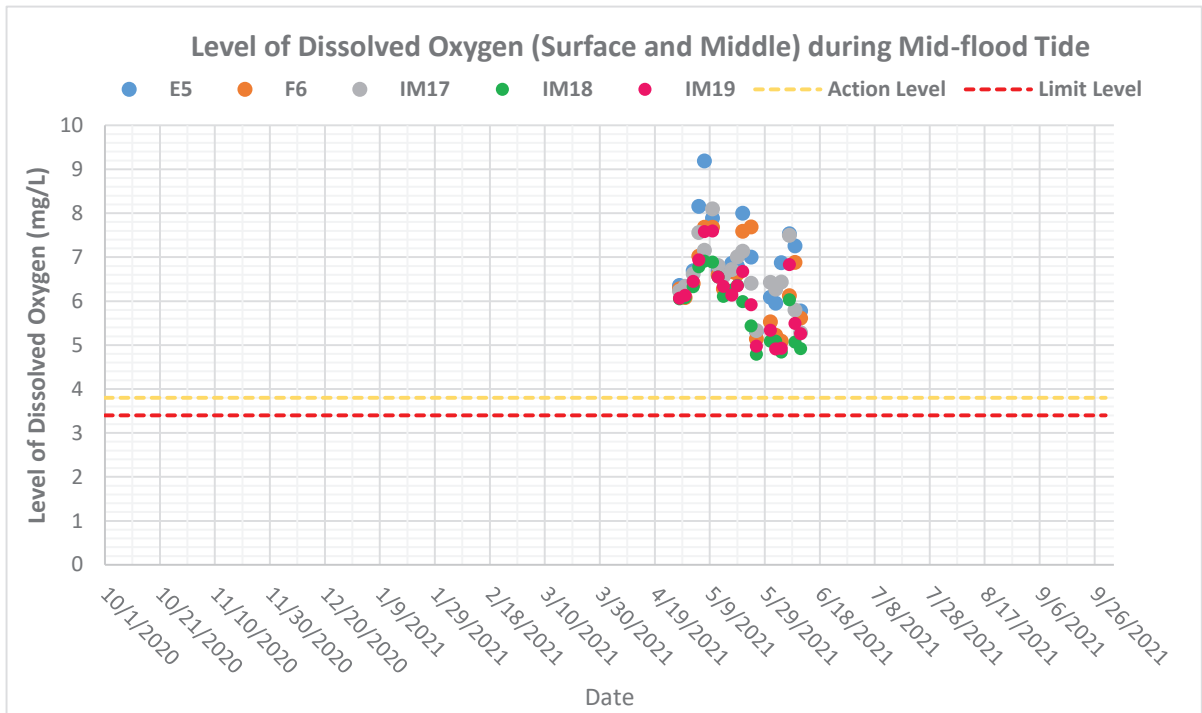


Figure F1k: Levels of Surface and Middle Dissolved Oxygen (mg/L) at control stations (E5, F6) and impact stations (IM17-IM19) under Group 7 during mid-flood tides between October 2020 and September 2021

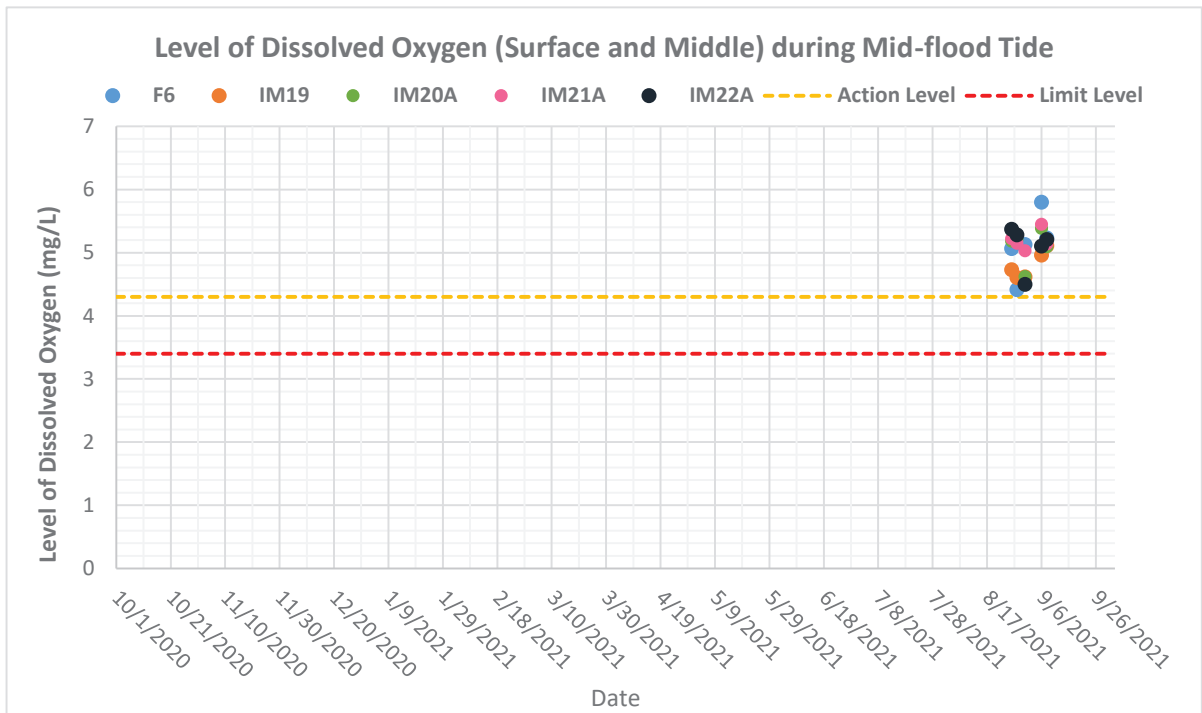


Figure F1l: Levels of Surface and Middle Dissolved Oxygen (mg/L) at control station (F6) and impact stations (IM19-IM22A) under Group 8 during mid-flood tides between October 2020 and September 2021

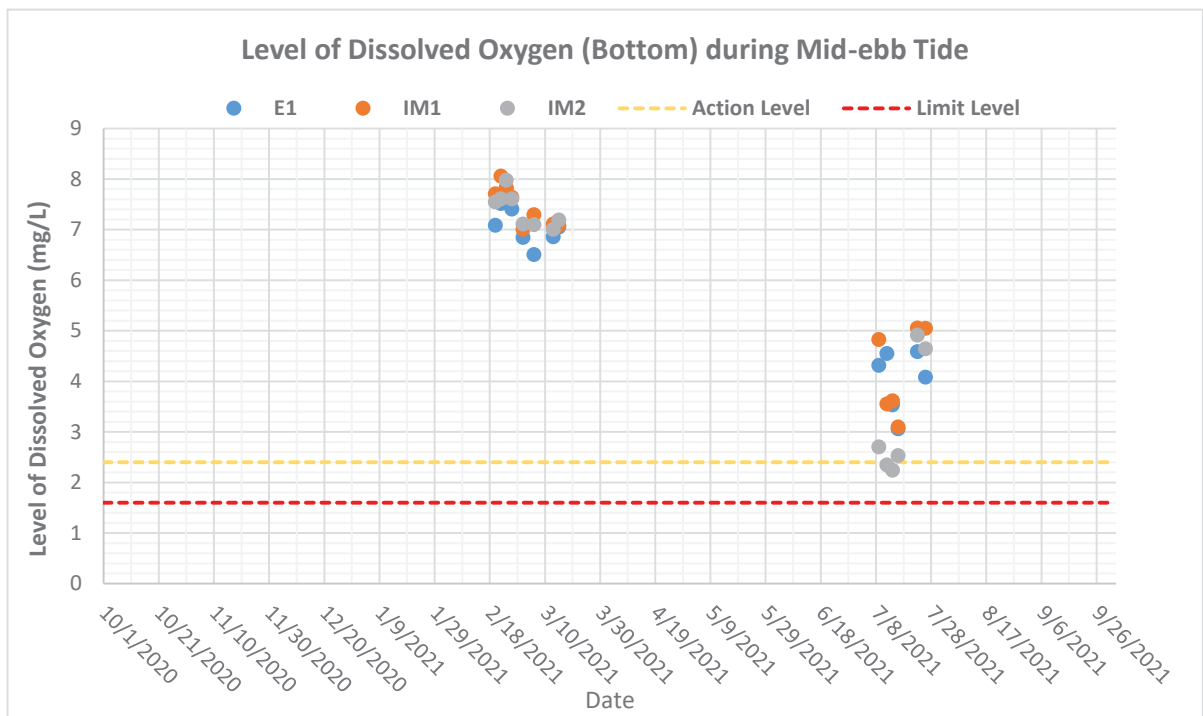


Figure F2a: Levels of Bottom Dissolved Oxygen (mg/L) at control station (E1) and impact stations (IM1-IM2) under Group 1 during mid-ebb tides between October 2020 and September 2021

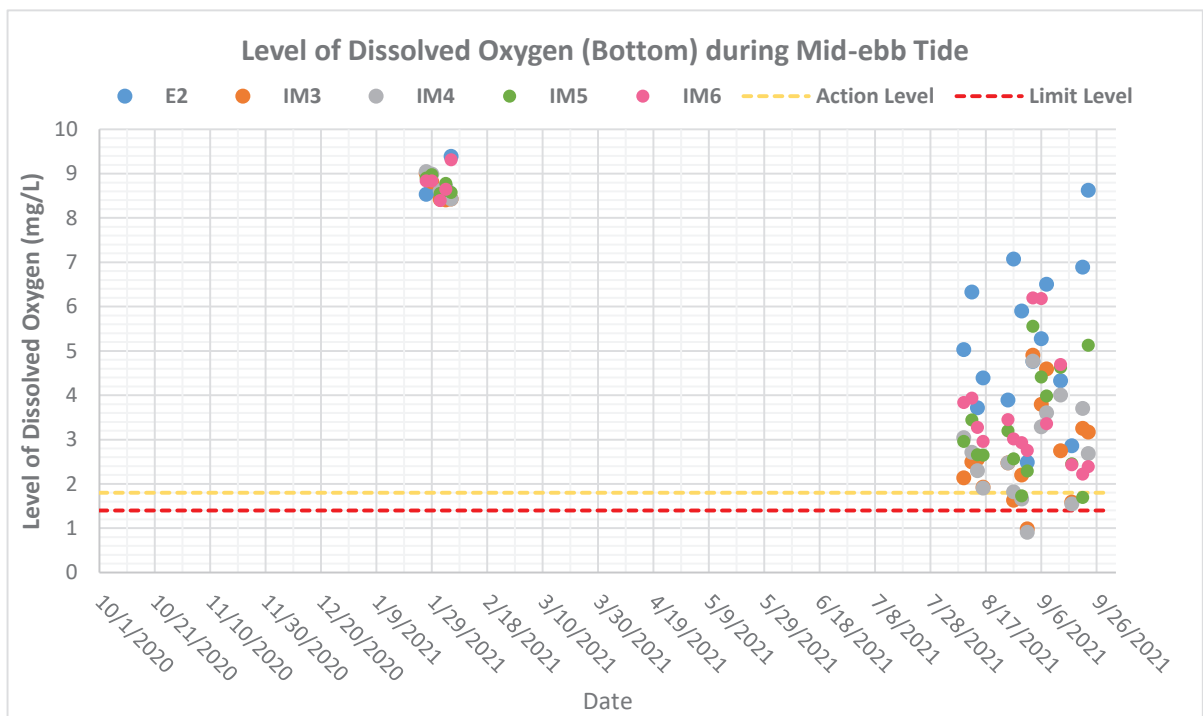


Figure F2b: Levels of Bottom Dissolved Oxygen (mg/L) at control station (E2) and impact stations (IM3-IM6) under Group 2 during mid-ebb tides between October 2020 and September 2021

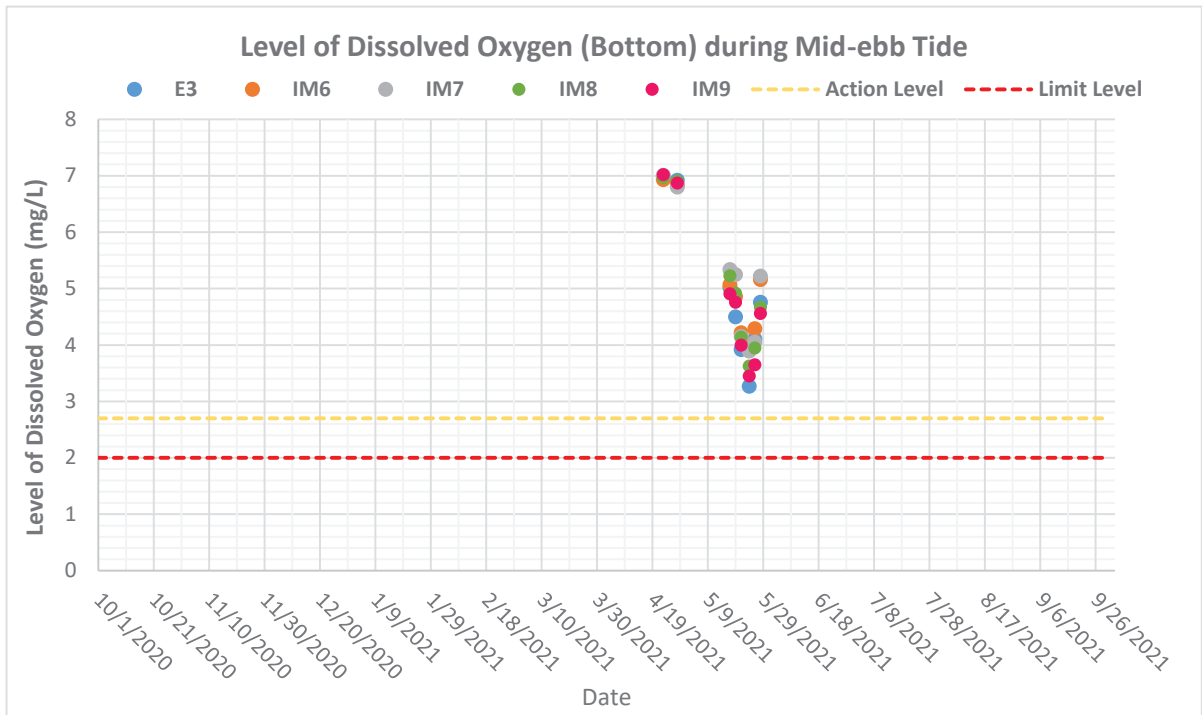


Figure F2c: Levels of Bottom Dissolved Oxygen (mg/L) at control station (E3) and impact stations (IM6-IM9) under Group 3 during mid-ebb tides between October 2020 and September 2021

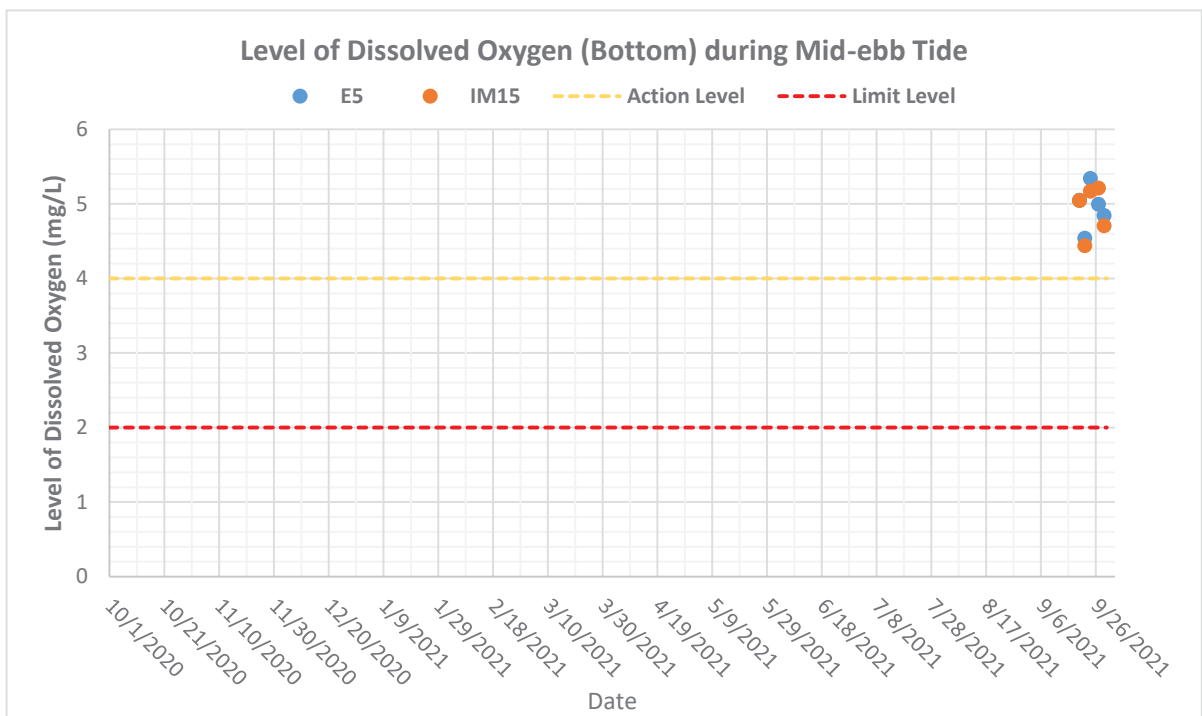


Figure F2d: Levels of Bottom Dissolved Oxygen (mg/L) at control station (E5) and impact station (IM15) under Group 5 during mid-ebb tides between October 2020 and September 2021

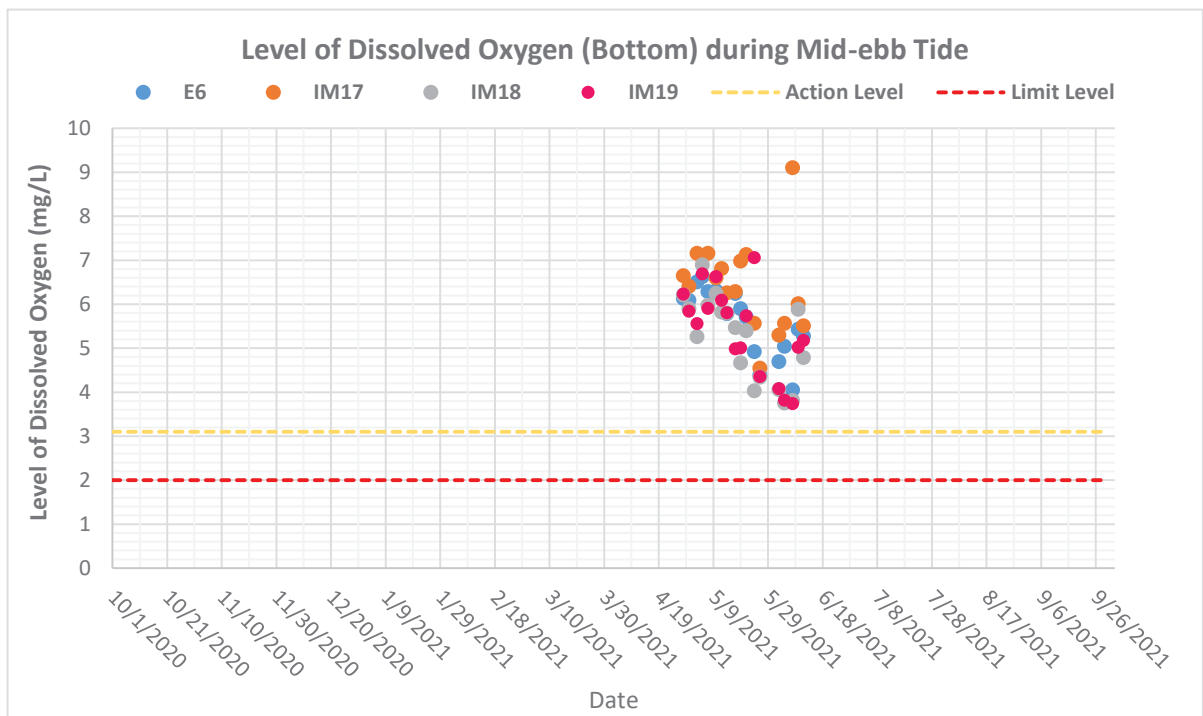


Figure F2e: Levels of Bottom Dissolved Oxygen (mg/L) at control station (E6) and impact stations (IM17-IM19) under Group 7 during mid-ebb tides between October 2020 and September 2021

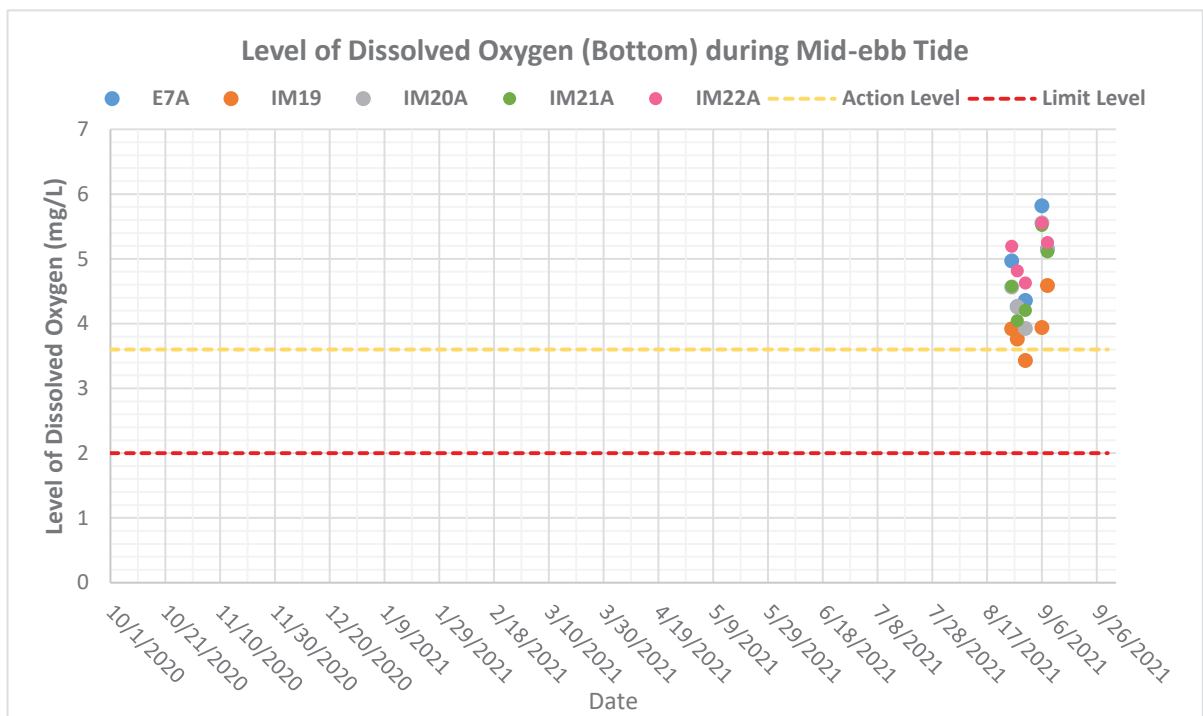


Figure F2f: Levels of Bottom Dissolved Oxygen (mg/L) at control station (E7A) and impact stations (IM19-IM22A) under Group 8 during mid-ebb tides between October 2020 and September 2021

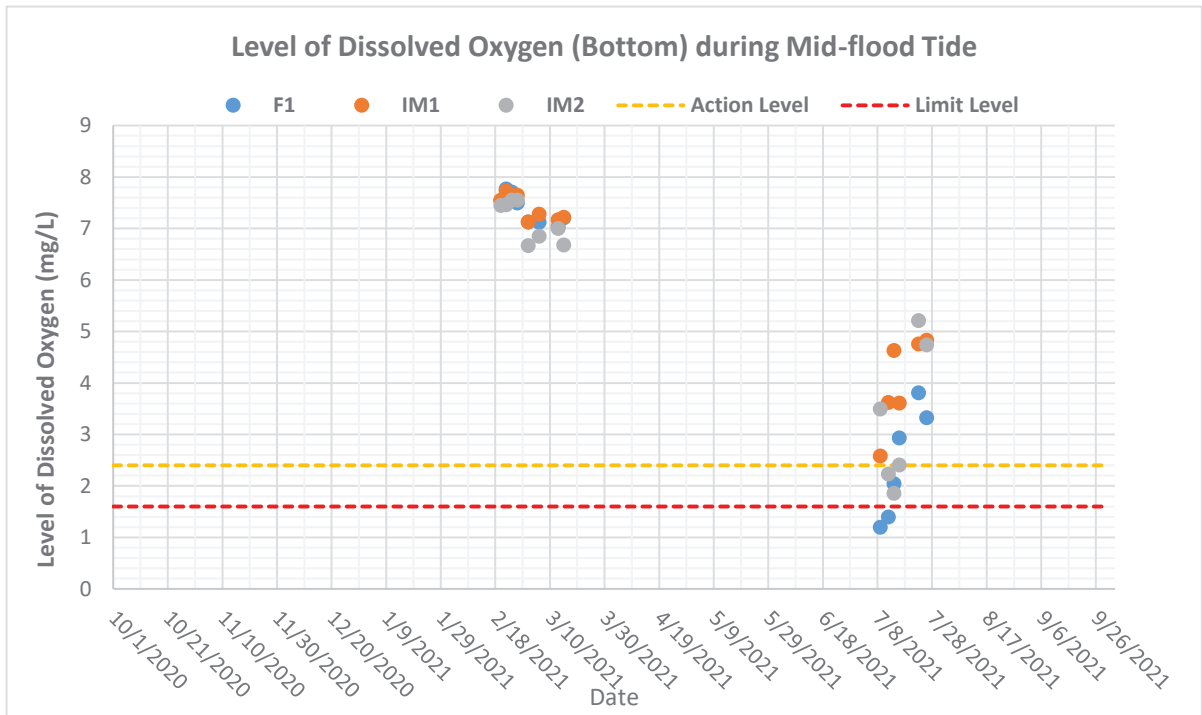


Figure F2g: Levels of Bottom Dissolved Oxygen (mg/L) at control station (F1) and impact stations (IM1-IM2) under Group 1 during mid-flood tides between October 2020 and September 2021

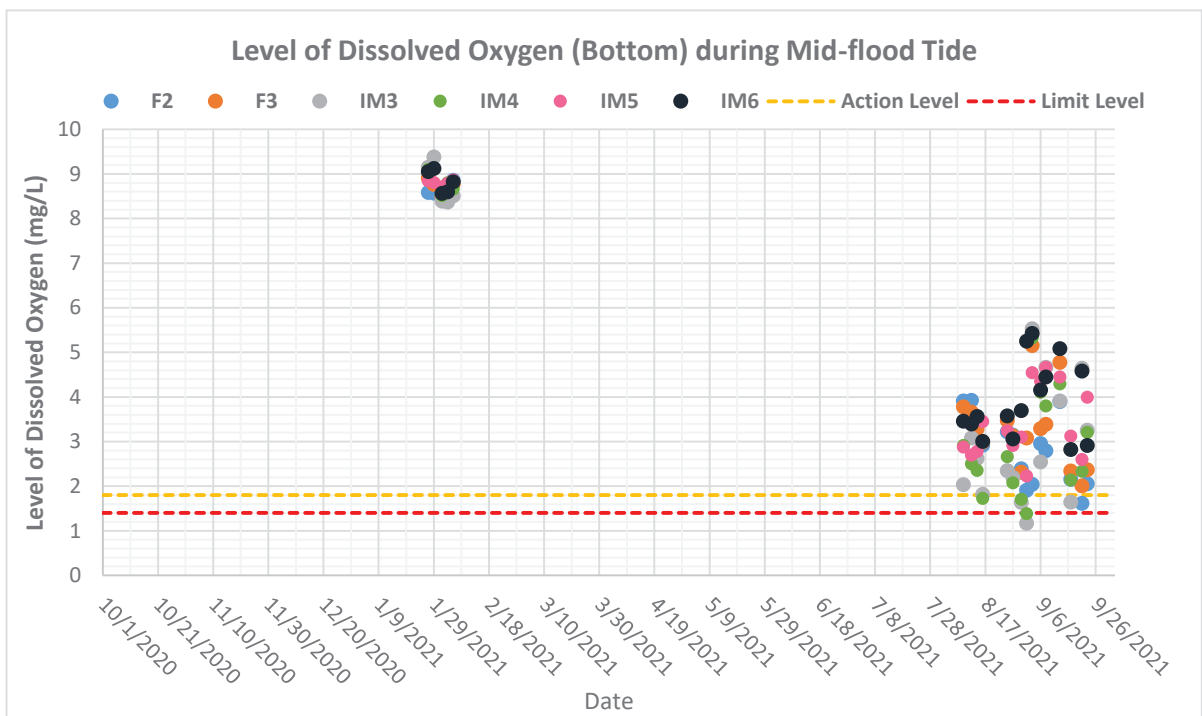


Figure F2h: Levels of Bottom Dissolved Oxygen (mg/L) at control stations (F2-F3) and impact stations (IM3-IM6) under Group 2 during mid-flood tides between October 2020 and September 2021

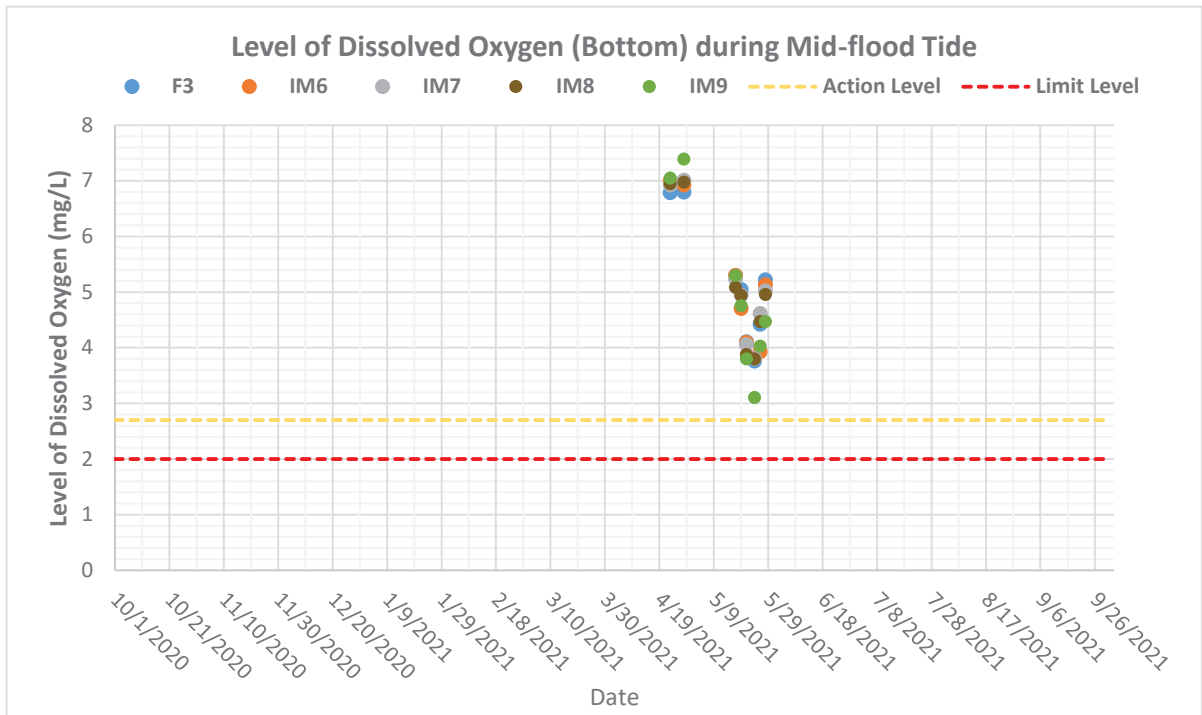


Figure F2i: Levels of Bottom Dissolved Oxygen (mg/L) at control station (F3) and impact stations (IM6-IM9) under Group 3 during mid-flood tides between October 2020 and September 2021

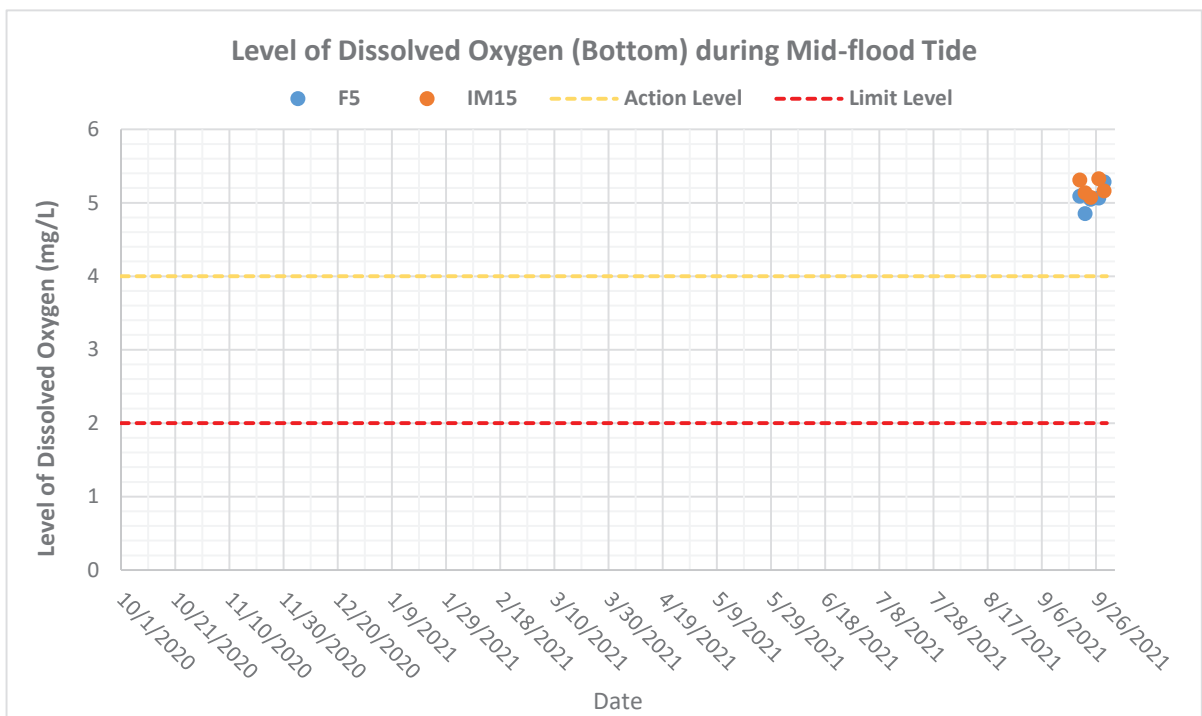


Figure F2j: Levels of Bottom Dissolved Oxygen (mg/L) at control station (F5) and impact station (IM15) under Group 5 during mid-flood tides between October 2020 and September 2021

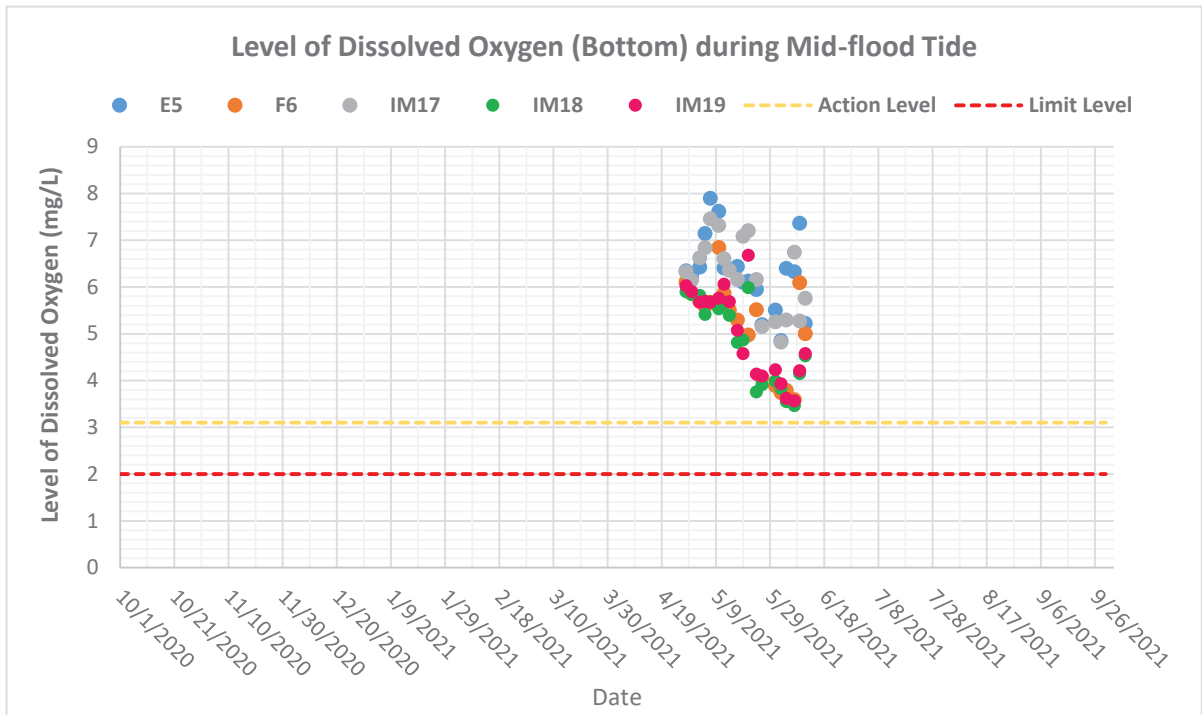


Figure F2k: Levels of Bottom Dissolved Oxygen (mg/L) at control stations (E5, F6) and impact stations (IM17-IM19) under Group 7 during mid-flood tides between October 2020 and September 2021

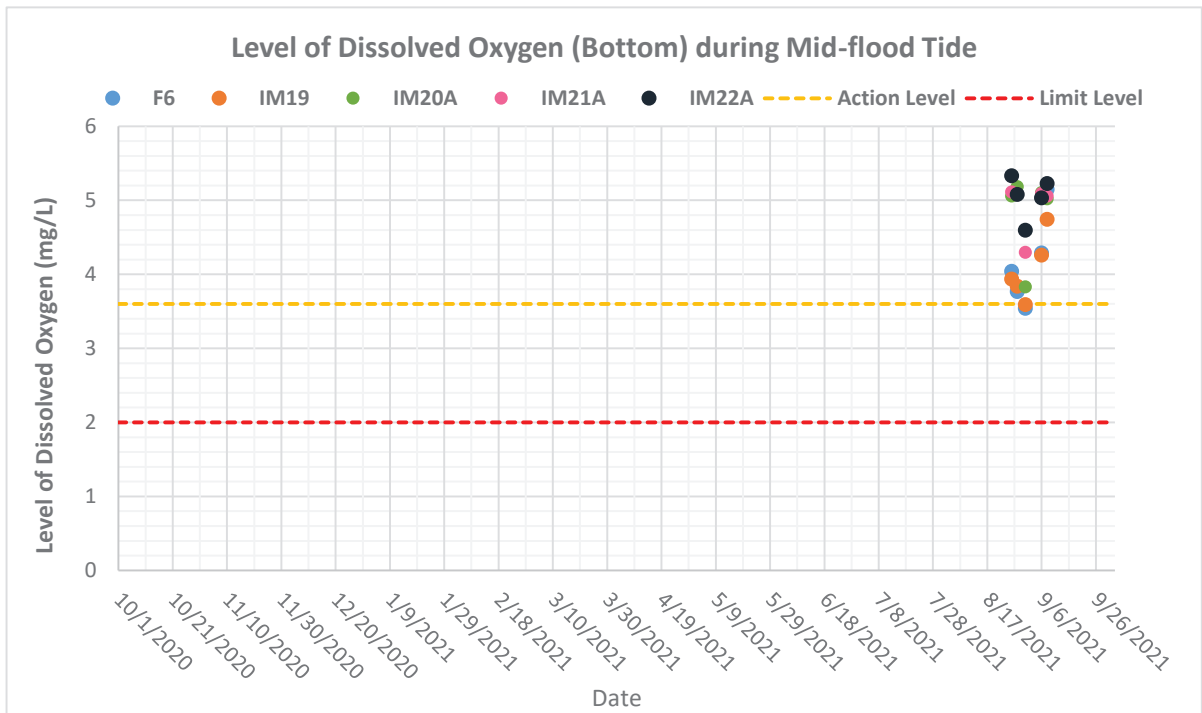


Figure F2l: Levels of Bottom Dissolved Oxygen (mg/L) at control station (F6) and impact stations (IM19-IM22A) under Group 8 during mid-flood tides between October 2020 and September 2021

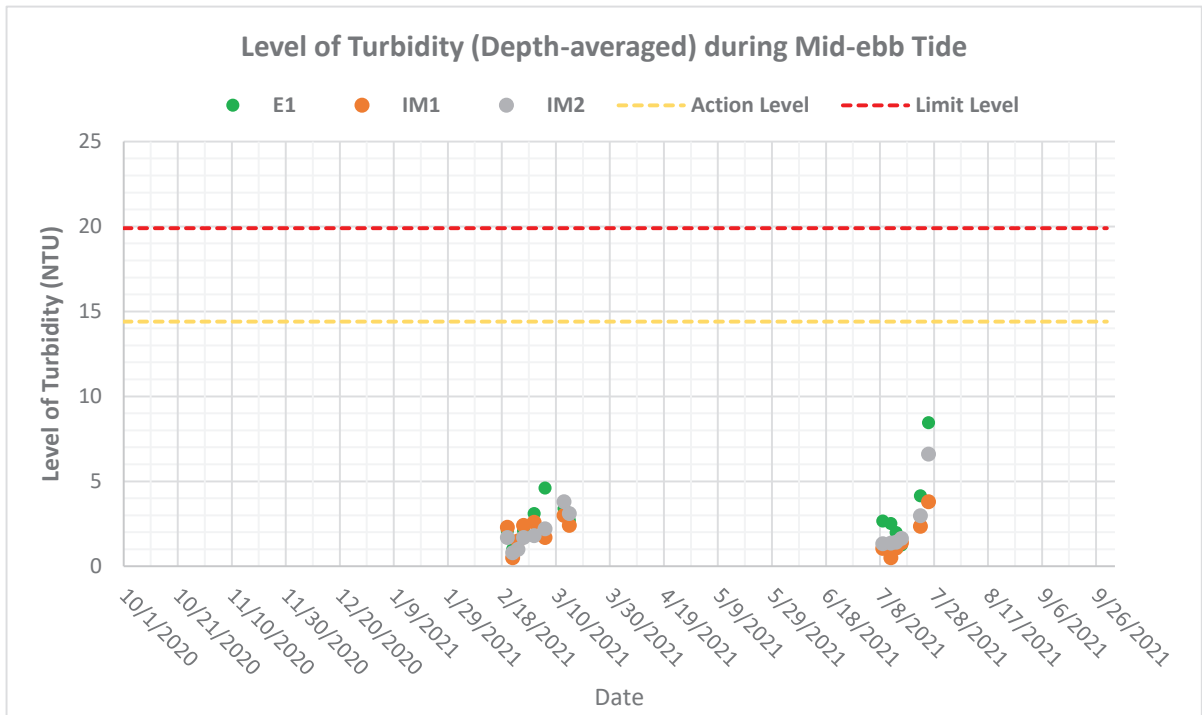


Figure F3a: Levels of Depth-averaged Turbidity (NTU) at control station (E1) and impact stations (IM1-IM2) under Group 1 during mid-ebb tides between October 2020 and September 2021

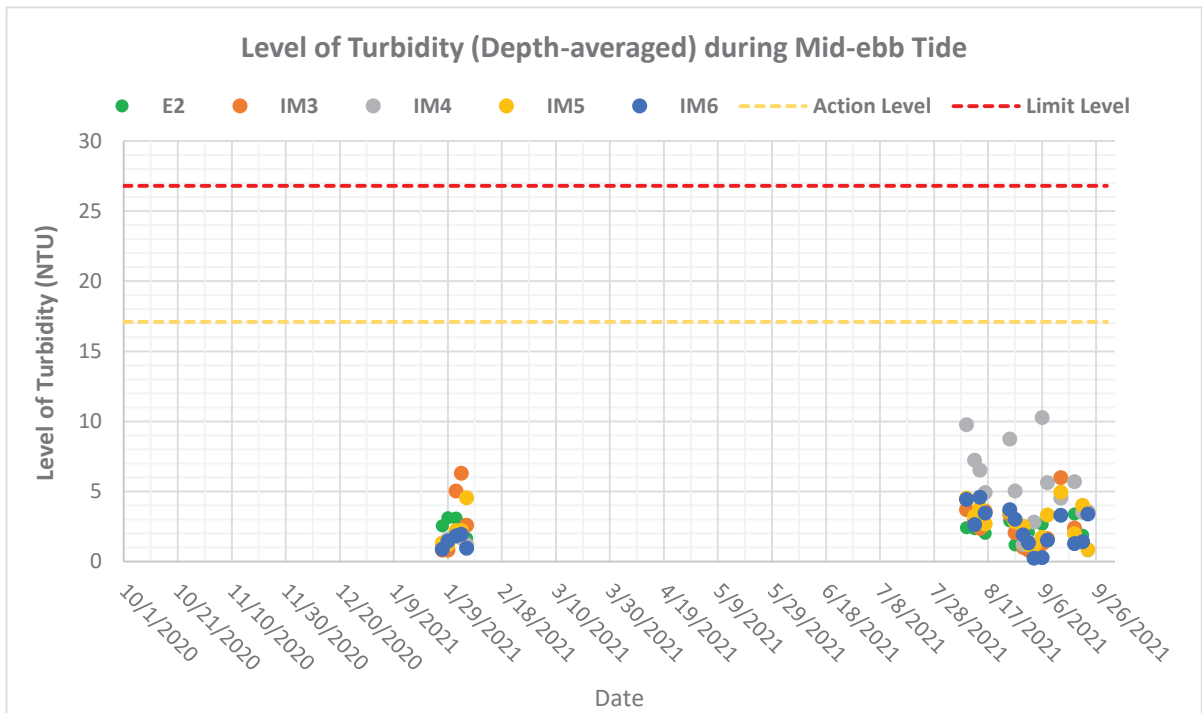


Figure F3b: Levels of Depth-averaged Turbidity (NTU) at control station (E2) and impact stations (IM3-IM6) under Group 2 during mid-ebb tides between October 2020 and September 2021

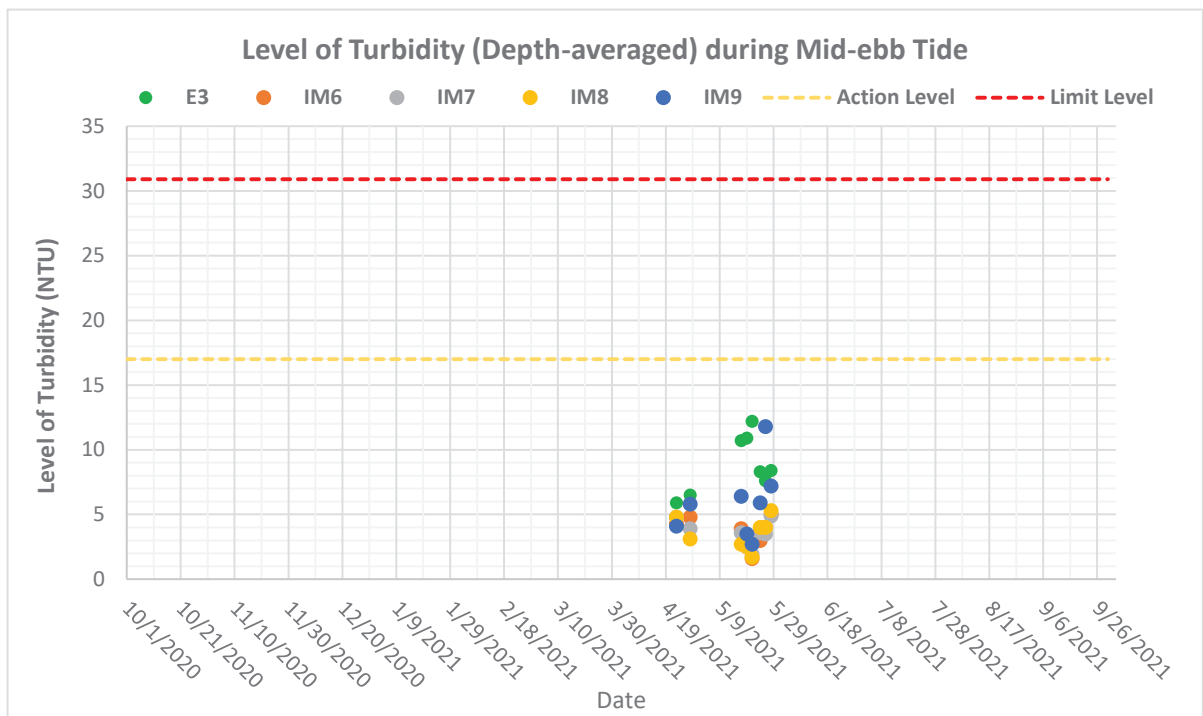


Figure F3c: Levels of Depth-averaged Turbidity (NTU) at control station (E3) and impact stations (IM6-IM9) under Group 3 during mid-ebb tides between October 2020 and September 2021

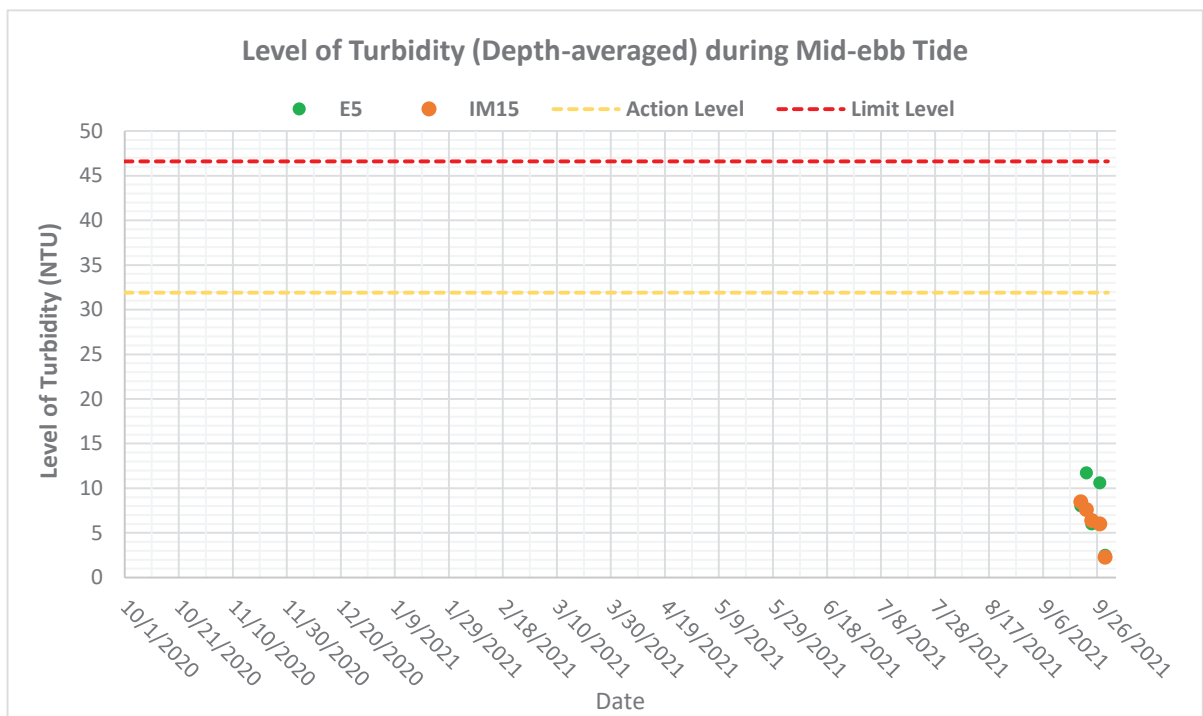


Figure F3d: Levels of Depth-averaged Turbidity (NTU) at control station (E5) and impact station (IM15) under Group 5 during mid-ebb tides between October 2020 and September 2021

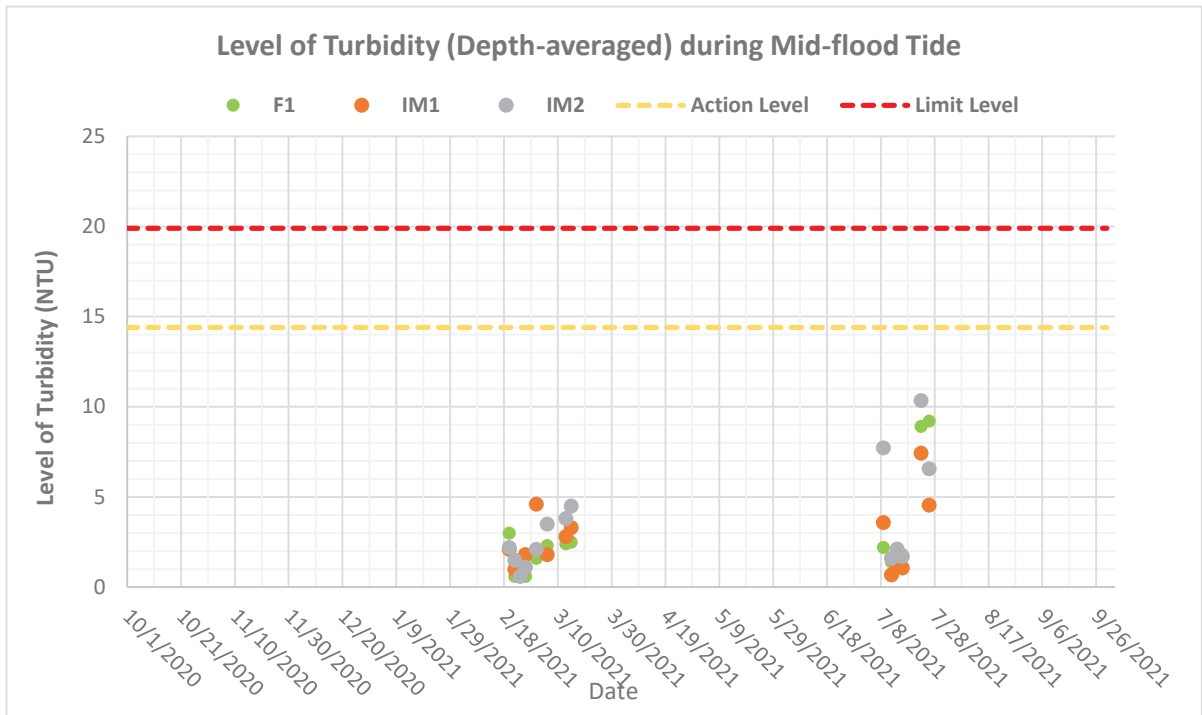


Figure F3g: Levels of Depth-averaged Turbidity (NTU) at control station (F1) and impact stations (IM1-IM2) under Group 1 during mid-flood tides between October 2020 and September 2021

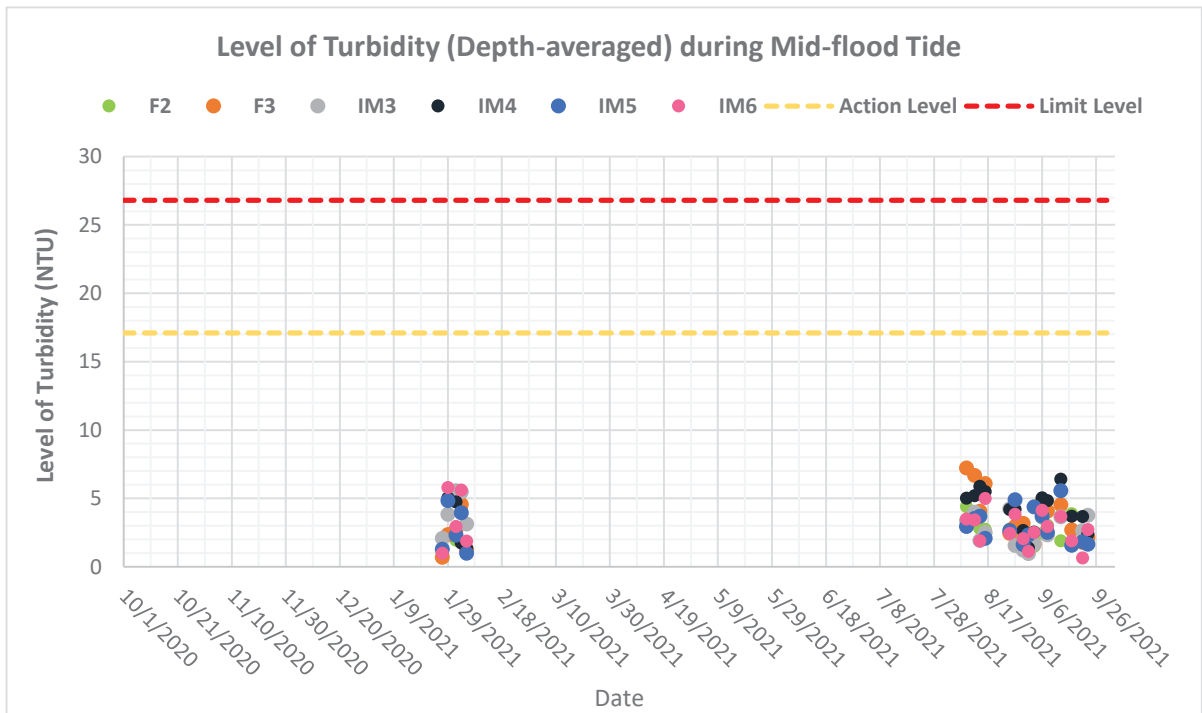


Figure F3h: Levels of Depth-averaged Turbidity (NTU) at control stations (F2-F3) and impact stations (IM3-IM6) under Group 2 during mid-flood tides between October 2020 and September 2021

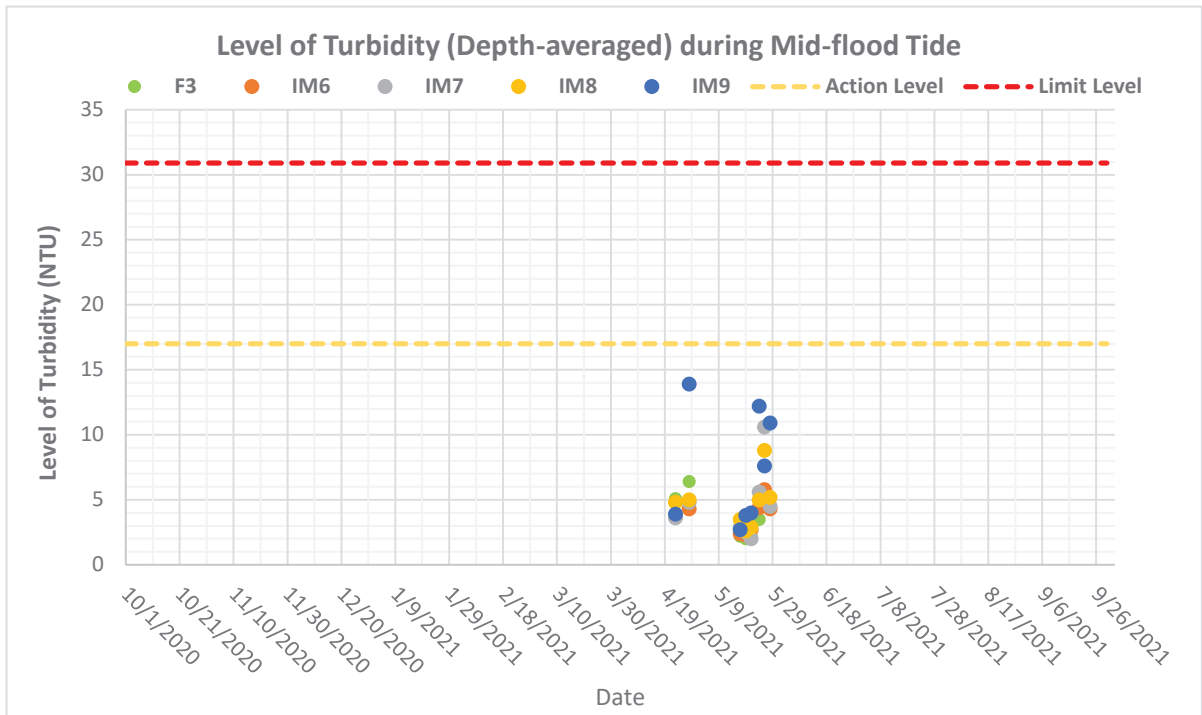


Figure F3i: Levels of Depth-averaged Turbidity (NTU) at control station (F3) and impact stations (IM6-IM9) under Group 3 during mid-flood tides between October 2020 and September 2021

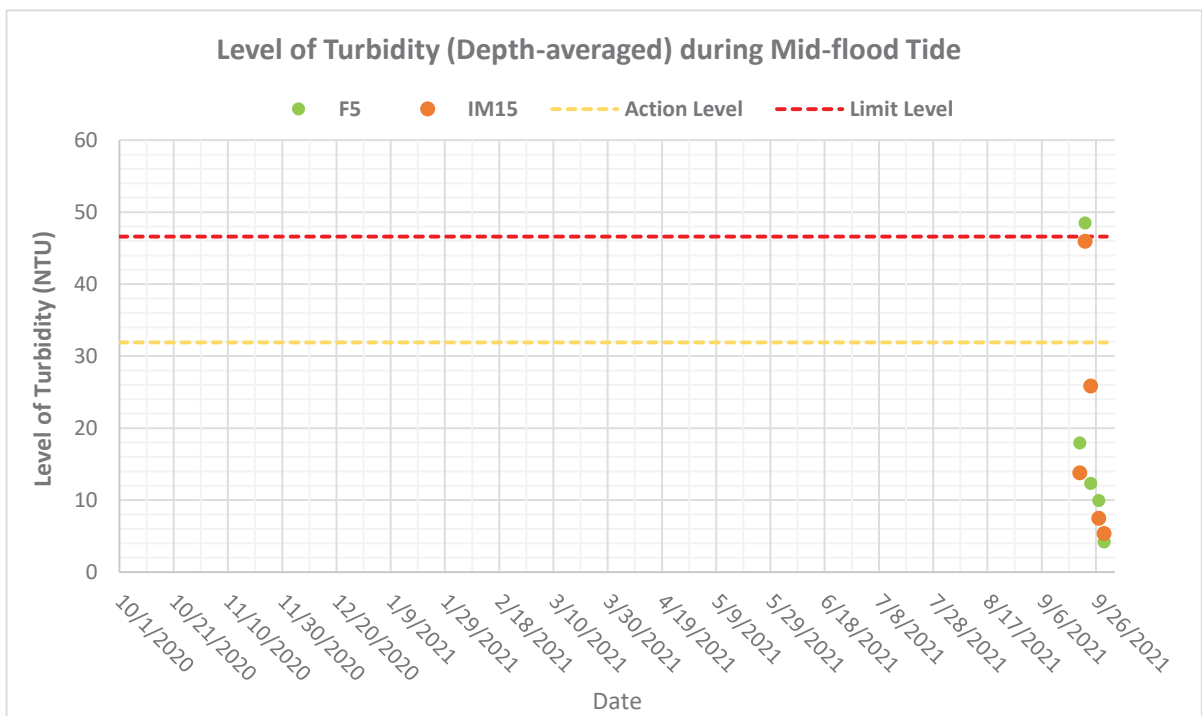


Figure F3j: Levels of Depth-averaged Turbidity (NTU) at control station (F5) and impact station (IM15) under Group 5 during mid-flood tides between October 2020 and September 2021

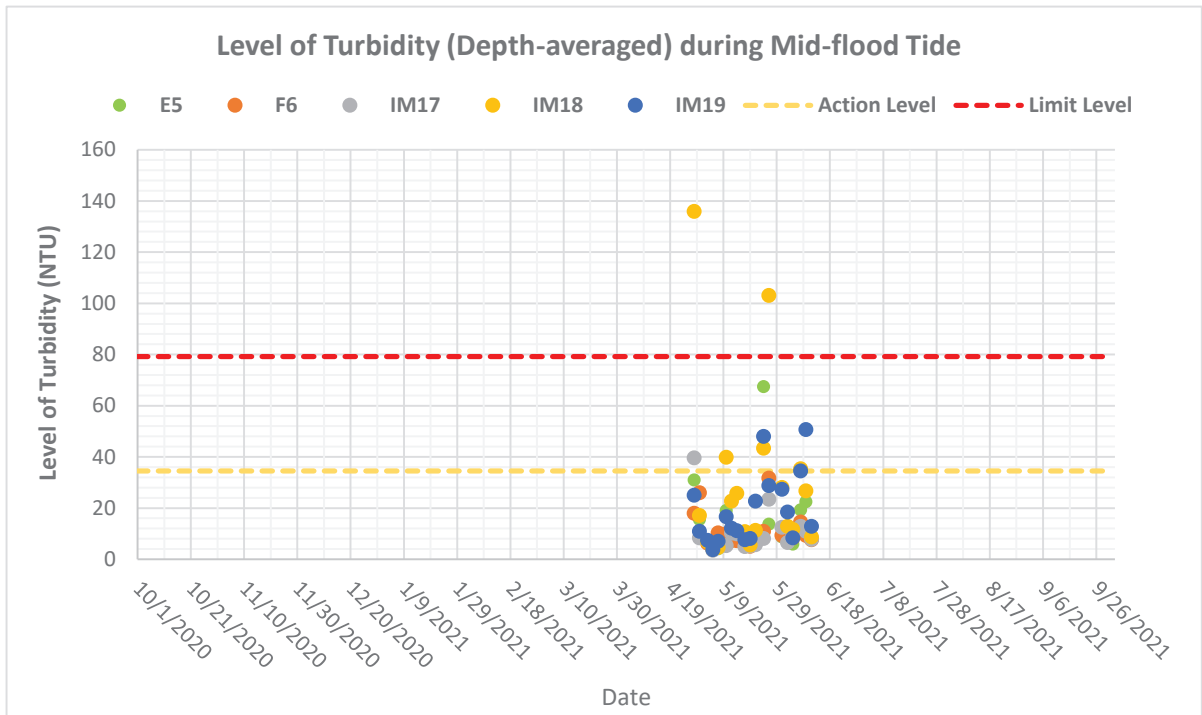


Figure F3k: Levels of Depth-averaged Turbidity (NTU) at control stations (E5, F6) and impact stations (IM17-IM19) under Group 7 during mid-flood tides between October 2020 and September 2021

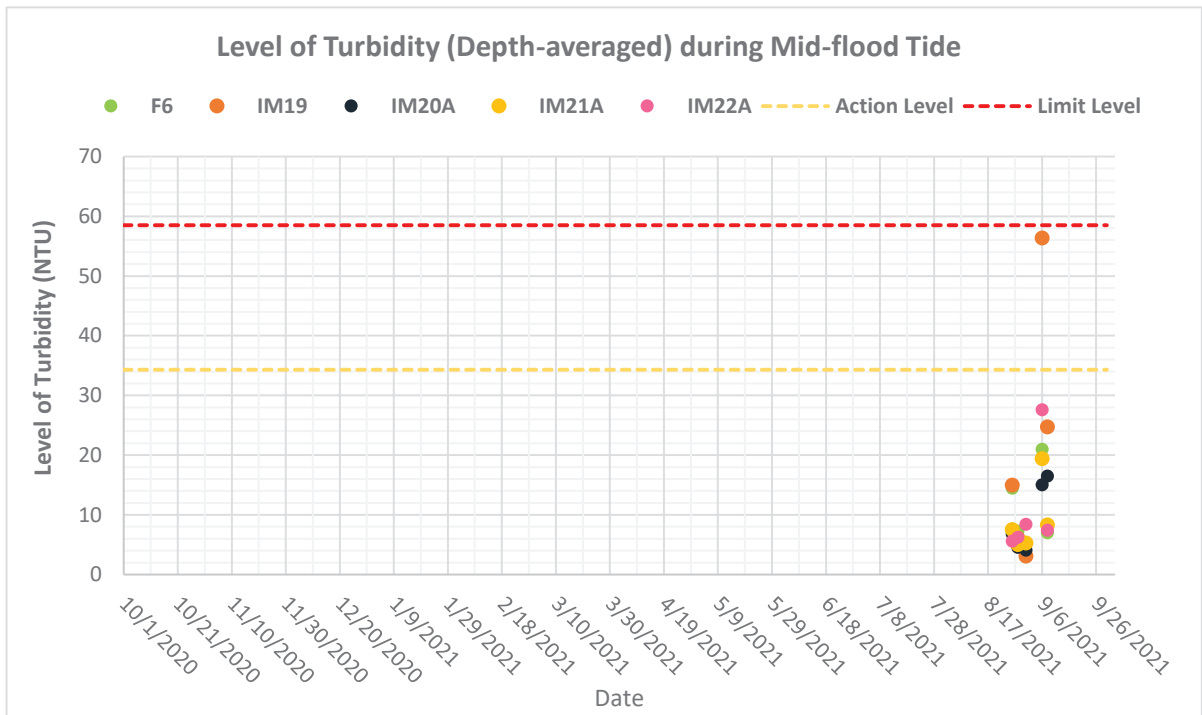


Figure F3l: Levels of Depth-averaged Turbidity (NTU) at control station (F6) and impact stations (IM19-IM22A) under Group 8 during mid-flood tides between October 2020 and September 2021

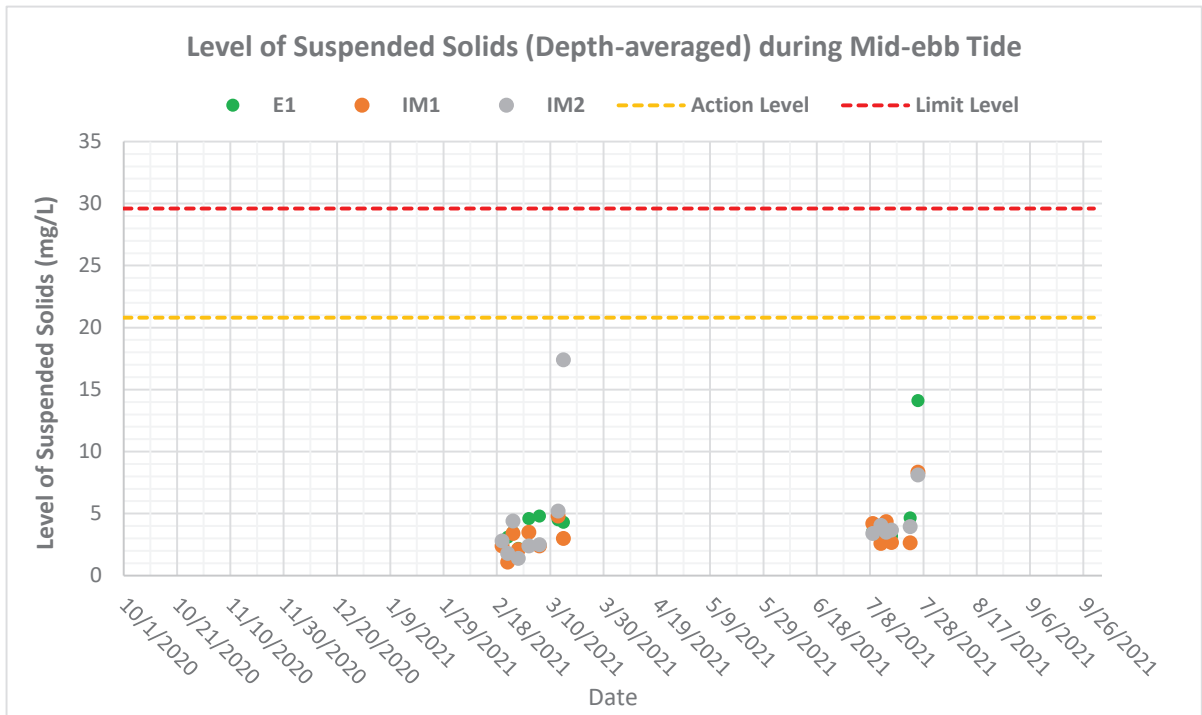


Figure F4a: Levels of Depth-averaged Suspended Solids (mg/L) at control station (E1) and impact stations (IM1-IM2) under Group 1 during mid-ebb tides between October 2020 and September 2021

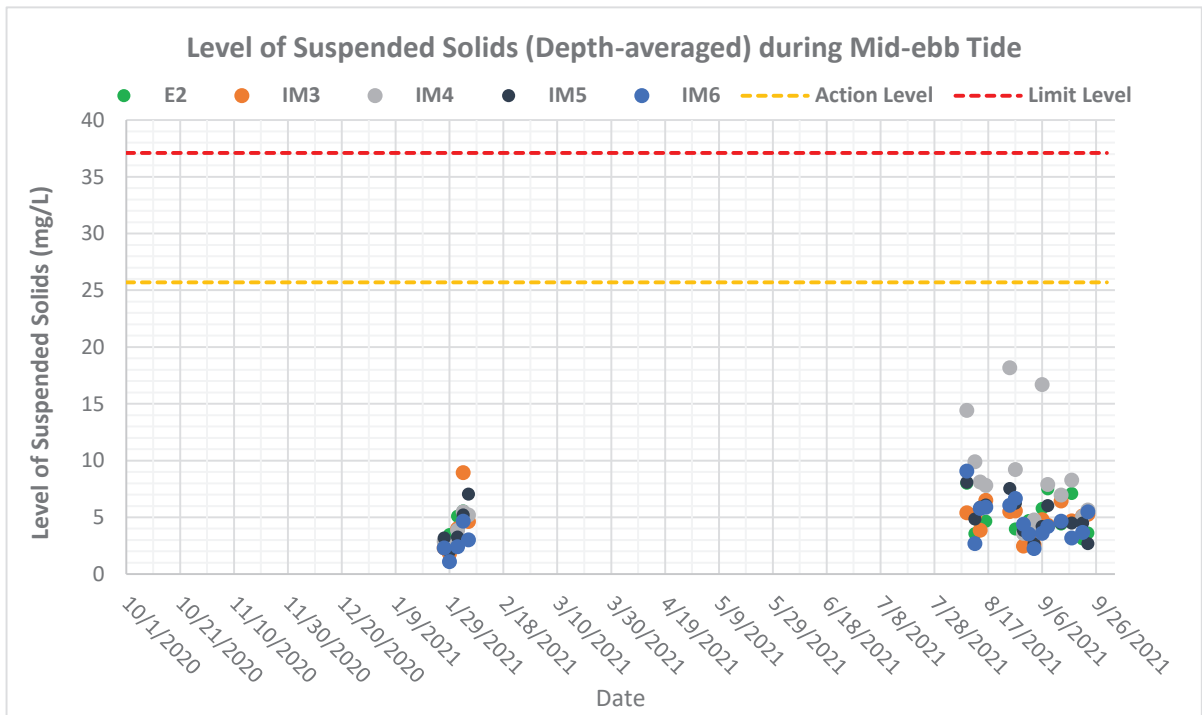


Figure F4b: Levels of Depth-averaged Suspended Solids (mg/L) at control station (E2) and impact stations (IM3-IM6) under Group 2 during mid-ebb tides between October 2020 and September 2021

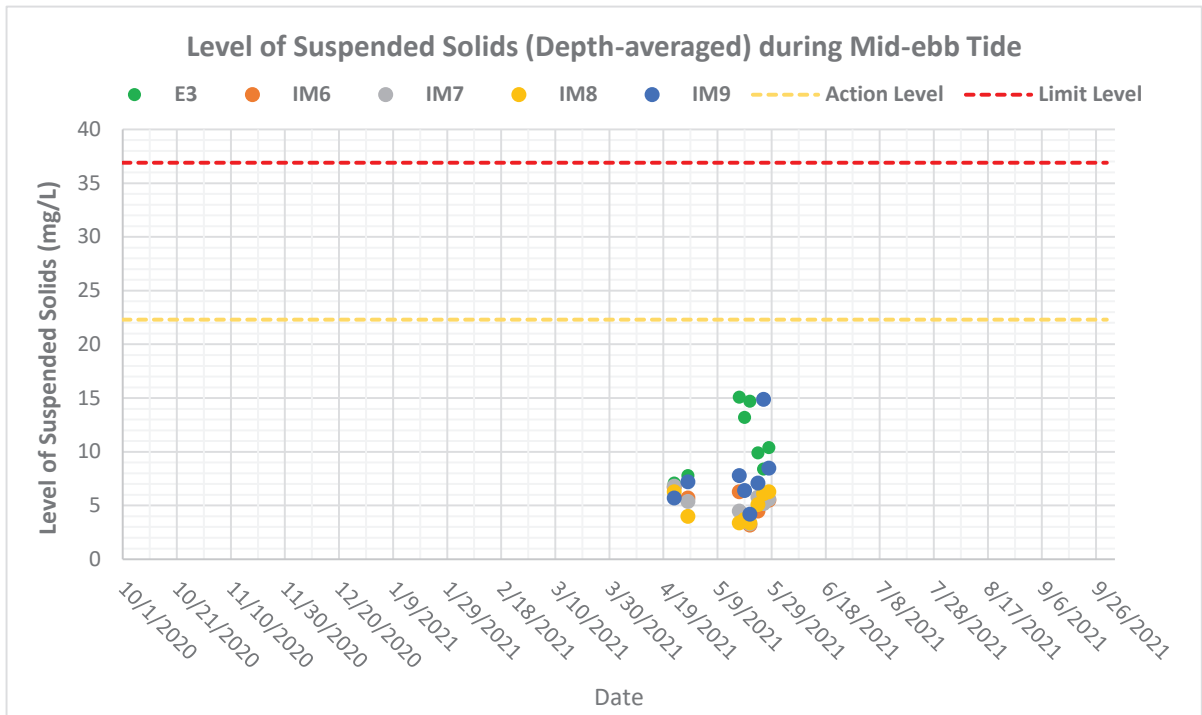


Figure F4c: Levels of Depth-averaged Suspended Solids (mg/L) at control station (E3) and impact stations (IM6-IM9) under Group 3 during mid-ebb tides between October 2020 and September 2021

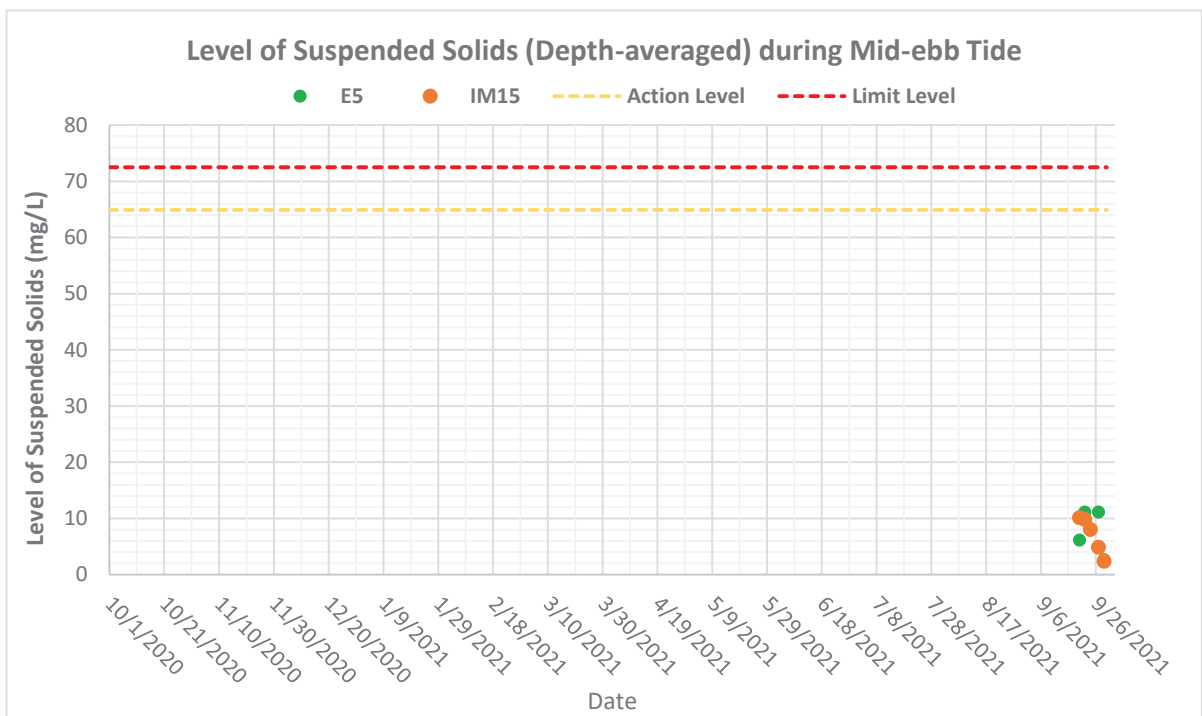


Figure F4d: Levels of Depth-averaged Suspended Solids (mg/L) at control station (E5) and impact station (IM15) under Group 5 during mid-ebb tides between October 2020 and September 2021

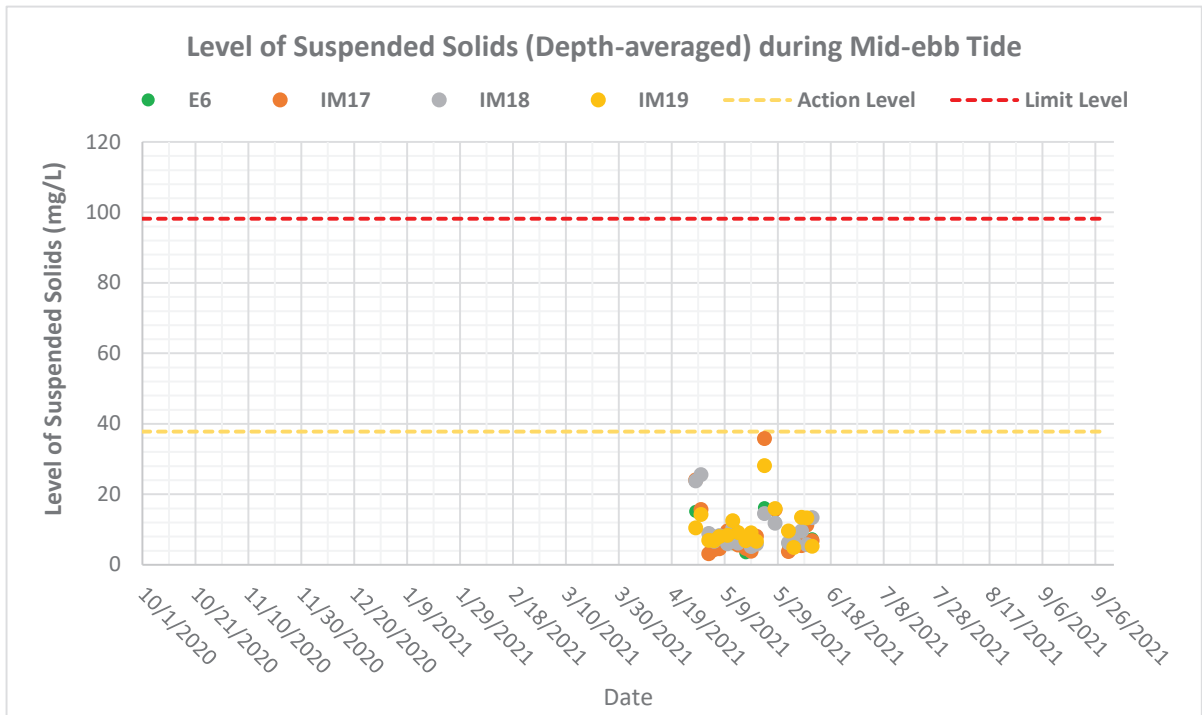


Figure F4e: Levels of Depth-averaged Suspended Solids (mg/L) at control station (E6) and impact stations (IM17-IM19) under Group 7 during mid-ebb tides between October 2020 and September 2021

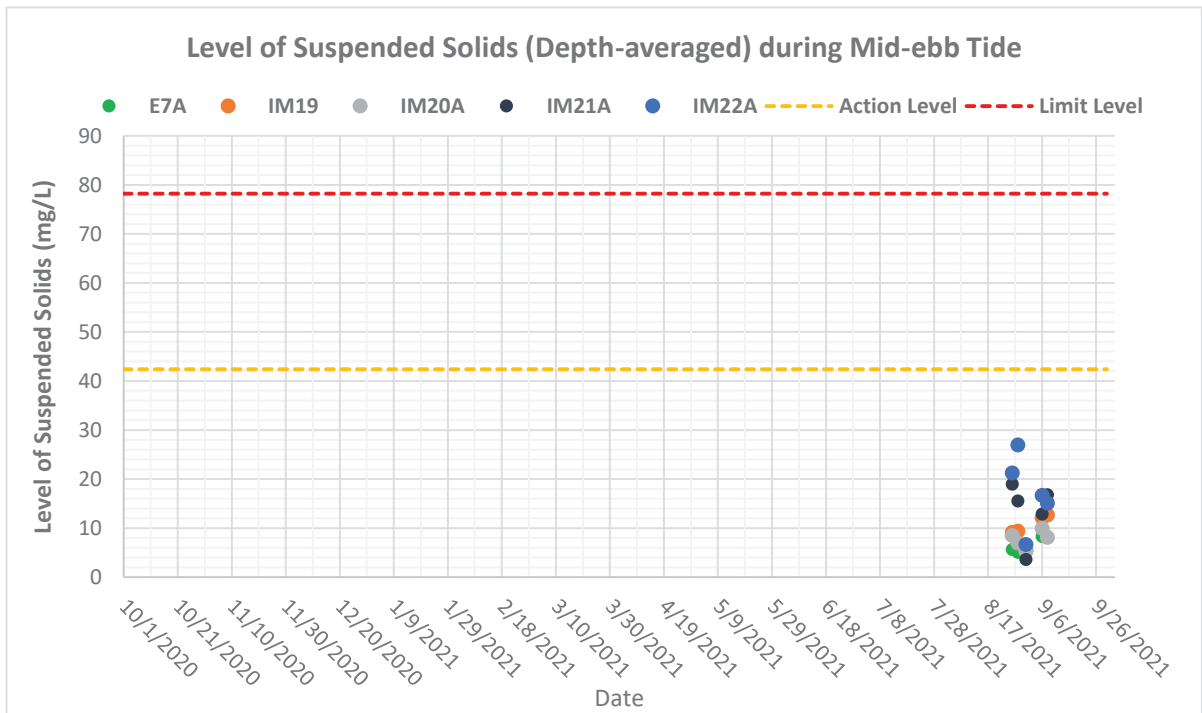


Figure F4f: Levels of Depth-averaged Suspended Solids (mg/L) at control station (E7A) and impact stations (IM19-IM22A) under Group 8 during mid-ebb tides between October 2020 and September 2021

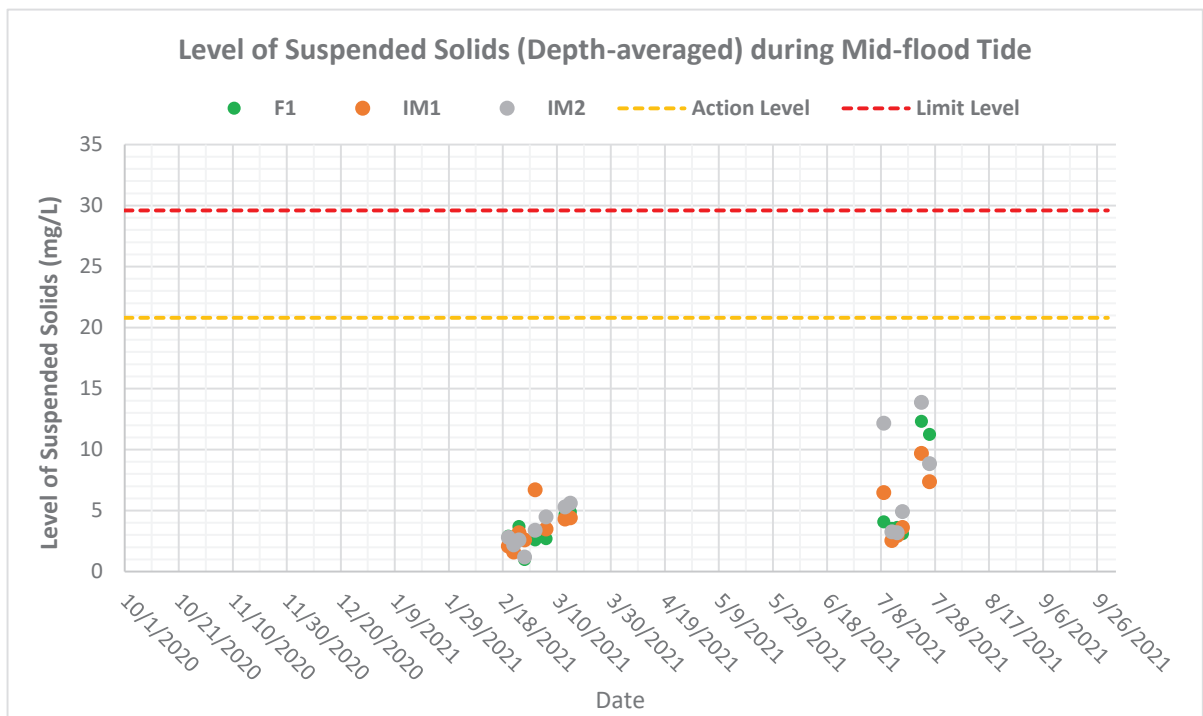


Figure F4g: Levels of Depth-averaged Suspended Solids (mg/L) at control station (F1) and impact stations (IM1-IM2) under Group 1 during mid-flood tides between October 2020 and September 2021

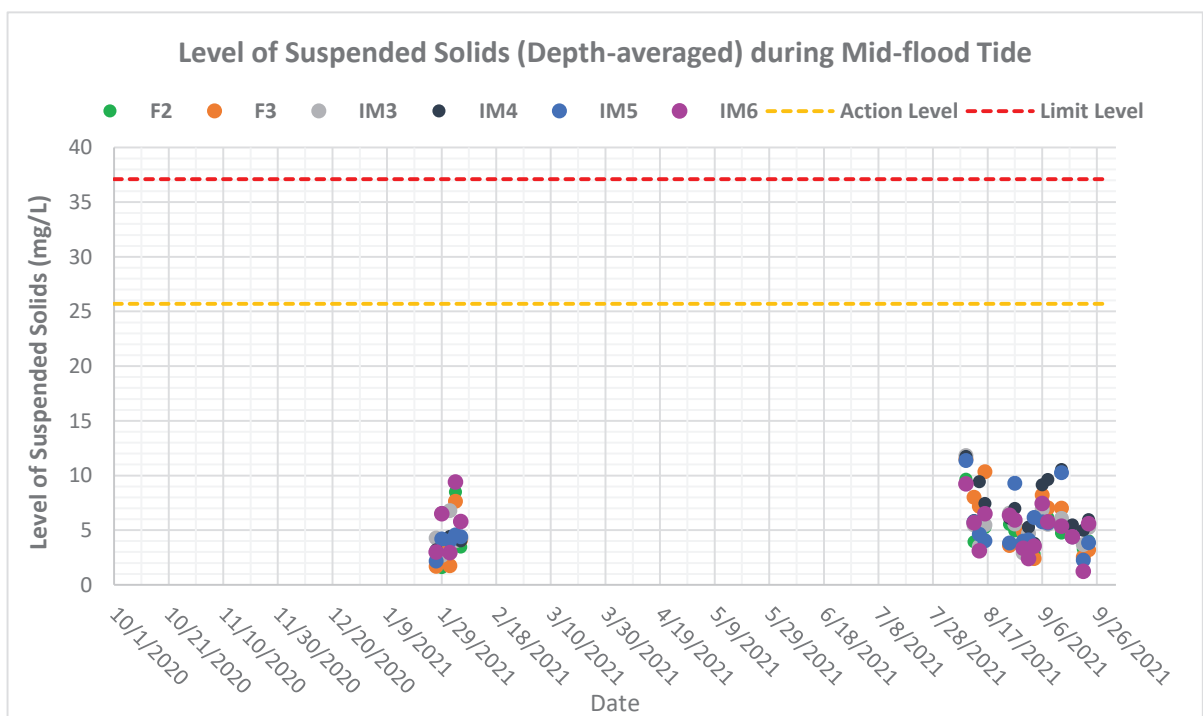


Figure F4h: Levels of Depth-averaged Suspended Solids (mg/L) at control stations (F2-F3) and impact stations (IM3-IM6) under Group 2 during mid-flood tides between October 2020 and September 2021

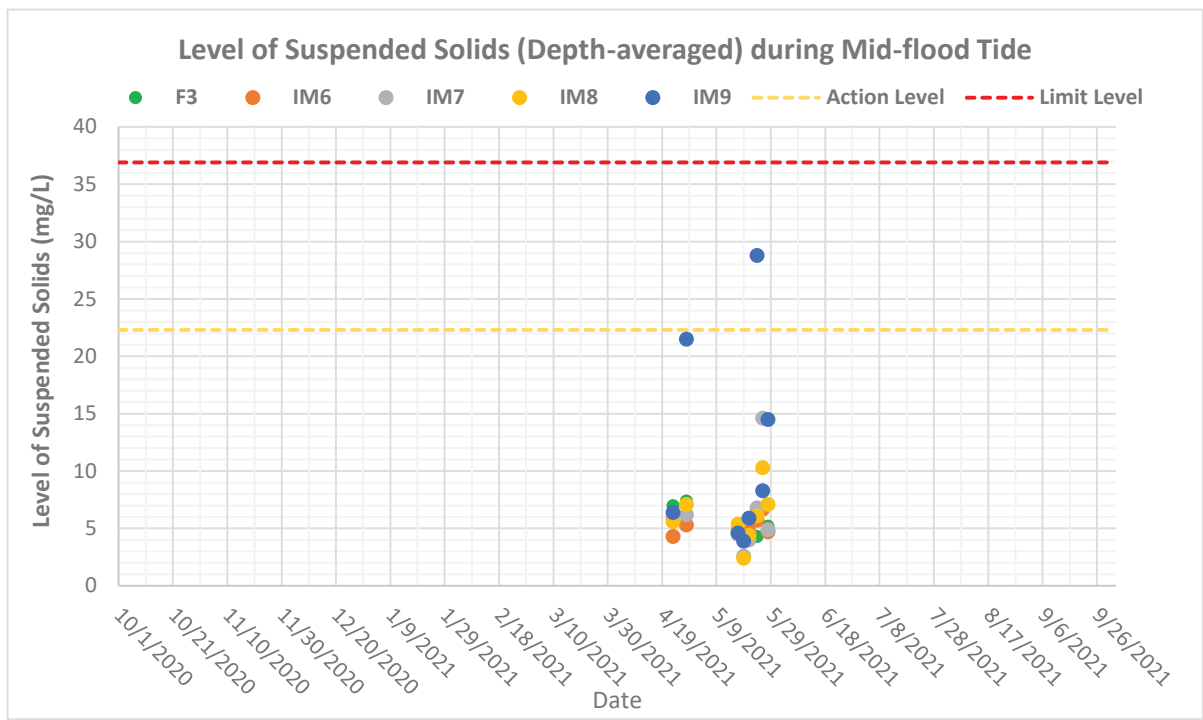


Figure F4i: Levels of Depth-averaged Suspended Solids (mg/L) at control station (F3) and impact stations (IM6-IM9) under Group 3 during mid-flood tides between October 2020 and September 2021

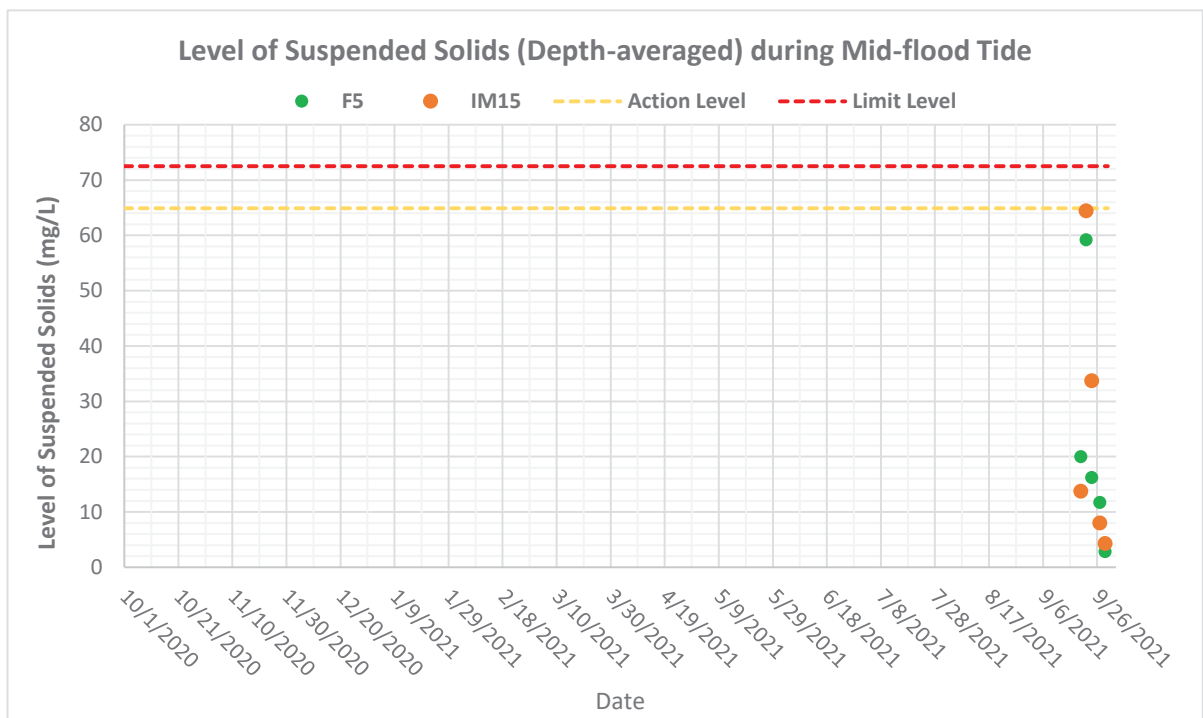


Figure F4j: Levels of Depth-averaged Suspended Solids (mg/L) at control station (F5) and impact station (IM15) under Group 5 during mid-flood tides between October 2020 and September 2021

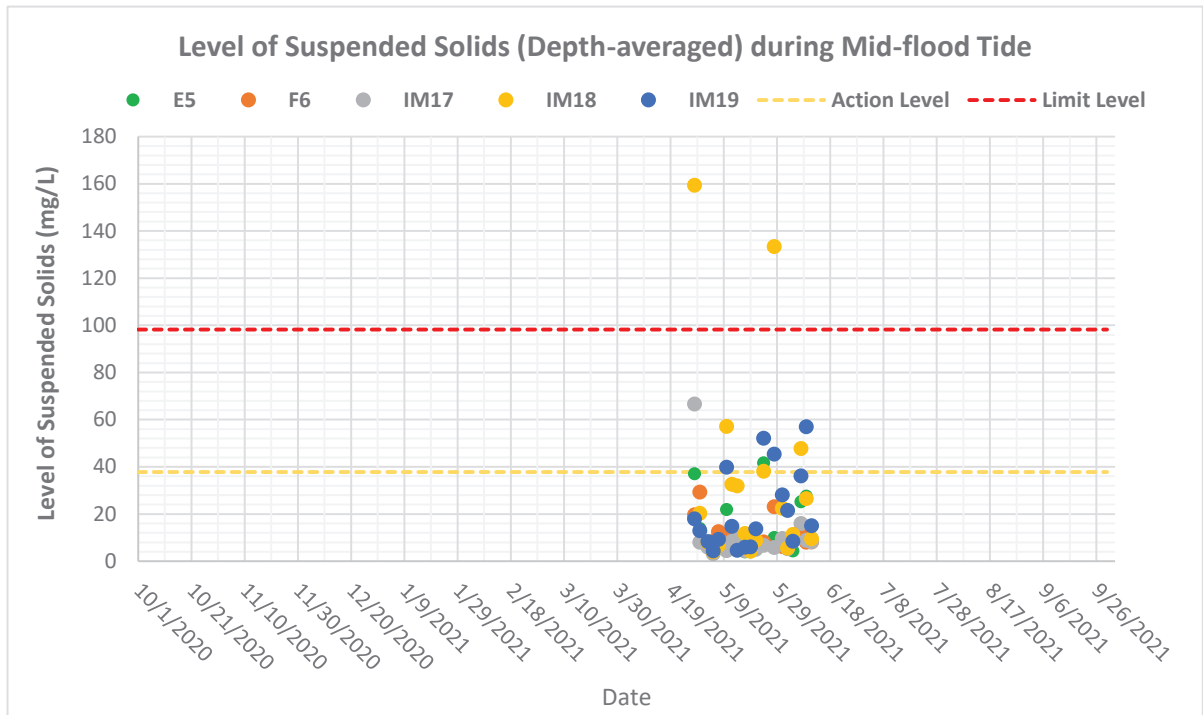


Figure F4k: Levels of Depth-averaged Suspended Solids (mg/L) at control stations (E5, F6) and impact stations (IM17-IM19) under Group 7 during mid-flood tides between October 2020 and September 2021

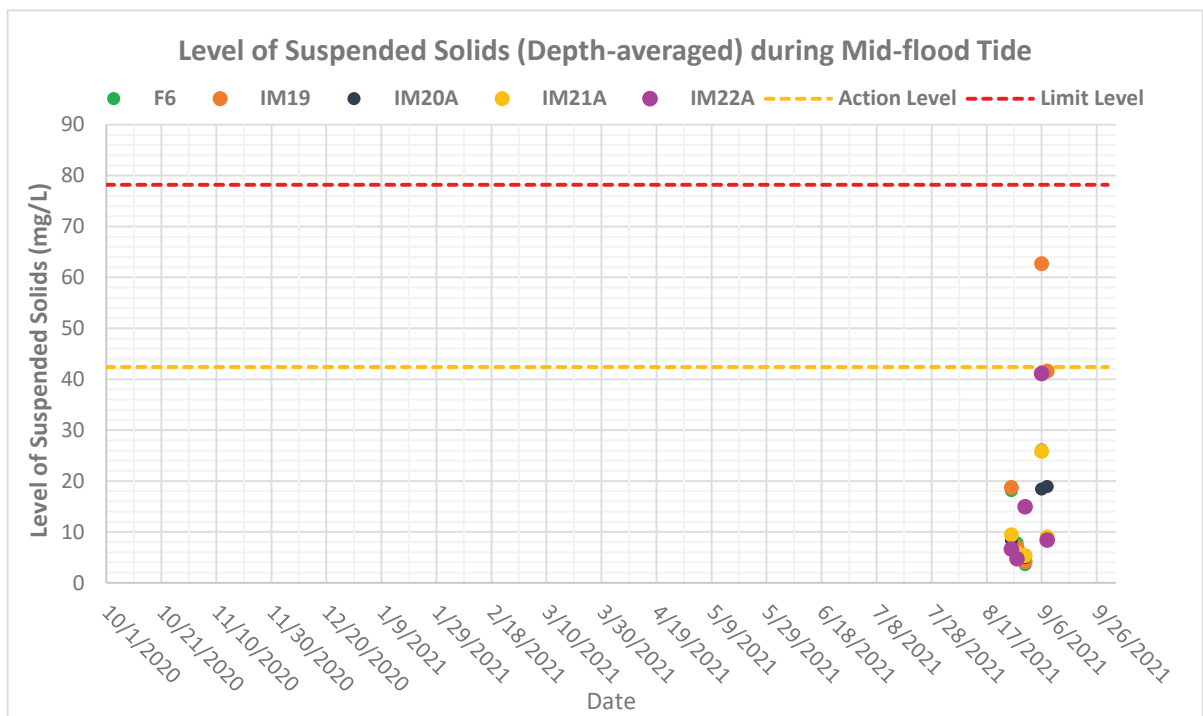


Figure F4l: Levels of Depth-averaged Suspended Solids (mg/L) at control station (F6) and impact stations (IM19-IM22A) under Group 8 during mid-flood tides between October 2020 and September 2021

Annotations:

- Key marine-based activities of the Project undertaken for construction of BPPS Pipeline included:
 - i. pre-trenching works in terms of dredging operation in the vicinity of marine water quality monitoring stations under Group 3 on 24 April and 16 to 28 May 2021;
 - ii. pre-trenching works in terms of dredging operation in the vicinity of marine water quality monitoring stations under Group 7 on 28 to 20 April, 1 to 26, 30, 31 May and 1 to 12 June 2021;
 - iii. pre-trenching works in terms of dredging operation in the vicinity of marine water quality monitoring stations under Group 8 on 26 to 31 August, 1, 8 and 9 September 2021; and
 - iv. post-trenching works in terms of jetting operation in the vicinity of marine water quality monitoring stations under Group 5 on 18 to 30 September 2021.
- Key marine-based activities of the Project undertaken for construction of LPS Pipeline included:
 - i. pre-trenching works in terms of dredging operation in the vicinity of marine water quality monitoring stations under Group 2 on 1, 2 and 4 February 2021;
 - ii. de-burial works by mass flow excavator in the vicinity of marine water quality monitoring stations under Group 1 on 23, 26, 27 February, 5, 6, 13, 14 and 15 March 2021.
 - iii. post-trenching works in terms of jetting operation in the vicinity of marine water quality monitoring stations under Group 1 on 5, 6, 8 to 18 and 22 to 26 July 2021 ⁽¹⁾; and
 - iv. post-trenching works in terms of jetting operation in the vicinity of marine water quality monitoring stations under Group 2 on 8 to 16, 24 to 31 August, 1 to 8, 12 to 14 and 17 to 23 September 2021.
- Marine water quality monitoring was conducted at monitoring stations under Group 1 on 20, 22, 24, 26 February, 2, 6, 13, 15 March, 9, 12, 14, 16, 23 and 26 July 2021.
- Marine water quality monitoring was conducted at monitoring stations under Group 2 on 27, 29 January, 1, 3, 5 February, 9, 12, 14, 16, 25, 27, 30 August, 1, 3, 6, 8, 13, 17, 21 and 23 September 2021 ⁽²⁾.
- Marine water quality monitoring was conducted at monitoring stations under Group 3 on 23, 28 ⁽³⁾ April, 17, 19, 21, 24, 26 and 28 May 2021.
- Marine water quality monitoring was conducted at monitoring stations under Group 5 on 20, 22, 24, 27 and 29 September 2021.
- Marine water quality monitoring was conducted at monitoring stations under Group 7 on 28, 30 April, 3, 5, 7, 10, 12, 14, 17, 19, 21, 24, 26, 31 ⁽⁴⁾ May, 2, 4, 7, 9 and 11 June 2021.
- Marine water quality monitoring was conducted at monitoring stations under Group 8 on 26, 28, 31 August, 6 and 8 September 2021 ⁽⁵⁾.
- Weather conditions during the monitoring period ranged from fine to cloudy, with sea conditions ranged from calm to moderate. 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) Preparation works for marine jetting operation (e.g. installation of cage-type silt curtain, anchoring activities, etc.) were undertaken on 5 and 6 July 2021 while marine jetting operation commenced since 8 July 2021.
- (2) Monitoring station, IM6, was occupied by a crane barge during the monitoring events since 27 August 2021. Therefore, the monitoring station was shifted to the nearest practicable location.
- (3) Marine water quality monitoring was conducted under Group 3 on 28 April 2021 as a follow-up monitoring due to the cancellation of monitoring scheduled on 26 April 2021 for marine dredging operation at Cable Sterile Corridor for BPPS Pipeline.
- (4) Marine water quality monitoring during ebb tide on 31 May 2021 was cancelled due to the adverse weather at the time of monitoring event.
- (5) Monitoring stations, IM20A and IM21A, were occupied by oyster rafts and crane barge, respectively, during the monitoring events since 26 August 2021. Therefore, the monitoring stations were shifted to the nearest practicable locations.