JOB NO.: TCS00975/18

CEDD CONTRACT AGREEMENT NO. EDO/04/2018 - ENVIRONMENTAL TEAM FOR CROSS BAY LINK, TSEUNG KWAN O

QUARTERLY ENVIRONMENTAL MONITORING AND AUDIT (EM&A) SUMMARY REPORT

(DECEMBER 2018 TO FEBRUARY 2019)

PREPARED FOR
CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT (CEDD)

Date	Reference No.	Prepared By	Certified By
2 July 2019	TCS00975/18/600/R0151v4		
		Martin Li (Environmental Consultant)	Tam Tak Wing (Environmental Team Leader)

Version	Date	Remarks
1	20 May 2019	First Submission
2	25 June 2019	Amended against IEC's comments
3	2 July 2019	Amended against IEC's comments
4	2 July 2019	Amended against IEC's comments

Our ref: ASCL-2018009

AECOM Asia Company Limited
8/F., Grand Central Plaza, Tower 2
138 Shatin Rural Committee Road
Shatin, New Territories, Hong Kong

Attention: Mr. Conrad NG

2 July 2019

Dear Sir,

Contract No. NE/2017/07 & NE/2017/08
Cross Bay Link, Tseung Kwan O
Quarterly EM&A Report for December 2018 to February 2019

I refer to the email of ET concerning the Quarterly EM&A Report for December 2018 to February 2019 (Version 4) with Ref. No. TCS00975/18/600/R0151v4. We have no adverse comment on it and verify the captioned according to section 1.9 of Environmental Permit with No. EP-459-2013.

Yours faithfully,

Li Wai Ming Kevin
Independent Environmental Checker

cc. Mr. Tam (ETL)
Simon Wong (CEDD)

EXECUTIVE SUMMARY

ES01 Civil Engineering and Development Department (hereafter referred as "CEDD") is the Project Proponent and the Permit Holder of the Project Cross Bay Link, Tseung Kwan O (hereinafter referred as "the Project") which is a Designated Project to be implemented under Environmental Permit number EP-459/2013 (hereinafter referred as "the EP-459/2013" or "the EP").

ES02 AUES was awarded the CEDD Contract Agreement No. EDO/04/2018 - Environmental Team for Cross Bay Link, Tseung Kwan O (hereinafter called "the Service Contract"). The Services under the Service Contract is to provide environmental monitoring and audit (EM&A) services for the Works Contracts pursuant to the requirement of Environmental Team (ET) under the Approved EM&A Manual to ensure that the environmental performance of the Works Contracts comply with the requirement specified in the EM&A Manual and EIA Report of Agreement No. CE 43/2008 (HY) Cross Bay Link, Tseung Kwan O - Investigation and other relevant statutory requirements.

ES03 This is the **1st** Quarterly EM&A report presenting the monitoring results and inspection findings for the reporting period from ***3rd December 2018*** to ***28th February 2019*** (hereinafter 'the Reporting Period').

ENVIRONMENTAL MONITORING AND AUDIT ACTIVITIES

ES04 Environmental monitoring activities under the EM&A program in this Reporting Period are summarized in the following table.

Table ES-4 Summary Environmental Monitoring Activities Undertaken in the Reporting Period

Issues	Environmental Monitoring Parameters / Inspection		Sessions
Air Quality	1-Hour TSP		48
	24-Hr TSP		17
Construction Noise	Leq (30min) Daytime		13
Water Quality	Marine Water Sampling(Note 1)		37
Inspection / Audit	Contract 1	ET Regular Environmental Site Inspection	13
	Contract 2		6

Note 1 Total sessions are counted by monitoring days

BREACH OF ACTION AND LIMIT (A/L) LEVELS

ES05 No air quality and construction noise monitoring exceedance was recorded in this Reporting Period. For water quality monitoring, six (6) Action Level and four (4) Limit Level exceedances were recorded for Suspended Solids in the reporting period. NOEs were issued to notify EPD, AFCD, WSD, IEC, the Contractor and the Project Consultant. The statistics of environmental exceedance, NOE issued and investigation of exceedance are summarized in the following table.

Table ES-5 Summary Environmental Monitoring Parameter Exceedance in the Reporting Period

Environmental Issues	Monitoring Parameters	Action Level	Limit Level	Event & Action		
				NOE Issued	Investigation Results	Corrective Actions
Air Quality	1-Hour TSP	0	0	0	--	--
	24-Hr TSP	0	0	0	--	--
Construction Noise	Leq_{30min} Daytime	0	0	0	--	--
Water Quality (Marine Water)	DO	0	0	0	--	--
	Turbidity	0	0	0	Not project related	NA
	SS	**6**	**4**	**10**		

Note: NOE – Notification of Exceedance

ES06 For Suspended Solid exceedance recorded in the reporting period, investigations were conducted and it is concluded that the exceedances were unlikely caused by the Project. Nevertheless, the Contractor was reminded to check the implementation of silt curtain regularly to ensure no seepage of muddy water into the marine water body.

ENVIRONMENTAL COMPLAINT

ES07 No environmental complaint was recorded in this Reporting Period for the Project. The statistics of environmental complaint are summarized in the following table.

Table ES-6 Summary Environmental Complaint Records in the Reporting Period

Reporting Period	Contract	Environmental Complaint Statistics			Related with the Works Contract(s)
		Frequency	Cumulative	Complaint Nature	
3 December 2018 – 28 February 2019	1	0	0	NA	NA
	2	0	0	NA	NA

NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

ES08 No environmental summons or prosecutions was received in this Reporting Period for the Project. The statistics of environmental summons or prosecutions are summarized in the following tables.

Table ES-7 Summary Environmental Summons Records in the Reporting Period

Reporting Period	Contract	Environmental Summons Statistics			Related with the Works Contract(s)
		Frequency	Cumulative	Complaint Nature	
3 December 2018 – 28 February 2019	1	0	0	NA	NA
	2	0	0	NA	NA

Table ES-8 Summary Environmental Prosecutions Records in the Reporting Period

Reporting Period	Contract	Environmental Prosecution Statistics			Related with the Works Contract(s)
		Frequency	Cumulative	Complaint Nature	
3 December 2018 – 28 February 2019	1	0	0	NA	NA
	2	0	0	NA	NA

SITE INSPECTION BY EXTERNAL PARTIES

ES09 No site inspection was undertaken by AFCD within the Reporting Period. EPD site inspection was undertaken on 28 February 2019 in relation to Contract 1 Contractor's effluent discharge license application.

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1. INTRODUCTION

1.1 PROJECT BACKGROUND

1.1.1 Civil Engineering and Development Department (hereafter referred as "CEDD") is the Project Proponent and the Permit Holder of the Project Cross Bay Link, Tseung Kwan O (hereinafter referred as "the Project") which is a Designated Project to be implemented under Environmental Permit number EP-459/2013 (hereinafter referred as "the EP-459/2013" or "the EP").

1.1.2 AUES was awarded the CEDD Contract Agreement No. EDO/04/2018 - Environmental Team for Cross Bay Link, Tseung Kwan O (hereinafter called "the Service Contract"). The Services under the Service Contract is to provide environmental monitoring and audit (EM&A) services for the Works Contracts pursuant to the requirement of Environmental Team (ET) under the Approved EM&A Manual to ensure that the environmental performance of the Works Contracts comply with the requirement specified in the EM&A Manual and EIA Report of Agreement No. CE 43/2008 (HY) Cross Bay Link, Tseung Kwan O - Investigation and other relevant statutory requirements.

1.1.3 As part of the EM&A programme, baseline monitoring shall be undertaken before the Project construction work commencement to determine the ambient environmental condition. The baseline air quality, background noise and water quality monitoring has been carried out between ***21st September 2018*** and ***13th November 2018*** at the designated and interim locations. The baseline monitoring report under the EP-459/2013 has been compiled by the ET and verified by Independent Environmental Checker (hereinafter the "IEC') prior submitted to EPD on ***19th November 2018*** for endorsement.

1.1.4 This is the **1st** Quarterly EM&A report presenting the monitoring results and inspection findings for the reporting period from ***3rd December 2018*** to ***28th February 2019*** (hereinafter 'the Reporting Period').

1.2 REPORT STRUCTURE

1.2.1 The Environmental Monitoring and Audit (EM&A) Monthly Report is structured into the following sections:-

Section 1	*Introduction*
Section 2	*Project Organization and Construction Progress*
Section 3	*Summary of Impact Monitoring Requirements*
Section 4	*Impact Monitoring Results*
Section 5	*Waste Management*
Section 6	*Site Inspections*
Section 7	*Landfill Gas Monitoring*
Section 8	*Environmental Complaints and Non-Compliance*
Section 9	*Implementation Status of Mitigation Measures*
Section 10	*Conclusions and Recommendations*

2. PROJECT ORGANIZATION AND CONSTRUCTION PROGRESS AND SUBMISSION

2.1 PROJECT ORGANIZATION

2.1.1 The project organization is shown in ***Appendix B***. The responsibilities of respective parties can be referred to Monthly Report.

2.2 CONSTRUCTION PROGRESS

2.2.1 3-month rolling construction program of each Works Contract is enclosed in ***Appendix C***; and the major construction activities undertaken in the Reporting Period is presented in below sub-sections.

Contract 1 (Contract No. NE/2017/07)

2.2.2 The major construction activities of Contract 1 undertaken in this Reporting Period are:-

- Site Clearance Work at Works Area A
- Site Office Setup at Works Area A
- Pre-drilling works at Portion II
- Piling works at Portion II

Contract 2 (Contract No. NE/2017/08)

2.2.3 The major construction activities of Contract 2 undertaken in this Reporting Period are:-

- Site Clearance Work at Portion III and VI
- Initial Survey at Portion III and VI
- UU Detection Work at Portion III and VI
- Fencing Erection Work at Portion II and VI
- Trial Pit and Pre-drill Work at Portion VI

2.3 SUMMARY OF ENVIRONMENTAL SUBMISSIONS

2.3.1 All the documents required under Environmental Permit No. EP-459/2013 were submitted within the required timeframe. The details can be referred to the Monthly Report.

2.3.2 Upon completed baseline monitoring, a Baseline Monitoring Report was verified by IEC on 19 November 2018 and submitted to EPD on that day for endorsement.

2.3.3 The notification of Project dedicated web site to EPD was made on 9 January 2019 (http://www.envcbltko.hk/).

3. SUMMARY OF ENVIRONMENTAL MONITORING PROGRAMMES AND REQUIREMENTS

3.1 GENERAL

3.1.1 The Environmental Monitoring and Audit Programmes and requirements are set out in the Approved EM&A manual. Environmental issues such as air quality, construction noise and water quality were identified as the key issues during the construction phase of the Project. A summary of EM&A programmes and requirements are presented in the sub-sections below.

3.2 MONITORING PARAMETERS

3.2.1 Monitoring parameters of air quality, noise and water quality are summarized in ***Table 3-1***.

Table 3-1 Summary of EM&A Requirements

Environmental Issue	Parameters
Air Quality	• 1-hour TSP by Real-Time Portable Dust Meter; and • 24-hour TSP by High Volume Air Sampler
Noise	• Leq (30min) in six consecutive Leq(5 min) between 07:00-19:00 on normal weekdays • Supplementary information for data auditing, statistical results such as L_{10} and L_{90} shall also be obtained for reference.
Water Quality	• In-situ measurement – Dissolved Oxygen (DO) concentration (mg/L) & saturation (%), pH, Salinity (mg/L), Temperature (ºC) and Turbidity (NTU); and • Laboratory analysis – SS (mg/L)

3.3 MONITORING LOCATIONS

Air Quality and Construction Noise

3.3.1 According to the Approved EM&A Manual Section 5.4 and Section 6.3, three (3) representative air sensitive receivers (ASR) and four (4) representative noise sensitive receivers were designated as monitoring stations. The designated air quality and noise monitoring locations are listed in ***Table 3-2*** and ***Table 3-3,*** and illustrated in ***Appendix D***.

Table 3-2 Designated Air Quality Monitoring Location recommended in EM&A Manual

ID	Location in the EM&A Manual	Currently Situation
AM1	Tung Wah Group of Hospitals Aided Primary School & Secondary School	Not yet construct
AM2	Lohas Park Stage 2 (Planned Development in Area 86)	Under Construction
AM3	Lohas Park Stage 3 (Planned Development in Area 86)	Under Construction

Table 3-3 Designated Construction Noise Monitoring Location recommended by EM&A Manual

ID	Location	Currently Situation
CNMS-1	Lohas Park Stage 1(Planned Development in Area 86, Package 5) (Southeast facade)	Under Construction
CNMS-2	Lohas Park Stage 1 (Planned Development in Area 86, Package 6) (Southeast facade)	Under Construction
CNMS-3	Lohas Park Stage 3 (Planned Development in Area 86,Package 11) (West facade)	Under Construction
CNMS-4	Tung Wah Group of Hospitals Aided Primary School & Secondary School (Southwest facade)	Not yet construct

3.3.2 As observed and confirmed by ET and IEC during the joint site visit on 29th August 2018, the designated air quality and noise monitoring locations are under construction or yet to construct. It is considered that these designated locations are not appropriate to perform air quality and noise monitoring. In this regard, alternative locations were proposed as interim arrangement to carry out air quality and noise monitoring before occupation of the designated monitoring location. A letter enclosed with the alternative location proposal and IEC verification (Our Ref:

TCS00975/18/300/L0038) was sent to EPD on 19th October 2018 and the proposal was agreed by EPD. Therefore, air quality and construction noise impact monitoring would be performed at the agreed alternative locations until the designated sensitive receivers occupied and granted the premises.

3.3.3 The agreed alternative monitoring location for impact air quality and noise monitoring are summarized in Table 3-4 and illustrated in ***Appendix D***.

Table 3-4 Interim alternative location for air quality and noise monitoring

Location ID	Monitoring Parameter	Location
AM4	1-Hour TSP Air Quality	Podium of Lohas Park Phase 2A (Le Prestige)
AM5	24-Hour TSP Air Quality	Boundary of Site Office near Junction of Wan Po Road and Wan O Road
CNMS-5	Noise (L_{eq}, L_{10} & L_{90})	Podium of Lohas Park Phase 2A (Le Prestige)

Remark: Since 24-Hour TSP Air Quality monitoring is not granted at AM4 Lohas Park Phase 2A, the 24-Hour TSP monitoring was therefore proposed at AM5 which is located at the boundary of the project site office.

Water Quality

3.3.4 According to Table 7.1 of the approved EM&A Manual Section 7.4, two Control Stations (C3 & C4), six (6) sensitive receivers (CC1, CC2, CC3, CC4, CC13 & SWI1) and one (1) Gradient station (I1) are recommended to perform water quality monitoring. Details and coordinate of these water quality monitoring stations are described in ***Table 3-5*** and the locations is shown in ***Appendix D.***

Table 3-5 Location of Water Quality Monitoring Station

Station	Coordinates		Description
	Easting	Northing	
CC1	843201	816416	**Sensitive Receiver** – Coral Sites at Chiu Keng Wan
CC2	844076	817091	**Sensitive Receiver** – Coral Sites at Junk Bay
CC3	844606	817941	**Sensitive Receiver** – Coral Sites at Junk Island
CC4	845444	815595	**Sensitive Receiver** – Coral Sites at Fat Tong Chau West
CC13	844200	817495	**Sensitive Receiver** – Coral Sites at Junk Bay near Chiu Keng Wan
SWI1	845512	817442	**Sensitive Receiver** – Tseung Kwan O Salt Water Intake
C3	843821	816211	**Control Station** (Ebb Tide) – within Junk Bay
C4	844621	815770	**Control Station** (Flood Tide) – within Junk Bay
I1	844602	817675	**Gradient Station** – in between Lam Tin Tunnel (LTT) and CBL

3.4 MONITORING FREQUENCY AND PERIOD

3.4.1 To according with the approved *EM&A Manual*, impact monitoring requirements are presented as follows.

Air Quality Monitoring

3.4.2 Air quality impact monitoring frequency is as follows:

- Once every 6 days of 24-hour TSP and 3 times of 1-hour TSP monitoring; during course of works throughout the construction period

Construction Noise Monitoring

3.4.3 Construction noise monitoring frequency is as follows:

- One set of $Leq_{(30min)}$ measurements in a weekly basis between 07:00 and 19:00 hours on normal weekdays during course of works as throughout the construction period
- If construction works are extended to include works during the hours of 1900-0700, additional weekly impact monitoring shall be carried out during evening and night-time works. Applicable permits under the NCO shall be obtained by the Contractor.

Water Quality (Marine Water) Monitoring

3.4.4 Marine water impact monitoring frequency is as follows:

- Three days a week, at mid ebb and mid flood tides during course of pile excavation works for the bridge pier foundations underway. Moreover, the intervals between 2 consecutive sets of monitoring day shall not be less than 36 hours.

3.5 DETERMINATION OF ACTION/LIMIT (A/L) LEVELS

3.5.1 The baseline results form the basis for determining the environmental acceptance criteria for the impact monitoring. A summary of the Action/Limit (A/L) Levels for air quality, construction noise and water quality are shown in ***Tables 3-6, 3-7*** and ***3-8*** respectively.

Table 3-6 Action & Limit Levels of Air Quality (1-Hour & 24-Hr TSP)

Monitoring Station	Action Level (μg /m^3)		Limit Level (μg/m^3)	
	1-Hour TSP	24-Hr TSP	1-Hour TSP	24-Hr TSP
AM4	278	NA	500	NA
AM5	NA	190	NA	260
Note: 1-Hour & 24-Hr TSP of Action Level = (Average Baseline Results × 1.3 + Limit level)/2				

Table 3-7 Action and Limit Levels for Construction Noise, dB(A)

Monitoring Location	Action Level	Limit Level (Leq30min)
	Time Period: 0700-1900 hours on normal weekdays	
CNMS-5	When one or more documented complaints are received	***75*** dB(A)

Remarks:

1. *Construction noise monitoring will be resumed at the designated locations CNMS-1, CNMS-2, CNMS-3 and CNMS4 once they are available and permission are granted;*
2. *The designated locations CNMS-1, CNMS-2 and CNMS-3 are located at residential building which are still under construction, Limit Level of 75dB(A) will be adopted until they are occupied;*
3. *The designated location CNMS-4 is located at planned school and still not yet to construction. When the school occupied and operated, Limit Level of 70dB(A) should be adopted and should be reduced to 65dB(A) during examination period; and*
4. *If construction works are required during restricted hours, the conditions stipulated in the construction noise permit issued by the Noise Control Authority shall be followed.*

Table 3-8 Action and Limit Levels for Water Quality

Monitoring Station	Depth Average of SS (mg/L)			
	Action Level		Limit Level	
CC1	7.8	**OR** 120% of upstream control station at the same tide of the same day (Control Station C3 at Ebb tide and Control Station C4 at Flood tide), whichever is higher	9.3	**OR** 130% of upstream control station at the same tide of the same day (Control Station C3 at Ebb tide and Control Station C4 at Flood tide) , whichever is higher
CC2	9.0		9.2	
CC3	8.2		9.0	
CC4	13.8		15.4	
CC13	8.9		10.3	
SWI1	8 mg/L		10 mg/L	

Monitoring Location	Dissolved Oxygen (mg/L)			
	Depth Average of Surface and Mid-depth		Bottom	
	Action Level	Limit Level	Action Level	Limit Level
CC1	5.8	5.7	5.3	5.2
CC2	5.8	5.7	5.3	5.1
CC3	5.5	5.4	4.9	4.7
CC4	5.7	5.7	5.5	5.4
CC13	5.6	5.5	5.3	5.2

Monitoring Station	Depth Average of SS (mg/L)			
	Action Level		Limit Level	
SWI1	5.4	4.8	5.1	5.0

Monitoring Location	Depth Average of Turbidity (NTU)			
	Action Level		Limit Level	
CC1	5.8	**OR** 120% of upstream control station at the same tide of the same day (Control Station C3 at Ebb tide and Control Station C4 at Flood tide) , whichever is higher	6.0	**OR** 130% of upstream control station at the same tide of the same day (Control Station C3 at Ebb tide and Control Station C4 at Flood tide) , whichever is higher
CC2	4.6		5.5	
CC3	4.8		5.4	
CC4	6.1		7.1	
CC13	6.0		6.3	
SWI1	6.1		7.1	

3.5.2 Should non-compliance of the environmental quality criteria occurs, remedial actions will be triggered according to the Event and Action Plan as stated EM&A Manual.

4. IMPACT MONITORING RESULT

4.1 RESULTS OF AIR QUALITY MONITORING IN THE REPORTING MONTH

4.1.1 During the Reporting Period, ***48*** sessions of 1-hour TSP and ***17*** sessions of 24-hours TSP monitoring were carried out and the monitoring results are summarized in ***Table 4-1***. The relevant graphical plots are shown in ***Appendix E***.

Table 4-1 Summary of Air Quality Impact Monitoring Results

Monitoring Location	1-hour TSP (μg/m³)			24-hour TSP (μg/m³)		
	Min	Max	Average	Min	Max	Average
AMS-1	39	118	66			
Record Date	10-Dec-18	18-Jan-19	48 events			
AMS-5				52	180	131
Record Date				2-Feb-19	15-Jan-19	17 events

4.1.2 As shown in ***Table 4-1***, all the 1-hour TSP and 24-hour TSP monitoring results were below the Action / Limit Levels. No Notification of Exceedance (NOE) was issued in this Reporting Period.

4.1.3 Due to the reporting quarter is dry and windy season, dust monitoring result may be higher than in wet season. No adverse impact on the monitoring result was observed in reporting quarter. The summary of meteorological information for the Reporting Period is shown in ***Appendix F***.

4.2 RESULTS OF CONSTRUCTION NOISE MONITORING

4.2.1 ***13*** sessions of construction noise monitoring were performed at the interim alternative location in the reporting period. The noise monitoring results at interim alternative location is summarized in ***Table 4-2.*** The relevant graphical plots are shown in ***Appendix E***.

Table 4-2 Summary of Construction Noise Impact Monitoring Results

Monitoring Location	Leq, 30min (dB((A))		
	Min	Max	Average
CNMS-5	58.0	69.3	65.2
Record Date	21-Dec-18	10-Dec-18	13 events

4.2.2 All the measured results were below 75dB(A) of the acceptance criteria. Furthermore, no complaint on construction noise was registered, indicating no exceedance of Action Level. No non-compliance was therefore found during the Reporting Period.

4.3 RESULTS OF WATER QUALITY MONITORING

4.3.1 In this Reporting Period, a total of ***37*** sampling days were performed for marine water monitoring at the nine designated locations. Monitoring results of 3 key parameters: dissolved oxygen (DO), turbidity and suspended solids are summarized in ***Tables 4-3*** to ***4-6*** and the graphical plots are shown in ***Appendix E***.

Table 4-3 Results Summary of Depth Average (Surface & Middle Layer) of DO (mg/L)

Tidal		CC1	CC2	CC3	CC4	CC13	SWI1	C3	C4	I1
Mid-Ebb	Average	7.6	7.6	7.6	7.5	7.5	7.5	7.5	7.5	7.5
	Min	6.6	6.7	6.7	6.6	6.4	6.3	6.7	6.7	6.6
	Max	9.2	9.4	9.6	9.1	9.4	9.7	9.1	9.0	9.7
Mid-Flood	Average	7.6	7.6	7.6	7.6	7.6	7.5	7.5	7.6	7.6
	Min	6.6	6.6	6.6	6.6	6.5	6.1	6.6	6.7	6.6
	Max	9.1	9.1	9.6	9.4	9.4	10.0	9.6	9.4	9.1

Table 4-4 Results Summary of Bottom Depth of DO (mg/L)

Tidal		CC1	CC2	CC3	CC4	CC13	SWI1	C3	C4	I1
Mid-Ebb	Average	7.5	7.4	7.3	NA	7.4	7.5	7.4	7.4	7.3
	Min	6.5	6.6	6.4	NA	6.6	6.2	6.7	6.7	6.4
	Max	9.3	8.7	8.4	NA	9.3	9.5	8.6	8.8	9.0
Mid-Flood	Average	7.5	7.4	7.3	NA	7.4	7.6	7.4	7.4	7.4
	Min	6.5	6.6	6.4	NA	6.3	6.1	6.5	6.7	6.5
	Max	9.4	8.6	9.0	NA	9.1	10.1	8.6	8.8	9.0

Remark: No Dissolved Oxygen (Bottom) monitoring data available for CC4 due to the water depth measured at CC4 during the monitoring days were less than 3 meters.

Table 4-5 Results Summary of Depth Average of Turbidity (NTU)

Tidal		CC1	CC2	CC3	CC4	CC13	SWI1	C3	C4	I1
Mid-Ebb	Average	1.4	1.5	1.6	1.5	1.6	1.4	1.6	1.6	1.7
	Min	0.3	0.4	0.6	0.4	0.4	0.4	0.3	0.4	0.7
	Max	2.9	3.0	3.3	2.7	3.1	3.0	2.9	3.2	3.4
Mid-Flood	Average	1.3	1.4	1.5	1.4	1.6	1.4	1.5	1.6	1.5
	Min	0.5	0.4	0.6	0.4	0.4	0.4	0.4	0.6	0.6
	Max	2.3	2.5	2.5	3.1	4.4	2.9	2.9	3.0	3.8

Table 4-6 Results Summary of Depth Average of Suspended Solids (mg/L)

Tidal		CC1	CC2	CC3	CC4	CC13	SWI1	C3	C4	I1
Mid-Ebb	Average	3.3	3.5	3.0	3.6	3.6	3.7	3.4	3.3	3.1
	Min	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	Max	8.7	9.1	8.1	9.2	9.4	12.3	8.8	8.3	7.6
Mid-Flood	Average	3.5	3.4	3.1	3.6	4.3	4.0	3.3	3.5	3.5
	Min	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	Max	10.6	11.9	7.8	9.8	15.4	9.1	7.7	8.2	9.7

4.3.2 A summary of exceedances for the four parameters: dissolved oxygen (DO), turbidity and suspended solids (SS) are shown in ***Table 4-7.***

Table 4-7 Summary of Water Quality Exceedance

Station	DO (Ave of Top & mid-depth)		DO (Bottom Depth)		Turbidity (Depth Ave)		SS (Depth Ave)		Total Exceedance for the Station	
	AL	LL	AL	LL	AL	LL	AL	LL	AL	LL
CC1	0	0	0	0	0	0	**1**	**1**	**1**	**1**
CC2	0	0	0	0	0	0	**1**	**1**	**1**	**1**
CC3	0	0	0	0	0	0	0	0	0	0
CC4	0	0	NA	NA	0	0	0	0	0	0
CC13	0	0	0	0	0	0	0	**1**	0	**1**
SWI1	0	0	0	0	0	0	**4**	**1**	**4**	**1**
No of Exceedance	0	0	0	0	0	0	**6**	**4**	**6**	**4**

4.3.3 In this Reporting Period, a total of six (6) Action Level and four (4) Limit Level exceedances of Suspended Solids recorded.

4.3.4 Upon confirmation of the monitoring result, Notification of Exceedances (NOEs) have been issued to relevant parties. Investigation for the cause of exceedance was carried out by ET subsequently and it is concluded that the exceedances recorded in this reporting period were unlikely caused by the Project. Nevertheless, the Contractor was reminded to check the implementation of silt curtain regularly to ensure no seepage of muddy water into the marine water body.

5. WASTE MANAGEMENT

5.1 GENERAL WASTE MANAGEMENT

5.1.1 Waste management would be carried out by an on-site Environmental Officer or an Environmental Consultant from time to time.

5.2 RECORDS OF WASTE QUANTITIES

5.2.1 All types of waste arising from the construction work are classified into the following:

- Construction & Demolition (C&D) Material;
- Chemical Waste; and
- General Refuse

5.2.2 According to the information provided by Contractor of Contract 1 and Contract 2, waste disposal was made in the Reporting period are summarized in ***Tables 5-1*** and ***5-2***.

Table 5-1 Summary of Quantities of Inert C&D Materials

Type of Waste	Contract No	Quantity			Disposal Location
		Dec 2018	Jan 2019	Feb 2019	
Total Generated C&D Materials (Inert) (in '000m^3)	1	0.276	0.845	0	TKO 137
	2	0	0.358	0.022	-
Reused in this Project (Inert) (in '000m^3)	1	0	0	0	-
	2	0	0.358	0	-
Reused in other Projects (Inert) (in '000m^3)	1	0	0	0	-
	2	0	0	0	-
Disposal as Public Fill (Inert) (in '000m^3)	1	0.276	0.845	0	TKO 137
	2	0	0	0.022	

Table 5-2 Summary of Quantities of C&D Wastes

Type of Waste	Contract No	Quantity			Disposal Location
		Dec 2018	Jan 2019	Feb 2019	
Recycled Metal (‘000kg)	1	0	0	0	-
	2	0	0	0	
Recycled Paper / Cardboard Packing (‘000kg)	1	0	0.023	0.032	Licensed collector
	2	0	0	0	
Recycled Plastic (‘000kg)	1	0	0	0	-
	2	0	0	0	
Chemical Wastes (‘000kg)	1	0	0	0	-
	2	0	0	0	
General Refuses (‘000m^3)	1	0.004	0.077	0.036	NENT
	2	0	0.357	0.728	

5.2.3 The Monthly Summary Waste Flow Table of the Contracts 1 and Contract 2 are shown in ***Appendix G***.

6. SITE INSPECTION

6.1 REQUIREMENTS

6.1.1 According to the approved EM&A Manual, the environmental site inspection shall be formulation by ET Leader. Weekly environmental site inspections should carry out to confirm the environmental performance.

6.2 FINDINGS / DEFICIENCIES DURING THE REPORTING MONTH

Contract 1

6.2.1 In this Reporting Period, ***13*** events of weekly joint site inspection was carried out for Contract 1 to evaluate site environmental performance. The summaries of the findings during site inspection are presented in ***Table 6-1*** and the details of site inspection can be found in relevant EM&A monthly report.

Table 6-1 Summary of Site Observations of the Contract 1

Reporting Period	Date of site inspection	Nos. of Findings/ Deficiencies	Follow-Up Status
December 2018	6, 14, 19 and 27 December 2018	1	Completed
January 2019	2, 9, 16, 23 & 30 January 2019	4	Completed
February 2019	8, 15, 20 and 27 February 2019	4	Completed

6.2.2 In the Reporting Period, no non-compliance was recorded for Contract 1; however, ***9*** observations were recorded during the site inspections and the major findings were related to air quality and water quality mitigation measures. Details of the findings of the inspection in the reporting period can be referred to the Monthly EM&A Report. The findings found in the weekly site inspection were in general rectified within the specified deadlines. The environmental performance of the Project was therefore considered satisfactory.

Contract 2

6.2.3 In this Reporting Period, ***6*** events of weekly joint site inspection was carried out for Contract 2 to evaluate site environmental performance. The summaries of the findings during site inspection are presented in ***Table 6-2*** and the details of site inspection can be found in relevant EM&A monthly report.

Table 6-2 Summary of Site Observations of the Contract 2

Reporting Period	Date of site inspection	Nos. of Findings/ Deficiencies	Follow-Up Status
January 2019	23 & 30 January 2019	0	NA
February 2019	8, 15, 20 and 27 February 2019	2	Completed

6.2.4 In the Reporting Period, no non-compliance was recorded for Contract 2; however, ***2*** observations were recorded during the site inspections and the major findings were related to general housekeeping. Details of the findings of the inspection in the reporting period can be referred to the Monthly EM&A Report. The findings found in the weekly site inspection were in general rectified within the specified deadlines. The environmental performance of the Project was therefore considered satisfactory.

7. LANDFILL GAS MONITORING

7.1 GENERAL REQUIREMENT

7.1.1 Pursuant to Section 13 of the Project's EM&A Manual, Landfill gas monitoring shall perform during construction activities within the 250m Consultation Zone of Tseung Kwan O Stage II & III Landfill. For landfill gas monitoring requirements, pre entry and routine measurement shall be undertaken in accordance with the *Factories and Industrial Undertaking (Confined Spaces) Regulation*.

7.1.2 According to Environmental Mitigation Implementation Schedule (EMIS) S14.7.6, portable monitoring equipment can be used to conduct landfill gas monitoring. Moreover, the frequency and areas to be monitored should be set down prior to commencement of the works either by the Safety Officer or by an appropriately qualified person.

7.2 LIMIT LEVELS AND EVENT AND ACTION PLAN

7.2.1 In event of the trigger levels specified in Table 14.6 of the EIA report being exceeded, a person, such as the Safety Officer, shall be nominated, with deputies, to be responsible for dealing with any emergency which may occur due to LFG. In an emergency situation the nominated person, or his deputies, shall have the necessary authority and shall ensure that the confined space is evacuated and the necessary works implemented for reducing the concentrations of gas. The Limit levels and relevant Action Plans for landfill gas detected in utilities and any on-site areas following construction is listed in ***Table 9-1***.

Table 7-1 Actions in the Event of Landfill Gas Being Detected in Excavations

Parameter	Limit Level	Actions
Methane	>10% LEL (i.e. >0.5% by volume)	• Post "No Smoking" signs • Prohibit hot works • Ventilate to restore methane to <10% LEL
	>20% LEL (i.e. >1% by volume)	• Stop excavation works • Evacuate personnel/prohibit entry • Increase ventilation to restore methane to <10% LEL
Carbon dioxide	>0.5%	• Ventilate to restore carbon dioxide to <0.5%
	>1.5%	• Stop excavation works • Evacuate personnel/prohibit entry • Increase ventilation to restore carbon dioxide to <0.5%
Oxygen	<19%	Ventilation to restore oxygen >19%
	<18%	• Stop excavation works • Evacuate personnel/prohibit entry • Increase ventilation to restore oxygen to >19%

7.2.2 In the event of the trigger levels specified in Table 9-1 being exceeded, the Safety Officer shall be responsible for dealing with any emergency which may occur due to landfill gas.

7.3 LANDFILL GAS MONITORING

7.3.1 Since the major construction activities under the Project were not yet commenced within the 250m Consultation Zone of Tseung Kwan O Stage II & III Landfill, no landfill gas monitoring was undertaken by the Contractors in the Reporting Period.

8. ENVIRONMENTAL COMPLAINT AND NON-COMPLIANCE

8.1 ENVIRONMENTAL COMPLAINT, SUMMONS AND PROSECUTION

8.1.1 In the Reporting Period, no environmental complaint, summons and prosecution under the EM&A Programme was lodged for the project. The statistical summary table of environmental complaint is presented in ***Tables 8-1, 8-2*** and ***8-3***.

Table 8-1 Statistical Summary of Environmental Complaints

Reporting Period	Contract	Environmental Complaint Statistics		
		Frequency	Cumulative	Complaint Nature
3 – 31 December 2018	1	0	0	NA
1 – 31 January 2019		0	0	NA
1 – 28 February 2019		0	0	NA
3 – 31 December 2018	2	0	0	NA
1 – 31 January 2019		0	0	NA
1 – 28 February 2019		0	0	NA

Table 8-2 Statistical Summary of Environmental Summons

Reporting Period	Contract	Environmental Complaint Statistics		
		Frequency	Cumulative	Complaint Nature
3 – 31 December 2018	1	0	0	NA
1 – 31 January 2019		0	0	NA
1 – 28 February 2019		0	0	NA
3 – 31 December 2018	2	0	0	NA
1 – 31 January 2019		0	0	NA
1 – 28 February 2019		0	0	NA

Table 8-3 Statistical Summary of Environmental Prosecution

Reporting Period	Contract	Environmental Complaint Statistics		
		Frequency	Cumulative	Complaint Nature
3 – 31 December 2018	1	0	0	NA
1 – 31 January 2019		0	0	NA
1 – 28 February 2019		0	0	NA
3 – 31 December 2018	2	0	0	NA
1 – 31 January 2019		0	0	NA
1 – 28 February 2019		0	0	NA

9. IMPLEMENTATION STATUS OF MITIGATION MEASURES

9.1 GENERAL REQUIREMENTS

9.1.1 The environmental mitigation measures that recommended in the Implementation Schedule for Environmental Mitigation Measures (ISEMM) in the approved EM&A Manual covered the issues of dust, noise, water and waste and they are summarized presented in ***Appendix H.***

9.1.2 The Contractors had been implementing the required environmental mitigation measures according to the Environmental Monitoring and Audit Manual subject to the site condition. Environmental mitigation measures generally implemented by the Contractors in this Reporting Month are summarized in ***Table 9-1***.

Table 9-1 Environmental Mitigation Measures in the Reporting Period

Issues	Environmental Mitigation Measures
Construction Noise	• Regularly to maintain all plants, so only the good condition plants were used on-site ; • If possible, all mobile plants onsite operation has located far from NSRs; • When machines and plants (such as trucks) were not in using, it was switched off; • Wherever possible, plant was prevented oriented directly the nearby NSRs; • Provided quiet powered mechanical equipment to use onsite; • Weekly noise monitoring was conducted to ensure construction noise meet the criteria.
Air Quality	• Stockpile of dusty material was covered entirely with impervious sheeting or sprayed with water so as to maintain the entire surface wet; • The construction plants regularly maintained to avoid the emissions of black smoke; • The construction plants switched off when it not in use; • Water spraying on haul road and dry site area was provided regularly; • Where a vehicle leaving the works site is carrying a load of dusty materials, the load has covered entirely with clean impervious sheeting; and • Before any vehicle leaving the works site, wheel watering has been performed.
Water Quality	• Debris and refuse generated on-site collected daily; • Oils and fuels were stored in designated areas; • The chemical waste storage as sealed area provided; • Site hoarding with sealed foot were provided surrounding the boundary of working site to prevent wastewater or site surface water runoff get into public areas; and • Portable chemical toilets were provided on-site. A licensed contractor was regularly disposal and maintenance of these facilities. • Silt curtain was installed and maintained in accordance with EP condition
Waste and Chemical Management	• Excavated material reused on site as far as possible to minimize off-site disposal. • Scrap metals or abandoned equipment should be recycled if possible; • Waste arising kept to a minimum and be handled, transported and disposed of in a suitable manner; • Disposal of C&D wastes to any designated public filling facility and/or landfill followed a trip ticket system; and • Chemical waste handled in accordance with the Code of Practice on the Packaging, Handling and Storage of Chemical Wastes.
General	• The site is generally kept tidy and clean. • Mosquito control is performed to prevent mosquito breeding on site.

10. CONCLUSIONS AND RECOMMENDATIONS

10.1 CONCLUSIONS

10.1.1 This is the **1st** Quarterly EM&A report as presented the monitoring results and inspection findings for the reporting period from ***3rd December 2018*** to ***28th February 2019***.

10.1.2 In this Reporting Period, no construction noise monitoring results that triggered the Limit Level was recorded. No Notification on Exceedance (NOE) or the associated corrective actions were therefore issued. Moreover, no noise complaint (which is an Action Level exceedance) was received by the Project Consultant, EPD and the Contractors.

10.1.3 In this Reporting Period, no 1-Hour TSP or 24-Hr TSP air quality monitoring exceedance was recorded. No NOE or the associated corrective actions were therefore issued.

10.1.4 For water quality monitoring, six (6) Action Level and four (4) Limit Level exceedance were recorded for Suspended Solids in the reporting period. Investigation for the cause of exceedance was carried out by ET subsequently and it is concluded that the exceedances recorded in this reporting period were unlikely caused by the Project.

10.1.5 No documented complaint, notification of summons or prosecution were received and recorded for the Project.

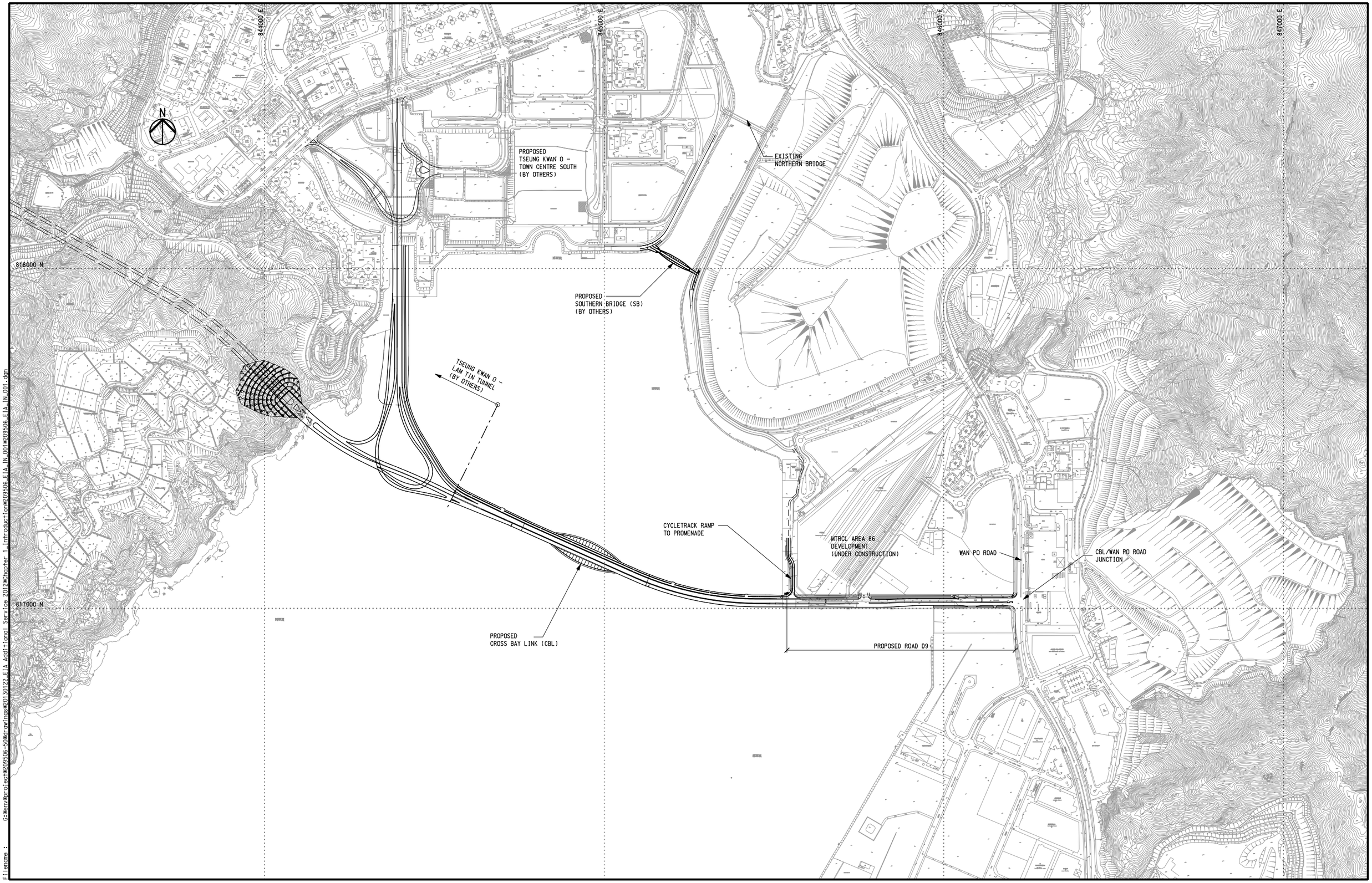
10.2 RECOMMENDATIONS

10.2.1 Due to the coming month is dry and windy season for Hong Kong, the Contractor was reminded that all the works to undertaking must be fulfill environmental statuary requirement, especially construction dust come from working sites of the Project.

10.2.2 In regards to the marine works, special attention should be paid on excavation works for the bridge pier foundations underway in which water quality mitigation measures such as erection of silt curtain should be properly implemented and maintained.

Appendix A

Project Layout Plan



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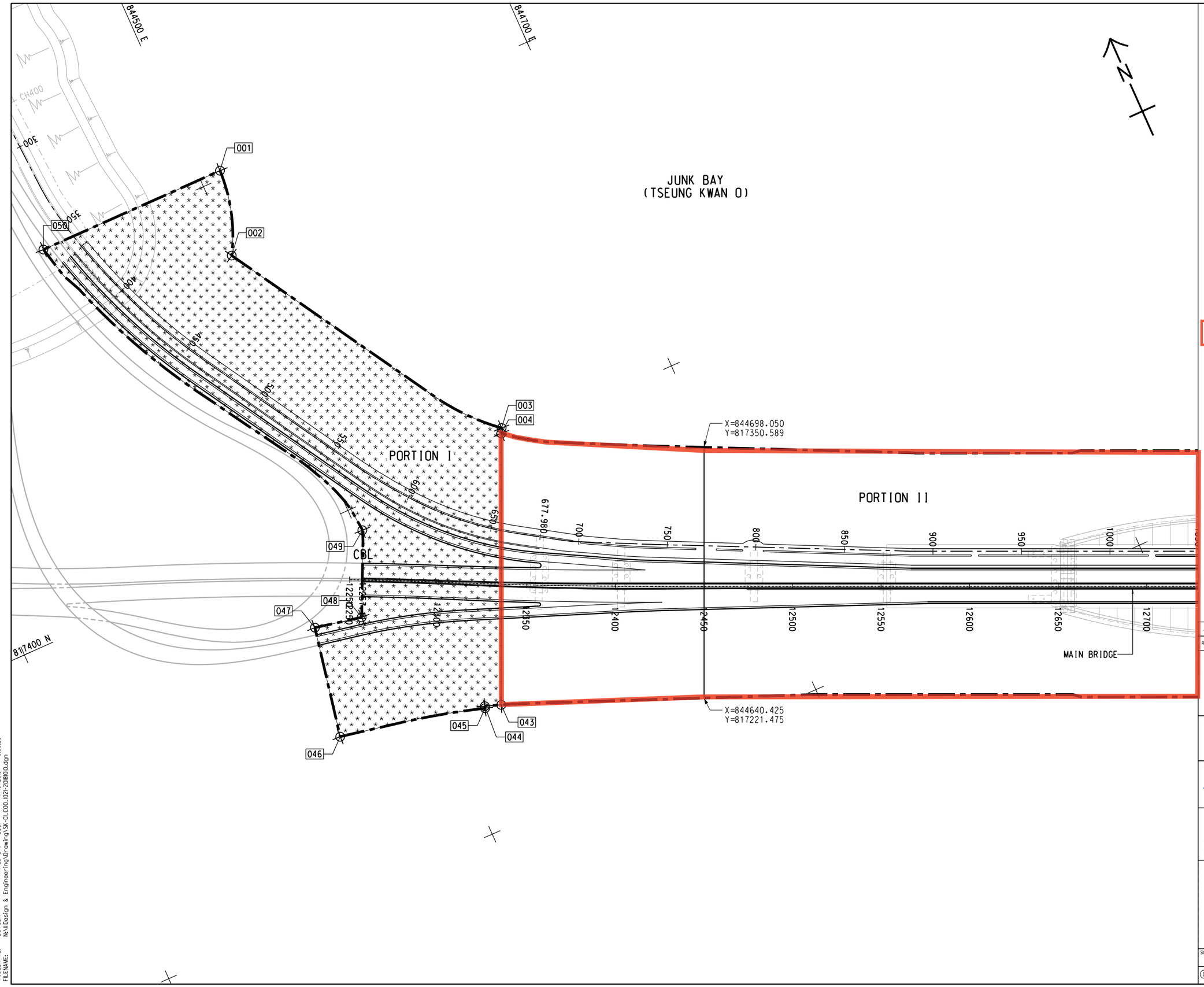
土木工程拓展署 Civil Engineering and Development Department	ARUP Ove Arup & Partners Hong Kong Limited	Job Title: **Agreement No. CE 43/2008(HY) Cross Bay Link, Tseung Kwan O – Investigation**
Drawing Title: GENERAL LAYOUT PLAN		

Rev.	Description	Date
B	SECOND ISSUE	01/13
A	FIRST ISSUE	07/11

Drawn: GL	Date: 01/13	Drawing No.: 209506/EIA/IN/001	
Checked: JP	Approved: ST		
Scale: 1:5000 on A1 & 1:10000 on A3		Status: FINAL	Rev.: B



NOTES:

1. ALL SETTING OUT POINTS SHOWN ON THIS SET OF DRAWINGS ARE FOR REFERENCE ONLY. THE EXACT LIMIT OF SITE BOUNDARY SHALL BE VERIFIED AND DETERMINED BY THE CONTRACTOR ON SITE.
2. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH DRAWING NOS. 60329339/C1/COO/1022 AND 1023.

LEGEND:

- SITE BOUNDARY
- PORTION I
- PORTION II
- PORTION III
- PORTION IV
- PORTION V
- PORTION VI
- PORTION VII
- WORKS AREA A
- WORKS AREA B
- Works area under Contract 1

Rev	Amendment	By	Chk.	App.	Date
A	FIRST ISSUE	HK	KN	AC	19/09/18

PROJECT MANAGER:

PROJECT MANAGER:

土木工程拓展署
Civil Engineering and Development Department

SUPERVISOR:

AECOM

CONTRACTOR:

中國路橋工程有限責任公司
China Road and Bridge Corp.

CONTRACT NO. AND TITLE:

Contract No. NE/2017/07

CROSS BAY LINK, TSEUNG KWAN O - MAIN BRIDGE AND ASSOCIATED WORKS

DRAWING TITLE:

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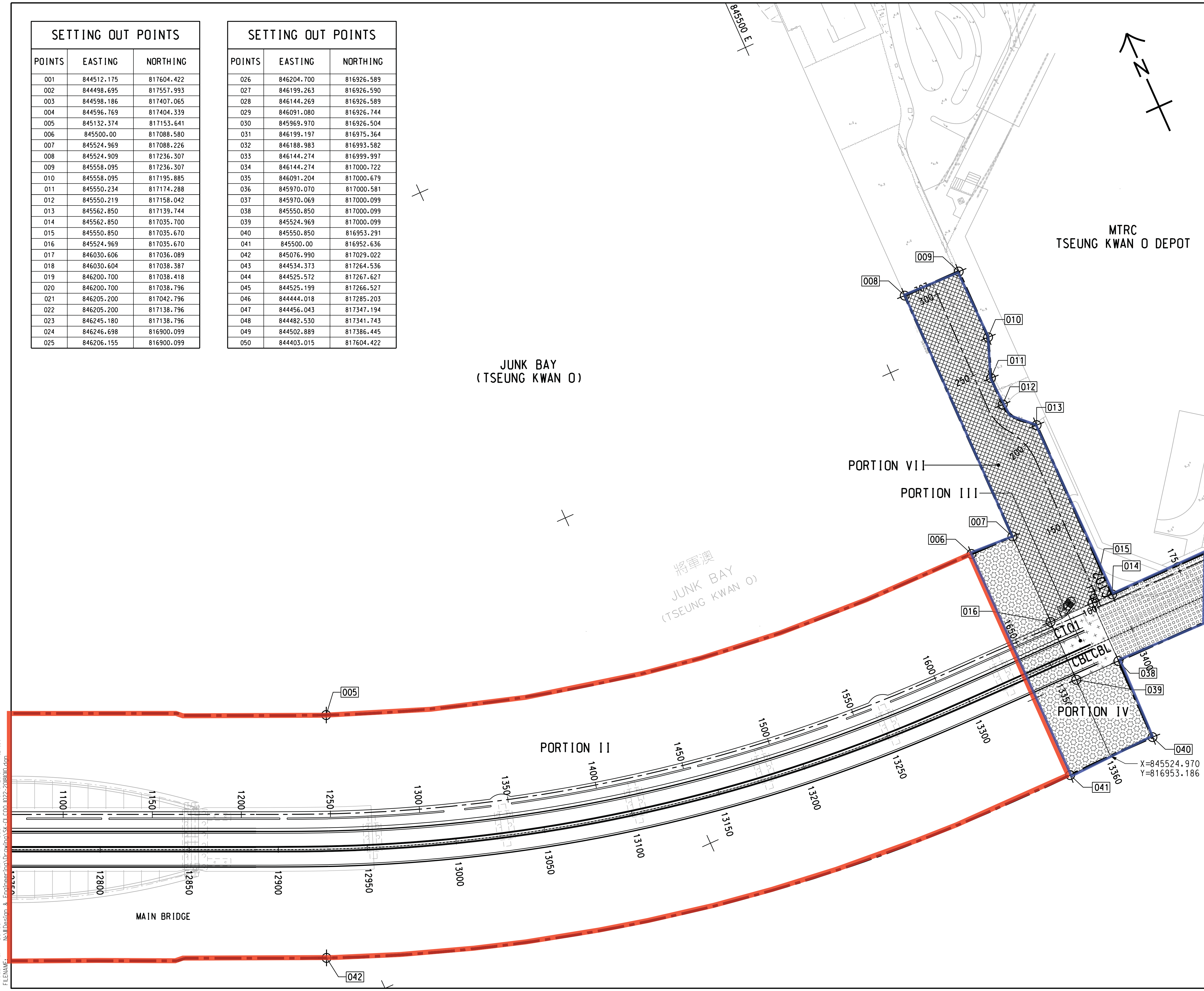
SETTING OUT POINTS		
POINTS	EASTING	NORTHING
001	844512.175	817604.422
002	844498.695	817557.993
003	844598.186	817407.065
004	844596.769	817404.339
005	845132.374	817153.641
006	845500.00	817088.580
007	845524.969	817088.226
008	845524.909	817236.307
009	845558.095	817236.307
010	845558.095	817195.885
011	845550.234	817174.288
012	845550.219	817158.042
013	845562.850	817139.744
014	845562.850	817035.700
015	845550.850	817035.670
016	845524.969	817035.670
017	846030.606	817036.089
018	846030.604	817038.387
019	846200.700	817038.418
020	846200.700	817038.796
021	846205.200	817042.796
022	846205.200	817138.796
023	846245.180	817138.796
024	846246.698	816900.099
025	846206.155	816900.099

SETTING OUT POINTS		
POINTS	EASTING	NORTHING
026	846204.700	816926.589
027	846199.263	816926.590
028	846144.269	816926.589
029	846091.080	816926.744
030	845969.970	816926.504
031	846199.197	816975.364
032	846188.983	816993.582
033	846144.274	816999.997
034	846144.274	817000.722
035	846091.204	817000.679
036	845970.070	817000.581
037	845970.069	817000.099
038	845550.850	817000.099
039	845524.969	817000.099
040	845550.850	816953.291
041	845500.00	816952.636
042	845076.990	817029.022
043	844534.373	817264.536
044	844525.572	817267.627
045	844525.199	817266.527
046	844444.018	817285.203
047	844456.043	817347.194
048	844482.530	817341.743
049	844502.889	817386.445
050	844403.015	817604.422



NOTE:

1. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH DRAWING NOS. 60329339/C1/C00/1021 AND 1023.

LEGEND:

Works area under Contract 1

Works area under Contract 2

Rev	Amendment	By	Chk.	App.	Date

PROJECT MANAGER:

土木工程拓展署
Civil Engineering and Development Department

SUPERVISOR:

AECOM

CONTRACTOR:

中國路橋工程有限責任公司
China Road and Bridge Corp.

CONTRACT NO. AND TITLE:

Contract No. NE/2017/07

CROSS BAY LINK, TSEUNG KWAN O - MAIN BRIDGE AND ASSOCIATED WORKS

DRAWING TITLE:

SCALE @ A1

DRAWING NO:

NOTE:

1. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH DRAWING NOS. 60329339/C1/C00/1021 AND 1022.

LEGEND:

Works area under Contract 1

Works area under Contract 2

845700 E

845900 E

846100 E

N

MTRC
TSEUNG KWAN O DEPOT

817200 N

LOHAS PARK

CUT LINE B-B
SEE DRAWING NO. 60329339/C1/C00/1022

PORTION VI

817000 N

E=845869.991
N=817000.014

E=845869.970
N=816926.504

Loading & Unloading Marine Area

100m

WORKS AREA A

WORKS AREA B

PORTION V

JUNK BAY
(TSEUNG KWAN O)

816800 N

017 018 019 020 021 022 023 024 025 026 027 028 029 030 031 032 033 034 035 036 037

Rev	Amendment	By	Chk.	App.	Date

PROJECT MANAGER:

PROJECT MANAGER:

土木工程拓展署
Civil Engineering and Development Department

SUPERVISOR:

AECOM

CONTRACTOR:

中國路橋工程有限責任公司
China Road and Bridge Corp.

CONTRACT NO. AND TITLE:

Contract No. NE/2017/07

CROSS BAY LINK, TSEUNG KWAN O - MAIN BRIDGE AND ASSOCIATED WORKS

DRAWING TITLE:

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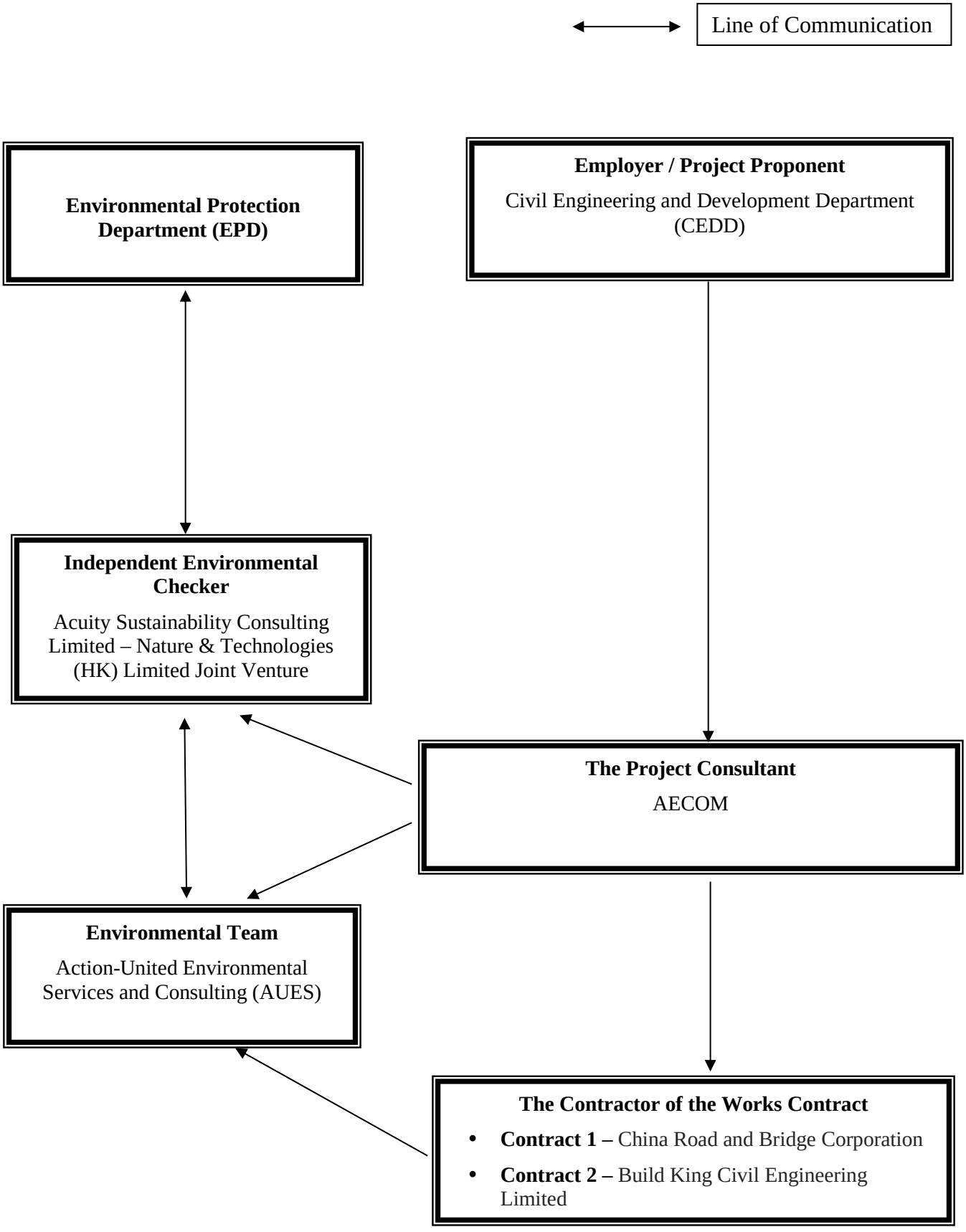
Appendix B

Project Organization Chart & Contact Details of Key Personnel for the Project

Project Organization Structure



Contact Details of Key Personnel for the Project

Organization	Project Role	Name of Key Staff	Tel No.	Fax No.
CEDD	Project Proponent	CK Lam	2301 1398	2714 5174
CEDD	Project Proponent	Simon Wong	2301 1398	2714 5174
AECOM	Senior Resident Engineer	Jackie Chan	3595 8045	3596 6118
AECOM	Resident Engineer	Kingman Chan	3595 8045	3596 6118
ASC – N&T JV	Independent Environmental Checker	Kevin Li	2698 6833	2698 9383
ASC – N&T JV	Senior Environmental Consultant	Tandy Tse	2698 6833	2698 9383
AUES	Environmental Team Leader	T. W. Tam	2959 6059	2959 6079
AUES	Environmental Consultant	Ben Tam	2959 6059	2959 6079
AUES	Environmental Consultant	Martin Li	2959 6059	2959 6079
CRBC	Site Agent	Raymond Cheng	6026 5971	2283 1689
CRBC	Environmental Officer	Calvin So	9724 6254	2283 1689
CRBC	Environmental Supervisor	Lila Lui	9790 5433	2283 1689
Build King	Site Agent	Stephen Leung	9071 7657	TBA
Build King	Environmental Officer	Stephen Leung	9071 7657	TBA
Build King	Environmental Supervisor	Walter Wong	6584 7065	TBA

Legend:

CEDD (Employer) – Civil Engineering and Development Department

AECOM (Project Consultant) – AECOM Asia Co. Ltd.

ASC – N&T JV (IEC) – Acuity Sustainability Consulting Limited – Nature & Technologies (HK) Limited Joint Venture

AUES (ET) – Action-United Environmental Services & Consulting

CRBC (the Main Contractor of the Works Contract 1) – China Road and Bridge Corporation

Build King (the Main Contractor of the Works Contract 2) - Build King Civil Engineering Limited

Appendix C

3-Month Rolling Construction Programme

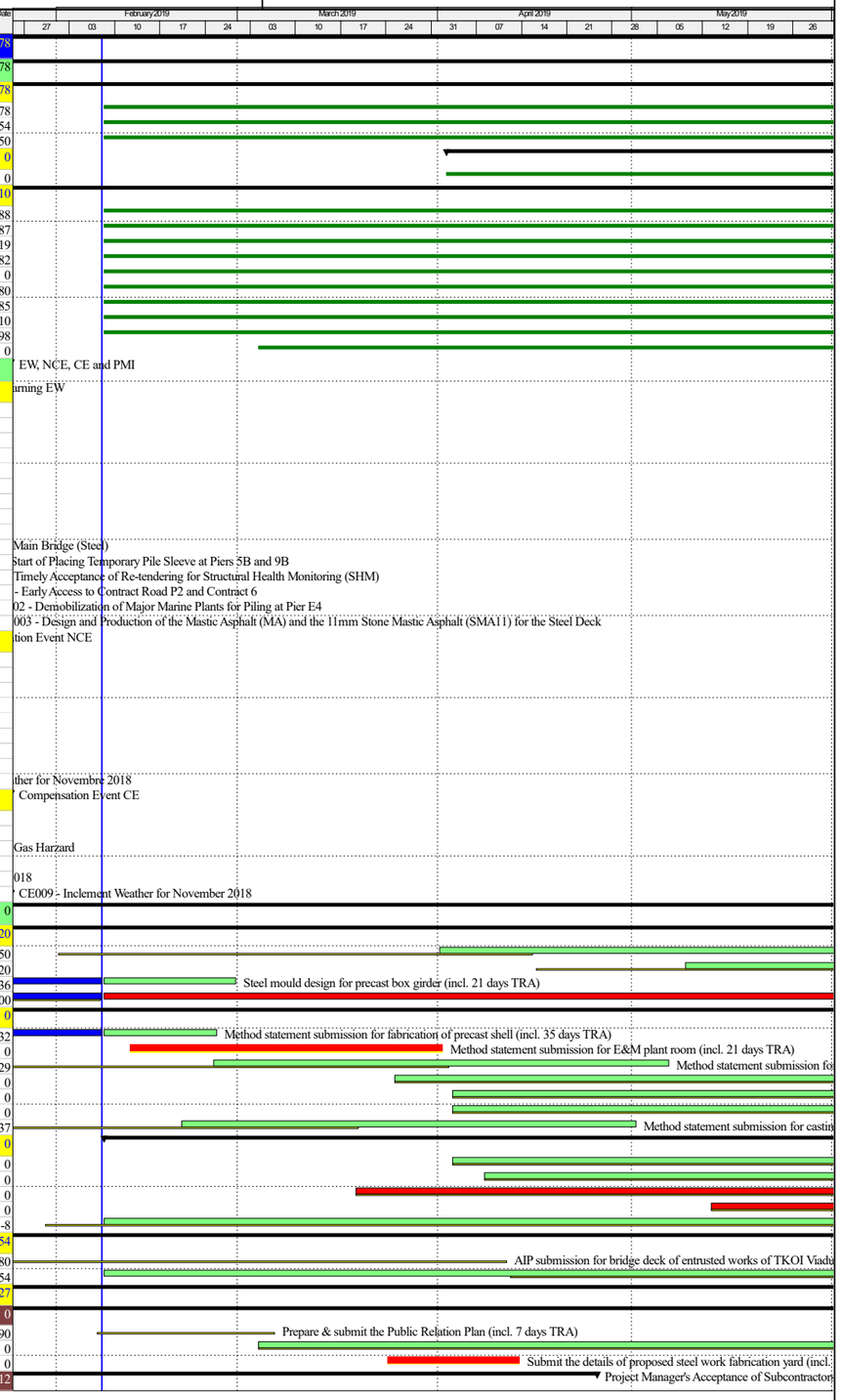
Contract 1

Data Date : 08-Feb-19

Page: 1

Contract No. NE/2017/07 Cross Bay Link, Tseng Kwan O - Main Bridge and Associated Works

Activity ID	Activity Name	Original Duration	Remaining Duration	Start	Planned Start	Finish	Planned Finish	Total Float	Activity % Complete	TRA	Variance - Finish Date
Cross Bay Link,Tseung Kwan O Main Bridge and Associated Works Feb-19		1484	1182	29-Jun-18 A	29-Jun-18	04-May-22	21-Jul-22	284			78
Executive Summary Programme		1484	1182	29-Jun-18 A	29-Jun-18	04-May-22	21-Jul-22	-81			78
ESP Section 2 of Works-All Works within Portion II,III,IV and VI		1240	1182	17-Sep-18 A	28-Feb-19	04-May-22	21-Jul-22	-81			78
ESP10920	CBL Main Bridge and Marine Viaduct	1240	1182	17-Sep-18 A	28-Feb-19	04-May-22	21-Jul-22	-81	4.68%	0	78
ESP10940	Pre-drilling Works	297	163	17-Sep-18 A	28-Feb-19	20-Jul-19	21-Dec-19	416	45.12%	0	154
ESP10960	Piling Works	671	590	17-Nov-18 A	18-Apr-19	19-Sep-20	16-Feb-21	87	12.07%	0	150
ESP Section 5 of the Works-All Works within Portion V (CBL E&M Plantroom)		233	233	02-Apr-19	02-Apr-19	20-Nov-19	20-Nov-19	15			0
ESP11260	Structural Works	233	233	02-Apr-19	02-Apr-19	20-Nov-19	20-Nov-19	15	0%	0	0
Preliminaries, Contractor's Design & Method Statement Submission & Approval		1048	714	29-Jun-18 A	29-Jun-18	21-Jan-21	11-May-21	387			110
ESP10400	Temporary Works Design	695	604	13-Aug-18 A	13-Aug-18	03-Oct-20	07-Jul-20	107	13.09%	0	-88
ESP10420	Method Statement Submission for Major Construction Works	736	658	27-Aug-18 A	27-Aug-18	26-Nov-20	31-Aug-20	68	10.6%	0	-87
ESP10440	Contractor's Design Submission and Approval	869	702	06-Aug-18 A	06-Aug-18	09-Jan-21	21-Dec-20	229	19.22%	0	-19
ESP10460	Alternative Design Submission and Approval	397	130	07-Aug-18 A	07-Aug-18	17-Jun-19	07-Sep-19	204	67.25%	0	82
ESP10480	General Submission	843	619	29-Jun-18 A	29-Jun-18	18-Oct-20	18-Oct-20	58	26.57%	0	0
ESP10500	Project Manager's Acceptance of Subcontractors	556	389	14-Aug-18 A	21-Feb-19	02-Mar-20	29-Aug-20	346	30.04%	0	180
ESP10520	Preliminaries	234	118	12-Jul-18 A	08-Jan-19	05-Jun-19	29-Aug-19	983	49.57%	0	85
ESP10600	Precasting of Precast Shell	745	714	08-Nov-18 A	28-Apr-19	21-Jan-21	11-May-21	146	4.16%	0	110
ESP10620	Fabrication of Precast Box Girder	713	709	10-Nov-18 A	13-May-19	16-Jan-21	24-Apr-21	62	0.56%	0	98
ESP10640	Fabrication of Steel Arch Bridge and Side Spans	636	636	04-Mar-19	04-Mar-19	28-Nov-20	28-Nov-20	-51	0%	0	0
EW, NCE, CE and PMI		5	0	31-Jul-18 A		25-Jan-19 A					
Early Warning EW		0	0	31-Jul-18 A		18-Jan-19 A					
EW0001	EW001 - Baseline Montioring Conducted by ET	0	0	31-Jul-18 A					100%		
EW0021	EW002 - No Access Date for Portion VII	0	0	06-Aug-18 A					100%		
EW0041	EW003 - Risk of Inadequate Embedment of Permanent Steel Casing for Bored Pile Installation	0	0	10-Aug-18 A					100%		
EW0061	EW-PM001 - Extension of Reliability Period of SQR	0	0	20-Aug-18 A					100%		
EW0081	EW004 - Insufficiency of Power Supply for CBL Site Office	0	0	08-Sep-18 A					100%		
EW0101	EW005 - Uncharted Signal Cables at Works Area A	0	0	08-Sep-18 A					100%		
EW0121	EW006 - Unforseen Fault and Shear Zone at the Piers	0	0	11-Sep-18 A					100%		
EW0141	EW007 - Risk of Performance of Bell-out Construction	0	0	13-Sep-18 A					100%		
EW0161	EW008 - Late Approval of MDN at Western Side of GI Marine Works	0	0	05-Nov-18 A					100%		
EW0181	EW009 - Delay in Tendering for Subcontacting Package of the Main Bridge (Steel)	0	0	08-Dec-18 A					100%		
EW0201	EW010 - Early Start of Placing Temporary Pile Sleeve at Piers 5B and 9B	0	0	12-Jan-19 A					100%		
EW0221	EW011 - Timely Acceptance of Re-tendering for Structural Health Monitoring (SHM)	0	0	17-Jan-19 A					100%		
EW0241	EW012 - Early Access to Contract Road P2 and Contract 6	0	0	18-Jan-19 A					100%		
EW0261	EW-PM002 - Demobilization of Major Marine Plants for Piling at Pier E4	0	0	17-Jan-19 A					100%		
EW0281	EW-PM003 - Design and Production of the Mastic Asphalt (MA) and the 11mm Stone Mastic Asphalt (SMA1	0	0	18-Jan-19 A					100%		
Notification of Compensation Event NCE		0	0	28-Sep-18 A		05-Jan-19 A					
NCE0001	NCE001 - Inclement Weather for August 2018	0	0	28-Sep-18 A					100%		
NCE0021	NCE002 - Super Typhoon of "Mangkhut" Hoisted on 16 Sep 2018	0	0	28-Sep-18 A					100%		
NCE0041	NCE003 - Landfill Gas Hazard	0	0	29-Oct-18 A					100%		
NCE0061	NCE004 - Inclement Weather for September 2018	0	0	01-Nov-18 A					100%		
NCE0081	NCE005 - Left-in Permanent Casing	0	0	05-Nov-18 A					100%		
NCE0101	NCE006 - Deeper Rockhead Level as Revealed by Marine GI	0	0	05-Nov-18 A					100%		
NCE0121	NCE007 - No Possession of Portion VII	0	0	05-Nov-18 A					100%		
NCE0141	NCE008 - Inclement Weather for October 2018	0	0	11-Dec-18 A					100%		
NCE0161	NCE009 - Inclement Weather for Novembre 2018	0	0	05-Jan-19 A					100%		
Compensation Event CE		5	0	08-Oct-18 A		25-Jan-19 A					
CE0001	CE001 - Inclement Weather for August 2018	0	0	08-Oct-18 A					100%		
CE0021	CE002 - Super Typhoon of "Mangkhut" Hoisted on 16 Sep 2018	0	0	08-Oct-18 A					100%		
CE0031	CE003 - Landfill Gas Harzard	0	0	11-Jan-19 A					100%		
CE0041	CE004 - Inclement Weather for September 2018	0	0	22-Nov-18 A					100%		
CE0061	CE008 - Inclement Weather for October 2018	0	0	24-Dec-18 A					100%		
CE0081	CE009 - Inclement Weather for November 2018	0	0	25-Jan-19 A					100%		
Preliminaries, Contractor's Design & Method Statement Submission & Approval		390	242	02-Aug-18 A	13-Sep-18	07-Oct-19	07-Oct-19	1224			0
Temporary Works Design		260	133	13-Aug-18 A	13-Sep-18	12-Jul-19	19-Jun-19	25			-20
TDS2010	Formwork design for V-shaped pier and crossbeam construction (incl. 21 days TRA)	63	63	01-Apr-19	01-Feb-19	12-Jun-19	15-Apr-19	25	0%	21	-50
TDS2020	Temporary falsework design for V-shaped pier and crossbeam construction (incl. 21 days TRA)	56	56	09-May-19	16-Apr-19	12-Jul-19	19-Jun-19	25	0%	21	-20
TDS2060	Steel mould design for precast box girder (incl. 21 days TRA)	56	18	10-Nov-18 A	14-Nov-18	28-Feb-19	17-Jan-19	24	67.86%	21	-36
TDS2120	Construction engineering for superstructure of steel arch bridge (incl. 7 days TRA)	127	100	13-Aug-18 A	13-Sep-18	04-Jun-19	07-Feb-19	-38	21.26%	7	-100
Method Statement Submission for Major Construction Works		194	116	30-Oct-18 A	09-Nov-18	22-Jun-19	22-Jun-19	266			0
MDS1040	Method statement submission for fabrication of precast shell (incl. 35 days TRA)	61	15	30-Oct-18 A	09-Nov-18	25-Feb-19	18-Jan-19	48	75.41%	35	-32
MDS1050	Method statement submission for E&M plant room (incl. 21 days TRA)	42	42	12-Feb-19	12-Feb-19	01-Apr-19	01-Apr-19	14	0%	21	0
MDS1090	Method statement submission for installation of precast shell (incl. 35 days TRA)	61	61	25-Feb-19	22-Jan-19	06-May-19	02-Apr-19	307	0%	35	-29
MDS1110	Method statement submission for fabrication of steel deck (incl. 21 days TRA)	77	77	25-Mar-19	25-Mar-19	21-Jun-19	21-Jun-19	47	0%	21	0
MDS1130	Method statement submission for fabrication of arch ribs (incl. 21 days TRA)	70	70	03-Apr-19	03-Apr-19	22-Jun-19	22-Jun-19	46	0%	21	0
MDS1135	Method statement submission for geometry control (incl. 21 days TRA)	67	67	03-Apr-19	03-Apr-19	19-Jun-19	19-Jun-19	49	0%	21	0
MDS1180	Method statement submission for casting of precast box girder (incl. 35 days TRA)	61	61	20-Feb-19	08-Jan-19	01-May-19	19-Mar-19	56	0%	35	-37
Contractor's Design Submission and Approval		207	207	08-Feb-19	30-Jan-19	07-Oct-19	07-Oct-19	113			0
CDS1040	Design of arch rib inspection cradle (incl. 14 days TRA)	100	100	03-Apr-19	03-Apr-19	27-Jul-19	27-Jul-19	37	0%	14	0
CDS1060	Design of access facilities (incl. 14 days TRA)	125	125	08-Apr-19	08-Apr-19	30-Aug-19	30-Aug-19	41	0%	14	0
CDS1160	Design of Electrical system for the E&M plant room (incl. 7 days TRA)	127	127	19-Mar-19	19-Mar-19	13-Aug-19	13-Aug-19	16	0%	7	0
CDS1180	Design of Building Services system for the E&M plant room (incl. 7 days TRA)	127	127	13-May-19	13-May-19	07-Oct-19	07-Oct-19	16	0%	7	0
CDS1200	Design of Structural health monitoring system (incl. 14 days TRA)	172	172	08-Feb-19	30-Jan-19	27-Aug-19	17-Aug-19	148	0%	14	-8
Alternative Design Submission and Approval		111	111	13-Dec-18 A	08-Jan-19	17-Jun-19	19-Aug-19	175			54
ADS1010	AIP submission for bridge deck of entrusted works of TKOI Viaduct (incl. 35 days TRA)	81	0	13-Dec-18 A	08-Jan-19	09-Jan-19 A	11-Apr-19		100%	35	80
ADS1030	DDA submission for bridge deck of entrusted works of TKOI Viaduct (incl. 35 days TRA)	111	111	08-Feb-19	12-Apr-19	17-Jun-19	19-Aug-19	175	0%	35	54
Preliminaries,Submission, Subcontracting and Procument		192	164	02-Aug-18 A	08-Jan-19	21-Jul-19	17-Aug-19	1302			27
General Submission		165	140	20-Aug-18 A	07-Feb-19	21-Jul-19	21-Jul-19	100			0
P-GS1430	Prepare & submit the Public Relation Plan (incl. 7 days TRA)	28	0	20-Aug-18 A	07-Feb-19	29-Aug-18 A	06-Mar-19		100%	7	190
P-GS1480	Steel main bridge shop drawings submission and approval (incl. 7 days TRA)	140	140	04-Mar-19	04-Mar-19	21-Jul-19	21-Jul-19	25	0%	7	0
P-GS1720	Submit the details of proposed steel work fabrication yard (incl. 14 days TRA)	21	21	24-Mar-19	24-Mar-19	13-Apr-19	13-Apr-19	-81	0%	14	0
Project Manager's Acceptance of Subcontractors		89	77	14-Aug-18 A	08-Jan-19	25-Apr-19	07-May-19	1389			12



Remaining Level of Effort | Remaining Work | Milestone

Primary Baseline | Critical Remaining Work | Summary

Actual Work | Baseline Milestone

CRBC

Three Month Rolling Programme

Date	Revision	Checked	Approved
08-Feb-19	Monthly updated on 8 Feb 2019		

Data Date : 08-Feb-19

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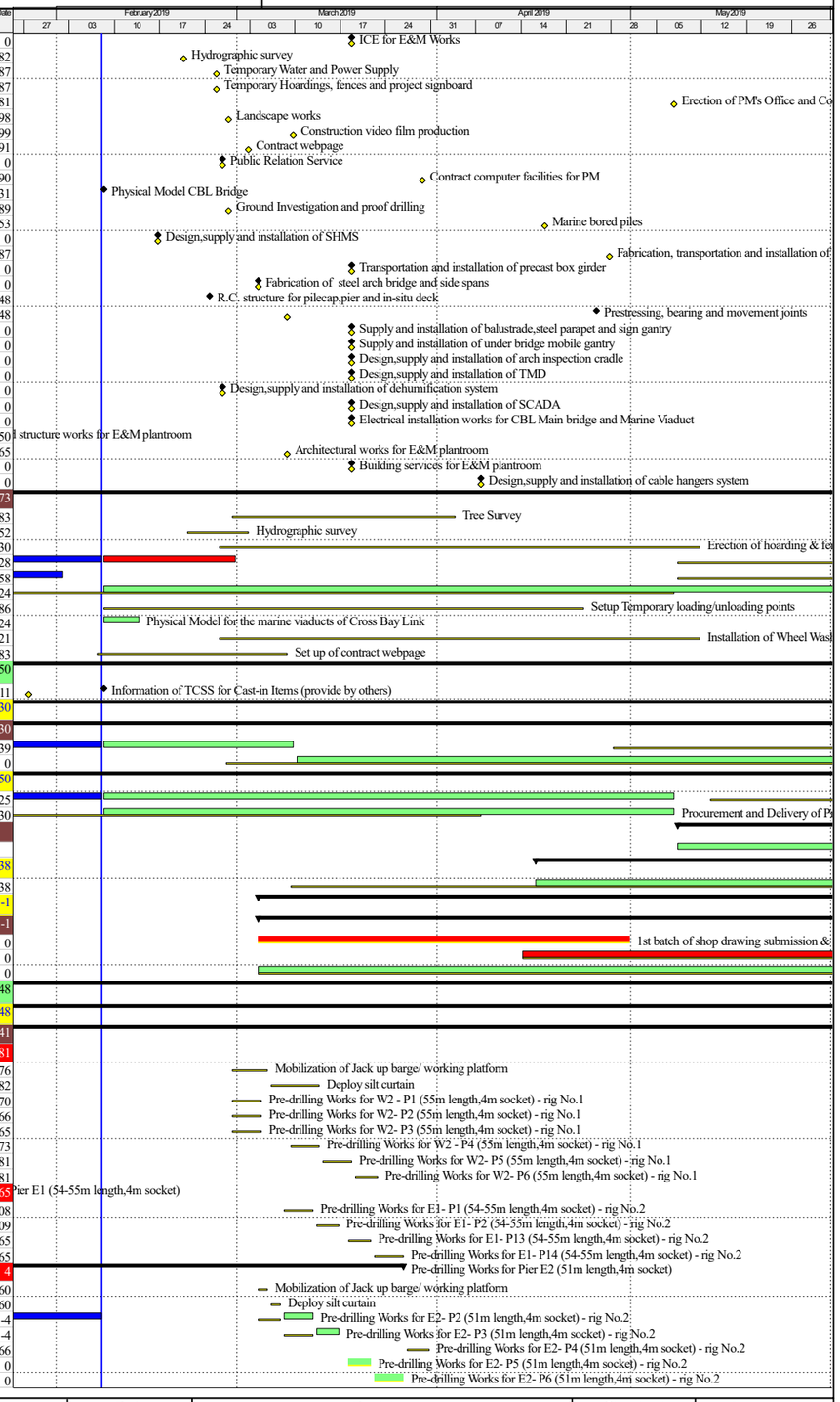
Contract No. NE/2017/07 Cross Bay Link, Tseng Kwan O - Main Bridge and Associated Works

Activity ID	Activity Name	Original Duration	Remaining Duration	Start	Planned Start	Finish	Planned Finish	Total Float	Activity % Complete	TRA	Variance - Finish Date
P-SP1040	ICE for E&M Works	0	0			18-Mar-19	18-Mar-19	16	0%	0	0
P-SP1100	Hydrographic survey	0	0			23-Aug-18 A	20-Feb-19		100%	0	182
P-SP1120	Temporary Water and Power Supply	0	0			23-Aug-18 A	25-Feb-19		100%	0	187
P-SP1140	Temporary Hoardings, fences and project signboard	0	0			23-Aug-18 A	25-Feb-19		100%	0	187
P-SP1160	Erection of PM's Office and Contractor Site Office	0	0			08-Nov-18 A	07-May-19		100%	0	181
P-SP1180	Landscape works	0	0			14-Aug-18 A	27-Feb-19		100%	0	198
P-SP1200	Construction video film production	0	0			23-Aug-18 A	09-Mar-19		100%	0	199
P-SP1220	Contract webpage	0	0			24-Aug-18 A	02-Mar-19		100%	0	191
P-SP1240	Public Relation Service	0	0			26-Feb-19	26-Feb-19	245	0%	0	0
P-SP1260	Contract computer facilities for PM	0	0			21-Sep-18 A	29-Mar-19		100%	0	190
P-SP1280	Physical Model CBL Bridge	0	0			08-Feb-19	08-Jan-19	1466	0%		-31
P-SP1300	Ground Investigation and proof drilling	0	0			23-Aug-18 A	27-Feb-19		100%	0	189
P-SP1320	Marine bored piles	0	0			16-Nov-18 A	17-Apr-19		100%	0	153
P-SP1340	Design,supply and installation of SHMS	0	0			16-Feb-19	16-Feb-19	139	0%	0	0
P-SP1360	Fabrication, transportation and installation of precast shell for pile cap	0	0			23-Oct-18 A	27-Apr-19		100%	0	187
P-SP1400	Transportation and installation of precast box girder	0	0			18-Mar-19	18-Mar-19	307	0%	0	0
P-SP1420	Fabrication of steel arch bridge and side spans	0	0			04-Mar-19*	04-Mar-19	-81	0%	0	0
P-SP1500	R.C. structure for pilecap,pier and in-situ deck	0	0			24-Feb-19	08-Jan-19	28	0%	0	-48
P-SP1520	Prestressing, bearing and movement joints	0	0			25-Apr-19	08-Mar-19	50	0%	0	-48
P-SP1560	Supply and installation of balustrade,steel parapet and sign gantry	0	0			18-Mar-19	18-Mar-19	79	0%	0	0
P-SP1600	Supply and installation of under bridge mobile gantry	0	0			18-Mar-19	18-Mar-19	47	0%	0	0
P-SP1620	Design,supply and installation of arch inspection cradle	0	0			18-Mar-19	18-Mar-19	43	0%	0	0
P-SP1640	Design,supply and installation of TMD	0	0			18-Mar-19	18-Mar-19	51	0%	0	0
P-SP1660	Design,supply and installation of dehumification system	0	0			26-Feb-19	26-Feb-19	128	0%	0	0
P-SP1680	Design,supply and installation of SCADA	0	0			18-Mar-19	18-Mar-19	150	0%	0	0
P-SP1700	Electrical installation works for CBL Main bridge and Marine Viaduct	0	0			18-Mar-19	18-Mar-19	109	0%	0	0
P-SP1720	Civil and structure works for E&M plantroom	0	0			29-Nov-18 A	17-Jan-19		100%	0	50
P-SP1740	Architectural works for E&M plantroom	0	0			03-Jan-19 A	08-Mar-19		100%	0	65
P-SP1760	Building services for E&M plantroom	0	0			18-Mar-19	18-Mar-19	191	0%	0	0
P-SP1790	Design,supply and installation of cable hangers system	0	0			07-Apr-19	07-Apr-19	50	0%	0	0
Preliminaries		192	118	02-Aug-18 A	08-Jan-19	05-Jun-19	17-Aug-19	1347			73
P-P11020	Tree Survey	30	0	16-Aug-18 A	28-Feb-19	23-Aug-18 A	03-Apr-19		100%	0	183
P-P11060	Hydrographic survey	10	0	03-Sep-18 A	21-Feb-19	02-Oct-18 A	02-Mar-19		100%	0	152
P-P11100	Erection of hoarding & fencing	60	0	22-Aug-18 A	26-Feb-19	29-Nov-18 A	11-May-19		100%	0	130
P-P11120	Design & Erection of project manager's site office	75	18	19-Nov-18 A	08-May-19	28-Feb-19	06-Aug-19	16	76%	0	128
P-P11140	Design & Erection of contractor's site office	85	0	19-Nov-18 A	08-May-19	02-Feb-19 A	17-Aug-19		100%	0	158
P-P11160	Design & Erection of Community liasion centre	95	95	08-Feb-19	08-Jan-19	05-Jun-19	07-May-19	799	0%	0	-24
P-P11180	Setup Temporary loading/unloading points	60	0	08-Nov-18 A	08-Feb-19	05-Jan-19 A	23-Apr-19		100%	0	86
P-P11220	Physical Model for the marine viaducts of Cross Bay Link	5	5	08-Feb-19	08-Jan-19	13-Feb-19	12-Jan-19	1185	0%		-24
P-P11240	Installation of Wheel Washing System	60	0	02-Aug-18 A	26-Feb-19	11-Aug-18 A	11-May-19		100%	0	221
P-P11260	Set up of contract webpage	30	0	07-Sep-18 A	07-Feb-19	07-Sep-18 A	08-Mar-19		100%	0	183
Precasting & Fabrication Works		214	164	08-Nov-18 A	08-Jan-19	22-Jul-19	09-Sep-19	59			50
P-PS9000	Information of TCSS for Cast-in Items (provide by others)	0	0			08-Feb-19	27-Jan-19	7	0%	7	-11
Fabrication of Precast Shell and Precast Segments		139	139	08-Nov-18 A	27-Feb-19	26-Jun-19	26-Jul-19	44			30
Precast Shell		139	139	08-Nov-18 A	27-Feb-19	26-Jun-19	26-Jul-19	44			30
P-PS1020	Setting up precasting yard for precast shell (incl. 21 days TRA)	90	30	08-Nov-18 A	28-Apr-19	09-Mar-19	26-Jul-19	44	66.67%	21	139
P-PS3080	Fabrication of Precast shell for pile cap of Marine viaduct and main bridge(1st batch 4 nos) (incl. 10 days TRA	109	109	10-Mar-19	27-Feb-19	26-Jun-19	26-Jun-19	44	0%	21	0
Fabrication of Precast Box Girder		214	164	10-Nov-18 A	08-Jan-19	21-Jul-19	09-Sep-19	59			50
P-BG1375	Setting Up Precasting Yard for Box Girder (incl. 14 days TRA)	120	89	10-Nov-18 A	13-May-19	07-May-19	09-Sep-19	59	25.83%	14	125
P-BG1376	Procurement and Delivery of Prestress Tendons & Anchorage (incl. 20 days TRA)	89	89	08-Feb-19	08-Jan-19	07-May-19	07-Apr-19	59	0%	21	-30
Box Girder Fabrication - 1st Batch 7 Pieces		75	75	08-May-19		21-Jul-19		59			
P-BG1380	Fabrication of Precast box girder, Cast-in Items and Prestressing -SE4-5	75	75	08-May-19		21-Jul-19		59	0%	21	
Fabrication of Precast Pier		90	90	16-Apr-19	09-Mar-19	14-Jul-19	06-Jun-19	28			-38
P-PF1220	Setting up precasting yard for precast pier (incl. 21 days TRA)Precast pier	90	90	16-Apr-19	09-Mar-19	14-Jul-19	06-Jun-19	28	0%	21	-38
Fabrication of Steel Arch Bridge and Side Spans		140	140	04-Mar-19	04-Mar-19	22-Jul-19	20-Jul-19	25			-1
Fabrication of Steel Arch Bridge		140	140	04-Mar-19	04-Mar-19	22-Jul-19	20-Jul-19	25			-1
P-PF1035	1st batch of shop drawing submission & approval	50	50	04-Mar-19	04-Mar-19	30-Apr-19	30-Apr-19	-58	0%	0	0
P-PF1040	Setting up steel work fabrication yard	60	60	14-Apr-19	14-Apr-19	12-Jun-19	12-Jun-19	-81	0%	0	0
P-PF1045	Remaining shop drawing submission & approval	120	120	04-Mar-19	04-Mar-19	22-Jul-19	20-Jul-19	22	0%	0	0
Section 2 of Works-All Works within Portion II,III,IV and VI		169	121	17-Sep-18 A	08-Jan-19	08-Jun-19	26-Jul-19	458			48
CBL Main Bridge and Marine Viaduct		169	121	17-Sep-18 A	08-Jan-19	08-Jun-19	26-Jul-19	458			48
Pre-drilling Works		137	96	17-Sep-18 A	08-Jan-19	06-Jun-19	26-Jul-19	375			41
Pre-drilling Works for Pier W2 (55m length,4m socket)		20	0	29-Nov-18 A	28-Feb-19	12-Dec-18 A	22-Mar-19				81
S2-PD20(	Mobilization of Jack up barge/ working platform	5	0	29-Nov-18 A	28-Feb-19	30-Nov-18 A	05-Mar-19		100%	0	76
S2-PD20	Deploy silt curtain	7	0	01-Dec-18 A	06-Mar-19	01-Dec-18 A	13-Mar-19		100%	0	82
S2-PD20	Pre-drilling Works for W2 - P1 (55m length,4m socket) - rig No.1	4	0	03-Dec-18 A	28-Feb-19	06-Dec-18 A	04-Mar-19		100%	0	70
S2-PD22	Pre-drilling Works for W2- P2 (55m length,4m socket) - rig No.1	4	0	01-Dec-18 A	28-Feb-19	11-Dec-18 A	04-Mar-19		100%	0	66
S2-PD23	Pre-drilling Works for W2- P3 (55m length,4m socket) - rig No.1	4	0	05-Dec-18 A	28-Feb-19	12-Dec-18 A	04-Mar-19		100%	0	65
S2-PD23	Pre-drilling Works for W2 - P4 (55m length,4m socket) - rig No.1	4	0	08-Dec-18 A	09-Mar-19	12-Dec-18 A	13-Mar-19		100%	0	73
S2-PD23	Pre-drilling Works for W2- P5 (55m length,4m socket) - rig No.1	4	0	04-Dec-18 A	14-Mar-19	07-Dec-18 A	18-Mar-19		100%	0	81
S2-PD23	Pre-drilling Works for W2- P6 (55m length,4m socket) - rig No.1	4	0	08-Dec-18 A	19-Mar-19	12-Dec-18 A	22-Mar-19		100%	0	81
Pre-drilling Works for Pier E1 (54-55m length,4m socket)		16	0	13-Oct-18 A	08-Mar-19	07-Jan-19 A	26-Mar-19				65
S2-PD22(	Pre-drilling Works for E1- P1 (54-55m length,4m socket) - rig No.2	4	0	15-Oct-18 A	08-Mar-19	31-Oct-18 A	12-Mar-19		100%	0	108
S2-PD36	Pre-drilling Works for E1- P2 (54-55m length,4m socket) - rig No.2	4	0	13-Oct-18 A	13-Mar-19	03-Nov-18 A	16-Mar-19		100%	0	109
S2-PD38	Pre-drilling Works for E1- P13 (54-55m length,4m socket) - rig No.2	4	0	28-Dec-18 A	18-Mar-19	02-Jan-19 A	21-Mar-19		100%	0	65
S2-PD38	Pre-drilling Works for E1- P14 (54-55m length,4m socket) - rig No.2	4	0	03-Jan-19 A	22-Mar-19	07-Jan-19 A	26-Mar-19		100%	0	65
Pre-drilling Works for Pier E2 (51m length,4m socket)		28	16	18-Dec-18 A	04-Mar-19	26-Mar-19	30-Mar-19	354			4
S2-PD22(	Mobilization of Jack up barge/ working platform	2	0	18-Dec-18 A	04-Mar-19	19-Dec-18 A	05-Mar-19		100%	0	60
S2-PD22(	Deploy silt curtain	2	0	20-Dec-18 A	06-Mar-19	21-Dec-18 A	07-Mar-19		100%	0	60
S2-PD39(	Pre-drilling Works for E2- P2 (51m length,4m socket) - rig No.2	4	4	22-Jan-19 A	04-Mar-19	12-Mar-19	07-Mar-19	354	0%	0	-4
S2-PD39	Pre-drilling Works for E2- P3 (51m length,4m socket) - rig No.2	4	4	13-Mar-19	08-Mar-19	16-Mar-19	12-Mar-19	354	0%	0	-4
S2-PD39	Pre-drilling Works for E2- P4 (51m length,4m socket) - rig No.2	4	0	05-Jan-19 A	27-Mar-19	10-Jan-19 A	30-Mar-19		100%	0	66
S2-PD39(	Pre-drilling Works for E2- P5 (51m length,4m socket) - rig No.2	4	4	18-Mar-19	18-Mar-19	21-Mar-19	21-Mar-19	354	0%	0	0
S2-PD39	Pre-drilling Works for E2- P6 (51m length,4m socket) - rig No.2	4	4	22-Mar-19	22-Mar-19	26-Mar-19	26-Mar-19	354	0%	0	0



Remaining Level of Effort | Remaining Work | Milestone
Primary Baseline | Critical Remaining Work | Summary
Actual Work | Baseline Milestone

CRBC

Three Month Rolling Programme

Date	Revision	Checked	Approved
08-Feb-19	Monthly updated on 8 Feb 2019		

Data Date : 08-Feb-19

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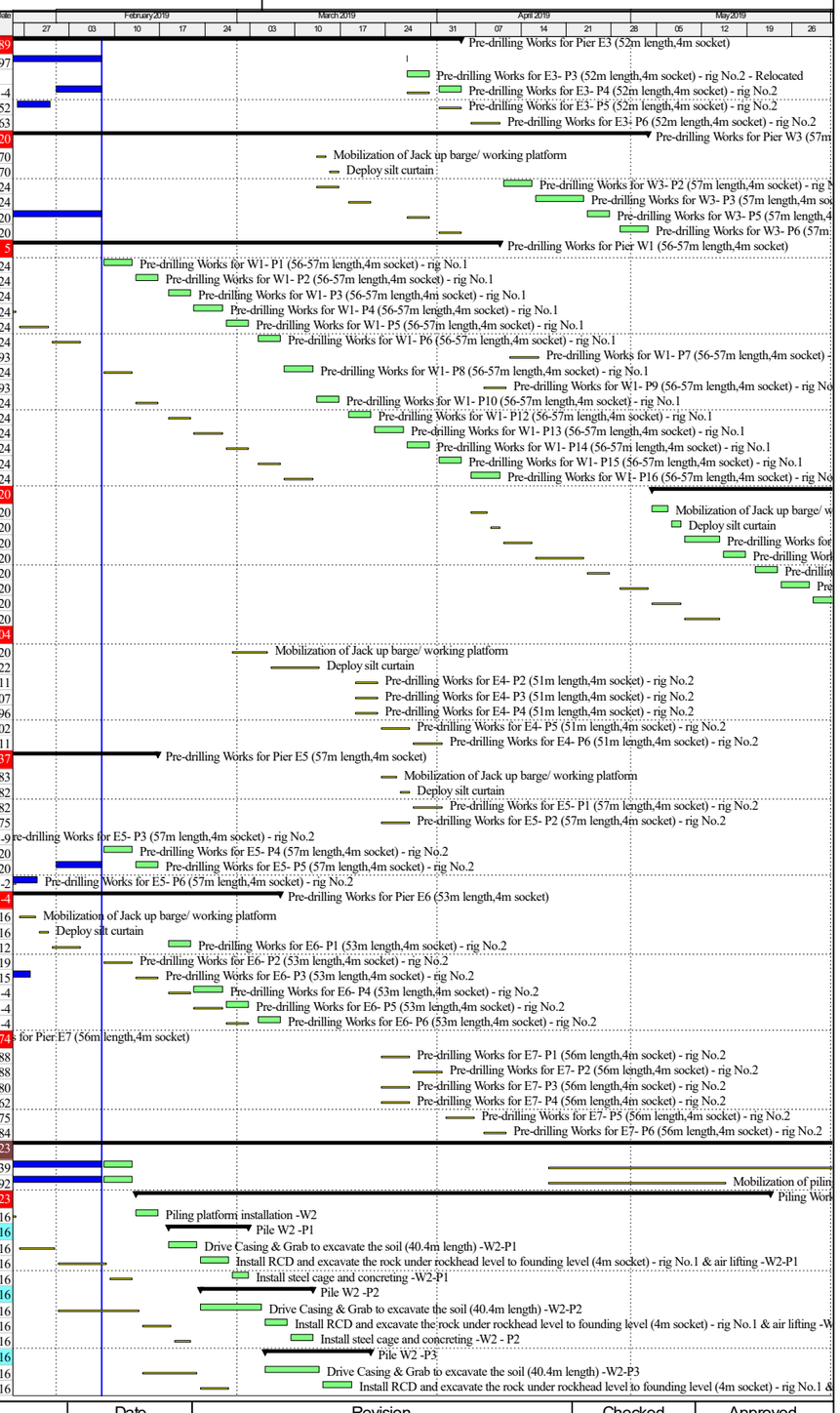
Contract No. NE/2017/07 Cross Bay Link, Tseng Kwan O - Main Bridge and Associated Works

Activity ID	Activity Name	Original Duration	Remaining Duration	Start	Planned Start	Finish	Planned Finish	Total Float	Activity % Complete	TRA	Variance - Finish Date
Pre-drilling Works for Pier E3 (52m length,4m socket)		97	8	24-Nov-18 A	27-Mar-19	04-Apr-19	26-Jul-19	423			89
S2-PD40	Pre-drilling Works for E3- P3 (52m length,4m socket) - rig No.2	4	0	24-Nov-18 A	23-Jul-19	27-Mar-19	26-Jul-19	423	100%	0	97
S2-PD40	Pre-drilling Works for E3- P3 (52m length,4m socket) - rig No.2 - Relocated	4	4	27-Mar-19		30-Mar-19		423	0%		
S2-PD40	Pre-drilling Works for E3- P4 (52m length,4m socket) - rig No.2	4	4	01-Feb-19 A	27-Mar-19	04-Apr-19	30-Mar-19	423	0%	0	-4
S2-PD40	Pre-drilling Works for E3- P5 (52m length,4m socket) - rig No.2	4	0	26-Jan-19 A	01-Apr-19	31-Jan-19 A	04-Apr-19		100%	0	52
S2-PD40	Pre-drilling Works for E3- P6 (52m length,4m socket) - rig No.2	4	0	16-Jan-19 A	06-Apr-19	23-Jan-19 A	10-Apr-19		100%	0	63
Pre-drilling Works for Pier W3 (57m length,4m socket)		40	16	15-Dec-18 A	13-Mar-19	03-May-19	04-Apr-19	212			-20
S2-PD20	Mobilization of Jack up barge/ working platform	2	0	15-Dec-18 A	13-Mar-19	17-Dec-18 A	14-Mar-19		100%	0	70
S2-PD20	Deploy silt curtain	2	0	18-Dec-18 A	15-Mar-19	19-Dec-18 A	16-Mar-19		100%	0	70
S2-PD23	Pre-drilling Works for W3- P2 (57m length,4m socket) - rig No.1	4	4	11-Apr-19	13-Mar-19	15-Apr-19	16-Mar-19	212	0%	0	-24
S2-PD24	Pre-drilling Works for W3- P3 (57m length,4m socket) - rig No.1	4	4	16-Apr-19	18-Mar-19	23-Apr-19	21-Mar-19	212	0%	0	-24
S2-PD24	Pre-drilling Works for W3- P5 (57m length,4m socket) - rig No.1	4	4	24-Jan-19 A	27-Mar-19	27-Apr-19	30-Mar-19	212	0%	0	-20
S2-PD24	Pre-drilling Works for W3- P6 (57m length,4m socket) - rig No.1	4	4	29-Apr-19	01-Apr-19	03-May-19	04-Apr-19	212	0%	0	-20
Pre-drilling Works for Pier W1 (56-57m length,4m socket)		57	52	13-Dec-18 A	08-Jan-19	10-Apr-19	16-Apr-19	96			5
S2-PD20	Pre-drilling Works for W1- P1 (56-57m length,4m socket) - rig No.1	4	4	08-Feb-19	08-Jan-19	12-Feb-19	11-Jan-19	96	0%	0	-24
S2-PD25	Pre-drilling Works for W1- P2 (56-57m length,4m socket) - rig No.1	4	4	13-Feb-19	12-Jan-19	16-Feb-19	16-Jan-19	96	0%	0	-24
S2-PD25	Pre-drilling Works for W1- P3 (56-57m length,4m socket) - rig No.1	4	4	18-Feb-19	17-Jan-19	21-Feb-19	21-Jan-19	96	0%	0	-24
S2-PD25	Pre-drilling Works for W1- P4 (56-57m length,4m socket) - rig No.1	4	4	22-Feb-19	22-Jan-19	26-Feb-19	25-Jan-19	96	0%	0	-24
S2-PD25	Pre-drilling Works for W1- P5 (56-57m length,4m socket) - rig No.1	4	4	27-Feb-19	26-Jan-19	02-Mar-19	30-Jan-19	96	0%	0	-24
S2-PD26	Pre-drilling Works for W1- P6 (56-57m length,4m socket) - rig No.1	4	4	04-Mar-19	31-Jan-19	07-Mar-19	04-Feb-19	96	0%	0	-24
S2-PD26	Pre-drilling Works for W1- P7 (56-57m length,4m socket) - rig No.1	4	0	14-Dec-18 A	12-Apr-19	21-Dec-18 A	16-Apr-19		100%	0	93
S2-PD26	Pre-drilling Works for W1- P8 (56-57m length,4m socket) - rig No.1	4	4	08-Mar-19	08-Feb-19	12-Mar-19	12-Feb-19	96	0%	0	-24
S2-PD26	Pre-drilling Works for W1- P9 (56-57m length,4m socket) - rig No.1	4	0	13-Dec-18 A	08-Apr-19	17-Dec-18 A	11-Apr-19		100%	0	93
S2-PD28	Pre-drilling Works for W1- P10 (56-57m length,4m socket) - rig No.1	4	4	13-Mar-19	13-Feb-19	16-Mar-19	16-Feb-19	96	0%	0	-24
S2-PD28	Pre-drilling Works for W1- P12 (56-57m length,4m socket) - rig No.1	4	4	18-Mar-19	18-Feb-19	21-Mar-19	21-Feb-19	96	0%	0	-24
S2-PD28	Pre-drilling Works for W1- P13 (56-57m length,4m socket) - rig No.1	4	4	22-Mar-19	22-Feb-19	26-Mar-19	26-Feb-19	96	0%	0	-24
S2-PD28	Pre-drilling Works for W1- P14 (56-57m length,4m socket) - rig No.1	4	4	27-Mar-19	27-Feb-19	30-Mar-19	02-Mar-19	96	0%	0	-24
S2-PD29	Pre-drilling Works for W1- P15 (56-57m length,4m socket) - rig No.1	4	4	01-Apr-19	04-Mar-19	04-Apr-19	07-Mar-19	96	0%	0	-24
S2-PD29	Pre-drilling Works for W1- P16 (56-57m length,4m socket) - rig No.1	4	4	06-Apr-19	08-Mar-19	10-Apr-19	12-Mar-19	96	0%	0	-24
Pre-drilling Works for Pier W4 (52m length,4m socket)		28	28	04-May-19	06-Apr-19	06-Jun-19	14-May-19	212			-20
S2-PD20	Mobilization of Jack up barge/ working platform	2	2	04-May-19	06-Apr-19	06-May-19	08-Apr-19	212	0%	0	-20
S2-PD20	Deploy silt curtain	2	2	07-May-19	09-Apr-19	08-May-19	10-Apr-19	212	0%	0	-20
S2-PD21	Pre-drilling Works for W4- P1 (52m length,4m socket) - rig No.1	4	4	09-May-19	11-Apr-19	14-May-19	15-Apr-19	212	0%	0	-20
S2-PD29	Pre-drilling Works for W4- P2 (52m length,4m socket) - rig No.1	4	4	15-May-19	16-Apr-19	18-May-19	23-Apr-19	212	0%	0	-20
S2-PD29	Pre-drilling Works for W4- P3 (52m length,4m socket) - rig No.1	4	4	20-May-19	24-Apr-19	23-May-19	27-Apr-19	212	0%	0	-20
S2-PD29	Pre-drilling Works for W4- P4 (52m length,4m socket) - rig No.1	4	4	24-May-19	29-Apr-19	28-May-19	03-May-19	212	0%	0	-20
S2-PD30	Pre-drilling Works for W4- P5 (52m length,4m socket) - rig No.1	4	4	29-May-19	04-May-19	01-Jun-19	08-May-19	212	0%	0	-20
S2-PD30	Pre-drilling Works for W4- P6 (52m length,4m socket) - rig No.1	4	4	03-Jun-19	09-May-19	06-Jun-19	14-May-19	212	0%	0	-20
Pre-drilling Works for Pier E4 (51m length,4m socket)		28	0	17-Sep-18 A	28-Feb-19	24-Nov-18 A	01-Apr-19				104
S2-PD21	Mobilization of Jack up barge/ working platform	5	0	17-Sep-18 A	28-Feb-19	09-Oct-18 A	05-Mar-19		100%	0	120
S2-PD21	Deploy silt curtain	7	0	10-Oct-18 A	06-Mar-19	15-Oct-18 A	13-Mar-19		100%	0	122
S2-PD32	Pre-drilling Works for E4- P2 (51m length,4m socket) - rig No.2	4	0	03-Nov-18 A	19-Mar-19	07-Nov-18 A	22-Mar-19		100%	0	111
S2-PD32	Pre-drilling Works for E4- P3 (51m length,4m socket) - rig No.2	4	0	08-Nov-18 A	19-Mar-19	12-Nov-18 A	22-Mar-19		100%	0	107
S2-PD32	Pre-drilling Works for E4- P4 (51m length,4m socket) - rig No.2	4	0	22-Nov-18 A	19-Mar-19	24-Nov-18 A	22-Mar-19		100%	0	96
S2-PD32	Pre-drilling Works for E4- P5 (51m length,4m socket) - rig No.2	4	0	17-Nov-18 A	23-Mar-19	22-Nov-18 A	27-Mar-19		100%	0	102
S2-PD32	Pre-drilling Works for E4- P6 (51m length,4m socket) - rig No.2	4	0	13-Nov-18 A	28-Mar-19	16-Nov-18 A	01-Apr-19		100%	0	111
Pre-drilling Works for Pier E5 (57m length,4m socket)		45	8	10-Dec-18 A	08-Jan-19	16-Feb-19	01-Apr-19	80			37
S2-PD22	Mobilization of Jack up barge/ working platform	2	0	10-Dec-18 A	23-Mar-19	12-Dec-18 A	25-Mar-19		100%	0	83
S2-PD22	Deploy silt curtain	2	0	13-Dec-18 A	26-Mar-19	15-Dec-18 A	27-Mar-19		100%	0	82
S2-PD22	Pre-drilling Works for E5- P1 (57m length,4m socket) - rig No.2	4	0	18-Dec-18 A	28-Mar-19	20-Dec-18 A	01-Apr-19		100%	0	82
S2-PD33	Pre-drilling Works for E5- P2 (57m length,4m socket) - rig No.2	4	0	20-Dec-18 A	23-Mar-19	24-Dec-18 A	27-Mar-19		100%	0	75
S2-PD33	Pre-drilling Works for E5- P3 (57m length,4m socket) - rig No.2	4	0	14-Jan-19 A	08-Jan-19	23-Jan-19 A	11-Jan-19		100%	0	-9
S2-PD33	Pre-drilling Works for E5- P4 (57m length,4m socket) - rig No.2	4	4	08-Feb-19	12-Jan-19	12-Feb-19	16-Jan-19	80	0%	0	-20
S2-PD33	Pre-drilling Works for E5- P5 (57m length,4m socket) - rig No.2	4	4	01-Feb-19 A	17-Jan-19	16-Feb-19	21-Jan-19	80	0%	0	-20
S2-PD33	Pre-drilling Works for E5- P6 (57m length,4m socket) - rig No.2	4	0	25-Jan-19 A	22-Jan-19	29-Jan-19 A	25-Jan-19		100%	0	-2
Pre-drilling Works for Pier E6 (53m length,4m socket)		24	16	09-Jan-19 A	26-Jan-19	07-Mar-19	02-Mar-19	117			-4
S2-PD22	Mobilization of Jack up barge/ working platform	2	0	09-Jan-19 A	26-Jan-19	10-Jan-19 A	28-Jan-19		100%	0	16
S2-PD22	Deploy silt curtain	2	0	11-Jan-19 A	29-Jan-19	12-Jan-19 A	30-Jan-19		100%	0	16
S2-PD22	Pre-drilling Works for E6- P1 (53m length,4m socket) - rig No.2	4	4	18-Feb-19	31-Jan-19	21-Feb-19	04-Feb-19	117	0%	0	-12
S2-PD34	Pre-drilling Works for E6- P2 (53m length,4m socket) - rig No.2	4	0	12-Jan-19 A	08-Feb-19	18-Jan-19 A	12-Feb-19		100%	0	19
S2-PD34	Pre-drilling Works for E6- P3 (53m length,4m socket) - rig No.2	4	0	21-Jan-19 A	13-Feb-19	28-Jan-19 A	16-Feb-19		100%	0	15
S2-PD34	Pre-drilling Works for E6- P4 (53m length,4m socket) - rig No.2	4	4	22-Feb-19	18-Feb-19	26-Feb-19	21-Feb-19	117	0%	0	-4
S2-PD34	Pre-drilling Works for E6- P5 (53m length,4m socket) - rig No.2	4	4	27-Feb-19	22-Feb-19	02-Mar-19	26-Feb-19	117	0%	0	-4
S2-PD34	Pre-drilling Works for E6- P6 (53m length,4m socket) - rig No.2	4	4	04-Mar-19	27-Feb-19	07-Mar-19	02-Mar-19	117	0%	0	-4
Pre-drilling Works for Pier E7 (56m length,4m socket)		16	0	26-Nov-18 A	23-Mar-19	11-Jan-19 A	11-Apr-19				74
S2-PD22	Pre-drilling Works for E7- P1 (56m length,4m socket) - rig No.2	4	0	26-Nov-18 A	23-Mar-19	08-Dec-18 A	27-Mar-19		100%	0	88
S2-PD35	Pre-drilling Works for E7- P2 (56m length,4m socket) - rig No.2	4	0	10-Dec-18 A	28-Mar-19	13-Dec-18 A	01-Apr-19		100%	0	88
S2-PD35	Pre-drilling Works for E7- P3 (56m length,4m socket) - rig No.2	4	0	14-Dec-18 A	23-Mar-19	18-Dec-18 A	27-Mar-19		100%	0	80
S2-PD35	Pre-drilling Works for E7- P4 (56m length,4m socket) - rig No.2	4	0	08-Jan-19 A	23-Mar-19	11-Jan-19 A	27-Mar-19		100%	0	62
S2-PD35	Pre-drilling Works for E7- P5 (56m length,4m socket) - rig No.2	4	0	29-Dec-18 A	02-Apr-19	05-Jan-19 A	06-Apr-19		100%	0	75
S2-PD35	Pre-drilling Works for E7- P6 (56m length,4m socket) - rig No.2	4	0	19-Dec-18 A	08-Apr-19	29-Dec-18 A	11-Apr-19		100%	0	84
Piling Works		139	121	17-Nov-18 A	22-Jan-19	08-Jun-19	01-Jul-19	342			23
S2-PW1010	Procurement and delivery of steel casing	75	5	23-Nov-18 A	18-Apr-19	12-Feb-19	01-Jul-19	58	93.33%	0	139
S2-PW1020	Mobilization of piling plant	28	5	17-Nov-18 A	18-Apr-19	12-Feb-19	15-May-19	28	82.14%	0	92
Piling Works for Pier W2		99	99	13-Feb-19	22-Jan-19	22-May-19	29-Apr-19	342			-23
S2-PW20	Piling platform installation -W2	4	4	13-Feb-19	22-Jan-19	16-Feb-19	25-Jan-19	24	0%	0	-16
Pile W2 -P1		12	12	18-Feb-19	26-Jan-19	02-Mar-19	12-Feb-19	44			-16
S2-PW	Drive Casing & Grab to excavate the soil (40.4m length) -W2-P1	5	5	18-Feb-19	26-Jan-19	22-Feb-19	31-Jan-19	24	0%	0	-16
S2-PW	Install RCD and excavate the rock under rockhead level to founding level (4m socket) - rig No.1 & air lifting -	4	4	23-Feb-19	01-Feb-19	27-Feb-19	08-Feb-19	40	0%	0	-16
S2-PW	Install steel cage and concreting -W2-P1	3	3	28-Feb-19	09-Feb-19	02-Mar-19	12-Feb-19	44	0%	0	-16
Pile W2 -P2		15	15	23-Feb-19	01-Feb-19	12-Mar-19	21-Feb-19	39			-16
S2-PW	Drive Casing & Grab to excavate the soil (40.4m length) -W2-P2	8	8	23-Feb-19	01-Feb-19	04-Mar-19	13-Feb-19	24	0%	0	-16
S2-PW	Install RCD and excavate the rock under rockhead level to founding level (4m socket) - rig No.1 & air lifting -	4	4	05-Mar-19	14-Feb-19	08-Mar-19	18-Feb-19	36	0%	0	-16
S2-PW	Install steel cage and concreting -W2 - P2	3	3	09-Mar-19	19-Feb-19	12-Mar-19	21-Feb-19	39	0%	0	-16
Pile W2 -P3		15	15	05-Mar-19	14-Feb-19	21-Mar-19	02-Mar-19	34			-16
S2-PW	Drive Casing & Grab to excavate the soil (40.4m length) -W2-P3	8	8	05-Mar-19	14-Feb-19	13-Mar-19	22-Feb-19	24	0%	0	-16
S2-PW	Install RCD and excavate the rock under rockhead level to founding level (4m socket) - rig No.1 & air lifting -	4	4	14-Mar-19	23-Feb-19	18-Mar-19	27-Feb-19	32	0%	0	-16



Remaining Level of Effort
Primary Baseline
Actual Work
Remaining Work
Critical Remaining Work
Baseline Milestone
Milestone
Summary

CRBC

Three Month Rolling Programme

Date	Revision	Checked	Approved
08-Feb-19	Monthly updated on 8 Feb 2019		

Data Date : 08-Feb-19

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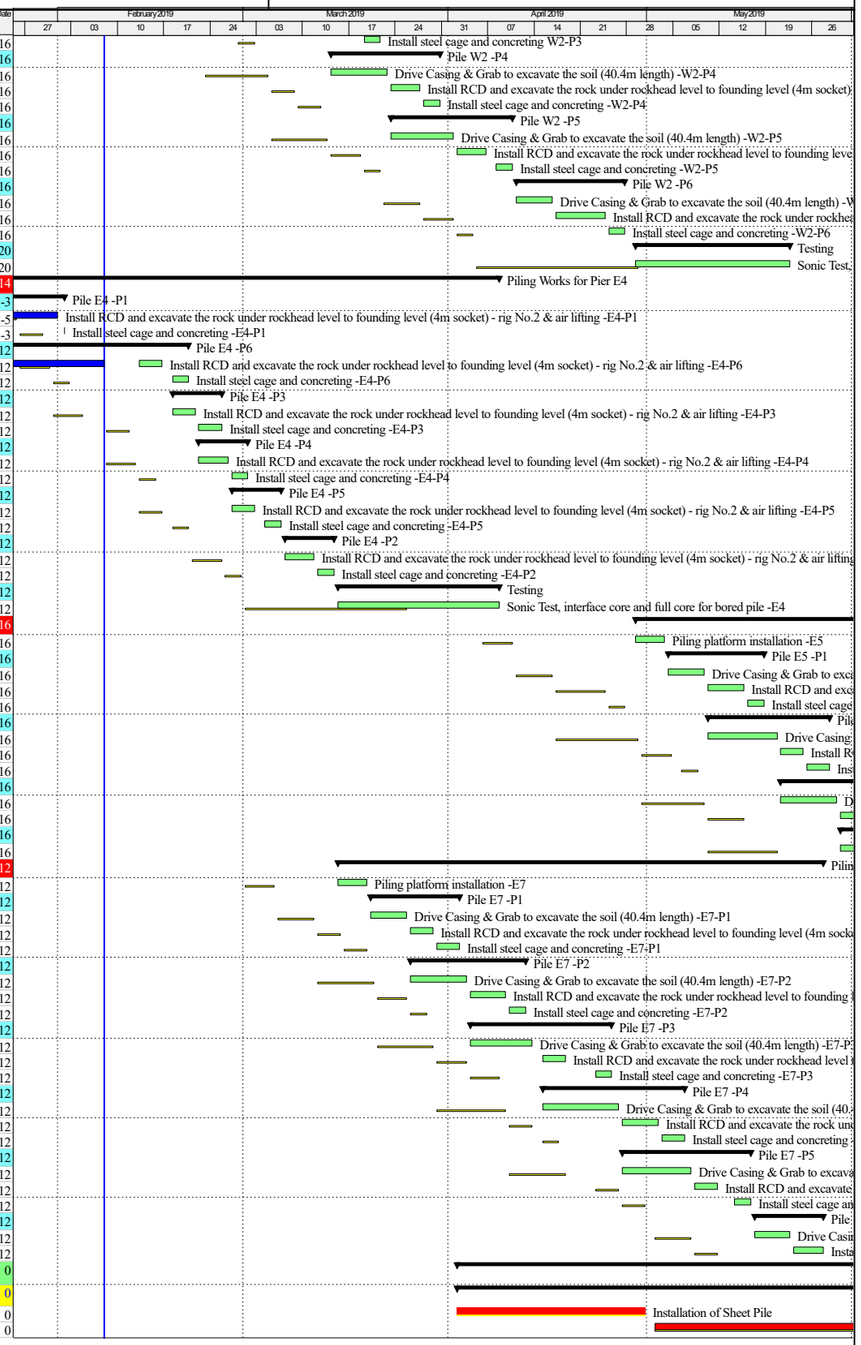
Contract No. NE/2017/07 Cross Bay Link, Tseng Kwan O - Main Bridge and Associated Works

Activity ID	Activity Name	Original Duration	Remaining Duration	Start	Planned Start	Finish	Planned Finish	Total Float	Activity % Complete	TRA	Variance - Finish Date
S2-PW	Install steel cage and concreting W2-P3	3	3	19-Mar-19	28-Feb-19	21-Mar-19	02-Mar-19	34	0%	0	-16
Pile W2 -P4		15	15	14-Mar-19	23-Feb-19	30-Mar-19	12-Mar-19	29			-16
S2-PW	Drive Casing & Grab to excavate the soil (40.4m length) -W2-P4	8	8	14-Mar-19	23-Feb-19	22-Mar-19	04-Mar-19	24	0%	0	-16
S2-PW	Install RCD and excavate the rock under rockhead level to founding level (4m socket) - rig No.1 & air lifting -	4	4	23-Mar-19	05-Mar-19	27-Mar-19	08-Mar-19	28	0%	0	-16
S2-PW	Install steel cage and concreting -W2-P4	3	3	28-Mar-19	09-Mar-19	30-Mar-19	12-Mar-19	29	0%	0	-16
Pile W2 -P5		15	15	23-Mar-19	05-Mar-19	10-Apr-19	21-Mar-19	24			-16
S2-PW	Drive Casing & Grab to excavate the soil (40.4m length) -W2-P5	8	8	23-Mar-19	05-Mar-19	01-Apr-19	13-Mar-19	24	0%	0	-16
S2-PW	Install RCD and excavate the rock under rockhead level to founding level (4m socket) - rig No.1 & air lifting -	4	4	02-Apr-19	14-Mar-19	06-Apr-19	18-Mar-19	24	0%	0	-16
S2-PW	Install steel cage and concreting -W2-P5	3	3	08-Apr-19	19-Mar-19	10-Apr-19	21-Mar-19	24	0%	0	-16
Pile W2 -P6		12	12	11-Apr-19	22-Mar-19	27-Apr-19	04-Apr-19	24			-16
S2-PW	Drive Casing & Grab to excavate the soil (40.4m length) -W2-P6	5	5	11-Apr-19	22-Mar-19	16-Apr-19	27-Mar-19	24	0%	0	-16
S2-PW	Install RCD and excavate the rock under rockhead level to founding level (4m socket) - rig No.1 & air lifting -	4	4	17-Apr-19	28-Mar-19	24-Apr-19	01-Apr-19	24	0%	0	-16
S2-PW	Install steel cage and concreting -W2-P6	3	3	25-Apr-19	02-Apr-19	27-Apr-19	04-Apr-19	24	0%	0	-16
Testing		21	21	29-Apr-19	05-Apr-19	22-May-19	29-Apr-19	293			-20
S2-PW	Sonic Test, interface core and full core for bored pile -W2	21	21	29-Apr-19	05-Apr-19	22-May-19	29-Apr-19	293	0%	0	-20
Piling Works for Pier E4		50	55	22-Jan-19 A	22-Jan-19	08-Apr-19	25-Mar-19	403			-14
Pile E4 -P1		4	0	22-Jan-19 A	22-Jan-19	02-Feb-19 A	29-Jan-19				-3
S2-PW	Install RCD and excavate the rock under rockhead level to founding level (4m socket) - rig No.2 & air lifting -	4	0	22-Jan-19 A	22-Jan-19	01-Feb-19 A	25-Jan-19		100%	0	-5
S2-PW	Install steel cage and concreting -E4-P1	3	0	02-Feb-19 A	26-Jan-19	02-Feb-19 A	29-Jan-19		100%	0	-3
Pile E4 -P6		8	7	22-Jan-19 A	26-Jan-19	20-Feb-19	02-Feb-19	54			-12
S2-PW	Install RCD and excavate the rock under rockhead level to founding level (4m socket) - rig No.2 & air lifting -	4	4	22-Jan-19 A	26-Jan-19	16-Feb-19	30-Jan-19	51	0%	0	-12
S2-PW	Install steel cage and concreting -E4-P6	3	3	18-Feb-19	31-Jan-19	20-Feb-19	02-Feb-19	54	0%	0	-12
Pile E4 -P3		7	7	18-Feb-19	31-Jan-19	25-Feb-19	11-Feb-19	53			-12
S2-PW	Install RCD and excavate the rock under rockhead level to founding level (4m socket) - rig No.2 & air lifting -	4	4	18-Feb-19	31-Jan-19	21-Feb-19	04-Feb-19	51	0%	0	-12
S2-PW	Install steel cage and concreting -E4-P3	3	3	22-Feb-19	08-Feb-19	25-Feb-19	11-Feb-19	53	0%	0	-12
Pile E4 -P4		7	7	22-Feb-19	08-Feb-19	01-Mar-19	15-Feb-19	52			-12
S2-PW	Install RCD and excavate the rock under rockhead level to founding level (4m socket) - rig No.2 & air lifting -	4	4	22-Feb-19	08-Feb-19	26-Feb-19	12-Feb-19	51	0%	0	-12
S2-PW	Install steel cage and concreting -E4-P4	3	3	27-Feb-19	13-Feb-19	01-Mar-19	15-Feb-19	52	0%	0	-12
Pile E4 -P5		7	7	27-Feb-19	13-Feb-19	06-Mar-19	20-Feb-19	51			-12
S2-PW	Install RCD and excavate the rock under rockhead level to founding level (4m socket) - rig No.2 & air lifting -	4	4	27-Feb-19	13-Feb-19	02-Mar-19	16-Feb-19	51	0%	0	-12
S2-PW	Install steel cage and concreting -E4-P5	3	3	04-Mar-19	18-Feb-19	06-Mar-19	20-Feb-19	51	0%	0	-12
Pile E4 -P2		7	7	07-Mar-19	21-Feb-19	14-Mar-19	28-Feb-19	51			-12
S2-PW	Install RCD and excavate the rock under rockhead level to founding level (4m socket) - rig No.2 & air lifting -	4	4	07-Mar-19	21-Feb-19	11-Mar-19	25-Feb-19	51	0%	0	-12
S2-PW	Install steel cage and concreting -E4-P2	3	3	12-Mar-19	26-Feb-19	14-Mar-19	28-Feb-19	51	0%	0	-12
Testing		21	21	15-Mar-19	01-Mar-19	08-Apr-19	25-Mar-19	346			-12
S2-PW	Sonic Test, interface core and full core for bored pile -E4	21	21	15-Mar-19	01-Mar-19	08-Apr-19	25-Mar-19	346	0%	0	-12
Piling Works for Pier E5		33	33	29-Apr-19	06-Apr-19	08-Jun-19	20-May-19	30			-16
S2-PW62	Piling platform installation -E5	4	4	29-Apr-19	06-Apr-19	03-May-19	10-Apr-19	24	0%	0	-16
Pile E5 -P1		12	12	04-May-19	11-Apr-19	18-May-19	27-Apr-19	44			-16
S2-PW	Drive Casing & Grab to excavate the soil (40.4m length) -E5-P1	5	5	04-May-19	11-Apr-19	09-May-19	16-Apr-19	24	0%	0	-16
S2-PW	Install RCD and excavate the rock under rockhead level to founding level (4m socket) - rig No.2 & air lifting -	4	4	10-May-19	17-Apr-19	15-May-19	24-Apr-19	40	0%	0	-16
S2-PW	Install steel cage and concreting -E5-P1	3	3	16-May-19	25-Apr-19	18-May-19	27-Apr-19	44	0%	0	-16
Pile E5 -P2		15	15	10-May-19	17-Apr-19	28-May-19	08-May-19	39			-16
S2-PW	Drive Casing & Grab to excavate the soil (40.4m length) -E5-P2	8	8	10-May-19	17-Apr-19	20-May-19	29-Apr-19	24	0%	0	-16
S2-PW	Install RCD and excavate the rock under rockhead level to founding level (4m socket) - rig No.2 & air lifting -	4	4	21-May-19	30-Apr-19	24-May-19	04-May-19	36	0%	0	-16
S2-PW	Install steel cage and concreting -E5-P2	3	3	25-May-19	06-May-19	28-May-19	08-May-19	39	0%	0	-16
Pile E5 -P3		12	12	21-May-19	30-Apr-19	03-Jun-19	15-May-19	32			-16
S2-PW	Drive Casing & Grab to excavate the soil (40.4m length) -E5-P3	8	8	21-May-19	30-Apr-19	29-May-19	09-May-19	24	0%	0	-16
S2-PW	Install RCD and excavate the rock under rockhead level to founding level (4m socket) - rig No.2 & air lifting -	4	4	30-May-19	10-May-19	03-Jun-19	15-May-19	32	0%	0	-16
Pile E5 -P4		8	8	30-May-19	10-May-19	08-Jun-19	20-May-19	24			-16
S2-PW	Drive Casing & Grab to excavate the soil (40.4m length) -E5-P4	8	8	30-May-19	10-May-19	08-Jun-19	20-May-19	24	0%	0	-16
Piling Works for Pier E7		57	57	15-Mar-19	01-Mar-19	27-May-19	11-May-19	51			-12
S2-PW70	Piling platform installation -E7	4	4	15-Mar-19	01-Mar-19	19-Mar-19	05-Mar-19	51	0%	0	-12
Pile E7 -P1		12	12	20-Mar-19	06-Mar-19	02-Apr-19	19-Mar-19	71			-12
S2-PW	Drive Casing & Grab to excavate the soil (40.4m length) -E7-P1	5	5	20-Mar-19	06-Mar-19	25-Mar-19	11-Mar-19	51	0%	0	-12
S2-PW	Install RCD and excavate the rock under rockhead level to founding level (4m socket) - rig No.2 & air lifting -	4	4	26-Mar-19	12-Mar-19	29-Mar-19	15-Mar-19	67	0%	0	-12
S2-PW	Install steel cage and concreting -E7-P1	3	3	30-Mar-19	16-Mar-19	02-Apr-19	19-Mar-19	71	0%	0	-12
Pile E7 -P2		15	15	26-Mar-19	12-Mar-19	12-Apr-19	28-Mar-19	66			-12
S2-PW	Drive Casing & Grab to excavate the soil (40.4m length) -E7-P2	8	8	26-Mar-19	12-Mar-19	03-Apr-19	20-Mar-19	51	0%	0	-12
S2-PW	Install RCD and excavate the rock under rockhead level to founding level (4m socket) - rig No.2 & air lifting -	4	4	04-Apr-19	21-Mar-19	09-Apr-19	25-Mar-19	63	0%	0	-12
S2-PW	Install steel cage and concreting -E7-P2	3	3	10-Apr-19	26-Mar-19	12-Apr-19	28-Mar-19	66	0%	0	-12
Pile E7 -P3		15	15	04-Apr-19	21-Mar-19	25-Apr-19	08-Apr-19	61			-12
S2-PW	Drive Casing & Grab to excavate the soil (40.4m length) -E7-P3	8	8	04-Apr-19	21-Mar-19	13-Apr-19	29-Mar-19	51	0%	0	-12
S2-PW	Install RCD and excavate the rock under rockhead level to founding level (4m socket) - rig No.2 & air lifting -	4	4	15-Apr-19	30-Mar-19	18-Apr-19	03-Apr-19	59	0%	0	-12
S2-PW	Install steel cage and concreting -E7-P3	3	3	23-Apr-19	04-Apr-19	25-Apr-19	08-Apr-19	61	0%	0	-12
Pile E7 -P4		15	15	15-Apr-19	30-Mar-19	06-May-19	17-Apr-19	56			-12
S2-PW	Drive Casing & Grab to excavate the soil (40.4m length) -E7-P4	8	8	15-Apr-19	30-Mar-19	26-Apr-19	09-Apr-19	51	0%	0	-12
S2-PW	Install RCD and excavate the rock under rockhead level to founding level (4m socket) - rig No.2 & air lifting -	4	4	27-Apr-19	10-Apr-19	02-May-19	13-Apr-19	55	0%	0	-12
S2-PW	Install steel cage and concreting -E7-P4	3	3	03-May-19	15-Apr-19	06-May-19	17-Apr-19	56	0%	0	-12
Pile E7 -P5		15	15	27-Apr-19	10-Apr-19	16-May-19	30-Apr-19	51			-12
S2-PW	Drive Casing & Grab to excavate the soil (40.4m length) -E7-P5	8	8	27-Apr-19	10-Apr-19	07-May-19	18-Apr-19	51	0%	0	-12
S2-PW	Install RCD and excavate the rock under rockhead level to founding level (4m socket) - rig No.2 & air lifting	4	4	08-May-19	23-Apr-19	11-May-19	26-Apr-19	51	0%	0	-12
S2-PW	Install steel cage and concreting -E7-P5	3	3	14-May-19	27-Apr-19	16-May-19	30-Apr-19	51	0%	0	-12
Pile E7 -P6		9	9	17-May-19	02-May-19	27-May-19	11-May-19	51			-12
S2-PW	Drive Casing & Grab to excavate the soil (40.4m length) -E7-P6	5	5	17-May-19	02-May-19	22-May-19	07-May-19	51	0%	0	-12
S2-PW	Install RCD and excavate the rock under rockhead level to founding level (4m socket) - rig No.2 & air lifting	4	4	23-May-19	08-May-19	27-May-19	11-May-19	51	0%	0	-12
Section 5 of the Works-All Works within Portion V (CBL E&M Plantroom)		49	49	02-Apr-19	02-Apr-19	04-Jun-19	04-Jun-19	13			0
Foundation Works		49	49	02-Apr-19	02-Apr-19	04-Jun-19	04-Jun-19	13			0
S5-PR1995	Installation of Sheet Pile	21	21	02-Apr-19	02-Apr-19	30-Apr-19	30-Apr-19	13	0%	0	0
S5-PR2000	Excavation Works	28	28	02-May-19	02-May-19	04-Jun-19	04-Jun-19	13	0%	0	0



Remaining Level of Effort
Primary Baseline
Actual Work
Remaining Work
Critical Remaining Work
Baseline Milestone
Milestone
Summary

CRBC

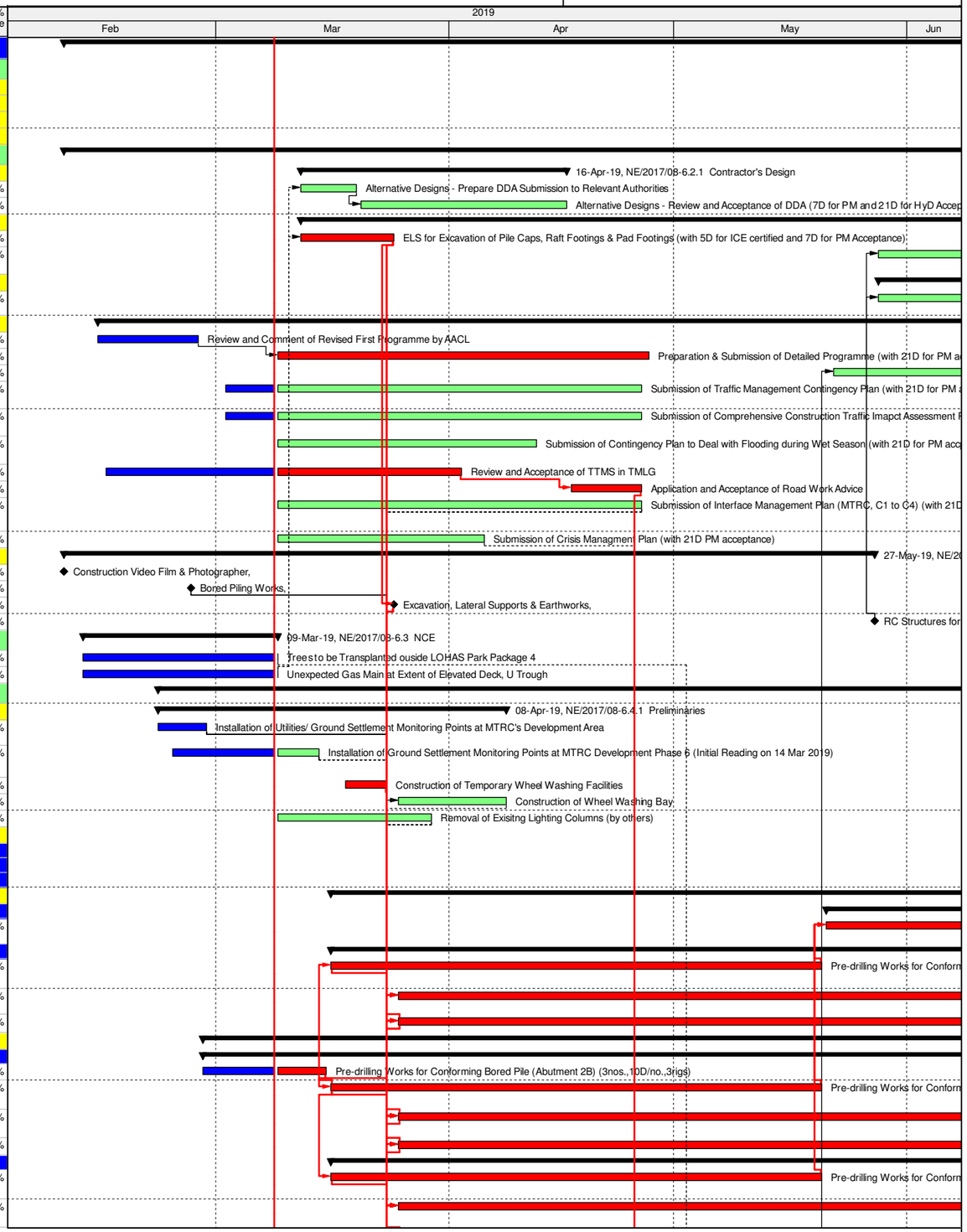
Three Month Rolling Programme

Date	Revision	Checked	Approved
08-Feb-19	Monthly updated on 8 Feb 2019		

Contract 2

NE/2017/08 Three Month Rolling Programme (Feb 2019)	Contract No.: NE/2017/08 - Cross Bay Link, Tseung Kwan O - Road D9 and Associated Works

Activity ID	Activity Name	iginal ation	Actual Duration	Remaining Float	Start	Finish	Calendar	Total Float	Activity % Complete
NE/2017/08-6	NE/2017/08 Three Months Rolling (data date 201903(	240	24	982	08-Feb-19 A	28-Nov-19		982	
NE/2017/08-6.1	Project Key Dates	0	0	0				0	
NE/2017/08-6.1.1	Access Dates	0	0	0				0	
NE/2017/08-6.1.2	Key Dates	0	0	0				0	
NE/2017/08-6.1.3	Sectional Completion Dates	0	0	0				0	
NE/2017/08-6.1.4	Planned Completion	0	0	0				0	
NE/2017/08-6.2	Design and Method Statement, Material Submissions	172	28	1312	08-Feb-19 A	30-Jul-19	NE/2017/08(7days)	1312	
NE/2017/08-6.2.1	Contractor's Design	36	0	89	12-Mar-19	16-Apr-19	NE/2017/08(7days)	89	
AD1030	Alternative Designs - Prepare DDA Submission to Relevant Authorities	8	0	89	12-Mar-19	19-Mar-19	NE/2017/08(7days)	89	0%
AD1040	Alternative Designs - Review and Acceptance of DDA (7D for PM and 21D for H	28	0	89	20-Mar-19	16-Apr-19	NE/2017/08(7days)	89	0%
NE/2017/08-6.2.2	Temporary Works Design	112	0	233	12-Mar-19	01-Jul-19	NE/2017/08(7days)	233	
TW1010	ELS for Excavation of Pile Caps, Raft Footings & Pad Footings (with 5D for ICE	13	0	0	12-Mar-19	24-Mar-19	NE/2017/08(7days)	0	0%
TW1050	Falsework & Formwork Design for Construction of Cycle Track Ramp (With 7D for ICE Certfied and 21D for PM acceptance)	35	0	233	28-May-19	01-Jul-19	NE/2017/08(7days)	233	0%
NE/2017/08-6.2.3	Method Statement for Major Construction Works	35	0	233	28-May-19	01-Jul-19	NE/2017/08(7days)	233	
MS1090	Method Statement for Construction of Cycle Track Ramp (With 7D for ICE Certfied and 21D for PM acceptance)	35	0	233	28-May-19*	01-Jul-19	NE/2017/08(7days)	233	0%
NE/2017/08-6.2.4	General Submissions	168	24	121	13-Feb-19 A	30-Jul-19	NE/2017/08(7days)	121	
GS1024	Review and Comment of Revised First Programme by AACL	14	14		13-Feb-19 A	26-Feb-19 A	NE/2017/08(7days)		100%
GS1030	Preparation & Submission of Detailed Programme (with 21D for PM acceptance)	50	0	0	09-Mar-19	27-Apr-19*	NE/2017/08(7days)	0	0%
GS1190	Preparation & Submission of SQR for Env. Boreholes EBH7 & EBH8	70	0	121	22-May-19	30-Jul-19	NE/2017/08(7days)	121	0%
GS1220	Submission of Traffic Management Contingency Plan (with 21D for PM and 21D for HD accpetance)	56	7	48	02-Mar-19 A	26-Apr-19	NE/2017/08(7days)	48	12.5%
GS1230	Submission of Comprehensive Construction Traffic Imapct Assessment Report (with 21D for PM and 21D for HyD acceptance)	56	7	48	02-Mar-19 A	26-Apr-19	NE/2017/08(7days)	48	12.5%
GS1330	Submission of Contingency Plan to Deal with Flooding during Wet Season (with 21D for PM accpetance)	35	0	18	09-Mar-19	12-Apr-19*	NE/2017/08(7days)	18	0%
GS1410	Review and Acceptance of TTMS in TMLG	48	23	0	14-Feb-19 A	02-Apr-19	NE/2017/08(7days)	0	47.92%
GS1420	Application and Acceptance of Road Work Advice	10	0	0	17-Apr-19	26-Apr-19	NE/2017/08(7days)	0	0%
GS1450	Submission of Interface Management Plan (MTRC, C1 to C4) (with 21D PM and 21D MTRC Acceptance)	49	0	27	09-Mar-19	26-Apr-19	NE/2017/08(7days)	27	0%
GS1460	Submission of Crisis Managment Plan (with 21D PM acceptance)	28	0	21	09-Mar-19	05-Apr-19	NE/2017/08(7days)	21	0%
NE/2017/08-6.2.5	Project Manager Acceptance of Sub-Contractors	108	17	1376	08-Feb-19 A	27-May-19	NE/2017/08(7days)	1376	
SC1100	Construction Video Film & Photographer	0	0			08-Feb-19 A	NE/2017/08(7days)		100%
SC1150	Bored Piling Works	0	0			25-Feb-19 A	NE/2017/08(7days)		100%
SC1170	Excavation, Lateral Supports & Earthworks	0	0	0		24-Mar-19*	NE/2017/08(7days)	0	0%
SC1180	RC Structures for Elevated Deck, U-trough & Pad Footings	0	0	0		27-May-19*	NE/2017/08(7days)	0	0%
NE/2017/08-6.3	NCE	26	26	251	11-Feb-19 A	09-Mar-19	NE/2017/08(7days)	251	
NCE1110	Treesto be Transplanted ouside LOHAS Park Package 4	26	26	251	11-Feb-19 A	09-Mar-19	NE/2017/08(7days)	251	100%
NCE1120	Unexpected Gas Main at Extent of Elevated Deck, U Trough	26	26	3	11-Feb-19 A	09-Mar-19	NE/2017/08(7days)	3	100%
NE/2017/08-6.4	Construction Works	230	14	76	21-Feb-19 A	28-Nov-19		76	
NE/2017/08-6.4.1	Preliminaries	39	14	18	21-Feb-19 A	08-Apr-19	NE/2017/08(6days)	18	
PREL1035	Installation of Utilities/ Ground Settlement Monitoring Points at MTRC's Development Area	6	6		21-Feb-19 A	27-Feb-19 A	NE/2017/08(6days)		100%
PREL1037	Installation of Ground Settlement Monitoring Points at MTRC Development Phase 6 (Initial Reading on 14 Mar 2019)	17	12	8	23-Feb-19 A	14-Mar-19	NE/2017/08(6days)	8	70.59%
PREL1120	Construction of Temporary Wheel Washing Facilities	6	0	0	18-Mar-19*	23-Mar-19	NE/2017/08(6days)	0	0%
PREL1125	Construction of Wheel Washing Bay	12	0	18	25-Mar-19	08-Apr-19	NE/2017/08(6days)	18	0%
PREL1180	Removal of Exisitng Lighting Columns (by others)	18	0	5	09-Mar-19	29-Mar-19	NE/2017/08(6days)	5	0%
NE/2017/08-6.4.2	Construction Works of Portion I	0	0	0				0	
NE/2017/08-6.4.2.1	U-trough at Cycle Track	0	0	0				0	
NE/2017/08-6.4.2.2	Elevated Cycle Track	0	0	0				0	
NE/2017/08-6.4.2.3	Lift and Staircase	0	0	0				0	
NE/2017/08-6.4.3	Construction Works of Portion II	165	0	0	16-Mar-19	05-Oct-19	NE/2017/08(6days)	0	
NE/2017/08-6.4.3.1	Abutment 2A	20	0	0	21-May-19	13-Jun-19	NE/2017/08(6days)	0	
PORII.AB.1010	Pre-drilling Works for Alternative Bored Pile at Abutment 2A (8no,10D/no,6rigs for 1st cycle,2rigs for 2nd cycle)	20	0	0	21-May-19	13-Jun-19	NE/2017/08(6days)	0	0%
NE/2017/08-6.4.3.2	Elevated Deck	165	0	0	16-Mar-19	05-Oct-19	NE/2017/08(6days)	0	
PORII.ED.1010	Pre-drilling Works for Conforming Bored Pile (Elevated Deck) (1nos.,10D/no.,3rig on16/3,6rig for 8/5 for ED+UT)	50	0	0	16-Mar-19	20-May-19	NE/2017/08(6days)	0	0%
PORII.ED.1020	Lower GL(+5.0 to 4.5mPD)and BP Construction(ED)(1nos,21D/pile,4tm for ED+UT,1st on3/25,2nd on 9/4,3rd+4th on 15/4)	109	0	0	25-Mar-19	07-Aug-19	NE/2017/08(6days)	0	0%
PORII.ED.1055	Sheet Piling Works for Construction of Footing/ Pile Cap Along Northern Footpat	158	0	0	25-Mar-19	05-Oct-19	NE/2017/08(6days)	0	0%
NE/2017/08-6.4.4	Construction Works of Portion III	180	9	0	27-Feb-19 A	05-Oct-19	NE/2017/08(6days)	0	
NE/2017/08-6.4.4.1	Construction of Elevated Deck and Abutment 2B	180	9	0	27-Feb-19 A	05-Oct-19	NE/2017/08(6days)	0	
PORIII.ED1010	Pre-drilling Works for Conforming Bored Pile (Abutment 2B) (3nos.,10D/no.,3rig	15	9	0	27-Feb-19 A	15-Mar-19	NE/2017/08(6days)	0	60%
PORIII.ED1015	Pre-drilling Works for Conforming Bored Pile (Elevated Deck)(9nrs,10D/no,3rig on16/3,6rig for 8/5 for ED+UT)	50	0	0	16-Mar-19	20-May-19	NE/2017/08(6days)	0	0%
PORIII.ED1020	Lower GL(+5.0 to 4.5mPD)and BP Construction(ED+AB2B)(12nos,21D/pile,4tm for ED+UT,1st on25/3,2nd on 9/4,3rd+4th on 15/4)	109	0	0	25-Mar-19	07-Aug-19	NE/2017/08(6days)	0	0%
PORIII.ED1055	Sheet Piling Works for Construction of Footing/ Pile Cap Along Northern Footpat	158	0	0	25-Mar-19	05-Oct-19	NE/2017/08(6days)	0	0%
NE/2017/08-6.4.4.2	Construction of U-trough Structure	165	0	0	16-Mar-19	05-Oct-19	NE/2017/08(6days)	0	
PORIII.UT1010	Pre-drilling Works for Conforming Bored Pile (U-trough) (8no,10D/no,3rig on16/3,6rig for 8/5 for ED+UT)	50	0	0	16-Mar-19	20-May-19	NE/2017/08(6days)	0	0%
PORIII.UT1020	Lower GL(+5.0 to 4.5mPD)and BP Construction(UT)(8nos,21D/pile,4tm for ED+UT,1st on3/25,2nd on 9/4,3rd+4th on 15/4)	105	0	0	25-Mar-19	02-Aug-19	NE/2017/08(6days)	0	0%



Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone
summary

土木工程拓展署
Civil Engineering and Development Department

Contract No.: NE/2017/08
Cross Bay Link, Tseung Kwan O
Road D9 and Associated Works

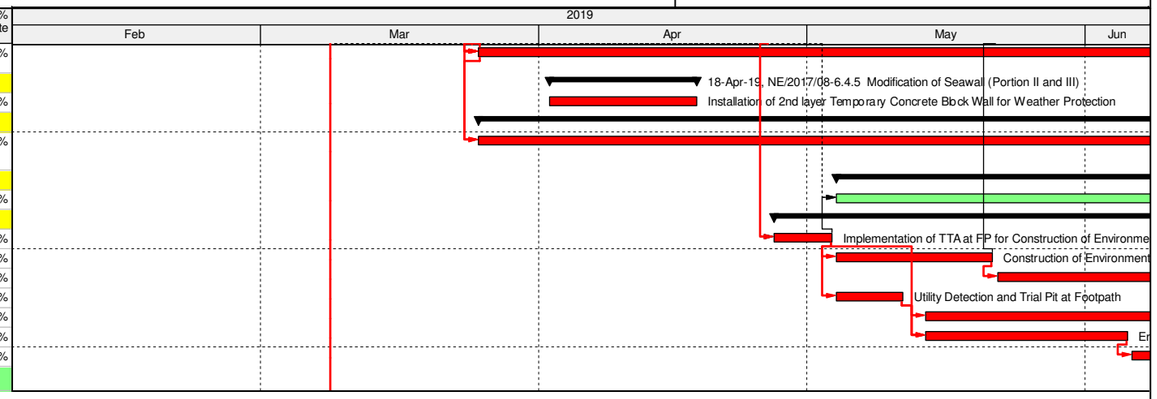
Build King

Date	Revision	Checked	Approved
08-Mar-19	Three Month Rolling (Feb 2019)	HY	StL

NE/2017/08 Three Month Rolling Programme (Feb 2019)

Contract No.: NE/2017/08 - Cross Bay Link, Tseung Kwan O - Road D9 and Associated Works

Activity ID	Activity Name	iginal ation	Actual Duration	Remaining Float	Start	Finish	Calendar	Total Float	Activity % Complete
PORIII.UT1055	Sheet Piling Works for Construction of Footing/Pile Cap along northern Footpath	158	0	0	25-Mar-19	05-Oct-19	NE/2017/08(6days)	0	0%
NE/2017/08-6.4.5	**Modification of Seawall (Portion II and III)**	14	0	0	02-Apr-19	18-Apr-19	NE/2017/08(6days)	0	
SW1025	Installation of 2nd layer Temporary Concrete Block Wall for Weather Protection	14	0	0	02-Apr-19	18-Apr-19*	NE/2017/08(6days)	0	0%
NE/2017/08-6.4.6	**Construction of the At-grade Noise Semi Enclosures**	158	0	0	25-Mar-19	05-Oct-19	NE/2017/08(6days)	0	
NSE1005	Sheet Piling/Open Excavation Works for Construction of Footing/Pile Cap along northern Footpath	158	0	0	25-Mar-19	05-Oct-19	NE/2017/08(6days)	0	0%
NE/2017/08-6.4.7	**Tree Protection Works (Portion I, II and III)**	88	0	161	04-May-19	17-Aug-19	NE/2017/08(6days)	161	
TP1000	Preparation Works for Tree Transplant	88	0	161	04-May-19	17-Aug-19	NE/2017/08(6days)	161	0%
NE/2017/08-6.4.8	**Wan O Road**	178	0	0	27-Apr-19	28-Nov-19		0	
WO1030	Implementation of TTA at FP for Construction of Environmental Borehole	5	0	0	27-Apr-19	03-May-19	NE/2017/08(6days)	0	0%
WO1040	Construction of Environmental Borehole and Sampling (2nos, 10D/no. 2rigs)	14	0	0	04-May-19	21-May-19	NE/2017/08(6days)	0	0%
WO1050	Chemical/Biological Testing for Environmental Borehole	191	0	0	22-May-19	28-Nov-19	NE/2017/08(7days)	0	0%
WO1060	Utility Detection and Trial Pit at Footpath	7	0	0	04-May-19	11-May-19	NE/2017/08(6days)	0	0%
WO1070	Installation of utility/Ground Settlement monitoring Points at Footpath	26	0	0	14-May-19	13-Jun-19	NE/2017/08(6days)	0	0%
WO1080	Erection of Chain Link Fence and Vehicular Gate at Footpath	20	0	0	14-May-19	05-Jun-19	NE/2017/08(6days)	0	0%
WO1090	Implementation of TTA at FP/Carriageway	6	0	0	06-Jun-19	13-Jun-19	NE/2017/08(6days)	0	0%
NE/2017/08-6.5	**Miscellaneous Works (Portion I, II and III)**	0	0	0				0	



Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone
summary

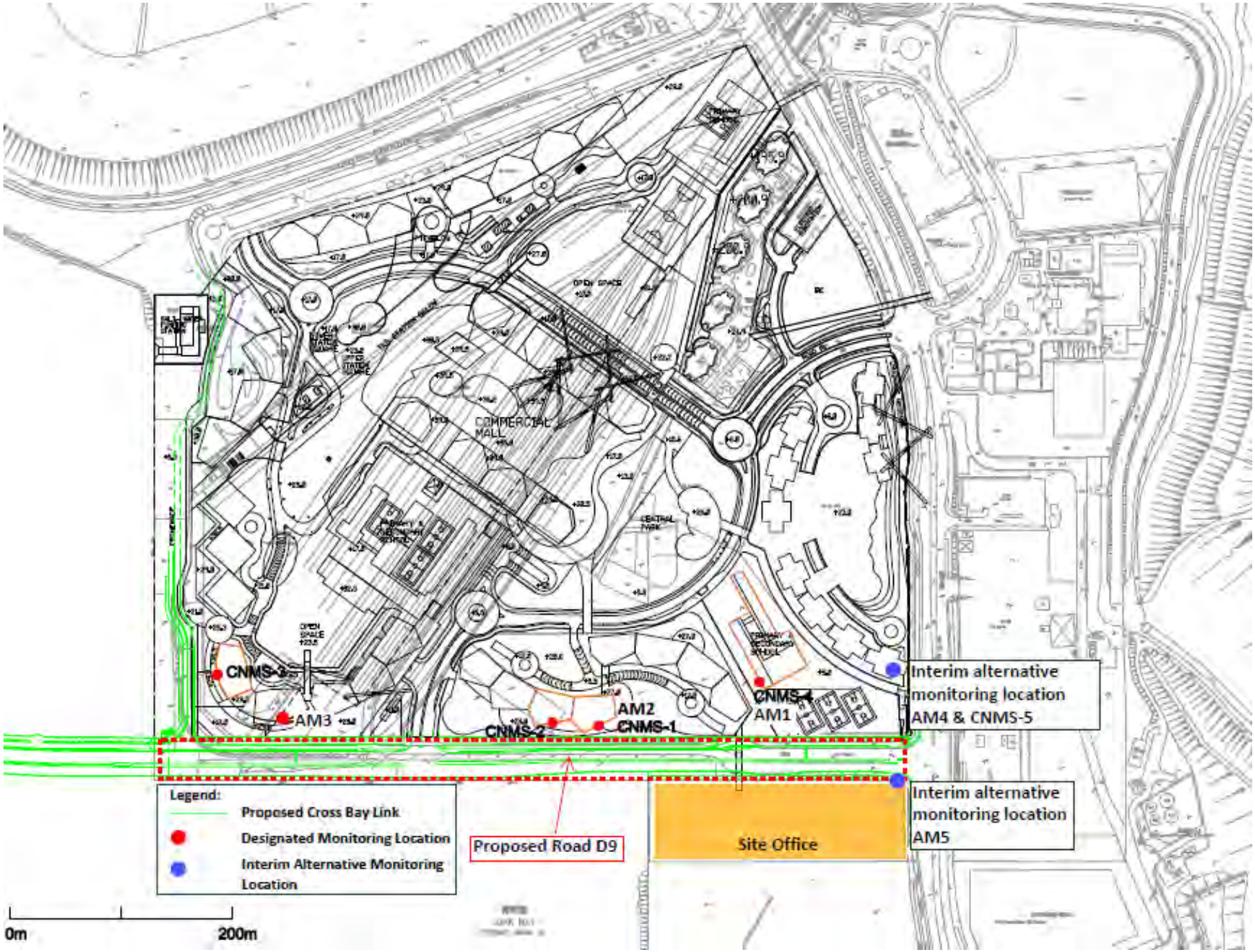
土木工程拓展署
Civil Engineering and Development Department

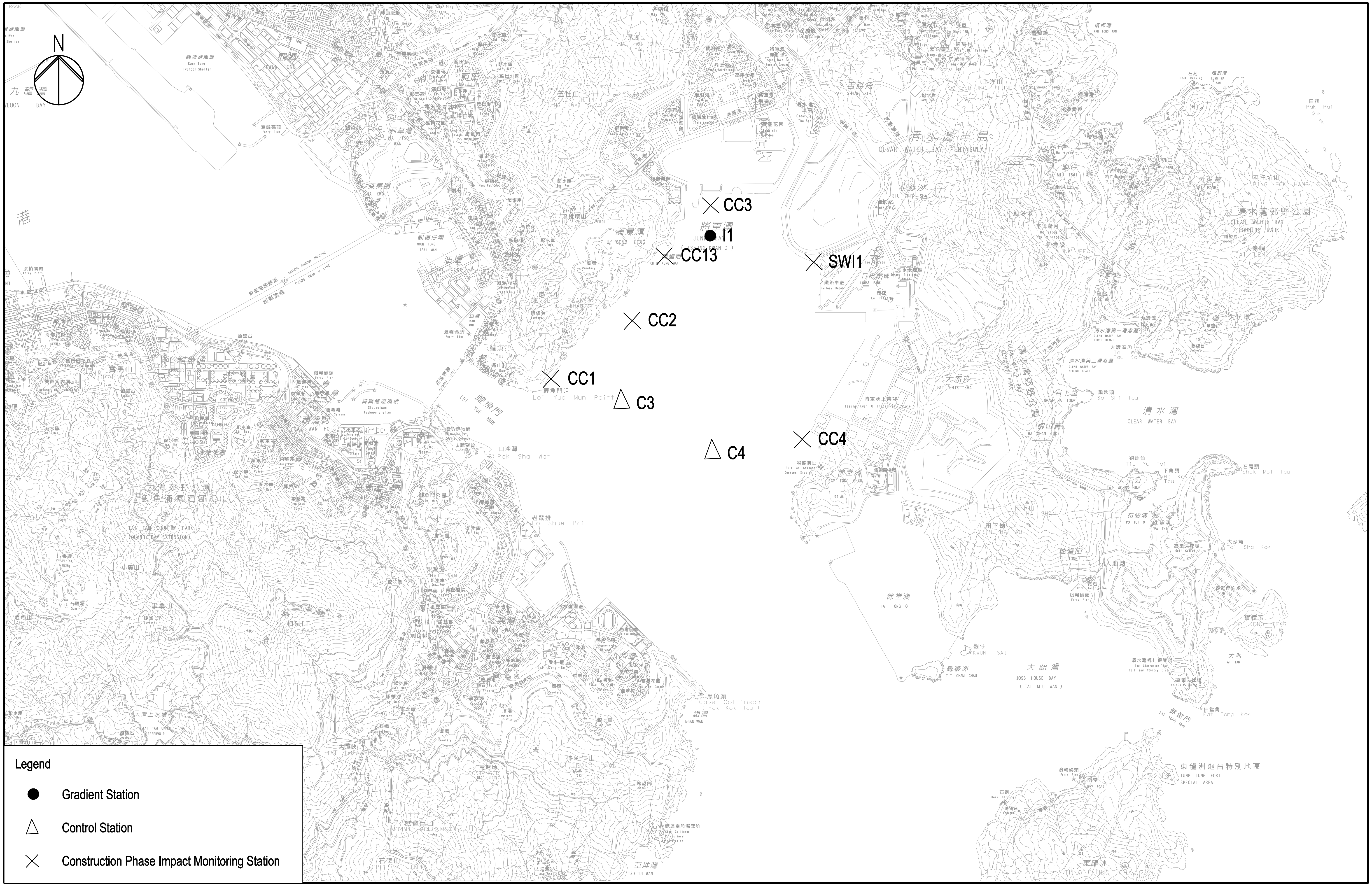
Contract No.: NE/2017/08
Cross Bay Link, Tseung Kwan O
Road D9 and Associated Works

Date	Revision	Checked	Approved
08-Mar-19	Three Month Rolling (Feb 2019)	HY	StL

Appendix D

Monitoring Location
(Air Quality, Noise and Water Quality)


COMMERCIAL
MALL
CNMS-3
AM3
CNMS-2
AM2
CNMS-1
CNMS-4
AM1
Interim alternative monitoring location AM4 & CNMS-5
Interim alternative monitoring location AM5
Site Office
Proposed Road D9
Legend:
Proposed Cross Bay Link
Designated Monitoring Location
Interim Alternative Monitoring Location
0m
200m



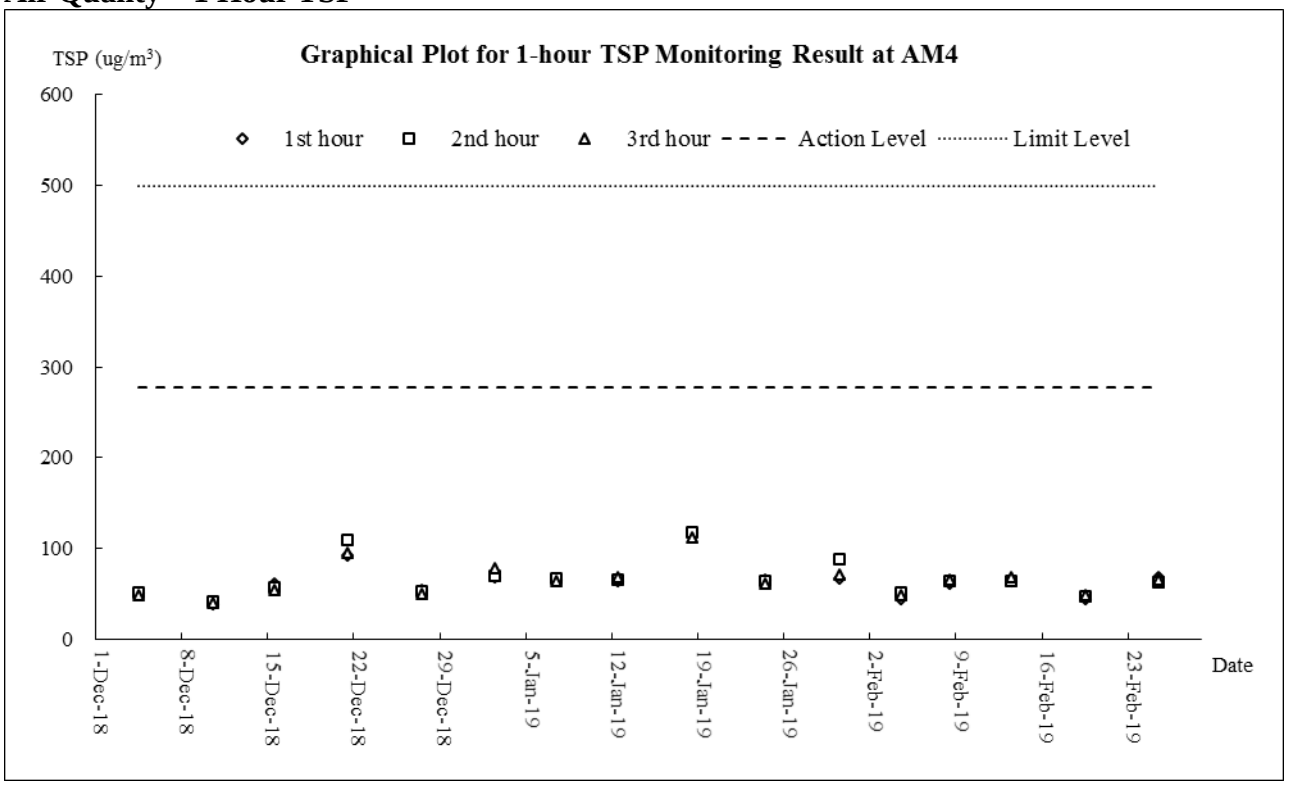
CEDD 土木工程拓展署 Civil Engineering and Development Department	ARUP Ove Arup & Partners Hong Kong Limited	Job Title: **Agreement No. CE 43/2008(HY)** **Cross Bay Link, Tseung Kwan O - Investigation**	Drawing Title: Locations of Water Quality Monitoring Stations	Drawn: GL; Date: 03/13; Checked: JP; Approved: ST; Scale: 1:30000 (A3)	Drawing No. 209506/EMA/WQ/001	Status: FINAL; Rev. C

Rev.	Description	Date
C	THIRD ISSUE	03/13
B	SECOND ISSUE	01/13
A	FIRST ISSUE	03/11

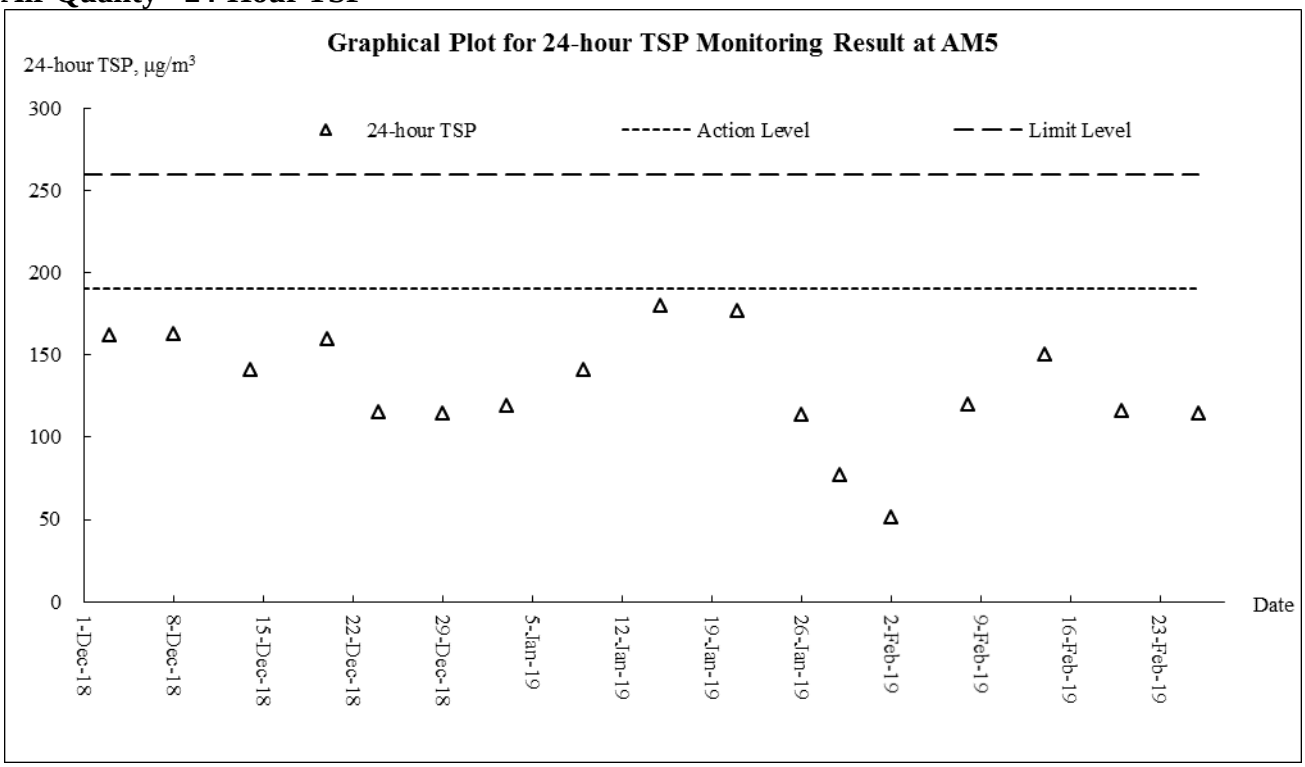
Appendix E

Graphical Plots of Monitoring Results

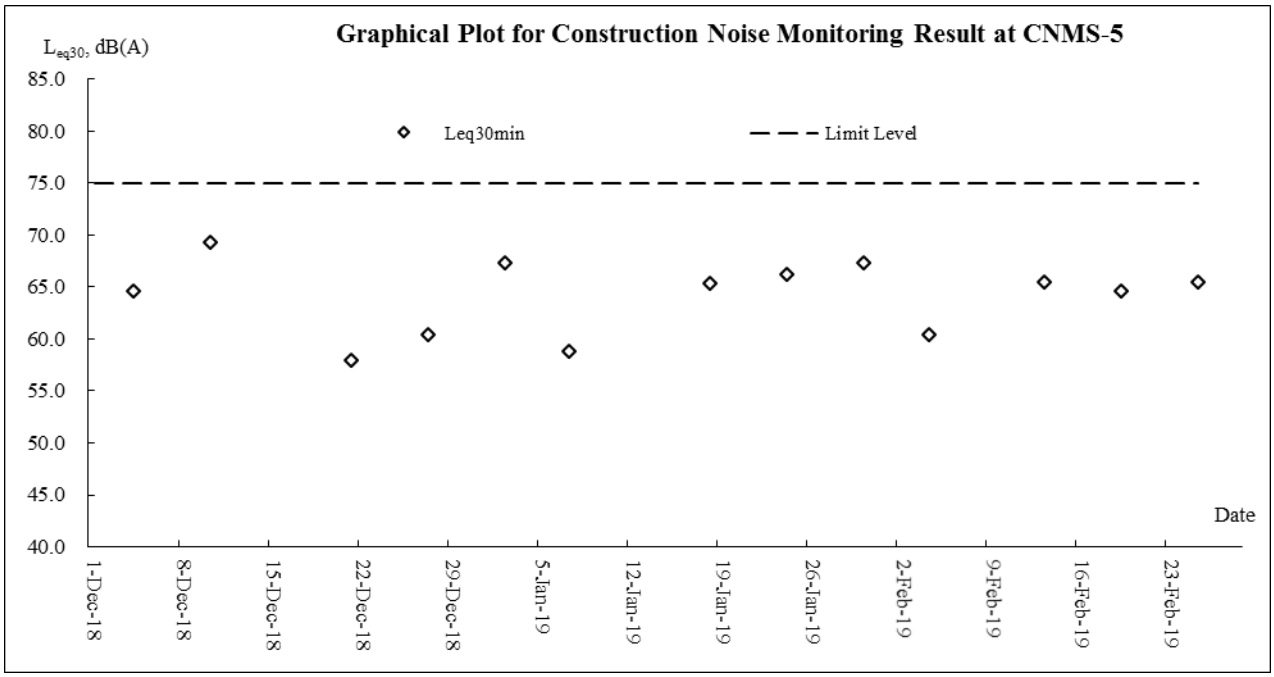
Air Quality – 1 Hour TSP



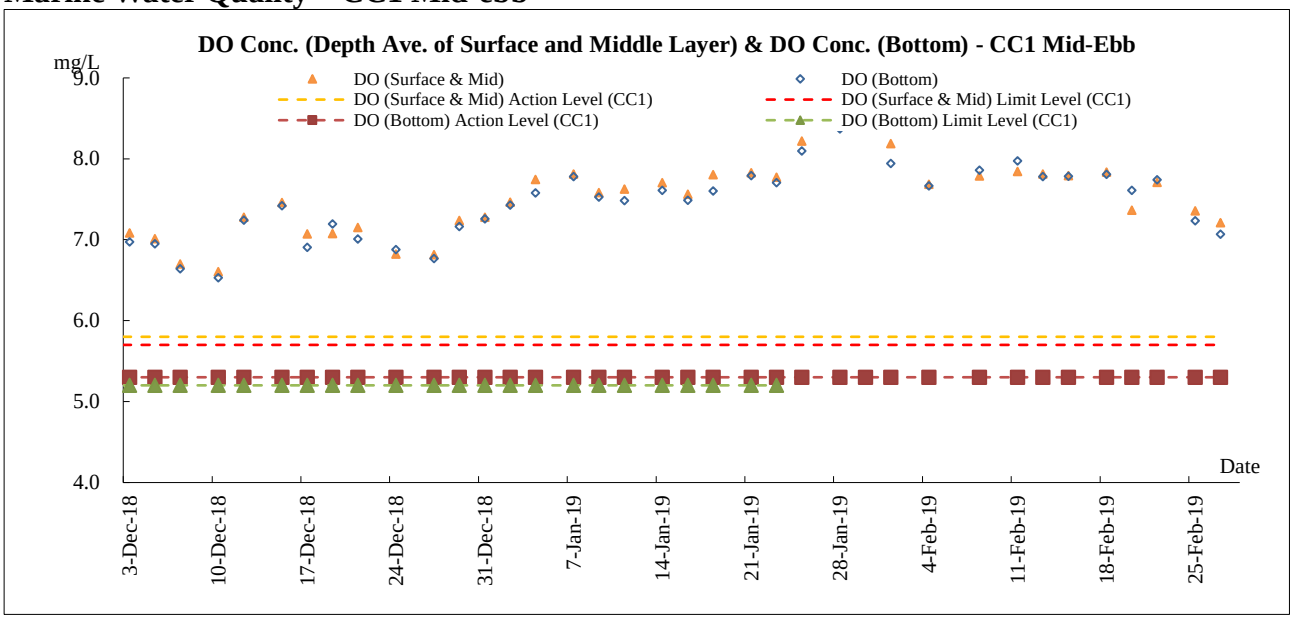
Air Quality - 24-Hour TSP

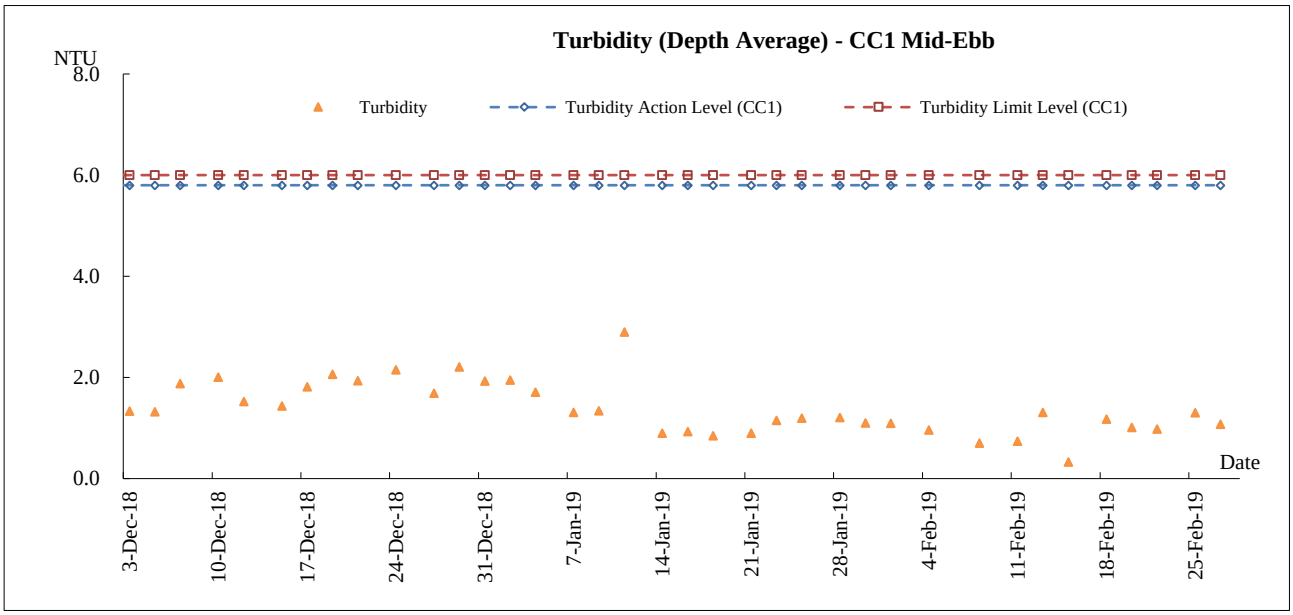


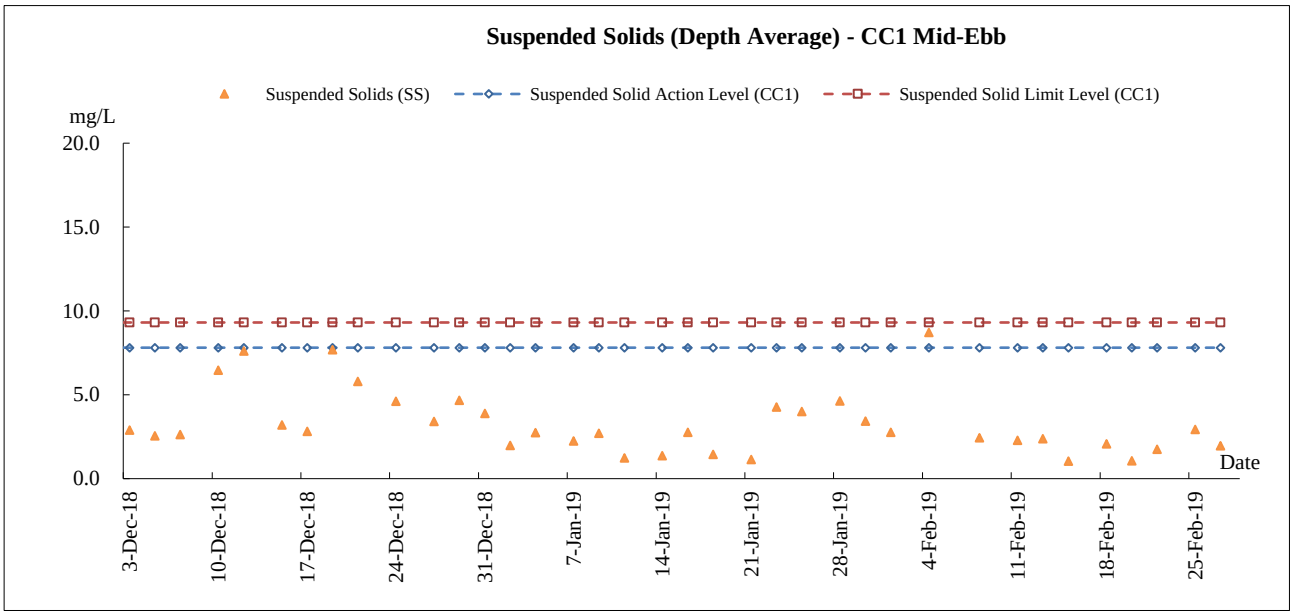
Construction Noise



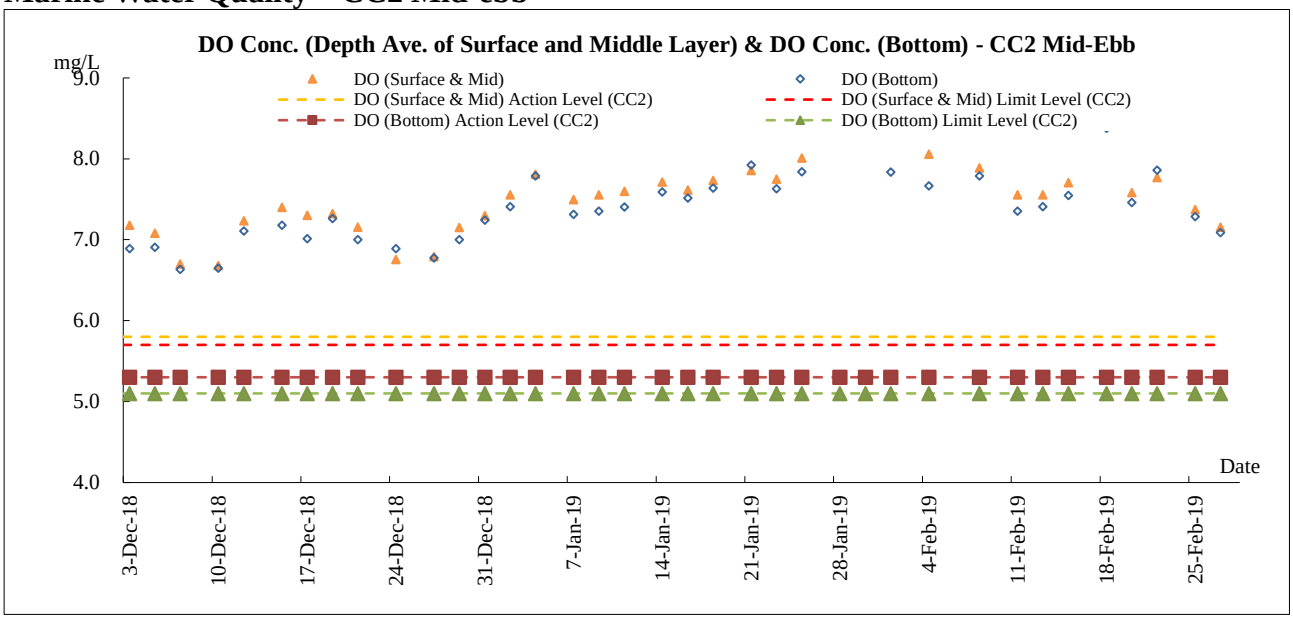
Marine Water Quality – CC1 Mid-ebb

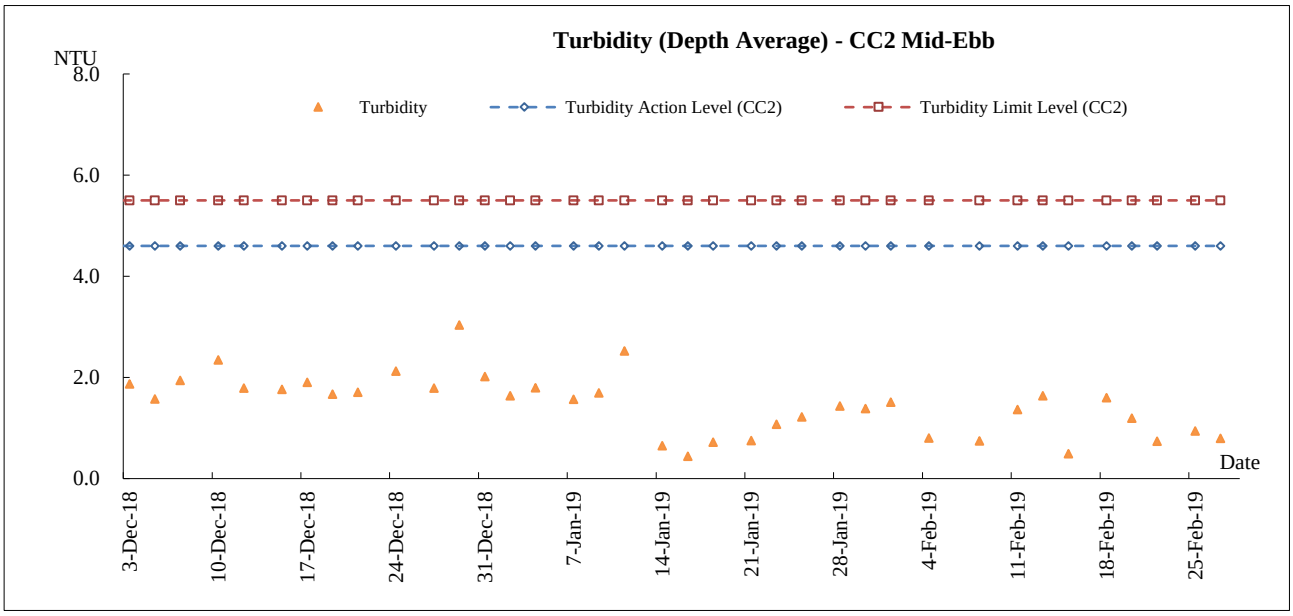


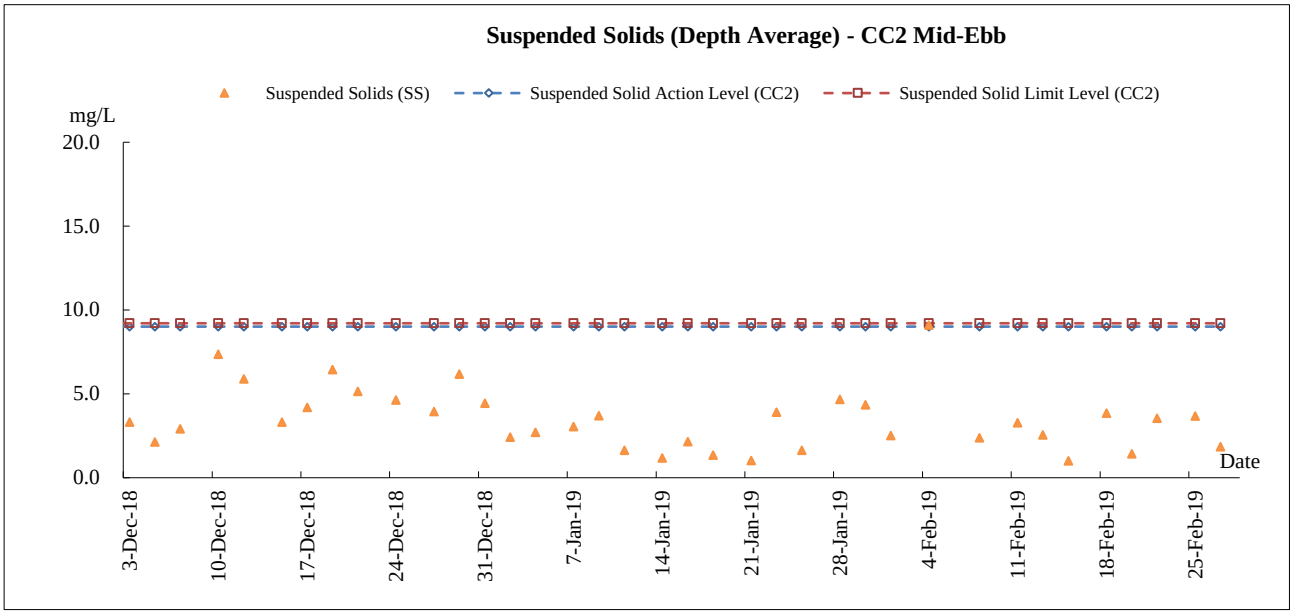




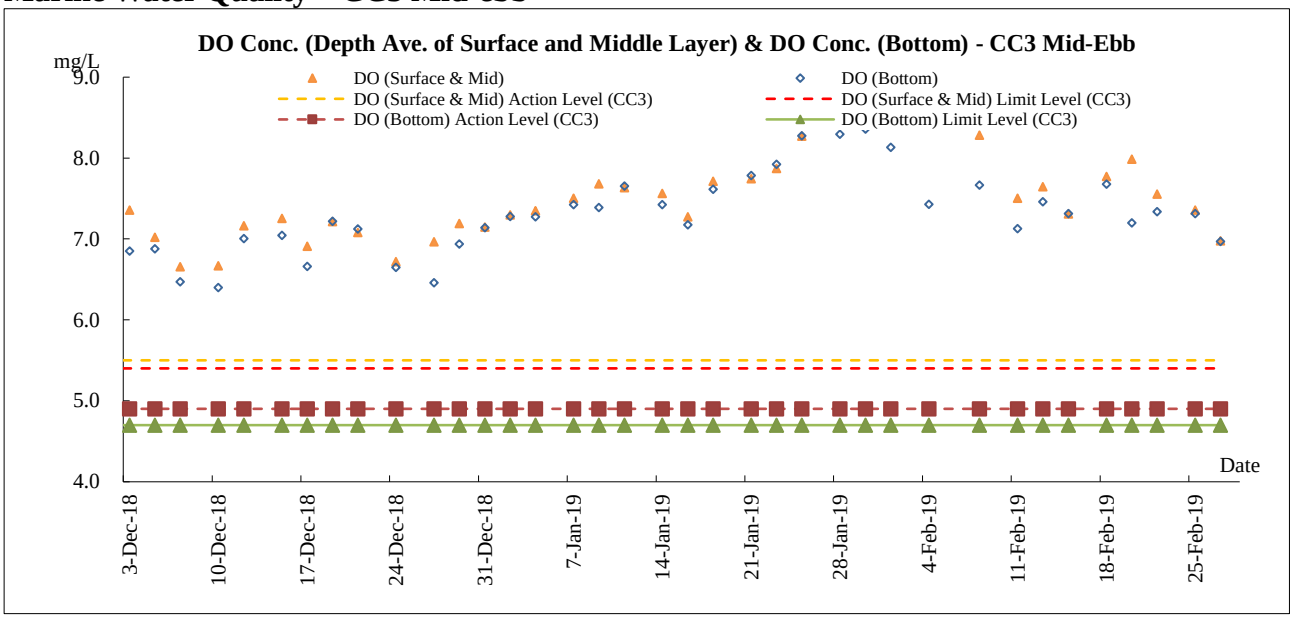
Marine Water Quality – CC2 Mid-ebb

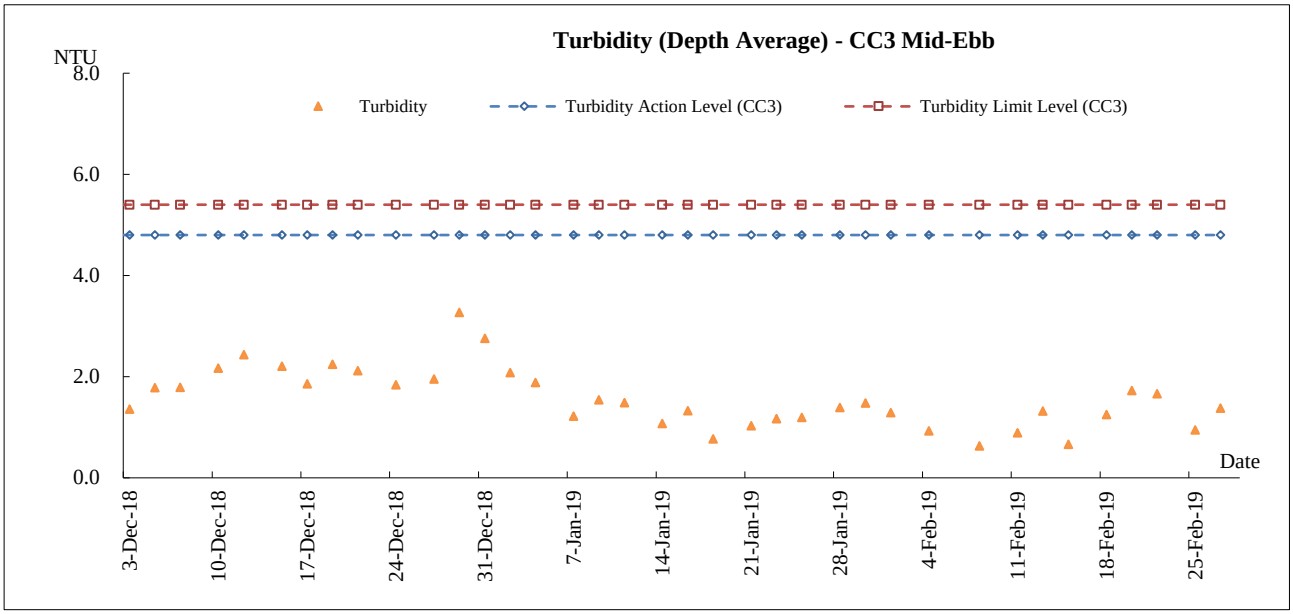


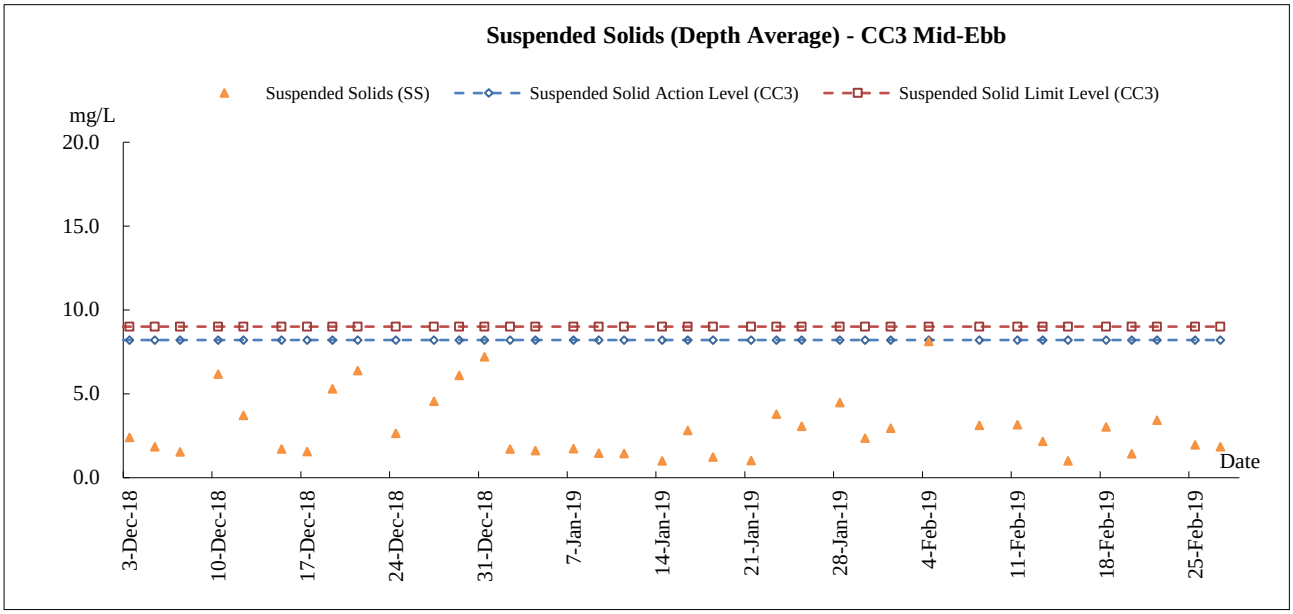




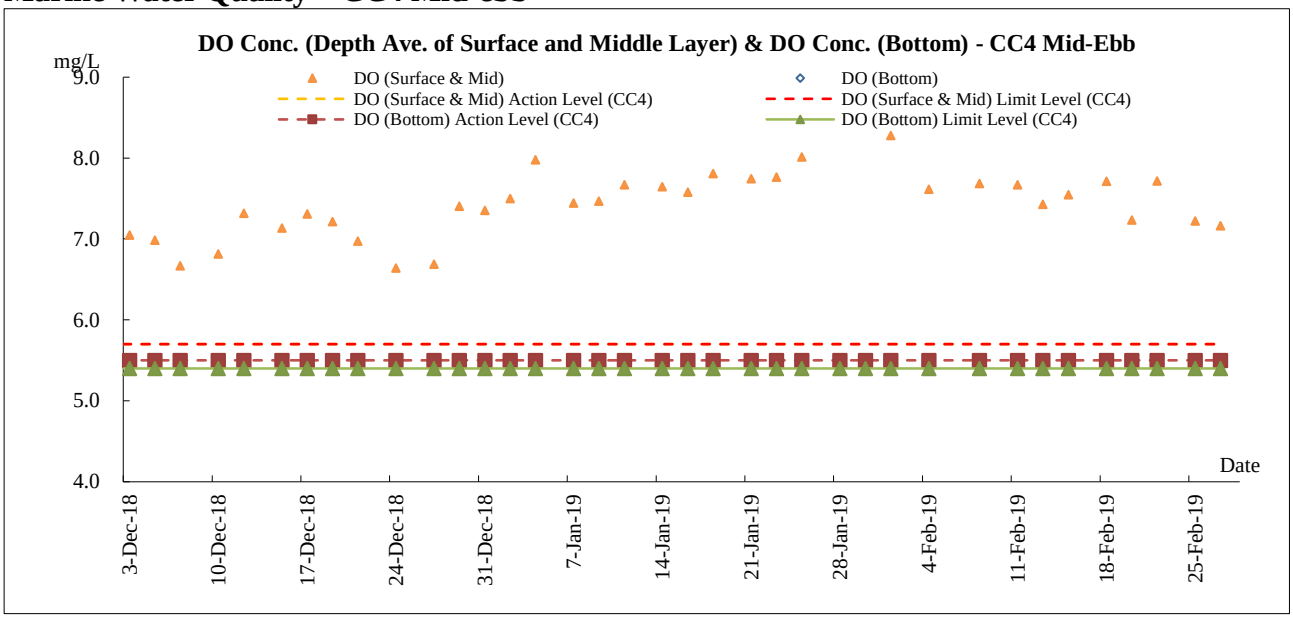
Marine Water Quality – CC3 Mid-ebb

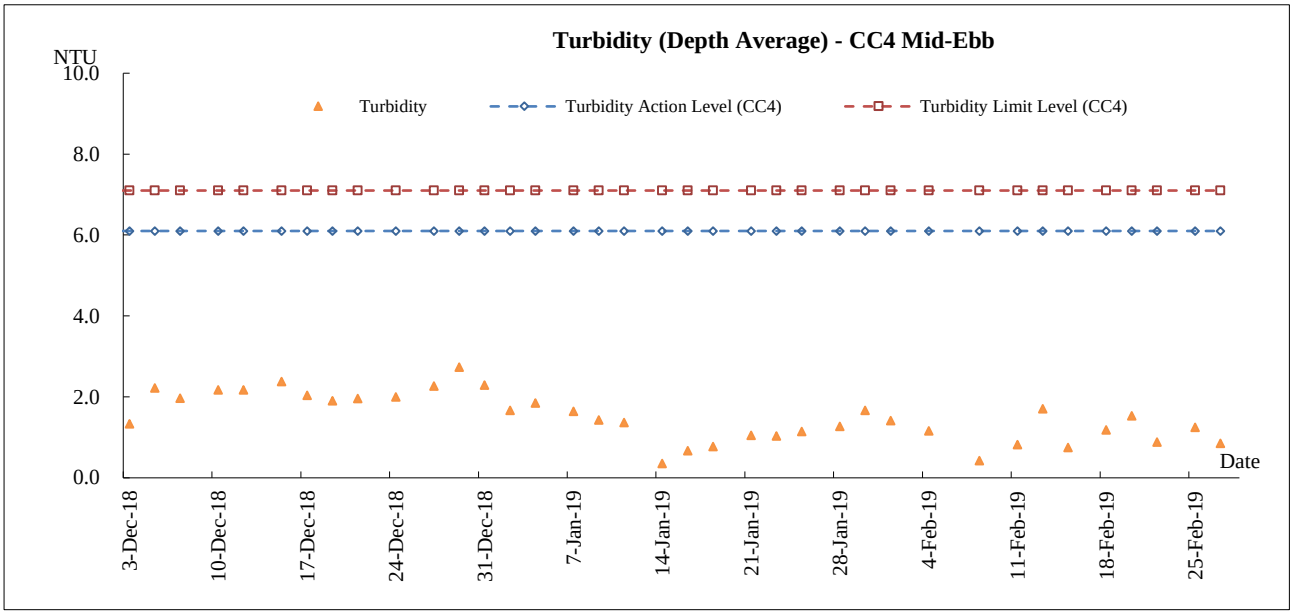


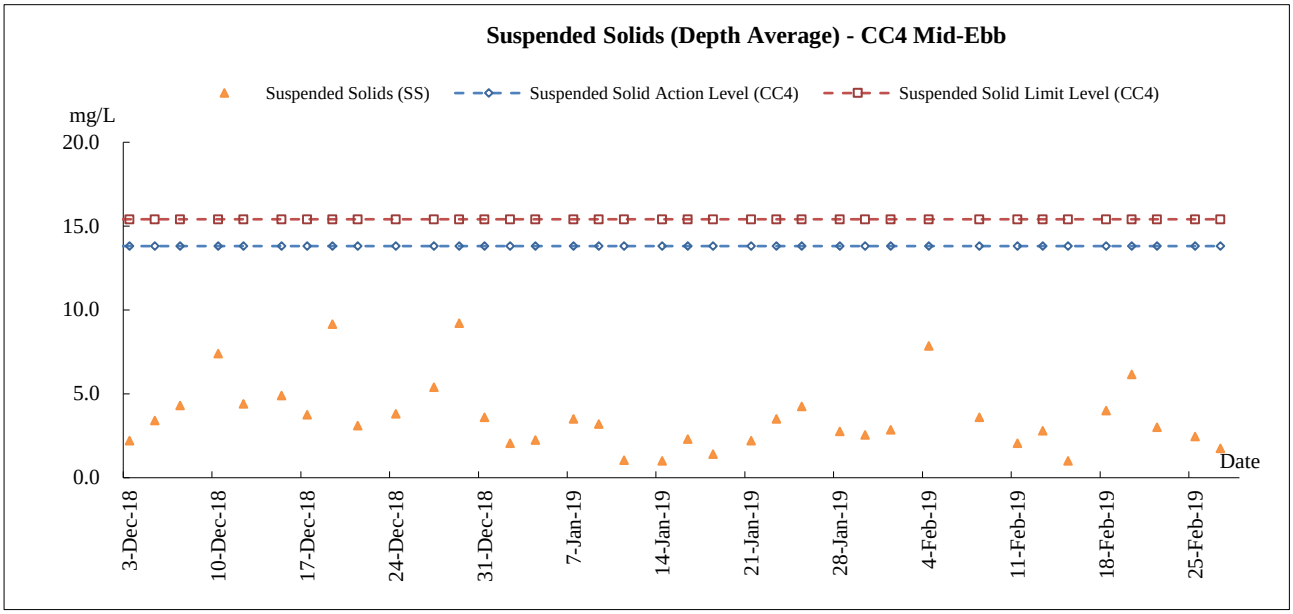




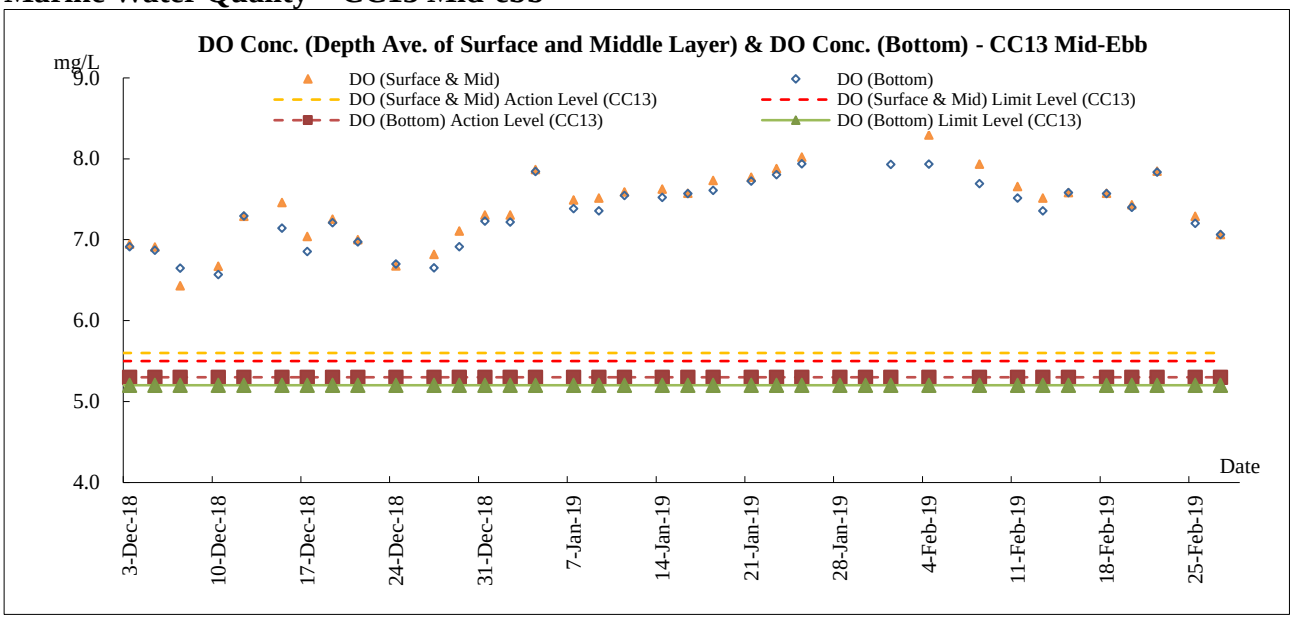
Marine Water Quality – CC4 Mid-ebb

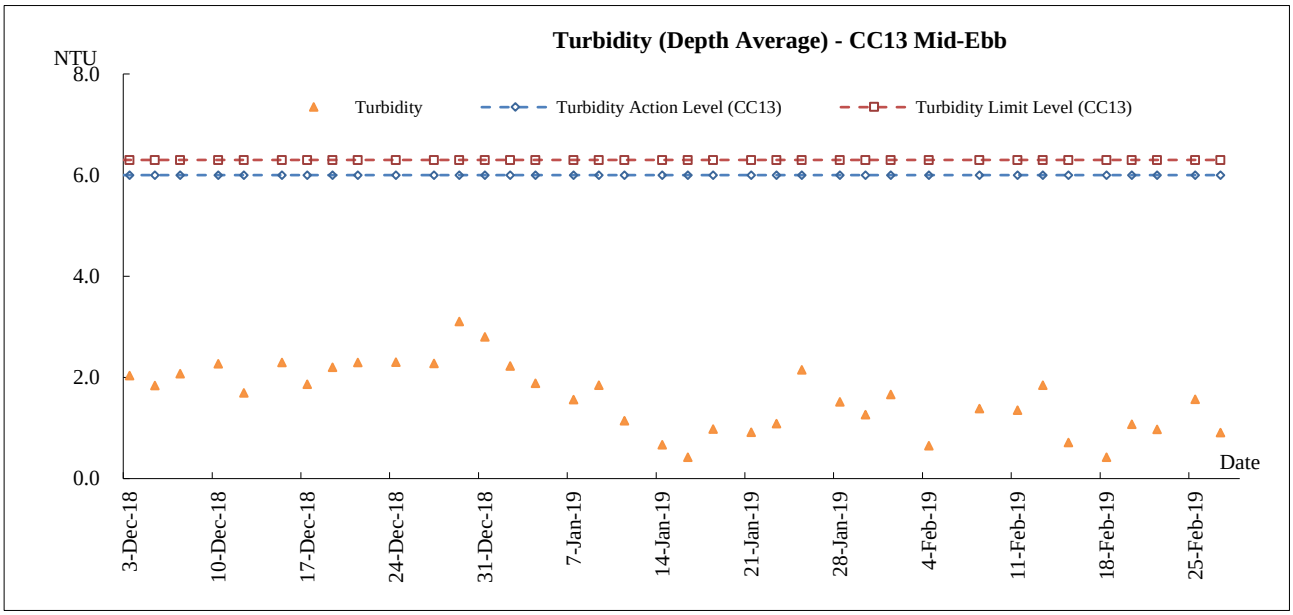


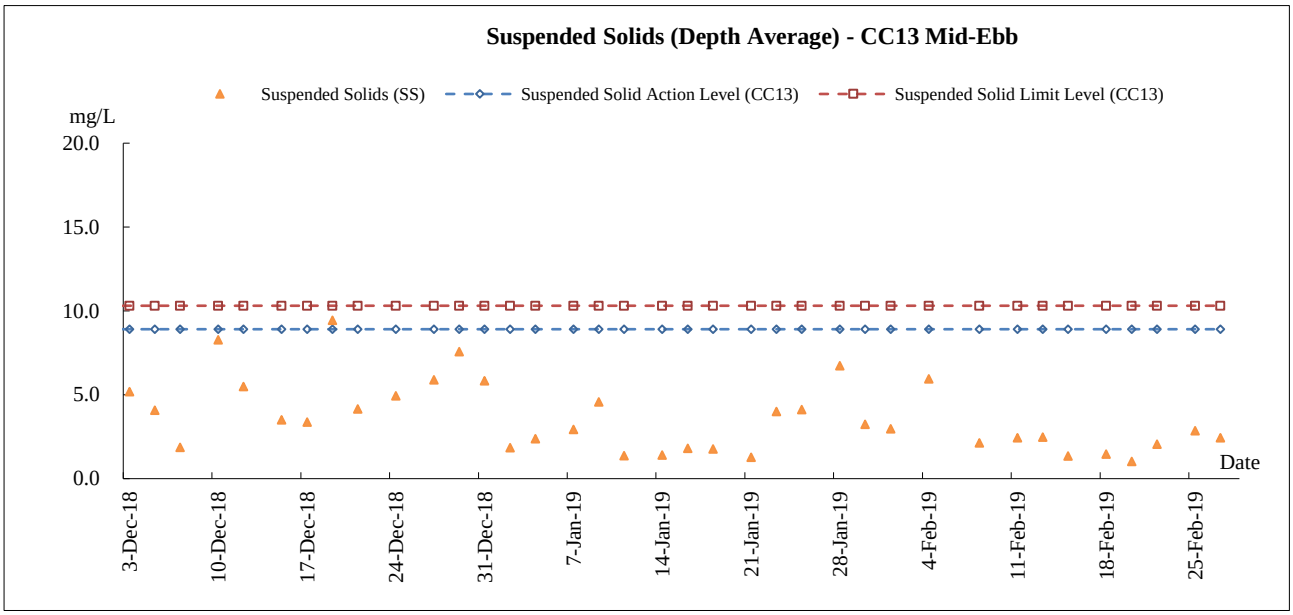



Suspended Solids (Depth Average) - CC4 Mid-Ebb
Suspended Solids (SS)
Suspended Solid Action Level (CC4)
Suspended Solid Limit Level (CC4)
mg/L
20.0
15.0
10.0
5.0
0.0
Date
3-Dec-18
10-Dec-18
17-Dec-18
24-Dec-18
31-Dec-18
7-Jan-19
14-Jan-19
21-Jan-19
28-Jan-19
4-Feb-19
11-Feb-19
18-Feb-19
25-Feb-19

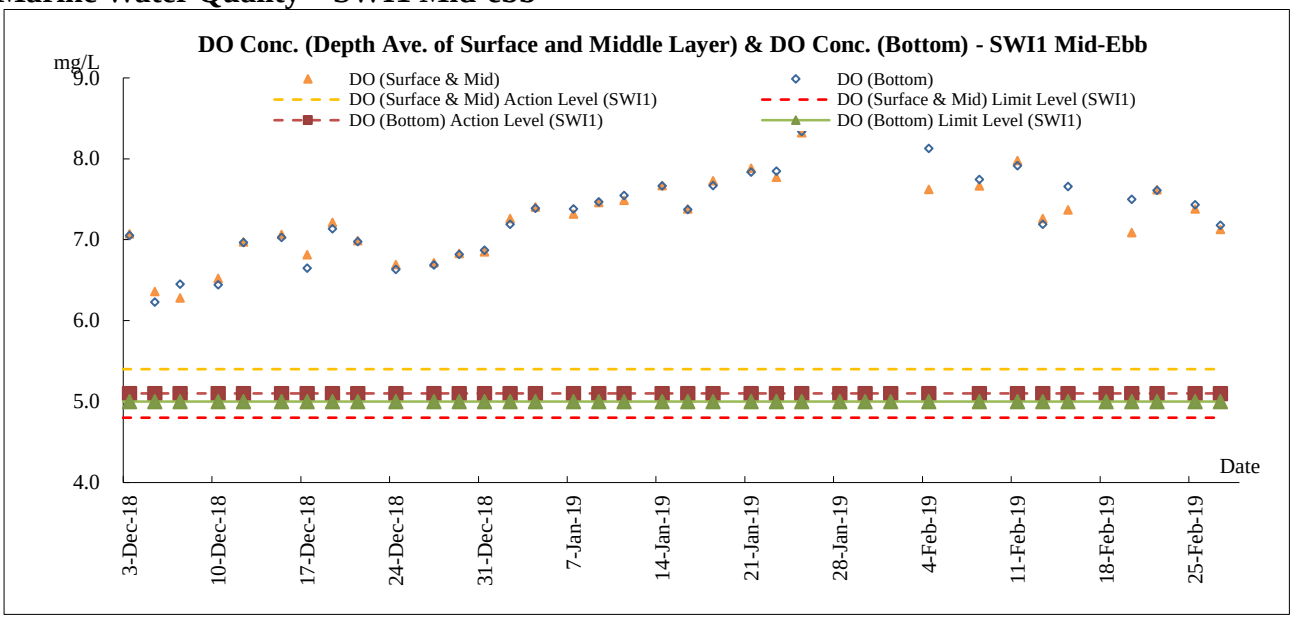
Marine Water Quality – CC13 Mid-ebb

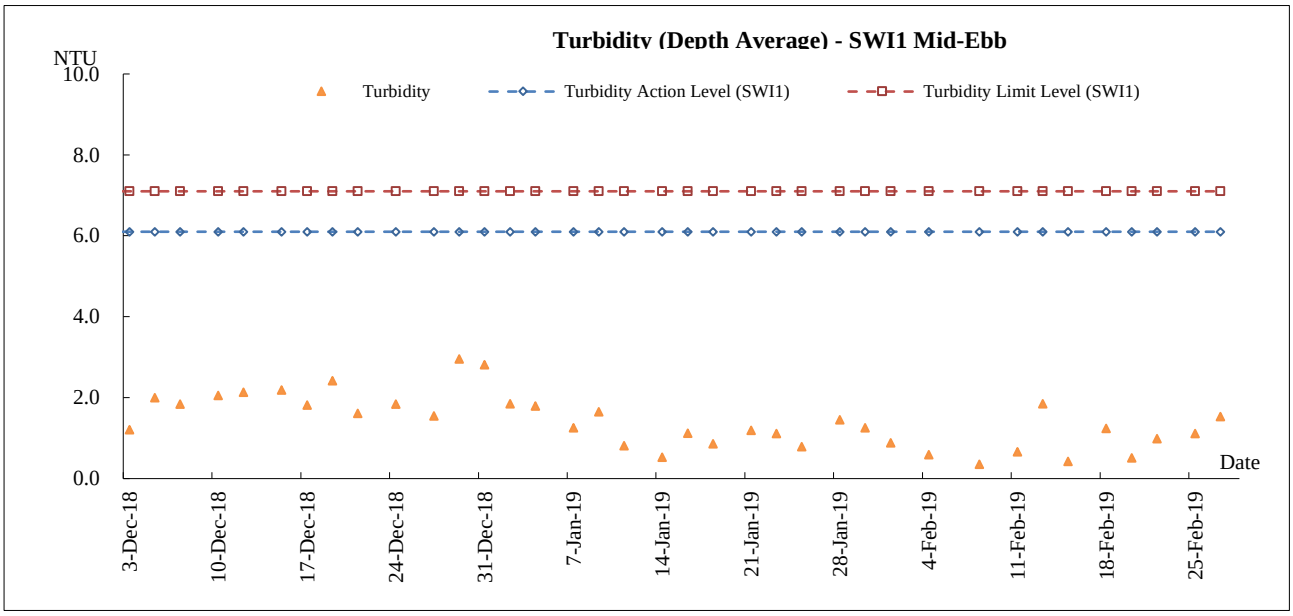


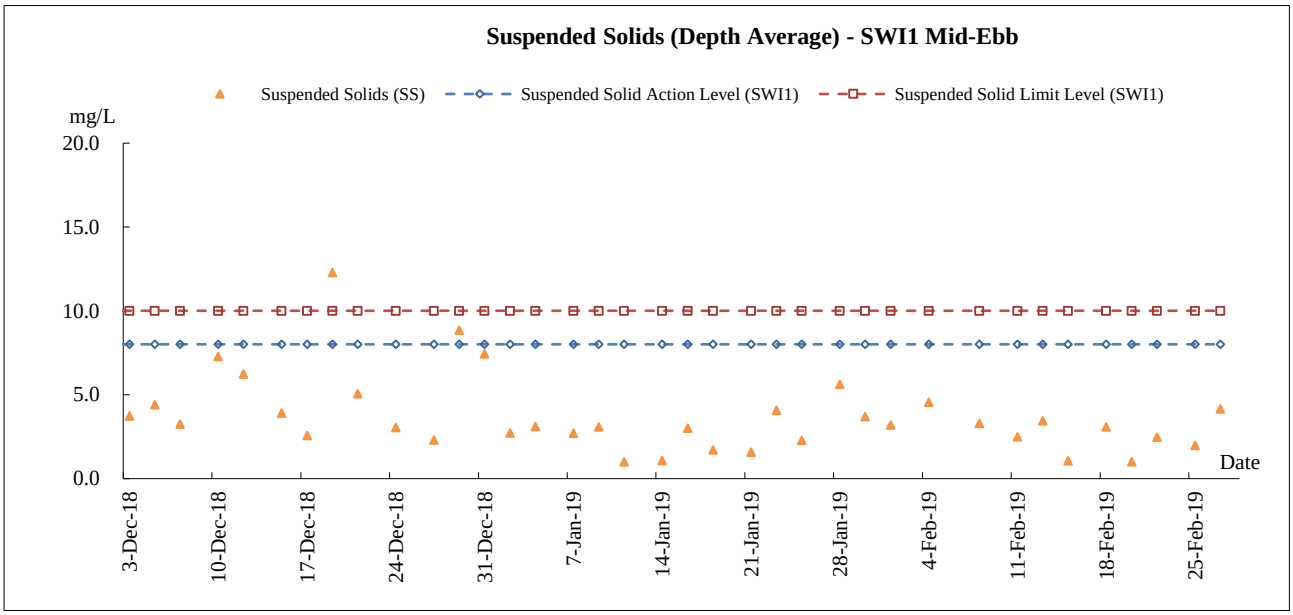




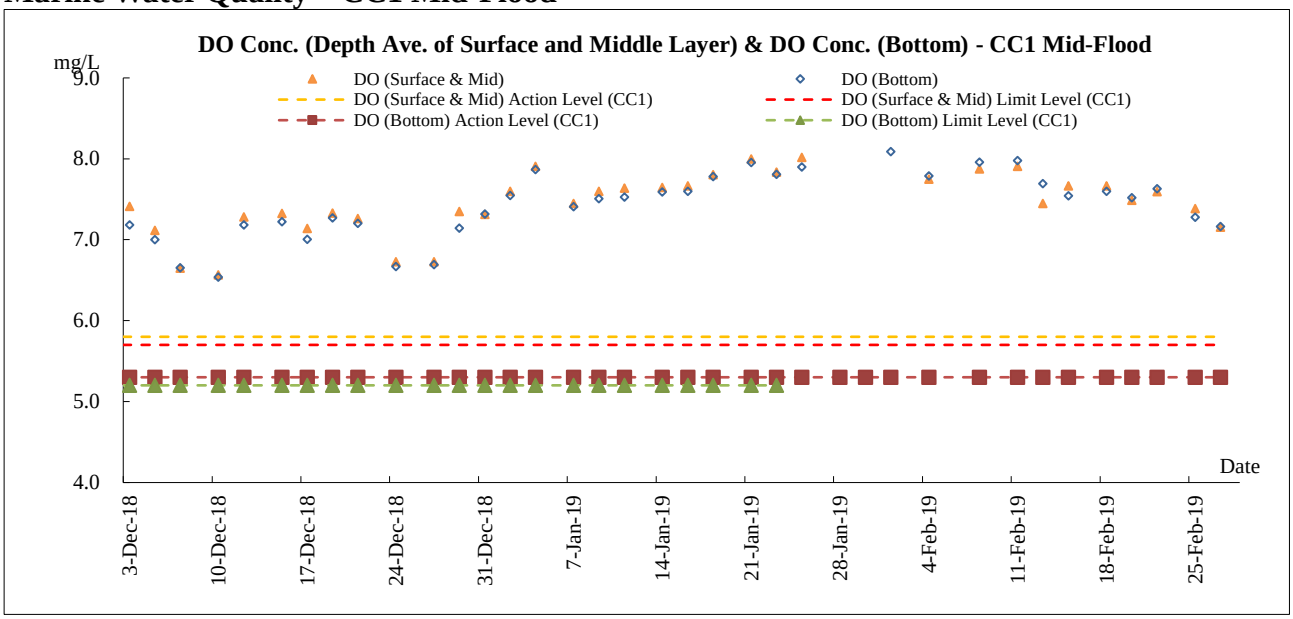
Marine Water Quality – SWI1 Mid-ebb

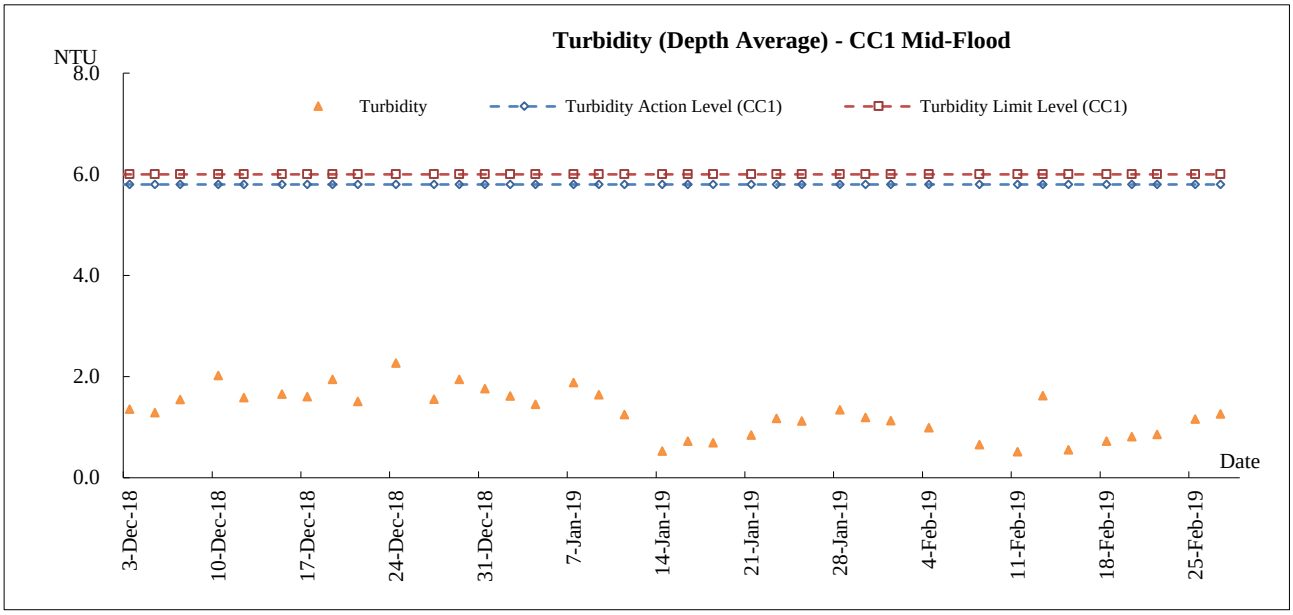


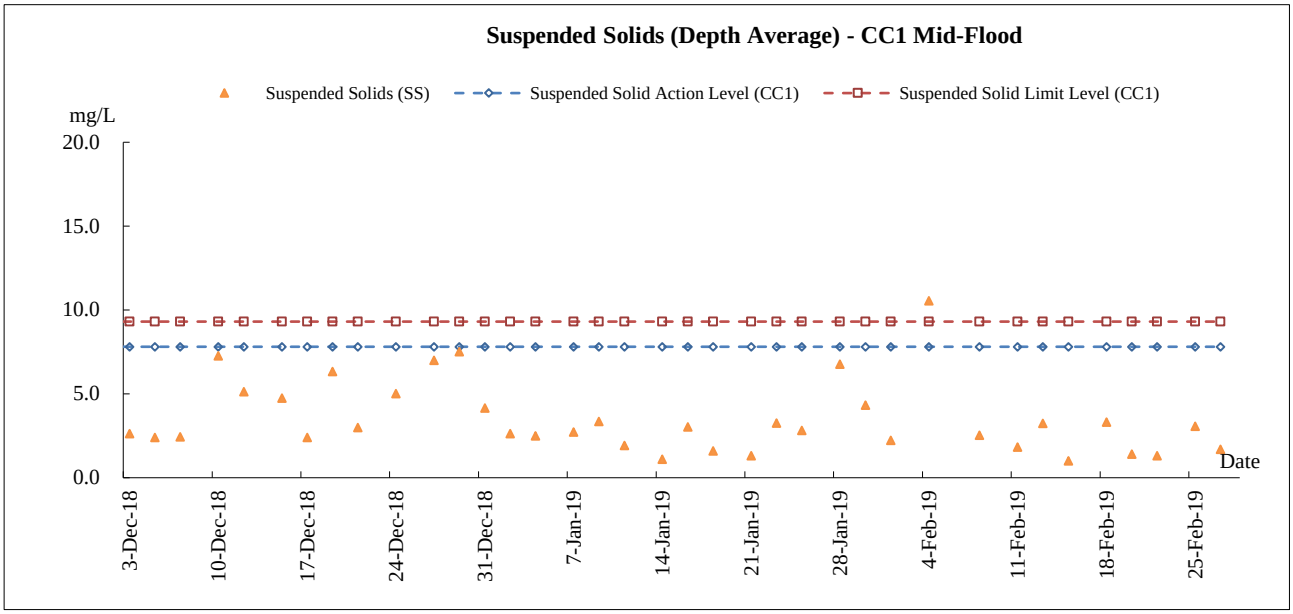




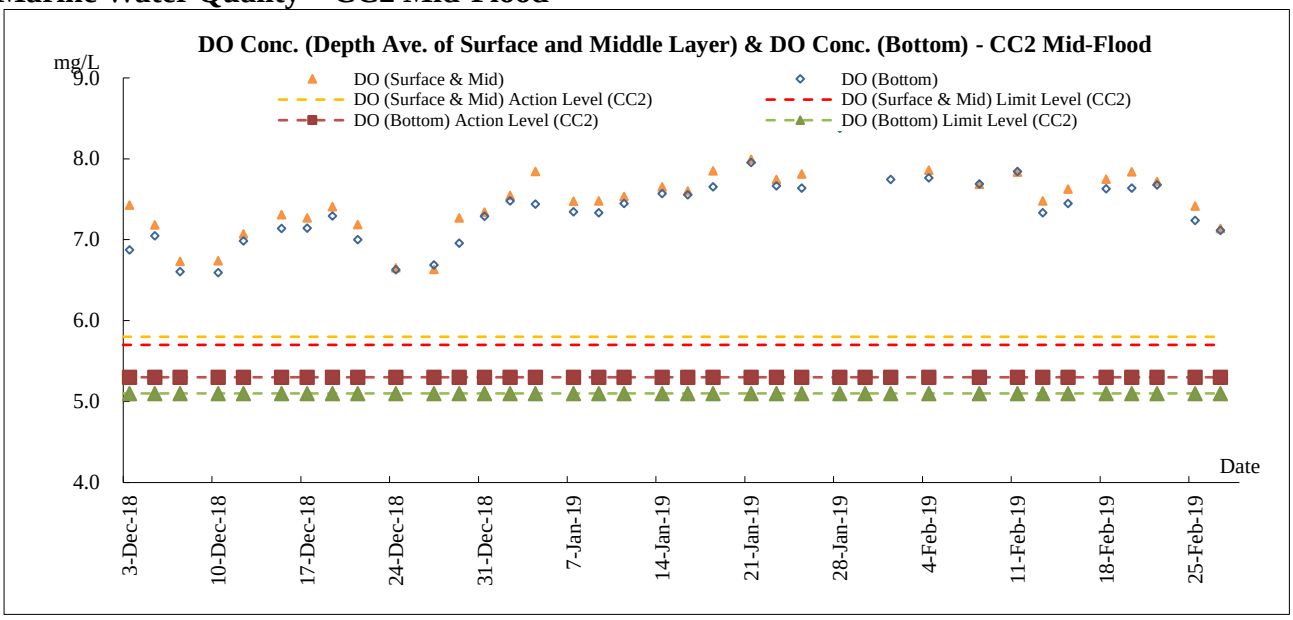
Marine Water Quality – CC1 Mid-Flood

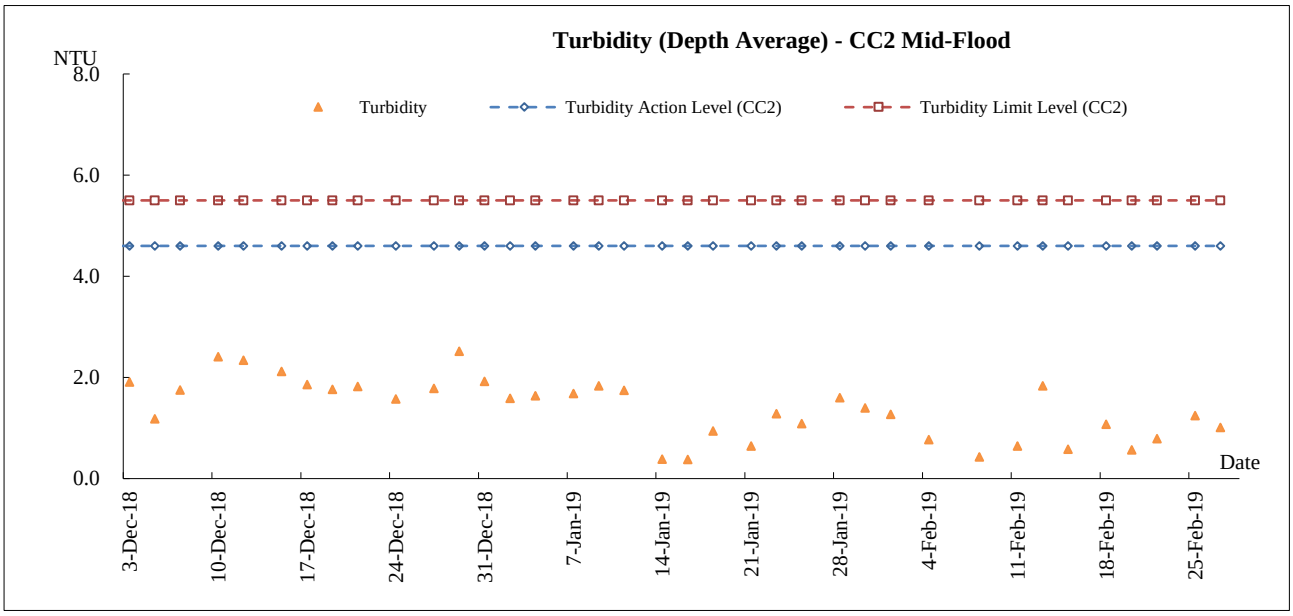


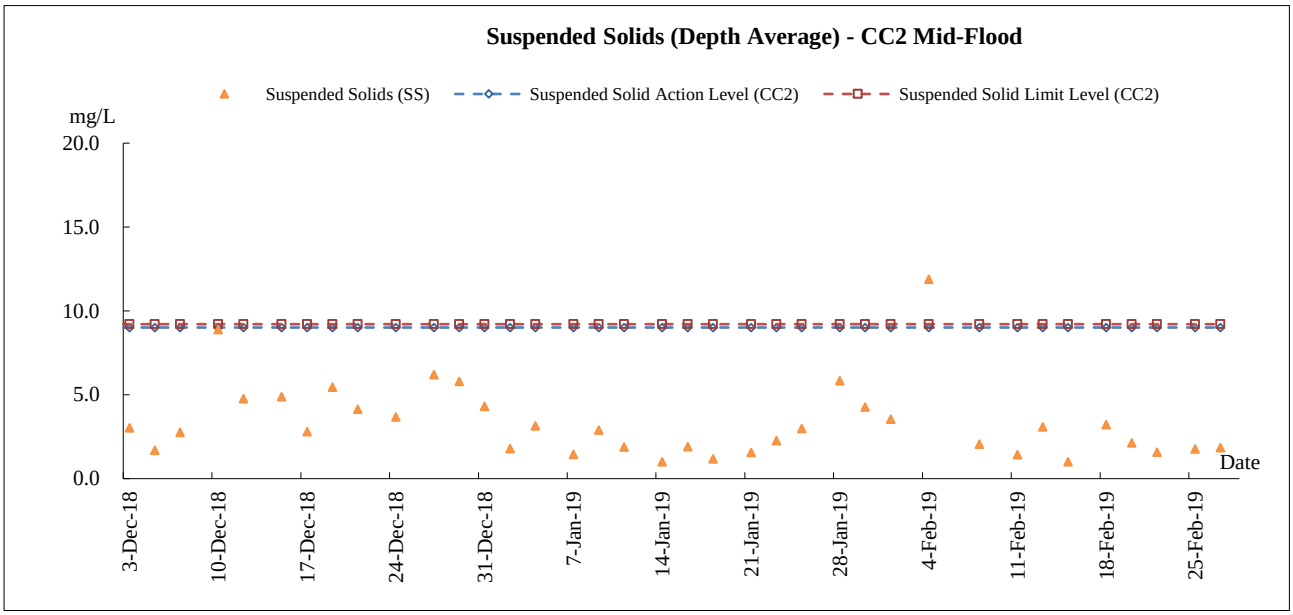



Suspended Solids (Depth Average) - CC1 Mid-Flood
Suspended Solids (SS)
Suspended Solid Action Level (CC1)
Suspended Solid Limit Level (CC1)
mg/L
20.0
15.0
10.0
5.0
0.0
Date
3-Dec-18
10-Dec-18
17-Dec-18
24-Dec-18
31-Dec-18
7-Jan-19
14-Jan-19
21-Jan-19
28-Jan-19
4-Feb-19
11-Feb-19
18-Feb-19
25-Feb-19

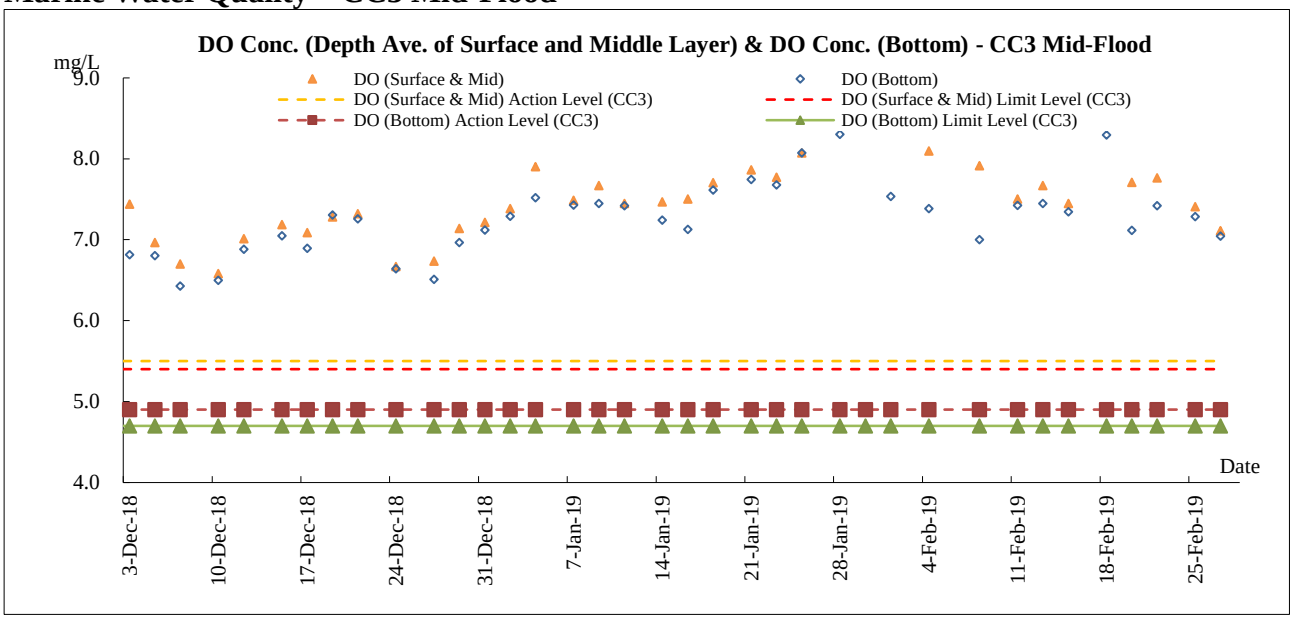
Marine Water Quality – CC2 Mid-Flood

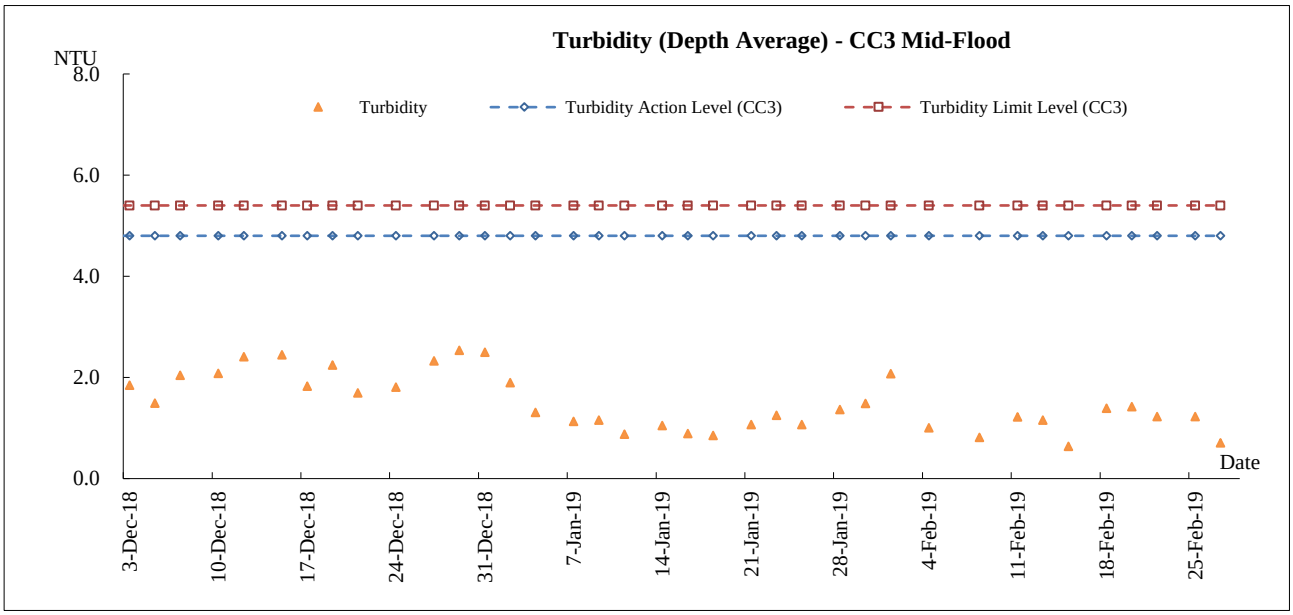


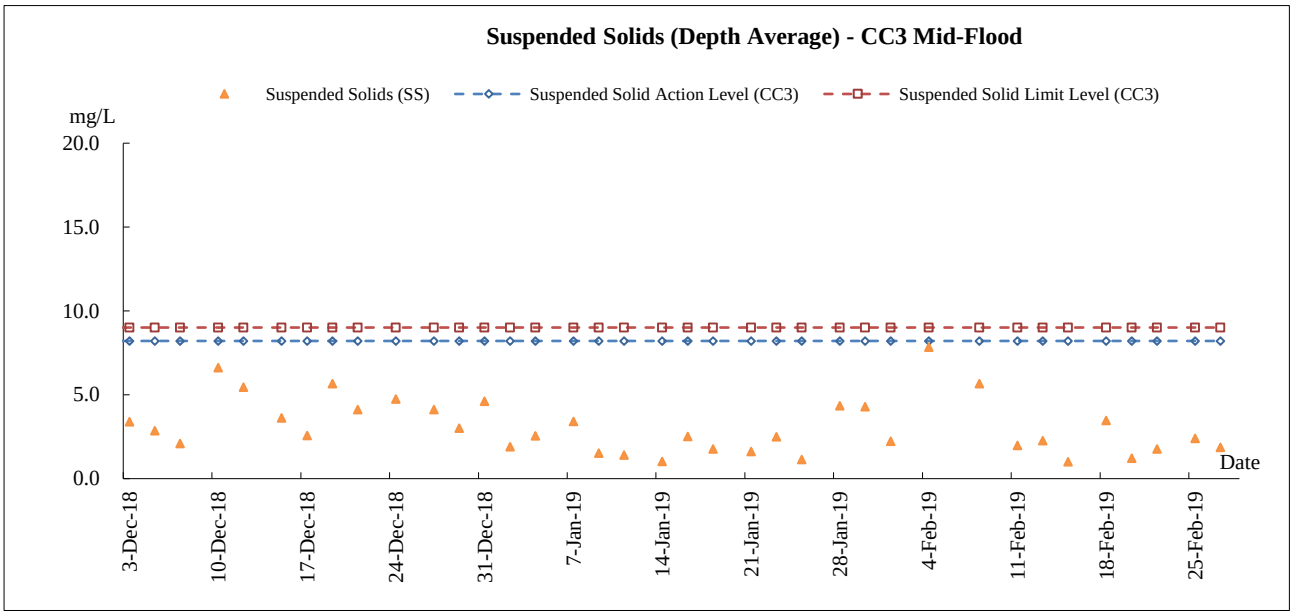




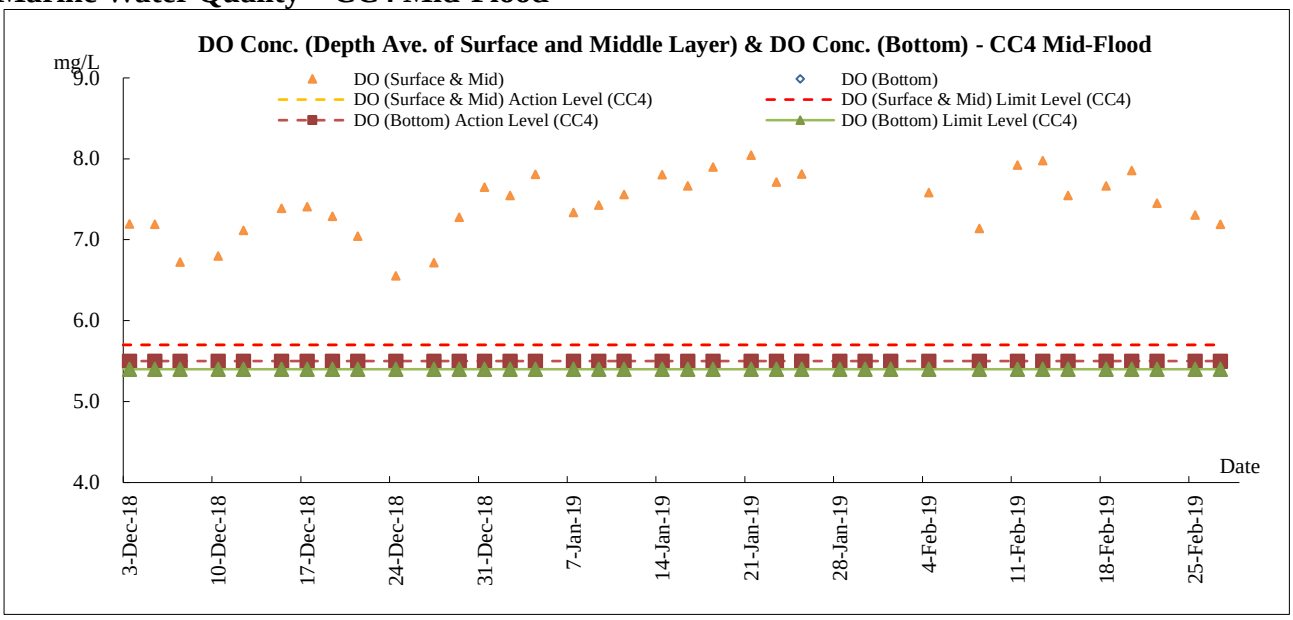
Marine Water Quality – CC3 Mid-Flood

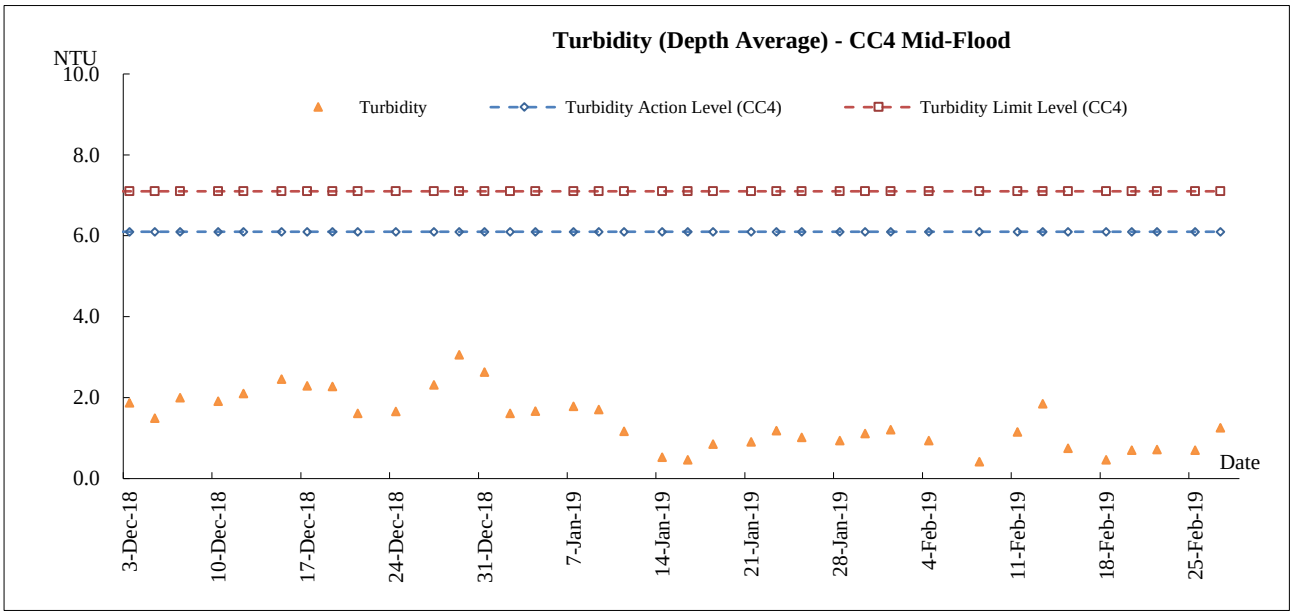


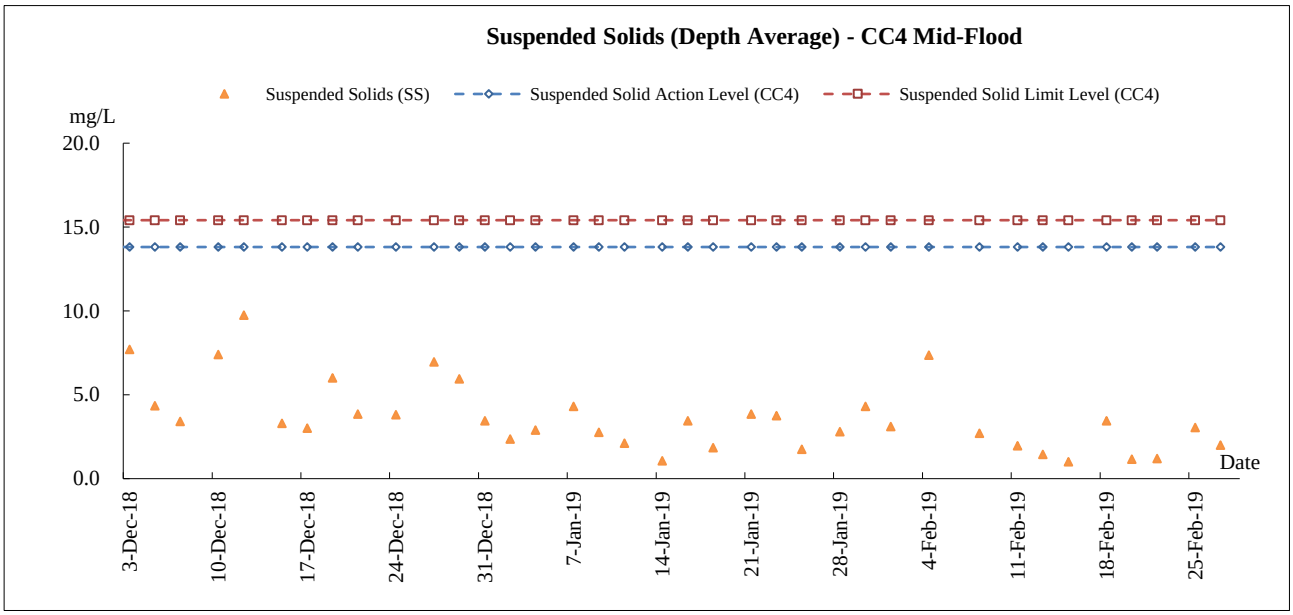




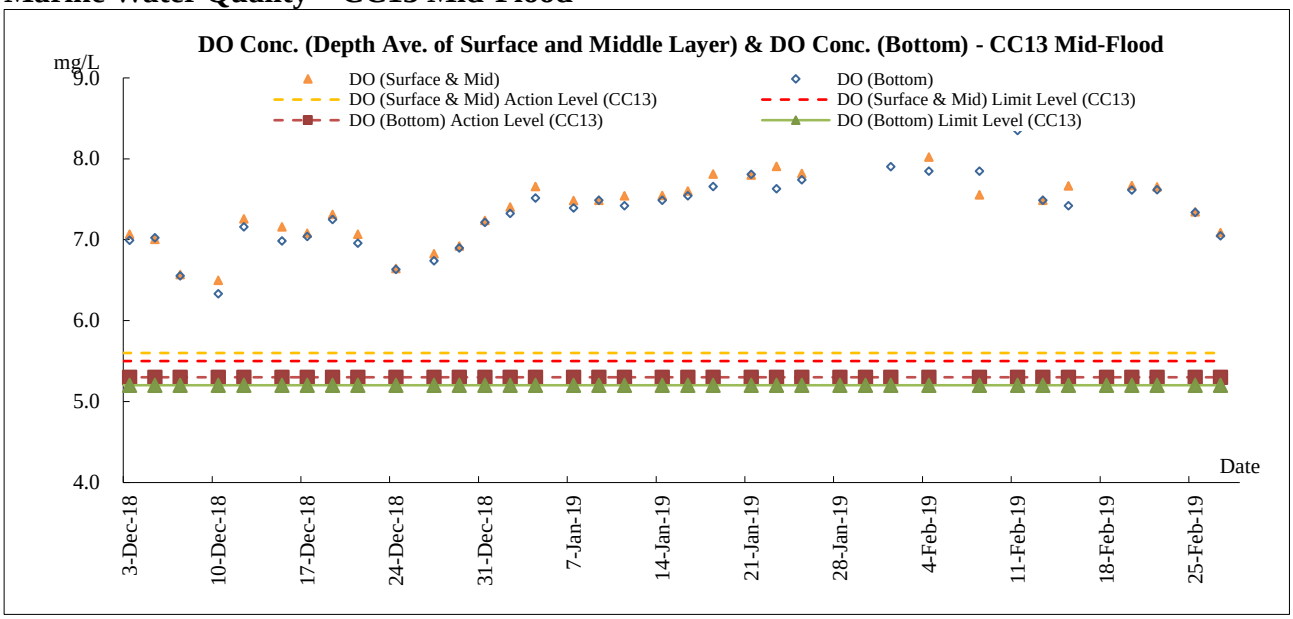
Marine Water Quality – CC4 Mid-Flood

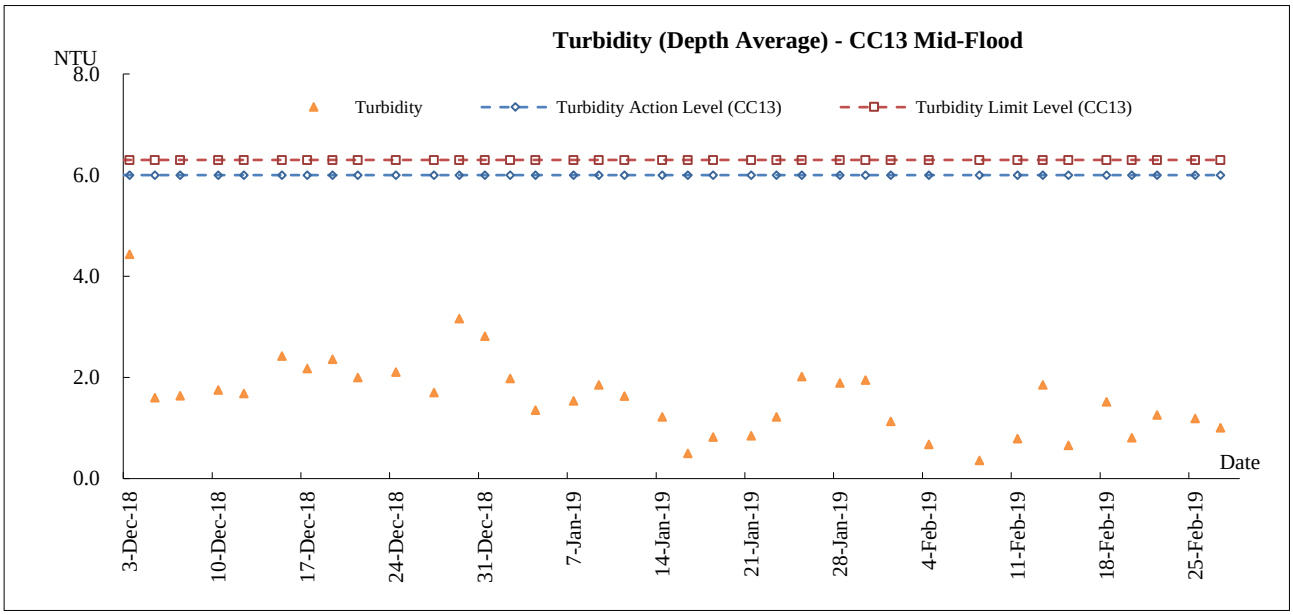


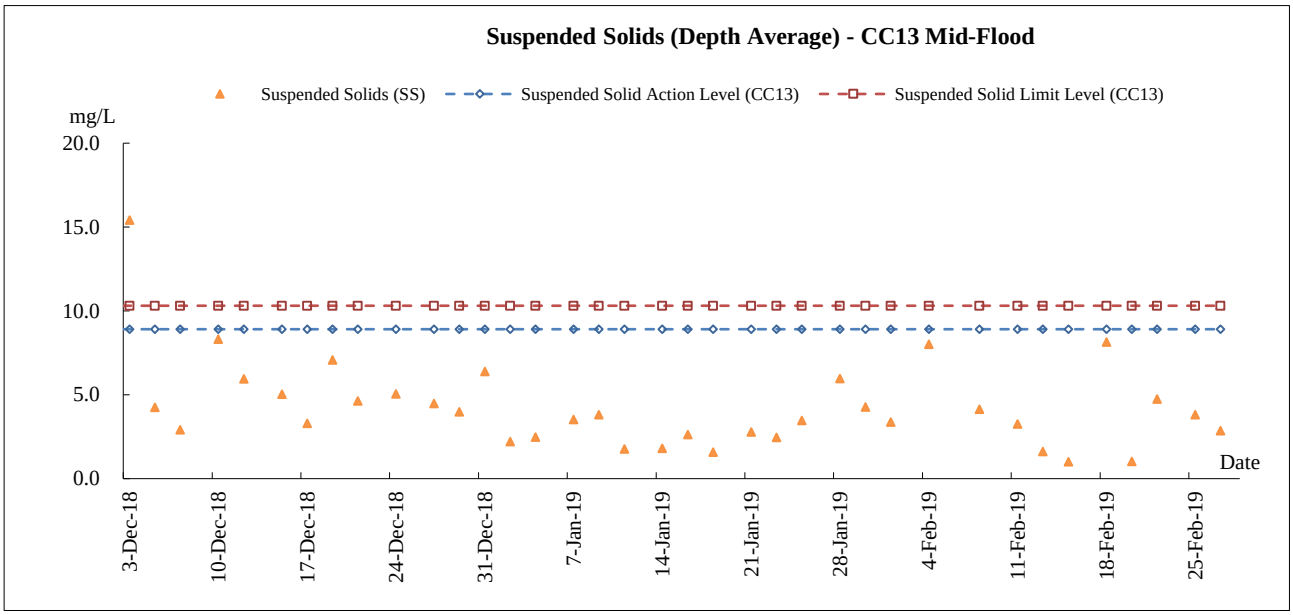




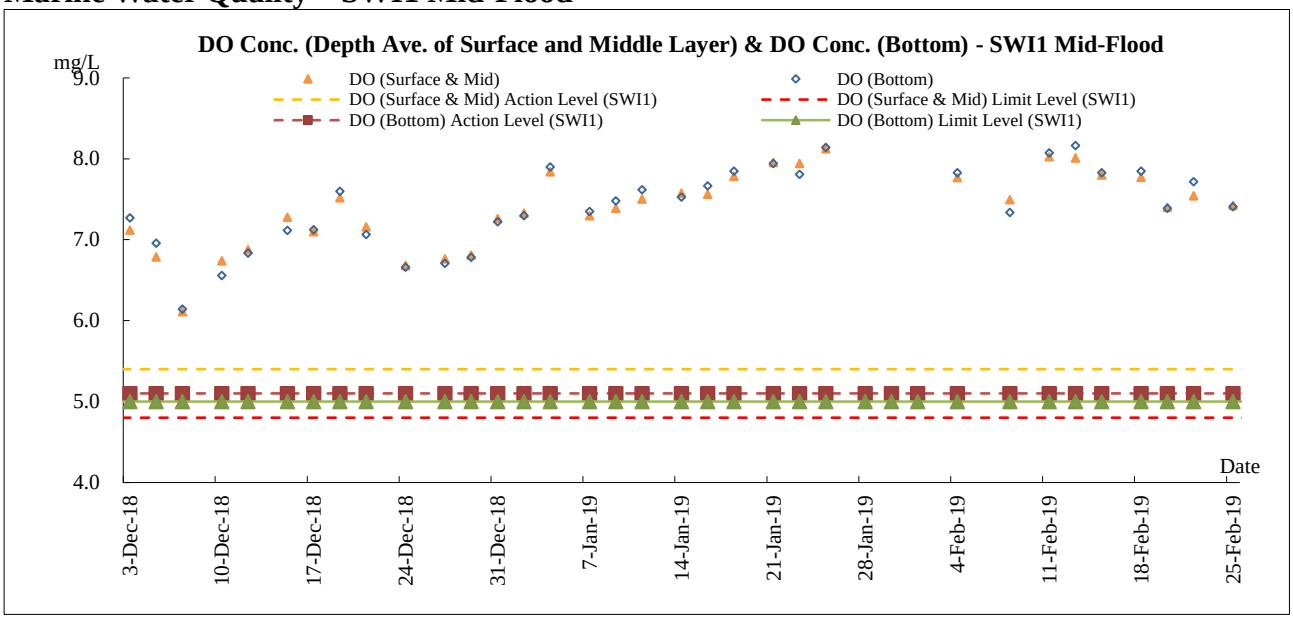
Marine Water Quality – CC13 Mid-Flood

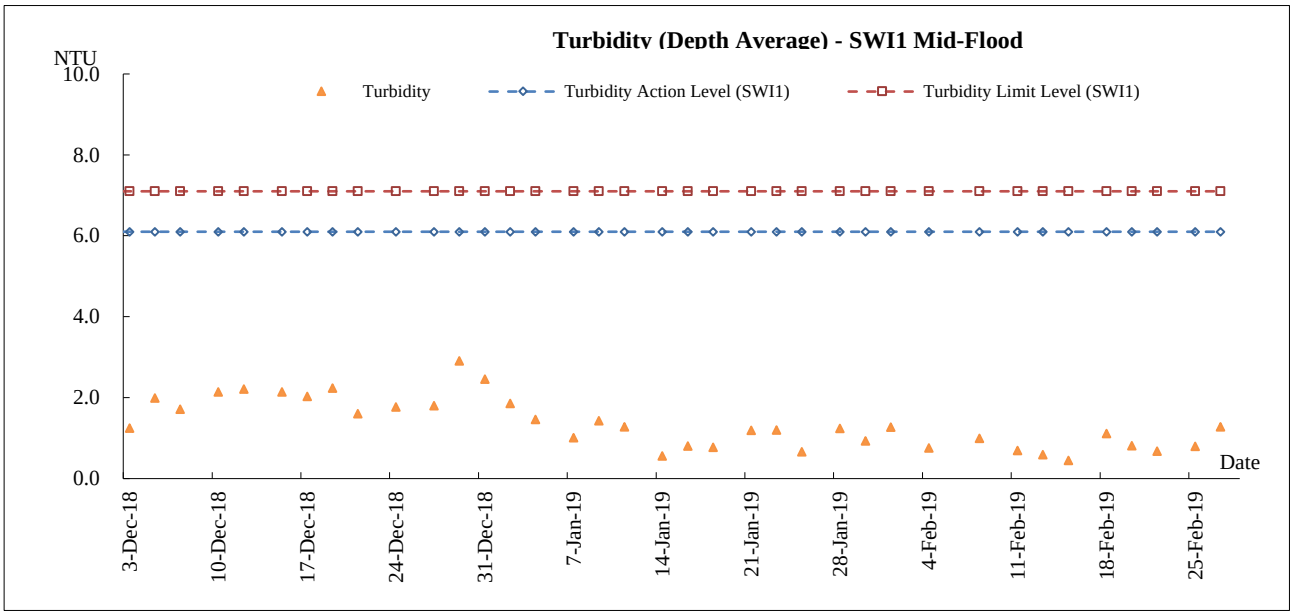


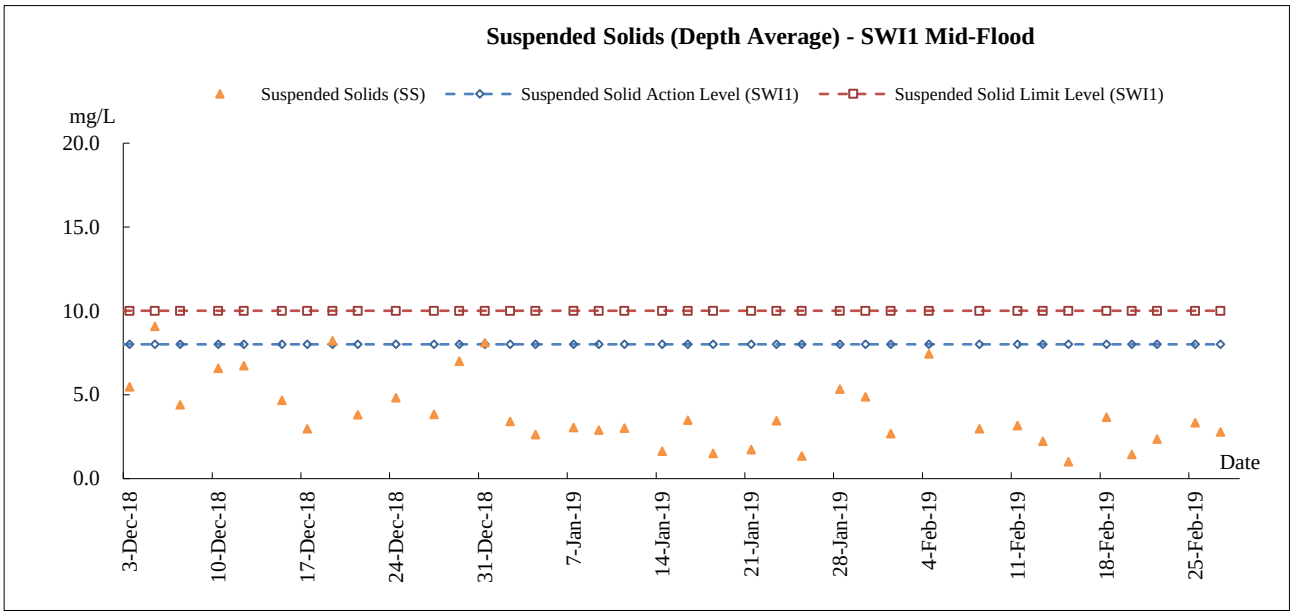




Marine Water Quality – SWI1 Mid-Flood







Appendix F

Meteorological Information

The weather of December 2018

With the northeast monsoon over southern China weaker than normal for most of the time in the month, December 2018 was much warmer than usual in Hong Kong. The monthly mean temperature was 19.2 degrees, 1.3 degrees above the normal of 17.9 degrees and among the sixth highest on record for December. The mean minimum temperature was 17.6 degrees, 1.7 degrees above normal of 15.9 degrees and among the fourth highest on record for December. The month was also drier than usual with a total rainfall of 11.9 millimetres, only about 44 percent of the normal of 26.8 millimetres. The annual total rainfall of 2162.9 millimetres in 2018 was about 10 percent below the annual normal of 2398.5 millimetres.

The weather of January 2019

With relatively less cold air outbreaks from the north arriving at the south China coast in the month, January 2019 was much warmer than usual in Hong Kong. The monthly mean temperature of 18.1 degrees and monthly mean minimum temperature of 16.4 degrees were 1.8 degrees and 1.9 degrees above their corresponding normals and both were the third highest on record for January. The mean maximum temperature of 20.4 degrees was 1.8 degrees above the normal and the fifth highest on record for January. The month was also drier than usual with only 4.7 millimetres of rainfall recorded in the month, about one fifth of the normal of 24.7 millimetres for January.

The weather of February 2019

February 2019 was unseasonably warm in Hong Kong which was mainly attributed to weaker than normal northeast monsoon over the south China coast for most of the time in the month. The monthly mean temperature of 20.1 degrees, monthly mean minimum temperature of 18.4 degrees and monthly mean maximum temperature of 22.6 degrees were 3.3 degrees, 3.4 degrees and 3.7 degrees above their corresponding normals and all of them were the second highest on record for February. Together with the well above normal temperatures in December 2018 and January 2019, Hong Kong experienced the warmest winter on record from December 2018 to February 2019 with the winter mean temperature reaching 19.1 degrees, 2.1 degrees above the normal. Moreover, there were only 3 cold days this winter, the fewest on record. February 2019 was also wetter than usual. The monthly rainfall was 68.7 millimetres, about 26 percent above the normal of 54.4 millimetres in February. The accumulated rainfall recorded in the first two months of the year was 73.4 millimetres, a deficit of 7 percent compared to the normal of 78.9 millimetres for the same period.

*The detailed meterological data for each successive day can be referred to in the Monthly EM&A Reports (December 2018, January 2019, and February 2019).

Appendix G

Waste Flow Table

Contract 1

Monthly Summary Waste Flow Table for 2018 (year)

Name of Person completing the record: Kanny Cho (EO)

Project : Cross Bay Link, TKO, Main Bridge and Associated Works

Contract No.: NE/2017/07

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Hard Rock and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics (see Note 3)	Chemical Waste	Others, e.g. general refuse
	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000 kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000 m^3)
Jan											
Feb											
Mar											
Apr											
May											
Jun											
Sub-total	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Jul	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Aug	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.837
Sep	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.305
Oct	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.065	0.000	0.000	0.008
Nov	0.000	0.000	0.000	0.000	0.000	0.320	0.000	0.000	0.000	0.000	0.009
Dec	0.000	0.000	0.000	0.000	0.276	0.000	0.000	0.000	0.000	0.000	0.004
Total	0.000	0.000	0.000	0.000	0.276	0.320	0.000	0.065	0.000	0.000	1.164

Note:

1. For non-inert portion of C&D material, assume the density of 1 m^3 general refuse is equal to 200 kg.
2. For inert portion of C&D material, assume 6 m^3 per each full-filled dump truck.

Monthly Summary Waste Flow Table for 2019 (year)

Name of Person completing the record: Calvin So (EO)

Project : Cross Bay Link, TKO, Main Bridge and Associated Works Contract No.: NE/2017/07

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Hard Rock and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics (see Note 3)	Chemical Waste	Others, e.g. general refuse
	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000 kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000 m^3)
Jan	0.845	0.000	0.000	0.000	0.845	0.000	0.000	0.023	0.000	0.000	0.077
Feb	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.032	0.000	0.000	0.036
Mar											
Apr											
May											
Jun											
Sub-total	0.845	0.000	0.000	0.000	0.845	0.000	0.000	0.055	0.000	0.000	0.113
Jul											
Aug											
Sep											
Oct											
Nov											
Dec											
Total	0.845	0.000	0.000	0.000	0.845	0.000	0.000	0.055	0.000	0.000	0.113

Note:

1. For non-inert portion of C&D material, assume the density of 1 m^3 general refuse is equal to 200 kg.
2. For inert portion of C&D material, assume 6 m^3 per each full-filled dump truck.
3. All values are round off to the third decimal places.

Contract 2

Monthly Summary Waste Flow Table for 2019 Year

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Hard Rock and Large Borken Concrete	Reused in the Contract	Reused in other Projects	Disposal as Public Fill	Imported Fill	Metals	Paper / Cardboard Packaging	Plastics (See note 3)	Chemical Waste	Other, e.g. general refuse
	[in '000m^3]	[in '000m^3]	[in '000m^3]	[in '000m^3]	[in '000m^3]	[in '000m^3]	[in '000kg]	[in '000kg]	[in '000kg]	[in '000kg]	[in '000m^3]
Jan	0.358	0.000	0.358	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.357
Feb	0.022	0.000	0.000	0.000	0.022	0.000	0.000	0.000	0.000	0.000	0.728
Mar											
Apr											
May											
June											
SUB-TOTAL	0.380	0.000	0.358	0.000	0.022	0.000	0.000	0.000	0.000	0.000	1.084
Jul											
Aug											
Sep											
Oct											
Nov											
Dec											
TOTAL	0.380	0.000	0.358	0.000	0.022	0.000	0.000	0.000	0.000	0.000	1.084

Note: Conversion to 1000m^3 for general refuse is weight in 1000kg multiply by 0.002

Conversion to 1000m^3 for Inert C&D is weight in 1000kg multiply by 0.0005

Plastics refer to plastic bottles / containers, plastic sheets / foam from packaging material

Plastics refer to plastic bottles / containers, plastic sheets / foam from packaging material

Assume the loaded volume of a dump truck for internal inert waste transfer is 17.9 m^3

Appendix H

Implementation Schedule for Environmental Mitigation Measures

EIA Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Location/ Timing	Implementation		Requirements and/or Standards to be Achieved
				Agent	Stage	
Dust Impact (Contraction Phase)						
S5.5.5.1	Regular watering under good site practice shall be adopted. In accordance with the "Control of Open Fugitive Dust Sources" (USEPA AP-42), watering once per hour on exposed worksites and haul road is recommended to achieve dust removal efficiency of 91.7%.	Good construction site practices to control the dust impact on the nearby sensitive receivers to within the relevant criteria	All construction sites	Contractor	Construction stage	• APCO (Cap. 311); and • Air Pollution Control (Construction Dust) Regulation
S5.5.5.3	The following dust suppression measures shall also be incorporated by the Contractor to control the dust nuisance throughout the construction phase: • Any excavated or stockpiled dusty material shall be covered entirely by impervious sheeting or sprayed with water to maintain the entire surface wet and then removed or backfilled or reinstated where practicable within 24 hours of the excavation or unloading; • Any dusty materials remaining after a stockpile is removed shall be wetted with water and cleared from the surface of roads; • A stockpile of dusty material shall not extend beyond the pedestrian barriers, fencing or traffic cones; • The load of dusty materials on a vehicle leaving a construction site shall be covered entirely by impervious sheeting to ensure that the dusty materials do not leak from the vehicle; • Where practicable, vehicle washing facilities with high pressure water jet shall be provided at every discernible or designated vehicle exit point. The area where vehicle washing takes place and the road section between the washing facilities and the exit point shall be paved with concrete, bituminous materials or hardcores; • When there are open excavation and reinstatement works, hoarding of not less than 2.4m high shall be provided as far as practicable along the site boundary with provision for public crossing. Good site practice shall also be adopted by the Contractor to ensure the conditions of the hoardings are properly maintained throughout the construction period; • The portion of any road leading to the construction site that is within 30m of a vehicle entrance or exit shall be kept clear	Good construction site practices to control the dust impact on the nearby sensitive receivers to within the relevant criteria	All construction sites	Contractor	Construction stage	• APCO (Cap. 311); and • Air Pollution Control (Construction Dust) Regulation

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	of dusty materials; • Surfaces where any pneumatic or power driven drilling, cutting, polishing or other mechanical breaking operation takes place shall be sprayed with water or a dust suppression chemical continuously; • Any area that involves demolition activities shall be sprayed with water or a dust suppression chemical immediately prior to, during and immediately after the activities so as to maintain the entire surface wet; • Where a scaffolding is erected around the perimeter of a building under construction, effective dust screens, sheeting or netting shall be provided to enclose the scaffolding from the ground floor level of the building, or a canopy should be provided from the first floor level up to the highest level of the scaffolding; • Any skip hoist for material transport shall be totally enclosed by impervious sheeting; • Exposed earth shall be properly treated by compaction, turfing, hydroseeding, vegetation planting or sealing with latex, vinyl, bitumen, shortcrete or other suitable surface stabiliser within six months after the last construction activity on the construction site or part of the construction site where the exposed earth lies.					
S5.5.5.4	For the barging facilities at the site compound, the following good site practice is required: • All road surfaces within the barging facilities shall be paved. • Vehicles should pass through designated wheel wash facilities. • Continuous water spray shall be installed at the loading point.	Good construction site practices to control the dust impact on the nearby sensitive receivers to within the relevant criteria	Site compound	Contractor	Construction stage	• APCO (Cap. 311); and • Air Pollution Control (Construction Dust) Regulation
S5.5.5.5	An audit and monitoring programme during the construction phase should be implemented by the Contractor to ensure that the construction dust impacts are controlled to within the HKAQO. Detailed requirements for the audit and monitoring programmes are given separately in the EM&A manual.	Monitor the 1-Hour and 24-Hr TSP levels at the representative dust monitoring stations to ensure compliance with relevant criteria throughout the construction period	Selected representative dust monitoring station (**Drawing no. 209506/EMA/ AIR/001**)	Contractor	Construction stage	• APCO (Cap. 311); and • Air Pollution Control (Construction Dust) Regulation
Noise Impact (Contraction Phase)						

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S6.6.4.3	Good site practice and noise management techniques: • Only well-maintained plant shall be operated on-site and the plant shall be serviced regularly during the construction programme; • Machines and plant (such as trucks, cranes) that are in intermittent use shall be shut down between work periods or throttled down to a minimum; • Plant known to emit noise strongly in one direction, where possible, shall be orientated so that the noise is directed away from nearby NSRs; • Silencers or mufflers on construction equipment shall be properly fitted and maintained during the construction works; • Mobile plant shall be sited as far away from NSRs as possible and practicable; and • Material stockpiles, site office and other structures shall be effectively utilised, where practicable, to screen noise from on-site construction activities.	To minimize construction noise impact arising from the Project on the affected NSRs	All construction sites	Contractor	Construction stage	• Annex 5, TM-EIAO
S6.6.4.5-6	Use of quiet powered mechanical equipment and working methods	Reduce noise levels of plant items	All construction sites	Contractor	Construction stage	• Annex 5, TM-EIAO
S6.6.4.7	Install site hoarding at the site boundaries between noisy construction activities and NSRs	Reduce the construction noise levels at low-level zone of NSRs through partial screening	All construction sites	Contractor	Construction stage	• Annex 5, TM-EIAO
S6.6.4.8-11	Use of temporary or movable noise barriers and full enclosure for relatively fixed plant source	Screen the noisy plant items to be used at all construction sites	For plant items listed in Table 6.7 and Appendix 6.1 of the EIA report at all construction sites	Contractor	Construction stage	• Annex 5, TM-EIAO
	Implement a noise monitoring programme under the EM&A manual	Monitor the construction noise levels at the selected representative locations	Selected representative noise monitoring stations (**Drawing no. 209506/EMA/NS/001** & **209506/EMA/NS/002**)	Contractor	Construction stage	• Annex 5, TM-EIAO
S6.7.3.1	Partial enclosures along Road D9 and application of low noise surfacing material along CBL and Road D9	To minimize road traffic noise impact arising from the CBL and Road D9 on the affected NSRs	CBL and Road D9 (**Drawing no. 209506/EMA/NS/003**)	CEDD/ Contractor	During operational stage	• Annex 5, TM-EIAO

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Water Quality Impact (Contraction Phase)						
S8.6.4.3	Marine Piling and Pile Excavation Works Marine piling and pile excavation works shall be undertaken in such a manner as to minimize re-suspension of sediments. Standard good practice measures shall be implemented, including the following requirements: • All marine piling and pile excavation works shall be conducted within a floating single silt curtain. • Mechanical closed grabs (with a size of5m3) shall be designed and maintained to avoid spillage and should seal tightly while being lifted. • Barges shall have tight fitting seals to their bottom openings to prevent leakage of material. • Any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes. • Loading of barges shall be controlled to prevent splashing of dredged material to the surrounding water. Barges shall not be filled to a level which will cause overflow of materials or pollution of water during loading or transportation. • Excess material shall be cleaned from the decks and exposed fittings of barges before the vessel is moved. • Adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action. • All vessels shall be sized such that adequate clearance is maintained between vessels and the sea bed at all states of the tide to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash. • The 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.	To control potential impacts from marine piling and pile excavation works	During marine piling and pile excavation works	Contractor	Construction stage	• TM-EIAO; and • WPCO
S8.6.4.4	Construction Site Runoff In accordance with the Practice Note for Professional Persons on Construction Site Drainage, Environmental Protection Department, 1994 (ProPECC PN 1/94), construction phase mitigation measures, where appropriate, shall include the following: • The design of efficient silt removal facilities shall be based on the guidelines in Appendix A1 of ProPECC PN 1/94. The	Control potential water quality impacts from construction site run-off	All construction sites	Contractor	Construction stage	• TM-EIAO; and • WPCO

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	detailed design of the sand/silt traps shall be undertaken by the contractor prior to the commencement of construction; • Open stockpiles of construction materials (for example, aggregates, sand and fill material) of more than 50m3 shall be covered with tarpaulin or similar fabric during rainstorms. Measures shall be taken to prevent the washing away of construction materials, soil, silt or debris into any marine water bodies; • All vehicles and plant shall be cleaned before leaving a construction site to ensure no earth, mud, debris and the like is deposited by them on roads. An adequately designed and sited wheel washing facilities shall be provided at every construction site exit where practicable. Wash-water shall have sand and silt settled out and removed at least on a weekly basis to ensure the continued efficiency of the process. The section of access road leading to, and exiting from, the wheel-wash bay to the public road shall be paved with sufficient backfall toward the wheel-wash bay to prevent vehicle tracking of soil and silty water to public roads and drains; • Construction solid waste, debris and rubbish on site shall be collected, handled and disposed of properly to avoid water quality impacts; • All fuel tanks and storage areas shall be provided with locks and sited on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank to prevent spilled fuel oils from reaching water sensitive receivers nearby; and • Regular environmental audit on the construction site shall be carried out in order to prevent any malpractices. Notices shall be posted at conspicuous locations to remind the workers not to discharge any sewage or wastewater into the meander, wetlands and fish ponds.					
S8.6.4.6	Sewage from workforce • Portable chemical toilets and sewage holding tanks shall be provided for handling the construction sewage generated by the workforce; • A licensed contractor shall be employed to provide	Control potential water quality impacts from sewage	All construction sites	Contractor	Construction stage	• TM-EIAO; and • WPCO

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	appropriate and adequate portable toilets and be responsible for appropriate disposal and maintenance.					
	Monitoring Implement a marine water quality monitoring programme under the EM&A on level of suspended solids (SS) / turbidity and dissolved oxygen (DO) shall be carried out.	Control potential water quality impacts from marine piling and pile excavation works	Selected monitoring stations (**Drawing no. 209506/EMA/WQ/001**)	Contractor	Construction station	• TM-EIAO; and • WPCO
S8.7.3.2	**Operational phase – Runoff from road surface** Proper drainage systems with silt traps and oil interceptors shall be installed, maintained and cleaned at regular intervals.	Control potential water quality impacts from road surface runoff	CBL and Road D9	Contractor	Construction and operational stage	• TM-EIAO; and • WPCO
Waste Management (Contraction Phase)						
S9.5.2	**Good Site Practices** Recommendations for good site practices: • Nomination of an approved personnel to be responsible for the implementation of good site practices, arrangements for collection and effective deposal to an appropriate facility of all wastes generated at the site; • Training of site personnel in proper waste management and chemical handling procedures; • Provision of sufficient waste disposal points and regular collection for disposal; • Separation of chemical wastes for special handling and appropriate treatment at the Chemical Waste Treatment Centre; • Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors; and • Implementation of a recording system for the amount of wastes generated/recycled and disposal sites.	Good site practices which ensure waste generated during construction phase is properly managed	All construction sites	Contractor	Construction stage	• Waste Disposal Ordinance (Cap. 54); • ETWB TCW No. 19/2005

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S9.5.4	**Waste Reduction Measures** Recommendations for achieving waste reduction include: • On-site reuse of any material excavated as far as practicable; • Segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of material and their proper disposal; • Collection of aluminum cans and waste paper by individual collectors during construction should be encouraged. Separately labelled recycling bins should also be provided to segregate these wastes from other general refuse by the workforce; • Recycling of any unused chemicals and those with remaining functional capacity as far as possible; • Prevention of the potential damage or contamination to the construction materials though proper storage and good site practices; • Planning and stocking of construction materials should be made carefully to minimize amount of waste generated avoid unnecessary generation of waste; and • Training on the importance of appropriate waste management procedures, including waste reduction, reuse and recycling should be provided to workers.	To reduce amount of waste generated during construction phase	All construction sites	Contractor	Construction stage	• Waste Disposal Ordinance (Cap. 54); • ETWB TCW No. 19/2005
S9.5.5-6	**Storage, Collection and Transportation of Waste** Recommendations for proper storage include: • Waste such as soil should be handled and stored well to ensure secure containment; • Stockpiling area should be provided with covers and water spraying system to prevent materials from being washed away and to reduce wind-blown litter; and • Different locations should be designated to stockpile each material to enhance reuse. With respect to the collection and transportation of waste from the construction works, the following is recommended: • Remove waste in a timely manner; • Employ trucks with cover or enclosed containers for waste transportations; • Obtain relevant waste disposal permits from the appropriate	To reduce the environmental implications of improper storage	All construction sites	Contractor	Construction stage	• Waste Disposal Ordinance (Cap. 54); • ETWB TCW No. 19/2005

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	authorities; and • Disposal of waste should be done at licensed waste disposal facilities.					
S9.5.8-11	**C&D Materials** The following mitigation measures shall be implemented in handling the waste: • Maintain temporary stockpiles and reuse excavated fill material for backfilling and reinstatement; • Carry out on-site sorting; • Make provisions in the Contract documents to allow and promote the use of recycled aggregates where appropriate; • Implement a trip-ticket system for each works contract to ensure that the disposal of C&D materials are properly documented and verified; • Disposal of the C&D materials onto any sensitive locations such as agricultural lands, etc. should be avoided. The Contractor shall propose the final disposal sites to the Project Proponent and get its approval before implementation; • Standard formwork or pre-fabrication order to minimise the arising of C&D materials. The use of more durable formwork or plastic facing for the construction works should be considered. Metal hoarding should be used to enhance the possibility of recycling. The purchasing of construction materials will be carefully planned in order to avoid over ordering and wastage; and • The Contractor should recycle as much of the C&D materials as possible on-site. Public fill and C&D waste should be segregated and stored in different containers or skips to enhance reuse or recycling of materials and their proper disposal. Where practicable, concrete and masonry can be crushed and used as fill. Steel reinforcement bar can be used by scrap steel mills. Different areas of the sites should be considered for such segregation and storage.	Good site practice to minimize the waste generation and recycle the C&D materials as far as practicable so as to reduce the amount for final disposal	All construction sites	Contractor	Construction stage	• Waste Disposal Ordinance (Cap. 54); • ETWB TCW No. 19/2005 • ETWB TCW No. 06/2010
S9.5.13	**Excavated Marine Sediments** During transportation and disposal of the excavated marine sediments, the following measures shall be taken to minimize potential environmental impacts: • Bottom opening of barges should be fitted with tight fitting	To minimize potential impacts on water quality	All construction sites where applicable	Contractor	Construction stage	• ETWBTC (Works) No. 34/2002

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	seals to prevent leakage of material. Excess material should be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved; • Monitoring of the barge loading should be conducted to ensure that loss of material does not take place during transportation; • Transport barges or vessels should be equipped with automatic self-monitoring devices as specified by the DEP; and • Barges should not be filled to a level that would cause the overflow of materials or sediment-laden water during loading or transportation.					
S9.5.14-17	For those processes which generate chemical waste, the Contractor shall identify any alternatives that generate reduced quantities or even no chemical waste, or less dangerous types of chemical waste. If chemical waste is produced at the construction site, the Contractor is required to register with EPD as chemical waste producers. Chemical waste shall be handled in accordance with the Code of Practice on the Packaging, Handling and Storage of Chemical Wastes as follows. Containers used for storage of chemical wastes shall: • 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 specification have been approved by EPD; and • Display a label in English and Chinese in accordance with instructions prescribed in Schedule 2 of the Regulations. The storage area for chemical wastes shall: • Be clearly labelled and used solely for the storage of chemical wastes; • 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 the area, whichever is greatest;	To ensure proper management of chemical waste	All construction sites	Contractor	Construction stage	• Waste Disposal (Chemical Waste) (General) Regulation; • Code of Practice on the Packaging, Labelling and Storage of Chemical Waste

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	• Have adequate ventilation; • Be covered to prevent rainfall entering (water collected within the bund must be tested and disposed as chemical waste, if necessary); and • Be arranged so that incompatible materials are adequately separated. Disposal of chemical waste shall: • Be via a licensed waste collector; and • Be to a facility licensed to receive chemical waste, such as the CWTC which also offers a chemical waste collection service and can supply the necessary storage containers; or • Be to a re-user of the waste, under approval from EPD.					
S9.5.18	**Sewage** An adequate number of portable toilets shall be provided for the on-site construction workers. Any waste shall be transferred to a sewage treatment works by a licensed collector.	Proper handling of sewage from worker to avoid odour, pest and litter impacts	All construction sites	Contractor	Construction stage	• Waste Disposal Ordinance (Cap. 54)
S9.5.19	**General Refuse** General refuse generated on-site shall be stored in enclosed bins or compaction units separately from construction and chemical wastes. Recycling bins shall also be provided to encourage recycling. A reputable waste collector shall be employed by the Contractor to remove general refuse from the site on a daily basis separately from the construction and chemical wastes. Burning of refuse on construction sites is prohibited by law.	Minimize production of general refuse and avoid odour, pest and litter impacts	All construction sites	Contractor	Construction stage	• Waste Disposal Ordinance (Cap. 54)
S10.7.2.4	Good Site Practices – The integrity and effectiveness of all silt curtains shall be regularly inspected. Effluent monitoring should be incorporated to make sure that the discharged effluent from construction sites meets the relevant effluent discharge guidelines.	To minimize potential impacts on water quality and protect marine communities within Junk Bay	All construction sites	Contractor	Construction stage	• TM-EIAO; and • WPCO
S10.7.2.5	Site runoff control – For works on land, standard site runoff control measures will be established and strictly enforced to ensure that discharge of contaminated or silt-laden runoff into marine waters is minimized.	To minimize potential impacts on water quality and protect marine communities within Junk Bay	All construction sites	Contractor	Construction stage	• TM-EIAO; and • WPCO
S10.9.1.1	The marine water quality monitoring programme recommended in Chapter 8 of this EIA report and this EMIS would also serve to protect the marine communities inside Junk Bay.	To minimize potential impacts on water quality and protect marine	Selected monitoring stations (**Drawing no. 209506/EMA/WQ/001**)	Contractor	Construction stage	• TM-EIAO; and • WPCO

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		communities within Junk Bay				
S11.6.2.2	Good Site Practices: – The integrity and effectiveness of all silt curtains should be regularly inspected. Effluent monitoring shall be incorporated to make sure that the discharged effluent from construction sites meets the relevant effluent discharge guidelines.	To minimize potential impacts on water quality and protect fishery resources	All construction sites	Contractor	Construction stage	• TM-EIAO; and • WPCO
S11.6.2.3	Site runoff control - For works on land, standard site runoff control measures will be established and strictly enforced to ensure that discharge of contaminated or silt-laden runoff is minimized.	To minimize potential impacts on water quality and protect fishery resources	All construction sites	Contractor	Construction stage	• TM-EIAO; and • WPCO
S11.8.1.1	The marine water quality monitoring programme recommended in Chapter 8 of this EIA report and this EMIS would also serve to protect the fishery resources.	To minimize potential impacts on water quality and protect fishery resources	Selected monitoring stations (**Drawing no. 209506/EMA/WQ/001**)	Contractor	Construction stage	• TM-EIAO; and • WPCO
Landscape and Visual						
S13.8.1.2	The following mitigation measures should be implemented in the construction stage • CM1 – The construction area and contractor's temporary works areas should be minimized to avoid impacts on adjacent landscape. • CM2 – Reduction of construction period to practical minimum. • CM3 – Topsoil, where identified, should be stripped and stored for re-use in the construction of the soft landscape works, where the soil material meets acceptable criteria and where practical. The Contract Specification shall include storage and reuse of topsoil as appropriate. • CM4 – Existing trees on boundary of the Project Area shall be carefully protected during construction. Detailed Tree Protection Specification shall be provided in the Contract Specification. Under this specification, the Contractor shall be required to submit, for approval, a detailed working method statement for the protection of trees prior to undertaking any works adjacent to all retained trees, including trees in contractor's works areas. (Tree protection measures will be detailed at Tree Removal Application stage).	Minimize effects of landscape and visual impacts	Work site/during construction	Funded and implemented by CEDD	Construction stage	

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	• CM5 – Trees unavoidably affected by the works shall be transplanted where practical. Trees should be transplanted straight to their final receptor site and not held in a temporary nursery. A detailed Tree Transplanting Specification shall be provided in the Contract Specification, if applicable. Sufficient time for necessary tree root and crown preparation periods shall be allowed in the project programme. • CM6 – Advance screen planting to proposed roads and associated structures. • CM7 – hydroseeding or sheeting of soil stockpiles with visually unobtrusive material (in earth tone). • CM8 – Screening of construction works by hoardings/noise barriers around works area in visually unobtrusive colours, to screen Works. • CM9 – Control night-time lighting and glare by hooding all lights. • CM10 – Ensure no run-off into water body adjacent to the Project Area. • CM11 – Avoidance of excessive height and bulk of buildings and structures					
S13.8.1.2	OM1 – Compensatory tree planting for all felled trees shall be provided to the satisfaction of relevant Government departments. Required numbers and locations of compensatory trees shall be determined and agreed separately with Government during the Tree Felling Application process under ETWBTC 3/2006.	Minimize effects of landscape and visual impacts	Within the site boundary of the proposed works	Funded and implemented by CEDD. Maintained by CEDD and LCSD.	Design, construction and operational stages	
S13.8.1.2	The following mitigation measures should be implemented in the operational stage: • OM2 – A continuous belt of screen planting along the roads. Planting of the belt of trees shall be carried out as advance works ahead of other site formation and building works. • OM3 – Maximise soft landscape of the site, where space permits, roadside berms /slope treatment works should be created. • OM4 – During detailed design, refine structure layout to create a planting strips along the roads to enhance greenery. • OM5 – Use appropriate (visually unobtrusive and	Minimize effects of landscape and visual impacts	CBL and Road D9/during construction and operation	Funded and implemented by CEDD. Maintained by CEDD and LCSD.	Design, construction and operational stages	

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	non-reflective) building materials and colours, and aesthetic design in built structures. • OM6 – Streetscape elements (e.g. paving, signage, street furniture, lighting etc.) shall be sensitively designed in a manner that responds to the local context, and minimizes potential negative landscape and visual impacts. Lighting units should be directional and minimize unnecessary light spill. • OM7 – Avoidance of excessive height and bulk of buildings and structures					
Landfill Gas						
S14.7.5	Precautionary measures The following guidance has been extracted from the EPD's Landfill Gas Hazard Assessment Guidance Note Guidance to ensure a robust and comprehensive set of measures to protect workers are provided. • During all works, safety procedures shall be implemented to minimize the risks of fires and explosions, asphyxiation of workers (especially in confined space) and toxicity effects resulting from contact with contaminated soils and groundwater. • Safety officers who are specifically trained with regard to LFG and leachate related hazards and the appropriate actions to take in adverse circumstances shall be present on all worksites throughout the works. • All personnel who work on site and all visitors to the site shall be made aware of the possibility of ignition of gas in the vicinity of the works, the possible presence of contaminated water and the need to avoid physical contact with it. • Those staff who work in, or have responsibility for "at risk" areas, including all excavation workers, supervisors and engineers working within the consultation zone, shall receive appropriate training on working in areas susceptible to LFG hazards. • Enhanced personal hygiene practices including washing thoroughly after working and eating only in "clean" areas shall be adopted where contact may have been made with any groundwater which is thought to be contaminated with	Health and safety of the workers	Construction sites within 250m Consultation Zone (**Drawing no. 209506/EMA/LFG/001**)	Contractor	Construction stage	• Landfill Gas Hazard Assessment Guidance Note (EPD/TR8/97)

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	leachate. • Ground level construction plant shall be fitted with vertical exhausts at least 0.6m above ground level and with spark arrestors. • During piping assembly or ducting construction, all valves/seals shall be closed immediately after installation. As construction progresses, all valves/seals should be closed as installed to prevent the migration of gases through the pipeline/conduit. All piping /ducting shall be capped at the end of each working day. • Mobile offices, equipment stores, mess rooms etc. shall be located on an area which has been proven to be gas free (by survey with portable gas detectors) and ongoing monitoring shall be carried out to ensure that these areas remain gas free. Alternatively, such buildings shall be raised clear of the ground. If buildings are raised clear of the ground, the minimum, clear separation distance (as measured from the highest point on the ground surface to the underside of the lowest floor joist) shall be 500mm. However, in this case, it is highly recommended that all the site offices, equipment stores and mess rooms should be located outside the 250m Consultation Zone. • Smoking and naked flames shall be prohibited within confined spaces. "No Smoking" and "No Naked Flame" notices in Chinese and English shall be posted prominently around the construction site. Safety notices shall be posted warning of the potential hazards. • Welding, flame-cutting or other hot works may only be carried out in confined spaces when controlled by a "permit to work" procedure, properly authorized by the Safety Office. The permit to work procedure shall set down clearly the requirements for continuous monitoring of methane, carbon dioxide and oxygen throughout the period during which the hot works are in progress. The procedure shall also require the presence of an appropriately qualified person who shall be responsible for reviewing the gas measurements as they are made, and who shall have executive responsibility for suspending the work in the event of					

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	unacceptable or hazardous conditions. Only those workers who are appropriately trained and fully aware of the potentially hazardous conditions which may arise shall be permitted to carry out hot works in confined areas. • During the construction works, adequate fire extinguishers and breathing apparatus sets shall be made available on site and appropriate training given in their use.					
S14.7.6	**Landfill gas monitoring** The following monitoring shall be undertaken when construction works are carried out in confined space within the 250m Consultation Zone: • The works area shall be monitored for methane, carbon dioxide and oxygen using appropriately calibrated portable gas detection equipment. The monitoring requirements and procedures specified in Paragraphs 8.23 to 8.28 of EPD's Guidance Note shall be followed. The monitoring frequency and areas to be monitored shall be set down prior to commencement of the works. Depending on the results of the measurements, actions required will vary. As a minimum these shall encompass the actions specified in Table 14.6 of the EIA report. • When portable monitoring equipment is used, the frequency and areas to be monitored should be set down prior to commencement of the works either by the Safety Officer or by an appropriately qualified person. • All measurements shall be made with the monitoring tube located not more than 10mm from the surface. • A standard form, detailing the location, time of monitoring and equipment used together with the gas concentrations measured, shall be used when undertaking manual monitoring to ensure that all relevant data are recorded. • If methane (flammable gas) or carbon dioxide concentrations are in excess of the trigger levels or that of oxygen is below the level specified in the Emergency Management in the following section, then evacuation shall be initiated.	Health and safety of the workers	Confined space of construction sites within 250m Consultation Zone	Contractor	Construction stage	• Landfill Gas Hazard Assessment Guidance Note (EPD/TR8/97)
S14.7.8-9	**Emergency management** In the event of the trigger levels specified in Table 14.6 of the EIA report being exceeded, a person, such as the Safety	Health and safety of the workers	Confined space of construction sites within 250m Consultation Zone	Contractor	Construction stage	• Landfill Gas Hazard Assessment

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				Agent	Stage	
	Officer, shall be nominated, with deputies, to be responsible for dealing with any emergency which may occur due to LFG. In an emergency situation the nominated person, or his deputies, shall have the necessary authority and shall ensure that the confined space is evacuated and the necessary works implemented for reducing the concentrations of gas.					Guidance Note (EPD/TR8/97)
S14.7.16	**Protection measures – Operational phase** • An assumed presence of landfill gas shall be adopted at all times by maintenance workers; • all maintenance workers inspecting any manhole shall be fully trained in the issue of LFG hazard; • any manhole which is large enough to permit to access to personnel shall be subject to entry safety procedure; • Code of Practice on Safety and Health at Work in Confined Spaces shall be followed to ensures compliance with the Factories and Industrial Undertakings (Confined Spaces) Regulations of the Factories and Industrial Undertakings Ordinance; • a strictly regulated "work permit procedure" shall be implemented and the relevant safety procedures must be rigidly followed; and • Adequate communication with maintenance staff shall be maintained with respect to LFG.	Health and safety of the workers	Utility maintenance areas within 250m Consultation Zone/during operational period	Utility companies	Operational stage	• Landfill Gas Hazard Assessment Guidance Note (EPD/TR8/97); and • Code of Practice on Safety and Health at Work in Confined Space
S14.7.17	**General recommended precautionary & protection measures – Operational phase** LGF surveillance exercise shall be undertaken by the utility companies at the utility manholes/inspection chambers. The surveillance exercise shall be undertaken for the duration of the site occupancy, or until such time that EPD agree that surveillance is no longer required and this shall be based on all the available monitoring data for methane, carbon dioxide and oxygen.	Health and safety of the workers	Utility maintenance areas within 250m Consultation Zone/during operational period	Utility companies	Operational stage	• Landfill Gas Hazard Assessment Guidance Note (EPD/TR8/97); and • Code of Practice on Safety and Health at Work in Confined Space