

**JOB NO.: TCS00975/18** 

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

MONTHLY ENVIRONMENTAL MONITORING & AUDITING REPORT OF THE PROJECT – MAY 2020

PREPARED FOR
CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT
(CEDD)

Date	Reference No.	Prepared By	Certified By

9 July 2020 TCS00975/18/600/R0399v4

Martin Li Tam Tak Wing (Environmental Consultant) (Environmental Team Leader)

Version	Date	Remarks
1	5 June 2020	First Submission
2	8 June 2020	Amended against IEC's comments
3	12 June 2020	Amended against IEC's comments
4	9 July 2020	Amended against IEC's comments



## Acuity Sustainability Consulting Limited – Nature & Technologies (HK) Limited Joint Venture



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

10 July 2020

Dear Sir,

Contract No. NE/2017/07 & NE/2017/08 Cross Bay Link, Tseung Kwan O Monthly EM&A Reports for January to May 2020

I refer to the email of the ET concerning the Revised Monthly EM&A Report for:

January 2020 (Version 3 with Ref. No. TCS00975/18/600/R0339v3),

February 2020 (Version 3 with Ref. No. TCS00975/18/600/R0344v3),

March 2020 (Version 2 with Ref. No. TCS00975/18/600/R0362v2),

April 2020 (Version 3 with Ref. No. TCS00975/18/600/R0375v3), and

May 2020 (Version 4 with Ref. No. TCS00975/18/600/R0399v4). We have no adverse comment on it and verify the captioned reports according to section 1.9 of Environmental Permit with No. EP-459-2013.

Yours faithfully,

Li Wai Ming Kevin

Independent Environmental Checker

cc. Mr. T.W. TAM (ETL)

Ms. Sheri S.Y. LEUNG (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 To facilitate management, the proposed Works of the project was divided into two Civil Engineering and Development Department (CEDD) Works contracts included *Contract 1 (Contract No. NE/2017/07)* and *Contract 2 (Contract No. NE/2017/08)*. The date for commencement of Contract 1 was 3<sup>rd</sup> December 2018 while the date for commencement of Contract 2 was 17<sup>th</sup> January 2019.
- ES04 According to the Approved Environmental Monitoring & Audit (EM&A) Manual, air quality, noise and water quality monitoring are required to be conducted during the construction phase of the Project. As part of the EM&A programme, baseline monitoring shall undertake before the Project construction work commencement to determine the ambient environment 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.
- ES05 This is the  $18^{th}$  Monthly EM&A report presenting the monitoring results and inspection findings for the reporting period from  $1^{st}$  to  $31^{st}$  May 2020 (hereinafter 'the Reporting Period').

## CONSTRUCTION WORKS CONDUCTED AT THE REPORTING MONTH

- ES06 The major construction activities of Contract 1 (Contract No. NE/2017/07) undertaken in this Reporting Period are:-
  - Precast shell Installation at Portion II
  - 1st and 2nd Stage of Pile caps concreting work at Portion II
  - Fabrication of bottom deck panels, top deck panels and diaphragm panels at Portion II
  - Fabrication of arch panel at Portion II
  - ABWF work at Portion V
  - E&M installation at Portion V
- ES07 The major construction activities of Contract 2 (Contract No. NE/2017/08) undertaken in this Reporting Period are:-
  - Pre-bored Socket H-Pile (Portion VI)
  - Excavation (Portion VI)
  - Sheet Pilling (Portion VI)
  - Drainage Installation (Portion VI)
  - Footing construction(Portion VI)
  - Excavation & RC works (Superstructure) (Portion III)
  - Desilting works at 1800 drain pipe(Portion III)
  - Trimming Bored pile head (Portion VI)



#### ENVIRONMENTAL MONITORING AND AUDIT ACTIVITIES

ES08 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	Enviror	nmental Monitoring Parameters / Inspection	Sessions
Air Quality	1-Hour TSP		18
Air Quality	24-Hr TSP		5
Construction Noise	Leq (30min		8
Construction Noise	Leq (5min)	Evening <sup>(Note 1)</sup>	4
Water Quality	Marine Wat	er Sampling <sup>(Note 2) (Note 3)</sup>	0
	Contract 1	ET Regular Environmental Site Inspection	4
Inspection / Audit		Joint site audit with Project Consultant and IEC	1
inspection / Audit		ET Regular Environmental Site Inspection	4
	Contract 2	Joint site audit with Project Consultant and IEC	1

Note 1 Total sessions are counted by every 3 consecutive Leg5min

## BREACH OF ACTION AND LIMIT (A/L) LEVELS

ES09 No air quality monitoring exceedance was recorded in this Reporting Period. One (1) of evening construction noise action level and three (3) sessions of evening construction noise monitoring limit level exceedances were recorded in this Reporting Period. NOEs were issued to notify EPD, IEC, the Contractor and the Project Consultant. The statistics of environmental exceedance and investigation of exceedance are summarized in the following table.

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

Environmental	Manitanina			Event &	Event & Action	
Issues	Monitoring Parameters	Action Level	Limit Level	Investigation Results	Corrective Actions	
Air Quality	1-Hour TSP	0	0			
All Quality	24-Hr TSP	0	0			
Construction	Leq <sub>30min</sub> Daytime	0	0			
Noise	Leq <sub>5min</sub> Evening	1	3	Not project related	NA	
Water Quality (Marine Water)	DO	0	0			
	Turbidity	0	0			
(Marine Water)	SS	0	0			

ES10 For the evening construction noise monitoring, three (3) exceedances were recorded in the reporting period. Investigations were carried out and it was considered that the exceedances recorded are unlikely caused by the Project.

## **ENVIRONMENTAL COMPLAINT**

ES11 One (1) environmental complaint was recorded in this Reporting Period for the Project. The statistics of environmental complaint are summarized in the following table.

Note 2 Total sessions are counted by monitoring days

Note 3 Since the marine construction works that requires marine water quality monitoring as stated in the EM&A Manual were completed, the impact water quality monitoring was ceased with effect from 1 May 2020.



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

Reporting	Contract	Enviro	onmental Complaint Statistics		Related with the
Period	Contract	Frequency	Cumulative	<b>Complaint Nature</b>	Works Contract(s)
1 – 31 May	1	1	5	NA	NA
2020	2	0	3	NA	NA

#### NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

ES12 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

I	Reporting	Contract	<b>Environmental Summons Statistics</b>			Related with the
	Period	Contract	Frequency	Cumulative	<b>Complaint Nature</b>	Works Contract(s)
ĺ	1 – 31 May	1	0	0	NA	NA
	2020	2	0	0	NA	NA

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

Ī	Reporting	Contract	<b>Environmental Prosecution Statistics</b>			Related with the
l	Period	Contract	Frequency	Cumulative	<b>Complaint Nature</b>	Works Contract(s)
I	1 – 31 May	1	0	0	NA	NA
	2020	2	0	0	NA	NA

#### REPORTING CHANGE

ES13 There is no reporting change made for this monthly report.

#### SITE INSPECTION BY EXTERNAL PARTIES

ES14 No site inspection was undertaken by AFCD within the Reporting Period. EPD inspection was undertaken on 11, 13 and 28 May 2020.

#### **FUTURE KEY ISSUES**

- ES15 Due to wet season has begun in Hong Kong, the Contractor was reminded that all the works being undertaken must fulfill environmental statutory requirements and to paid attention to water quality mitigation measures to prevent surface runoff into nearby water bodies or public areas.
- ES16 Construction noise would be the key environmental issue as Lohas Park Phase 4 was already available for resident occupation. The noise mitigation measures such as use of quiet plants and installation of temporary noise barrier at the construction noise predominate area should be fully implemented in accordance with the EM&A requirement.



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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 To facilitate management, the proposed Works of *Cross Bay Link, Tseung Kwan O* (hereinafter called "the Project") was divided into two Civil Engineering and Development Department (CEDD) Works contracts included *Contract 1 (Contract No. NE/2017/07)* and *Contract 2 (Contract No. NE/2017/08)*. The details of each contract Works are summarized below and the delineation of each contract is shown in *Appendix A*.

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

- (i) 400m section of marine viaducts of steel deck sections including the Eternal Arch Bridge;
- (ii) 600m section of marine viaducts of concrete deck sections;
- (iii) An E&M Plantroom and associated building services; and
- (iv) E&M provisions.

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

- (i) Elevated deck structures along Road D9;
- (ii) A 210m section of cycle track and footpath ramp bridge;
- (iii) A 630m section of noise semi-enclosure covering the entire length of Road D9, and;
- (iv) Lift, staircase, modification of existing seawall along Road D9, landscaping and miscellaneous works.
- 1.1.4 The date for commencement of Contract 1 is  $3^{rd}$  December 2018 while the date for commencement of Contract 2 is  $17^{th}$  January 2019.
- 1.1.5 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.
- 1.1.6 This is the  $18^{th}$  Monthly EM&A report presenting the monitoring results and inspection findings for the reporting period from  $I^{st}$  to  $31^{st}$  May 2020 (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** Air Quality Monitoring

Section 5 Construction Noise Monitoring



Section 6	Water Quality Monitoring
Section 7	Waste Management
Section 8	Site Inspections
Section 9	Landfill Gas Monitoring
Section 10	Environmental Complaints and Non-Compliance
Section 11	Implementation Status of Mitigation Measures
Section 12	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 are:

## The Project Consultant

- 2.1.2 The Project Consultant (hereinafter "the Consultant") is responsible for overseeing the construction works and for ensuring that the works are undertaken by the Contractor in accordance with the specification and contract requirements. The duties and responsibilities of the Consultant with respect to EM&A are:
  - Monitor the Contractors' compliance with contract specifications, including the implementation and operation of the environmental mitigation measures and their effectiveness
  - Monitor Contractors', ET's and IEC's compliance with the requirements in the Environmental Permit (EP) and EM&A Manual
  - Facilitate ET's implementation of the EM&A programme
  - Participate in joint site inspection by the ET and IEC
  - Oversee the implementation of the agreed Event / Action Plan in the event of any exceedance
  - Adhere to the procedures for carrying out complaint investigation

## *The Contractor(s) of Works Contract(s)*

- 2.1.3 There will be one contractor for each individual works contract. The Contractor(s) should report to the Consultant. The duties and responsibilities of the Contractor are:
  - Comply with the relevant contract conditions and specifications on environmental protection
  - Participate in the site inspections by the ET and IEC, and undertake any corrective actions
  - Provide information / advice to the ET regarding works programme and activities which may contribute to the generation of adverse environmental impacts
  - Submit proposals on mitigation measures in case of exceedances of Action and Limit levels in accordance with the Event / Action Plans
  - Implement measures to reduce impact where Action and Limit levels are exceeded
  - Adhere to the procedures for carrying out complaint investigation

#### Environmental Team (ET)

- 2.1.4 ET shall not be in any way an associated body of the Contractor(s) and employed by the Permit Holder (i.e., CEDD) to conduct the EM&A programme. The ET should be managed by the ET Leader. The ET Leader shall be a person who has at least 7 years' experience in EM&A and has relevant professional qualifications. Suitable qualified staff should be included in the ET, and resources for the implementation of the EM&A programme should be allocated in time under the Contract(s), to enable fulfillment of the Project's EM&A requirements as specified in the EM&A Manual during construction of the Project. ET shall report to the Project Proponent and the duties shall include:
  - Conduct baseline monitoring, impact monitoring and post-construction monitoring and the associated in-situ and laboratory tests to monitor various environmental parameters as required in the EM&A Manual and the EP
  - Analyze the environmental monitoring and audit data, review the success of EM&A
    programme and the adequacy of mitigation measures implemented, confirm the validity of
    the EIA predictions and identify any adverse environmental impacts arising
  - Carry out regular site inspection to investigate and audit the Contractors' site practice, equipment/plant and work methodologies with respect to pollution control and environmental mitigation, and effect proactive action to pre-empt problems
  - Monitor compliance with conditions in the EP, environmental protection, pollution prevention and control regulations and contract specifications



- Audit environmental conditions on site
- Report on the environmental monitoring and audit results to EPD, the Consultant, the IEC and Contractor(s) or their delegated representatives
- Recommend suitable mitigation measures to the Contractor in the case of exceedance of Action and Limit levels in accordance with the Event and Action Plans
- Liaise with the IEC on all environmental performance matters and timely submit all relevant EM&A proforma for approval by IEC
- Advise the Contractor(s) on environmental improvement, awareness, enhancement measures etc., on site
- Adhere to the procedures for carrying out complaint investigation
- Set up a dedicated web site where the project information, all environmental monitoring and audit data and reports described in Condition 5.2 of the EP, and all finalized submissions and plans required under the EP are to be placed for public inspection
- Upload the environmental monitoring results to the dedicated web site in accordance with requirements of the EP and EM&A Manual
- To carry out the Operational Phase Landfill Gas monitoring during effluent drainage system maintenance for one year

## <u>Independent Environmental Checker (IEC)</u>

- 2.1.5 IEC will be employed for this Project. The Independent Environmental Checker (IEC) should not be in any way an associated body of the Contractor(s) or the ET for the Project. The IEC should be employed by the Permit Holder (i.e., CEDD) prior to the commencement of the construction of the Project. The IEC should have at least 7 years' experience in EM&A and have relevant professional qualifications. The duty of IEC should be:
  - Provide proactive advice to the Project Consultant and the Project Proponent on EM&A
    matters related to the project, independent from the management of construction works, but
    empowered to audit the environmental performance of construction
  - Review and audit all aspects of the EM&A programme implemented by the ET
  - Review and verify the monitoring data and all submissions in connection with the EP and EM&A Manual submitted by the ET
  - Arrange and conduct regular, at least monthly site inspections of the works during construction phase, and ad hoc inspections if significant environmental problems are identified
  - Check compliance with the agreed Event / Action Plan in the event of any exceedance
  - Check compliance with the procedures for carrying out complaint investigation
  - Check the effectiveness of corrective measures
  - Feedback audit results to ET by signing off relevant EM&A proforma
  - Check that the mitigation measures are effectively implemented
  - Report the works conducted, the findings, recommendation and improvement of the site inspections, after reviewing ET's and Contractor's works, and advices to the Project Consultant and Project Proponent on a monthly basis

## 2.2 CONSTRUCTION PROGRESS

3-month rolling construction program of the 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:-
  - Precast shell Installation at Portion II
  - 1st and 2nd Stage of Pile caps concreting work at Portion II
  - Fabrication of bottom deck panels, top deck panels and diaphragm panels at Portion II
  - Fabrication of arch panel at Portion II
  - ABWF work at Portion V
  - E&M installation at Portion V



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

- 2.2.3 The major construction activities of Contract 2 undertaken in this Reporting Period are:-
  - Pre-bored Socket H-Pile (Portion VI)
  - Excavation (Portion VI)
  - Sheet Pilling (Portion VI)
  - Drainage Installation (Portion VI)
  - Footing construction(Portion VI)
  - Excavation & RC works (Superstructure) (Portion III)
  - Desilting works at 1800 drain pipe(Portion III)
  - Trimming Bored pile head (Portion VI)

## 2.3 SUMMARY OF ENVIRONMENTAL SUBMISSIONS

2.3.1 The required documents list below shall be to submit to EPD for retention:

 Table 2-1
 Documents Submission under Environmental Permit Requirement

EP condition	Submission to EPD	Requirement	Situation
1.11		no later than 1 month prior to the commencement of construction of the Project	
2.3	the Community Liaison	construction of the Project	_
2.4	Organization of Main	No later than 2 weeks before the commencement of construction of the Project	$\varepsilon$
2.5		No later than 1 month before commencement of construction of the Project	
		No later than 1 month before commencement of construction of the Project	
	Landfill Gas Hazards	No later than 1 month before commencement of construction of the Project	-

- 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/).
- 2.3.4 Summary of the relevant permits, licenses, and/or notifications on environmental protection for the Project are presented in *Table 2-2*.



Table 2-2 Status of Environmental Licenses and Permits of the Project Works (Contract 1)

Item	Description	Permit no./	Valid 1	Period	
Item	Description	Account no./ Ref. no.	From	То	Status
1	Notification pursuant to Air pollution Control (Construction Dust) Regulation	1			Notified on 11 July 2018
2	Chemical Waste Producer Registration	5213-839-C1232 -19	28 Aug 2018	N/A	
3	Water Pollution Control	WT00032842-20	1 Mar	31 Mar	Valid until 31
	Ordinance - Discharge	18	2019	2024	March 2024
	License	WT00034178-20 19	15 Jul 2019	31 Jul 2024	Valid until 31 July 2024
4	Billing Account for Disposal of Construction Waste	7031412	24 Jul 2018	N/A	
5	Construction Noise Permit	GW-RE0308-20	7 May 2020	27 Oct 2020	Valid until 27 Oct 2020

Remark: Evening work was scheduled on 7-9 and 25 - 30 May 2020 for Contract 1

Table 2-3 Status of Environmental Licenses and Permits of the Project Works (Contract 2)

		License/Permit Status			
Item	Description	Permit no./	Valid 1	Period	
	Account no./ Ref. no.		From	То	Status
1	Notification pursuant to Air pollution Control (Construction Dust) Regulation				Notified on 31 October 2018
2	Chemical Waste Producer Registration	5213-839-B2500 -04	22 Nov 2018	N/A	
3	Water Pollution Control Ordinance - Discharge License	WT00034244-20 19	8 Jul 2019	31 Jul 2024	Valid until 31 July 2024
4	Billing Account for Disposal of Construction Waste	7032702	8 Nov 2018	N/A	
5	Construction Noise Permit	GW-RE1021-19	23 Dec 2019	1 Jun 2020	Valid until 1 Jun 2020

Remark: No evening work and night work was carried out for Contract 2



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

## 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 4) (Southeast facade)	Available for resident occupation in November 2019
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 29<sup>th</sup> 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 19<sup>th</sup> 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 designated and interim alternative monitoring location for impact air quality and noise monitoring in the Reporting Period are summarized in Table 3-4 and illustrated in *Appendix D*.

Table 3-4 Designated and interim alternative location for air quality and noise monitoring in the Reporting Period

<b>Location ID</b>	Monitoring Parameter	Location
AM4	1-Hour TSP Air Quality Podium of Lohas Park Phase 2A (Le Prestig	
AM5	24-Hour TSP Air Quality	Boundary of Site Office near Junction of Wan Po Road and Wan O Road
CNMS-1	Noise (L <sub>eq</sub> , L <sub>10</sub> & L <sub>90</sub> )	Podium of Lohas Park Package 4
CNMS-5	CNMS-5 Noise (L <sub>eq</sub> , L <sub>10</sub> & L <sub>90</sub> ) Podium of Lohas Park Phase 2A (Le P	

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	Coord	linates	Description
Station	Easting	Northing	Description
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	<b>Gradient Station</b> – 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<sub>(30min)</sub> 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 MONITORING EQUIPMENT

## Air Quality Monitoring

3.5.1 The 24-hour and 1-hour TSP levels shall be measured by following the standard high volume sampling method as set out in the *Title 40 of the Code of Federal Regulations, Chapter 1 (Part 50)*, Appendix *B*. If the ET proposes to use a direct reading dust meter to measure 1-hour TSP levels, it shall submit sufficient information to the IEC to prove that the instrument is capable of achieving a comparable results to the HVS. The instrument should be calibrated regularly, and the 1-hour sampling shall be determined on yearly basis by the HVS to check the validity and accuracy of the results measured by direct reading method. The filter paper of 24-hour TSP measurement shall be determined by HOKLAS accredited laboratory. The equipment used for air quality monitoring is listed in *Table 3-6*.

Table 3-6 Air Quality Monitoring Equipment

Equipment		Model
24-hour TSP	High Volume Air Sampler	TISCH High Volume Air Sampler, HVS Model TE-5170
	Calibration Kit	TISCH Model TE-5025A (S/N: 1612)
1- hour TSP	Portable Dust Meter	Laser Dust Monitor Sibata LD-3B Laser Dust Monitor (S/N: 2X6145)

#### Noise Monitoring

3.5.2 Sound level meter in compliance with the International Electrotechnical Commission Publications 651: 1979 (Type 1) and 804: 1985 (Type 1) specifications shall be used for carrying out the noise monitoring. The sound level meter shall be checked using an acoustic calibrator. The wind speed shall be checked with a portable wind speed meter capable of measuring the wind speed in ms<sup>-1</sup>. Noise equipment will be used for impact monitoring is listed in *Table 3-7*.

Table 3-7 Construction Noise Monitoring Equipment

Equipment	Model
Integrating Sound Level Meter	B&K 2238 (S/N: 2285762), Rion NL-52 ( S/N:00464681)
Calibrator	Rion NC-74 (S/N:34657231)
Portable Wind Speed Indicator	Anemometer AZ Instrument 8908

#### Water Quality Monitoring

- 3.5.3 For water quality monitoring, the equipment should fulfill the requirement under the Approved *EM&A Manual Section 7.2*. The requirement is summarized below:
  - Dissolved Oxygen and Temperature Measuring Equipment The instrument should be a portable, weatherproof dissolved oxygen measuring instrument completed with cable, sensor, comprehensive operation manuals, and should be operable from a DC power source. It should be capable of measuring: dissolved oxygen levels in the range of 0-20 mg/L and 0-200% saturation; and a temperature of 0-45 degrees Celsius. It should have a membrane electrode with automatic temperature compensation complete with a cable of not less than 35 m in length. Sufficient stocks of spare electrodes and cable should be available for replacement where necessary.
  - *Turbidity Measurement Equipment* The instrument shall be a portable, weatherproof turbidity-measuring instrument complete with comprehensive operation manual. The equipment shall use a DC power source. It shall have a photoelectric sensor capable of measuring turbidity between 0-1000 NTU.
  - Salinity Measurement Instrument A portable salinometer capable of measuring salinity in the range of 0-40 ppt should be provided for measuring salinity of the water at each monitoring location.



- Water Depth Detector A portable, battery-operated echo sounder should be used for the determination of water depth at each designated monitoring station. A detector affixed to the bottom of the works boat, if the same vessel is to be used throughout the monitoring programme, is preferred.
- **Positioning Device** hand-held or boat-fixed type digital Global Positioning System (GPS) with way point bearing indication or other equipment instrument of similar accuracy, should be provided and used during water quality monitoring to ensure the monitoring vessel is at the correct location before taking measurements.
- Water Sampling Equipment A water sampler, consisting of a transparent PVC or glass cylinder of not less than two liters, which can be effectively sealed with cups at both ends, should be used. The water sampler should have a positive latching system to keep it open and prevent premature closure until released by a messenger when the sampler is at the selected water depth.
- 3.5.4 Equipment used for water quality impact monitoring is listed in *Table 3-8*.

**Table 3-8** Water Monitoring Equipment

Equipment	Model	
A Digital Global Positioning System	GPS12 Garmin	
Water Depth Detector	Eagle Sonar CUDA 300	
Water Sampler	A 2-litre transparent PVC cylinder with latex cups at both ends	
Thermometer & DO meter		
pH meter	YSI ProDSS Digital Sampling System Water Quality Meter	
Turbidimeter		
Salinometer		
Sample Container	High density polythene bottles (provided by laboratory)	
Storage Container	'Willow' 33-litter plastic cool box with Ice pad	

## 3.6 MONITORING PROCEDURES Air Quality

#### 1-hour TSP

- 3.6.1 The 1-hour TSP monitor was a brand named "Sibata LD-3 Laser Dust monitor Particle Mass Profiler & Counter" which is a portable, battery-operated laser photometer. The 1-hour TSP meter provides a real time 1-hour TSP measurement based on 90° light scattering. The 1-hour TSP monitor consists of the following:
  - (a.) A pump to draw sample aerosol through the optic chamber where TSP is measured;
  - (b.) A sheath air system to isolate the aerosol in the chamber to keep the optics clean for maximum reliability; and
  - (c.) A built-in data logger compatible with Windows based program to facilitate data collection, analysis and reporting.

## 24-hour TSP

- 3.6.2 The equipment used for 24-hour TSP measurement is TISCH, Model TE-5170 TSP High Volume Air Sampler, which complied with *EPA Code of Federal Regulation, Appendix B to Part 50*. The High Volume Air Sampler (HVS) consists of the following:
  - (a.) An anodized aluminum shelter;
  - (b.) A 8"x10" stainless steel filter holder;
  - (c.) A blower motor assembly;
  - (d.) A continuous flow/pressure recorder;
  - (e.) A motor speed-voltage control/elapsed time indicator;
  - (f.) A 7-day mechanical timer, and
  - (g.) A power supply of 220v/50 Hz
- 3.6.3 For HVS for 24-hour TSP monitoring, the HVS is mounted in a metallic cage with a top for protection and also it is sat on the existing ground or the roof of building. The flow rate of the HVS between 0.6m<sup>3</sup>/min and 1.7m<sup>3</sup>/min will be properly set in accordance with the



manufacturer's instruction to within the range recommended in *EPA Code of Federal Regulation*, *Appendix B to Part 50*. Glass Fiber Filter 8" x 10" of TE-653 will be used for 24-Hour TSP monitoring and would be supplied by laboratory. The general procedures of sampling are described as below:-

- A horizontal platform with appropriate support to secure the samples against gusty wind should be provided;
- No two samplers should be placed less than 2 meters apart;
- The distance between the sampler and an obstacle, such as building, must be at least twice the height that the obstacle protrudes above the sample;
- A minimum of 2 meters of separation from any supporting structure, measured horizontally is required;
- Before placing any filter media at the HVS, the power supply will be checked to ensure the sampler work properly;
- The filter paper will be set to align on the screen of HVS to ensure that the gasket formed an air tight seal on the outer edges of the filter. Then filter holder frame will be tightened to the filter hold with swing bolts. The holding pressure should be sufficient to avoid air leakage at the edge.
- The mechanical timer will be set for a sampling period of 24 hours (00:00 mid-night to 00:00 mid-night next day). Information will be recorded on the field data sheet, which would be included the sampling data, starting time, the weather condition at current and the filter paper ID with the initial weight;
- After sampling, the filter paper will be collected and transfer from the filter holder of the HVS to a sealed envelope and sent to a local HOKLAS accredited laboratory for quantifying.
- 3.6.4 All the sampled 24-hour TSP filters will be kept in normal air conditioned room conditions, i.e. 70% HR (Relative Humidity) and 25°C, for six months prior to disposal.
- 3.6.5 The HVS used for 24-hour TSP monitoring will be calibrated in two months interval for in accordance with the manufacturer's instruction using the NIST-certified standard calibrator (Tisch Calibration Kit Model TE-5025A) to establish a relationship between the follow recorder meter reading in cfm (cubic feet per minute) and the standard flow rate, Qstd, in m³/min. Motor brushes of HVS will be regularly replaced. The calibration certificates of the air quality monitoring equipment used for the impact monitoring and the HOKLAS accredited certificate of laboratory was provided in Appendix G.

#### **Noise Monitoring**

- 3.6.6 As referred to in the Technical Memorandum (TM) issued under the NCO, sound level meters in compliance with the International Electrotechnical Commission Publications 651:1979 (Type 1) and 804:1985 (Type 1) specifications shall be used for carrying out the noise monitoring. Immediately prior to and following each noise measurement the accuracy of the sound level meter shall be checked using an acoustic calibrator generating a known sound pressure level at a known frequency. Measurements may be accepted as valid only if the calibration levels from before and after the noise measurement agree to within 1.0 dB.
- 3.6.7 All noise measurements will be performed with the meter set to FAST response and on the A-weighted equivalent continuous sound pressure level (Leq). Leq<sub>(30 min)</sub> in six consecutive Leq<sub>(5 min)</sub> measurements will be used as the monitoring parameter for the time period between 07:00-19:00 hours on weekdays throughout the construction period.
- 3.6.8 The sound level meter will be mounted on a tripod at a height of 1.2 m and placed at the assessment point and oriented such that the microphone is pointed to the site with the microphone facing perpendicular to the line of sight. The windshield will be fitted for all measurements. Where a measurement is to be carried out at a building, the assessment point would normally be at a position 1 m from the exterior of the building façade. Where a measurement is to be made for noise being received at a place other than a building, the assessment point would be at a position 1.2 m above the ground in a free-field situation, i.e. at least 3.5 m away from reflective surfaces



such as adjacent buildings or walls.

- 3.6.9 Immediately prior to and following each noise measurement the accuracy of the sound level meter will be checked using an acoustic calibrator generating a known sound pressure level at a known frequency. Measurements will be accepted as valid only if the calibration level from before and after the noise measurement agrees to within 1.0 dB.
- 3.6.10 Noise measurements will not be made in fog, rain, wind with a steady speed exceeding 5m/s or wind with gusts exceeding 10m/s. The wind speed will be checked with a portable wind speed meter capable of measuring the wind speed in m/s.
- 3.6.11 The sound level meter and calibrator are calibrated and certified by a laboratory accredited under HOKLAS or any other international accreditation scheme at yearly basis. The calibration certificates of noise monitoring equipment used for the impact monitoring was provided in Appendix G.

## **Marine Water Quality**

- 3.6.12 Marine water quality monitoring would be conducted at all designated locations in accordance with Table 7.1 of the approved EM&A Manual. The procedures of water sampling, in-situ measurement and chemical analysis are described as below:
  - A Global Positioning System (GPS) will be used to ensure that the correct location was selected prior to sample collection. A portable, battery-operated echo sounder was used for the determination of water depth at each designated monitoring station.
  - The marine water sampler will be lowered into the water body at a predetermined depth. The trigger system of the sampler is activated with a messenger and opening ends of the sampler are closed accordingly then the sample of water is collected.
  - During the sampling, the sampling container will be rinsed to use a portion of the marine water sample before the water sample is transferred to the container. Upon sampling completion, the container will be sealed with a screw cap.
  - Before the sampling process, general information such as the date and time of sampling, weather condition and tidal condition as well as the personnel responsible for the monitoring will be recorded on the monitoring field data sheet.
  - In-situ measurement including water temperature, turbidity, dissolved oxygen, salinity, pH and water depth will be recorded at the identified monitoring station and depth. At each station, marine water samples will be collected at three depths: 1m below water surface, 1m above sea bottom and at mid-depth when the water depth exceeds 6m. Samples at 1m below water surface and 1m above sea bottom will be collected when the water depth is between 3m and 6m. And sample at mid-depth will be taken when the water depth is below 3m.
  - For the in-situ measurement, two consecutive measurements of sampling depth, temperature, dissolved oxygen, salinity, turbidity and pH concentration will be measured at the sea. The YSI ProDSS Multifunctional Meter will be retrieved out of the water after the first measurement and then re-deployed for the second measurement. Where the difference in the value between the first and second readings of each set is more than 25% of the value of the first reading, the reading is discarded and further readings is taken.
  - Marine water sample will be collected by using a water sampler. The high-density polythene bottles will be filled after the water sample collected from the sea. Before the water sample being fills into the sampling bottles, the sampling bottles will be pre-rinsed with the same water sample. The sampling bottles will then be packed in cool-boxes (cooled at 4°C without being frozen), and delivered to HOKLAS accredited laboratory for the chemical analysis as followed APHA *Standard Methods for the Examination of Water and Wastewater* 19ed 2540D, unless otherwise specified.
- 3.6.13 Before each round of monitoring, the dissolved oxygen probe will be calibrated by wet bulb method; a zero check in distilled water will be performed with the turbidity and salinity probes. The turbidity probe also will be checked with a standard solution of known NTU and known



value of the pH standard solution were used to check the accuracy of pH value before each monitoring day. Moreover, all in-situ measurement equipment used marine water monitoring will be calibrated at three months interval.

#### Laboratory Analysis

3.6.14 All water samples included the duplicate samples, was tested with chemical analysis as specified in the EM&A Manual by a HOKALS accredited laboratory - ALS Technichem (HK) Pty Ltd. The chemicals analysis method and reporting limit show *Table 3-9*.

Table 3-9 Testing Method and Reporting Limit of the Chemical Analysis

Parameter ALS Meth Code		In-house Method Reference (1)	Reporting Limit	
Total Suspended Solids	EA025	APHA 2540D	1 mg/L	

## Note:

- 1. The exact method shall depend on the laboratory accredited method. APHA = Standard Methods for the Examination of Water and Wastewater by the American Public Health Association.
- 3.6.15 The determination works will start within 24 hours after collection of the water samples or within the holding time as advised by the laboratory.

## **Meteorological Information**

- 3.6.16 The meteorological information including wind direction, wind speed, humidity and temperature etc. of impact monitoring is extracted from the closest Tseung Kwan O Hong Kong Observatory Station. Moreover, the data of rainfall and air pressure would be extracted from King's Park Station.
- 3.6.17 For marine water quality monitoring, tidal information would be referred to tide gauge at Tai Miu Wan.

## 3.7 DETERMINATION OF ACTION/LIMIT (A/L) LEVELS

3.7.1 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 3-10*, *3-11* and *3-12* respectively.

Table 3-10 Action & Limit Levels of Air Quality (1-Hour & 24-Hr TSP)

Monitoring Station	Action Level (μg /m³)		Limit Level (μg/m³)		
Momitoring Station	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	te: 1-Hour & 24-Hr TSP of Action Level = $(Average\ Baseline\ Results \times 1.3 + Limit\ level)/2$				



Table 3-11 Action and Limit Levels for Construction Noise, dB(A)

Monitoring Location	Action Level	Limit Level	
	Time Period: 0700-1900 hours on normal weekdays (Leq30min)		
CNMS-1	When one or more documented complaints are received	75 dB(A)	
CNMS-5	Time Period: 1900-2300 hours on all days (Leq15min)		
	When one or more documented complaints are received	<i>55</i> dB(A)	

#### Remarks:

- 1. Construction noise monitoring will be resumed at the designated locations CNMS-2, CNMS-3 and CNMS4 once they are available and permission are granted;
- 2. The designated locations 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 3-12 Action and Limit Levels for Water Quality

1 able 5-12	Action and Limit Levels for water Quanty					
Monitoring	Depth Average of SS (mg/L)					
Station	Action Level		Limit Level			
CC1	7.8	OR 120% of upstream control	9.3	OR 130% of upstream control		
CC2	9.0	station at the same	9.2	station at the same		
CC3	8.2	tide of the same day (Control Station C3	9.0	tide of the same day (Control Station C3		
CC4	13.8	at Ebb tide and Control Station C4 at	15.4	at Ebb tide and Control Station C4 at		
CC13	8.9	Flood tide), whichever is higher	10.3	Flood tide), whichever is higher		
SWI1	8	mg/L		10 mg/L		
		Dissolved Oxy	gen (mg/L)			
Monitoring	Depth Average of S	Surface and Mid-depth	<b>0</b> \ <b>0</b> /	Bottom		
Location	Action Level	Limit Level	Action Leve	el 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		
SWI1	5.4	4.8	5.1	5.0		
Monitoring		Depth Average of T	Turbidity (NTI	<u> </u>		
Location	Actio	on Level	•	imit Level		
CC1	5.8	<b>OR</b> 120% of	6.0	<b>OR</b> 130% of		
CC2	4.6	upstream control station at the same	5.5	upstream control station at the same		
CC3	4.8	tide of the same day	5.4	tide of the same day		
CC4	6.1	(Control Station C3 at Ebb tide and	7.1	(Control Station C3 at Ebb tide and		
CC13	6.0	Control Station C4 at Flood tide),	6.3	Control Station C4 at Flood tide),		
SWI1	6.1	whichever is higher	7.1	whichever is higher		



3.7.2 Should non-compliance of the environmental quality criteria occurs, remedial actions will be triggered according to the Event and Action Plan which presented in *Appendix E*.

## 3.8 DATA MANAGEMENT AND DATA QA/QC CONTROL

- 3.8.1 All monitoring data will be handled by the ET's in-house data recording and management system. The monitoring data recorded in the equipment will be downloaded directly from the equipment at the end of each monitoring day. The downloaded monitoring data will input into a computerized database properly maintained by the ET. The laboratory results will be input directly into the computerized database and checked by personnel other than those who input the data.
- 3.8.2 For monitoring parameters that require laboratory analysis, the local laboratory shall follow the QA/QC requirements as set out under the HOKLAS scheme for the relevant laboratory tests.



## 4. AIR QUALITY MONITORING

## 4.1 GENERAL

- 4.1.1 In the Reporting Period, 1-Hour TSP and 24-Hr TSP of air quality monitoring were respectively performed at interim alternative monitoring locations AM4 and AM5. The air quality monitoring schedule is presented in *Appendix F*.
- 4.1.2 Valid calibration certificates of monitoring equipment are shown in *Appendix G* and the monitoring results are summarized in the following sub-sections

## 4.2 RESULTS OF AIR QUALITY MONITORING IN THE REPORTING MONTH

4.2.1 During the Reporting Period, 18 sessions of 1-hour TSP and 5 sessions of 24-hours TSP monitoring were carried out and the monitoring results are summarized in Table 4-1. The detailed 24-hour TSP monitoring data are presented in Appendix H and the relevant graphical plots are shown in Appendix I.

Table 4-1 1-Hour and 24-Hour TSP Air Quality Impact Monitoring Results

AN	M5	AM4				
24-Hr TS	$P(\mu g/m^3)$		1-I	Iour TSP (μg/	$m^3$ )	
Date	Meas. Result	Date	Start Time	1st Meas.	2 <sup>nd</sup> Meas.	3 <sup>rd</sup> Meas.
5-May-20	94	2-May-20	10:38	88	86	84
11-May-20	95	6-May-20	10:30	85	77	74
16-May-20	115	12-May-20	14:23	103	110	120
22-May-20	100	18-May-20	9:17	84	67	62
28-May-20	60	23-May-20	9:45	67	71	65
		29-May-20	10:10	75	69	67
Average (Range)	93 (60 – 115)	Aver (Rar	•		81 (62 – 120)	

- 4.2.2 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.
- 4.2.3 The meteorological data during impact monitoring period is summarized in *Appendix J*.



#### 5. CONSTRUCTION NOISE MONITORING

#### 5.1 GENERAL

- 5.1.1 In the Reporting Period, construction noise quality monitoring was performed at designated monitoring location **CNMS-1** and interim alternative monitoring location **CNMS-5**. The construction noise monitoring schedule is presented in *Appendix F*.
- 5.1.2 Valid calibration certificates of monitoring equipment is shown in *Appendix G* and the construction noise monitoring results are summarized in the following sub-sections

#### 5.2 RESULTS OF NOISE MONITORING

5.2.1 **8** sessions of daytime construction noise monitoring were performed at both the designated monitoring location CNMS-1 and the interim alternative location CNMS-5 in the reporting period. The daytime noise monitoring results are summarized in *Table 5-1* and *Table 5-2*. The detailed noise monitoring data are presented in *Appendix H* and the relevant graphical plots are shown in *Appendix I*.

Table 5-1 Daytime Construction Noise Impact Monitoring Results at CNMS-1

Doto	Time	Measuremen	t Result (dB(A))
Date	1 iiile	L <sub>eq30min</sub>	Façade Correction
6-May-20	11:21	69.4	NA
12-May-20	15:11	68.4	NA
18-May-20	10:10	70.0	NA
29-May-20	11:20	66.4	NA

Table 5-2 Daytime Construction Noise Impact Monitoring Results at CNMS-5

Doto	Time	Measuremen	nt Result (dB(A))
Date	Time	$L_{ m eq30min}$	Façade Correction
6-May-20	10:30	65.8	NA
12-May-20	14:25	66.8	NA
18-May-20	9:17	68.9	NA
29-May-20	10:15	69.0	NA

- 5.2.2 As shown in *Table 5-1* and *Table 5-2*, all the measured results were below 75dB(A) of the acceptance criteria. No adverse weather condition which may affect the monitoring result was encountered during the course of noise monitoring in the reporting period.
- 5.2.3 One (1) complaint related to construction noise was received in the reporting period, therefore one (1) Action Level exceedances was registered. The details of the complaint was presented in *Section 10*.
- 5.2.4 In the reporting period, evening marine work was scheduled by Contractor of Contract 1 at Portion II from 4 9 and 25 30 May 2020. 4 session of weekly evening construction noise monitoring were performed at both the designated monitoring location CNMS-1 and the interim alternative location CNMS-5 in the reporting period. The evening noise monitoring results at interim alternative location is summarized in *Table 5-3* and *Table 5-4*. The detailed noise monitoring data are presented in *Appendix H*.

Table 5-3 Evening Construction Noise Impact Monitoring Results at CNMS-1

Date	Start Time	1st Leq (5min)	2nd Leq (5min)	3rd Leq (5min)
Date	Start Time	Leq, dB(A)	Leq, dB(A)	Leq, dB(A)
7-May-20	19:41	51.4	50.9	51.0
28-May-20	19:37	57.8	58.0	57.4



Table 5-4 Evening Construction Noise Impact Monitoring Results at CNMS-5

Doto	Start Time	1st Leq (5min)	2nd Leq (5min)	3rd Leq (5min)
Date	Start Time	Leq, dB(A)	Leq, dB(A)	Leq, dB(A)
7-May-20	19:10	61.2	60.3	60.5
28-May-20	19:05	62.5	60.1	60.6

- 5.2.5 According to Table 5-3 and Table 5-4, three (3) sessions of evening noise monitoring results triggered the Limit Level (55 dB(A)) in the reporting period and investigations were undertaken by ET accordingly.
- 5.2.6 For the evening noise monitoring exceedances recorded at CNMS-1 on 28 May 2020 and at CNMS-5 on 7 & 28 May 2020, since the marine work at Junk Bay were ceased before the evening noise monitoring event, it was considered the exceedances recorded were unlikely due to the Project.



## 6. WATER QUALITY MONITORING

## 6.1 GENERAL

- 6.1.1 According to the approved EM&A Manual Section 7.6.1, the impact marine water quality monitoring work shall be carried out during the CBL piling and pile excavation works (marine construction activity) of the Project. Impact marine water quality monitoring was commenced in December 2018 when CBL piling and pile excavation works started.
- As confirmed, all the marine piling and piling excavation work were completed in January 2020 and all pile cap installation work was completed in mid-March 2020. Due to the marine construction works that requires marine water quality monitoring as stated in the EM&A Manual were completed, the impact water quality monitoring was ceased with effect from 1 May 2020 and IEC has no particular comment on this arrangement.
- 6.1.3 No impact water quality monitoring was therefore carried out in the reporting period.



#### 7. WASTE MANAGEMENT

## 7.1 GENERAL WASTE MANAGEMENT

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

## 7.2 RECORDS OF WASTE QUANTITIES

- 7.2.1 All types of waste arising from the construction work are classified into the following:
  - Construction & Demolition (C&D) Material;
  - Chemical Waste; and
  - General Refuse
- 7.2.2 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 7-1* and *7-2*.

Table 7-1 Summary of Quantities of Inert C&D Materials

	Cont	ract 1	Cont	ract 2
Type of Waste	Quantity	Disposal Location	Quantity	Disposal Location
Total C&D Materials (Inert) ('000m <sup>3</sup> )	0.132	-	2.256	-
Reused in this Contract (Inert) ('000m <sup>3</sup> )	0	-	0	-
Reused in other Projects (Inert) ('000m <sup>3</sup> )	0	-	0	-
Disposal as Public Fill (Inert) ('000m <sup>3</sup> )	0.132	TKO 137	2.256	TKO 137
Imported Fill ('000m <sup>3</sup> )	0	-	0	-

Table 7-2 Summary of Quantities of C&D Wastes

	Contract 1		Contract 2	
Type of Waste	Quantity	Disposal Location	Quantity	Disposal Location
Recycled Metal ('000kg)	0	-	0	-
Recycled Paper / Cardboard Packing ('000kg)	0.092	Collected by paper recycling company	0	-
Recycled Plastic ('000kg)	0	-	0	-
Chemical Wastes ('000kg)	0	-	0	-
General Refuses ('000m³)	0.117	NENT	0.052	NENT

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



#### 8. SITE INSPECTION

## 8.1 REQUIREMENTS

8.1.1 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.

## **8.2** FINDINGS / DEFICIENCIES DURING THE REPORTING MONTH Contract 1

- 8.2.1 In this Reporting Month, weekly joint site inspection to evaluate site environmental performance for the *Contract 1* was carried out by the Project Consultant, ET and the Contractor on 6, 13, 21 & 27 May 2020. Moreover, the Independent Environmental Checker (IEC) monthly site inspection was conducted on 13 May 2020.
- 8.2.2 The findings / deficiencies of *Contract 1* that observed during the weekly site inspection are listed in *Table 8-1* and the site layout plan was provided in **Appendix A**.

Table 8-1 Site Observations of the Contract 1 (Contract No. NE/2017/07)

Date	Findings / Deficiencies	Follow-Up Status
6 May 2020	No adverse environmental issue was observed.	• NA
13 May 2020	Observation:  • Small amount of oil spillage from the plant was observed. Oil and water mixture cumulated inside the drip tray and the top soil nearby contaminated by oily water should be cleaned and disposed as chemical waste. (Works Area A)	The top soil nearby contaminated by oily water was cleaned and disposed as chemical waste.
21 May 2020	No adverse environmental issue was observed.	• NA
27 May 2020	No adverse environmental issue was observed.	• NA

#### Contract 2

- 8.2.3 In this Reporting Month, weekly joint site inspection to evaluate site environmental performance for the *Contract 2* were carried out by the Project Consultant, ET and the Contractor on 6, 13, 21 & 27 May 2020. Moreover, the Independent Environmental Checker (IEC) monthly site inspection was conducted on 13 May 2020.
- 8.2.4 The findings / deficiencies of *Contract 2* that observed during the weekly site inspection are listed in *Table 8-2* and the site layout plan was provided in **Appendix A**.

Table 8-2 Site Observations of the Contract 2 (Contract No. NE/2017/08)

Date	Findings / Deficiencies	Follow-Up Status
6 May 2020	Observation:  • The Contractor should check the specification of the excavator and display the NRMM label for the excavator if required. (Portion IV)	provided for excavator.
13 May 2020	No adverse environmental issue was observed.	• NA
21 May 2020	Observation:  • Small amount of oil stain on the ground should be cleaned. (Portion VI- Wan O Road)	The oil absorption mat has been provided on ground to prevent the oil leakage.



Date	Findings / Deficiencies	Follow-Up Status
27 May 2020	Observation: Proper NEL should be displayed for hand-held breaker using on-site. (Portion VI)	The hand held breaker has been removed from site.

## 8.3 IMPLEMENTATION STATUS OF SURFACE RUNOFF MITIGATION MEASURES DURING THE REPORTING MONTH

8.3.1 During the inspection of the reporting month, implementation of surface runoff mitigation measures were observed in both Contracts. The surface runoff mitigation measures observed during the weekly site inspection of Contract 1 and Contract 2 are summarized below and the photo recorded was provided in **Appendix L**.

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

- 8.3.2 The surface runoff mitigation measures of Contract 1 implemented in this Reporting Period are:-
  - Temporary trench had been installed at the sea front to prevent muddy run-off overflow into the water body.
  - Treatment facilities was installed at site to treat the site generated water prior discharge.

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

- 8.3.3 The surface runoff mitigation measures of Contract 2 implemented in this Reporting Period are:-
  - Treatment facilities was installed at site to treat the site generated water prior discharge.
  - Gap between the concrete block and the sea front was sealed up.
  - Trench had been installed beside the sea front to prevent muddy surface run-off overflow during rainstorm.
- 8.3.4 Overall, the surface runoff mitigation measures of Contract 1 and Contract 2 observed during the inspection of the reporting period are efficient.



#### 9. LANDFILL GAS MONITORING

## 9.1 GENERAL REQUIREMENT

- 9.1.1 Pursuant to Section 13 of the Project's EM&A Manual, landfill gas monitoring shall perform during excavation work 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*.
- 9.1.2 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.

#### 9.2 LIMIT LEVELS AND EVENT AND ACTION PLAN

9.2.1 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 9-1 Actions in the Event of Landfill Gas Being Detected in Excavations

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

9.2.2 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.

#### 9.3 LANDFILL GAS MONITORING

- 9.3.1 In the Reporting Period, landfill gas monitoring was conducted at the zone Wan O Road which excavation work of Contract 2 was carried out. A Crowcon gas detector was used for the landfill gas monitoring and the valid calibration certificate is presented in **Appendix G**.
- 9.3.2 There were a total of **25** days monitoring were carried by the Safety Officer or an approved and qualified persons. The results of landfill gas measurement are summarized in **Table 9-2**. Moreover, database of monitoring result is attached in **Appendix H**.



**Table 9-2** Summary of Landfill Gas Measurement Results

Landfill Gas Action Level		Limit Level	Detectable at LMR	
Parameter Action Level	Min		Max	
Methane	>10% LEL (>0.5% v/v)	>20% LEL (>1% v/v)	0.1%	0.1%
Oxygen	<19%	<18%	20.8%	21.0%
Carbon Dioxide	>0.5%	>1.5%	0.1%	0.2%

9.3.3 The measurement results shown that slightly methane concentration was detected, oxygen concentration measured was over 19.0 % and Carbon Dioxide was between 0.1% and 0.2 %. No exceedance was triggered and therefore no corrective action was required accordingly.



#### 10. ENVIRONMENTAL COMPLAINT AND NON-COMPLIANCE

## 10.1 Environmental Complaint, Summons and Prosecution

10.1.1 In the Reporting Period, one (1) environmental complaint was received with respect to construction dust, evening construction noise and wastewater arising from the Project. Besides, no summons and prosecution under the EM&A Programme was lodged for the project. Investigation for the complaints was undertaken by the ET and presented below.

## Complaint received on 5 May 2020

- 10.1.2 A complaint was received by CEDD on 5 May 2020 afternoon regarding several environmental issue including construction dust, noise nuisance from evening construction work and wastewater generated from site. The complainant did not specify the complaint location.
- 10.1.3 During the regular joint site inspection among the Supervisor, the Contractor and ET carried out in the past few weeks, it was observed that construction dust and wastewater mitigation measures were implemented properly in both Contracts of the Project and no environmental non-compliance was found.
- 10.1.4 In addition, according to the evening noise monitoring conducted in the past month, the evening noise measurement results were found within the range of the baseline noise monitoring results which implies that the construction noise from evening works was insignificant. The complaint was considered not related to the Project.
- 10.1.5 The statistical summary table of environmental complaint is presented in *Tables 10-1*, *10-2* and *10-3*.

**Table 10-1** Statistical Summary of Environmental Complaints

Domontino Dominal	Comtract	Environmental Complaint Statistics		
Reporting Period	Contract	Frequency	Cumulative	<b>Complaint Nature</b>
1 – 31 May 2020	1	1	5	Construction Dust, Noise and Wastewater
1 – 31 May 2020	2	0	3	NA

**Table 10-2** Statistical Summary of Environmental Summons

Donouting Dowing	Contract	Environmental Summons Statistics		
Reporting Period		Frequency	Cumulative	<b>Summons Nature</b>
1 – 31 May 2020	1	0	0	NA
1 – 31 May 2020	2	0	0	NA

Table 10-3 Statistical Summary of Environmental Prosecution

Donouting Donied	Contract	Environmental Prosecution Statistics		
Reporting Period	Contract	Frequency	Cumulative	<b>Prosecution Nature</b>
1 – 31 May 2020	1	0	0	NA
1 – 31 May 2020	2	0	0	NA



#### 11. IMPLEMENTATION STATUS OF MITIGATION MEASURES

## 11.1 GENERAL REQUIREMENTS

- 11.1.1 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 M*.
- 11.1.2 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 11-1* and photo record of water mitigation measure was provided in **Appendix L**.

Table 11-1 Environmental Mitigation Measures in the Reporting Month

<b>Table 11-1</b>	Environmental Mitigation Measures in the Reporting Month
Issues	Environmental Mitigation Measures
Construction Noise	Regularly to maintain all plants, so only the good condition plants were used on-site;
	<ul> <li>If possible, all mobile plants onsite operation has located far from NSRs;</li> <li>When machines and plants (such as trucks) were not in using, it was switched off;</li> <li>Wherever possible, plant was prevented oriented directly the nearby NSRs;</li> <li>Provided quiet powered mechanical equipment to use onsite;</li> <li>Weekly noise monitoring was conducted to ensure construction noise meet the</li> </ul>
Air Quality	<ul> <li>Stockpile of dusty material was covered entirely with impervious sheeting or sprayed with water so as to maintain the entire surface wet;</li> </ul>
	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
	<ul> <li>Portable chemical toilets were provided on-site. A licensed contractor was regularly disposal and maintenance of these facilities.</li> </ul>
	Silt curtain was installed and maintained in accordance with EP condition
Waste and	• Excavated material reused on site as far as possible to minimize off-site disposal.
Chemical	<ul> <li>Scrap metals or abandoned equipment should be recycled if possible;</li> </ul>
Management	• 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	<ul><li>The site is generally kept tidy and clean.</li><li>Mosquito control is performed to prevent mosquito breeding on site.</li></ul>

## 11.2 TENTATIVE CONSTRUCTION ACTIVITIES IN THE COMING MONTH

11.2.1 Tentative construction activities to be undertaken in **June 2020** should be included:-

## Contract 1

- Installation of pre-cast shell at Portion II
- Pile Cap Construction at Portion II
- Construction of Cast-in situ pier E1 at Portion II
- Installation of Precast V-pier at Portion II
- 2<sup>nd</sup> Stage Pile Cap Casting (Connecting between pile cap and V-Pier) at Portion II



• Installation of Bearing and Precast Deck at Portion II

## Contract 2

- Pre-bored Socket H-Pile (Portion VI)
- Excavation (Portion III,VI)
- Sheet Pilling (Portion VI)
- Drainage Installation (Portion VI)
- Footing construction(Portion VI)
- Excavation & RC works (Superstructure) (Portion III)
- RC construction for U-trough(Portion III)
- Trimming Bored pile head (Portion VI)

•

## 11.3 IMPACT FORECAST

- 11.3.1 Potential environmental impacts arising from the works of the Contracts 1 and Contract 2 include:
  - Construction waste
  - Air quality
  - Construction noise
  - Water quality
- 11.3.2 Environmental mitigation measures will be properly implemented and maintained as per the Mitigation Implementation Schedule in **Appendix L** to ensure site environmental performance is acceptable.



#### 12. CONCLUSIONS AND RECOMMENDATIONS

#### 12.1 CONCLUSIONS

- 12.1.1 This is the monthly EM&A report as presented the monitoring results and inspection findings for the reporting period from  $I^{st}$  to  $3I^{st}$  May 2020.
- 12.1.2 In the Reporting Period, one (1) evening construction noise action level exceedance was recorded and three (3) session of evening construction noise monitoring results triggered the Limit Level. Investigation was undertaken by ET and it was considered that the evening construction noise limit level exceedances recorded are unlikely caused by the Project.
- 12.1.3 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.
- 12.1.4 In the Reporting Period, one (1) environmental complaint were received with respect to the construction dust, evening construction noise and wastewater arising from the Project. Investigations for the complaint by site investigation were undertaken by ET and it is considered the complaint is not related to the Project.
- 12.1.5 No notification of summons or prosecution were received and recorded for the Project.

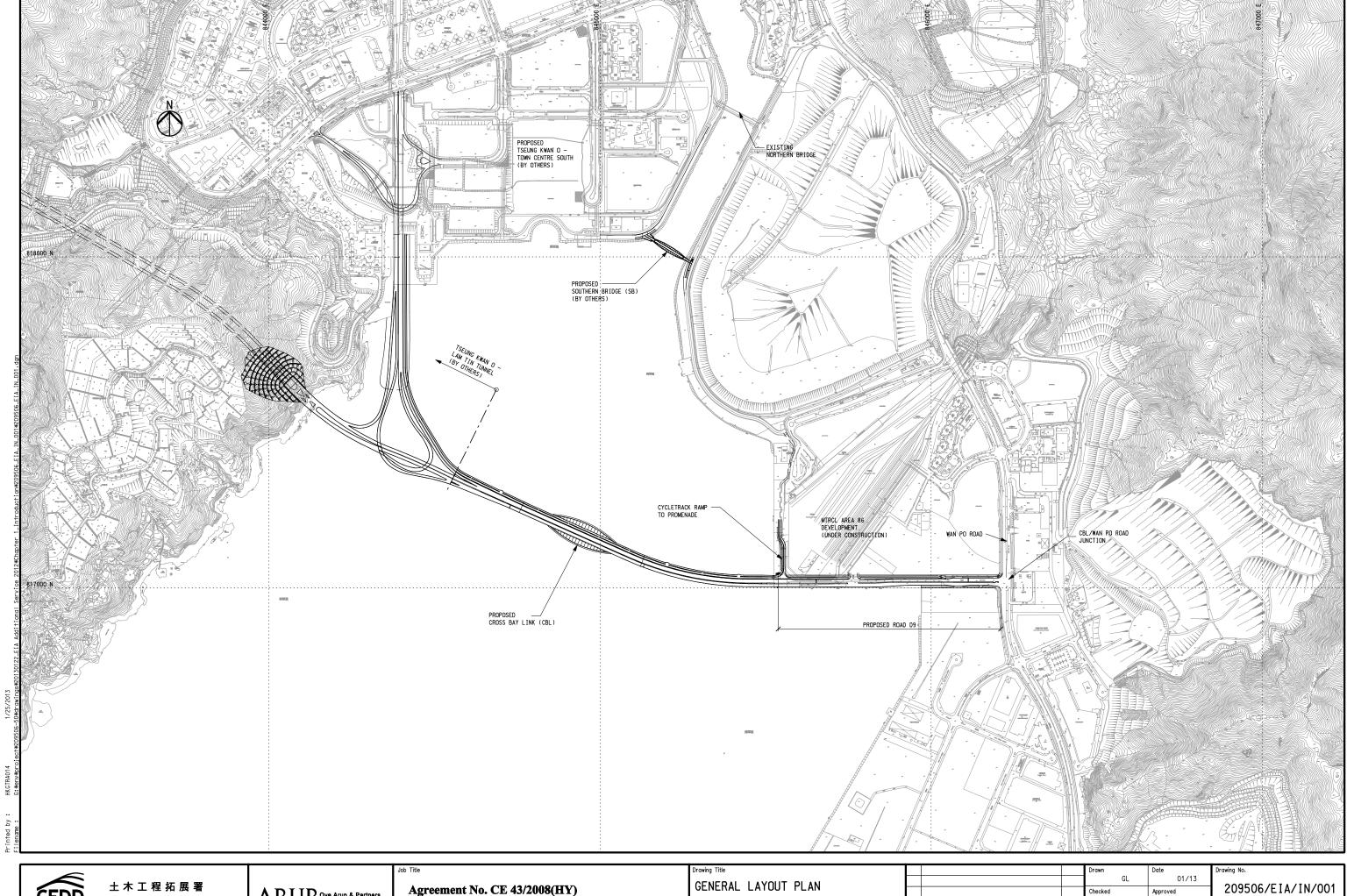
#### 12.2 RECOMMENDATIONS

- 12.2.1 Due to wet season has begun in Hong Kong, the Contractor was reminded that all the works being undertaken must fulfill environmental statutory requirements and to paid attention to water quality mitigation measures to prevent surface runoff into nearby water bodies or public areas.
- 12.2.2 Construction noise would be the key environmental issue as Lohas Park Phase 4 was already available for resident occupation. The noise mitigation measures such as use of quiet plants and installation of temporary noise barrier at the construction noise predominate area should be fully implemented in accordance with the EM&A requirement.



## Appendix A

**Project Layout Plan** 

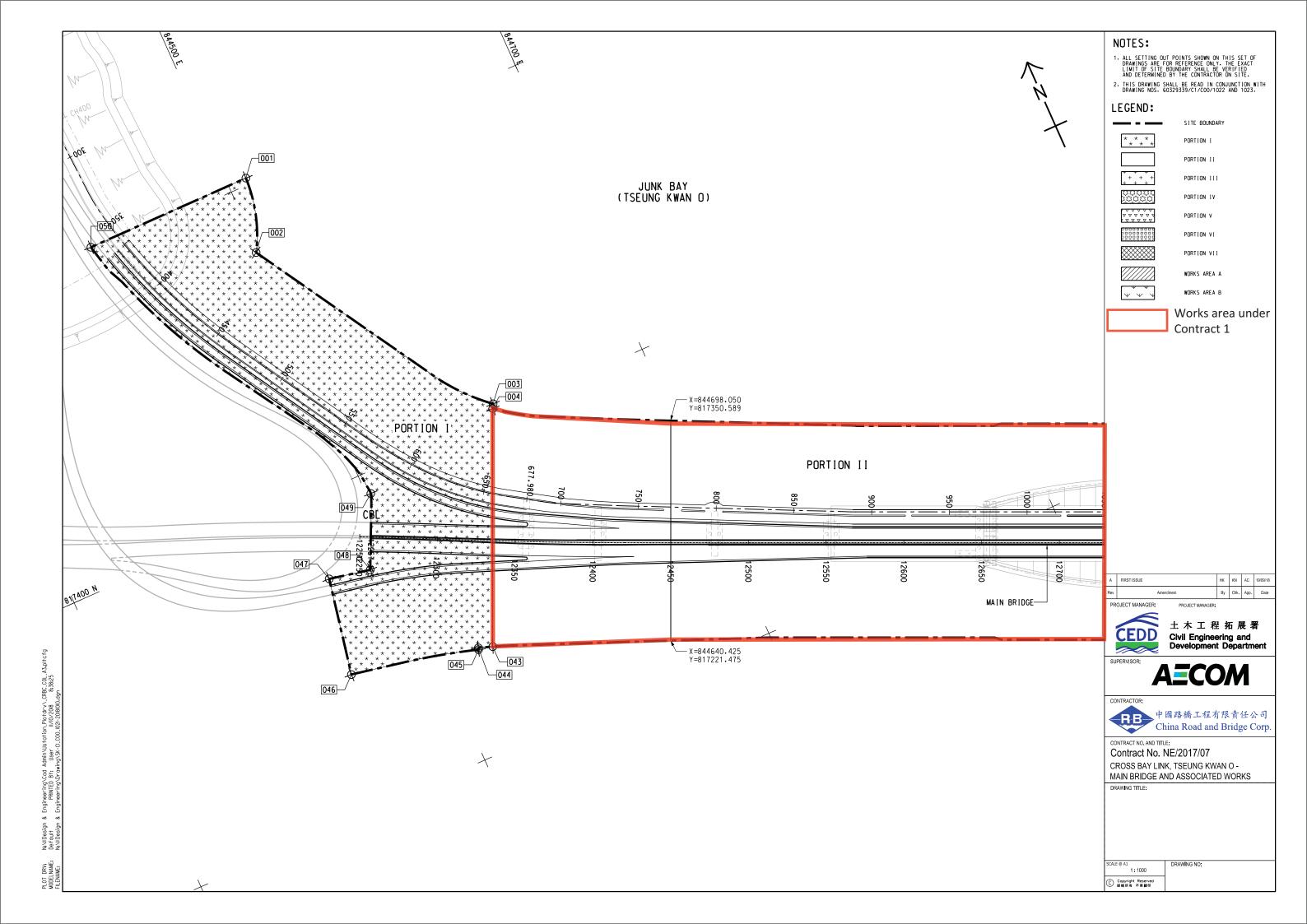


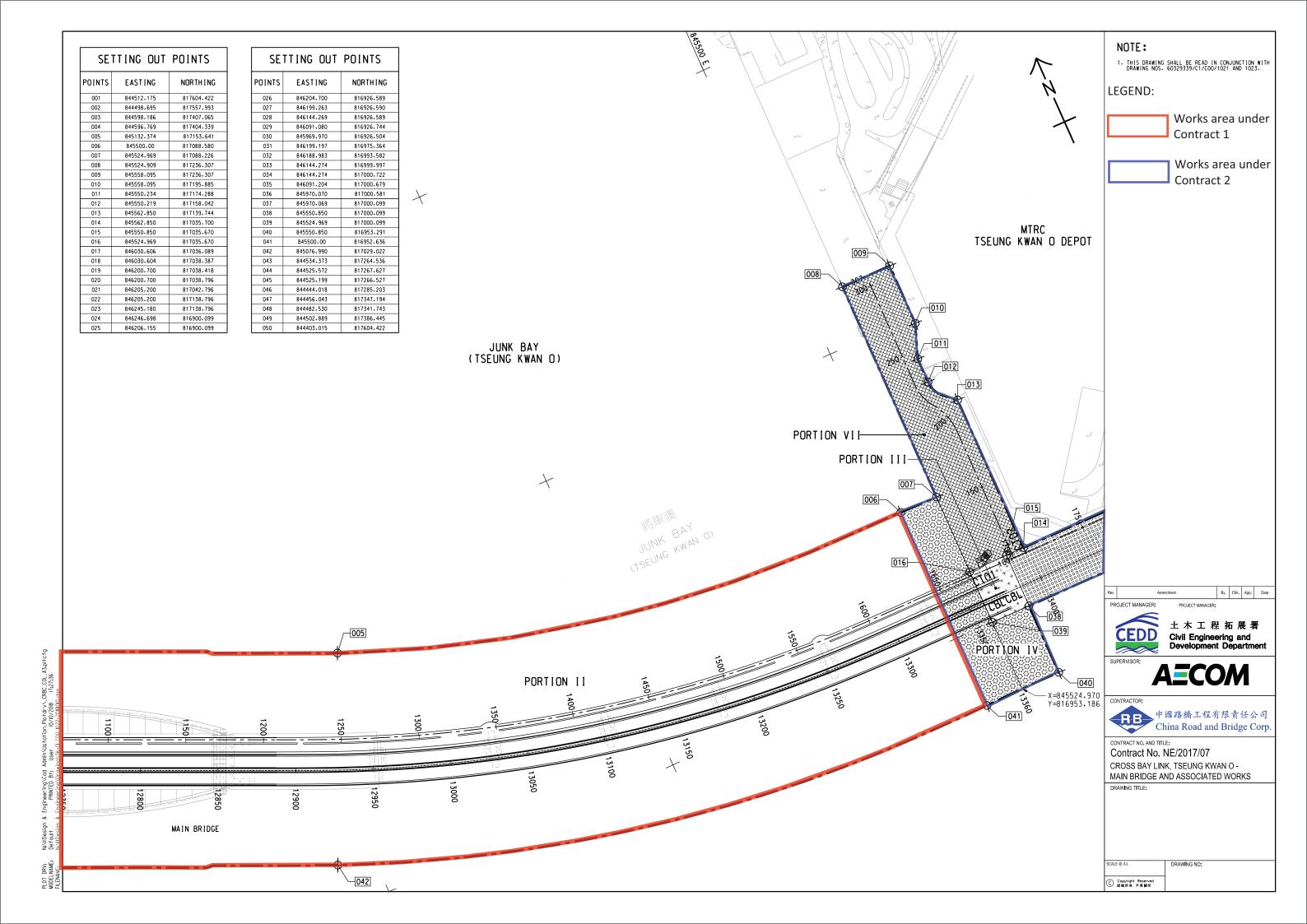
Civil Engineering and Development Department

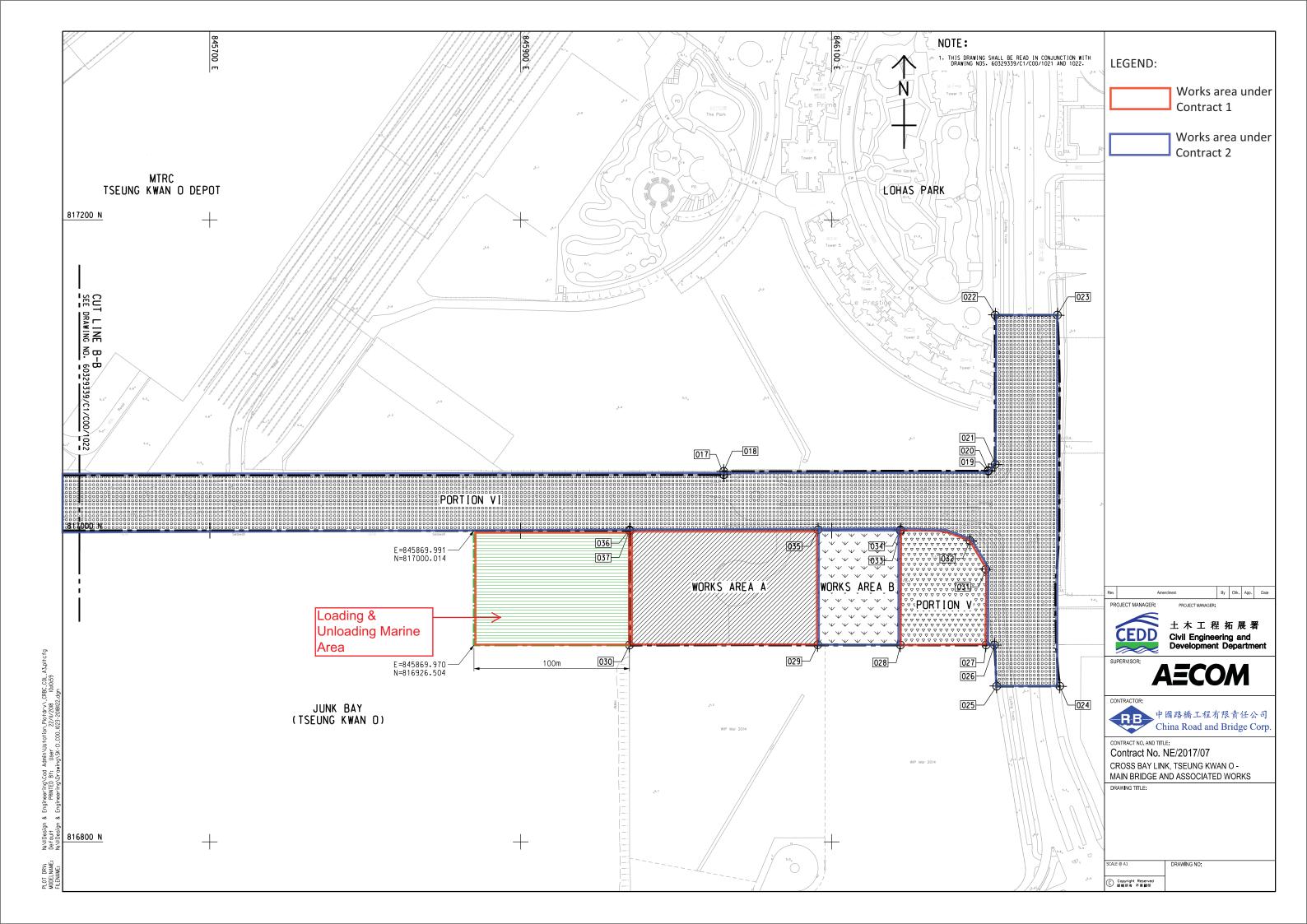
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Agreement No. CE 43/2008(HY) Cross Bay Link, Tseung Kwan O – Investigation

B SECOND ISSUE A FIRST ISSUE Scale 1:5000 on A1 & 1:10000 on A3 FINAL







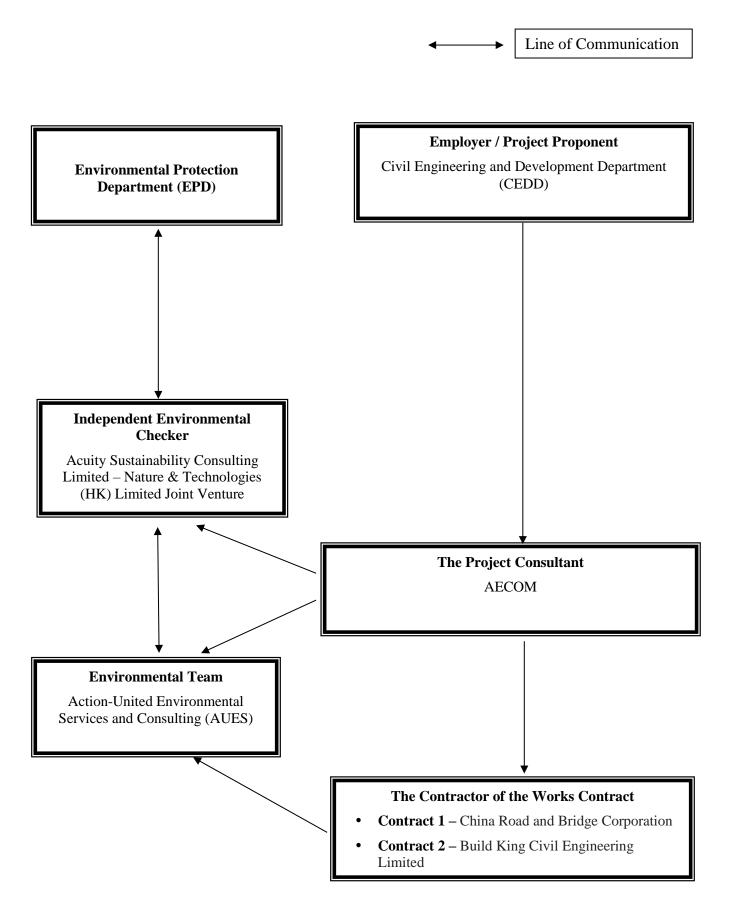


## Appendix B

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	Sheri Leung	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 Suen	9779 8871	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	Michael Lam	6476 4299	TBA
Build King	Environmental Supervisor	Kenneth Hung	6170 9304	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-Ma Page: 1	r-20 Co	ntrac	et No.	NE/2017/0	7 Cross I	Bay Link,	Tseng Kwa	an O	- Main	Brid	lge and	d Ass	ociat	ed Work	s		
Activity D	ActivelyName	Original Duration	Remaining Duratio	n Start	Planned Start	Finish	Planned Finish	Total Float	Activity% Complete	TRA	Variance - Finish Dai	alte	01	March 2020	April 2120 Maj 22 29 05 12 19 26 03 10	/2020	June 2020 07 14 21 28
Cross Bay Link,Tse	ung Kwan O Main Bridge and Associated Works - 01 - Update with E1 and W	1505	886	29-Jun-18 A	29-Jun-18	11-Aug-22	21-Jul-22	-180			-21	25	01	U6   15	22 25 00 12 19 20 00 10	17 24 31	07 14 21 2
Executive Summar	y Programme	1505	886	29-Jun-18 A	29-Jun-18	11-Aug-22	21-Jul-22	-180			-21						
ESP Section 2 of	Norks-All Works within Portion II,III,IV and VI	1261	886	17-Sep-18 A	28-Feb-19	11-Aug-22	21-Jul-22	-180			-21						
ESP10920	CBL Main Bridge and Marine Viaduct	1240	886	17-Sep-18 A	28-Feb-19	11-Aug-22	21-Jul-22	-180	28.55%	0	-21						
ESP10980	Pile Cap	321	241	23-Jul-19 A	08-Aug-19	04-Nov-20	23-Jun-20	41	24.92%	0	-134						
ESP11000	Pier	210	210	20-Mar-20	08-Apr-20	15-Oct-20	26-Sep-20	91	0%	0	-19	<u> </u>		-			
ESP11080	Concrete Bridge Decks	457	457	06-May-20	06-May-20	05-Aug-21	27-May-21	-24	0%	0	-70						
ESP11160	E&M Works for CBL Main Bridge and Marine Viaduct	886	886	09-Mar-20	10-Feb-20	11-Aug-22	03-Jun-22	-180	0%	0	-69						
ESP Section 5 of	the Works-All Works within Portion V (CBL E&M Plantroom)	153	149	13-Feb-20 A	13-Feb-20	04-Aug-20	14-Jul-20	3			-21	_					
ESP11280	Architectural & External Works	153	149	13-Feb-20 A	13-Feb-20	04-Aug-20	14-Jul-20	3	2.61%	0	-21						
Preliminaries, Con	ntractor's Design & Method Statement Submission & Approval	1048	423	29-Jun-18 A	29-Jun-18	05-May-21	11-May-21	82			6	<u> </u>	<del></del>				
ESP10400	Temporary Works Design	695	300	13-Aug-18 A	13-Aug-18	02-Jan-21	07-Jul-20	-3	56.83%	0	-179						
ESP10420	Method Statement Submission for Major Construction Works	736	207	27-Aug-18 A	27-Aug-18	01-Oct-20	31-Aug-20	125	71.88%	0	-31						
ESP10440	Contractor's Design Submission and Approval	869	328	06-Aug-18 A	06-Aug-18	30-Jan-21	21-Dec-20	177	62.26%	0	-40						
ESP10480	General Submission	843	224	29-Jun-18 A	29-Jun-18	18-Oct-20	18-Oct-20	58	73.43%	0	0						
ESP10500	Project Manager's Acceptance of Subcontractors	556	0	14-Aug-18 A	21-Feb-19	09-Mar-20	29-Aug-20	340	100%	0	174			Project Manage	r's Acceptance of Subcontractors		
ESP10560	Procurement, Factory Acceptance Test, Delivery and Temporary Storage of Major E&M Equipment	423	423	24-Feb-20 A	10-Feb-20	05-May-21	03-Apr-21	46	0%	0	-32						
ESP10600	Precasting of Precast Shell	745	420	08-Nov-18 A	28-Apr-19	02-May-21	11-May-21	45	43.62%	0	9						
ESP10620	Fabrication of Precast Box Girder	713	376	10-Nov-18 A	13-May-19	19-Mar-21	24-Apr-21	-46	47.27%	0	36	-					
ESP10640	Fabrication of Steel Arch Bridge and Side Spans	623	404	28-Mar-19 A	08-Apr-19	16-Apr-21	20-Dec-20	-169	35.15%	0	-117						
Procurement, Fact	ory Acceptance Test, Delivery and Temporary Storage of Major E&M Equipment	150	150	24-Feb-20 A	10-Feb-20	08-Sep-20	11-Aug-20	80			-24	<del></del>	<u> </u>				
Procurement	. y	90	90	24-Feb-20 A	10-Feb-20	29-Jun-20	30-May-20	80			-24	-					
P-PC10120	Procurement and Manufacture of LV Switch Board	90	90	09-Mar-20	10-Feb-20	29-Jun-20	30-May-20	80	0%	0	-24	_					
P-PC10140	Procurement and Manufacture of AHU for Dehumidification System	75	55	24-Feb-20 A	10-Feb-20	18-May-20	13-May-20	0	26.67%	0	-4					Procurement and Manufac	ture of AHU for Dehumidifica
P-PC10160	Procurement and Manufacture of Generator	90	90	09-Mar-20	10-Feb-20	29-Jun-20	30-May-20	37	0%	0	-24						
Factory Acceptant	ce Test	125	125	08-Apr-20	02-Apr-20	08-Sep-20	11-Aug-20	80			-24				·		
P-PC10060	Factory Acceptance Test for LV Switch Board	60	60	30-Jun-20	01-Jun-20	08-Sep-20	11-Aug-20	80	0%	0	-24						
P-PC10080	Factory Acceptance Test for AHU for Dehumidification System	30	30	08-Apr-20	02-Apr-20	18-May-20	13-May-20	0	0%	0	-4	_				Factory Acceptance Test fo	r AHU for Dehumidification S
P-PC10100	Factory Acceptance Test for Generator	60	60	30-Jun-20	01-Jun-20	08-Sep-20	11-Aug-20	37	0%	0	-24	_					
Delivery		7	7	19-May-20	14-May-20	26-May-20	21-May-20	0			-4					Delivery	
P-PC10020	Delivery of AHU for Dehumidification System	7	7	19-May-20	14-May-20	26-May-20	21-May-20	0	0%	0	-4		<u> </u>			Delivery of AH	U for Dehumidification System
	tractor's Design & Method Statement Submission & Approval	662	225	28-Mar-19 A	26-Apr-19	19-Oct-20	15-Feb-21	150			119						
Temporary Works		296	193	14-Oct-19 A	09-Nov-19	19-Oct-20	19-Oct-20	62			0						
TDS2080	Design of lifting frame for full-span lifting of precast box girder (incl. 35 days TRA)	63	45	14-Oct-19 A	09-Nov-19	29-Apr-20	21-Jan-20	102	28.57%	35	-85				Design of lifting fran	ne for full-span lifting of precast l	box girder (incl. 35 days TRA
TDS2140	Design of temporary works for superstructure of steel bridge (incl. 35 days TRA)	141	85	13-Jan-20 A	10-Feb-20	15-Jun-20	22-Jul-20	0	39.72%	35	32		:				
TDS2160	Steel mould design for precast segments of TKOI viaducts (incl. 21 days TRA)	63	63	09-Mar-20	21-Feb-20	20-May-20	04-May-20	-4	0%	21	-14					Steel mould design for r	precast segments of TKOI via
TDS2180	Design of Pier bracket for erection of pier-head segments (incl. 21 days TRA)	56	56	21-Mar-20	16-Mar-20	25-May-20	19-May-20	-4	0%	21	-5	-				Design of Pier br	acket for erection of pier-head
TDS2200	Design of temporary supporting towers and working platform for steel bridge (incl. 35 days TRA)	120	120	02-Jun-20	02-Jun-20	19-Oct-20	19-Oct-20	62	0%	35	0	-					•
TDS2220	Design for temporary works for full span erection for TKOI viaducts (incl. 21 days TRA)	90	90	09-Mar-20	03-Mar-20	20-Jun-20	15-Jun-20	38	0%	21	-5						Design for
Method Statemen	t Submission for Major Construction Works	567	178	28-Mar-19 A	26-Apr-19	01-Oct-20	15-Feb-21	107	370	-1	117						
MDS1135	Method statement submission for geometry control (incl. 21 days TRA)	67	7	28-Mar-19 A	26-Apr-19	16-Mar-20	13-Fe0-21 12-Jul-19	-117	89.55%	21	-212		<u> </u>	Meth	od statement submission for geometry control (incl. 21 days TRA)		
MDS1140	Method statement submission for assembly of steel arch bridge (incl. 35 days TRA)	96	50	15-Jul-19 A	09-Nov-19	05-May-20	28-Feb-20	35		35	-57					ement submission for assembly of	of steel arch bridge (incl. 35 da
MDS1170	Method statement submission for delivery of precast box girder (incl. 35 days TRA)	61	35	19-Oct-19 A	09-Nov-19 09-Mar-20	17-Apr-20	18-May-20		42.62%	35	26		:				ion for delivery of precast box
MDS1210	Method statement submission for installation of precast box girder (incl. 35 days TRA)	81	55	04-Nov-19 A	09-Mar-20	11-May-20	10-Jun-20	92	32.1%	35	26						<ul> <li>Method statement submi</li> </ul>
MDS1220	Method statement submission for delivery of steel bridge deck of side span (incl. 35 days TRA)	81	47	15-Jul-19 A	13-Nov-20	14-Sep-20	15-Feb-21	122		35	132						
MDS1225	Method statement submission for delivery of steel arch bridge (incl. 21 days TRA)	82	60		24-Sep-20			87			77						
MDS1230	Method statement submission for installation of the steel bridge deck of side span (incl. 21 days TRA)	67	40	15-Aug-19 A 15-Jul-19 A	24-Sep-20 13-Nov-20	29-Sep-20 05-Sep-20	28-Dec-20 29-Jan-21	129	40.3%	21	125		:				
						-											
MDS1270	Method statement submission for installation of steel arch bridge (incl. 21 days TRA)	82 485	62 199	15-Jul-19 A	29-Sep-20 28-May-19	01-Oct-20 23-Sep-20	01-Jan-21 03-Sep-20	97	24.39%	21	79 -20						
	gn Submission and Approval			15-Apr-19 A	· ·	·	·		70.0267	0					Design of arch rib inspection cradle + Under bridge	cantry	
CDS1040	Design of arch rib inspection cradle + Under bridge gantry	86	25	16-Sep-19 A	09-Oct-19	06-Apr-20	16-Jan-20	-81	70.93%	0	-69				Design of arch no inspection cradie + Under orage  Design of access facilities (incl. 14 days TRA)	,u.u.y	
CDS1060	Design of access facilities (incl. 14 days TRA)	125	14	05-May-19 A	28-May-19	24-Mar-20	19-Oct-19	-63	88.8%	14	-134		:				
CDS1080	Design of Tuned Mass Damper(TMD) (incl. 7 days TRA)	150	21	15-Apr-19 A	08-Jul-19	01-Apr-20	28-Dec-19	-36	86%	14	-81				Design of Tuned Mass Damper(TMD) (incl. 7 days TRA)		
Remainin	g Level of Effort Remaining Work ♦ Milestone	<u> </u>	Τ				TDDC						$\neg$	Date	Revision	Checked	Approved
Primary B	-						CRBC						1-80	Mar-20	Monthly updated on 08 Mar 2020		
Actual Wo		J			Thr	ee Month	Rolling Pr	rogra	mme								
- Actual VV	Dasoni i vinestori																

	ta Date : 08-Mar-2 e: 2	Con		et No.	NE/2017/0	7 Cross F	Bay Link, T	Seng Kw	an O	- Main	Brid	ge and A	Associa	ated Works				
Activity ID		ActityName	Original Duration	Remaining Durate	on Start	Planned Start	Finish	Planned Finish	Total Float	Activity% Complete	TRA V		23 01	March 2020 08 15 22	April 2020 29 05 12 19 26	May 2020 17 17	24 31	June 2020 07 14 21 28
	CDS1120	Design of Isolation panel and its structural frame (incl. 7 days TRA)	97	60	19-Nov-20 A	27-Mar-20	16-May-20	17-Jul-20	39	38.14%	7	53				: :		
	CDS1140	Design of Functional lighting system,road lighting system,etc (incl. 7 days TRA)	97	97	18-May-20	20-Apr-20	07-Sep-20	10-Aug-20	39	0%	7	-24						
	CDS1160	Design of Electrical system for the E&M plant room	100	50	09-Oct-19 A	09-Dec-19	27-Apr-20	17-Mar-20	1	50%	0	-41				esign of Electrical system for the I	1	
	CDS1180	Design of Building Services system for the E&M plant room	100	40	02-Sep-19 A	02-Sep-19	17-Apr-20	10-Dec-19	0	60%	0	-129			Design of Build	ing Services system for the E&M	plant room	
	CDS1200	Design of Structural health monitoring system (incl. 14 days TRA)	172	40	12-Jun-19 A	08-Jul-19	23-Apr-20	23-Jan-20	-75	76.74%	14	-78			Design	of Structural health monitoring sy	stem (incl. 14 days TI	RA)
	CDS1220 1	Design of SCADA system(SCADAS) (incl. 14 days TRA)	171	171	09-Mar-20	18-Feb-20	23-Sep-20	03-Sep-20	151	0%	14	-17	:			:		
	Preliminaries, Submis	ssion, Subcontracting and Procurement	49	49	08-Mar-20	08-Feb-20	26-Apr-20	20-Apr-20	291			-6			▼ Pre	iminaries,Submission, Subcontra	cting and Procuremen	nt
	General Submission		49	49	09-Mar-20	03-Mar-20	26-Apr-20	20-Apr-20	100			-6		•	₹ Ger	ieral Submission		
	P-GS1680	Submit the details of proposed precast yard for precast segment (incl. 21 days TRA)	49	49	09-Mar-20	03-Mar-20	26-Apr-20	20-Apr-20	100	0%	21	-6	- i -		Sub	mit the details of proposed precas	st yard for precast segr	ment (incl. 21 days TRA)
1	Project Manager's Acc	ceptance of Subcontractors	0	0	08-Mar-20	08-Feb-20	08-Mar-20	02-Mar-20	340			-6		▼ Project Manager's Acceptance	ce of Subcontractors			
	P-SP1460	Fabrication and transportation of precast segment	0	0			08-Mar-20	02-Mar-20	44	0%	0	-6	<b>•</b>	Fabrication and transportation	on of precast segment			
	P-SP1470	Fabrication of Precast Pile Cap Shelll for TKOI Viaduct	0	0			08-Mar-20	02-Mar-20	45	0%	0	-6	<b>•</b>	Fabrication of Precast Pile C	Cap Shelll for TKOI Viaduct			
	P-SP1480	Erection of precast segment	0	0			08-Mar-20	02-Mar-20	340	0%	0	-6	<b>.</b>	Erection of precast segment				
	P-SP1540	Waterproofing Works	0	0			08-Mar-20	08-Feb-20	171	0%	0	-29		◆ Waterproofing Works		:		
	P-SP1580	Supply and installation of steel parapet and sign gantry	0	0			08-Mar-20	08-Feb-20	174	0%	0	-29		Supply and installation of sto	eel parapet and sign gantry			
		Flexible pavement works	0	0			08-Mar-20	08-Feb-20	0	0%	0	-29		Flexible pavement works				
	recasting & Fabricat	•	625	354	19-Apr-19 A	12-Jun-19	25-Feb-21	18-Dec-20	-130			-69		·				
	ŭ	st Shell and Precast Segments	164	135	29-Jan-20 A	09-Feb-20	21-Jul-20	18-Jul-20	-28			-3						
	Precast Shell	st Shell and Precast Segments	164	135	29-Jan-20 A	09-Feb-20	21-Jul-20	18-Jul-20	-28			-3						
1		* Challe (Green)					21-Jul-20 21-Jul-20	18-Jul-20										
	CBL - E1 and W1 Side	Casting Bed Preparation for Side Shells (small) - Additional Casting Beds	164	135	29-Jan-20 A	09-Feb-20			-28	0.220/		-3				Casting Bed Preparation for	Side Shelk (cmall) - A	idditional Carting Rode
			60	55	29-Jan-20 A	09-Feb-20	02-May-20	29-Apr-20	-28	8.33%	0	-3				Casting Bed Freparation for	Side Silens (silian) - A	Fabrication of Side Shell
		Fabrication of Side Shells (C Shape) E1	40	40	03-May-20	30-Apr-20	11-Jun-20	08-Jun-20	-28	0%	0	-3			•			Fabrication of Side Shells
		Fabrication of Side Shells (C Shape) W1	40	40	12-Jun-20	09-Jun-20	21-Jul-20	18-Jul-20	-28	0%	0	-3					•	
	Fabrication of Precas		244	251	08-Dec-19 A	24-Feb-20	14-Nov-20	01-Sep-20	-74			-74						
Ш.	Box Girder Fabricatio	on - 1st Batch (10 Pieces)	153	156	08-Dec-19 A	24-Feb-20	11-Aug-20	10-Jul-20	-74			-32						
		Transfer and delivery the 1st Batch Box Girder to HONG KONG (except NW5-4) ** planned to Commenced from early Apr 2020	60	60	13-Jun-20	31-Mar-20	11-Aug-20	29-May-20	-74	0%	0	-74					—	
	P-BG1408	Fabrication of Precast box girder, Including Cast-in Items -Span E6-E7(North)	132	97	08-Dec-19 A	29-Mar-20	13-Jun-20	02-Jul-20	-67	26.52%	0	19		_				
	P-BG1409	Fabrication of Precast box girder, Including Cast-in Items -Span W3-W4(North)	139	139	16-Mar-20*	24-Feb-20	01-Aug-20	08-May-20	-74	0%	0	-85				:		
	P-BG1425	Fabrication of Precast box girder, Including Cast-in Items -Span E7-Abut(North)	132	122	09-Jan-20 A	06-Apr-20	08-Jul-20	10-Jul-20	-67	7.58%	0	2				:	:	
	Box Girder Fabricatio	on - 2nd Batch (8 Pieces)	125	125	13-Jul-20	30-Apr-20	14-Nov-20	01-Sep-20	-74			-74						
	P-BG1407	Fabrication of Precast box girder, Including Cast-in Items -Span W2-W3(North)	75	75	07-Aug-20	25-May-20	20-Oct-20	07-Aug-20	-74	0%	0	-74					-	
	P-BG1445	Fabrication of Precast box girder, Including Cast-in Items -Span E3-E4(North)	75	75	13-Jul-20	30-Apr-20	25-Sep-20	13-Jul-20	-74	0%	0	-74						
	P-BG1446	Fabrication of Precast box girder, Including Cast-in Items -Span E3-E4(South)	75	75	01-Sep-20	19-Jun-20	14-Nov-20	01-Sep-20	-74	0%	0	-74						
П-	Fabrication of Precas	st Pier	176	160	25-Feb-20 A	09-Feb-20	15-Aug-20	17-Jul-20	64			-29	<del> </del>			<u>:</u>		
	P-PF1420	Fabrication of Precast pier (2nd batch 4 nos) - E7 W3, W4, W5(include 10 days TRA)	165	160	25-Feb-20 A	09-Feb-20	15-Aug-20	07-Jul-20	58	3.03%	10	-39				:	:	
	P-PF1430	Fabrication of Precast pier (3rd batch 3 nos) (incl. 10 days TRA) - W2,E2, E3	60	60	04-Jun-20	19-May-20	02-Aug-20	17-Jul-20	77	0%	10	-16						:
	Fabrication of Steel A	Arch Bridge and Side Spans	625	354	19-Apr-19 A	12-Jun-19	25-Feb-21	18-Dec-20	-180			-69				:		
	Fabrication of Side Sp	pans	333	284	14-Nov-19 A	27-Dec-19	27-Dec-20	23-Nov-20	-137			-34						
	P-PF1080	Fabrication of steel deck of Side Spans - C01 to C07	161	124	14-Nov-19 A	27-Dec-19	20-Jul-20	04-Jun-20	-137	22.98%	7	-46						
	P-PF1081	Sub-assembly of Side Span - C01 to C07	80	80	06-Jun-20	11-May-20	24-Aug-20	29-Jul-20	-117	0%	0	-26						
	P-PF1082	Fabrication of steel deck of Side Spans - C22 to C28	173	160	23-Dec-19 A	04-Jun-20	27-Dec-20	23-Nov-20	-137	7.51%	7	-34						
	Fabrication of Steel Ar	-	625	354	19-Apr-19 A	12-Jun-19	25-Feb-21	18-Dec-20	-180			-69				:		
	Design, Drawing, Pro	-	227	40	19-Apr-19 A	12-Jun-19	17-Apr-20	24-Jan-20	-29			-84			Design, Drawin	g, Procurement		
		Remaining shop drawing submission & approval (NCE 014)	65	40	29-Jun-19 A	21-Nov-19	17-Apr-20	24-Jan-20	-29	38,46%	0	-84			Remaining shop	drawing submission & approval	(NCE 014)	
		Procurement and delivery of steel material (incl. 35 days TRA)	125	10	19-Apr-19 A	12-Jun-19	18-Mar-20	14-Oct-19	-160	92%	35	-156		Procurement a	and delivery of steel material (incl. 35 days			
	Fabrication and sub-a		570	354	29-Jun-19 A	06-Aug-19	25-Feb-21	18-Dec-20	-180	,2,0	33	-69			<u> </u>			
		Welding Procedure trials	90	7	29-Jun-19 A	06-Aug-19	15-Mar-20	03-Nov-19	-147	92.22%	0	-133		Welding Procedure	e trials			
		Fabrication of Main Span - Decking C08-C14	235	£1				03-Nov-19 14-Mar-20	-147	74.04%	7	-55				Fabrication of Main	Span - Decking COS (	C14
				61	30-Aug-19 A	30-Aug-19	08-May-20			8.43%	,	-82				i aoneadon on widhii		
		Sub-assembly of Main Span - Decking C08 to C14	178	163	23-Dec-19 A	17-Jan-20	26-Aug-20	05-Jun-20	-137		0							
		Fabrication of Main Span - Decking C15- C21	233	163	10-Oct-19 A	02-Mar-20	18-Oct-20	13-Sep-20	-50	30.04%	7	-35						
		Main Span Coating	190	190	20-Aug-20	12-Jun-20	25-Feb-21	18-Dec-20	-180	0%	0	-69						
	P-PF1170	Fabrication of Main Span - Arch rib NG01 to NG19	347	282	25-Nov-19 A	09-Dec-19	15-Dec-20	11-Sep-20	-180	18.73%	7	-95						
	Pemaining	evel of Effort Remaining Work ◆ Milestone	Τ				DDC						Date	Revision		Checked	Approved	
	Primary Base							RBC					08		ly updated on 08 Mar 2020			
	•		,			Thr	ee Month	Rolling P	rogra	mme								
	Actual Work	♦ Baseline Milestone																

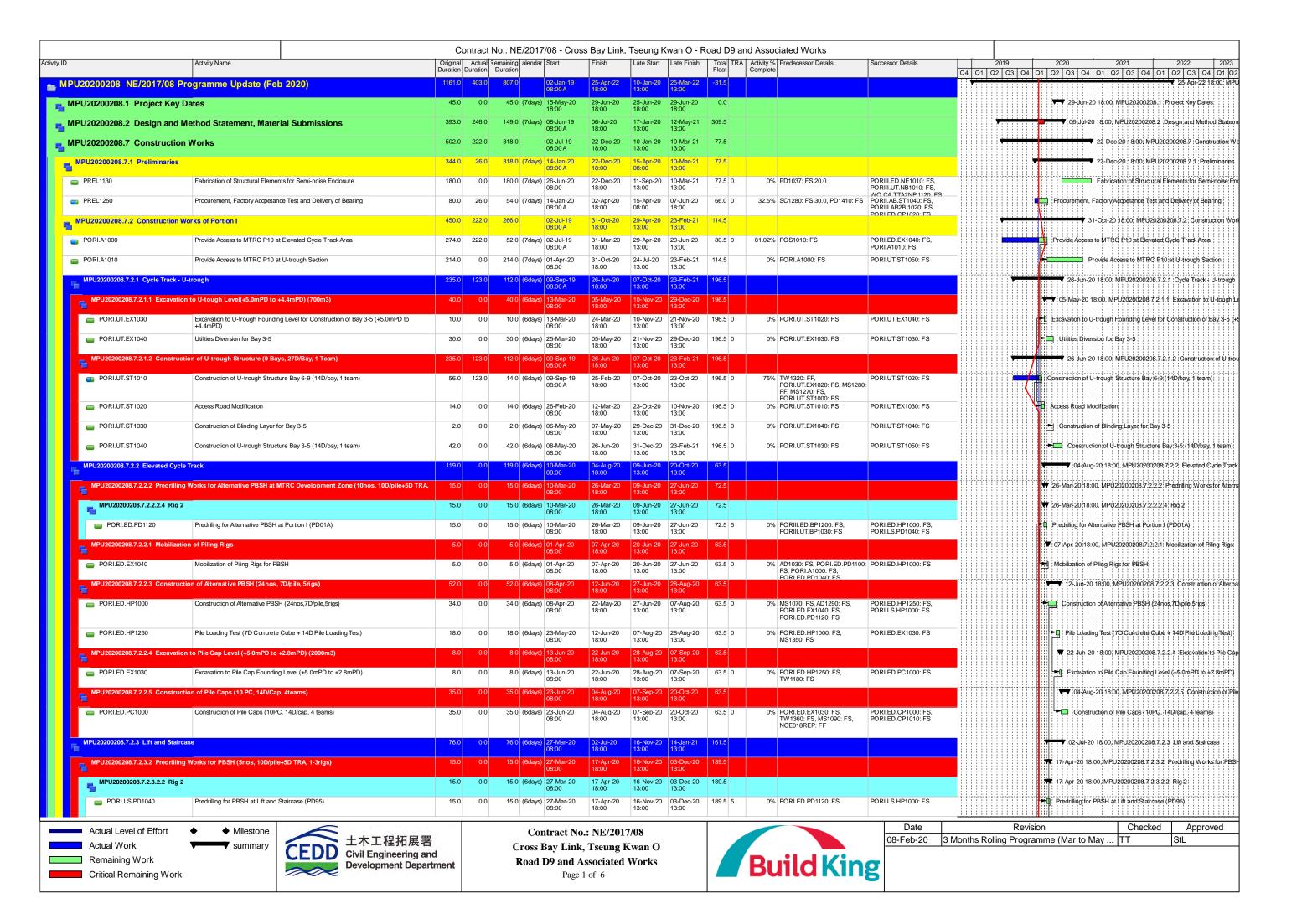
<b>Date : 08-Mar</b> -3	20 TACHANAme		t No.	NE/2017/0	7 Cross I	Bay Link,	Tseng Kw	an O -	- Main	Bridge	e and	Associat	ted Works
D DELLOO		Original Duration	Remaining Duraion	San 20	Planted Sant	FIRST	Planned Finsh	10ai Fidai	Admy% Complete	TRA Variar	De-FinishLate	23 01	Netrol Auto
P-PF1190	Fabrication of Main Span - Arch rib SG01 to SG19	252	252	05-May-20	09-Feb-20	11-Jan-21	17-Oct-20	-180	0%	7	-86		
	All Works within Portion II,III,IV and VI	322	274	10-Oct-19 A	21-Jan-20	07-Dec-20	07-Dec-20	241			0		
	nd Marine Viaduct	322	274	10-Oct-19 A	21-Jan-20	07-Dec-20	07-Dec-20	241			0		
Pile Cap		182	144	10-Oct-19 A	21-Jan-20	01-Sep-20	06-Aug-20	87			-22		
Pile Cap (L+R) for F	Pier W1	88	88	09-Mar-20	11-Mar-20	26-Jun-20	29-Jun-20	-46					
S2-PC2060	Installation of precast shell -W1 (L+R)	18	18	09-Mar-20	11-Mar-20	28-Mar-20	31-Mar-20	-46	0%	0	2		Installation of precast shell -W1 (L+R)
S2-PC2080	Pilehead treatment -W1(L+R)	30	30	30-Mar-20	01-Apr-20	09-May-20	12-May-20	-46	0%	0	2		Pilehead treatment -W1(L+R)
S2-PC2740	Rebar fixing and Concreting -W1	30	30	22-May-20	25-May-20	26-Jun-20	29-Jun-20	-46	0%	0	2		
Pile Cap for Pier E5		10	10	09-Mar-20	10-Feb-20	19-Mar-20	20-Feb-20	102			-24		Pile Cap for Pier E5
S2-PC2820	Preparation works for pier installation -E5	10	10	09-Mar-20	10-Feb-20	19-Mar-20	20-Feb-20	102	0%	0	-24		Preparation works for pier installation -E5
Pile Cap for Pier E6		10	10	09-Mar-20	10-Feb-20	19-Mar-20	20-Feb-20	98			-24		Pile Cap for Pier E6
S2-PC2840	Preparation works for pier installation -E6	10	10	09-Mar-20	10-Feb-20	19-Mar-20	20-Feb-20	98	0%	0	-24		Preparation works for pier installation -E6
Pile Cap for Pier E7		10	10	09-Mar-20	10-Feb-20	19-Mar-20	20-Feb-20	126			-24		Pile Cap for Pier E7
	Preparation works for pier installation -E7	10	10	09-Mar-20	10-Feb-20	19-Mar-20	20-Feb-20	126	0%	0	-24		Preparation works for pier installation -E7
Pile Cap (C Side Cap	•	40		17-Jul-20	19-Jun-20			0	070	•	-22		
						01-Sep-20	06-Aug-20	9	00/				
S2-PC2461	Installation of pre-cast side shell and construction of strucutre gap x2 sides -E1	40	40	17-Jul-20	19-Jun-20	01-Sep-20	06-Aug-20	9	0%	0	-22		Di. C., 6. BUD
Pile Cap for Pier W2		10	- "	09-Mar-20	10-Feb-20	19-Mar-20	20-Feb-20	221			-24		Pile Cap for Pier W2
S2-PC2050	Preparation works for pier installation -W2	10	10	09-Mar-20	10-Feb-20	19-Mar-20	20-Feb-20	221	0%	0	-24		Preparation works for pier installation -W2
Pile Cap for Pier W3	3	20	10	04-Feb-20 A	23-Mar-20	15-Apr-20	14-May-20	113			23		Pile Cap for Pier W3
S2-PC2160	Rebar fixing and 1st stage Concreting -W3	20	0	04-Feb-20 A	23-Mar-20	26-Feb-20 A	17-Apr-20		100%	0	40	_	Rebar fixing and 1st stage Concreting -W3
S2-PC2720	Preparation works for pier installation -W3	10	10	31-Mar-20	04-May-20	15-Apr-20	14-May-20	113	0%	0	23		Preparation works for pier installation -W3
Pile Cap for Pier W4	4	33	10	10-Oct-19 A	12-Mar-20	14-Apr-20	23-Apr-20	118			8		▼ Pile Cap for Pier W4
S2-PC2180	Installation of precast shell -W4	10	0	10-Oct-19 A	09-Apr-20	10-Oct-19 A	23-Apr-20		100%	0	158		Installation of precast shell -W4
S2-PC2200	Pilehead treatment -W4	14	0	20-Nov-19 A	12-Mar-20	25-Nov-19 A	27-Mar-20		100%	0	100		Pilehead treatment -W4
	Rebar fixing and 1st stage Concreting -W4	10	0	30-Nov-19 A	28-Mar-20	09-Dec-19 A	09-Apr-20		100%	0	98		Rebar fixing and 1st stage Concreting -W4
S2-PC2760	Preparation works for pier installation -W4	10	10	30-Mar-20	01-Apr-20	14-Apr-20	16-Apr-20	118	0%	0	2		Preparation works for pier installation -W4
			50		_	14-Apr-20	-		070	0			▼ Pile Cap for Pi
Pile Cap for Pier W5		59	39	30-Mar-20	01-Apr-20		15-Jun-20	114	00/		2		Installation of precast shell -W5 (8nos.)
S2-PC2240	Installation of precast shell -W5 (8nos.)	10	10	30-Mar-20	01-Apr-20	14-Apr-20	16-Apr-20	114	0%	0	2		
S2-PC2260	Pilehead treatment -W5	18	18	15-Apr-20	17-Apr-20	07-May-20	09-May-20	114	0%	0	2		Pilehead treatment -W5
S2-PC2280	Rebar fixing and 1st stage Concreting -W5	11	11	08-May-20	11-May-20	20-May-20	22-May-20	114	0%	0	2		Rebar fixing and 1st stage Concreting -W5
S2-PC2780	Preparation works for pier installation -W5	10	10	02-Jun-20	04-Jun-20	12-Jun-20	15-Jun-20	114	0%	0	2		Preparation
Pile Cap (L+R) for F	Pier E1	30	15	09-Jan-20 A	21-Jan-20	25-Mar-20	27-Feb-20	-46			-23		▼ Pile Cap (L+R ) for Pier E1
S2-PC2450	Rebar fixing and Concreting -E1 (L+R)	30	15	09-Jan-20 A	21-Jan-20	25-Mar-20	27-Feb-20	-46	50%	0	-23		Rebar fixing and Concreting -E1 (L+R)
Pile Cap for Pier E2		54	54	30-Mar-20	01-Apr-20	06-Jun-20	09-Jun-20	140			2		▼ Pile Cap for Pier E2
S2-PC2300	Installation of precast shell -E2	10	10	30-Mar-20	01-Apr-20	14-Apr-20	16-Apr-20	140	0%	0	2		Installation of precast shell -E2
S2-PC2320	Pilehead treatment -E2	14	14	15-Apr-20	17-Apr-20	02-May-20	05-May-20	140	0%	0	2		Pilehead treatment -E2
S2-PC2340	Rebar fixing and 1st stage Concreting -E2	10	10	04-May-20	06-May-20	14-May-20	16-May-20	140	0%	0	2		Rebar fixing and 1st stage Concreting -E2
S2-PC2900	Preparation works for pier installation -E2	10	10	27-May-20	29-May-20	06-Jun-20	09-Jun-20	140	0%	0	2		Preparation works
Pile Cap for Pier E3		10		09-Mar-20	10-Feb-20	19-Mar-20	20-Feb-20	206			-24		Pile Cap for Pier E3
	Preparation works for pier installation -E3		10	09-Mar-20	10-Feb-20	19-Mar-20	20-Feb-20	206	0%	0	-24		Preparation works for pier installation -E3
	•	10							U70	U			✓ Pile Cap for Pier E4
Pile Cap for Pier E4		10		09-Mar-20	10-Feb-20	19-Mar-20	20-Feb-20	106	00.5		-24		
S2-PC2800	Preparation works for pier installation -E4	10	10	09-Mar-20	10-Feb-20	19-Mar-20	20-Feb-20	106	0%	0	-24		Preparation works for pier installation -E4
	orks for CBL Main Bridge and Marine Viaduct	210	210	09-Mar-20	10-Feb-20	20-Nov-20	22-Oct-20	208			-24		
Procurement and De	elivery of Assocaited, E&M Works	210	210	09-Mar-20	10-Feb-20	20-Nov-20	22-Oct-20	208			-24		
S2-AW2006	Procurement and Delivery Under Bridge mobile gantry	180	180	25-Mar-20	26-Feb-20	02-Nov-20	03-Oct-20	-60	0%	0	-24		
S2-AW2008	Procurement and delivery of arch inspection cradle	210	210	09-Mar-20	10-Feb-20	20-Nov-20	22-Oct-20	-90	0%	0	-24		
S2-AW2010	Procurement and delivery of of TMD	120	120	02-Apr-20	05-Mar-20	28-Aug-20	31-Jul-20	277	0%	0	-24	_	
S2-AW2012	Procurement and delivery of dehumification system	180	180	09-Mar-20	10-Feb-20	15-Oct-20	15-Sep-20	229	0%	0	-24		
Pier (Precast Pier un	nder CSD)	111	122	17-Jan-20 A	27-Mar-20	08-Jul-20	22-Jun-20	72			-16		
Pier Erection with C	Crane Barge 1000 Tons	78	89	17-Jan-20 A	27-Mar-20	05-Jun-20	23-May-20	105			-13		▼ Pier Erection with Crar
Mobilised the 1000		41	8	17-Jan-20 A	27-Mar-20	16-Mar-20	06-May-20	127			51		Mobilised the 1000 Tons Crane
	Modification ,Inspection and approval of the 1000 Tons Crane **Initial 14 days	41	R	17-Jan-20 A	27-Mar-20	16-Mar-20	06-May-20	127	80.49%	3	51		Modification ,Inspection and approval of the 1000 Tons Crane **
52-T K5000	monitorion , inspection and approval of the 1000 1008 Craire Hillian 14 days	41	o	1 / "Jail"-2U A	∠/=ivial=∠U	10-ivial-20	00-ividy-20	12/	00.47/0	,	J1		
Remaining	Level of Effort Remaining Work	Milestone					DDC						Date Revision Checked Approved
Primary Ba		7 Summary					CRBC					08-	Mar-20 Monthly updated on 08 Mar 2020
•	_	• Outlinary			Thr	ee Month	Rolling P	rograi	nme				
Actual Worl													

	ActivityName	Original F Duration	kemaining Duration	start	Planned Start	Finsn	PlannedFinsh	lotal Float	Acamily % Complete	B INA	variance-Finish Lait	23	01 08 March 2	15 22 29	05 12 19	26 03	May 2020 10 17 24 31	June 2020 07 14
Pier E5		23	23	25-Mar-20	16-Apr-20	24-Apr-20	14-May-20	102			15					Pier E5		
S2-PR3600	Installation of Pier -E5	4	4	25-Mar-20	16-Apr-20	28-Mar-20	20-Apr-20	98	0%	0	15				- Install	llation of Pier -E5	Dahan Swing and 2nd stone Comm	ting for compaction betw
S2-PR3620	Rebar fixing and 2nd stage Concreting for connection between pier and pile cap -E5	14	14	30-Mar-20	21-Apr-20	18-Apr-20	08-May-20	102	0%	0	15						Rebar fixing and 2nd stage Concre  Installation of temp. bearing	-
S2-PR3640	Installation of temp. bearing/jacking system -E5	5	3	20-Apr-20	09-May-20	24-Apr-20	14-May-20	102	0%	0	15				Pier F		installation of temp. bearif	ig/jacking system -E3
Pier E6 S2-PR3660	Installation of Pier -E6	23	23	20-Mar-20	08-Apr-20	20-Apr-20	09-May-20	98	00/	0	15				Installation o			
S2-PR3680 S2-PR3680	Rebar fixing and 2nd stage Concreting for connection between pier and pile cap -E6	14	14	20-Mar-20 25-Mar-20	08-Apr-20	24-Mar-20	15-Apr-20	111	0%	0	15				- Instanauon c		r fixing and 2nd stage Concreting f	or connection between r
S2-PR3700	Installation of temp. bearing/jacking system -E6	5	5	25-iviar-20 15-Apr-20	16-Apr-20 05-May-20	14-Apr-20 20-Apr-20	04-May-20 09-May-20	111	0%	0	15	-					Installation of temp. bearing/jack	_
Pier E7	instantion of emp. ocaling jacking system -1.0	23	23	11-May-20	25-Apr-20	05-Jun-20	23-May-20	88	070	0	-11						¥	Pier E7
S2-PR3720	Installation of Pier -E7	4	4	11-May-20	25-Apr-20	14-May-20	29-Apr-20	88	0%	0	-11				=		Installation of Pier -E7	
S2-PR3740	Rebar fixing and 2nd stage Concreting for connection between pier and pile cap -E7	14	14	15-May-20	02-May-20	30-May-20	18-May-20	88	0%	0	-11							ar fixing and 2nd stage (
S2-PR3760	Installation of temp. bearing/ jacking system -E7	5	5	01-Jun-20	19-May-20	05-Jun-20	23-May-20	88	0%	0	-11							Installation of temp.
Pier E4	installation of temp. bearing justing system 27	23	23	30-Mar-20	21-Apr-20	29-Apr-20	19-May-20	98	070	Ů	15			<u> </u>		Pier E4		
S2-PR3540	Installation of Pier -E4	4	4	30-Mar-20	21-Apr-20	02-Apr-20	24-Apr-20	98	0%	0	15					Installation of Pier -	-E4	
S2-PR3560	Rebar fixing and 2nd stage Concreting for connection between pier and pile cap -E4	14	14	03-Apr-20	25-Apr-20	23-Apr-20	13-May-20	98	0%	0	15	-					Rebar fixing and 2nd stage	Concreting for connection
S2-PR3580	Installation of tem. bearing/ Jacking System -E4	5	5	24-Apr-20	14-May-20	29-Apr-20	19-May-20	98	0%	0	15	-					Installation of tem.	-
	n crane barge 4000 Tons	4	4	04-Jul-20	18-Jun-20	08-Jul-20	22-Jun-20	49	J. V		-12							2 0,
Pier W3		4	4	04-Jul-20	18-Jun-20	08-Jul-20	22-Jun-20	49			-12							
S2-PR3100	Installation of Pier -W3	4	4	04-Jul-20	18-Jun-20	08-Jul-20	22-Jun-20	49	0%	0	-12							
oncrete Bridge D		216	216	06-May-20	21-Mar-20	07-Dec-20	07-Dec-20	173			0	-				· ·	<u></u>	
	st Girder for Marine Viaduct	58	58	03-Jun-20	21-Mar-20	30-Jul-20	23-Jun-20	62			-37							
S2-CB2000	Mobilization of crane barge (~4000T) (incl.3days TRA)	10	10	03-Jun-20	21-Mar-20	12-Jun-20	30-Mar-20	75	0%	3	-74							Mobilization
East Side of Prec		39	39	13-Jun-20	20-May-20	30-Jul-20	23-Jun-20	53			-30							₩
S2-CB2500	Erection of precast girder for span E4 - E5 (North Deck)	5	5	13-Jun-20	20-May-20	18-Jun-20	25-May-20	62	0%	0	-21							E <sub>I</sub>
S2-CB2520	Erection of precast girder for span E4 - E5 (South Deck)	5	5	03-Jul-20	06-Jun-20	08-Jul-20	11-Jun-20	62	0%	0	-21	-						
S2-CB2540	Erection of precast girder for span E5 - E6 (North Deck)	5	5	19-Jun-20	26-May-20	24-Jun-20	30-May-20	62	0%	0	-21	-						
S2-CB2560	Erection of precast girder for span E5 - E6 (South Deck)	5	5	26-Jun-20	01-Jun-20	02-Jul-20	05-Jun-20	62	0%	0	-21	-					_	_
S2-CB2580	Erection of precast girder for span E6 - E7 (North Deck)	5	5	20-Jul-20	12-Jun-20	24-Jul-20	17-Jun-20	53	0%	0	-30							
S2-CB2600	Erection of precast girder for span E6 - E7 (South Deck)	5	5	25-Jul-20	18-Jun-20	30-Jul-20	23-Jun-20	53	0%	0	-30	1						
Procurement and	Delivery	180	180	06-May-20	06-May-20	07-Dec-20	07-Dec-20	138			0					· ·		
S2-CB2485	Procurement and delivery of bearing system	180	180	06-May-20	06-May-20	07-Dec-20	07-Dec-20	138	0%	0	0							
Pier (In-situ Pier un	nder Conforming Design)	124	124	13-Feb-20 A	11-Mar-20	08-Aug-20	01-Jun-20	-90			-57						<u>:</u>	
Pier E1		124	124	13-Feb-20 A	11-Mar-20	08-Aug-20	01-Jun-20	-90			-57							
S2-PR3485	Pier Mould Modification Work (due to PIer drawing amedment)	80	59	13-Feb-20 A		22-May-20		-90	26.25%	0							Pier Mould Mo	dification Work (due to
S2-PR3490	Construction of In-situ Pier Legs - E1	65	65	23-May-20	11-Mar-20	08-Aug-20	01-Jun-20	-90	0%	0	-57	+					<u> </u>	
tion 5 of the Wo	orks-All Works within Portion V (CBL E&M Plantroom)	222	194	13-Feb-20 A	10-Feb-20	18-Sep-20	26-Aug-20	96			-23							
WF Work		131	120	13-Feb-20 A	10-Feb-20	04-Aug-20	20-Jul-20	3			-13							
5-PR2080	ABWF Work	131	120	13-Feb-20 A	10-Feb-20	04-Aug-20	20-Jul-20	3	8.4%	0	-13	- :		<u> </u>			:	
ajor Services Sy	rstem	119	119	23-May-20	02-May-20	18-Sep-20	26-Aug-20	96			-23						·	
Electrical System		84	84	23-May-20	02-May-20	31-Aug-20	06-Aug-20	91			-21						<del>-</del>	
UPS Room		55	55	27-Jun-20	02-Jun-20	31-Aug-20	06-Aug-20	81			-21							
S5-PR2580	E&M Installation for UPS Room	55	55	27-Jun-20	02-Jun-20	31-Aug-20	06-Aug-20	81	0%	0	-21						_	
Transformer Roor	m 1 and Room 2	26	26	23-May-20	02-May-20	22-Jun-20	01-Jun-20	81			-18						<b>-</b>	
S5-PR2360	E&M installation for Transformer Room	26	26	23-May-20	02-May-20	22-Jun-20	01-Jun-20	81	0%	0	-18							
Generator Room 8	& Fuel Tank Room	40	40	04-Jul-20	11-Jun-20	19-Aug-20	29-Jul-20	101			-18							
S5-PR2520	E&M Installation for Fuel Tank Room	40	40	04-Jul-20	11-Jun-20	19-Aug-20	29-Jul-20	101	0%	0	-18							
ire Services Syste	em	116	116	26-May-20	02-May-20	18-Sep-20	26-Aug-20	96			-23						<b>▼</b>	
Statutory Submiss	sion	30	30	08-Jun-20	15-May-20	07-Jul-20	13-Jun-20	169			-24							▼
S5-PR2660	Submission of WWO46 to WSD	30	30	08-Jun-20	15-May-20	07-Jul-20	13-Jun-20	148	0%	0	-24							
S5-PR2680	Submission of FSI/314 to FSD	30	30	08-Jun-20	15-May-20	07-Jul-20	13-Jun-20	169	0%	0	-24	1						
Installation of Fire	Services	98	98	26-May-20	02-May-20	18-Sep-20	26-Aug-20	16			-20						▼	
S5-PR2720	Fire services installation on Transformer Room	26	26	26-May-20	02-May-20	24-Jun-20	01-Jun-20	16	0%	0	-20							
			1	1		1	1						Date	::	Revision	· · · · · · · · · · · · · · · · · · ·	Checked	d Appro
Remainin	ng Level of Effort Remaining Work $lacktriangle$	Milestone				(	CRBC						08-Mar-20	N4 4 . 1	ated on 08 Mar 2020		Griecket	Applo

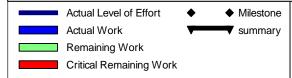
Data Date : 08-Mar-20 Page: 5	Contract No. NE/	2017/07 Cross Bay Link, Tseng Kwan (	) - Main Bridge and Associa	ated Works	
Activity D Activity Name	Original Remaining Duration Duration	Start Planned Start Finish Planned Finish Total	coat Activity% Complete TRA Variance-Finish Date 23 01	March 2020   April 2020   Mey 2020   08   15   22   29   06   12   19   26   03   10   17   2	June 2020 24 31 07 14 21 28
S5-PR2740 Fire services installation on others' Area (except Transformer Roon	m) 72 72 2	-Jun-20 02-Jun-20 18-Sep-20 26-Aug-20 10	0% 0 -20		
MVAC System  Statutory Submission		-May-20 22-May-20 09-Jul-20 04-Jul-20 16 -Jun-20 05-Jun-20 09-Jul-20 04-Jul-20 16		`	
S5-PR2940 Submission of FSI/314 to FSD			7 0% 0 -5		
Installation of MVAC System			-4	,	✓ Insta
S5-PR2840 MVAC Installation for Transformer Room	26 26 2	-May-20 22-May-20 26-Jun-20 20-Jun-20 0	0% 0 4	_	MV
Remaining Level of Effort Remaining Work	♦ Milestone	CRBC			Checked Approved
Primary Baseline Critical Remaining	g Work Summary	Three Month Rolling Progr	amme 08	8-Mar-20 Monthly updated on 08 Mar 2020	
Actual Work ♦ Baseline Mileston	ne	Three Month Rolling 1 10gi			



**Contract 2** 



	Activity Name	Original Duration	Actual R Duration	emaining Duration	alendar Start	Finish	Late Start La		Total TR	A Activity % Predecessor Details Complete	Successor Details	2019 2020 2021 2022 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3
MPU20200208.7.2.3.3 Constru	uction of PBSH (14nos, 7D/pile, 3rigs)	33.0			(6days) 23-May-20 08:00	02-Jul-20 18:00	03-Dec-20 14 13:00 13	4-Jan-21 3:00	161.5			44 U1 U2 U3 U4 U1 U2 U3 U3 U4 U1 U2 U3 U3 U4 U1 U2 U3 U3 U4 U1 U2 U3 U4
PORI.LS.HP1000	Construction of PBSH (14nos,7D/pile,3rigs)	33.0	0.0	33.0	(6days) 23-May-20 08:00		03-Dec-20 14		161.5 0	0% PORI.ED.HP1000: FS, MS1070: FS, AD1210: FS, PORI.LS.PD1040: FS, PORILS.PD1010: FS	PORILLS.PD1060: FS	□ Construction of PBSH;(14nos;7D/pile;3rigs)
20200208.7.3 Construction	ı Works of Portion II	176.0	20.0	156.0	20-Jan-20 08:00 A	13-Jul-20 18:00	10-Jan-20 26 13:00 13	6-Aug-20 3:00	43.5			. 13-Jul-2b 18:00, MPU2b200208.7,3: Gonstruc
U20200208.7.3.1 Abutment 2	A	105.0	8.0	97.0		15-May-20 18:00	25-Mar-20 24		40.0			15-May-20 18:00; MPU2020b208.7.3.1 Abutment
MPU20200208.7.3.1.4 Constru	uction of Abutment Structure	105.0	8.0	97.0	01-Feb-20	15-May-20	25-Mar-20 24	4-Jun-20	40.0			15-May-20 18:d0; MPU20200208.7.3.1.4 ;Constru
PORII.AB.ST1010	Excavation to Pile Cap Founding Level (+4.4 to +2.3mPD) (900m3)	7.0	0.0	7.0	08:00 A (6days) 20-Feb-20	18:00 27-Feb-20	31-Mar-20 08		34.0 0	0% PORII.AB.BP1030: FS,	PORII.AB.ST1020: FS	r*11: Ekoavation to Pile Cap Founding Level (+4.4 to +2.8mF
					08:00	18:00	08:00	8:00		PORII.AB.ST1010-01: FS, PORII.ED.HP1010: FS -15.0		
PORII.AB.ST1010-01	Home Quarantine due to Wuhan Pneumonia (NCE083)	14.0	8.0	6.0	(7days) 01-Feb-20 08:00 A	14-Feb-20 18:00	25-Mar-20 30 08:00 18	0-Mar-20 8:00	45.0 0	57.14%	PORII.AB.ST1010: FS	Home Quarantine due to Wuhan Pneumonia (NCED83
PORII.AB.ST1020	Construction of Pile Cap for Abutment Structure	16.0	0.0	16.0	(6days) 28-Feb-20 08:00	17-Mar-20 18:00		2-May-20 8:00	34.0 0	0% PORII.AB.ST1010: FS, TW1440: FF, MS1370: FF	PORII.AB.ST1030: FS, PORII.AB.ST1025: FS	Construction of Pile Cap for Abulment Structure
PORII.AB.ST1025	Bearing Information provided by C1 for reserve opening at Abutment Structure	0.0	0.0	0.0	(6days)	17-Mar-20 18:00		2-May-20 8:00	34.0 0	0% PORII.AB.ST1020: FS	PORII.AB.ST1030: FS	Bearing Information provided by C1 for reserve openii
PORII.AB.ST1030	Construction of Abutment Structure	30.0	0.0	30.0	(6days) 18-Mar-20 08:00	25-Apr-20 18:00	04-May-20 06		34.0 0	0% PORII.AB.ST1020: FS, PORII.AB.ST1025: FS	PORII.AB.ST1040: FS	Construction of Abutment Structure
PORII.AB.ST1040	Installation of Bearing	15.0	0.0	15.0	(6days) 27-Apr-20	15-May-20	08-Jun-20 24	4-Jun-20	34.0 0	0% PORII.AB.ST1030: FS,	PC1010: FS, PCP1010: FS	——□: Installation of Bearing:
U20200208.7.3.2 Elevated Dec	ick	140.0	15.0	125.0	08:00 (6days) 20-Jan-20	18:00 13-Jul-20	10-Jan-20 26		37.5	PREL1250: FS		. 13;-Jul;-2b;18;00; MPŲ-2b;200;208;7;3;2; Elevate
//PU20200208.7.3.2.5 Constru	uction of Alternative PBSH (5nos in Port II,7D/pile, 1 rig)	75.0	15.0	60.0	08:00 A (6days) 20-Jan-20	18:00 23-Apr-20	13:00 13 10-Jan-20 09	3:00 9-Jun-20	37.5			3-Apr-20 18:00; MPU2b200208.7.3.2.5 Construc
PORII.ED.HP1010	Construction of Alternative PBSH (7D/pile, Zone 4, 5nos) (Rig 4)	31.0	15.0	24.0	08:00 A (6days) 20-Jan-20	18:00 07-Mar-20		3:00 1-Feb-20	-22.5 0	22.58% PORIII.ED.HP1020: FS -5.0,	PORII.ED.HP1060: FS,	Gonstruction of Alternative PBSH (7D/pile, Zone 4, 5ne
1011112	Constitution of vital matter 1 2011 (1 2) pine, 20110-4, 01003 (10g-4)	01.0	10.0	24.0	08:00 A	18:00		3:00	22.0	PORII.ED.PD.HP1020: FS, PORII.ED.PD.HP1010: FS	PORII.ED.1060: FS, PORIII.ED.HP1470: FS, PORIII.ED1060: FS, PORII.AB.ST1010: FS -15.0	
PORII.ED.HP1060	Pile Loading Test (28 Concrete Cube + 14D Setup)	36.0	0.0	36.0	(6days) 09-Mar-20 08:00	23-Apr-20 18:00	25-Apr-20 09 13:00 13	9-Jun-20 3:00	37.5 0	0% PORII.ED.HP1010: FS, PORIII.ED.HP1470: SS, PORIII.ED.HP1010: FS, PORIII.ED.HP1020: FS, PORIII.ED.HP1030: FS	PORII.ED.1070: FS, PORIII.ED1070: FS	Pile:Lpading Test (28 Concrete Cube + 14D Setup)
IPU20200208.7.3.2.6 Excavat	tion to Pile Cap Level (+4.4mPD to +2.3mPD)	59.0	0.0	59.0	(6days) 09-Mar-20 08:00	22-May-20 18:00	24-Feb-20 26 13:00 13	6-Aug-20 3:00	79.5			▼ 22-May-20;18:00, MPU20200208;7:3;2:6; Excava
PORII.ED.1060	Excavation to Pile Cap Founding Level (Bored Pile Area) (+4.4mPD to +2.3mPD)	16.0	0.0	16.0	(6days) 09-Mar-20 08:00		24-Feb-20 13		-11.5 0	0% PORII.ED.1015: SS 42.0, PORII.ED.HP1010: FS, PORIII.ED.HP1010: FS, PORIII.ED.HP1020: FS, PORIII.ED.HP1030: FS	PORII.ED.PCBP1000: FS, PORII.ED.1070: FS	►¶ Excavation to Pile Cap Founding Level (Boned Pile An
PORII.ED.1070	Excavation to Pile Cap Founding Level (PBSH Area) (+4.4mPD to +2.3mPD)	23.0	0.0	23.0	(6days) 24-Apr-20	22-May-20 18:00		6-Aug-20 3:00	79.5 0	0% PORII.ED.HP1060: FS, PORIII.ED1070: SS,	PORII.ED.PC1000: FS	——— Excavation to Pile Çap Founding Level (PBSH Are
					08:00	16.00	13.00	3.00		PORII.ED.1060: FS		
	ruction of Pile Cap at Bored Pile Area(Elevated Deck)( cap+ cantilever beam, 21D/pc,1t			21.0	(6days) 27-Mar-20 08:00	24-Apr-20 18:00		8-Apr-20 3:00	-11.5			V▼ 24-Agr-20 18:00; MPU20200208.7.3.2.11; Constru
PORII.ED.PCBP1000	Construction of Pile Cap at Bored Pile Area (1 PC+cantilever beam, 21D/cap, 1team)	21.0			(6days) 27-Mar-20 08:00	18:00		3:00	-11.5 0	0% PORII.ED.1060: FS, PORIII.ED.PCBP1000: SS, PORII.ED.BP1030: FS	PORII.ED.1120: FS, PORIII.ED1120: FS	Construction of Pile Cap:at Bored Pile Area (1 PC+
	illing to Interim Formation Level (Bored Pile Area) (7 Layers, 5D layer)	35.0	0.0	35.0	(6days) 11-May-20 08:00	19-Jun-20 18:00	08-Apr-20 25 13:00 13	5-May-20 3:00	-22.5			▼▼ 19-Jun-2018:00; MPU20200208.7.3.2.12 Back
PORII.ED.1120	Backfill to Interim Formation Level (Bored Pile Area) (7layers, 5D/layer)	35.0	0.0	35.0	(6days) 11-May-20 08:00	19-Jun-20 18:00	08-Apr-20 13:00	5-May-20 3:00	-22.5 0	0% PORII.ED.PCBP1000: FS, PORIII.ED1120: SS	PORII.ED.COBP1000: FS, PORIII.ED.COBP1000: FS	■ Backfill to Interim Formation Level (Bored Pile:A
MPU20200208.7.3.2.13 Constr	ruction of Columns (Bored Plle Area) (2nos, 18D/no, 2 teams)	18.0	0.0	18.0	(6days) 20-Jun-20 08:00	13-Jul-20 18:00	15-Jun-20 08 13:00 13	8-Jul-20 3:00	-4.5			▼ 13-Jul-2b 18:00, MPU2b200208.7.3.2/13 Cbr
PORII.ED.COBP1000	Construction of Columns (Bored Pile Area) (2columns, 18D/column, 2team)	18.0	0.0	18.0	(6days) 20-Jun-20 08:00	13-Jul-20 18:00	15-Jun-20 08 13:00 13	8-Jul-20 3:00	-4.5 0	0% PORII.ED.1120: FS, PORIII.ED.COBP1000: SS	PORII.ED.PC1000: FS, PORIII.ED.PC1000: FS	📲 Construction of Columns (Bored Pile Area) (2d
0200208.7.4 Construction	n Works of Portion III	349.0	172.0	176.0	21-Aug-19 08:00 A	03-Aug-20 18:00	10-Jan-20 02 13:00 13	2-Mar-21 2 3:00	210.5			V
U20200208.7.4.1 Constructio	on of Elevated Deck and Abutment 2B	282.0	139.0	143.0	(6days) 21-Aug-19 08:00 A	03-Aug-20 18:00	10-Jan-20 08		126.5			. V . OB-Aug-20 18:0d, MPU20200208.7;4.1; Con
MPU20200208.7.4.1.2 Sheet P	Piling and Lowering of Existing Ground Level	4.0	0.0	4.0	(6days) 10-Feb-20	13-Feb-20	04-Jun-20 09	9-Jun-20	93.5			7 13 Feb-20 18:00, MPU20200208.7.4.1.2 Sheet Piling a
PORIII.ED.EX1060	Sheet Piling Works along Northern Footpath (Grid 10 to Grid 13)	4.0	0.0	4.0	08:00 (6days) 10-Feb-20	18:00 13-Feb-20	04-Jun-20 09		93.5 0	0% PORIII.ED.EX1050: FS,	NCE019REP: FF 21.0,	Şhpet Piling;Works along;Northern Foptpath (Grid 10:tq
MPU20200208.7.4.1.3 Co <u>nstru</u>	uction of Bored Pile (12nos in Port III, 21D/pile, 1 to 5 teams in total)	42.0	139.0	<u>10.0</u>	08:00 (6days) 21-Aug-19	18:00 20-Feb-20	30-Jan-20 11		-8.5	PORIII.ED.EX1040: FS	PORIII.ED1070: FS	V 29 Feb-20 18:00, MPU20200208;7:4:1,3 Gonstruction
					08:00 A	18:00	13:00	3:00				
MPU20200208.7.4.1.3.7 Tes	oung -	42.0	139.0	10.0	(6days) 21-Aug-19 08:00 A	20-Feb-20 18:00		1-Feb-20 3:00	-8.5			2d-Feb-20 18:00; MPU20200208.7.4:1.3.7: Testing





Contract No.: NE/2017/08 Cross Bay Link, Tseung Kwan O Road D9 and Associated Works Page 2 of 6

Bui	ld King

	Date	Revision	Checked	Approved
	08-Feb-20	3 Months Rolling Programme (Mar to May	TT	StL
5				

)	Activity Name	Original	Actual	Remaining alendar S		Bay Link,	Tseung H		Total TRA	and Associated Works  A Activity % Predecessor Details	Successor Details		019	2020	) [	2021		202	2
PORIII.ED.BP1200		Duration D	Duration	Duration					Float	Complete	PORII.ED.BP1030; SS.	Q4 Q1 Q2	Q3 Q4	Q1 Q2 C	Q3 Q4 Q	1 Q2 Q	3 Q4 C		
PORIII.ED.BP1200	Interface Core/Sonic Test (Elevated Deck)	42.0	139.0		11-Aug-19 08:00 Å	20-Feb-20 18:00	13:00	11-Feb-20 13:00	-8.5 0	76.19% MS1040: FS, PORIII.ED.BP1130: FF 28.0, PORIII.ED.BP1250: FF 28.0, PORIII.ED.BP1150: FF 28.0, PORIII.ED.BP1145: FF 28.0	PORILEDIOS: 5S, PORILEDIOS: FS, PORILED.PD1120: FS			. III e Iau	e Core/Sonic	. Test (Eleva	areu Deckj		
MPU20200208.7.4.1.5 Constru	uction of Alternative PB SH (45 nos in Port III, 7D/pile, 1-4rigs)	115.0	69.0		4-Nov-19 08:00 A	23-Apr-20 18:00	10-Jan-20 13:00	09-Jun-20 13:00	37.5				<del>     </del>	₹ 23-#	Apr-20 18:00	MPU2020	0208.7.4.1	.5 Constr	action of Alf
■ PORIII.ED.HP1010	Construction of Alternative PBSH (7D/pile, Zone 3, 19nrs) (Rig 3)	57.0	69.0	24.0 (6days) 1		07-Mar-20 18:00	10-Jan-20 13:00	11-Feb-20 13:00	-22.5 0	57.89% MS1070: FS, AD1310: FS, AD1210: FS, GS1249: FF, AD1370: FS, NCE010REP: FF, PORIILED.HP1000: SS, PORIILED.PD.HP1220: FS, PORIILED.PD.HP1240: FS, PORIILED.PD.HP1200: FS, PORIILED.PD.HP1200: FS, PORIILED.PD.HP1235: FS -11.0	PORIII.ED1060: FS, PORIII.ED.HP1470: FS, PORII.ED.1060: FS, PORII.ED.HP1060: FS		,	Constri	uction of Alte	rnátive PBS	SH:(7D/pile	Zòne 3, 1	9nrs) (Rig
PORIII.ED.HP1020	Construction of Alternative PBSH (7D/pile, Zone 4, 8nrs) (Rig 4)	24.0	43.0	5.0 (6days) 1	4-Dec-19 08:00 A	14-Feb-20 18:00	10-Jan-20 13:00	16-Jan-20 13:00	-22.5 0	79.17% PORIII.ED.HP1000: FS	PORIII.ED.HP1470: FS, PORII.ED.1060: FS, PORII.ED.HP1060: FS, PORIII.ED.HP1010: FS, PORIII.ED.HP1010: FS -5.0	-	-	<b>C</b> dnistrud	ction of Altern	riative PBSI	H (7D/þile,.	Zone 4, 8n	rs) (Rig 4)
PORIII.ED.HP1030	Construction of Alternative PBSH (7D/pile, Zone 1, 18nos) (Rig 1)	54.0	55.0	24.0 (6days) 3	80-Nov-19 08:00 A	07-Mar-20 18:00	10-Jan-20 13:00	11-Feb-20 13:00	-22.5 0	55.56% PORIII.UT.HP1010: FS -10.0	PORII.ED.1060: FS, PORII.ED.HP1060: FS, PORIII.ED.HP1470: FS, PORIII.ED1060: FS			Constri	uction of Alte	rnative PBS	SH (7D/pile	Zone 1, 1	8nos) (Rig
PORIII.ED.HP1470	Pile Loading Test (28 Days Concrete Cube + 14D Setup)	36.0	0.0		09-Mar-20 08:00	23-Apr-20 18:00	25-Apr-20 13:00	09-Jun-20 13:00	37.5 0	0% PORIII.ED.HP1010: FS, PORIII.ED.HP1020: FS, PORIII.ED.HP1030: FS, PORII.ED.HP1010: FS, MS1050-01: FS	PORIII.ED1070: FS, PORII.ED.HP1060: SS			Pile:	Loading Tes	st (28 Days (	Concrété C	ube + 140	Setup)
MPU20200208.7.4.1.6 Excavati	tion to Pile Cap Level (+4.4mPD to +2.3mPD)	59.0	0.0		09-Mar-20 08:00	22-May-20 18:00	11-Feb-20 13:00	08-Jul-20 13:00	37.5					<b>▼=▼</b> 22	-May-20 18:	:00, MPU20	200208.7.	1,1,6 Exca	vation to P
PORIII.ED1060	Excavation to Pile Cap Founding Level incl. Abutment 2B (+4.4mPD to +2.3mPD) (Bored Pile Area)	14.0	0.0		09-Mar-20 08:00	24-Mar-20 18:00	11-Feb-20 13:00	27-Feb-20 13:00	-22.5 0	0% PORIII.ED.HP1010: FS, PORIII.ED.EX1000: FS, PORIII.ED.EX1010: FS, PORIII.ED.EX1030: FS, TW1560: FS, TW1620: FS, PORIII.ED.BP1200: FS, PORIII.ED.HP1020: FS, PORIII.ED.HP1030: FS, PORIII.ED.HP1070: FS, PORII.ED.HP1070: FS	PORIII.UT.ST1010: FS, PORIII.ED.PCBP1000: FS -5.0			Excav	ation to Pile (	Çap Found	iņg Ļeyel iņ	ol. Abutme	1t;2B (+4,4
PORIII.ED1070	Excavation to Pile Cap Founding Level incl. Abutment 2B (+4.4mPD to +2.3mPD) (PBSH Area)	23.0	0.0		24-Apr-20 08:00	22-May-20 18:00	09-Jun-20 13:00	08-Jul-20 13:00	37.5 0	0% PORIII.ED.HP1470: FS, PORII.ED.HP1060: FS, PORIII.ED.EX1060: FS, PORII.ED.PD.HP1010: FS, PORII.ED.PD.HP1020: FS	PORIII.AB2B.1005: FS, PORIII.ED.PC1000: FS, PORII.ED.1070: SS			FO EX	cavation to F	Pile Çap Fo	unding Lev	el indl. Abu	ment 2B (
MPU20200208.7.4.1.7 Constru	uction of PC42 (16D) + Abutment 2B (28D) + Bearing Installation (14D)	44.0	0.0		23-May-20 08:00	15-Jul-20 18:00	24-Aug-20 13:00	05-Jan-21 13:00	142.5				******	<del> </del>	15-Jul-20 1	8:00, MPU2	20200208.	74.17 Co	nstruction
PORIII.AB2B.1005	Construction of PC42	16.0	0.0	16.0 (6days) 2		10-Jun-20 18:00		11-Sep-20 13:00	77.5 0	0% TW1200: FS, PORIII.ED1070: FS	PORIII.AB2B.1010: FS, PORIII.ED1090: FS			Ļ <u>i</u> g c	Construction	of PC42			
PORIII.AB2B.1010	Construction of Abutment 2B	28.0	0.0	28.0 (6days) 1	1-Jun-20 08:00	15-Jul-20 18:00	30-Nov-20 13:00	05-Jan-21 13:00	142.5 0	0% TW1460: FS, PORIII.AB2B.1005: FS	PORIII.AB2B.1020: FS, PORIII.UT.ST1090: FS	-		<b>-</b> -	Constructio	on of Abutme	eht 2/B		
MPU20200208.7.4.1.11 Constru	ruction of Pile Cap at Bored Pile Area(Elevated Deck)(9nos cap+cantilever beam, 21D/į	42.0	0.0		9-Mar-20 08:00	13-May-20 18:00	21-Feb-20 13:00	15-Apr-20 13:00	-22.5					<b>V=V</b> 13	-May-20 18:0	00, MPU20	200208.7.4	.1.11 Con	struction of
PORIII.ED.PCBP1000	Construction of Pile Cap at Bored Pile Area (9nos caps+cantilever beam,21D/pc,5teams)	42.0	0.0		9-Mar-20 08:00	13-May-20 18:00	13:00	15-Apr-20 13:00	-22.5 0	0% MS1080: FS, TW1200: FS, PORIII.ED1060: FS -5.0, PORIII.ED.BP1250: FS, MS1330: FS	PORIII.ED1120: FS -3.0, PORII.ED.PCBP1000: SS				nstruction of				
•	lling to Formation Level (Bored Pile Area) (7Layers, 5D/layer)	35.0	0.0		1-May-20 08:00	19-Jun-20 18:00	08-Apr-20 13:00	25-May-20 13:00	-22.5					Ш	19-Jun-20 18				
PORIII.ED1120	Backfill to Interim Formation Level (Bored Pile Area) (7 layers, 5D/layer) (+2.3 mPD to +4.4mPD)	35.0	0.0	`	08:00	19-Jun-20 18:00	08-Apr-20 13:00	25-May-20 13:00	-22.5 0	0% PORIII.ED.PCBP1000: FS -3.0 PORII.ED.PCBP1000: FS	PORIII.ED.COBP1000: FS, PORII.ED.1120: SS			Ш	Backfill to Inte				
•	ruction of Columns (Bored Pile Area) (18nos,18D/no,5teams)	36.0	0.0		20-Jun-20 08:00	03-Aug-20 18:00	25-May-20 13:00	08-Jul-20 13:00	-22.5						7 03-Aug-20				
PORIII.ED.COBP1000	Construction of Columns (Bored Pile Area) (9Columns, 18D/column, 5 teams)	36.0	0.0		20-Jun-20 08:00	03-Aug-20 18:00	25-May-20 13:00	08-Jul-20 13:00	-22.5 0	0% PORIII.ED1120: FS, TW1220: FS, PORII.ED.1120: FS	PORIII.ED.PC1000: FS, PORII.ED.COBP1000: SS				Constructi	ion of Colun	nns (Bored	Pile Area)	(9Column
MPU20200208.7.4.2 Construction	n of U-trough Structure	320.0	169.0		24-Aug-19 08:00 A	08-Jul-20 18:00	11-May-20 13:00	02-Mar-21 13:00	236.5				1		08-Jul-20 18	111111	111111		::::::
MPU20200208.7.4.2.3 Constru	uction of Bored Pile (8 nos, 21D/pile, 1-3 teams)	42.0	136.0		24-Aug-19 08:00 A	09-Mar-20 18:00	11-May-20 13:00	09-Jun-20 13:00	72.5			************	\ <del>\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\</del>	09-Mar	r-20 18;00, N	MPU202002	208.7.4.2.3	Construc	on of Bor
MPU20200208.7.4.2.3.7 Test	iting	42.0	136.0		24-Aug-19 08:00 A	09-Mar-20 18:00	11-May-20 13:00	09-Jun-20 13:00	72.5				<b>17</b>	09-Mar	r-20 18:00, N	MPU202002	208.7.4.2.3	7 Testing	
PORIII.UT.BP1030	Interface Core/Sonic Test (U-trough)	42.0	136.0	25.0 (6days) 2	24-Aug-19 08:00 A	09-Mar-20 18:00	11-May-20 13:00	09-Jun-20 13:00	72.5 0	40.48% MS1040: FS, PORIII.UT.BP1070: FF 28.0, PORIII.UT.BP1110: FF 28.0, PORIII.UT.BP1102: FF 28.0	PORIILUT.ST1010: FS, PORI.ED.PD1120: FS		1	Interfar	ce Core/Son	nic Test:(U-ti	rough):		
MPU20200208.7.4.2.5 Constru	uction of Alternative PB SH (40 nos., 7D/pile, 1-2 rigs)	33.0	0.0		02-Mar-20 08:00	09-Apr-20 18:00	05-Oct-20 13:00	13-Nov-20 13:00	176.5				\	<b>▼▼</b> 09-A	pr-20 18:00,	MPU20200	0208.7.4.2.	5 Constru	ction of Alte
Actual Level of Effort Actual Work Remaining Work Critical Remaining Work	◆ Milestone summary CEDD 土木工程拓展署 Civil Engineering an Development Depart	d		Cross Ba	ay Link,	: NE/201 Tseung l ssociated	Kwan O			Build Kin	· ·	Ionths Rolli	Revisi ng Progra		ar to Ma		Checked	I ,	Approve

	Activity Name	Original	∆ctual 2	emaining	alendar Start	Finish	Late Stort	Late Finish	Total TD	A Activity % Predecessor Details	Successor Details	4	2019	2020	2021	2022
	Activity Name	Duration	Duration	Duration	n aleridar Start	FILISH	Late Start	Late Finish	Float	Complete Complete	Successor Details				Q1 Q2 Q3 Q4	
PORIII.UT.HP1410	Pile Loading Test (28D Concrete Cube + 14D Setup)	33.0	0.0	33.0	0 (6days) 02-Mar-2 08:00	09-Apr-20 18:00	05-Oct-20 13:00	13-Nov-20 13:00	176.5 0	0% PORIII.UT.HP1020: FS, PORIII.UT.HP1010: FS, MS1050-01: FS	PORIII.UT.ST1010: FS			Pile Loading	Test (28D Concrete Cube	ə; + 1/4D Setup)
MPU20200208.7.4.2.6 Construc	ction of U-trough Structure	86.0	0.0	86.0	14-Apr-2 08:00	0 08-Jul-20 18:00	13-Nov-20 13:00	02-Mar-21 13:00	236.5			<b>/</b>		VV 0/8-Jul-V	20 18:00 MPU20200208.	.7.4.2.6 Construct
PORIII.UT.ST1010	Excavation to Pile Cap Founding Level (+4.4mPD to +3.8mPD)(2000m3)	15.0	0.0	15.0	0 (6days) 14-Apr-2 08:00			01-Dec-20 13:00	176.5 0	0% PORIII.ED1060: FS, PORIII.UT.HP1410: FS, PORIII.UT.BP1030: FS, NCE017REP: FS, TW1600: FS	PORIII.UT.ST1020: FS	1		Excavation 1	tọ Pile Cap Founding Lev	/el (+4.4mPD to +3
PORIII.UT.ST1020	Plate Load Test	7.0	0.0	7.0	0 (7days) 03-May-2	09-May-20 18:00	01-Dec-20 13:00	08-Dec-20 13:00	212.5 0	TW1640: FS, MS1300: FS  0% PORIII.UT.ST1010: FS	PORIII.UT.ST1030: FS	-		<b>≻</b> ¶ Plate Load	Test	
PORIII.UT.ST1030	Construction of Base Slab Phase 1-1 (north) (3bays, 14D/bay, 3teams)	16.0	0.0	16.0	08:00 0 (6days) 11-May-2 08:00		08-Dec-20 13:00		176.5 0	0% TW1280: FS, PORIII.UT.ST1020: FS, NCE010REP: FF	PORIII.UT.ST1040: FS, PORIII.UT.ST1050: FS	-		➡□ Constructi	on of Base Slab Phase 1-	-1 (north) (3bays,
PORIII.UT.ST1040	Construction of Base Slab Phase 1-2 (north) (2bays, 14D/bay, 2teams)	15.0	0.0	15.0	0 (6days) 29-May-2	20 15-Jun-20 18:00	22-Jan-21 13:00	09-Feb-21 13:00	196.5 0	0% PORIII.UT.ST1030: FS, NCE010REP: FF	PORIII.UT.ST1060: FS	-		<b>⊢</b> □ Construc	tion of Base Slab Phase	1-2 (north) (2bays
PORIII.UT.ST1050	Construction of Base Slab Phase 2-1 (south) (3bays, 14D/bay, 3teams)	16.0	0.0	16.0	0 (6days) 29-May-2	20 16-Jun-20 18:00	29-Dec-20 13:00	18-Jan-21 13:00	176.5 0	0% PORIII.UT.ST1030: FS	PORIII.UT.ST1060: FS, PORIII.UT.ST1070: FS			<b>►</b> □ Construc	tion of Base Slab Phase 2	2-1 (south) (3bays
PORIII.UT.ST1060	Construction of Base Slab Phase 2-2 (south) (2bays, 14D/bay, 2teams)	15.0	0.0	15.0	0 (6days) 17-Jun-2		09-Feb-21 13:00		195.5 0	0% PORIII.UT.ST1050: FS, PORIII.UT.ST1040: FS	PORIII.UT.ST1090: FS			=□ :Constri:	iction of Base Slab Phase	3 2+2 (\$outh) (2bay
PORIII.UT.ST1070	Construction of Wall Phase 1 - 1 (North) (3 bays, 7D/bay, 3teams)	9.0	0.0	9.0	0 (6days) 17-Jun-2 08:00	0 27-Jun-20 18:00	18-Jan-21 13:00	28-Jan-21 13:00	176.5 0	0% PORIII.UT.ST1050: FS	PORIII.UT.ST1075: FS			Constru	ction of Wall:Phase 1 + 1	(North) (3 bays, 7
PORIII.UT.ST1075	Construction of Wall Phase 1 - 2 (North) (2 bays, 7D/bay, 2teams)	8.0	0.0	8.0	0 (6days) 29-Jun-2 08:00	0 08-Jul-20 18:00	28-Jan-21 13:00	06-Feb-21 13:00	176.5 0	0% PORIII.UT.ST1070: FS	PORIII.UT.ST1080: FS			-1 Constr⊍	ction of Wall Phase 1 - 2	(North) (2 bays, 7
PU20200208.7.6 Construction of	of the At-grade Noise Semi Enclosures	151.0	8.0	143.0	01-Feb-2 08:00 A	30-Jun-20 18:00	16-Feb-20 13:00	09-Nov-20 13:00	131.5					30-Jun∔2	20 18:00, MPU20200208	.7.6 Construction
MPU20200208.7.6.1 Construction	of Northern Drainage	105.0	0.0	105.0	0 (6days) 10-Feb-2 08:00	0 17-Jun-20 18:00	08-May-20 13:00	09-Nov-20 13:00	118.5					17-Jun-2	0 18:00, MPU20200208.	7.6.1 Construction
PORIII.AG.1048	Sheet Piles Installation SMH008 Construction (~20m length)	3.0	0.0	3.0	0 (6days) 10-Feb-2 08:00	0 12-Feb-20 18:00	25-Sep-20 13:00	29-Sep-20 13:00	188.5 0	0% PORIII.AG.1042: FS 26.0	PORIII.AG.1048-01: FS			Sheet Piles Insta	llation SMH008 Construc	tion (~20m length
PORIII.AG.1048-01	Excavation to Formation Level for SMH008 Construction	3.0	0.0	3.0	0 (6days) 13-Feb-2 08:00		29-Sep-20 13:00	05-Oct-20 13:00	188.5 0	0% PORIII.AG.1048: FS	PORIII.AG.1048-02: FS			Excavation to Fo	rmation Level for SMH00	)8 Construction
PORIII.AG.1048-02	Manhole Construction for SMH008 (14D/manhole)	14.0	0.0	14.0	0 (6days) 17-Feb-2 08:00	03-Mar-20 18:00	05-Oct-20 13:00	21-Oct-20 13:00	188.5 0	0% PORIII.AG.1048-01: FS	PORIII.AG.1048-03: FS			Manhole Constr	ruction for SMH008 (14D	/manhole)
PORIII.AG.1048-03	Laying of Drainage Pipe SMH007 to SMH008	5.0	0.0	5.0	0 (6days) 04-Mar-2	09-Mar-20 18:00	21-Oct-20 13:00	28-Oct-20 13:00	188.5 0	0% PORIII.AG.1048-02: FS	PORIII.AG.1048-04: FS			11 Laying of Drain	age Pipe SMH007 to SM	IH008
PORIII.AG.1048-04	Backfilling of Drainage Trench for SMH007 to SMH008	10.0	0.0	10.0	0 (6days) 10-Mar-2 08:00	20-Mar-20 18:00	28-Oct-20 13:00	09-Nov-20 13:00	188.5 0	0% PORIII.AG.1048-03: FS	PORIII.AG.1130: FS			Backfilling of D	rainage Trench for SMH0	007 to SMH008
PORIII.AG.1080	Excavation from +5.5mPD to +3.5mPD (inlcude Demolition of existing manhole) (SMH001A-SMH003)	10.0	0.0	10.0	0 (6days) 29-Apr-2 08:00	0 12-May-20 18:00	08-May-20 13:00	20-May-20 13:00	6.5 0	0% PORIII.AG.1070: FS -2.0	PORIII.AG.1090: FS -5.0			Excavation	from +5.5mPD to:+3.5ml	PD (inloude Demo
PORIII.AG.1090	Excavation of Drainage Trench (maximum up to +2.0mPD) for SMH001A to SMH003	7.0	0.0	7.0	0 (6days) 07-May-2 08:00	20 14-May-20 18:00	14-May-20 13:00	22-May-20 13:00	6.5 0	0% PORIII.AG.1080: FS -5.0	PORIII.AG.1100: FS			Excavation	of Drainage Trench (max	rimum up to +2.0n
PORIII.AG.1100	Manhole Construction and pipe laying for SMH001A to SMH003	14.0	0.0	14.0	0 (6days) 15-May-2 08:00	30-May-20 18:00	22-May-20 13:00	08-Jun-20 13:00	6.5 0	0% PORIII.AG.1090: FS	PORIII.AG.1105: FS			Manhole (	Construction and pipe layi	ing for SMH001A
PORIII.AG.1105	Backfilling of Drainage Trench for SMH001A to SMH003 (max 4 layers, 5D/layer)	15.0	0.0	15.0	0 (6days) 01-Jun-2 08:00	0 17-Jun-20 18:00	08-Jun-20 13:00	26-Jun-20 13:00	6.5 0	0% PORIII.AG.1100: FS	PORIII.AG.1120-002: FS			<b>►</b> □ Backfillinç	g of Drainage Trench for	SMH001A to SMH
MPU20200208.7.6.2 Construction	of Pad Footing	151.0	8.0	143.0	01-Feb-2 08:00 A	0 30-Jun-20 18:00	16-Mar-20 13:00	13-Aug-20 13:00	43.5					30-Jun+	20 18:00, MPU20200208	.7.6.2 Construction
PORIII.AG.1070	Shifting of Site Vehicle Access to Seawall Side	7.0	0.0	7.0	0 (6days) 23-Apr-2 08:00	0 02-May-20 18:00	02-May-20 13:00	11-May-20 13:00	6.5 0	0% WO.CA.TTA2010: FS, PORIII.AG.1160-03: FS	PORIII.AG.1080: FS -2.0, PORIII.AG.1060-26: FS, WO.CA.TTA2NP.1052: FS	1		Shifting of S	iite:Vehide:Abdess:to Sea	wall Side
PORIII.AG.1110	Utilities Ducts Laying across Road D9 (South Portion)	20.0	0.0	20.0	0 (6days) 09-Mar-2 08:00	0 31-Mar-20 18:00	16-Mar-20 13:00	09-Apr-20 13:00	6.5 0	0% PORIII.AG.1160-02: FS	PORIII.AG.1160-03: FS, PORIII.AG.1057: FS	-		Utilities Ducts	Laying across Road D9 (	(South Portion)
MPU20200208.7.6.2.1 Base Slab	o (18 Bays, north & south bound)	151.0	8.0	143.0				0 09-Jul-20 13:00	8.5		1 Gramma. 1007. 1 G			30-Jun∔	20 18:00, MPU20200208	3.7,6,2,1 Base Sla
PORIII.AG.1060-12	Construction of Pad Footing Bay NB-N1, S1, S3 Base Slab	15.0	0.0	15.0	0 (6days) 10-Mar-2	0 26-Mar-20	02-Jun-20	19-Jun-20	66.5 0	0% PORIII.AG.1060-10: FS,	PORIII.AG.1060-15: FS,	<b>.</b>		Construction (	of Pad Footing Bay NB-N	I1, S1, S3 Base SI
PORIII.AG.1060-15	Construction of Pad Footing Bay NB-S2, 4, 6 Base Slab	15.0	0.0	15.0	08:00 0 (6days) 27-Mar-2	18:00 0 17-Apr-20	13:00 19-Jun-20	13:00 09-Jul-20	66.5 0	PORIII.AG.1120-001: FS  0% PORIII.AG.1060-12: FS	PORIII.AG.1060-29: FS PORIII.AG.1120-01: FS,		(- <del> - - - - - - -</del>	Construction	of Pad Fopting Bay NB-5	S2, 4, 6 Base Slat
■ PORIII.AG.1060-20	Home Quarantine due to Wuhan Pneumonia (NCE083)	14.0	8.0	6.0	08:00 0 (7days) 01-Feb-2		13:00 03-May-20		84.5 0	57.14%	PORIII.AG.1060-32: FS PORIII.AG.1060-25: FS	-		Home Quarantir	ne due to Wuhan Pneumo	onia (NCE083)
PORIII.AG.1060-25	Excavation for Construction of Bay NB-N1, NB-S1-S6	10.0	0.0	10.0	08:00 A 0 (6days) 15-Feb-2		13:00 09-May-20		66.5 0	0% PORIII.AG.1060-11: FS 1.0,	PORIII.AG.1120-001: FS,	1		Excavation for (	onstruction of Bay NB-N	I1, NB-S1-S6
PORIII.AG.1060-26	Excavation for Construction of Bay NB-S7-S16	10.0	0.0	10.0	08:00 0 (6days) 04-May-2	18:00 20 14-May-20	13:00 26-Jun-20	13:00 09-Jul-20	45.5 0	PORIII.AG.1060-20: FS  0% PORIII.AG.1070: FS	PORIII.AG.1060-18: FS -2.0 PORIII.AG.1120-01: FS	-		<b>►</b> ] Éxcavation	for Construction of Bay:N	NB+S7-S16
PORIII.AG.1120-001	Construction of Blinding for Bay NB-N1, NB-S1-S6	10.0			08:00 0 (6days) 27-Feb-2	18:00	13:00	13:00 02-Jun-20	66.5 0	0% PORIII.AG.1060-25: FS	PORIII.AG.1060-12: FS	-			Blinding for Bay NB-N1,	
PORIII.AG.1120-001	Construction of Blinding for Bay NB-N12-N16, NB-S7-S16	10.0			08:00 0 (6days) 18-Jun-2	18:00	13:00 26-Jun-20	13:00	6.5 0	0% PORIII.AG.1105: FS	PORIII.AG.1120-01: FS	1 1 1 1 1 1 1 1 1 1	;-}- <del>}-</del>		ction of Blinding for Bay:N	-1-1-4-1-1-1-1-1
					08:00	18:00	13:00	13:00		575 . STAILE 1100.110						
<u>*</u>	n (18 Bays, north & south bound)	72.0			0 (6days) 25-Feb-2 08:00	18:00	19-May-20 13:00	13:00	66.5						) 18:00, MPU20200208:7	
PORIII.AG.1060-18	Construction of Pad Footing Bay NB-N7, 9, 11 Wall Stem	12.0	0.0	12.0	0 (6days) 25-Feb-2 08:00	09-Mar-20 18:00	19-May-20 13:00	02-Jun-20 13:00	66.5 0	0% PORIII.AG.1060-25: FS -2.0, PORIII.AG.1060-01: FS	PORIII.AG.1060-21: FS			Construction of	Pad Footing Bay NB-N7	,9, 11 Wall Stem
PORIII.AG.1060-21	Construction of Pad Footing Bay NB-N5, 8, 10 Wall Stem	12.0	0.0	12.0	0 (6days) 10-Mar-2 08:00	23-Mar-20 18:00	02-Jun-20 13:00	16-Jun-20 13:00	66.5 0	0% PORIII.AG.1060-18: FS, PORIII.AG.1060-04: FS	PORIII.AG.1060-24: FS			Construction c	of Pad Footing Bay NB-N	5, 8,10 Wall Stem

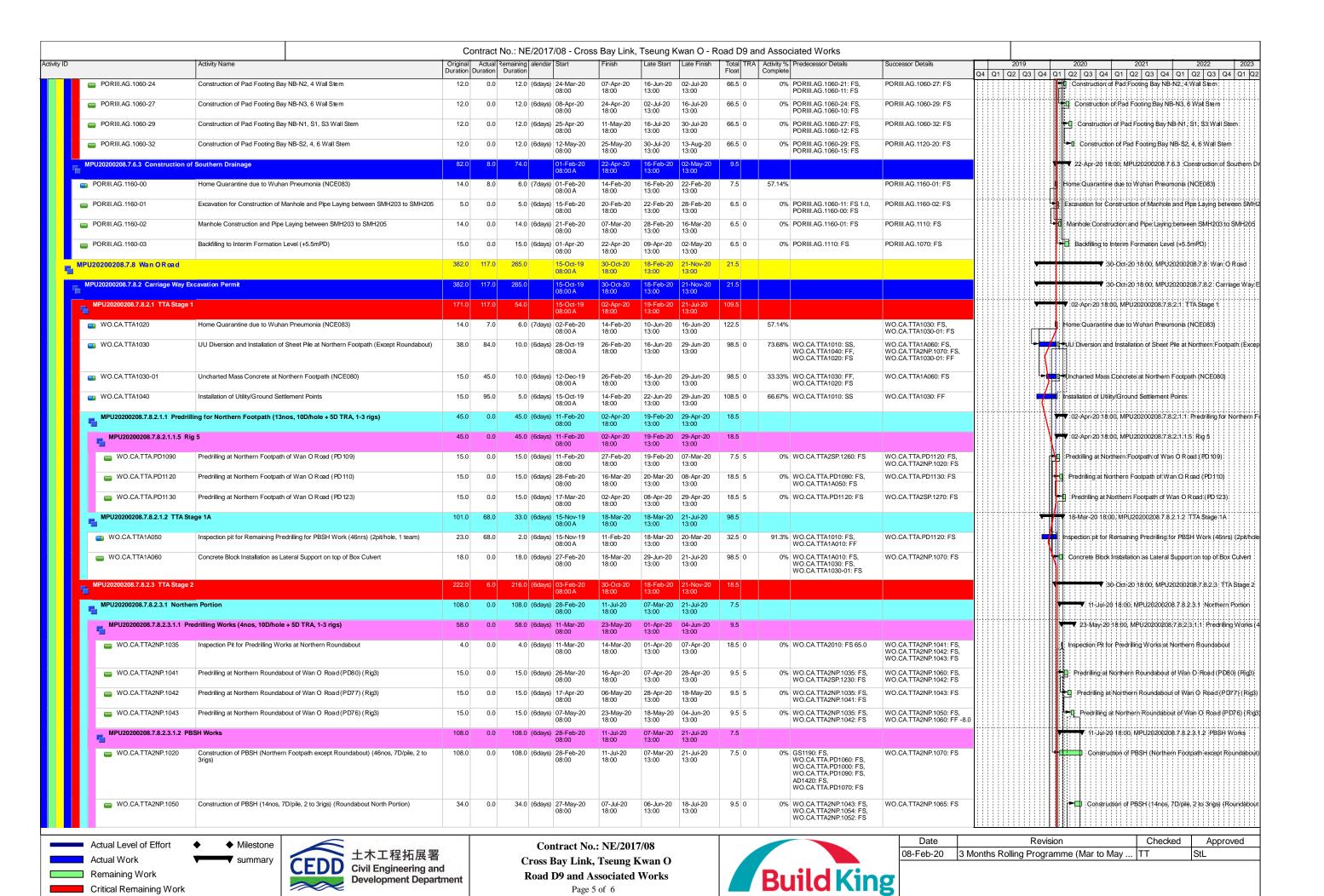
Actual Work Remaining Work Critical Remaining Work



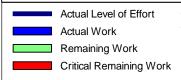
Cross Bay Link, Tseung Kwan O Road D9 and Associated Works

Build King 9 Page 4 of 6

Date	Revision	Checked	Approved
08-Feb-20	3 Months Rolling Programme (Mar to May	TT	StL

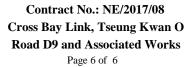


	Activity Name	Original Duration	Actual R Duration	emaining alend Duration	lar Start	Finish	Late Start	Late Finish	Total TRA Float	Activity % Predecessor Details Complete	Successor Details	2019 Q4 Q1 Q2 Q3 Q4 Q1	2020 2021 2022 20 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1
MPU20200208.7.8.2.3.1.3	Excavation and Construction of RC Structure	22.0	0.0	22.0 (6day	/s) 29-Apr-20 08:00	26-May-20 18:00	12-May-20 13:00	06-Jun-20 13:00	9.5				26-May-20:18:00, MPU20200208:7:8:2:3:1:3: Excavation and
WO.CA.TTA2NP.1052	Temporary Diversion of Underground Utilities at Wan O Road Roundabout	10.0	0.0	10.0 (6day	/s) 04-May-20 08:00	14-May-20 18:00	26-May-20 13:00	06-Jun-20 13:00	19.5 0	0% PORIII.AG.1070: FS	WO.CA.TTA2NP.1050: FS		1 Temporary Diversion of Underground Utilities at Wan O Road
WO.CA.TTA2NP.1054	Shifting of MOE to along Sheet Pile at Northern Portion	10.0	0.0	10.0 (6day	/s) 15-May-20 08:00	26-May-20 18:00	26-May-20 13:00	06-Jun-20 13:00	9.5 0	0% WO.CA.TTA2NP.1060: FS	WO.CA.TTA2NP.1050: FS		Shifting of MOE to along Sheet Pite at Northern Portion
WO.CA.TTA2NP.1060	Installation of Sheet pile at Roundabout Northern Portion	12.0	0.0	12.0 (6da	29-Apr-20 08:00	15-May-20 08:00	12-May-20 13:00	26-May-20 13:00	9.5 0	0% TW1160: FS, WO.CA.TTA2NP.1041: FS, WO.CA.TTA2NP.1043: FF -8.0	WO.CA.TTA2NP.1065: FS, WO.CA.TTA2NP.1054: FS		चिर्चित्रझबllation of Sheet pile at Roundabout Northern Portion
MPU20200208.7.8.2.3.2 Sour	thern Portion and Central Barrier	222.0	6.0	216.0 (6day	vs) 03-Feb-20 08:00 A	30-Oct-20 18:00	18-Feb-20 13:00	21-Nov-20 13:00	18.5			<del>1</del>	▼ :30-Oct-20 18:00; MPU20200208;7:82:3:2: South
MPU20200208.7.8.2.3.2.1	Predrilling Works (16nos, 10D/hole + 5D TRA, 1-3 rigs)	112.0	6.0	106.0 (6day	03-Feb-20 08:00 A	18-Jun-20 18:00	18-Feb-20 13:00	13-Jul-20 13:00	18.5			<b>1</b>	
MPU20200208.7.8.2.3.2	.1.2 Rig 3	40.0	1.0	39.0 (6da	/s) 08-Feb-20 08:00 A	25-Mar-20 18:00	20-Feb-20 13:00	07-Apr-20 13:00	9.5				25-Mar-2018:00, MPU20200208;7;8;2;3;2;1;2; Rig 3
WO.CA.TTA2SP.121	0 Predrilling at Central Barrier of Wan O Road (PD119)	15.0	1.0	9.0 (6da	/s) 08-Feb-20 08:00 A	19-Feb-20 18:00	20-Feb-20 13:00	02-Mar-20 13:00	9.5 5	40% WO.CA.TTA2SP.1200: FS	WO.CA.TTA2SP.1220: FS, WO.CA.TTA2SP.1040: FS		Predrilling at Central Barrier of Wan O. Road (PD119)
WO.CA.TTA2SP.122	0 Predrilling at Central Barrier of Wan O Road (PD120)	15.0	0.0	15.0 (6day	/s) 20-Feb-20 08:00	07-Mar-20 18:00	02-Mar-20 13:00	19-Mar-20 13:00	9.5 5	0% WO.CA.TTA2SP.1210: FS	WO.CA.TTA2SP.1230: FS	-	Predrilling at Central Barrier of Wan O Road (PD1:20):
WO.CA.TTA2SP.123	0 Predrilling at Central Barrier of Wan O Road (PD121)	15.0	0.0	15.0 (6day	vs) 09-Mar-20 08:00	25-Mar-20 18:00	19-Mar-20 13:00	07-Apr-20 13:00	9.5 5	0% WO.CA.TTA2SP.1220: FS	WO.CA.TTA2NP.1041: FS, WO.CA.TTA2SP.1040: FS		Predrilling at Central Barrier of Wan O Road (PD121)
MPU20200208.7.8.2.3.2	.1.3 Rig 5	112.0	6.0	106.0 (6day	vs) 03-Feb-20 08:00 A	18-Jun-20 18:00	18-Feb-20 13:00	13-Jul-20 13:00	18.5		-40.0	1	18-Jun-20 18:00; MPU20200208.7.8.2.3.2.1.3 Rig 5
WO.CA.TTA2SP.124	Predrilling at Central Barrier of Wan O Road (PD122)	15.0	0.0	15.0 (6day	vs) 02-Jun-20 08:00	18-Jun-20 18:00	23-Jun-20 13:00	13-Jul-20 13:00	18.5 5	0% WO.CA.TTA2SP.1290: FS	WO.CA.TTA2SP.1040: FS -95.0		🛅: Predrilling;at Central Barrier of Wan O. Road (PD122)
WO.CA.TTA2SP.126	0 Predrilling at Central Barrier of Wan O Road (PD82)	15.0	6.0	1.0 (6day	/s) 03-Feb-20 08:00 A	10-Feb-20 18:00	18-Feb-20 13:00	19-Feb-20 13:00	7.5 5	93.33% WO.CA.TTA2SP.1250: FS	WO.CA.TTA.PD1090: FS, WO.CA.TTA2SP.1040: FS	<b>1</b> P	redrilling at Central Barrier of Wah O'Road (PD82)
WO.CA.TTA2SP.1270	0 Predrilling at Central Barrier of Wan O Road (PD83)	15.0	0.0	15.0 (6da	/s) 03-Apr-20 08:00	24-Apr-20 18:00	29-Apr-20 13:00	19-May-20 13:00	18.5 5	0% WO.CA.TTA.PD1130: FS	WO.CA.TTA2SP.1280: FS		Predrilling at Central Barrier of Wan O Road (PD83)
WO.CA.TTA2SP.128	0 Predrilling at Central Barrier of Wan O Road (PD79)	15.0	0.0	15.0 (6da	/s) 25-Apr-20 08:00	14-May-20 18:00	19-May-20 13:00	05-Jun-20 13:00	18.5 5	0% WO.CA.TTA2SP.1270: FS	WO.CA.TTA2SP.1290: FS		🛮 : Predrilling:at Central Barrier of Wah O: Road (PD79)
WO.CA.TTA2SP.129	0 Predrilling at Central Barrier of Wan O Road (PD78)	15.0	0.0	15.0 (6day	/s) 15-May-20 08:00	01-Jun-20 18:00	05-Jun-20 13:00	23-Jun-20 13:00	18.5 5	0% WO.CA.TTA2SP.1280: FS	WO.CA.TTA2SP.1240: FS	]	➡□ :Predrilling at Central Barrier of Wan O Road (PD78)
MPU20200208.7.8.2.3.2.2	PBSH Works	205.0	0.0	205.0 (6day	/s) 22-Feb-20 08:00	30-Oct-20 18:00	14-Mar-20 13:00	21-Nov-20 13:00	18.5			<u> </u>	30-Dct+20 18:00( MPU20200208.7.8.2.3.2.2 : PB
WO.CA.TTA2SP.1040	Construction of PBSH (44nos at Southern Portion, 7D/pile, 1-2rigs)	205.0	0.0	205.0 (6da	/s) 22-Feb-20 08:00	30-Oct-20 18:00	14-Mar-20 13:00	21-Nov-20 13:00	18.5 0	0% AD1420: FS, WO.CA.TTA2SP.1210: FS, WO.CA.TTA2SP.1260: FS, WO.CA.TTA2SP.1230: FS -40.0, WO.CA.TTA2SP.1240: FS -95.0	WO.CA.TTA2SP.1050: FS, WO.CA.TTA2SP.1070: FS		Construction of PBSH (44hos at Southern Portion
PU20200208.8 Miscellaneo	us Works (Portion I, II and III)	939.0	326.0	630.0 (6day	vs) 02-Jan-19 08:00 A	25-Apr-22 18:00	11-Feb-20 13:00	25-Mar-22 13:00	-22.5				<b></b> 25-Apr-22 18:00
/IISC4030	Tree Preservation and Protection Works	939.0	326.0	630.0 (6day	/s) 02-Jan-19 08:00 A	25-Apr-22 18:00	11-Feb-20 13:00	25-Mar-22 13:00	-22.5 0	32.91% PORILS.1080: FF, PORI.UT.1040: FF, PREL1240: FF, PREL1230: FF	PC1080: FS, PCP1080: FS		Tree Preservatii





Milestone





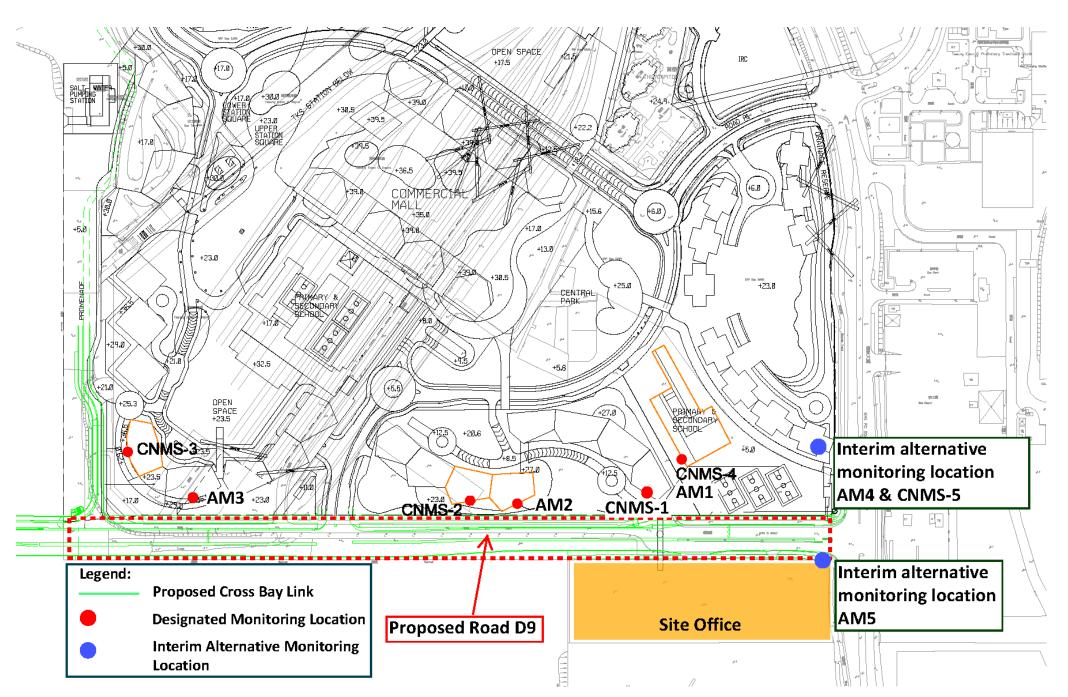
ī	Date	Revision	Checked	Approved
	08-Feb-20	3 Months Rolling Programme (Mar to May	TT	StL
,				

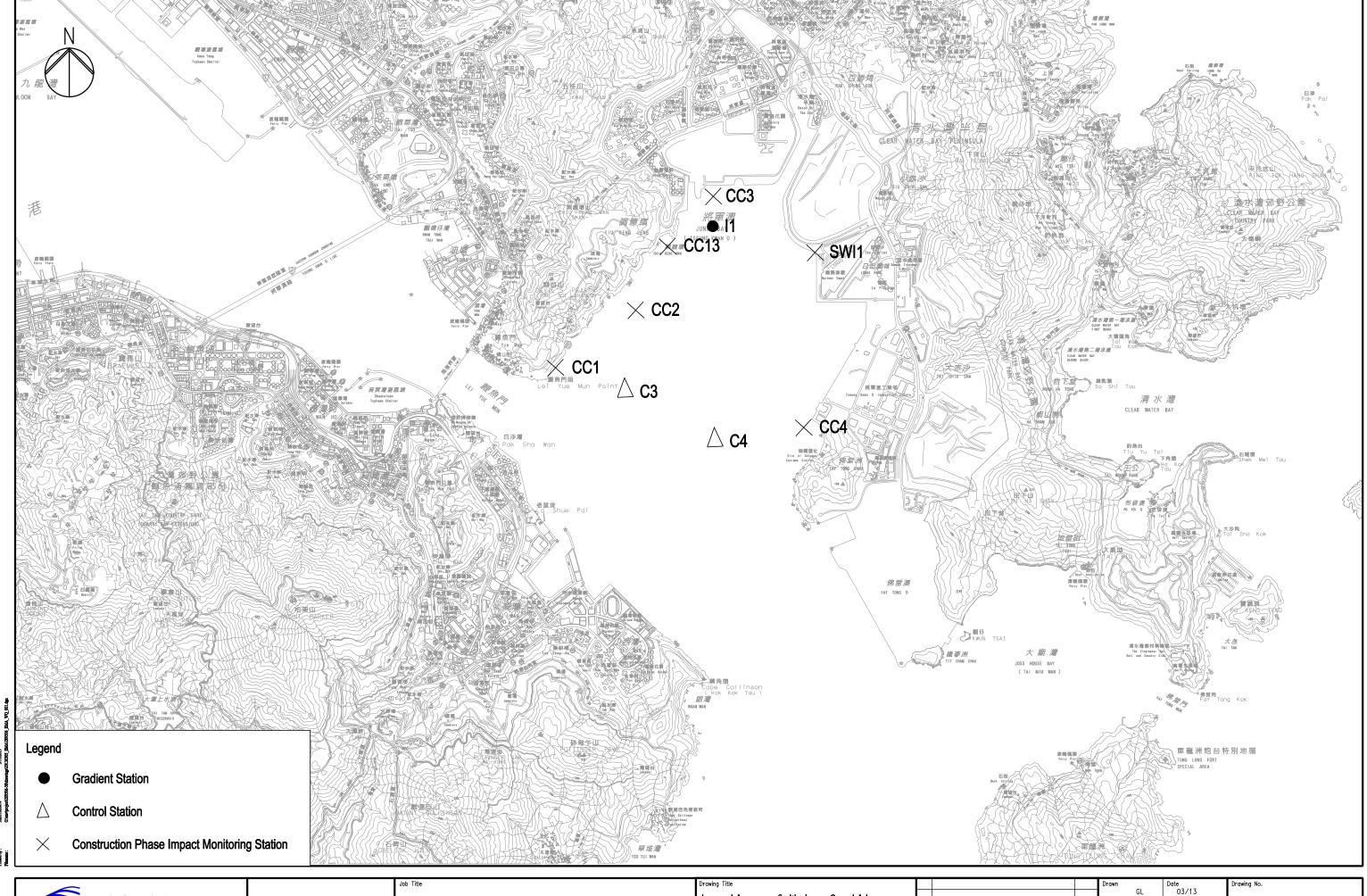


## Appendix D

Monitoring Location (Air Quality, Noise and Water Quality)









ARUP Ove Arup & Partners Hong Kong Limited Civil Engineering and Development Department

Agreement No. CE 43/2008(HY) Cross Bay Link, Tseung Kwan O - Investigation Locations of Water Quality Monitoring Stations

			Drawn		Date	Drawing No.	
				GL	03/13	200500 /544 /W	0./004
С	THIRD ISSUE	03/13	Checked		Approved	209506/EMA/W	u/001
В	SECOND ISSUE	01/13		JP	\$1		
Α	FIRST ISSUE	03/11	Scale	4.	70000 (47)	Status	Rev.
lev.	Description	Date		1 :	30000 (A3)	FINAL	· ·



## Appendix E

**Event and Action Plan** 

# CEDD Contract Agreement No. EDO/04/2018 - Environmental Team for Cross Bay Link, Tseung Kwan O Event and Action Plan for Air Quality Monitoring



	ACTION						
EVENT	Environmental Team (ET)	Independent Environmental Checker (IEC)	Project Consultant	Contractor			
ACTION LEVEL							
Exceedance for one sample	<ol> <li>Identify source, investigate the causes of exceedance and propose remedial measures;</li> <li>Inform IEC and Project Consultant;</li> <li>Repeat measurement to confirm finding;</li> <li>Increase monitoring frequency to daily.</li> </ol>	Check monitoring data submitted by ET;     Check Contractor's working method.	1. Notify Contractor.	Rectify any unacceptable practice;     Amend working methods if appropriate.			
Exceedance for	1. Identify source;	Check monitoring data	1. Confirm receipt of	1. Submit proposals for			
two or more consecutive samples	<ol> <li>Inform IEC and Project Consultant;</li> <li>Advise the Project Consultant on the effectiveness of the proposed remedial measures;</li> <li>Repeat measurements to confirm findings;</li> <li>Increase monitoring frequency to daily;</li> <li>Discuss with IEC and Contractor on remedial actions required;</li> <li>If exceedance continues, arrange meeting with IEC and Project Consultant;</li> <li>If exceedance stops, cease additional monitoring.</li> </ol>	submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ET on the effectiveness of the proposed remedial measures; 5. Supervise Implementation of remedial measures.	notification of exceedance in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented.	remedial actions to IEC within 3 working days of notification; 2. Implement the agreed proposals; 3. Amend proposal if appropriate.			

# CEDD Contract Agreement No. EDO/04/2018 - Environmental Team for Cross Bay Link, Tseung Kwan O Event and Action Plan for Air Quality Monitoring



		ACTION		
EVENT	Environmental Team (ET)	Independent Environmental Checker (IEC)	Project Consultant	Contractor
LIMIT LEVEL				
Exceedance for one sample	I. Identify source, investigate the causes of exceedance and propose remedial measures;     Inform Project Consultant, Contractor, IEC and EPD;     Repeat measurement to confirm finding;     Increase monitoring frequency to daily;     Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and Project Consultant informed of the results.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the Project Consultant on the effectiveness of the proposed remedial measures; 5. Supervise implementation of remedial measures.	Confirm receipt of notification of failure in writing;     Notify Contractor;     Ensure remedial measures properly implemented.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; Implement the agreed proposals; 4. Amend proposal if appropriate.

# CEDD Contract Agreement No. EDO/04/2018 Environmental Team for Cross Bay Link, Tseung Kwan O Event and Action Plan for Air Quality Monitoring



	ACTION							
EVENT	Environmental Team (ET)	Independent Environmental Checker (IEC)	Project Consultant	Contractor				
LIMIT LEVEL		. , ,						
Exceedance for two or more consecutive samples	1. Notify IEC, Project Consultant, Contractor and EPD; 2. Identify source; 3. Repeat measurement to confirm findings; 4. Increase monitoring frequency to daily; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Arrange meeting with IEC and Project Consultant to discuss the remedial actions to be taken; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and Project Consultant informed of the results; 8. If exceedance stops, cease additional monitoring.	1. Discuss amongst Project Consultant, ET, and Contractor on the potential remedial actions; 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the Project Consultant accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of exceedance in writing; 2. Notify Contractor; 3. In consultation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Ensure remedial measures properly implemented; 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by the Project Consultant until the exceedance is abated.				

## CEDD Contract Agreement No. EDO/04/2018 Environmental Team for Cross Bay Link, Tseung Kwan O Event and Action Plan for Construction Noise Monitoring



	ACTION				
EVENT	Environmental Team (ET)	Independent Environmental Checker (IEC)	Project Consultant	Contractor	
Action Level	<ol> <li>Notify IEC and contractor;</li> <li>Carry out investigation;</li> <li>Report the results of investigation to the IEC, Project Consultant and Contractor;</li> <li>Discuss with the Contractor and formulate remedial measures;</li> <li>Increase monitoring frequency to check mitigation effectiveness.</li> </ol>	1. Review the analysed results submitted by the ET; 2. Review the proposed remedial measures by the Contractor and advise the Project Consultant accordingly; 3. Supervise the implementation of remedial measures.	Confirm receipt of notification of exceedance in writing; 2. Notify Contractor;     Require Contractor to propose remedial measures for the analysed noise problem;     Ensure remedial measures are properly implemented	Submit noise mitigation proposals to IEC;     Implement noise mitigation proposals.	
Limit Level	1. Identify source; 2. Inform IEC, Project Consultant, EPD and Contractor; 3. Repeat measurements to confirm findings; 4. Increase monitoring frequency; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Inform IEC, Project Consultant and EPD the causes and actions taken for the exceedances; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and Project Consultant informed of the results; 8. If exceedance stops, cease additional monitoring.	1. Discuss amongst Project Consultant, ET, and Contractor on the potential remedial actions; 2. Review Contractors remedial actions whenever necessary to assure their effectiveness and advise the Project Consultant accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of exceedance in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; 4. Ensure remedial measures properly implemented; 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by the Project Consultant until the exceedance is abated.	

# CEDD Contract Agreement No. EDO/04/2018 Environmental Team for Cross Bay Link, Tseung Kwan O Event and Action Plan for Marine Water Quality Monitoring



	ACTION						
EVENT	Environmental Team (ET)	Independent Environmental Checker (IEC)	Project Consultant	Contractor			
Action level being exceeded by one sampling day at water sensitive receiver(s)	1. Identify the source(s) of impact by comparing the results with those collected at the gradient stations and the control stations as appropriate; 2. If exceedance is found to be caused by the marine works, repeat <i>in-situ</i> measurement to confirm findings; 3. Inform IEC and contractor; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. If exceedance occurs at WSD salt water intake, inform WSD; 6. Discuss mitigation measures with IEC and Contractor; 7. Repeat measurement on next day of exceedance.	1. Discuss mitigation measures with ET and Contractor; 2. Review proposal on mitigation measures submitted by Contractor and advise the Project Consultant accordingly; 3. Assess the effectiveness of the implemented mitigation measures.	Discuss proposed mitigation measures with IEC;     Make agreement on the mitigation proposal.	1. Inform the Project Consultant and confirm notification of the non- compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment; 4. Amend working methods if appropriate; 5. Discuss with ET and IEC and propose mitigation measures to IEC and Project Consultant; 6. Implement the agree mitigation measures.			
Action level being exceeded by two or more consecutive sampling days at water sensitive receiver(s)	1. Identify the source(s) of impact by comparing the results with those collected at the gradient stations and the control stations as appropriate;  2. If exceedance is found to be caused by the marine works, repeat <i>in-situ</i> measurement to confirm findings;  3. Inform IEC and contractor;  4. Check monitoring data, all plant, equipment and Contractor's working methods;  5. Discuss mitigation measures with IEC, and Contractor;  6. Ensure mitigation measures are	1. Discuss mitigation measures with ET and Contractor; 2. Review proposal on mitigation measures submitted by Contractor and advise the Project Consultant accordingly; 3. Assess the effectiveness of the implemented mitigation measures.	1. Discuss proposed mitigation measures with IEC; 2. Make agreement on the mitigation proposal; 3. Assess the effectiveness of the implemented mitigation measures.	1. Inform the Project Consultant and confirm notification of the noncompliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment and consider changes of working methods; 4. Discuss with ET, IEC and Project Consultant and propose mitigation measures to IEC and Project Consultant within 3 working			

# CEDD Contract Agreement No. EDO/04/2018 Environmental Team for Cross Bay Link, Tseung Kwan O Event and Action Plan for Marine Water Quality Monitoring



	ACTION						
EVENT	Environmental Team (ET)	Independent Environmental Checker (IEC)	Project Consultant	Contractor			
	implemented; 7. Prepare to increase the monitoring frequency to daily; 8. If exceedance occurs at WSD salt water intake, inform WSD; 9. Repeat measurement on next day of exceedance.			days; 5. Implement the agreed mitigation measures.			
Limit level being exceeded by one sampling day at water sensitive receiver(s)	1. Identify the source(s) of impact by comparing the results with those collected at the gradient stations and the control stations as appropriate;  2. If exceedance is found to be caused by the marine works, repeat <i>in-situ</i> measurement to confirm findings;  3. Inform IEC, contractor and EPD  4. Check monitoring data, all plant, equipment and Contractor's working methods;  5. Discuss mitigation measures with IEC, ER and Contractor;  6. Ensure mitigation measures are implemented;  7. If exceedance occurs at WSD salt water intake, inform WSD.  8. ET should contact AFCD if the limit level is exceeded by one sampling day or two or more consecutive sampling days at water sensitive receiver(s).	1.Discuss mitigation measures with ET and Contractor; 2. Review proposal on mitigation measures submitted by Contractor and advise the Project Consultant accordingly; 3. Assess the effectiveness of the implemented mitigation measures.	1. Discuss proposed mitigation measures with IEC, ET and Contractor; 2. Request Contractor to critically review the working methods; 3. Make agreement on the mitigation measures to be implemented; 4. Assess the effectiveness of the implemented mitigation measures.	1. Inform the Project Consultant and confirm notification of the noncompliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment and consider changes of working methods; 4. Discuss with ET, IEC and Project Consultant and submit proposal of mitigation measures to IEC and Project Consultant within 3 working days of notification; 5. Implement the agreed mitigation measures.			
Limit level	1. Identify the source(s) of impact by	1. Discuss mitigation	1. Discuss proposed	1. Inform the Project			
being exceeded	comparing the results with those	measures with ET and	mitigation measures with	Consultant and confirm			
by two or more	collected at the gradient stations and the	Contractor;	IEC, ET and Contractor;	notification of the			

# CEDD Contract Agreement No. EDO/04/2018 Environmental Team for Cross Bay Link, Tseung Kwan O Event and Action Plan for Marine Water Quality Monitoring



	ACTION							
EVENT	Environmental Team (ET)	Independent Environmental Checker (IEC)	Project Consultant	Contractor				
consecutive	control stations as appropriate;	2. Review proposal on	2. Request Contractor to	noncompliance in writing;				
sampling days at	2. If exceedance is found to be caused	mitigation measures	critically review the	2. Rectify unacceptable				
water sensitive	by the marine works, repeat <i>in-situ</i>	submitted by Contractor	working methods;	practice;				
receiver(s)	measurement to confirm findings;	and advise the Project	3. Make agreement on the	3. Check all plant and				
	3. Inform IEC, contractor and EPD;	Consultant	mitigation measures to be	equipment and consider				
	4. Check monitoring data, all plant,	accordingly;	implemented;	changes of working methods;				
	equipment and Contractor's working	3. Assess the effectiveness of	4. Assess the effectiveness	4. Discuss with ET, IEC and				
	methods;	the implemented mitigation	of the implemented	Project Consultant and				
	5. Discuss mitigation measures with	measures.	mitigation measures;	submit proposal of mitigation				
	IEC, and Contractor;		5. Consider and instruct, if	measures to IEC and Project				
	6. Ensure mitigation measures are		necessary, the Contractor	Consultant within 3 working				
	implemented;		to slow down or to stop all	days of notification;				
	7. Prepare to increase the monitoring		or part of the marine work	5. Implement the agreed				
	frequency to daily;		until no exceedance of	mitigation measures;				
	8. If exceedance occurs at WSD salt		Limit level.	6. As directed by the				
	water intake, inform WSD;			Engineer, to slow down or to				
	9. Repeat measurement on next day of			stop all or part of the				
	exceedance.			construction activities.				



## Appendix F

Impact Monitoring Schedule of the Reporting Month and Coming Month



### Impact Monitoring Schedule for the reporting month – May 2020

	D-4-	Noise Monitoring	Air Quality	y Monitoring
	Date	(L <sub>eq</sub> 30min)	1-Hour TSP	24-Hour TSP
Fri	1-May-20			
Sat	2-May-20		✓	
Sun	3-May-20			
Mon	4-May-20			
Tue	5-May-20			✓
Wed	6-May-20	✓	✓	
Thu	7-May-20			
Fri	8-May-20			
Sat	9-May-20			
Sun	10-May-20			
Mon	11-May-20			✓
Tue	12-May-20	✓	✓	
Wed	13-May-20			
Thu	14-May-20			
Fri	15-May-20			
Sat	16-May-20			✓
Sun	17-May-20			
Mon	18-May-20	✓	✓	
Tue	19-May-20			
Wed	20-May-20			
Thu	21-May-20			
Fri	22-May-20			✓
Sat	23-May-20		✓	
Sun	24-May-20			
Mon	25-May-20			
Tue	26-May-20			
Wed	27-May-20			
Thu	28-May-20			✓
Fri	29-May-20	✓	✓	
Sat	30-May-20			
Sun	31-May-20			
	✓	Monitoring Day		
		Sunday or Public Holiday		

#### Remark:

Impact marine water quality monitoring was ceased in May 2020 since CBL piling and pile excavation works (marine construction activity) of the Project were completed. (Construction works that requires impact marine water quality monitoring stated in the approved EM&A Manual).



### Impact Monitoring Schedule for coming month – June 2020

Date		Noise Monitoring	Air Quality Monitoring			
	Date	(L <sub>eq</sub> 30min)	1-Hour TSP	24-Hour TSP		
Mon	1-Jun-20					
Tue	2-Jun-20					
Wed	3-Jun-20			✓		
Thu	4-Jun-20	✓	✓			
Fri	5-Jun-20					
Sat	6-Jun-20					
Sun	7-Jun-20					
Mon	8-Jun-20					
Tue	9-Jun-20			✓		
Wed	10-Jun-20	✓	✓			
Thu	11-Jun-20					
Fri	12-Jun-20					
Sat	13-Jun-20					
Sun	14-Jun-20					
Mon	15-Jun-20			✓		
Tue	16-Jun-20	✓	✓			
Wed	17-Jun-20					
Thu	18-Jun-20					
Fri	19-Jun-20					
Sat	20-Jun-20			✓		
Sun	21-Jun-20					
Mon	22-Jun-20	✓	✓			
Tue	23-Jun-20					
Wed	24-Jun-20					
Thu	25-Jun-20					
Fri	26-Jun-20			✓		
Sat	27-Jun-20		✓			
Sun	28-Jun-20					
Mon	29-Jun-20					
Tue	30-Jun-20					
	✓	Monitoring Day				
		Sunday or Public Holiday				



## Appendix G

Calibration Certificates of Equipment and Accreditation Laboratory Certificate



### **Hong Kong Accreditation Service** 香港認可處

### Certificate of Accreditation

認可證書

This is to certify that 特此證明

## ALS TECHNICHEM (HK) PTY LIMITED

11/F., Chung Shun Knitting Centre, 1-3 Wing Yip Street, Kwai Chung, New Territories, Hong Kong 香港新界葵涌永業街1-3號忠信針織中心11樓

has been accepted by the HKAS Executive, on the recommendation of the Accreditation Advisory Board, as a 為香港認可處執行機關根據認可諮詢委員會建議而接受的

### HOKLAS Accredited Laboratory

「香港實驗所認可計劃」認可實驗所

This laboratory meets the requirements of ISO / IEC 17025: 2005 - General requirements for the competence 此實驗所符合ISO / IEC 17025: 2005 -《測試及校正實驗所能力的通用規定》所訂的要求, of testing and calibration laboratories and it has been accredited for performing specific tests or calibrations as 獲認可進行載於香港實驗所認可計劃《認可實驗所名冊》內下述測試類別中的指定 listed in the HOKLAS Directory of Accredited Laboratories within the test category of 測試或校正工作

## **Environmental Testing**

環境測試

This laboratory is accredited in accordance with the recognised International Standard ISO / IEC 17025: 2005. 本實驗所乃根據公認的國際標準 ISO / IEC 17025 : 2005 獲得認可。 This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory 這項認可資格演示在指定範疇所需的技術能力及實驗所質量管理體系的運作 quality management system (see joint IAF-ILAC-ISO Communiqué). (見國際認可論壇,國際實驗所認可合作組織及國際標準化組織的聯合公報)。

The common seal of the Hong Kong Accreditation Service is affixed hereto by the authority of the HKAS Executive 香港認可處根據認可處執行機關的權限在此蓋上通用印章

CHAN Sing Sing, Terence, Executive Administrator

執行幹事 陳成城 Issue Date: 5 May 2009

簽發日期:二零零九年五月五日

註冊號碼:

Registration Number: HOKLAS 066

Date of First Registration : 15 September 1995 首次註冊日期:一九九五年九月十五日

### TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location: Junction of Wan Po Road and Wan O Road

ad Date o

Date of Calibration: 2-May-20

Location ID: AM5

Next Calibration Date: 2-Jul-20

Name and Model: TISCH HVS Model TE-5170

Technician: Ho

### **CONDITIONS**

Sea Level Pressure (hPa)
Temperature (°C)

1010 26.3

Corrected Pressure (mm Hg)
Temperature (K)

### **CALIBRATION ORIFICE**

Make-> TISCH
Model-> 5025A
Serial # -> 1612

Qstd Slope -> Qstd Intercept ->

2.03014 -0.04616

### **CALIBRATION**

Plate	H20 (L)	H2O (R)	H20	Ostd	I	IC	LINEAR
No.	(in)	(in)	(in)	(m3/min)	(chart)	corrected	
18	5.40	5.40	10.8	1.635	57	56.66	Slope = 24.0011
13	3.70	3.70	7.4	1.358	51	50.69	Intercept = 17.9175
10	2.30	2.30	4.6	1.075	45	44.73	Corr. coeff. = 0.9960
7	1.60	1.60	3.2	0.901	40	39.76	
5	1.20	1.20	2.4	0.783	36	35.78	

### Calculations:

Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]

IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate

IC = corrected chart respones

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration ( deg K

Pstd = actual pressure during calibration ( mm Hg

### For subsequent calculation of sampler flow:

1/m(( I )[Sqrt(298/Tav)(Pav/760)]-b)

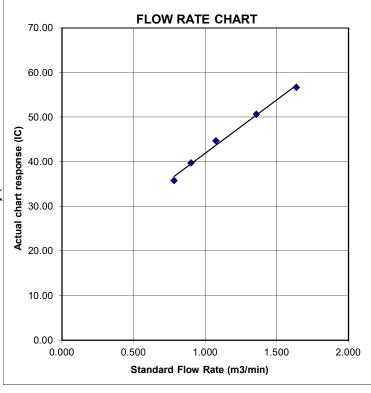
m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure





### RECALIBRATION DUE DATE:

February 7, 2021

# Pertificate o alibration

**Calibration Certification Information** 

Cal. Date: February 7, 2020 Rootsmeter S/N: 438320

Ta: 295

°K

Operator: Jim Tisch Pa: 745.5

mm Hg

Calibration Model #: TE-5025A

Calibrator S/N: 1612

Run	Vol. Init (m3)	Vol. Final (m3)	ΔVol. (m3)	ΔTime (min)	ΔP (mm Hg)	ΔH (in H2O)
1	1	2	1	1.3730	3.2	2.00
2	3	4	1	0.9820	6.4	4.00
3	5	6	1	0.8780	8.0	5.00
4	7	8	1	0.8340	8.8	5.50
5	9	10	1	0.6900	12.8	8.00

		Data Tabulat	ion		
Vstd (m3)	Qstd (x-axis)	$\sqrt{\Delta H \left(\frac{Pa}{Pstd}\right) \left(\frac{Tstd}{Ta}\right)}$ (y-axis)	Va	Qa (x-axis)	$\sqrt{\Delta H \left( \text{Ta/Pa} \right)}$ (y-axis)
0.9866	0.7186	1.4078	0.9957	0.7252	0.8896
0.9824	1.0004	1.9909	0.9914	1.0096	1.2581
0.9802	1.1165	2.2259	0.9893	1.1267	1.4066
0.9792	1.1741	2.3345	0.9882	1.1849	1.4753
0.9739	1.4114	2.8155	0.9828	1.4244	1.7792
	m=	2.03014		m=	1.27124
QSTD	b=	-0.04616	QA	b=	-0.02917
	r=	0.99995		r=	0.99995

	Calculation	ns	
Vstd=	ΔVol((Pa-ΔP)/Pstd)(Tstd/Ta)	Va=	ΔVol((Pa-ΔP)/Pa)
Qstd=	Vstd/∆Time	Qa=	Va/ΔTime
	For subsequent flow ra	te calculatio	ns:
Qstd=	$1/m\left(\left(\sqrt{\Delta H\left(\frac{Pa}{Pstd}\right)\left(\frac{Tstd}{Ta}\right)}\right)-b\right)$	Qa=	$1/m\left(\left(\sqrt{\Delta H\left(Ta/Pa\right)}\right)-b\right)$

	Standard Conditions
Tstd:	298.15 °K
Pstd:	760 mm Hg
	Key
ΔH: calibrator	manometer reading (in H2O)
ΔP: rootsmete	er manometer reading (mm Hg)
Ta: actual abs	olute temperature (°K)
Pa: actual bar	ometric pressure (mm Hg)
b: intercept	
m: slope	

### RECALIBRATION

US EPA recommends annual recalibration per 1998 40 Code of Federal Regulations Part 50 to 51, Appendix B to Part 50, Reference Method for the Determination of Suspended Particulate Matter in the Atmosphere, 9.2.17, page 30

Tisch Environmental, Inc. 145 South Miami Avenue Village of Cleves, OH 45002 www.tisch-env.com

TOLL FREE: (877)263-7610

FAX: (513)467-9009

## ALS Technichem (HK) Pty Ltd

### ALS Laboratory Group

ANALYTICAL CHEMISTRY & TESTING SERVICES



### SUB-CONTRACTING REPORT

CONTACT : MR BEN TAM WORK ORDER : HK2001298

CLIENT : ACTION UNITED ENVIRONMENT

SERVICES AND CONSULTING

ADDRESS : RM A 20/F., GOLD KING IND BLDG, NO. 35-41 SUB-BATCH :

TAI LIN PAI ROAD, KWAI CHUNG, N.T. HONG

DATE RECEIVED : 6-JAN-2020

DATE OF ISSUE : 10-JAN-2020

KONG

PROJECT : --- NO. OF SAMPLES : 1

CLIENT ORDER :---

### General Comments

 Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.

Sample information (Project name, Sample ID, Sampling date/time, etc., if any) is provided by client.

Calibration was subcontracted to and analysed by Action United Enviro Services.

### **Signatories**

This document has been signed by those names that appear on this report and are the authorised signatories

Signatories Position

Richard Fung

Managing Director

This is the Final Report and supersedes any preliminary report with this batch number.

Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release.

: HK2001298 WORK ORDER

SUB-BATCH

: 1 : ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING CLIENT

PROJECT



ALS Lab	Client's Sample ID	Sample	Sample Date	External Lab Report No.
ID		Туре		
HK2001298-001	S/N: 2X6145	AIR	06-Jan-2020	S/N: 2X6145

### **Equipment Verification Report (TSP)**

### **Equipment Calibrated:**

Type: Laser Dust monitor

Manufacturer: Sibata LD-3B

Serial No. 2X6145

Equipment Ref: EQ105

Job Order HK2001298

### **Standard Equipment:**

Standard Equipment: Higher Volume Sampler

Location & Location ID: AUES office (calibration room)

Equipment Ref: HVS 018

Last Calibration Date: 3 December 2019

### **Equipment Verification Results:**

Testing Date: 27&31 December 2019

Hour	Time	Mean Temp °C	Mean Pressure (hPa)	Concentration in mg/m³ (Standard Equipment)	Total Count (Calibrated Equipment)	Count/Minute (Total Count/60min)
2hr	09:08 ~ 11:10	18.0	1020.3	0.040	2254	18.8
2hr	11:15 ~ 13:16	19.2	1024.9	0.048	2561	21.3
2hr15min	13:22 ~ 15:23	19.2	1024.9	0.034	1841	13.6

Sensitivity Adjustment Scale Setting (Before Calibration) 586 (CPM)

Sensitivity Adjustment Scale Setting (After Calibration) 586 (CPM)

### Linear Regression of Y or X

Slope (K-factor): 0.0022

Correlation Coefficient 0.9935

Date of Issue 6 January 2020

### Remarks:

1. Strong Correlation (R>0.8)

2. Factor 0.0022 should be apply for TSP monitoring

\*If R<0.5, repair or re-verification is required for the equipment

0.06 0.05 0.04 0.03 0.02 0.01 0 5 10 15 20 25

Operator: Fai So Signature: Date: 6 January 2020

QC Reviewer: Ben Tam Signature: Date: 6 January 2020

### TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location: Gold King Industrial Building, Kwai Chung Date of Calibration: 3-Dec-19
Location ID: Calibration Room Next Calibration Date: 3-Mar-20

### CONDITIONS

Sea Level Pressure (hPa)
Temperature (°C)

1023.1 16.4 Corrected Pressure (mm Hg)
Temperature (K)

767.325 289

### **CALIBRATION ORIFICE**

Make-> TISCH
Model-> 5025A
Calibration Date-> 5-Feb-19

Qstd Slope ->
Qstd Intercept ->
Expiry Date->

2.0968 -0.00065 5-Feb-20

### **CALIBRATION**

Plate	H20 (L)	H2O (R)	H20	Qstd	I	IC	LINEAR
No.	(in)	(in)	(in)	(m3/min)	(chart)	corrected	REGRESSION
18	6.5	6.5	13.0	1.754	53	54.04	Slope = 36.7338
13	5.2	5.2	10.4	1.569	48	48.94	Intercept = -9.6198
10	4.1	4.1	8.2	1.393	41	41.80	Corr. coeff. = 0.9986
8	2.6	2.6	5.2	1.109	30	30.59	
5	1.6	1.6	3.2	0.870	22	22.43	

#### Calculations:

Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]

IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate

IC = corrected chart response

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration ( deg K )

Pstd = actual pressure during calibration ( mm Hg )

### For subsequent calculation of sampler flow:

1/m(( I )[Sqrt(298/Tav)(Pav/760)]-b)

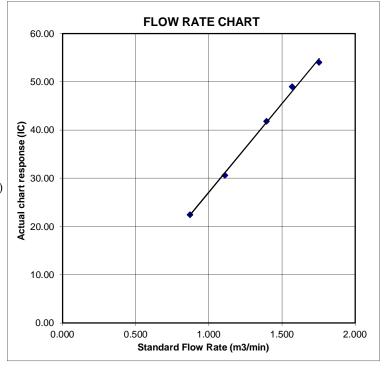
m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure





### Sun Creation Engineering Limited

Calibration & Testing Laboratory

# Certificate of Calibration 校正證書

Certificate No. : C193753

證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號: IC19-1098)

Date of Receipt / 收件日期: 5 July 2019

Description / 儀器名稱

Integrating Sound Level Meter (EQ006)

Manufacturer / 製造商

Brüel & Kjær

Model No. / 型號

2238

Serial No. / 編號

2285762

Supplied By / 委託者

Action-United Environmental Services and Consulting

Unit A, 20/F., Gold King Industrial Building, 35-41 Tai Lin Pai Road, Kwai Chung, N.T.

TEST CONDITIONS / 測試條件

Temperature / 溫度 :

 $(23 \pm 2)^{\circ}C$ 

Relative Humidity / 相對濕度:  $(50 \pm 25)\%$ 

TEST SPECIFICATIONS / 測試規範

Calibration check

Line Voltage / 電壓

DATE OF TEST / 測試日期

16 July 2019

### TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.

The results do not exceed manufacturer's specification.

The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via:

- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- The Bruel & Kjaer Calibration Laboratory, Denmark
- Agilent Technologies / Keysight Technologies
- Fluke Everett Service Center, USA

Tested By 測試

K P Cheuk

Assistant Engineer

Certified By 核證

Tel/電話: (852) 2927 2606

K C Lee Engineer Date of Issue 簽發日期

22 July 2019

Page 1 of 4

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory

E-mail/電郵; callab@suncreation.com

本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗所書面批准。

Fax/傳真: (852) 2744 8986



### Sun Creation Engineering Limited

Calibration & Testing Laboratory

# Certificate of Calibration 校正證書

Certificate No.: C193753

證書編號

- 1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours, and switched on to warm up for over 10 minutes before the commencement of the test.
- Self-calibration using laboratory acoustic calibrator was performed before the test from 6.1.1.2 to 6.4. 2.
- 3. The results presented are the mean of 3 measurements at each calibration point.
- 4. Test equipment:

Equipment ID CL280

Description

Certificate No.

CL281

40 MHz Arbitrary Waveform Generator Multifunction Acoustic Calibrator

C190176

CDK1806821

- 5. Test procedure: MA101N.
- 6. Results:
- 6.1 Sound Pressure Level
- 6.1.1 Reference Sound Pressure Level

### 6.1.1.1 Before Self-calibration

	UUT	Setting	Applied	UUT		
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)
50 - 130	$L_{AFP}$	A	F	94.00	1	94.4

### 6.1.1.2 After Self-calibration

	UUT Setting				d Value	UUT	IEC 60651
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)	Type 1 Spec. (dB)
50 - 130	LAFP	A	F	94.00	1	94.1	± 0.7

#### 6.1.2 Linearity

	UU'	Γ Setting	Applied	UUT		
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)
50 - 130	L <sub>AFP</sub>	A	F	94.00	1	94.1 (Ref.)
				104.00		104.1
				114.00		114.0

IEC 60651 Type 1 Spec. :  $\pm$  0.4 dB per 10 dB step and  $\pm$  0.7 dB for overall different.

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗所書面批准。



Sun Creation Engineering Limited

Calibration & Testing Laboratory

# Certificate of Calibration 校正證書

Certificate No.: C193753

證書編號

### 6.2 Time Weighting

6.2.1 Continuous Signal

	UUT Setting			Applied Value		UUT	IEC 60651
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)	Type 1 Spec. (dB)
50 - 130	L <sub>AFP</sub>	A	F	94.00	1	94.1	Ref.
	L <sub>ASP</sub>		S			94.1	± 0.1
	LAIP		I			94.2	± 0.1

6.2.2 Tone Burst Signal (2 kHz)

UUT Setting			Applied Value		UUT	IEC 60651	
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Burst Duration	Reading (dB)	Type 1 Spec. (dB)
30 - 110	LAFP	A	F	106.0	Continuous	106.0	Ref.
	L <sub>AFMax</sub>				200 ms	104.9	$-1.0 \pm 1.0$
	L <sub>ASP</sub>		S		Continuous	106.0	Ref.
	L <sub>ASMax</sub>				500 ms	102.0	$-4.1 \pm 1.0$

### 6.3 Frequency Weighting

6.3.1 A-Weighting

	UUT	Setting		Appl	ied Value	UUT	IEC 60651
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq.	Reading (dB)	Type 1 Spec. (dB)
50 - 130 L <sub>AFP</sub>	A	F	94.00	31.5 Hz	55.2	-39.4 ± 1.5	
	11 12 2				63 Hz	68.1	-26.2 ± 1.5
					125 Hz	78.0	-16.1 ± 1.0
					250 Hz	85.4	$-8.6 \pm 1.0$
					500 Hz	90.8	$-3.2 \pm 1.0$
					1 kHz	94.1	Ref.
					2 kHz	95.3	$+1.2 \pm 1.0$
					4 kHz	95.1	$+1.0 \pm 1.0$
					8 kHz	93.0	-1.1 (+1.5; -3.0)
					12.5 kHz	89.9	-4.3 (+3.0 ; -6.0)

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# Certificate of Calibration 校正證書

Certificate No.: C193753

證書編號

6.3.2 C-Weighting

	UUT Setting			Appl	ied Value	UUT	IEC 60651
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq.	Reading (dB)	Type 1 Spec. (dB)
50 - 130	0 - 130 L <sub>CFP</sub> C F	F	94.00	31.5 Hz	91.5	$-3.0 \pm 1.5$	
	1				63 Hz	93.4	$-0.8 \pm 1.5$
				125 Hz	93.9	$-0.2 \pm 1.0$	
					250 Hz	94.1	$0.0 \pm 1.0$
					500 Hz	94.1	$0.0 \pm 1.0$
				l i	1 kHz	94.1	Ref.
					2 kHz	93.9	$-0.2 \pm 1.0$
					4 kHz	93.3	$-0.8 \pm 1.0$
					8 kHz	91.1	-3.0 (+1.5; -3.0
					12.5 kHz	88.0	-6.2 (+3.0 ; -6.0

6.4 Time Averaging

	UUT	Setting		Applied Value					UUT	IEC 60804
Range (dB)	Parameter	Frequency Weighting	Integrating Time	Frequency (kHz)	Burst Duration (ms)	Burst Duty Factor	Burst Level (dB)	Equivalent Level (dB)	Reading (dB)	Type 1 Spec. (dB)
30 - 110	LAcq	A	10 sec.	4	1	1/10	110.0	100	100.0	±0.5
1000				1	1/102		90	90.0	± 0.5	
			60 sec.			1/103		80	79.2	± 1.0
			5 min.			1/104		70	69.2	±1.0

Remarks: - UUT Microphone Model No.: 4188 & S/N: 2658547

- Mfr's Spec. : IEC 60651 Type 1 & IEC 60804 Type 1

- Uncertainties of Applied Value : 94 dB : 31.5 Hz - 125 Hz : ± 0.35 dB

250 Hz - 500 Hz : ± 0.30 dB 1 kHz  $: \pm 0.20 \text{ dB}$ 2 kHz - 4 kHz  $: \pm 0.35 \text{ dB}$ 8 kHz  $: \pm 0.45 \text{ dB}$ 

12.5 kHz  $: \pm 0.70 \text{ dB}$ 

104 dB : 1 kHz 114 dB : 1 kHz  $\pm 0.10 \text{ dB (Ref. 94 dB)}$  $\pm 0.10 \text{ dB (Ref. 94 dB)}$ : ± 0.2 dB (Ref. 110 dB Burst equivalent level

continuous sound level)

#### Note:

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<sup>-</sup> The uncertainties are for a confidence probability of not less than 95 %.



### Sun Creation Engineering Limited

Calibration & Testing Laboratory

# Certificate of Calibration 校正證書

Certificate No.: C193189

證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號: IC19-1098)

Date of Receipt / 收件日期: 18 June 2019

Description / 儀器名稱 Sound Level Meter (EQ016)

Manufacturer / 製造商 Rion Model No. / 型號 NL-52

Serial No. / 編號 00464681

Supplied By / 委託者 Action-United Environmental Services and Consulting

> Unit A, 20/F., Gold King Industrial Building, 35-41 Tai Lin Pai Road, Kwai Chung, N.T.

TEST CONDITIONS / 測試條件

Temperature / 温度 :  $(23 \pm 2)^{\circ}C$  $(50 \pm 25)\%$ Relative Humidity / 相對濕度:

Line Voltage / 電壓 :

TEST SPECIFICATIONS / 測試規節

Calibration check

DATE OF TEST / 測試日期 20 June 2019

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.

The results do not exceed manufacturer's specification.

The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via:

- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior

E-mail/電郵: callab@suncreation.com

- The Bruel & Kjaer Calibration Laboratory, Denmark
- Agilent Technologies / Keysight Technologies
- Fluke Everett Service Center, USA

Tested By 測試

K P Cheuk

Assistant Engineer

Certified By 核證

C Lee

Date of Issue : 簽發日期

20 June 2019

Engineer

written approval of this laboratory

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### Sun Creation Engineering Limited

Calibration & Testing Laboratory

# Certificate of Calibration 校正證書

Certificate No.: C193189

證書編號

- 1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours, and switched on to warm up for over 10 minutes before the commencement of the test.
- 2. Self-calibration was performed before the test.
- 3. The results presented are the mean of 3 measurements at each calibration point.
- 4. Test equipment:

Equipment IDDescriptionCertificate No.CL28040 MHz Arbitrary Waveform GeneratorC190176CL281Multifunction Acoustic CalibratorCDK1806821

- 5. Test procedure: MA101N.
- 6. Results:
- 6.1 Sound Pressure Level
- 6.1.1 Reference Sound Pressure Level

UUT Setting			Applied Value		UUT	IEC 61672	
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)	Class 1 Spec. (dB)
30 - 130	LA	A	Fast	94.00	1	93.5	± 1.1

6.1.2 Linearity

	UUT Setting				Applied Value	
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)
30 - 130	$L_{A}$	A	Fast	94.00	1	93.5 (Ref.)
		1 - 3		104.00		103.5
				114.00		113.5

IEC 61672 Class 1 Spec. :  $\pm$  0.6 dB per 10 dB step and  $\pm$  1.1 dB for overall different.

6.2 Time Weighting

UUT Setting		Applied Value		UUT	IEC 61672		
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	Reading (dB)	Class 1 Spec. (dB)
30 - 130	L <sub>A</sub>	A	Fast	94.00	1	93.5	Ref.
			Slow			93.5	± 0.3

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the print written approval of this laboratory.

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Sun Creation Engineering Limited

Calibration & Testing Laboratory

# Certificate of Calibration 校正證書

Certificate No.: C193189

證書編號

6.3 Frequency Weighting

6.3.1 A-Weighting

	UUT Setting			Appl	ied Value	UUT	IEC 61672
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq.	Reading (dB)	Class 1 Spec. (dB)
30 - 130	130 L <sub>A</sub> A Fast	94.00	63 Hz	67.3	-26.2 ± 1.5		
	100	19.9	100000	125 Hz	77.4	$-16.1 \pm 1.5$	
					250 Hz	84.8	$-8.6 \pm 1.4$
					500 Hz	90.3	$-3.2 \pm 1.4$
					1 kHz	93.5	Ref.
					2 kHz	94.8	$+1.2 \pm 1.6$
					4 kHz	94.5	$+1.0 \pm 1.6$
					8 kHz	92.5	-1.1 (+2.1; -3.
					12.5 kHz	89.1	-4.3 (+3.0; -6.0

6.3.2 C-Weighting

	UUT	Setting		Appl	ied Value	UUT	IEC 61672
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq.	Reading (dB)	Class 1 Spec. (dB)
30 - 130	- 130 L <sub>C</sub> C Fast	Fast	94.00	63 Hz	92.7	$-0.8 \pm 1.5$	
	1 1 1 1 1				125 Hz	93.4	$-0.2 \pm 1.5$
					250 Hz	93.5	$0.0 \pm 1.4$
					500 Hz	93.6	$0.0 \pm 1.4$
				/	1 kHz	93.5	Ref.
					2 kHz	93.4	$-0.2 \pm 1.6$
					4 kHz	92.8	$-0.8 \pm 1.6$
					8 kHz	90.6	-3.0 (+2.1; -3.1)
					12.5 kHz	87.2	-6.2 (+3.0; -6.0)

Remarks: - UUT Microphone Model No.: UC-59 & S/N: 07619

- Mfr's Spec. : IEC 61672 Class 1

- Uncertainties of Applied Value: 94 dB: 63 Hz - 125 Hz: ± 0.35 dB

Website/網址: www.suncreation.com

104 dB : 1 kHz : ± 0.10 dB (Ref. 94 dB) 114 dB : 1 kHz : ± 0.10 dB (Ref. 94 dB)

- The uncertainties are for a confidence probability of not less than 95 %.

- The uncertainties are for a confidence probability of not less than 95 v

Note :

Only the original copy or the laboratory's certified true copy is valid.

The values given in this Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited shall not be liable for any loss or damage resulting from the use of the equipment.

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### Sun Creation Engineering Limited

Calibration & Testing Laboratory

# Certificate of Calibration 校正證書

Certificate No.: C194819

證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號: IC19-1098)

Date of Receipt / 收件日期: 27 August 2019

Description / 儀器名稱

Sound Calibrator (EQ087)

Manufacturer / 製造商

Rion

Model No. / 型號 Serial No./編號

NC-74 34657231

Supplied By / 委託者

Action-United Environmental Services and Consulting

Unit A, 20/F., Gold King Industrial Building, 35-41 Tai Lin Pai Road, Kwai Chung, N.T.

TEST CONDITIONS / 測試條件

Temperature / 溫度 :  $(23 \pm 2)^{\circ}C$ 

Relative Humidity / 相對濕度 :  $(50 \pm 25)\%$ 

TEST SPECIFICATIONS / 測試規範

Calibration check

Line Voltage / 電壓

DATE OF TEST / 測試日期

7 September 2019

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.

The results do not exceed manufacturer's specification.

The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via:

- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- The Bruel & Kjaer Calibration Laboratory, Denmark
- Agilent Technologies / Keysight Technologies
- Fluke Everett Service Center, USA

Tested By 測試

H T Wong

Technical Officer

Certified By 核證

Lee Engineer Date of Issue : 簽發日期

10 September 2019

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory

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Page 1 of 2



# Certificate of Calibration 校正證書

Certificate No.: C194819

證書編號

The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours before the commencement
of the test.

2. The results presented are the mean of 3 measurements at each calibration point.

3. Test equipment:

Equipment ID CL130 CL281 TST150A Description
Universal Counter
Multifunction Acoustic Calibrator
Measuring Amplifier

Certificate No. C193756 CDK1806821 C181288

4. Test procedure: MA100N.

5. Results:

5.1 Sound Level Accuracy

UUT	Measured Value	Mfr's Spec.	Uncertainty of Measured Value
Nominal Value	(dB)		(dB)
94 dB, 1 kHz	94.1	± 0.3	± 0.2

5.2 Frequency Accuracy

UUT Nominal Value	Measured Value	Mfr's	Uncertainty of Measured Value (Hz)
(kHz)	(kHz)	Spec.	
1	1.001	1 kHz ± 1 %	± 1

Remark: The uncertainties are for a confidence probability of not less than 95 %.

### Note:

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### ALS Technichem (HK) Pty Ltd

11/F, Chung Shun Knitting Centre 1-3 Wing Yip Street, Kwai Chung N.T., Hong Kong

T: +852 2610 1044 | F: +852 2610 2021

## **CERTIFICATE OF ANALYSIS**

CONTACT: MR MIKE SHEK WORK ORDER: HK1921228

CLIENT: AECOM ASIA COMPANY LIMITED

ADDRESS: 1501-10, 15/F, TOWER 1, GRAND CENTRAL PLAZA, SUB BATCH: 0

138 SHATIN RURAL COMMITTEE ROAD, LABORATORY: HONG KONG SHATIN, NEW TERRITORIES, HONG KONG DATE RECEIVED: 20-May-2019

DATE OF ISSUE: 31-May-2019

### COMMENTS

The performance of the equipment stated in this report is checked with independent reference material and results are compared against a calibrated secondary source.

The "Tolerance Limit" quoted is the acceptance criteria applicable for similar equipment used by the ALS Hong Kong laboratory or quoted from relevant international standards.

The "Next Calibration Date" is recommended according to best practice principles as practised by the ALS Hong Kong laboratory or quoted from relevant international standards.

Scope of Test: Carbon dioxide, Methane and Oxygen

Equipment Type: Landfill Gas Analyser

Brand Name: GEOTECH
Model No.: GA2000
Serial No.: GA11903/09

Equipment No.: --

Date of Calibration: 24-May-2019

### **NOTES**

This is the Final Report and supersedes any preliminary report with this batch number. Results apply to sample(s) as submitted. All pages of this report have been checked and approved for releas

> Ms Chan Ka Yu, Karen Manager - Organics

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## REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

Work Order: HK1921228

Sub-Batch: 0

Client: AECOM ASIA COMPANY LIMITED

Date of Issue: 31-May-2019

Equipment Type: Landfill Gas Analyser

Brand Name: GEOTECH
Model No.: GA2000
Serial No.: GA11903/09

Equipment No.: --

Date of Calibration: 24-May-2019 Date of next Calibration: 24-May-2020

Parameters:

Methane

Calibrated Gas Standard, %	Monitor Readout, %	% error	Instrument Specification, %
0.0 (Nitrogen)	0.0	0.0	+/- 0.5
1.0	0.9	-0.1	+/- 0.5
10.0	10.0	0.0	+/- 0.5
49.0	49.0	0.0	+/- 3
99.0	99.8	0.8	+/- 3

Carbon Dioxide

Calibrated Gas Standard, %	Monitor Readout, %	% error	Instrument Specification, %
0.0 (Nitrogen)	0.0	0.0	+/- 0.5
1.0	1.1	0.1	+/- 0.5
10.0	10.2	0.2	+/- 0.5
47.8	47.8	0.0	+/- 3
99.5	99.9	0.4	+/- 3

Oxygen

Calibrated Gas Standard, %	Monitor Readout, %	% error	Instrument Specification, %
0.0 (Nitrogen)	0.0	0.0	+/- 1
0.5	0.4	-0.1	+/- 1
2.5	2.5	0.0	+/- 1
9.9	9.8	-0.1	+/- 1
20.9	20.9	0.0	+/- 1

Ms Chan Ka Yu, Karen Manager - Organics



## Appendix H

**Database of Monitoring Results** 



24-hour TSP	Monitoring	Data for A	M5												
DATE	SAMPLE NUMBER	ELA	APSED TIN	1E	СНА	RT REA	DING	AVG TEMP	AVG AIR PRESS	STANDARD FLOW RATE	AIR VOLUME	FILTER WI	EIGHT (g)	DUST WEIGHT COLLECTED	24-hr TSP
	NUMBER	INITIAL	FINAL	(min)	MIN	MAX	AVG	(℃)	(hPa)	(m³/min)	(std m <sup>3</sup> )	INITIAL	FINAL	(g)	(μg/m <sup>3</sup> )
5-May-20	25668	16194.90	16218.90	1440.00	42	44	43.0	24.8	1010.7	1.04	1502	2.8148	2.9561	0.1413	94
11-May-20	25671	16218.90	16242.91	1440.60	41	42	41.5	25.8	1010.2	0.98	1408	2.7891	2.9227	0.1336	95
16-May-20	25740	16242.91	16266.91	1440.00	42	44	43.0	28.9	1007.5	1.03	1481	2.7944	2.9654	0.1710	115
22-May-20	25825	16266.91	16290.91	1440.00	40	42	41.0	27.9	1003.2	0.94	1361	2.7736	2.9094	0.1358	100
28-May-20	25828	16290.91	16314.91	1440.00	42	44	43.0	26.7	1007.8	1.04	1491	2.7690	2.8585	0.0895	60

Daytime No	Paytime Noise Measurement Results (dB) at CNMS1																			
	Stant	1st	Leq (5n	nin)	2nd	Leq (51	min)	3rd	Leq (5r	nin)	4th	Leq (5r	nin)	5th	Leq (5n	nin)	6th	Leq (5n	nin)	
Date	Start Time	Leq,	L10,	L90,	Leq30min, dB(A)															
	Time	dB(A)	dB(A)	dB(A)																
6-May-20	11:21	69.1	73.5	61.9	69.5	71.9	64.6	69.4	72.5	65.1	71.8	72.3	62.6	67.1	69.9	61.3	68.1	70.6	62.4	69.4
12-May-20	15:11	69.8	70.6	64.0	67.7	69.2	63.8	66.9	67.1	64.0	69.7	71.1	65.6	67.4	68.5	64.9	67.7	67.0	64.9	68.4
18-May-20	10:10	71.0	73.7	64.0	70.8	74.3	63.6	69.1	71.8	64.5	69.6	72.3	64.7	72.7	45.7	65.9	52.7	75.6	65.3	70.0
29-May-20	11:20	65.2	67.0	60.7	67.2	70.6	62.5	67.8	70.4	62.7	66.0	67.9	62.8	65.5	68.1	62.8	66.2	68.2	62.4	66.4

Daytime Noi	Daytime Noise Measurement Results (dB) at CNMS5																			
	Stant	1st	Leq (5n	nin)	2nd	Leq (51	min)	3rd	Leq (5r	nin)	4th	Leq (5r	nin)	5th	Leq (5n	nin)	6th	Leq (5r	nin)	
Date	Start Time	Leq,	L10,	L90,	Leq30min, dB(A)															
	Time	dB(A)	dB(A)	dB(A)																
6-May-20	10:30	66.4	68.7	62.2	64.5	66.1	62.9	67.7	70.1	64.6	64.7	66.7	62.7	66.5	68.5	63.2	63.6	65.1	61.9	65.8
12-May-20	14:25	68.7	67.5	59.5	66.4	65.9	58.6	67.8	67.8	58.8	65.0	65.9	59.6	64.6	66.7	58.1	67.0	68.7	59.3	66.8
18-May-20	9:17	70.2	71.8	68.6	69.1	70.7	67.0	70.6	71.7	69.3	68.8	70.4	66.4	67.0	68.1	65.6	66.4	68.3	64.1	68.9
29-May-20	10:15	69.5	72.3	63.6	67.8	70.8	61.9	69.3	72.5	62.7	69.1	72.3	63.3	69.3	73.2	62.6	68.7	72.1	62.5	69.0



<b>Evening Noi</b>	ise Mea	surement Resu	lts (dB) at CNM	IS1							
	Start		1st Leq (5min)			2nd Leq (5min)			3rd Leq (5min)		
Date	Time	Leq, dB(A)	L10, dB(A)	L90, dB(A)	Leq, dB(A)	L10, dB(A)	L90, dB(A)	Leq, dB(A)	L10, dB(A)	L90, dB(A)	Leq15min, dB(A)
7-May-20	19:41	51.4	52.4	50.5	50.9	51.6	50.3	51.0	51.6	50.4	51.1
28-May-20	19:37	57.8	58.2	57.1	58.0	58.5	57.5	57.4	58.1	56.6	57.7

Evening No	ise Mea	surement Resu	lts (dB) at CNN	<b>1</b> S5							
	Start		1st Leq (5min)			2nd Leq (5min)	l		3rd Leq (5min)		
Date	Time	Leq, dB(A)	L10, dB(A)	L90, dB(A)	Leq, dB(A)	L10, dB(A)	L90, dB(A)	Leq, dB(A)	L10, dB(A)	L90, dB(A)	Leq15min, dB(A)
7-May-20	19:10	61.2	64.2	55.6	60.3	63.3	55.5	60.5	63.7	55.7	60.7
28-May-20	19:05	62.5	65.4	56.4	60.1	63.1	56.2	60.6	63.7	55.7	61.2

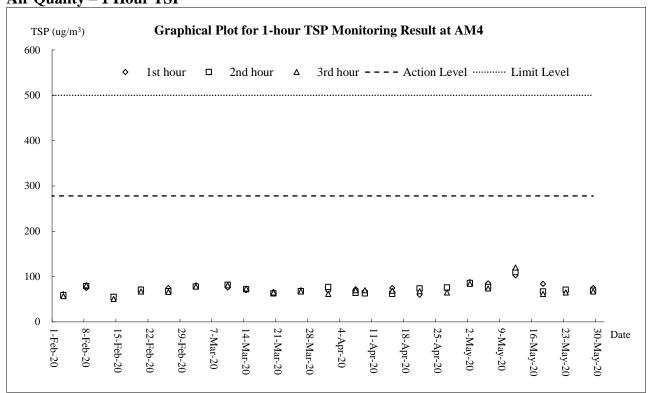


## Appendix I

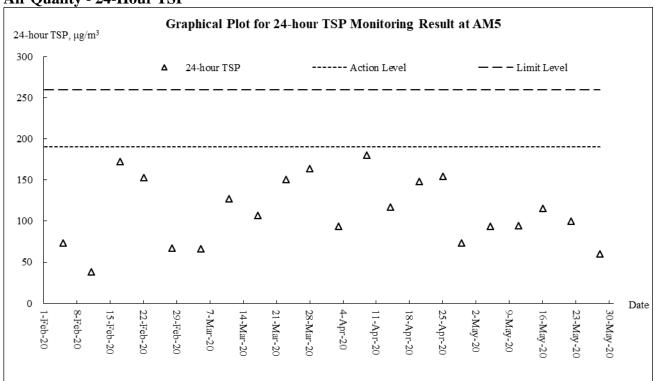
**Graphical Plots of Monitoring Results** 



Air Quality - 1 Hour TSP

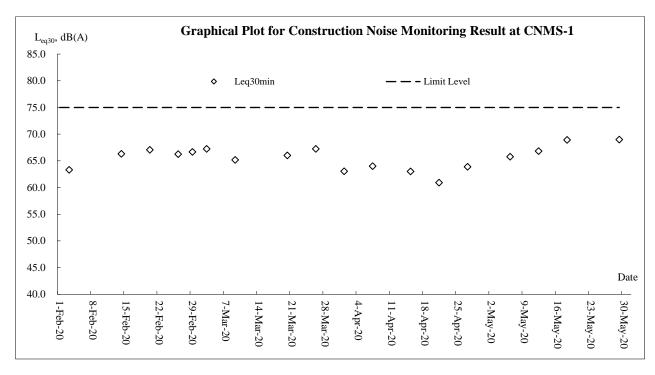


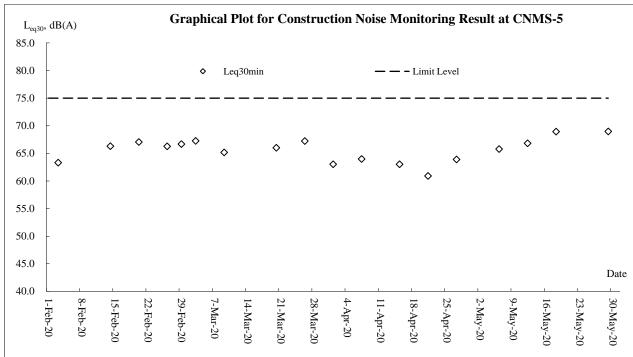
### Air Quality - 24-Hour TSP





### **Construction Noise**







## Appendix J

**Meteorological Data** 



					Tseung I	Kwan O Sta	tion
Date		Weather	Total Rainfall (mm)	Mean Air Temp. (°C)	Wind Speed (km/h)	Mean Relative Humidity (%)	Wind Direction (degree)
1-May-20	Fri	Mainly cloudy and hot.	0	25.4	10.5	71	S/SW
2-May-20	Sat	Moderate southerly winds.	0	26.2	7.2	69.2	S/SW
3-May-20	Sun	Isolated showers at first.	0	27.9	8.7	65.5	S/SW
4-May-20	Mon	Sunny periods tomorrow.	0	29.1	9.2	70.5	S/SW
5-May-20	Tue	Moderate southerly winds.	0	28.6	9.7	70.7	S/SW
6-May-20	Wed	Isolated showers during the day.	0	28.7	7.5	76.2	S/SW
7-May-20	Thu	Mainly cloudy and hot.	0	28.8	6.7	78.7	S
8-May-20	Fri	Mainly cloudy and hot.	1	29.1	7.5	78.7	S
9-May-20	Sat	Isolated showers and thunderstorms.	0.1	29.3	10.5	69	S
10-May-20	Sun	Light winds.	0.8	29.8	8.7	69.2	S/SW
11-May-20	Mon	Very hot with sunny periods in the afternoon.	14.8	27.6	8.5	72.5	S
12-May-20	Tue	Mainly cloudy with a few showers and thunderstorms.	3.6	26.3	5.0	80.5	W/SW
13-May-20	Wed	Isolated showers and thunderstorms.	0.3	25.3	6.2	86.2	E/NE
14-May-20	Thu	Mainly cloudy and hot.	0.1	25	7	86.2	NE
15-May-20	Fri	Light winds.	0	28.2	6.2	77.5	E/SE
16-May-20	Sat	Moderate southwesterly winds.	0	27.7	6.5	71	E/SE
17-May-20	Sun	Showers will be heavy at times.	Trace	28.7	6.2	66.5	S/SW
18-May-20	Mon	Mainly cloudy with showers and squally thunderstorms.	46.7	25.9	7.5	84.5	S/SW
19-May-20	Tue	Mainly cloudy with a few showers and squally thunderstorms.	0	26.7	6.2	79.2	S/SW
20-May-20	Wed	More showers later.	4.3	25.9	6	88.2	N/NE
21-May-20	Thu	Moderate to fresh south to southwesterly winds.	84	26.5	6.2	93	S/SW
22-May-20	Fri	Mainly cloudy with a few showers.	17	27.2	8	82	S/SW
23-May-20	Sat	Thunderstorms and more showers tonight and tomorrow morning.	1.5	24.6	7.5	75	S/SW
24-May-20	Sun	Sunny intervals in the afternoon tomorrow.	Trace	26.1	6	79	E/SE
25-May-20	Mon	Moderate southeasterly winds,	32.4	25.4	3.7	91.7	N/NE
26-May-20	Tue	Hot with sunny periods in the afternoon.	14.4	28.1	6	86	S
27-May-20	Wed	There will be isolated showers and thunderstorms.	0.1	28	6	81	S
28-May-20	Thu	Mainly cloudy tonight.	0.2	25.8	5	90	N/NE
29-May-20	Fri	Moderate southerly winds.	0.2	27.1	5	86	E/SE
30-May-20	Sat	Moderate southeasterly winds,	131.3	25.2	7	81.5	E/SE
31-May-20	Sun	Moderate to fresh south to southwesterly winds.	Trace	28.5	6.5	82.5	S/SW



## Appendix K

**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

		,	riuge and Ass			_					
	A	ctual Quantitie	s of Inert C&I	O Materials G	enerated Month	ıly	Actua	al Quantities o	of C&D Waste	s Generated M	Ionthly
Month	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 <sup>3</sup> )	$(in '000m^3)$	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(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	1.163

### Note:

- For non-inert portion of C&D material, assume the density of 1 m³ general refuse is equal to 200 kg.
   For inert portion of C&D material, assume 6 m³ per each full-filled dump truck.
   All values are round off to the third decimal places.

#### **Monthly Summary Waste Flow Table for <u>2019</u>** (year)

Name of Person completing the record: <u>Calvin So (EO)</u>

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

		ctual Quantitie			enerated Month	ly	Actua	al Quantities o	of C&D Waste	es Generated M	Ionthly
Month	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 <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(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	0.042	0.000	0.000	0.000	0.042	0.000	0.000	0.029	0.000	0.000	0.081
Apr	1.760	0.000	0.000	0.000	1.760	0.000	0.000	0.509	0.000	0.000	0.012
May	1.026	0.000	0.000	0.000	1.026	0.000	0.000	0.094	0.000	0.000	0.030
Jun	0.354	0.000	0.000	0.000	0.354	0.000	0.000	0.087	0.000	0.000	0.050
Sub-total	4.027	0.000	0.000	0.000	4.027	0.000	0.000	0.774	0.000	0.000	0.286
Jul	1.122	0.000	0.000	0.000	1.122	0.000	0.000	0.060	0.000	0.000	0.095
Aug	1.290	0.000	0.000	0.000	1.290	0.000	0.000	0.075	0.000	0.000	0.058
Sep	0.762	0.000	0.000	0.000	0.762	0.000	0.000	0.085	0.000	0.000	0.054
Oct	1.002	0.000	0.000	0.000	1.002	0.000	0.000	0.080	0.000	0.000	0.106
Nov	0.744	0.000	0.000	0.000	0.744	0.000	0.000	0.092	0.000	0.000	0.075
Dec	1.104	0.000	0.000	0.000	1.104	0.000	0.000	0.100	0.000	0.000	0.154
Total	10.051	0.000	0.000	0.000	10.051	0.000	0.000	1.266	0.000	0.000	0.828

Contract No.: NE/2017/07

### Note:

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

## Monthly Summary Waste Flow Table for <u>2020</u> (year)

Name of Person completing the record: <u>Calvin So (EO)</u>

Project : C	ross Bay Link,	TKO, Main B	Bridge and Ass	ociated Work	S					Contract No.: NI	E/2017/07
	A	ctual Quantitie	s of Inert C&l	D Materials G	enerated Month	ıly	Actua	al Quantities o	of C&D Waste	es Generated M	Ionthly
Month	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 <sup>3</sup> )	$(in '000m^3)$	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000 kg)	(in '000kg)	(in '000kg)	(in '000kg)	$(in '000 m^3)$
Jan	1.020	0.000	0.000	0.000	1.020	0.000	0.000	0.088	0.000	0.000	0.100
Feb	0.102	0.000	0.000	0.000	0.102	0.000	0.000	0.095	0.000	0.000	0.073
Mar	0.018	0.000	0.000	0.000	0.018	0.000	0.000	0.073	0.000	0.000	0.092
Apr	0.060	0.000	0.000	0.000	0.060	0.000	0.000	0.090	0.000	0.000	0.133
May	0.132	0.000	0.000	0.000	0.132	0.000	0.000	0.092	0.000	0.000	0.117
Jun											
Sub-total	1.332	0.000	0.000	0.000	1.332	0.000	0.000	0.438	0.000	0.000	0.515
Jul											
Aug											
Sep											
Oct											
Nov											
Dec								_			
Total	1.332	0.000	0.000	0.000	1.332	0.000	0.000	0.438	0.000	0.000	0.515

### Note:

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



**Contract 2** 

Monthly Summary Waste Flow Table for 2019 Year

		Actual Qua	ntities of Inert C&I	Materials Generat	ed Monthly			Actual Quantities	of C&D Wastes Go	enerated Monthly	
Month	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 <sup>3</sup> ]	[in '000m <sup>3</sup> ]	[in '000m <sup>3</sup> ]	[in '000m <sup>3</sup> ]	[in '000m <sup>3</sup> ]	[in '000m <sup>3</sup> ]	[in '000kg]	[in '000kg]	[in '000kg]	[in '000kg]	[in '000m <sup>3</sup> ]
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	0.106	0.000	0.000	0.000	0.106	0.000	0.000	0.000	0.000	0.000	0.229
Apr	3.013	0.000	0.000	0.000	3.013	0.000	0.000	0.000	0.000	0.000	0.013
May	3.621	0.000	0.000	0.000	3.621	0.000	0.000	0.000	0.000	0.000	0.022
June	1.127	0.000	0.000	0.000	1.127	0.000	0.000	0.000	0.000	0.000	0.019
SUB- TOTAL	8.247	0.000	0.358	0.000	7.889	0.000	0.000	0.000	0.000	0.000	1.368
Jul	2.468	0.000	0.000	0.000	1.879	0.589	0.000	0.000	0.000	0.000	0.031
Aug	4.401	0.000	0.000	0.000	4.262	0.140	0.000	0.000	0.000	0.000	0.004
Sep	1.912	0.000	0.000	0.046	1.866	0.000	0.000	0.000	0.000	0.000	0.009
Oct	4.384	0.000	0.000	0.000	4.384	0.000	0.000	0.000	0.000	0.000	0.007
Nov	2.351	0.000	0.000	0.000	2.351	0.000	8.870	0.000	0.000	0.000	0.004
Dec	0.700	0.000	0.000	0.000	0.700	0.000	0.000	0.000	0.000	0.000	0.012
<b>TOTAL</b>	24.463	0.000	0.358	0.046	23.331	0.728	8.870	0.000	0.000	0.000	1.436

Note: Conversion to 1000m<sup>3</sup> for general refuse is weight in 1000kg multiply by 0.002

Conversion to 1000m³ 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<sup>3</sup>

### Monthly Summary Waste Flow Table for 2020 Year

	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
Month	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 <sup>3</sup> ]	[in '000m <sup>3</sup> ]	[in '000m <sup>3</sup> ]	[in '000m <sup>3</sup> ]	[in '000m <sup>3</sup> ]	[in '000m <sup>3</sup> ]	[in '000kg]	[in '000kg]	[in '000kg]	[in '000kg]	[in '000m <sup>3</sup> ]
Jan	1.374	0.000	0.000	0.000	1.374	0.000	0.000	0.000	0.000	0.000	0.019
Feb	1.750	0.000	0.000	0.000	1.750	0.000	0.000	0.000	0.000	0.000	0.004
Mar	3.422	0.000	0.000	0.000	3.422	0.000	0.000	0.000	0.000	0.000	0.013
Apr	6.641	0.000	0.000	0.000	6.641	0.000	0.000	0.000	0.000	0.000	0.035
May	2.256	0.000	0.000	0.000	2.256	0.000	0.000	0.000	0.000	0.000	0.052
June											
SUB- TOTAL	15.444	0.000	0.000	0.000	15.444	0.000	0.000	0.000	0.000	0.000	0.122
Jul											
Aug											
Sep											
Oct											
Nov					·						
Dec											
<b>TOTAL</b>	15.444	0.000	0.000	0.000	15.444	0.000	0.000	0.000	0.000	0.000	0.122

Note: Conversion to 1000m<sup>3</sup> for general refuse is weight in 1000kg multiply by 0.002

Conversion to 1000m<sup>3</sup> 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<sup>3</sup>



## **Appendix** L

Implementation Record of Water Mitigation Measures in the Reporting Month

### Water Quality Mitigation Measures under NE/2017/07 (Contract 1)



Treatment facilities was installed at site to treat the site generated water prior discharge.



Temporary trench had been installed at the sea front to prevent muddy run-off overflow into the water body during

# Water Quality Mitigation Measures under NE/2017/08 (Contract 2)



Treatment facilities was installed at site to treat the site generated water prior discharge.



Gap between the concrete block and the sea front was sealed  $\label{eq:concrete} \text{up.}$ 



Trench had been installed beside the sea front to prevent muddy surface run-off overflow during rainstorm.



# Appendix M

**Implementation Schedule for Environmental Mitigation Measures** 



		Objectives of the		Implementation		Requirements
EIA Ref	<b>Environmental Protection Measures/ Mitigation Measures</b>	Recommended Measures &	Location/ Timing	Agent	Stage	and/or Standards to
D / T		Main Concerns to Address				be Achieved
	ct (Contraction Phase)			1 a		1700 (0 011)
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	APCO (Cap. 311);     and     Air Pollution     Control     (Construction     Dust) Regulation
\$5.5.5.3	<ul> <li>The following dust suppression measures shall also be incorporated by the Contractor to control the dust nuisance throughout the construction phase:</li> <li>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;</li> <li>Any dusty materials remaining after a stockpile is removed shall be wetted with water and cleared from the surface of roads;</li> <li>A stockpile of dusty material shall not extend beyond the pedestrian barriers, fencing or traffic cones;</li> <li>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;</li> <li>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;</li> <li>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;</li> <li>The portion of any road leading to the construction site that is within 30m of a vehicle entrance or exit shall be kept clear</li> </ul>	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



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 scalfolding is crected around the perimeter of a building under construction, effective dust screens, sheeting or netting shall be provided to enclose the scalfolding 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, shortered 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.  S55.5.5.4 For the barging facilities stall be paved.  • Vehicles should pass through designated wheel wash facilities.  • Continuous water spray shall be installed at the loading point.  S55.5.5.5 An audit and monitoring programme during the construction point.  Main Concerns to Address     Agent   Stage		nentation Requirements
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 crected 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 scaling 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.  St.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.  St.5.5.5. An audia and monitoring programme during the construction place of the construction of the dust impact on the nearby sensitive receivers to within the relevant criteria within the relevant criteria dust monitoring station  Monitor the 1-Hour and 24-Hir TSP levels at the dust monitoring station  Monitor the 1-Hour and 24-Hir TSP levels at the dust monitoring station	onmental Protection Measures/ Mitigation Measures	Stage and/or Standards to be Achieved
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.  S5.5.5.5 An audit and monitoring programme during the construction phase should be implemented by the Contractor to ensure that	faces where any pneumatic or power driven drilling, ing, polishing or other mechanical breaking operation is place shall be sprayed with water or a dust suppression mical continuously; area that involves demolition activities shall be sprayed a water or a dust suppression chemical immediately prior during and immediately after the activities so as to make the entire surface wet; are a scaffolding is erected around the perimeter of a ding under construction, effective dust screens, sheeting etting shall be provided to enclose the scaffolding from ground floor level of the building, or a canopy should be wided from the first floor level up to the highest level of scaffolding; skip hoist for material transport shall be totally enclosed impervious sheeting; osed earth shall be properly treated by compaction, ng, hydroseeding, vegetation planting or sealing with a virial property in the last construction wity on the construction site or part of the construction	Se remeved
S5.5.5.5 An audit and monitoring programme during the construction phase should be implemented by the Contractor to ensure that 24-Hr TSP levels at the dust monitoring station stage and	ite practice is required: road surfaces within the barging facilities shall be paved. icles should pass through designated wheel wash lities. tinuous water spray shall be installed at the loading	stage and
HKAQO. Detailed requirements for the audit and monitoring programmes are given separately in the EM&A manual.  monitoring stations to ensure compliance with alr/001  Control of the audit and monitoring programmes are given separately in the EM&A manual.	dit and monitoring programme during the construction should be implemented by the Contractor to ensure that instruction dust impacts are controlled to within the O. Detailed requirements for the audit and monitoring immes are given separately in the EM&A manual.	` 1



		Objectives of the		Impler	nentation	Requirements	
EIA Ref	Environmental Protection Measures/ Mitigation Measures	Recommended Measures &	Location/ Timing	Agent	Stage	and/or Standards to	
0.5.5.4.0		Main Concerns to Address		Ü	_	be Achieved	
S6.6.4.3	<ul> <li>Good site practice and noise management techniques:</li> <li>Only well-maintained plant shall be operated on-site and the plant shall be serviced regularly during the construction programme;</li> </ul>	To minimize construction noise impact arising from the Project on the affected NSRs	All construction sites	Contractor	Construction stage	• Annex 5, TM-EIAO	
	<ul> <li>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;</li> </ul>						
	<ul> <li>Plant known to emit noise strongly in one direction, where possible, shall be orientated so that the noise is directed away from nearby NSRs;</li> </ul>						
	• 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.						
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 ( <b>Drawing no. 209506/EMA/NS/001</b> & <b>209506/EMA/NS/002</b> )	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	



		Objectives of the		Implen	nentation	Requirements
EIA Ref	<b>Environmental Protection Measures/ Mitigation Measures</b>	Recommended Measures &	Location/ Timing	Agent	Stage	and/or Standards to
***		Main Concerns to Address		8	~	be Achieved
	lity Impact (Contraction Phase)				<b>a</b> :	TDA FILA O 1
S8.6.4.3	Marine Piling and Pile Excavation Works Marine piling and	To control potential		Contractor	Construction	• TM-EIAO; and
	pile excavation works shall be undertaken in such a manner as	impacts from marine piling	and pile excavation		stage	• WPCO
	to minimize re-suspension of sediments. Standard good	and pile excavation works	works			
	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					
	<ul><li>tightly while being lifted.</li><li>Barges shall have tight fitting seals to their bottom openings</li></ul>					
	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.					
S8.6.4.4	Construction Site Runoff	Control potential water	All construction sites	Contractor	Construction	<ul> <li>TM-EIAO; and</li> </ul>
	In accordance with the Practice Note for Professional Persons	quality impacts from			stage	• WPCO
	on Construction Site Drainage, Environmental Protection	construction site run-off				
	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					

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		Objectives of the		Implen	nentation	Requirements
EIA Ref	Environmental Protection Measures/ Mitigation Measures	Recommended Measures & Main Concerns to Address	<b>Location/ Timing</b>	Agent	Stage	and/or Standards to be Achieved
	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					
S8.6.4.6	meander, wetlands and fish ponds.  Sewage from workforce  • Portable chemical toilets and sewage holding tanks shall be provided for handling the construction sewage generated by	Control potential water quality impacts from sewage	All construction sites	Contractor	Construction stage	TM-EIAO; and WPCO
	the workforce; • A licensed contractor shall be employed to provide					

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		Objectives of the		Impler	nentation	Requirements
EIA Ref	<b>Environmental Protection Measures/ Mitigation Measures</b>	Recommended Measures & Main Concerns to Address	Location/ Timing	Agent	Stage	and/or Standards to be Achieved
	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 ( <b>Drawing no.</b> 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 Mai	nagement (Contraction Phase)					
89.5.2	<ul> <li>Good Site Practices</li> <li>Recommendations for good site practices:</li> <li>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;</li> <li>Training of site personnel in proper waste management and chemical handling procedures;</li> <li>Provision of sufficient waste disposal points and regular collection for disposal;</li> <li>Separation of chemical wastes for special handling and appropriate treatment at the Chemical Waste Treatment Centre;</li> <li>Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors; and</li> <li>Implementation of a recording system for the amount of wastes generated/recycled and disposal sites.</li> </ul>	Good site practices which ensure waste generated during construction phase is properly managed	All construction sites	Contractor	Construction stage	<ul> <li>Waste Disposal Ordinance (Cap. 54);</li> <li>ETWB TCW No. 19/2005</li> </ul>



		Objectives of the		Implen	nentation	Requirements
EIA Ref	Environmental Protection Measures/ Mitigation Measures	Recommended Measures &	<b>Location/ Timing</b>	Agent	Stage	and/or Standards to
50.5.4	W . D . L . M	Main Concerns to Address	A 11	_		be Achieved
S9.5.4	<ul> <li>Waste Reduction Measures</li> <li>Recommendations for achieving waste reduction include:</li> <li>On-site reuse of any material excavated as far as practicable;</li> <li>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;</li> <li>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;</li> <li>Recycling of any unused chemicals and those with remaining functional capacity as far as possible;</li> <li>Prevention of the potential damage or contamination to the construction materials though proper storage and good site practices;</li> <li>Planning and stocking of construction materials should be made carefully to minimize amount of waste generated avoid unnecessary generation of waste; and</li> <li>Training on the importance of appropriate waste management procedures, including waste reduction, reuse and recycling should be provided to workers.</li> </ul>	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	<ul> <li>Storage, Collection and Transportation of Waste Recommendations for proper storage include: <ul> <li>Waste such as soil should be handled and stored well to ensure secure containment;</li> <li>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</li> <li>Different locations should be designated to stockpile each material to enhance reuse.</li> </ul> </li> <li>With respect to the collection and transportation of waste from the construction works, the following is recommended: <ul> <li>Remove waste in a timely manner;</li> <li>Employ trucks with cover or enclosed containers for waste transportations;</li> <li>Obtain relevant waste disposal permits from the appropriate</li> </ul> </li> </ul>	To reduce the environmental implications of improper storage	All construction sites	Contractor	Construction stage	<ul> <li>Waste Disposal Ordinance (Cap. 54);</li> <li>ETWB TCW No. 19/2005</li> </ul>



		Objectives of the		Impler	nentation	Requirements
EIA Ref	<b>Environmental Protection Measures/ Mitigation Measures</b>	Recommended Measures & Main Concerns to Address	Location/ Timing	Agent	Stage	and/or Standards to be Achieved
	<ul> <li>authorities; and</li> <li>Disposal of waste should be done at licensed waste disposal facilities.</li> </ul>					
S9.5.8-11	<ul> <li>C&amp;D Materials</li> <li>The following mitigation measures shall be implemented in handling the waste:</li> <li>Maintain temporary stockpiles and reuse excavated fill material for backfilling and reinstatement;</li> <li>Carry out on-site sorting;</li> <li>Make provisions in the Contract documents to allow and promote the use of recycled aggregates where appropriate;</li> <li>Implement a trip-ticket system for each works contract to ensure that the disposal of C&amp;D materials are properly documented and verified;</li> <li>Disposal of the C&amp;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;</li> <li>Standard formwork or pre-fabrication order to minimise the arising of C&amp;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</li> <li>The Contractor should recycle as much of the C&amp;D materials as possible on-site. Public fill and C&amp;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.</li> </ul>	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	<ul> <li>Waste Disposal Ordinance (Cap. 54);</li> <li>ETWB TCW No. 19/2005</li> <li>ETWB TCW No. 06/2010</li> </ul>
\$9.5.13	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



		Objectives of the		Implementation	Requirements	
EIA Ref	Environmental Protection Measures/ Mitigation Measures	Recommended Measures & Main Concerns to Address	Location/ Timing	Agent	Stage	and/or Standards to be Achieved
	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.	To ensure proper management of chemical waste	All construction sites	Contractor	Construction stage	• Waste Disposal (Chemical Waste) (General) Regulation;
	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					Code of Practice on the Packaging, Labelling and Storage of Chemical Waste
	corrosion, maintained in a good condition, and securely closed;  • Have a capacity of less than 450 L unless the specification					
	<ul> <li>have been approved by EPD; and</li> <li>Display a label in English and Chinese in accordance with instructions prescribed in Schedule 2 of the Regulations.</li> </ul>					
	<ul> <li>The storage area for chemical wastes shall:</li> <li>Be clearly labelled and used solely for the storage of chemical wastes;</li> <li>Be enclosed on at least 3 sides;</li> </ul>					
	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;					



		Objectives of the	, , , , , , , , , , , , , , , , , , ,	Implementation		Requirements
EIA Ref	Environmental Protection Measures/ Mitigation Measures	Recommended Measures & Main Concerns to Address	Location/ Timing	Agent	Stage	and/or Standards to be Achieved
	<ul> <li>Have adequate ventilation;</li> <li>Be covered to prevent rainfall entering (water collected within the bund must be tested and disposed as chemical waste, if necessary); and</li> <li>Be arranged so that incompatible materials are adequately separated.</li> <li>Disposal of chemical waste shall:</li> <li>Be via a licensed waste collector; and</li> <li>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</li> </ul>	Main Concerns to Muricis				be remeved
S9.5.18	Be to a re-user of the waste, under approval from EPD.      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 ( <b>Drawing no.</b> 209506/EMA/WQ/001)	Contractor	Construction stage	TM-EIAO; and WPCO



		Objectives of the			nentation	Requirements
EIA Ref	<b>Environmental Protection Measures/ Mitigation Measures</b>	Recommended Measures & Main Concerns to Address	Location/ Timing	Agent	Stage	and/or Standards to be Achieved
		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 ( <b>Drawing no.</b> 209506/EMA/WQ/001)	Contractor	Construction stage	• TM-EIAO; and • WPCO
Landscape	and Visual					
S13.8.1.2	<ul> <li>The following mitigation measures should be implemented in the construction stage</li> <li>CM1 – The construction area and contractor's temporary works areas should be minimized to avoid impacts on adjacent landscape.</li> <li>CM2 – Reduction of construction period to practical minimum.</li> <li>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.</li> <li>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).</li> </ul>	Minimize effects of landscape and visual impacts	Work site/during construction	Funded and implemented by CEDD		



		Objectives of the		Implementation		Requirements
EIA Ref	Environmental Protection Measures/ Mitigation Measures	Recommended Measures & Main Concerns to Address	Location/ Timing	Agent	Stage	and/or Standards to be Achieved
	<ul> <li>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.</li> <li>CM6 – Advance screen planting to proposed roads and associated structures.</li> <li>CM7 – hydroseeding or sheeting of soil stockpiles with visually unobtrusive material (in earth tone).</li> <li>CM8 – Screening of construction works by hoardings/noise barriers around works area in visually unobtrusive colours, to screen Works.</li> <li>CM9 – Control night-time lighting and glare by hooding all lights.</li> <li>CM10 – Ensure no run-off into water body adjacent to the Project Area.</li> <li>CM11 – Avoidance of excessive height and bulk of</li> </ul>					
S13.8.1.2	buildings and structures  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.	construction and operational stages	
S13.8.1.2	<ul> <li>The following mitigation measures should be implemented in the operational stage:</li> <li>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.</li> <li>OM3 – Maximise soft landscape of the site, where space permits, roadside berms /slope treatment works should be created.</li> <li>OM4 – During detailed design, refine structure layout to create a planting strips along the roads to enhance greenery.</li> <li>OM5 – Use appropriate (visually unobtrusive and</li> </ul>	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.	construction and operational	



EIA Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measures & Location/ Timing Main Concerns to Address	Implementation		Requirements	
			Location/ Timing	Agent	Stage	and/or Standards to be Achieved
	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 G	as					
S14.7.5	<ul> <li>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.</li> <li>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.</li> <li>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.</li> <li>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.</li> <li>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.</li> <li>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</li> </ul>	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)

## CEDD Contract Agreement No. EDO/04/2018 -Environmental Team for Cross Bay Link, Tseung Kwan O Monthly Environmental Monitoring & Audit Report – May 2020



	Environmental Protection Measures/ Mitigation Measures	Objectives of the	Location/ Timing	Implementation		Requirements
EIA Ref		Recommended Measures & Main Concerns to Address		Agent	Stage	and/or Standards to be Achieved
	<ul> <li>Ground level construction plant shall be fitted with vertical exhausts at least 0.6m above ground level and with spark arrestors.</li> <li>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.</li> <li>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.</li> <li>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.</li> <li>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<!--</td--><td></td><td></td><td></td><td></td><td>be Achieved</td></li></ul>					be Achieved



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	<ul> <li>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.</li> <li>During the construction works, adequate fire extinguishers and breathing apparatus sets shall be made available on site and appropriate training given in their use.</li> </ul>						
S14.7.6	<ul> <li>Landfill gas monitoring</li> <li>The following monitoring shall be undertaken when construction works are carried out in confined space within the 250m Consultation Zone:</li> <li>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.</li> <li>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.</li> <li>All measurements shall be made with the monitoring tube located not more than 10mm from the surface.</li> <li>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.</li> <li>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</li> </ul>	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	following section, then evacuation shall be initiated.  Emergency management	Health and safety of the	Confined space of	Contractor	Construction	• Landfill Gas	
	In the event of the trigger levels specified in Table 14.6 of the EIA report being exceeded, a person, such as the Safety	workers	construction sites within 250m Consultation Zone		stage	Hazard Assessment	

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	Officer, shall be nominated, with deputies, to be responsible for dealing with any emergency which may occur due to LFG.					Guidance Note (EPD/TR8/97)
	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.					
S14.7.16	<ul> <li>Protection measures – Operational phase</li> <li>An assumed presence of landfill gas shall be adopted at all times by maintenance workers;</li> <li>all maintenance workers inspecting any manhole shall be fully trained in the issue of LFG hazard;</li> <li>any manhole which is large enough to permit to access to personnel shall be subject to entry safety procedure;</li> <li>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;</li> <li>a strictly regulated "work permit procedure" shall be implemented and the relevant safety procedures must be rigidly followed; and</li> <li>Adequate communication with maintenance staff shall be maintained with respect to LFG.</li> </ul>	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