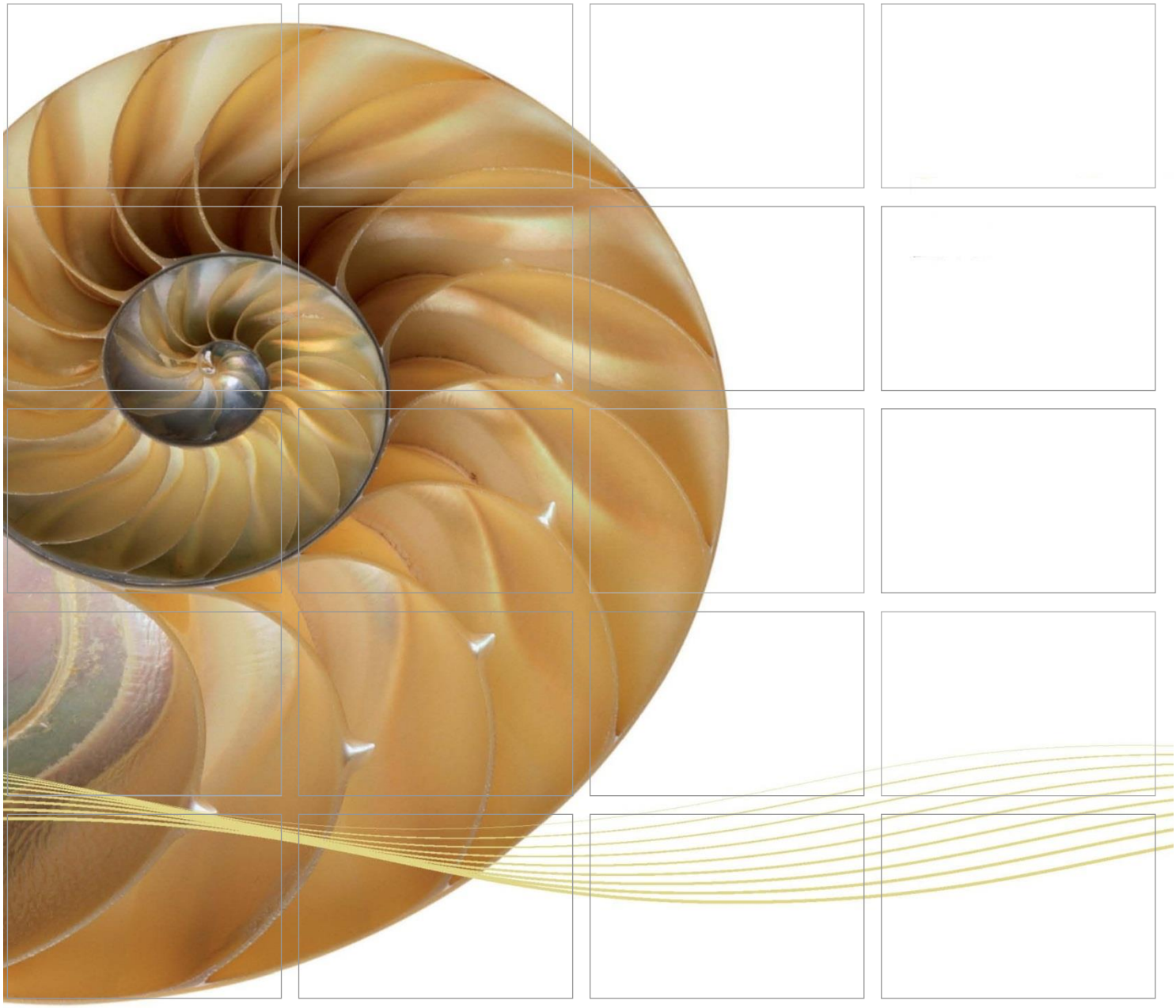
Report



Contract No. HY/2012/08
Tuen Mun – Chek Lap Kok Link – Northern Connection Sub-sea Tunnel Section

Eighty-Sixth Monthly Environmental Monitoring & Audit (EM&A) Report

11 January 2021

Environmental Resources Management
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18 Tak Fung Street
Hunghom, Kowloon
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Contract No. HY/2012/08
Tuen Mun – Chek Lap Kok Link – Northern Connection Sub-sea Tunnel Section

Eighty-Sixth Monthly Environmental Monitoring & Audit (EM&A) Report

Document Code: 0212330_86th Monthly EM&A_20210111.doc

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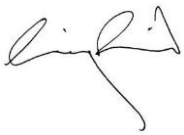
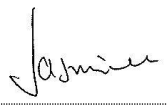
Client: DBJV	Project No: 0212330
Summary: This document presents the Eighty-Sixth Monthly EM&A Report for Tuen Mun – Chek Lap Kok Link Northern Connection Sub-sea Tunnel Section.	Date: 11 January 2021 Approved by:  *Mr Craig Reid* *Partner* Certified by:  *Dr Jasmine Ng* *ET Leader*

Revision	Description	By	Checked	Approved	Date
	86th Monthly EM&A Report	VAR	JN	CAR	11/01/21

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Ref.: HYDHZMBEEM00_0_8331L.21

11 January 2021

By Fax (2293 6300) and By Post

AECOM Asia Co. Ltd.
Supervising Officer Representative's Office
No.8 Mong Fat Street, Tuen Mun, New Territories, Hong Kong

Attention: Mr. Roger Man

Dear Mr. Man,

Re: Agreement No. CE 48/2011 (EP)
Environmental Project Office for the
HZMB Hong Kong Link Road, HZMB Hong Kong Boundary Crossing Facilities, and
Tuen Mun-Chek Lap Kok Link – Investigation

Contract No. HY/2012/08
TM-CLKL – Northern Connection Sub-sea Tunnel Section
86th Monthly EM&A Report for December 2020 (EP-354/2009/D)

Reference is made to the Monthly EM&A Report for December 2020 (ET's ref.: "0212330_86th Monthly EM&A_20210111.doc") certified by the ET Leader and provided to us via e-mail on 11 January 2021.

Please be informed that we have no adverse comments on the captioned Report. We write to verify the captioned submission in accordance with Condition 4.4 of EP-354/2009/D.

Thank you for your attention. Please do not hesitate to contact the undersigned or the ENPO Leader Mr. Y. H. Hui should you have any queries.

Yours sincerely,

Manson Yeung
Independent Environmental Checker
Tuen Mun – Chek Lap Kok Link

c.c.

HyD	Mr. Patrick Ng	(By Fax: 3188 6614)
HyD	Mr. Alan Ip	(By Fax: 3188 6614)
AECOM	Mr. Conrad Ng	(By Fax: 3922 9797)
ERM	Dr. Jasmine Ng	(By Fax: 2723 5660)
DBJV	Mr. Bryan Lee	(By Fax: 2293 7499)

Internal: DY, YH, ENPO Site

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Ramboll Hong Kong Limited 英環香港有限公司
21/F, BEA Harbour View Centre, 56 Gloucester Road, Wanchai, Hong Kong Tel: 852.3465 2888 Fax: 852.3465 2899
www.Ramboll.com

Table of Contents

Under *Contract No. HY/2012/08*, Dragages – Bouygues Joint Venture (DBJV) is commissioned by the Highways Department (HyD) to undertake the design and construction of the Northern Connection Sub-sea Tunnel Section of the Tuen Mun – Chek Lap Kok Link Project (TM-CLK Link Project) while AECOM Asia Company Limited was appointed by HyD as the Supervising Officer. For implementation of the environmental monitoring and audit (EM&A) programme under the Contract, ERM-Hong Kong, Limited (ERM) has been appointed as the Environmental Team (ET) in accordance with *Environmental Permit No. EP-354/2009/A*. Ramboll Hong Kong Ltd. was employed by HyD as the Independent Environmental Checker (IEC) and Environmental Project Office (ENPO). Subsequent applications for variation of environmental permits (VEP), *EP-354/2009/B*, *EP-354/2009/C* and *EP-354/2009/D*, were granted on 28 January 2014, 10 December 2014 and 13 March 2015, respectively.

The construction phase of the Contract commenced on 1 November 2013 and will tentatively be completed in 2021. The impact monitoring of the EM&A programme, including air quality, water quality, marine ecological monitoring and environmental site inspections, were commenced on 1 November 2013.

This is the Eighty-sixth Monthly EM&A report presenting the EM&A works carried out during the period from 1 to 31 December 2020 for the *Contract No. HY/2012/08 Northern Connection Sub-sea Tunnel Section* (the "Contract") in accordance with the Updated EM&A Manual of the TM-CLK Link Contract. As informed by the Contractor, major activities in the reporting period included:

Land-based Works

- Installation of green roof system & chain fence - South Ventiliation Building;
- Defect works for reinstatement at Box culvert – Northern Landfall; and
- Demolition of CLP substation

A summary of monitoring and audit activities conducted in the reporting period is listed below:

24-hour TSP Monitoring	5 sessions
1-hour TSP Monitoring	5 sessions
Operational Phase Water Quality Monitoring	1 session
Operational Phase Dolphin Monitoring	2 sessions
Joint Environmental Site Inspection	4 sessions

Implementation of Marine Mammal Exclusion Zone

No marine works were undertaken during the reporting period, therefore, daily 250 m marine mammal exclusion zone monitoring was not undertaken during the reporting period.

Summary of Breaches of Action/Limit Levels

Breaches of Action and Limit Levels for Air Quality

One (1) Action Level exceedances of 1-hour TSP was recorded in the air quality monitoring during this reporting month. No Action Level exceendace of 24-hour TSP was recorded.

Environmental Complaints, Non-compliance & Summons

No non-compliance with EIA recommendations, EP conditions and other requirements associated with the construction of this Contract was recorded in this reporting period.

No environmental complaint was received in this reporting period.

No environmental summons was received in this reporting period.

Reporting Change

There was no reporting change in the reporting period.

Upcoming Works for the Next Reporting Month

Works to be undertaken in the next monitoring period of January 2021 include the following:

Land-based Works

- Demolition of CLP substation

Future Key Issue

Potential environmental impacts arising from the above upcoming construction activities in the next reporting month of January 2021 are mainly associated with dust and waste management issues.

1 INTRODUCTION

1.1 BACKGROUND

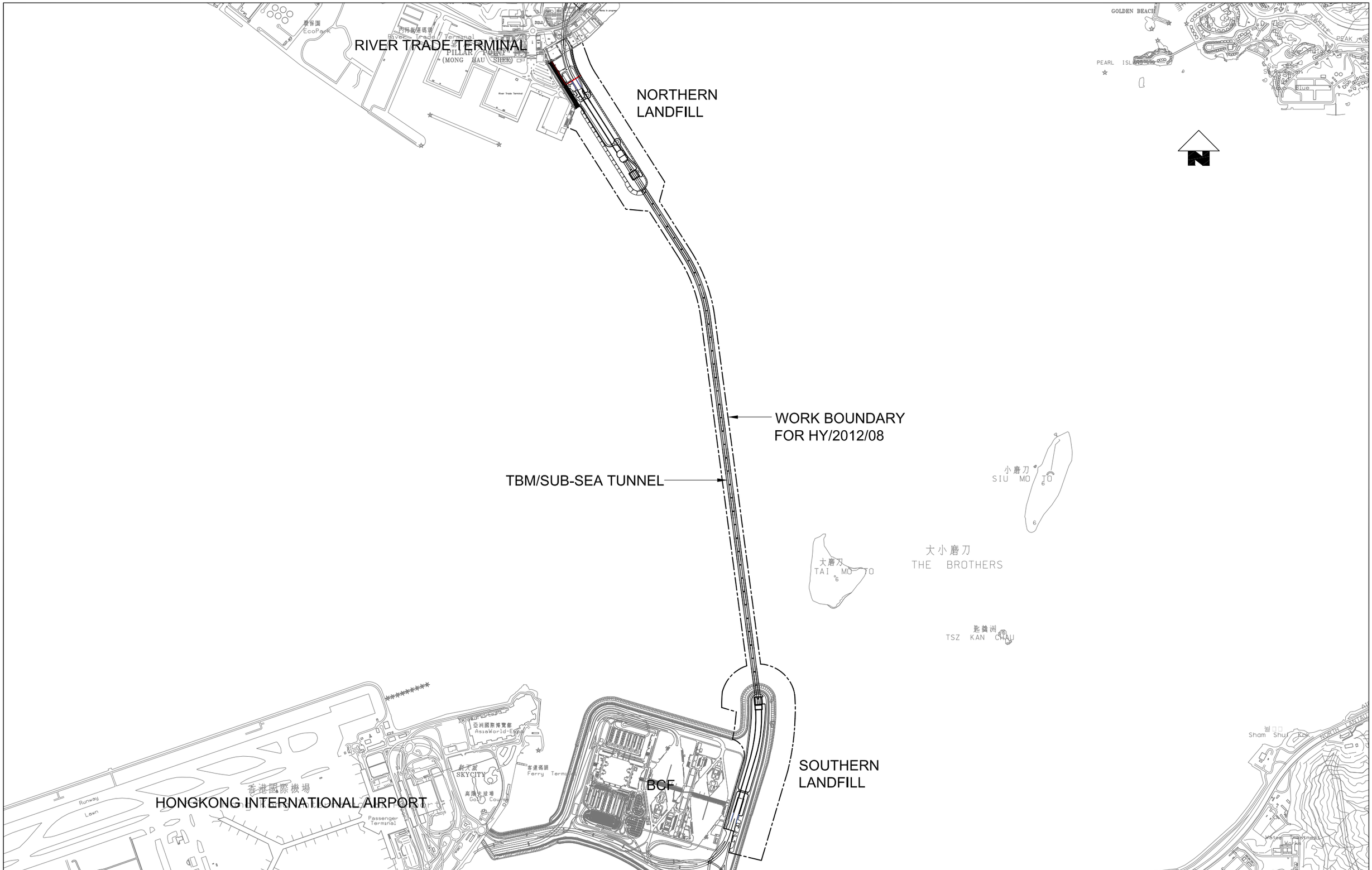
According to the findings of the Northwest New Territories (NWNT) Traffic and Infrastructure Review conducted by the Transport Department, Tuen Mun Road, Ting Kau Bridge, Lantau Link and North Lantau Highway would be operating beyond capacity after 2016. This forecast has been based on the estimated increase in cross boundary traffic, developments in the Northwest New Territories (NWNT), and possible developments in North Lantau, including the Airport developments, the Lantau Logistics Park (LLP) and the Hong Kong – Zhuhai – Macao Bridge (HZMB). In order to cope with the anticipated traffic demand, two new road sections between NWNT and North Lantau – Tuen Mun – Chek Lap Kok Link (TM-CLKL) and Tuen Mun Western Bypass (TMWB) are proposed.

An Environmental Impact Assessment (EIA) of TM-CLKL (the Project) was prepared in accordance with the EIA Study Brief (No. ESB-175/2007) and the *Technical Memorandum of the Environmental Impact Assessment Process* (*EIAO-TM*). The EIA Report was submitted under the Environmental Impact Assessment Ordinance (EIAO) in August 2009. Subsequent to the approval of the EIA Report (EIAO Register Number AEIAR-146/2009), an Environmental Permit (EP-354/2009) for TM-CLKL was granted by the Director of Environmental Protection (DEP) on 4 November 2009, and EP variation (VEP) (EP-354/2009/A) was issued on 8 December 2010. Subsequent applications for variation of environmental permits (VEPs), *EP-354/2009/B, EP-354/2009/C* and *EP-354/2009/D*, were granted on 28 January 2014, 10 December 2014 and 13 March 2015, respectively.

Under *Contract No. HY/2012/08*, Dragages – Bouygues Joint Venture (DBJV) is commissioned by the Highways Department (HyD) to undertake the design and construction of the Northern Connection Sub-sea Tunnel Section of TM-CLKL while AECOM Asia Company Limited was appointed by HyD as the Supervising Officer. For implementation of the environmental monitoring and audit (EM&A) programme under the Contract, ERM-Hong Kong, Limited (ERM) has been appointed as the Environmental Team (ET). Ramboll Hong Kong Ltd. was employed by HyD as the Independent Environmental Checker (IEC) and Environmental Project Office (ENPO).

Layout of the Contract components is presented in *Figure 1.1*.

The construction phase of the Contract commenced on 1 November 2013 and will tentatively be completed in 2020. The impact monitoring phase of the EM&A programme, including air quality, water quality, marine ecological monitoring and environmental site inspections, were commenced on 1 November 2013.



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				Approved By	SPo PP
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Rev.	Description	Date	Checked		

Main Contractor

香寶嘉 Dragages HongKong

A member of the Bouygues Construction group

BOUYGUES TRAVAUX PUBLICS

Dragages - Bouygues Joint Venture 寶嘉 - 布依格聯營

Client

路政署 HIGHWAYS DEPARTMENT

Contractor's Designer

ARUP Ove Arup & Partners Hong Kong Limited

Project

Contract No. HY/2012/08
Tuen Mun - Chek Lap Kok Link -
Northern Connection Sub-Sea Tunnel Section

Drawing Title

Figure 1.1

Drawing no.	TMCLKL8-DBJ-GEN-DWG-00174
Scale	1:25000 @ A3
CADD Ref.	TMCLKL8-DBJ-GEN-DWG-00174-DFT-A
Issue Status	DFT (DRAFT)
Revision	A

1.2 SCOPE OF REPORT

This is the Eighty-sixth Monthly EM&A Report under the *Contract No. HY/2012/08 Tuen Mun – Chek Lap Kok Link – Northern Connection Sub-sea Tunnel Section*. This report presents a summary of the environmental monitoring and audit works in December 2020.

1.3 ORGANIZATION STRUCTURE

The organization structure of the Contract is shown in *Appendix A*. The key personnel contact names and contact details are summarized in *Table 1.1* below.

Table 1.1 Contact Information of Key Personnel

Party	Position	Name	Telephone	Fax
Highways Department	Engr 24/SD	Ken T.M. Cheng	2762 4062	3188 6614
SOR (AECOM Asia Company Limited)	Chief Resident Engineer	Roger Man	2293 6388	2293 6300
ENPO / IEC (Ramboll Hong Kong Ltd.)	ENPO Leader	Y.H. Hui	3465 2850	3465 2899
	IEC	Manson Yeung	9700 6767	3465 2899
Contractor (Dragages – Bouygues Joint Venture)	Deputy Environmental Manager	Bryan Lee	2293 7323	2293 7499
	24-hour hotline		2293 7330	
ET (ERM-HK)	ET Leader	Jasmine Ng	2271 3311	2723 5660

1.4 SUMMARY OF CONSTRUCTION WORKS

The construction phase of this Contract was commenced on 1 November 2013. The construction programme is shown in *Appendix B*.

As per DBJV's information, details of major construction works carried out in this reporting period are summarized in *Table 1.2*.

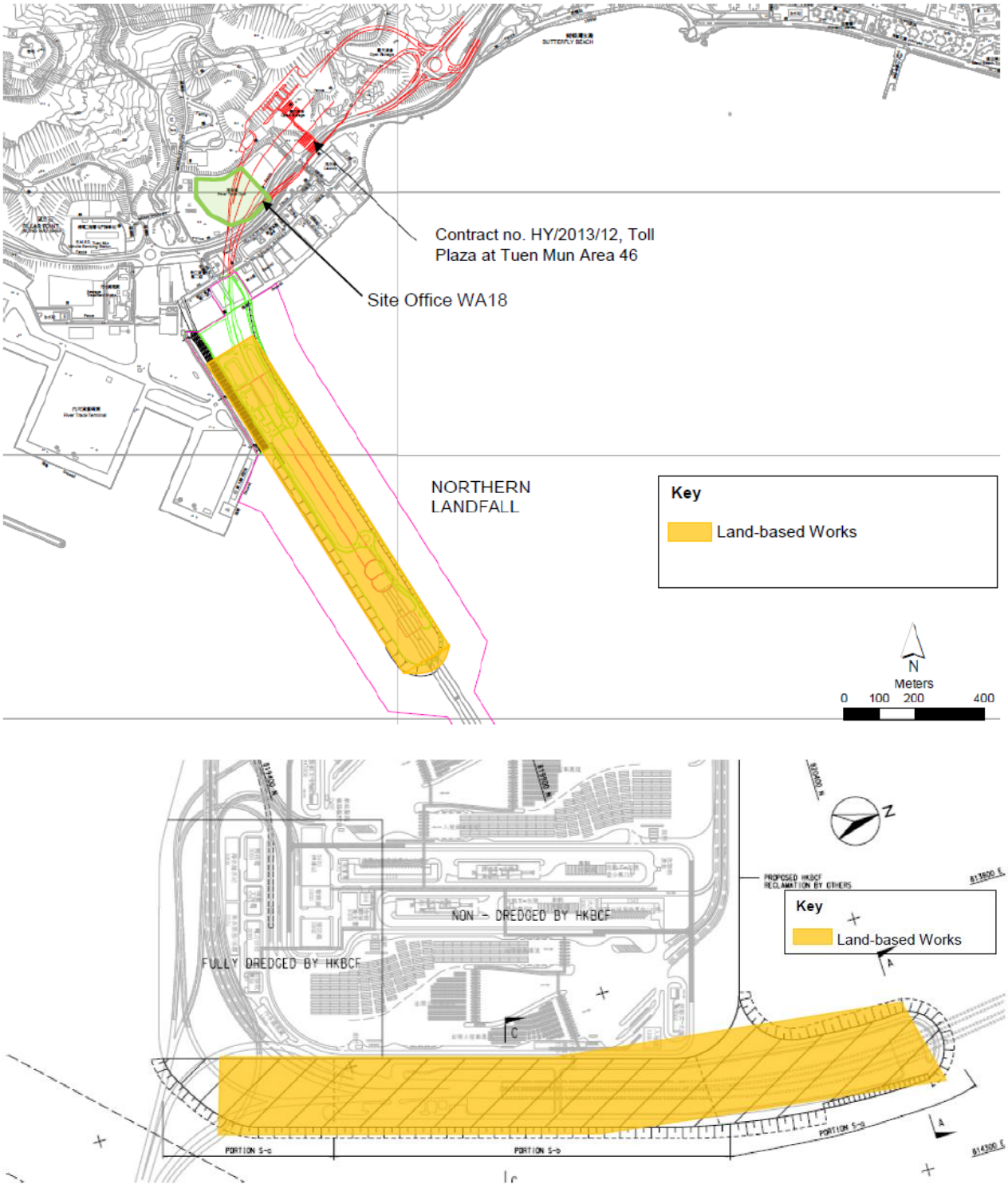
The general layout plan of the site showing the detailed works areas is shown in *Figure 1.2*. The Environmental Sensitive Receivers in the vicinity of the Contract are shown in *Figure 1.3*.

The implementation schedule of environmental mitigation measures is presented in *Appendix C*.

Table 1.2 Summary of Construction Activities Undertaken during the Reporting Period

Construction Activities Undertaken
Land-based Works
• Installation of green roof system & chain fence - South Ventiliation Building; • Defect works for reinstatement at Box culvert – Northern Landfall; and • Demolition of CLP substation

Figure 1.2 Locations of Construction Activities – December 2020



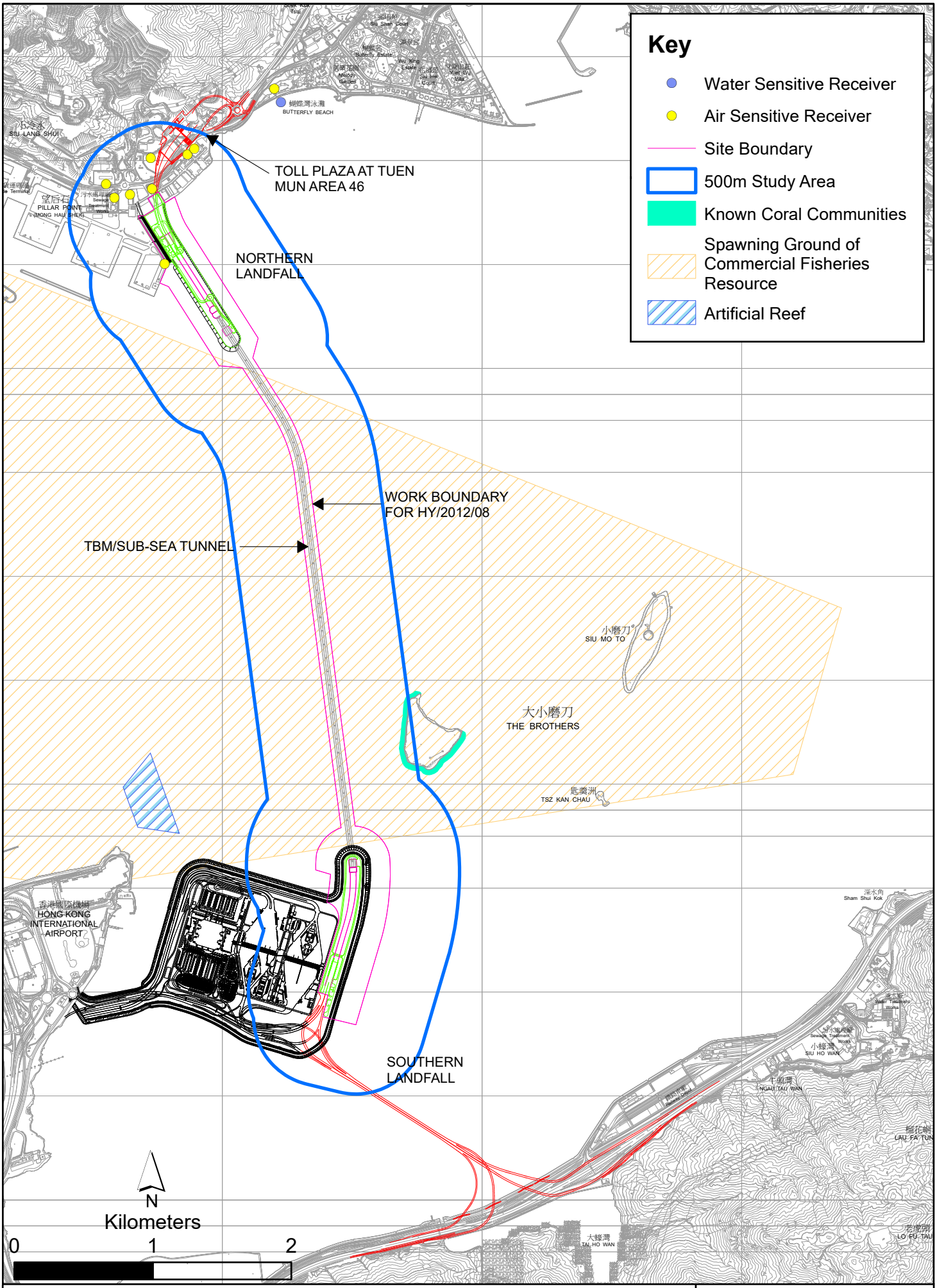


Figure 1.3 Environmental Sensitive Receivers in the vicinity of Contract No. HY/2012/08 Tuen Mun - Chek Lap Kok Link - Northern Connection Sub-Sea Tunnel Section

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Date: 15/4/2014

Environmental Resources Management

The EM&A programme required environmental monitoring for air quality, water quality and marine ecology as well as environmental site inspections for air quality, noise, water quality, waste management, marine ecology and landscape and visual impacts. The EM&A requirements and related findings for each component are summarized in the following sections

2.1 AIR QUALITY

2.1.1 Monitoring Requirements and Equipment

In accordance with the Updated EM&A Manual and the Enhanced TSP Monitoring Plan, impact 1-hour TSP monitoring was conducted three (3) times every six (6) days and impact 24-hour TSP monitoring was carried out once every six (6) days when the highest dust impact was expected. 1-hr and 24-hr TSP monitoring frequency was increased to three times per day every three days and daily every three days, respectively, as excavation works for launching shaft commenced on 24 October 2014.

Excavation works for lauching shaft were completed and notification of change on air quality monitoring frequency was submitted to EPD on 14 September 2020. 1-hr and 24-hr TSP monitoring frequency was changed to three times per day every six days and daily every six days, respectively, since 14 September 2020.

High volume samplers (HVSs) were used to carry out the 1-hour and 24-hour TSP monitoring on 4, 10, 16, 22 and 28 December 2020 at the five (5) air quality monitoring stations in accordance with the requirements stipulated in the Updated EM&A Manual (*Figure 2.1*; *Table 2.1*). Wind meter was installed at the rooftop of ASR5 for logging wind speed and wind direction. Details of the equipment deployed are provided in *Table 2.2*. Copies of the calibration certificates for the equipment are presented in *Appendix E*.

Table 2.1 Locations of Impact Air Quality Monitoring Stations and Monitoring Dates in this Reporting Period

Monitoring Station	Monitoring Dates	Location	Description	Parameters & Frequency
ASR1	4, 10, 16, 22 and 28 December 2020	Tuen Mun Fireboat Station	Office	TSP monitoring • 1-hour Total Suspended Particulates (1-hour TSP, µg/m³), 3 times in every 6 days • 24-hour Total Suspended Particulates (24-hour TSP, µg/m³), daily for 24-hour in every 6 days Enhanced TSP monitoring (commenced on 24 October 2014) • 1-hour Total Suspended Particulates (1-hour TSP,
ASR5		Pillar Point Fire Station	Office	
AQMS1		Previous River Trade Golf	Bare ground	
ASR6		Butterfly Beach Laundry	Office	

Monitoring Station	Monitoring Dates	Location	Description	Parameters & Frequency
ASR10		Butterfly Beach Park	Recreational uses	µg/m³), 3 times in every 3 days • 24-hour Total Suspended Particulates (24-hour TSP, µg/m³), daily for 24-hour in every 3 days

Table 2.2 Air Quality Monitoring Equipment

Equipment	Brand and Model
High Volume Sampler (1-hour TSP and 24-hour TSP)	Tisch Environmental Mass Flow Controlled Total Suspended Particulate (TSP) High Volume Sampler (Model No. TE-5170)
Wind Meter	Davis (Model: Vantage Pro 2 (S/N: AS160104014)
Wind Anemometer for calibration	Lutron (Model No. AM-4201)

2.1.2 Action & Limit Levels

The Action and Limit Levels of the air quality monitoring is provided in *Appendix D*. The Event and Action plan is presented in *Appendix K.*

2.1.3 Monitoring Schedule for the Reporting Month

The schedule for air quality monitoring in December 2020 is provided in *Appendix F*.

2.1.4 Results and Observations

The monitoring results for 1-hour TSP and 24-hour TSP are summarized in *Tables 2.3* and *2.4,* respectively. Detailed impact air quality monitoring results and graphical presentations are presented in *Appendix G*.

Table 2.3 Summary of 1-hour TSP Monitoring Results in this Reporting Period

Station	Average (µg/m³)	Range (µg/m³)	Action Level (µg/m³)	Limit Level (µg/m³)
ASR1	139	79 - 233	331	500
ASR5	193	94 - 348	340	500
AQMS1	109	48 - 140	335	500
ASR6	146	81 - 229	338	500
ASR10	97	39 - 200	337	500

Table 2.4 Summary of 24-hour TSP Monitoring Results in this Reporting Period

Station	Average (µg/m³)	Range (µg/m³)	Action Level (µg/m³)	Limit Level (µg/m³)
ASR1	112	93 - 147	213	260
ASR5	114	80 - 166	238	260
AQMS1	83	53 - 102	213	260
ASR6	113	97 - 130	238	260
ASR10	78	63 - 94	214	260

The weather condition during the monitoring period varied from sunny to hazy. The major dust sources in the reporting period included construction

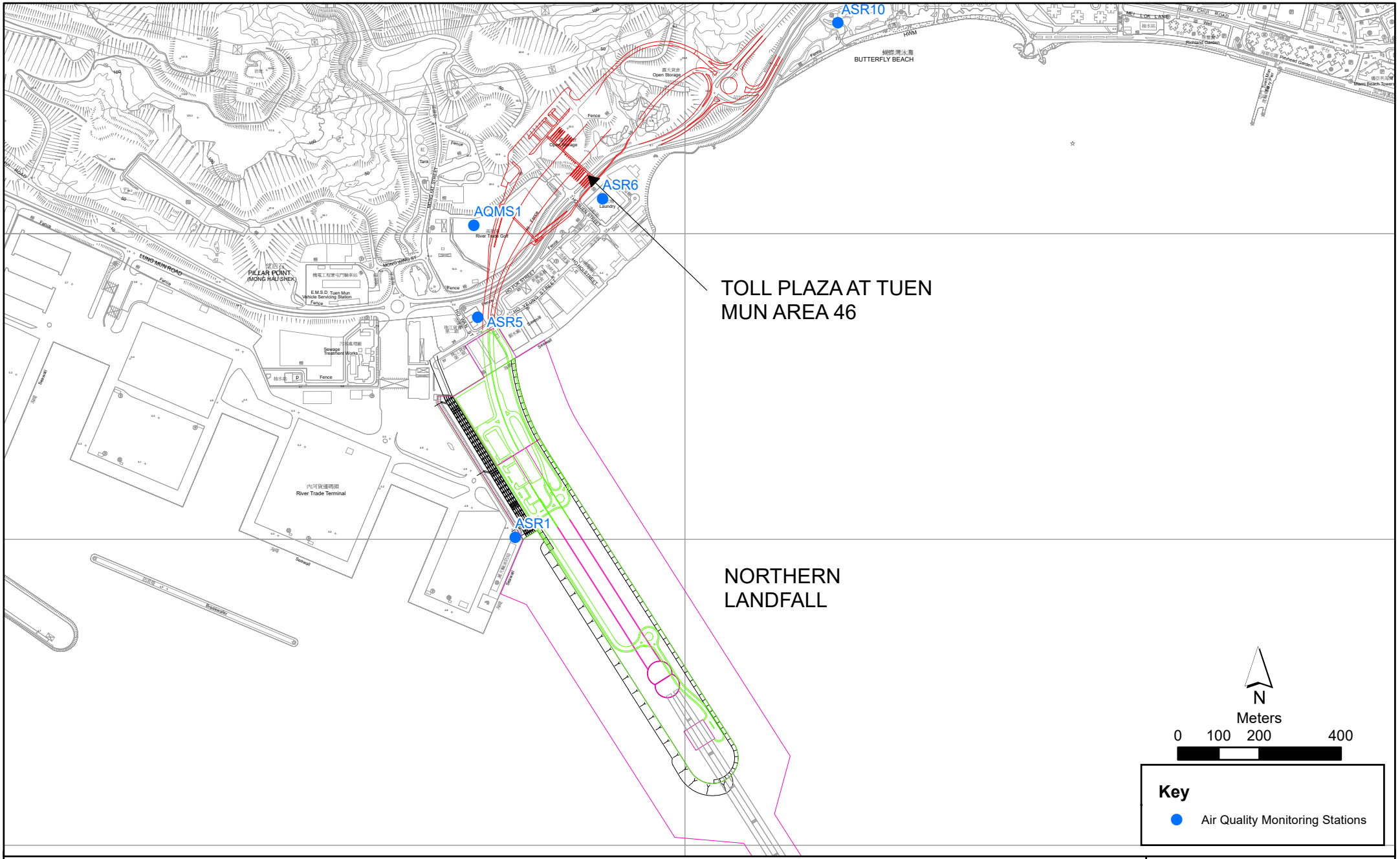

Figure 2.1

Air Quality Monitoring Stations for the Enhanced TSP Monitoring

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activities under the Contract as well as nearby traffic emissions and renovation works undertaken by other contract.

A total of 5 1-hour TSP and 24-hour TSP monitoring were undertaken in this reporting month. One (1) Action Level exceedances of 1-hour TSP was recorded in the air quality monitoring during this reporting month.

Meteorological information collected at the ASR5, including wind speed and wind direction, is provided in *Appendix H*.

2.2 WATER QUALITY MONITORING

2.2.1 Monitoring Requirements & Equipment

According to the Updated EM&A Manual, a operational phase water quality monitoring shall be performed monthly during the first year of Project operation at all designated monitoring stations including control stations. The operation phase water quality monitoring shall be ceased after the first year of operation of the Project subject to the first year review. Operational phase water quality monitoring commenced in June 2020. Locations of water quality monitoring stations presented in *Figure 2.2* and in *Table 2.5*.

Table 2.5 Locations of Operational Phase Water Quality Monitoring Stations and the Corresponding Monitoring Requirements

Station ID	Type	Coordinates		*Parameters, unit	Depth	Frequency
		Easting	Northing			
IS(Mf)11	Impact Station (Close to HKBCF construction site)	813562	820716	• Temperature(°C) • pH(pH unit) • Turbidity (NTU) • Water depth (m) • Salinity (ppt) • DO (mg/L and % of saturation) • SS (mg/L)	3 water depths: 1m below sea surface, mid-depth and 1m above sea bed. If the water depth is less than 3m, mid-depth sampling only. If water depth less than 6m, mid-depth may be omitted.	Monthly at each station, at mid-flood and mid-ebb tides during the construction period of the Contract.
SR4(N2)	Sensitive receiver (Tai Ho Inlet)	814688	817996			
CS2(A)	Control Station	805232	818606			
CS(Mf)5	Control Station	817990	821129			

Station ID	Type	Coordinates	*Parameters, unit	Depth	Frequency

*Notes:
In addition to the parameters presented monitoring location/position, time, water depth, sampling depth, tidal stages, weather conditions and any special phenomena or works underway nearby were also recorded.

With reference to the EM&A Report under Contract No. HY/2011/03, water quality monitoring station SR3 was relocated to SR3(N) since 1 September 2017.
With reference to the EM&A Report under Contract No. HY/2011/03, water quality monitoring station SR4 was relocated to SR4(N) since 1 January 2018.
With reference to the EM&A Report under Contract No. HY/2011/03, water quality monitoring station SR4(N) was relocated to SR4(N2) since 21 August 2019.
With reference to the EM&A Report under Contract No. HY/2011/03, water quality monitoring station CS2 was relocated to CS2(A) since 23 August 2017.

Table 2.6 summarizes the equipment used in the operational phase water quality monitoring programme. Copies of the calibration certificates are attached in *Appendix E*.

Table 2.6 Water Quality Monitoring Equipment

Equipment	Model
Multi-Parameters	YSI ProDss 17H105557; YSI 6920 V2 0001C6A7
Positioning Equipment	Furuno GP-170
Water Depth Detector	Lowrance Mark 5x / Garmin Striker 4

2.2.2 Monitoring Schedule for the Reporting Month

The schedule for operational phase water quality monitoring in December 2020 is provided in *Appendix F.*

2.2.3 Results and Observations

One monitoring event for operational phase water quality monitoring was conducted at all designated monitoring stations in the reporting month. Operational phase water quality monitoring results are provided in *Appendix J*.

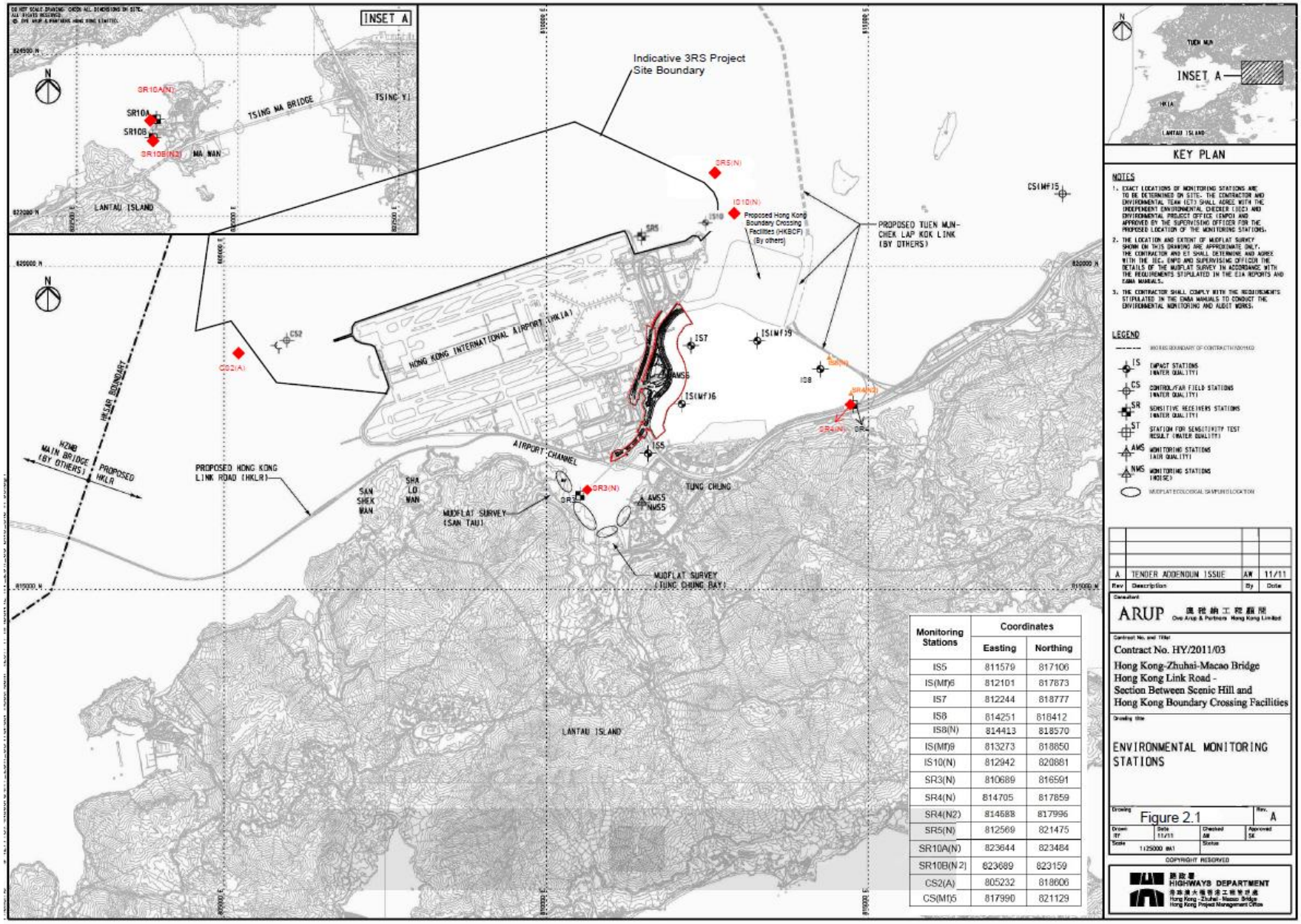
2.3 DOLPHIN MONITORING

2.3.1 Monitoring Requirements

Operational Phase dolphin monitoring is required to be conducted by a qualified dolphin specialist team to evaluate whether there have been any effects on the dolphins. In order to fulfil the EM&A requirements and make good use of available resources, Contract No. HY/2012/08 has taken over the responsibility for implementation of dolphin monitoring from HZMB HKLR Contract No. HY/2011/03 since October 2019.

2.3.2 Monitoring Equipment

Table 2.7 summarises the equipment used for the operational phase dolphin monitoring.



Monitoring Stations	Coordinates	
	Easting	Northing
IS5	811579	817106
IS(Mf)6	812101	817873
IS7	812244	818777
IS8	814251	818412
IS8(N)	814413	818570
IS(Mf)9	813273	818850
IS10(N)	812942	820881
SR3(N)	810689	816591
SR4(N)	814705	817859
SR4(N2)	814588	817996
SR5(N)	812569	821475
SR10A(N)	823644	823484
SR10B(N2)	823689	823159
CS2(A)	805232	818606
CS(Mf)5	817990	821129

Figure 2.2

Operational Phase Water Quality Monitoring Stations SR3(N), CS2(A), SR4(N2) & CS(Mf)5

(Source from Contract No. HY/2011/03 EM&A Report)

Table 2.7 Dolphin Monitoring Equipment

Equipment	Model
Global Positioning System (GPS)	Garmin 18X-PC Geo One Phottix
Camera	Nikon D90 300m 2.8D fixed focus Nikon D90 20-300m zoom lens
Laser Binocular	Infinitor LRF 1000
Marine Binocular	Bushell 7 x 50 marine binocular with compass and reticules
Vessel for Monitoring	65 foot single engine motor vessel with viewing platform 4.5m above water level

2.3.3 Monitoring Parameter, Frequencies & Duration

Dolphin monitoring should cover all transect lines in Northeast Lantau (NEL) and the Northwest Lantau (NWL) survey areas twice per month throughout the entire construction period and operational phase. The monitoring data should be compatible with, and should be made available for, long-term studies of small cetacean ecology in Hong Kong. In order to provide a suitable long-term dataset for comparison, identical methodology and line transects employed in baseline dolphin monitoring was followed in the impact dolphin monitoring and operational phase dolphin monitoring.

2.3.4 Monitoring Location

The operational phase dolphin monitoring was carried out in the NEL and NWL along the line transect as depicted in *Figure 2.3*. The co-ordinates of all transect lines are shown in *Table 2.8* below.

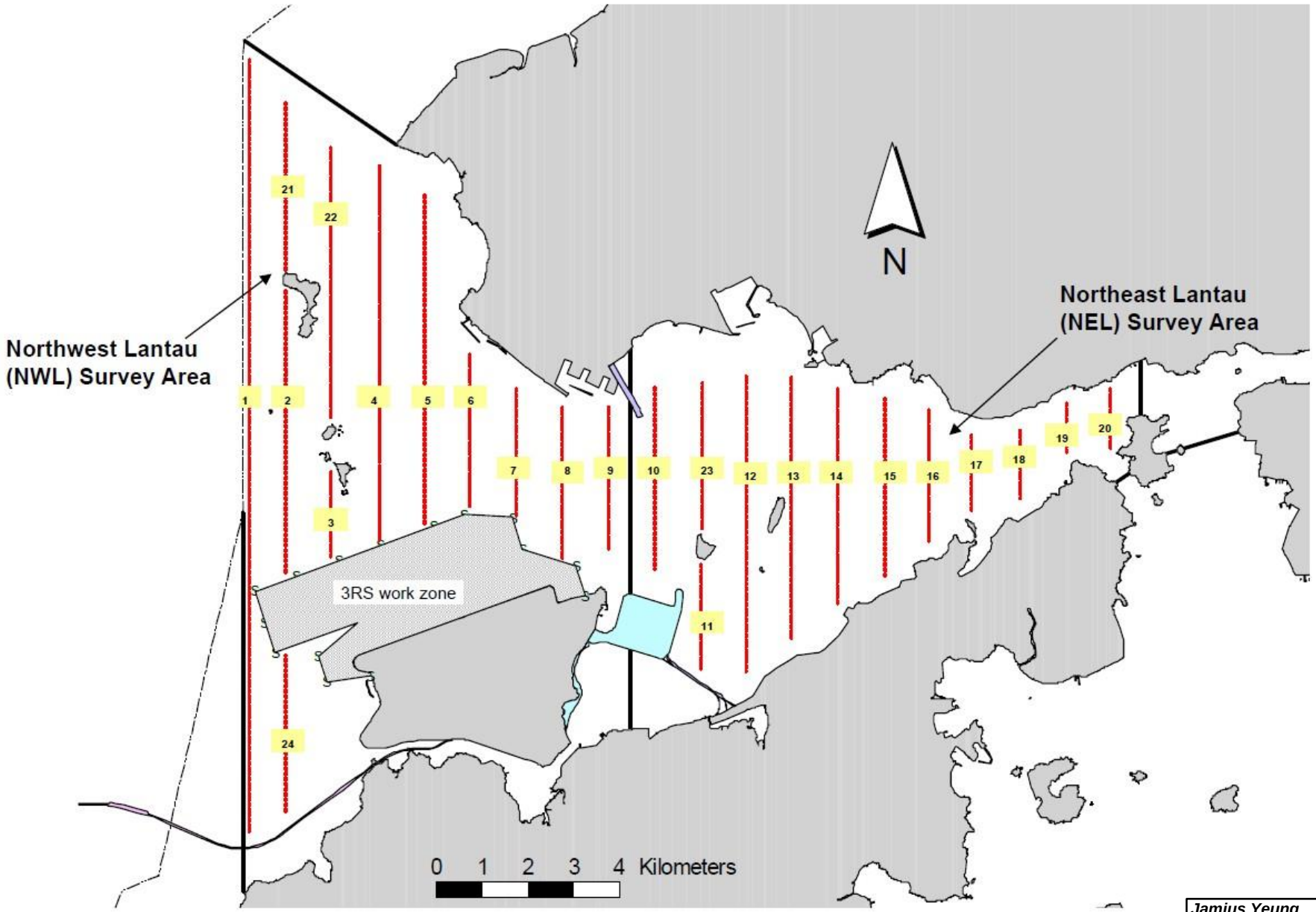


Figure 2.3

Layout of Transect Lines of Dolphin Monitoring in Northwest and Northeast Lantau Areas

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Figure 2.3

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Table 2.8 Operational Phase Dolphin Monitoring Line Transect Co-ordinates

Line No.		Easting	Northing	Line No.		Easting	Northing
1	Start Point	804671	815456	13	Start Point	816506	819480
1	End Point	804671	831404	13	End Point	816506	824859
2	Start Point	805476	820800*	14	Start Point	817537	820220
2	End Point	805476	826654	14	End Point	817537	824613
3	Start Point	806464	821150*	15	Start Point	818568	820735
3	End Point	806464	822911	15	End Point	818568	824433
4	Start Point	807518	821500*	16	Start Point	819532	821420
4	End Point	807518	829230	16	End Point	819532	824209
5	Start Point	808504	821850*	17	Start Point	820451	822125
5	End Point	808504	828602	17	End Point	820451	823671
6	Start Point	809490	822150*	18	Start Point	821504	822371
6	End Point	809490	825352	18	End Point	821504	823761
7	Start Point	810499	822000*	19	Start Point	822513	823268
7	End Point	810499	824613	19	End Point	822513	824321
8	Start Point	811508	821123	20	Start Point	823477	823402
8	End Point	811508	824254	20	End Point	823477	824613
9	Start Point	812516	821303	21	Start Point	805476	827081
9	End Point	812516	824254	21	End Point	805476	830562
10	Start Point	813525	821176	22	Start Point	806464	824033
10	End Point	813525	824657	22	End Point	806464	829598
11	Start Point	814556	818853	23	Start Point	814559	821739
11	End Point	814556	820992	23	End Point	814559	824768
12	Start Point	815542	818807	24*	Start Point	805476*	815900*
12	End Point	815542	824882	24*	End Point	805476*	819100*

Remarks: The coordinates of several starting and ending points have been revised due to the presence of a work zone to the north of the airport platform with intense construction activities in association with the construction of the third runway expansion for the Hong Kong International Airport. Co-ordinates in red and marked with asterisk are revised co-ordinates of transect line.

2.3.5 *Monitoring Schedule for the Reporting Month*

Dolphin monitoring was carried out on 1, 3, 8, and 10 December 2020. The dolphin monitoring schedule for the reporting month is shown in *Appendix F*.

2.3.6 *Results & Observations*

A total of 257.39 km of survey effort was collected, with 94.8% of the total survey effort being conducted under favourable weather conditions (i.e. Beaufort Sea State 3 or below with good visibility) in December 2020. Among the two areas, 96.40 km and 160.99 km of survey effort were collected from NEL and NWL survey areas, respectively. The total survey effort conducted on primary and secondary lines were 192.26 km and 65.13 km respectively. The survey efforts are summarized in *Appendix I.*

A single group of two Chinese White Dolphins was sighted in the two sets of surveys in December 2020. The dolphin sighting was made in NWL, while none was sighted in NEL. The dolphin sighting was made during on-effort search and was made on secondary lines. The dolphin was not associated with any operating fishing vessel.

No dolphin sighting was made in the proximity of the TM-CLKL alignment. The distribution of dolphin sightings during the reporting month is shown in *Figure 2.4*.

The southern end of transect line no. 8 was not travelled on 1 and 8 December 2020 during the dolphin monitoring due to the presence of construction boats along the transect line. Part of the transect line was not travelled due to safety concerns.

Encounter rates of Chinese White Dolphins are deduced from the survey effort and on-effort sighting data made under favourable conditions (Beaufort 3 or below) in December 2020 with the results present in *Tables 2.9* and *2.10.*

Table 2.9 Individual Survey Event Encounter Rates

		Encounter rate (STG) (no. of on-effort dolphin sightings per 100 km of survey effort)	**Encounter rate (ANI)** (no. of dolphins from all on-effort sightings per 100 km of survey effort)
		Primary Lines Only	**Primary Lines Only**
NEL	Set 1: December 1st / 3rd	0.0	0.0
	Set 2: December 8th / 10th	0.0	0.0
NWL	Set 1: December 1st / 3rd	0.0	0.0
	Set 2: December 8th / 10th	0.0	0.0

Note: Dolphin Encounter Rates are deduced from the Two Sets of Surveys (Two Surveys in Each Set) in December 2020 in Northeast (NEL) and Northwest Lantau (NWL)

Table 2.10 Monthly Average Encounter Rates

	Encounter rate (STG) (no. of on-effort dolphin	**Encounter rate (ANI) (no. of dolphins from all on-**

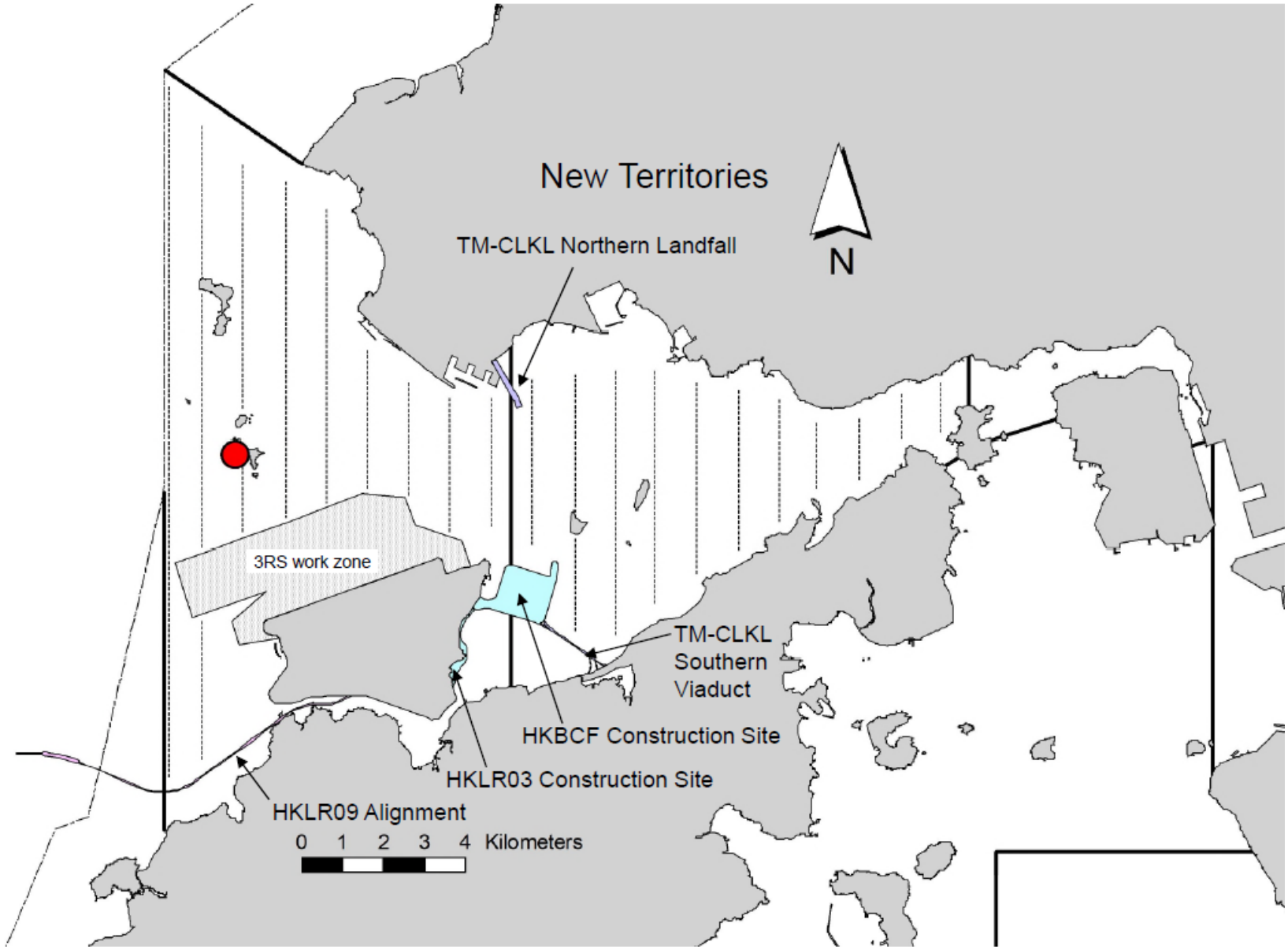

Figure 2.4

HY/2012/08 TM-CLKL Northern Connection Sub-sea Tunnel Section
The distribution of dolphin sightings during the reporting period

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	sightings per 100 km of survey effort)		effort sightings per 100 km of survey effort)	
	Primary Lines Only	**Both Primary and Secondary Lines**	**Primary Lines Only**	**Both Primary and Secondary Lines**
Northeast Lantau	0.0	0.0	0.0	0.0
Northwest Lantau	0.0	0.7	0.0	1.4

Note: Overall dolphin encounter rates (sightings per 100 km of survey effort) from all four surveys are conducted in December 2020 on primary lines only as well as both primary lines and secondary lines in Northeast and Northwest Lantau.

According to the EM&A Manual, Operational Phase Monitoring on dolphin monitoring shall be undertaken based upon the frequency of forty-eight, one-day survey events at a frequency of 2 per month over a period of 24 months following cessation of the construction. The schedule for operational phase monitoring on dolphin monitoring in Decemeber 2020 is provided in *Appendix F*.

2.3.7 Implementation of Marine Mammal Exclusion Zone

No marine works were undertaken during the reporting period, therefore, daily 250 m marine mammal exclusion zone monitoring was not undertaken during the reporting period.

2.4 EM&A SITE INSPECTION

Site inspections were carried out on a weekly basis to monitor the implementation of proper environmental pollution control and mitigation measures under the Contract. In the reporting month, four (4) site inspections were carried out on 9, 16, 23 and 28 December 2020.

Key observations and recommendations during the site inspections in this reporting period are summarized in *Table 2.11*.

Table 2.11 Specific Observations and Recommendations during the Weekly Site Inspection in this Reporting Month

Inspection Date	Observations	Recommendations/ Remarks
9 Decmeber 2020	Northern Landfall (CLP Substation) • Nil.	Northern Landfall (CLP Substation) • Nil.
16 December 2020	South Ventilation Building carpark (southern landfall) • NRMM label on the generator was faded. • Chemical containers were observed not placed in drip tray. • Over 20 bags of cement bag were observed without proper cover.	South Ventilation Building carpark (southern landfall) • The Contractor was reminded to replace the NRMM label on the generator. • The Contractor was reminded to place chemical containers in drip tray. • The Contractor was reminded to cover the cement bag with tarpaulin sheet to avoid windblow dust.
23 December 2020	Storage area (Northern landfall) • Chemical containers were observed not placed in drip tray.	Storage area (Northern landfall) • The Contractor was reminded to place chemical containers in drip tray.
28 December 2020	CLP Substation • Chemical container was observed not placed in the drip tray. Northern Landfall (Zone C) • Chemical containers were observed not placed in drip tray.	CLP Substation • The Contractor was reminded to place chemical container in drip tray. Northern Landfall (Zone C) • The Contractor was reminded to place chemical container in drip tray.

The Contractor has rectified all of the observations as identified during environmental site inspections in the reporting month.

2.5 WASTE MANAGEMENT STATUS

The Contractor had submitted application form for registration as chemical waste producer under the Contract. Sufficient numbers of receptacles were available for general refuse collection and sorting.

Wastes generated during this reporting period included mainly construction wastes (inert and non-inert). Reference has been made to the waste flow table prepared by the Contractor (*Appendix M*). The quantities of different types of wastes are summarized in *Table 2.12*.

Table 2.10 Quantities of Different Waste Generated in the Reporting Month

Month/Year	Inert Construction Waste [a] (tonnes)	Inert Construction Waste Re-used (tonnes)	Non-inert Construction Waste [b] (tonnes)	Recyclable Materials [c] (kg)	Chemical Wastes (kg)	Marine Sediment (m^3)		
						Category L	Category M (M_p & M_f)	Mixed (L+M)
December 2020	554	0	173	0	0	0	0	0

Notes:

(a) Inert construction wastes include hard rock and large broken concrete, and materials disposed as public fill.

(b) Non-inert construction wastes include general refuse disposed at landfill.

(c) Recyclable materials include metals, paper, cardboard, plastics, timber and others.

The Contractor was advised to properly maintain on site C&D materials and waste collection, sorting and recording system, dispose of C&D materials and wastes at designated ground and maximize reuse/ recycle of C&D materials and wastes. The Contractor was also reminded to properly maintain the site tidiness and dispose of the wastes accumulated on site regularly and properly.

For chemical waste containers, the Contractor was reminded to treat properly and store temporarily in designated chemical waste storage area on site in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes.

2.6 ENVIRONMENTAL LICENSES AND PERMITS

The status of environmental licensing and permit is summarized in *Table 2.13* below.

Table 2.13 Summary of Environmental Licensing and Permit Status

License/ Permit	License or Permit No.	Date of Issue	Date of Expiry	License/ Permit Holder	Remarks
Environmental Permit	EP-354/2009/D	13 March 2015	Throughout the Contract	HyD	Application for VEP on 3 March 2015 to supersede EP-354/2009/C
Construction Dust Notification	435068	27 June 2018	Throughout the Contract	DBJV	Northern Landfall
Construction Dust Notification	435505	12 July 2018	Throughout the Contract	DBJV	Southern Landfall
Chemical Waste Registration	5213-422-D2516-02	18 January 2017	Throughout the Contract	DBJV	Northern Landfall
Chemical Waste Registration	5213-951-D2591-01	25 May 2016	Throughout the Contract	DBJV	Southern Landfall
Construction Waste Disposal Account	7018108	28 August 2013	Throughout the Contract	DBJV	Waste disposal in Contract No. HY/2012/08
Waste Water Discharge License	WT00031435-2018	2 August 2018	31 August 2023	DBJV	Southern Landfall
Waste Water Discharge License	WT00034060-2019	25 July 2019	30 June 2024	DBJV	Northern Landfall (4 Discharge Point)

Notes:
HyD = Highways Department
DBJV = Dragages – Bouygues Joint Venture
VEP = Variation of Environmental Permit

2.7 IMPLEMENTATION STATUS OF ENVIRONMENTAL MITIGATION MEASURES

In response to the site audit findings, the Contractors carried out all corrective actions.

A summary of the Implementation Schedule of Environmental Mitigation Measures (EMIS) is presented in *Appendix C*. The necessary mitigation measures relevant to this Contract were implemented properly.

2.8 SUMMARY OF EXCEEDANCES OF THE ENVIRONMENTAL QUALITY PERFORMANCE LIMIT

One (1) Action Level exceedances of 1-hour TSP was recorded in the air quality monitoring during this reporting month. No exceedance of 24-hour TSP Monitoring was recorded.

Cumulative statistics are provided in *Appendix L*.

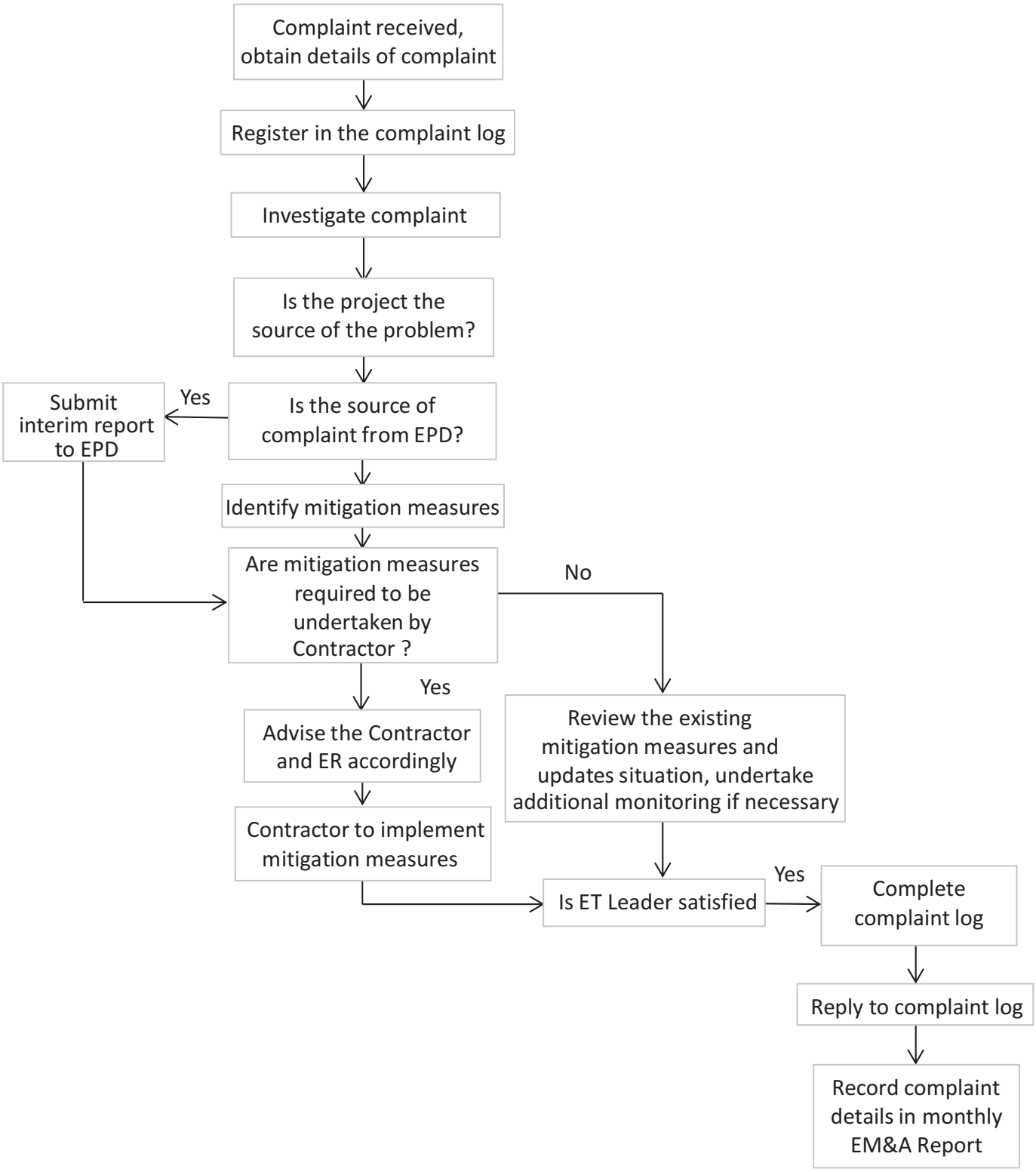
2.9 SUMMARY OF COMPLAINTS, NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

The Environmental Complaint Handling Procedure is provided in *Figure 2.5*.

No environmental complaint was received in this reporting period.

No environmental summons was received in this reporting period.

Statistics on complaints, notifications of summons and successful prosecutions are summarized in *Appendix L*.



Environmental Complaint Handling Procedure

Figure 2.5

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DATE: 06/12/2013

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3 FUTURE KEY ISSUES

3.1 CONSTRUCTION ACTIVITIES FOR THE COMING MONTH

As informed by the Contractor, the major works for the Contract in January 2021 are summarized in *Table 3.1*.

Table 3.1 Construction Works to Be Undertaken in the Coming Month

Works to be undertaken
Land-based Works
• Demolition of CLP substation

3.2 KEY ISSUES FOR THE COMING MONTH

Potential environmental impacts arising from the above upcoming construction activities in the next reporting month of January 2021 are mainly associated with dust and waste management issues.

3.3 MONITORING SCHEDULE FOR THE COMING MONTH

The tentative schedule for environmental monitoring in January 2021 is provided in *Appendix F*.

4 CONCLUSIONS AND RECOMMENDATIONS

4.1 CONCLUSIONS

This Eighty-sixth Monthly EM&A Report presents the findings of the EM&A activities undertaken during the period from 1 to 31 December 2020, in accordance with the Updated EM&A Manual and the requirements of EP-354/2009/D.

Air quality (including 1-hour TSP and 24-hour TSP), operational phase water quality monitoring and operational phase dolphin monitoring were carried out in this reporting month.

One (1) Action Level exceedances of 1-hour TSP was recorded in the air quality monitoring during this reporting month. No exceedance of 24-hour TSP Monitoring was recorded.

A single group of two Chinese White Dolphins was sighted in the two sets of surveys in December 2020. The dolphin sighting was made in NWL, while none was sighted in NEL. The dolphin sighting was made during on-effort search and was made on secondary lines. The dolphin was not associated with any operating fishing vessel.

Environmental site inspection was carried out four (4) times in December 2020. Remedial actions recommended for the deficiencies identified during the site audits were properly implemented by the Contractor.

No non-compliance event was recorded during the reporting period.

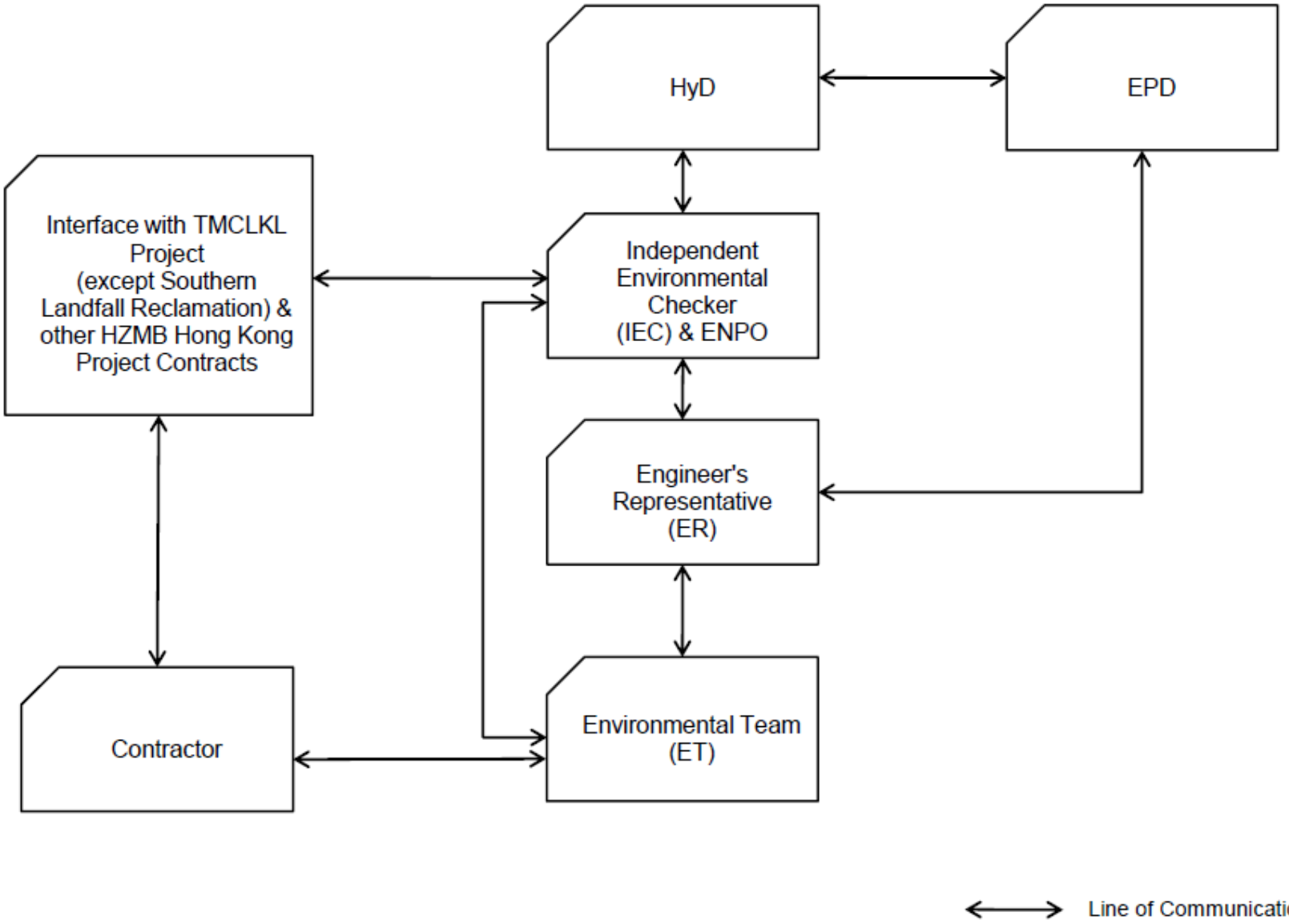
No environmental complaint was received in this reporting period.

No environmental summons was received in this reporting period.

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

Appendix A

Project Organization for Environmental Works



Appendix A1

Contract No. HY/2012/08 Northern Connection Sub-sea Tunnel Section
Project Organization

DATE: 06/03/2013

Environmental Resources Management

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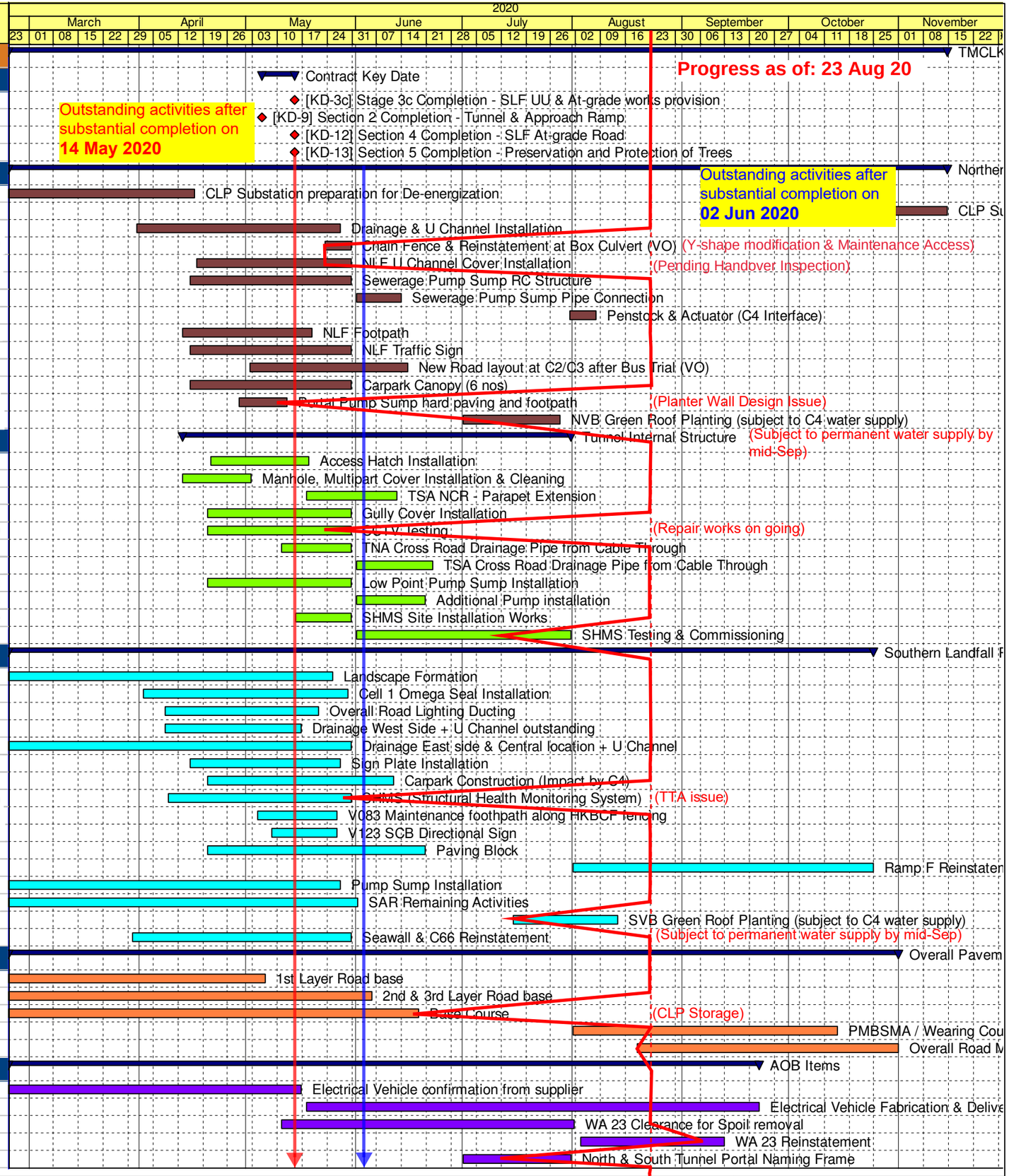
Appendix B

Construction Programme

#	Activity Name	Orig Dur	Start	Finish	Target Finish Date
1	**TMCLKL Northen Connection Sub-sea Tunnel Section**	217	24-Feb-20	14-Nov-20	
2	**Contract Key Date**	8	05-May-20	14-May-20	
3	[KD-3c] Stage 3c Completion - SLF UU & At-grade works provision	0		14-May-20	
4	[KD-9] Section 2 Completion - Tunnel & Approach Ramp	0		05-May-20	
5	[KD-12] Section 4 Completion - SLF At-grade Road	0		14-May-20	
6	[KD-13] Section 5 Completion - Preservation and Protection of Trees	0		14-May-20	
7	**Northern Landfall Remaining Works**	228	24-Feb-20	14-Nov-20	
8	CLP Substation preparation for De-energization	46	24-Feb-20	16-Apr-20	
9	CLP Substation - Dismantling, Removal & Reinstatement	39	01-Oct-20	14-Nov-20	
10	Drainage & U Channel Installation	50	31-Mar-20	27-May-20	
11	Chain Fence & Reinstatement at Box Culvert (VO)	7	23-May-20	30-May-20	30-Sep-20
12	NLF U Channel Cover Installation	38	17-Apr-20	30-May-20	15-Sep-20
13	Sewerage Pump Sump RC Structure	40	15-Apr-20	30-May-20	
14	Sewerage Pump Sump Pipe Connection	12	01-Jun-20	13-Jun-20	
15	Penstock & Actuator (C4 Interface)	7	31-Jul-20	07-Aug-20	
16	NLF Footpath	32	13-Apr-20	19-May-20	
17	NLF Traffic Sign	40	15-Apr-20	30-May-20	15-Aug-20
18	New Road layout at C2/C3 after Bus Trial (VO)	38	02-May-20	15-Jun-20	
19	Carpark Canopy (6 nos)	40	15-Apr-20	30-May-20	
20	Portal Pump Sump hard paving and footpath	12	29-Apr-20	12-May-20	05-Sep-20
21	NVB Green Roof Planting (subject to C4 water supply)	24	01-Jul-20	28-Jul-20	30-Sep-20
22	**Tunnel Internal Structure**	95	13-Apr-20	31-Jul-20	
23	Access Hatch Installation	24	21-Apr-20	18-May-20	
24	Manhole, Multipart Cover Installation & Cleaning	18	13-Apr-20	02-May-20	
25	TSA NCR - Parapet Extension	23	18-May-20	12-Jun-20	7-Aug-20
26	Gully Cover Installation	36	20-Apr-20	30-May-20	
27	CCTV Testing	36	20-Apr-20	30-May-20	15-Aug-20
28	TNA Cross Road Drainage Pipe from Cable Through	18	11-May-20	30-May-20	8-Jul-20
29	TSA Cross Road Drainage Pipe from Cable Through	19	01-Jun-20	22-Jun-20	4-Jul-20
30	Low Point Pump Sump Installation	36	20-Apr-20	30-May-20	15-Aug-20
31	Additional Pump installation	18	01-Jun-20	20-Jun-20	15-Aug-20
32	SHMS Site Installation Works	14	15-May-20	30-May-20	15-Aug-20
33	SHMS Testing & Commissioning	53	01-Jun-20	31-Jul-20	15-Oct-20
34	**Southern Landfall Remaining Works**	210	24-Feb-20	24-Oct-20	
35	Landscape Formation	79	24-Feb-20	25-May-20	
36	Cell 1 Omega Seal Installation	50	02-Apr-20	29-May-20	
37	Overall Road Lighting Ducting	38	08-Apr-20	21-May-20	
38	Drainage West Side + U Channel outstanding	34	08-Apr-20	16-May-20	
39	Drainage East side & Central location + U Channel	84	24-Feb-20	30-May-20	
40	Sign Plate Installation	37	15-Apr-20	27-May-20	
41	Carpark Construction (Impact by C4)	46	20-Apr-20	11-Jun-20	
42	SHMS (Structural Health Monitoring System)	45	09-Apr-20	30-May-20	26-Aug-20
43	V083 Maintenance foothpath along HKBCF fencing	20	04-May-20	26-May-20	
44	V123 SCB Directional Sign	16	08-May-20	26-May-20	
45	Paving Block	54	20-Apr-20	20-Jun-20	
46	Ramp F Reinstatement	73	01-Aug-20	24-Oct-20	
47	Pump Sump Installation	81	24-Feb-20	27-May-20	
48	SAR Remaining Activities	85	24-Feb-20	01-Jun-20	
49	SVB Green Roof Planting (subject to C4 water supply)	26	15-Jul-20	13-Aug-20	15-Sep-20
50	Seawall & C66 Reinstatement	54	30-Mar-20	30-May-20	
51	**Overall Pavement Works**	216	24-Feb-20	31-Oct-20	
52	1st Layer Road base	63	24-Feb-20	06-May-20	
53	2nd & 3rd Layer Road base	89	24-Feb-20	05-Jun-20	
54	Base Course	100	24-Feb-20	18-Jun-20	
55	PMBSMA / Wearing Course	64	01-Aug-20	14-Oct-20	
56	Overall Road Marking	64	19-Aug-20	31-Oct-20	
57	**AOB Items**	182	24-Feb-20	22-Sep-20	
58	Electrical Vehicle confirmation from supplier	72	24-Feb-20	16-May-20	
59	Electrical Vehicle Fabrication & Delivery	110	18-May-20	22-Sep-20	
60	WA 23 Clearance for Spoil removal	72	11-May-20	01-Aug-20	
61	WA 23 Reinstatement	36	03-Aug-20	12-Sep-20	
62	North & South Tunnel Portal Naming Frame	27	01-Jul-20	31-Jul-20	5 Sep-20



Page 1 of 1

Data Date: 24-Feb-20

Milestone | Pavement | Northern Landfall | AOB | Internal Structure | Summary | Southern Landfall

TMCLK Northern Connection Sub-sea Tunnel Section

Programme of Remaining Works

Forecast as of: 24 February 2020

Dragages HongKong 香港寶嘉 — A member of the Bouygues Construction group

Dragages - Bouygues Joint Venture 寶嘉 - 布依格聯營

BOUYGUES TRAVAUX PUBLICS

Date	Revision	Checked	Approved
09-May-20	For Monitoring	SPa	DLo

Appendix C

Environmental Mitigation and Enhancement Measure Implementation Schedules

Contract No. HY/2012/08
Tuen Mun – Chek Lap Kok Link
Northern Connection Sub-sea Tunnel Section
Environmental Mitigation and Enhancement Measure Implementation Schedule

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status *
						D	C	O	
Air Quality									
4.8.1	3.8	An effective watering programme of twice daily watering with complete coverage, is estimated to reduce by 50%. This is recommended for all areas in order to reduce dust levels to a minimum;	All areas / throughout construction period	Contractor	TMEIA Avoid smoke impacts and disturbance		Y		✓
4.8.1	3.8	Watering of the construction sites in Lantau for 8 times/day and in Tuen Mun for 12 times/day to reduce dust emissions by 87.5% and 91.7% respectively and shall be undertaken.	All areas / throughout construction period	Contractor	TMEIA Avoid dust generation		Y		✓
4.8.1	3.8	The Contractor shall, to the satisfaction of the Engineer, install effective dust suppression measures and take such other measures as may be necessary to ensure that at the Site boundary and any nearby sensitive receiver, dust levels are kept to acceptable levels.	All areas / throughout construction period	Contractor	TMEIA Avoid dust generation		Y		✓
4.8.1	3.8	The Contractor shall not burn debris or other materials on the works areas.	All areas / throughout construction period	Contractor	TMEIA Avoid dust generation		Y		✓
4.8. 1	3.8	In hot, dry or windy weather, the watering programme shall maintain all exposed road surfaces and dust sources wet.	All unpaved haul roads / throughout construction period in hot, dry or windy weather	Contractor	TMEIA Avoid smoke impacts and disturbance		Y		✓
4.8.1	3.8	Where breaking of oversize rock/concrete is required, watering shall be implemented to control dust. Water spray shall be used during the handling of fill material at the site and at active cuts, excavation and fill sites where dust is likely to be created.	All areas / throughout construction period	Contractor	TMEIA Avoid dust generation		Y		✓
4.8. 1	3.8	Open dropping heights for excavated materials shall be controlled to a maximum height of 2m to minimise the fugitive dust arising from unloading.	All areas / throughout construction period	Contractor	TMEIA Avoid dust generation		Y		✓
4.8.1	3.8	During transportation by truck, materials shall not be loaded to a level higher than the side and tail boards, and shall be dampened or covered before transport.	All areas / throughout construction period	Contractor	TMEIA Avoid dust generation		Y		✓

Legend: D=Design, C=Construction, O=Operation

Note: Funding Agent for all mitigation measures will be the Highways Department of the Hong Kong SAR Government

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status *
						D	C	O	
4.8.1	3.8	Materials having the potential to create dust shall not be loaded to a level higher than the side and tail boards, and shall be covered by a clean tarpaulin. The tarpaulin shall be properly secured and shall extend at least 300mm over the edges of the side and tail boards.	All areas / throughout construction period	Contractor	TMEIA Avoid dust generation		Y		✓
4.8.1	3.8	No earth, mud, debris, dust and the like shall be deposited on public roads. Wheel washing facility shall be usable prior to any earthworks excavation activity on the site.	All site exits / throughout construction period	Contractor	TMEIA Avoid dust		Y		✓
4.8.1	3.8	Areas of exposed soil shall be minimised to areas in which works have been completed shall be restored as soon as is practicable.	All exposed surfaces / throughout construction period	Contractor	TMEIA Avoid dust generation		Y		✓
4.8.1	3.8	All stockpiles of aggregate or spoil shall be enclosed or covered and water applied in dry or windy condition.	All areas / throughout construction period	Contractor	TMEIA Avoid dust generation		Y		✓
4.11	Section 3	EM&A in the form of 1 hour and 24 hour dust monitoring and site audit.	All representative existing ASRs / throughout construction period	Contractor	EM&A Manual		Y		✓
WATER QUALITY									
Marine Works (Sequence A)									
6.1 Figure 6.2a Appendix D6a	Annex A	Construction of seawalls to be advanced by at least 200m before the main reclamation dredging and filling can commence. The protection by advanced seawall is a dynamic process depending on the progress of the construction activities and the stage when such protection could be realised is illustrated in Figure 6.2a and detailed in Appendix D6a. The part of the works where such measures can be undertaken for the majority of the time includes the following locations: - TM-CLKL northern reclamation;	All areas/ prior to dredging and backfilling works	Contractor	TM-EIAO		Y		N/A
6.1	-	a maximum of 50% public fill to be used for all seawall filling below +2.5mPD for TM-CLKL southern and northern landfalls.	TM-CLKL seawall filling	Contractor	TM-EIAO		Y		N/A

Legend: D=Design, C=Construction, O=Operation

Note: Funding Agent for all mitigation measures will be the Highways Department of the Hong Kong SAR Government

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status *
						D	C	O	
6.1	-	a maximum of 30% public fill to be used for reclamation filling below +2.5mPD for TM-CLKL southern landfall	TM-CLKL southern landfall reclamation filling	Contractor	TM-EIAO		Y		N/A
6.1	-	a maximum of 100% public fill to be used for reclamation filling below +2.5mPD for TM-CLKL northern landfall	TM-CLKL northern landfall reclamation filling	Contractor	TM-EIAO		Y		N/A
6.1	-	Use of cage type silt curtains round allgrab dredgers during the HKBCF, HKLR and TM-CLKL southern reclamation works.	All areas dredging works	Contractor	TM-EIAO		Y		N/A
	Figure 1.1 of Annex C	A layer of floating type silt curtain will be applied when dredging and reclamation works are being undertaken at Portion N-a as shown in Figure 1.1 of Annex C of the EM&A Manual.	All areas/ through out marine works	Contractor	TM-EIAO		Y		N/A
6.1	-	Trailer suction hopper dredgers shall not allow mud to overflow.	All areas/ throughout construction period	Contractor	Marine Fill Committee Guidelines. DASO permit conditions.		Y		N/A
6.1	-	The use of Lean Material Overboard (LMOB) systems shall be prohibited.	All areas/ throughout construction period	Contractor	Marine Fill Committee Guidelines. DASO permit conditions.		Y		N/A
6.1 Figure 6.2b Appendix D6b	Annex A	For other parts of the reclamation works construction of seawalls to be advanced by at least 200m before the main reclamation dredging and filling can commence. It should be noted that the protection by advanced seawall is a dynamic process depending on the progress of the construction activities and the stage when such protection could be realised is illustrated in Figure 6.2b and detailed in Appendices D6b. The part of the works where such measures can be undertaken for the majority of the time includes the following locations: - TM-CLKL northern reclamation; - Reclamation filling for Portion D of HKBCF; Reclamation filling for FSD berth of HKBCF; and - Reclamation dredging and filling for Portion 1 of HKLR;	TM-CLKL northern landfall, Portion D of HKBCF and HKLR	Contractor	TM-EIAO		Y		N/A

Legend: D=Design, C=Construction, O=Operation

Note: Funding Agent for all mitigation measures will be the Highways Department of the Hong Kong SAR Government

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status *
						D	C	O	
6.1	-	The filling material for the other parts of the works are the same as Sequence A;	All other areas/backfilling works	Contractor	TM-EIAO		Y		N/A
6.1	5.7	Cage type silt curtain (with steel enclosure) shall be used for grab dredgers working in the site of HKBCF and TM- CLKL southern reclamation. Cage type silt curtains will be applied round all grab dredgers at other works area.	HKBCF, HKLR and TM-CLKL grab dredging	Contractor	TM-EIAO		Y		N/A
6.1	Annex A	A layer of floating type silt curtain will be applied around all works as defined in Appendix D6b.	All areas/ through out marine works	Contractor	TM-EIAO		Y		N/A
6.1	-	TM-CLKL northern landfall: - Reclamation filling shall not proceed until at least 200m section of leading seawall at both the east and west sides of the reclamation are formed above +2.5 mPD, except for 100m gaps for marine access;	All areas/ through out marine works	Contractor	TM-EIAO		Y		N/A
General Marine Works									
6.1	-	Use of TBM for the construction of the submarine tunnel.	Tunnel works / Construction phase	Contractor	TM-EIAO		Y		N/A
6.1	-	Export dredged spoils from NWWCZ.	All areas as much as possible / dredging activities	Contractor	DASO Permit conditions		Y		N/A
6.1	-	Where public fill is proposed for filling below +2.5mPD, the fine content in the public fill will be controlled to 25%	All areas/ backfilling works	Contractor	TM-EIAO		Y		N/A
6.1	-	Where sand fill is proposed for filling below +2.5mPD, the fine content in the sand fill will be controlled to 5%.	All areas/ backfilling works	Contractor	TM-EIAO		Y		N/A
6.1	-	Mechanical grabs shall be designed and maintained to avoid spillage and should seal tightly while being lifted.	All areas/ throughout construction period	Contractor	Marine Fill Committee Guidelines. DASO permit conditions.		Y		N/A
6.1	-	Barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material.	All areas/ throughout construction period	Contractor	Marine Fill Committee Guidelines. DASO permit conditions.		Y		N/A

Legend: D=Design, C=Construction, O=Operation

Note: Funding Agent for all mitigation measures will be the Highways Department of the Hong Kong SAR Government

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status *
						D	C	O	
6.1	-	Any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes.	All areas/ throughout construction period	Contractor	Marine Fill Committee Guidelines. DASO permit conditions.		Y		N/A
6.1	-	Loading of barges and hoppers shall be controlled to prevent splashing of dredged material to the surrounding water. Barges or hoppers shall not be filled to a level which will cause overflow of materials or pollution of water during loading or transportation.	All areas/ throughout construction period	Contractor	Marine Fill Committee Guidelines. DASO permit conditions.		Y		N/A
6.1	-	Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved.	All areas/ throughout construction period	Contractor	Marine Fill Committee Guidelines. DASO permit conditions.		Y		N/A
6.1	-	Adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action;	All areas/ throughout construction period	Contractor	Marine Fill Committee Guidelines. DASO permit conditions.		Y		N/A
6.1	-	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.	All areas/ throughout construction period	Contractor	Marine Fill Committee Guidelines. DASO permit conditions.		Y		N/A
6.1	-	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.	All areas/ throughout construction period	Contractor	Marine Fill Committee Guidelines. DASO permit conditions.		Y		N/A
6.1	5.2	Silt curtain shall have proved effectiveness from the producer and shall be fully maintained throughout the works by the contractor.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		N/A

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EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status *
						D	C	O	
6.1	-	The daily maximum production rates shall not exceed those assumed in the water quality assessment.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		N/A
6.1	-	The dredging and filling works shall be scheduled to spread the works evenly over a working day.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		N/A
Land Works									
6.1	-	Wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.1	-	Sewage effluent and discharges from on- site kitchen facilities shall be directed to Government sewer in accordance with the requirements of the WPCO or collected for disposal offsite. The use of soakaways shall be avoided.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.1	-	Storm drainage shall be directed to storm drains via adequately designed sand/silt removal facilities such as sand traps, silt traps and sediment basins. Channels, earth bunds or sand bag barriers should be provided on site to properly direct stormwater to such silt removal facilities. Catchpits and perimeter channels should be constructed in advance of site formation works and earthworks.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.1	-	Silt removal facilities, channels and manholes shall be maintained and any deposited silt and grit shall be removed regularly, including specifically at the onset of and after each rainstorm.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.1	-	Temporary access roads should be surfaced with crushed stone or gravel.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.1	-	Rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.1	-	Measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.1	-	Open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓

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EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status *
						D	C	O	
6.1	5.8	Manholes (including any newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris from getting into the drainage system, and to prevent storm run-off from getting into foul sewers.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.1	-	Discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.1	-	All vehicles and plant should be cleaned before they leave the construction site to ensure that no earth, mud or debris is deposited by them on roads. A wheel washing bay should be provided at every site exit.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.1	-	Wheel wash overflow shall be directed to silt removal facilities before being discharged to the storm drain.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.1	-	Section of construction road between the wheel washing bay and the public road should be surfaced with crushed stone or coarse gravel.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.1	-	Wastewater generated from concreting, plastering, internal decoration, cleaning work and other similar activities, shall be screened to remove large objects.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.1	-	Vehicle and plant servicing areas, vehicle wash bays and lubrication facilities shall be located under roofed areas. The drainage in these covered areas shall be connected to foul sewers via a petrol interceptor in accordance with the requirements of the WPCO or collected for off site disposal.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		N/A
6.1	-	The Contractor shall prepare an oil / chemical cleanup plan and ensure that leakages or spillages are contained and cleaned up immediately.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.1	-	Waste oil should be collected and stored for recycling or disposal, in accordance with the Waste Disposal Ordinance.	All areas/ throughout construction period	Contractor	TM-EIAO Waste Disposal Ordinance		Y		✓
6.1	-	All fuel tanks and chemical storage areas should be provided with locks and be sited on sealed areas. The storage areas should be surrounded by bunds with a capacity equal to 110% of the storage capacity of the largest tank.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.1	-	Surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.1	-	Roadside gullies to trap silt and grit shall be provided prior to	Roadside/design and operation	Design	TM-EIAO	Y		Y	✓

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EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status *
						D	C	O	
		discharging the stormwater into the marine environment. The sumps will be maintained and cleaned at regular intervals.		Consultant/ Contractor					
6.1	Section 5	All construction works shall be subject to routine audit to ensure implementation of all EIA recommendations and good working practice.	All areas/ throughout construction period	Contractor	EM&A Manual		Y		✓
Water Quality Monitoring									
6.1	Section 5	Water quality monitoring shall be undertaken for suspended solids, turbidity, and dissolved oxygen. Nutrients and metal parameters shall also be measured for Mf sediment operations (only HKBCF and HKLR required handling of Mf sediment) during baseline, backfilling and post construction period. One year operation phase water quality monitoring at designated stations.	Designated monitoring stations as defined in EM&A Manual, Section 5/ Before, through-out marine construction period, post construction and monthly operational phase water quality monitoring for a year.	Contractor	EM&A Manual		Y	Y	Operational phase water quality monitoring commenced in June 2020.
ECOLOGY									
8.14	6.3	Specification for and implement pre, during and post construction dolphin abundance monitoring.	All Areas/Detailed Design/ during construction works/post construction	Design Consultant/ Contractor	TMEIA	Y	Y	Y	✓

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EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status *
						D	C	O	
8.14	6.3,6.5	Specification and implementation of 250m dolphin exclusion zone.	All dredging and reclamation areas/Detailed Design/during all reclamation and dredging works	Design Consultant/ Contractor	TMEIA	Y	Y		✓
8.15	6.3, 6.5	Specification and deployment of an artificial reef of an area of 3,600m2 in an area where fishing activities are prohibited.	Area of prohibited fishing activities/Detailed Design/towards end of construction period	TM-CLKL/ HKBCF Design Consultant/TM-CLKL/ HKBCF Contractor	TMEIA	Y		Y	N/A. To be implemented by AFCD.
8.14	6.3, 6.5	Specification and implementation of marine vessel control specifications	All areas/Detailed Design/during construction works	Design Consultant/ Contractor	TMEIA	Y	Y		✓
8.14	6.3, 6.5	Design and implementation of acoustic decoupling methods for dredging and reclamation works	All areas/ Detailed Design/during dredging and reclamation works	Design Consultant/ Contractor	TMEIA	Y	Y		✓
8.15	6.3, 6.4	Pre-construction phase survey and coral translocation	Detailed Design/Prior to construction	Design Consultant/ Contractor	TMEIA	Y	Y		✓
8.15	6.5	Audit coral translocation success	Post translocation	Contractor	TMEIA		Y		✓
7.13	6.5	The loss of habitat shall be supplemented by enhancement planting in accordance with the landscape mitigation schedule.	All areas / As soon as accessible	Contractor	TMEIA		Y		N/A
7.13	6.5	Spoil heaps shall be covered at all times.	All areas / Throughout construction period	Contractor	TMEIA		Y		✓
7.13	6.5	Avoid damage and disturbance to the remaining and surrounding natural habitat	All areas / Throughout construction period	Contractor	TMEIA		Y		✓
7.13	6.5	Placement of equipment in designated areas within the existing disturbed land	All areas / Throughout construction period	Contractor	TMEIA		Y		✓
7.13	6.5	Disturbed areas to be reinstated immediately after completion of the works.	All areas / Throughout construction period	Contractor	TMEIA		Y		✓
7.13	6.5	Construction activities should be restricted to the proposed works boundary.	All areas / Throughout construction period	Contractor	TMEIA		Y		✓
LANDSCAPE AND VISUAL									
10.9	7.6	The colour and shape of the toll control buildings, ventilation building and administration building shall adopt a design which could blend it into the vicinity elements, and the details will be developed in detailed design stage (DM2)	All areas/detailed design	Design Consultant	TMEIA	Y			N/A
10.9	7.6	Aesthetic design of the viaduct, retaining wall and other structures will be developed under ACABAS submission (DM5)	All areas/detailed design	Design Consultant	TMEIA	Y			N/A

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EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status *
						D	C	O	
10.9	7.6	Screening of construction works by hoardings around works area in visually unobtrusive colours, to screen works (CM5)	All areas/detailed design/ during construction/post construction	Design Consultant/ Contractor	TMEIA	Y	Y		✓
10.9	7.6	Control night-time lighting and glare by hooding all lights (CM6)	All areas/detailed design/ during construction	Design Consultant/ Contractor	TMEIA	Y	Y		N/A
10.9	7.6	Ensure no run-off into water body adjacent to the Project Area (CM7)	All areas/detailed design/ during construction	Design Consultant/ Contractor	TMEIA	Y	Y		✓
10.9	7.6	Avoidance of excessive height and bulk of buildings and structures (CM8)	All areas/detailed design/ during construction	Design Consultant/ Contractor	TMEIA	Y	Y		✓
10.9	7.6	Aesthetically pleasing design (visually unobtrusive and non-reflective) as regard to the form, material and finishes shall be incorporated to all buildings, engineering structures and associated infrastructure facilities (OM5)	All areas/detailed design/ during construction / during operation	Design Consultant/ Contractor	TMEIA	Y	Y	Y	N/A
10.9	7.6	Avoidance of excessive height and bulk of buildings and structures (OM6)	All areas/detailed design/ during construction / during operation	Design Consultant/ Contractor	TMEIA	Y	Y	Y	N/A
WASTE									
12.6		The Contractor shall identify a coordinator for the management of waste.	Contract mobilisation	Contractor	TMEIA		Y		✓
12.6		The Contractor shall prepare and implement a Waste Management Plan which specifies procedures such as a ticketing system, to facilitate tracking of loads and to ensure that illegal disposal of wastes does not occur, and protocols for the maintenance of records of the quantities of wastes generated, recycled and disposed. A recording system for the amount of waste generated, recycled and disposed (locations) should be established.	Contract mobilisation	Contractor	TMEIA, Works Branch Technical Circular No. 5/99 for the Trip-ticket System for Disposal of Construction and Demolition Material		Y		✓
12.6		The Contractor shall apply for and obtain the appropriate licenses for the disposal of public fill, chemical waste and effluent discharges.	Contract mobilisation	Contractor	TMEIA, Land (Miscellaneous Provisions) Ordinance (Cap		Y		✓

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EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status *
						D	C	O	
					28); Waste Disposal Ordinance (Cap 354); Dumping at Sea Ordinance (Cap 466); Water Pollution Control Ordinance.				
12.6	8.1	Training shall be provided to workers about the concepts of site cleanliness and appropriate waste management procedures including waste reduction, reuse and recycling.	Contract Mobilisation	Contractor	TMEIA		Y		✓
12.6	8.1	The extent of cutting operation should be optimised where possible. Earth retaining structures and bored pile walls should be proposed to minimise the extent of cutting.	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	The surplus surcharge should be transferred to a fill bank	Reclamation areas / after surcharge works	Contractor	TMEIA		Y		N/A
12.6	8.1	Rock armour from the existing seawall should be reused on the new sloping seawall as far as possible	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	The site and surroundings shall be kept tidy and litter free.	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	No waste shall be burnt on site.	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	Provisions to be made in contract documents to allow and promote the use of recycled aggregates where appropriate.	Detailed Design	Design Consultant	TMEIA	Y			✓
12.6	8.1	The Contractor shall be prohibited from disposing of C&D materials at any sensitive locations. The Contractor should propose the final disposal sites in the EMP and WMP for approval before implementation.	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	Stockpiled material shall be covered by tarpaulin and /or watered as appropriate to prevent windblown dust/ surface run off.	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	Excavated material in trucks shall be covered by tarpaulins to reduce the potential for spillage and dust generation.	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	Wheel washing facilities shall be used by all trucks leaving the site to prevent transfer of mud onto public roads.	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	Dredged marine mud shall be disposed of in a gazetted marine disposal ground under the requirements of the Dumping at Seas Ordinance.	Reclamation areas / throughout dredging works	Contractor	TMEIA		Y		✓

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EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status *
						D	C	O	
12.6	8.1	Standard formwork or pre-fabrication should be used as far as practicable so as to minimise the C&D materials arising. The use of more durable formwork/plastic facing for construction works should be considered. The use of wooden hoardings should be avoided and metal hoarding should be used to facilitate recycling. Purchasing of construction materials should avoid over-ordering and wastage.	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	The Contractor should recycle as many C&D materials (this is a waste section) as possible on-site. The public fill and C&D waste should be segregated and stored in separate containers or skips to facilitate the reuse or recycling of materials and proper disposal. Where practicable, the concrete and masonry should be crushed and used as fill materials. Steel reinforcement bar should be collected for use by scrap steel mills. Different areas of the sites should be considered for segregation and storage activities.	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	All falsework will be steel instead of wood.	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	Chemical waste producers should register with the EPD. Chemical waste should be handled in accordance with the Code of Practice on the Packaging, Handling and Storage of Chemical Wastes as follows: *f* suitable for the substance to be held, resistant to corrosion, maintained in good conditions and securely closed;	All areas / throughout construction period	Contractor	TMEIA		Y		<>

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EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status *
						D	C	O	
		f Having a capacity of <450L unless the specifications have been approved by the EPD; and w Chinese according to the instructions prescribed in Schedule 2 of the Regulations. *f* Clearly labelled and used solely for the storage of chemical wastes; *f* Enclosed with at least 3 sides; *f* Impermeable floor and bund with 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; *f* Adequate ventilation; *f* Sufficiently covered to prevent rainfall entering (water collected within the bund must be tested and disposed of as chemical waste, if necessary); and *f* Incompatible materials are adequately separated.							
12.6	8.1	Waste oils, chemicals or solvents shall not be disposed of to drain,	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	Adequate numbers of portable toilets should be provided for on-site workers. Portable toilets should be maintained in reasonable states, which will not deter the workers from utilising them.	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	Night soil should be regularly collected by licensed collectors.	All areas / throughout construction period	Contractor	TMEIA		Y		N/A
12.6	8.1	General refuse arising on-site should be stored in enclosed bins or compaction units separately from C&D and chemical wastes. Sufficient dustbins shall be provided for storage of waste as required under the Public Cleansing and Prevention of Nuisances By-laws. In addition, general refuse shall be cleared daily and shall be disposed of to the nearest licensed landfill or refuse transfer station. Burning of refuse on construction sites is prohibited.	All areas / throughout construction period	Contractor	TMEIA		Y		<>
12.6	8.1	All waste containers shall be in a secure area on hardstanding;	All areas / throughout construction period	Contractor	TMEIA		Y		✓

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EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status *
						D	C	O	
12.6	8.1	Training shall be provided to workers about the concepts of site cleanliness and appropriate waste management procedure, including waste reduction, reuse and recycling.	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	Office wastes can be reduced by recycling of paper if such volume is sufficiently large to warrant collection. Participation in a local collection scheme by the Contractor should be advocated. Waste separation facilities for paper, aluminium cans, plastic bottles, etc should be provided on-site.	Site Offices/ throughout construction period	Contractor	TMEIA		Y		✓
12.6	Section 8	EM&A of waste handling, storage, transportation, disposal procedures and documentation through the site audit programme shall be undertaken.	All areas / throughout construction period	Contractor	EM&A Manual		Y		✓
CULTURAL HERITAGE									
11.8	Section 9	EM&A in the form of audit of the mitigation measures	All areas / throughout construction period	Highways Department	EIAO-TM		Y		N/A

*** Remarks:**

✓	Compliance of Mitigation Measures
<>	Compliance of Mitigation but need improvement
x	Non-compliance of Mitigation Measures
▲	Non-compliance of Mitigation Measures but rectified by Contractor
Δ	Deficiency of Mitigation Measures but rectified by Contractor
N/A	Not Applicable in Reporting Period

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Appendix D

Summary of Action and Limit Levels

Table D1 Action and Limit Levels for 1-hour and 24-hour TSP

Parameters	Action	Limit
24 Hour TSP Level in μg/m³	ASR1 = 213 ASR5 = 238 AQMS1 = 213 ASR6 = 238 ASR10 = 214	260
1 Hour TSP Level in μg /m³	ASR1 = 331 ASR5 = 340 AQMS1 = 335 ASR6 = 338 ASR10 = 337	500

Appendix E

Copies of Calibration Certificates for Air Quality Monitoring and Water Quality Monitoring

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	ASR 5
Calibrated by	:	K.T.Ho
Date	:	07/10/2020

Sampler

Model	:	TE-5170
Serial Number	:	S/N 0816

Calibration Orifice and Standard Calibration Relationship

Serial Number	:	2454
Service Date	:	18 February 2020
Slope (m)	:	2.07134
Intercept (b)	:	-0.04091
Correlation Coefficient(r)	:	0.99999

Standard Condition

Pstd (hpa)	:	1013
Tstd (K)	:	298.18

Calibration Condition

Pa (hpa)	:	1006
Ta(K)	:	302

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	12.2	3.458	1.689	55	54.45
2	13 holes	9.5	3.051	1.493	50	49.50
3	10 holes	7.0	2.619	1.284	46	45.54
4	7 holes	4.8	2.169	1.067	38	37.62
5	5 holes	2.6	1.596	0.790	30	29.70

Notes:Z=SQRT{dH(Pa/Pstd)(Tstd/Ta)}, X=Z/m-b ,Y(Corrected Flow)=IC*{SQRT(Pa/Pstd)(Tstd/Ta)}

Sampler Calibration Relationship (Linear Regression)

Slope(m):27.714 Intercept(b):8.311 Correlation Coefficient(r): 0.9954

Checked by: Magnum Fan Date: 11/10/2020

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	ASR10
Calibrated by	:	K.T.Ho
Date	:	07/10/2020

Sampler

Model	:	TE-5170
Serial Number	:	S/N 8162

Calibration Orifice and Standard Calibration Relationship

Serial Number	:	2454
Service Date	:	18 February 2020
Slope (m)	:	2.07134
Intercept (b)	:	-0.04091
Correlation Coefficient(r)	:	0.99999

Standard Condition

Pstd (hpa)	:	1013
Tstd (K)	:	298.18

Calibration Condition

Pa (hpa)	:	1006
Ta(K)	:	302

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	11.2	3.313	1.619	54	53.46
2	13 holes	9.0	2.970	1.453	50	49.50
3	10 holes	6.5	2.524	1.238	45	44.55
4	7 holes	4.2	2.029	0.999	37	36.63
5	5 holes	2.4	1.534	0.760	28	27.72

Notes:Z=SQRT{dH(Pa/Pstd)(Tstd/Ta)}, X=Z/m-b ,Y(Corrected Flow)=IC*{SQRT(Pa/Pstd)(Tstd/Ta)}

Sampler Calibration Relationship (Linear Regression)

Slope(m):29.805 Intercept(b): 6.184 Correlation Coefficient(r): 0.9943

Checked by: Magnum Fan Date: 11/10/2020

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	AQMS1
Calibrated by	:	K.T.Ho
Date	:	07/10/2020

Sampler

Model	:	TE-5170
Serial Number	:	S/N 1253

Calibration Orifice and Standard Calibration Relationship

Serial Number	:	2454
Service Date	:	18 February 2020
Slope (m)	:	2.07134
Intercept (b)	:	-0.04091
Correlation Coefficient(r)	:	0.99999

Standard Condition

Pstd (hpa)	:	1013
Tstd (K)	:	298.18

Calibration Condition

Pa (hpa)	:	1006
Ta(K)	:	302

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	12.0	3.429	1.675	54	53.46
2	13 holes	9.2	3.003	1.469	48	47.52
3	10 holes	6.8	2.581	1.266	43	42.57
4	7 holes	4.6	2.123	1.045	37	36.63
5	5 holes	2.2	1.468	0.729	28	27.72

Notes:Z=SQRT{dH(Pa/Pstd)(Tstd/Ta)}, X=Z/m-b ,Y(Corrected Flow)=IC*{SQRT(Pa/Pstd)(Tstd/Ta)}

Sampler Calibration Relationship (Linear Regression)

Slope(m):26.943 Intercept(b):8.253 Correlation Coefficient(r): 0.9997

Checked by: Magnum Fan Date: 11/10/2020

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	ASR 1
Calibrated by	:	K.T.Ho
Date	:	07/10/2020

Sampler

Model	:	TE-5170
Serial Number	:	S/N 0146

Calibration Orifice and Standard Calibration Relationship

Serial Number	:	2454
Service Date	:	18 February 2020
Slope (m)	:	2.07134
Intercept (b)	:	-0.04091
Correlation Coefficient(r)	:	0.99999

Standard Condition

Pstd (hpa)	:	1013
Tstd (K)	:	298.18

Calibration Condition

Pa (hpa)	:	1006
Ta(K)	:	302

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	11.8	3.400	1.661	54	53.46
2	13 holes	9.2	3.003	1.469	49	48.51
3	10 holes	6.6	2.543	1.248	44	43.56
4	7 holes	4.2	2.029	0.999	37	36.63
5	5 holes	2.3	1.501	0.745	29	28.71

Notes:Z=SQRT{dH(Pa/Pstd)(Tstd/Ta)}, X=Z/m-b ,Y(Corrected Flow)=IC*{SQRT(Pa/Pstd)(Tstd/Ta)}

Sampler Calibration Relationship (Linear Regression)

Slope(m):26.712 Intercept(b):9.464 Correlation Coefficient(r): 0.9982

Checked by: Magnum Fan Date: 11/10/2020

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	ASR 6
Calibrated by	:	K.T.Ho
Date	:	07/10/2020

Sampler

Model	:	TE-5170
Serial Number	:	S/N 3957

Calibration Orifice and Standard Calibration Relationship

Serial Number	:	2454
Service Date	:	18 February 2020
Slope (m)	:	2.07134
Intercept (b)	:	-0.04091
Correlation Coefficient(r)	:	0.99999

Standard Condition

Pstd (hpa)	:	1013
Tstd (K)	:	298.18

Calibration Condition

Pa (hpa)	:	1006
Ta(K)	:	302

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	12.2	3.458	1.689	55	54.45
2	13 holes	9.4	3.035	1.485	50	49.50
3	10 holes	6.8	2.581	1.266	45	44.55
4	7 holes	4.6	2.123	1.045	38	37.62
5	5 holes	2.4	1.534	0.760	30	29.70

Notes:Z=SQRT{dH(Pa/Pstd)(Tstd/Ta)}, X=Z/m-b ,Y(Corrected Flow)=IC*{SQRT(Pa/Pstd)(Tstd/Ta)}

Sampler Calibration Relationship (Linear Regression)

Slope(m):26.773 Intercept(b): 9.721 Correlation Coefficient(r): 0.9984

Checked by: Magnum Fan Date: 11/10/2020

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	ASR 5
Calibrated by	:	K.T.Ho
Date	:	07/12/2020

Sampler

Model	:	TE-5170
Serial Number	:	S/N 0816

Calibration Orifice and Standard Calibration Relationship

Serial Number	:	2454
Service Date	:	18 February 2020
Slope (m)	:	2.07134
Intercept (b)	:	-0.04091
Correlation Coefficient(r)	:	0.99999

Standard Condition

Pstd (hpa)	:	1013
Tstd (K)	:	298.18

Calibration Condition

Pa (hpa)	:	1020
Ta(K)	:	293

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	11.2	3.387	1.655	64	64.77
2	13 holes	9.2	3.069	1.502	58	58.69
3	10 holes	6.8	2.639	1.294	52	52.62
4	7 holes	4.5	2.147	1.056	45	45.54
5	5 holes	2.5	1.600	0.792	35	35.42

Notes:Z=SQRT{dH(Pa/Pstd)(Tstd/Ta)}, X=Z/m-b ,Y(Corrected Flow)=IC*{SQRT(Pa/Pstd)(Tstd/Ta)}

Sampler Calibration Relationship (Linear Regression)

Slope(m):33.108 Intercept(b):9.702 Correlation Coefficient(r): 0.9984

Checked by: Magnum Fan Date: 11/12/2020

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	ASR10
Calibrated by	:	K.T.Ho
Date	:	07/12/2020

Sampler

Model	:	TE-5170
Serial Number	:	S/N 8162

Calibration Orifice and Standard Calibration Relationship

Serial Number	:	2454
Service Date	:	18 February 2020
Slope (m)	:	2.07134
Intercept (b)	:	-0.04091
Correlation Coefficient(r)	:	0.99999

Standard Condition

Pstd (hpa)	:	1013
Tstd (K)	:	298.18

Calibration Condition

Pa (hpa)	:	1020
Ta(K)	:	293

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	12.0	3.506	1.712	60	60.7
2	13 holes	9.4	3.103	1.518	53	53.6
3	10 holes	6.8	2.639	1.294	46	46.6
4	7 holes	4.6	2.170	1.068	38	38.5
5	5 holes	2.4	1.568	0.777	30	30.4

Notes:Z=SQRT{dH(Pa/Pstd)(Tstd/Ta)}, X=Z/m-b ,Y(Corrected Flow)=IC*{SQRT(Pa/Pstd)(Tstd/Ta)}

Sampler Calibration Relationship (Linear Regression)

Slope(m):32.593 Intercept(b): 4.434 Correlation Coefficient(r): 0.9989

Checked by: Magnum Fan Date: 11/12/2020

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	AQMS1
Calibrated by	:	K.T.Ho
Date	:	07/12/2020

Sampler

Model	:	TE-5170
Serial Number	:	S/N 1253

Calibration Orifice and Standard Calibration Relationship

Serial Number	:	2454
Service Date	:	18 February 2020
Slope (m)	:	2.07134
Intercept (b)	:	-0.04091
Correlation Coefficient(r)	:	0.99999

Standard Condition

Pstd (hpa)	:	1013
Tstd (K)	:	298.18

Calibration Condition

Pa (hpa)	:	1020
Ta(K)	:	293

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	11.8	3.476	1.698	56	56.67
2	13 holes	9.2	3.069	1.502	51	51.61
3	10 holes	6.8	2.639	1.294	45	45.54
4	7 holes	4.6	2.170	1.068	38	38.46
5	5 holes	2.4	1.568	0.777	30	30.36

Notes:Z=SQRT{dH(Pa/Pstd)(Tstd/Ta)}, X=Z/m-b ,Y(Corrected Flow)=IC*{SQRT(Pa/Pstd)(Tstd/Ta)}

Sampler Calibration Relationship (Linear Regression)

Slope(m):28.905 Intercept(b):7.890 Correlation Coefficient(r): 0.9996

Checked by: Magnum Fan Date: 11/12/2020

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	ASR 1
Calibrated by	:	K.T.Ho
Date	:	07/12/2020

Sampler

Model	:	TE-5170
Serial Number	:	S/N 0146

Calibration Orifice and Standard Calibration Relationship

Serial Number	:	2454
Service Date	:	18 February 2020
Slope (m)	:	2.07134
Intercept (b)	:	-0.04091
Correlation Coefficient(r)	:	0.99999

Standard Condition

Pstd (hpa)	:	1013
Tstd (K)	:	298.18

Calibration Condition

Pa (hpa)	:	1020
Ta(K)	:	293

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	12.0	3.506	1.712	58	58.69
2	13 holes	9.4	3.103	1.518	52	52.62
3	10 holes	6.7	2.619	1.284	44	44.53
4	7 holes	4.5	2.147	1.056	37	37.44
5	5 holes	2.4	1.568	0.777	30	30.36

Notes:Z=SQRT{dH(Pa/Pstd)(Tstd/Ta)}, X=Z/m-b ,Y(Corrected Flow)=IC*{SQRT(Pa/Pstd)(Tstd/Ta)}

Sampler Calibration Relationship (Linear Regression)

Slope(m):30.712 Intercept(b):5.744 Correlation Coefficient(r): 0.9983

Checked by: Magnum Fan Date: 11/12/2020

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	ASR 6
Calibrated by	:	K.T.Ho
Date	:	07/12/2020

Sampler

Model	:	TE-5170
Serial Number	:	S/N 3957

Calibration Orifice and Standard Calibration Relationship

Serial Number	:	2454
Service Date	:	18 February 2020
Slope (m)	:	2.07134
Intercept (b)	:	-0.04091
Correlation Coefficient(r)	:	0.99999

Standard Condition

Pstd (hpa)	:	1013
Tstd (K)	:	298.18

Calibration Condition

Pa (hpa)	:	1020
Ta(K)	:	293

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	11.0	3.356	1.640	58	58.69
2	13 holes	9.0	3.036	1.485	52	52.62
3	10 holes	6.8	2.639	1.294	45	45.54
4	7 holes	4.3	2.098	1.033	37	37.44
5	5 holes	2.5	1.600	0.792	29	29.35

Notes:Z=SQRT{dH(Pa/Pstd)(Tstd/Ta)}, X=Z/m-b ,Y(Corrected Flow)=IC*{SQRT(Pa/Pstd)(Tstd/Ta)}

Sampler Calibration Relationship (Linear Regression)

Slope(m):34.743 Intercept(b): 1.963 Correlation Coefficient(r): 0.9991

Checked by: Magnum Fan Date: 11/12/2020

TISCH Environmental

RECALIBRATION DUE DATE:
February 18, 2021

Certificate of Calibration

Calibration Certification Information					
Cal. Date:	February 18, 2020	**Rootsmeter S/N:** 438320	**Ta:** 294	°K	
Operator:	Jim Tisch		**Pa:** 753.1	mm Hg	
Calibration Model #:	TE-5025A	**Calibrator S/N:** **2454**			

Run	Vol. Init (m3)	Vol. Final (m3)	ΔVol. (m3)	ΔTime (min)	ΔP (mm Hg)	ΔH (in H2O)
1	1	2	1	1.4190	3.2	2.00
2	3	4	1	1.0100	6.4	4.00
3	5	6	1	0.9020	7.9	5.00
4	7	8	1	0.8600	8.8	5.50
5	9	10	1	0.7110	12.7	8.00

Data Tabulation

Vstd (m3)	Qstd (x-axis)	$\sqrt{\Delta H\left(\frac{Pa}{Pstd}\right)\left(\frac{Tstd}{Ta}\right)}$ (y-axis)	Va	Qa (x-axis)	$\sqrt{\Delta H\left(Ta/Pa\right)}$ (y-axis)
1.0001	0.7048	1.4173	0.9958	0.7017	0.8836
0.9959	0.9860	2.0044	0.9915	0.9817	1.2496
0.9939	1.1019	2.2410	0.9895	1.0970	1.3971
0.9927	1.1543	2.3504	0.9883	1.1492	1.4653
0.9875	1.3889	2.8347	0.9831	1.3828	1.7672
QSTD	**m=**	**2.07134**	**QA**	**m=**	**1.29704**
	b=	**-0.04091**		**b=**	**-0.02551**
	r=	**0.99999**		**r=**	**0.99999**

Calculations

Vstd=	ΔVol((Pa-ΔP)/Pstd)(Tstd/Ta)	**Va=**	ΔVol((Pa-ΔP)/Pa)
Qstd=	Vstd/ΔTime	**Qa=**	Va/ΔTime

For subsequent flow rate calculations:

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: rootsmeter manometer reading (mm Hg)
Ta: actual absolute temperature (°K)
Pa: actual barometric 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

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輝創工程有限公司
Sun Creation Engineering Limited
Calibration & Testing Laboratory

Certificate of Calibration
校正證書

Certificate No. : C203177
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC20-1161) Date of Receipt / 收件日期 : 1 June 2020

Description / 儀器名稱	:	Anemometer
Manufacturer / 製造商	:	Lutron
Model No. / 型號	:	AM-4201
Serial No. / 編號	:	AF.27513
Supplied By / 委託者	:	Envirotech Services Co. Room 113, 1/F, My Loft, 9 Hoi Wing Road, Tuen Mun, New Territories, Hong Kong

TEST CONDITIONS / 測試條件

Temperature / 溫度 : (23 ± 2)°C Relative Humidity / 相對濕度 : (50 ± 25)%
Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 9 June 2020

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via :
- Testo Industrial Services GmbH, Germany

Tested By 測試 : T F Lee
Assistant Engineer

Certified By 核證 : H C Chan
Engineer

Date of Issue 簽發日期 : 11 June 2020

Certificate of Calibration
校正證書

Certificate No. : C203177
證書編號

1. 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 10 measurements at each calibration point.

3. Test equipment :

Equipment ID	Description	Certificate No.
CL386	Multi-function Measuring Instrument	S16494

4. Test procedure : MA130N.

5. Results :

Air Velocity

Applied Value (m/s)	UUT Reading (m/s)	Measured Correction		
		Value (m/s)	Measurement Uncertainty	
			Expanded Uncertainty (m/s)	Coverage Factor
2.0	1.8	+0.2	0.2	2.0
4.0	3.8	+0.2	0.3	2.0
6.1	5.9	+0.2	0.3	2.0
8.1	8.0	+0.1	0.3	2.0
10.0	10.1	-0.1	0.4	2.0

Remarks : - The Measured Corrections are defined as :
Value = Applied Value - UUT Reading

- The expanded uncertainties are for a level of confidence of 95 %.

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.

Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 – 校正及檢測實驗所
c/o 香港新界屯門興安里 1號四樓
Tel/電話: (852) 2927 2606 Fax/傳真: (852) 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

ENVIROTECH SERVICES CO.

Calibration Report of Wind Meter

Date of Calibration : 29 June 2020

Brand of Test Meter: Davis

Model: Vantage Pro 2 (s/n: AS160104014)

Location : Roof of Tuen Mun Firestation

Procedures :

1. Wind Still Test: The wind speed sensor was hold by hand until it keep still

2.Wind Speed Test: The wind meter was on-site calibrated against the Anemometer

3.Wind Direction Test : The wind meter was on-site calibrated against the marine compass at four directions

Results:

Wind Still Test

Wind Speed (m/s)
0.00

Wind Speed Test

Davis (m/s)	Anemometer (m/s)
4.4	4.8
3.2	2.9
1.8	1.9

Wind Direction Test

Davis (o)	Marine Compass (o)
270	270
0	0
91	90
181	180

Calibrated by: Ho

Yeung Ping Fai
(Technical Officer)

Checked by : Fat

Ho Kam Fat
(Senior Technical Officer)

ENVIROTECH SERVICES CO.

Calibration Report of Wind Meter

Date of Calibration : 8 December 2020

Brand of Test Meter: Davis

Model: Vantage Pro 2 (s/n: AS160104014)

Location : Roof of Tuen Mun Firestation

Procedures :

1. Wind Still Test: The wind speed sensor was hold by hand until it keep still

2.Wind Speed Test: The wind meter was on-site calibrated against the Anemometer

3.Wind Direction Test : The wind meter was on-site calibrated against the marine compass at four directions

Results:

Wind Still Test

Wind Speed (m/s)
0.00

Wind Speed Test

Davis (m/s)	Anemometer (m/s)
4.7	4.2
2.1	2.3
1.7	1.5

Wind Direction Test

Davis (o)	Marine Compass (o)
270	270
1	0
91	90
180	180

Calibrated by: Yeung Ping Fai (Technical Officer)

Checked by : Ho Kam Fat (Senior Technical Officer)

專業化驗有限公司
QUALITY PRO TEST-CONSULT LIMITED
Unit 10, 14/F, Wah Wai Centre, 38-40 Au Pui Wan St., Fotan, Hong Kong
Email: info@qualityprotest.com; Website: www.qualityprotest.com
Tel: (852) 3956 8717; Fax: (852) 3956 3928

REPORT OF EQUIPMENT PERFORMANCE CHECK/ CALIBRATION

Report No. : AJ120009
Date of Issue : 02 December 2020

PART A – CUSTOMER INFORMATION

Enovative Environmental Service Ltd.
Flat 2207, Yu Fun House,
Yu Chui Court, Shatin
New Territories, Hong Kong
Attn: Mr. Thomas WONG

PART B – DESCRIPTION

Name of Equipment	:	YSI 6920V2 (Multi-Parameters)
Manufacturer	:	YSI (a xylem brand)
Serial Number	:	17H105557
Date of Received	:	Dec 02, 2020
Date of Calibration	:	Dec 02, 2020
Date of Next Calibration[(a)]	:	Mar 01, 2021

PART C – REFERENCE METHODS/ DOCUMENTS FOR THE CALIBRATION

Parameter	Reference Method
pH at 25°C	APHA 21e 4500-H^+ B
Dissolved Oxygen	APHA 21e 4500-O G
Conductivity at 25°C	APHA 21e 2510 B
Salinity	APHA 21e 2520 B
Turbidity	APHA 21e 2130 B
Temperature	Section 6 of international Accreditation New Zealand Technical Guide no. 3 Second edition March 2008: Working Thermometer Calibration Procedure.

PART D – CALIBRATION RESULTS[(b,c)]

(1) pH at 25°C

Target (pH unit)	Displayed Reading[(d)] (pH Unit)	Tolerance[(e)](pH Unit)	Results
4.00	4.05	0.05	Satisfactory
7.42	7.41	-0.01	Satisfactory
10.01	9.92	-0.09	Satisfactory

Tolerance of pH should be less than ±0.20 (pH unit)

(2) Temperature

Reading of Ref. thermometer (°C)	Displayed Reading (°C)	Tolerance (°C)	Results
10	10.0	0.0	Satisfactory
20	20.0	0.0	Satisfactory
40	40.1	0.1	Satisfactory

Tolerance limit of temperature should be less than ±2.0 (°C)

~ CONTINUED ON NEXT PAGE ~

Remark(s): -

(a) *The "Date of Next Calibration" is recommended according to best practice principals as practiced by QPT or quoted form relevant international standards.*
(b) *The results relate only to the calibrated equipment as received*
(c) *The performance of the equipment stated in this report is checked with independent reference material and results compared against a calibrated secondary source.*
(d) *"Displayed Reading" denotes the figure shown on item under calibration/ checking regardless of equipment precision or significant figures.*
(e) *The "Tolerance Limit" mentioned is referenced to YSI product specifications.*

LEE Chun-ning, Desmond
Senior Chemist

專業化驗有限公司
QUALITY PRO TEST-CONSULT LIMITED
Unit 10, 14/F, Wah Wai Centre, 38-40 Au Pui Wan St., Fotan, Hong Kong
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Tel: (852) 3956 8717; Fax: (852) 3956 3928

REPORT OF EQUIPMENT PERFORMANCE CHECK/ CALIBRATION

Report No. : AJ120009
Date of Issue : 02 December 2020

PART D – CALIBRATION RESULTS (Cont'd)

(3) Dissolved Oxygen

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)	Results
0.06	0.40	0.34	Satisfactory
1.80	1.36	-0.44	Satisfactory
5.14	4.70	-0.44	Satisfactory
8.44	8.60	0.16	Satisfactory

Tolerance limit of dissolved oxygen should be less than ±0.50 (mg/L)

(4) Conductivity at 25°C

Conc. of KCl (M)	Expected Reading (µS/cm)	Displayed Reading (µS/cm)	Tolerance (%)	Results
0.001	146.9	157.0	6.88	Satisfactory
0.01	1412	1376	-2.55	Satisfactory
0.1	12890	12854	-0.28	Satisfactory
0.5	58670	57630	-1.77	Satisfactory
1.0	111900	111802	-0.09	Satisfactory

Tolerance limit of conductivity should be less than ±10.0 (%)

(5) Salinity

Expected Reading (g/L)	Displayed Reading (g/L)	Tolerance (%)	Results
10	10.08	0.80	Satisfactory
20	20.10	0.50	Satisfactory
30	30.52	1.73	Satisfactory

Tolerance limit of salinity should be less than ±10.0 (%)

(6) Turbidity

Expected Reading (NTU)	Displayed Reading[f] (NTU)	Tolerance[g] (%)	Results
0	0.08	--	Satisfactory
10	9.89	-1.1	Satisfactory
20	19.96	-0.2	Satisfactory
100	107.74	7.7	Satisfactory
800	798.46	-0.2	Satisfactory

Tolerance limit of turbidity should be less than ±10.0 (%)

~ END OF REPORT ~

Remark(s): -

[f] "Displayed Reading" presents the figures shown on item under calibration/ checking regardless of equipment precision or significant figures.

[g] The "Tolerance Limit" mentioned is the acceptance criteria applicable for similar equipment used by Quality Pro Test-Consult Ltd. or quoted form relevant international standards.

專業化驗有限公司
QUALITY PRO TEST-CONSULT LIMITED
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REPORT OF EQUIPMENT PERFORMANCE CHECK/ CALIBRATION

Report No. : AJ100092
Date of Issue : 23 October 2020

PART A – CUSTOMER INFORMATION

Enovative Environmental Service Ltd.
Flat 2207, Yu Fun House,
Yu Chui Court, Shatin
New Territories, Hong Kong
Attn: Mr. Thomas WONG

PART B – DESCRIPTION

Name of Equipment	:	YSI 6920V2 (Multi-Parameters)
Manufacturer	:	YSI (a xylem brand)
Serial Number	:	0001C6A7
Date of Received	:	Oct 22, 2020
Date of Calibration	:	Oct 22, 2020
Date of Next Calibration[a]	:	Jan 21, 2021

PART C – REFERENCE METHODS/ DOCUMENTS FOR THE CALIBRATION

Parameter	Reference Method
pH at 25°C	APHA 21e 4500-H^+ B
Dissolved Oxygen	APHA 21e 4500-O G
Conductivity at 25°C	APHA 21e 2510 B
Salinity	APHA 21e 2520 B
Turbidity	APHA 21e 2130 B
Temperature	Section 6 of international Accreditation New Zealand Technical Guide no. 3 Second edition March 2008: Working Thermometer Calibration Procedure.

PART D – CALIBRATION RESULTS[b,c]

(1) pH at 25°C

Target (pH unit)	Displayed Reading[d] (pH Unit)	Tolerance[e](pH Unit)	Results
4.00	4.02	0.02	Satisfactory
7.42	7.46	0.04	Satisfactory
10.01	10.13	0.12	Satisfactory

Tolerance of pH should be less than ±0.20 (pH unit)

(2) Temperature

Reading of Ref. thermometer (°C)	Displayed Reading (°C)	Tolerance (°C)	Results
10	10.03	0.03	Satisfactory
20	20.08	0.08	Satisfactory
45	45.20	0.20	Satisfactory

Tolerance limit of temperature should be less than ±2.0 (°C)

~ CONTINUED ON NEXT PAGE ~

Remark(s): -

[a] *The "Date of Next Calibration" is recommended according to best practice principals as practiced by QPT or quoted form relevant international standards.*
[b] *The results relate only to the calibrated equipment as received*
[c] *The performance of the equipment stated in this report is checked with independent reference material and results compared against a calibrated secondary source.*
[d] *"Displayed Reading" denotes the figure shown on item under calibration/ checking regardless of equipment precision or significant figures.*
[e] *The "Tolerance Limit" mentioned is referenced to YSI product specifications.*

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REPORT OF EQUIPMENT PERFORMANCE CHECK/ CALIBRATION

Report No. : AJ100092
Date of Issue : 23 October 2020

PART D – CALIBRATION RESULTS (Cont'd)

(3) Dissolved Oxygen

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)	Results
0.16	0.34	0.18	Satisfactory
3.19	3.48	0.29	Satisfactory
6.20	6.45	0.25	Satisfactory
8.10	8.23	0.13	Satisfactory

Tolerance limit of dissolved oxygen should be less than ±0.50 (mg/L)

(4) Conductivity at 25°C

Conc. of KCl (M)	Expected Reading (µS/cm)	Displayed Reading (µS/cm)	Tolerance (%)	Results
0.001	146.9	154.7	5.31	Satisfactory
0.01	1412	1477	4.60	Satisfactory
0.1	12890	12815	-0.58	Satisfactory
0.5	58670	57692	-1.67	Satisfactory
1.0	111900	110899	-0.89	Satisfactory

Tolerance limit of conductivity should be less than ±10.0 (%)

(5) Salinity

Expected Reading (g/L)	Displayed Reading (g/L)	Tolerance (%)	Results
10	10.14	1.40	Satisfactory
20	20.24	1.20	Satisfactory
30	30.59	1.97	Satisfactory

Tolerance limit of salinity should be less than ±10.0 (%)

(6) Turbidity

Expected Reading (NTU)	Displayed Reading[f] (NTU)	Tolerance[g] (%)	Results
0	0.1	--	Satisfactory
10	9.9	-1.0	Satisfactory
20	20.3	1.5	Satisfactory
100	105.8	5.8	Satisfactory
800	795.6	-0.5	Satisfactory

Tolerance limit of turbidity should be less than ±10.0 (%)

~ END OF REPORT ~

Remark(s): -

(f) "Displayed Reading" presents the figures shown on item under calibration/ checking regardless of equipment precision or significant figures.

(g) The "Tolerance Limit" mentioned is the acceptance criteria applicable for similar equipment used by Quality Pro Test-Consult Ltd. or quoted form relevant international standards.

Appendix F

EM&A Monitoring Schedules

HY/2012/08 - Tuen Mun - Chek Lap Kok Link
Northern Connection Sub-sea Tunnel Section
Tentative Air Quality Impact Monitoring Schedule - December 2020

Air quality monitoring stations: ASR1, ASR5, ASR6, ASR10, AQMS1

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		01-Dec	02-Dec	03-Dec	04-Dec	05-Dec
					1-hour TSP - 3 times 24-hour TSP - 1 time Impact AQM	
06-Dec	07-Dec	08-Dec	09-Dec	10-Dec	11-Dec	12-Dec
				1-hour TSP - 3 times 24-hour TSP - 1 time Impact AQM		
13-Dec	14-Dec	15-Dec	16-Dec	17-Dec	18-Dec	19-Dec
			1-hour TSP - 3 times 24-hour TSP - 1 time Impact AQM			
20-Dec	21-Dec	22-Dec	23-Dec	24-Dec	25-Dec	26-Dec
		1-hour TSP - 3 times 24-hour TSP - 1 time Impact AQM				
27-Dec	28-Dec	29-Dec	30-Dec	31-Dec		
	1-hour TSP - 3 times 24-hour TSP - 1 time Impact AQM					

HY/2012/08 - Tuen Mun - Chek Lap Kok Link
Northern Connection Sub-sea Tunnel Section
Tentative Air Quality Impact Monitoring Schedule - January 2021

Air quality monitoring stations: ASR1, ASR5, ASR6, ASR10, AQMS1

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					01-Jan	02-Jan
						1-hour TSP - 3 times 24-hour TSP - 1 time Impact AQM
03-Jan	04-Jan	05-Jan	06-Jan	07-Jan	08-Jan	09-Jan
					1-hour TSP - 3 times 24-hour TSP - 1 time Impact AQM	
10-Jan	11-Jan	12-Jan	13-Jan	14-Jan	15-Jan	16-Jan
				1-hour TSP - 3 times 24-hour TSP - 1 time Impact AQM		
17-Jan	18-Jan	19-Jan	20-Jan	21-Jan	22-Jan	23-Jan
			1-hour TSP - 3 times 24-hour TSP - 1 time Impact AQM			
24-Jan	25-Jan	26-Jan	27-Jan	28-Jan	29-Jan	30-Jan
		1-hour TSP - 3 times 24-hour TSP - 1 time Impact AQM				
31-Jan						

The schedule is subject to agreement from the EPD on the monitoring times. The schedule will be revised after reviewing the progress of the construction works or due to adverse (safety,weather etc) conditions.

HY/2012/08 - Tuen Mun - Chek Lap Kok Link - Northern Landfall

Operational Phase Marine Water Quality Monitoring (WQM) Schedule (December 2020)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1-Dec	2-Dec	3-Dec	4-Dec	5-Dec
6-Dec	7-Dec	8-Dec	9-Dec	10-Dec	11-Dec	12-Dec
13-Dec	14-Dec	15-Dec	16-Dec	17-Dec	18-Dec	19-Dec
			ebb tide 12:36 - 16:06 flood tide 7:20 - 10:50			
20-Dec	21-Dec	22-Dec	23-Dec	24-Dec	25-Dec	26-Dec
27-Dec	28-Dec	29-Dec	30-Dec	31-Dec		

HY/2012/08 - Tuen Mun - Chek Lap Kok Link - Northern Landfall
Operational Phase Marine Water Quality Monitoring (WQM) Schedule (January 2021)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1-Jan	2-Jan
3-Jan	4-Jan	5-Jan	6-Jan	7-Jan	8-Jan	9-Jan
10-Jan	11-Jan	12-Jan	13-Jan	14-Jan	15-Jan	16-Jan
17-Jan	18-Jan	19-Jan	20-Jan	21-Jan	22-Jan	23-Jan
24-Jan	25-Jan	26-Jan	27-Jan	28-Jan	29-Jan	30-Jan
	ebb tide 9:30 - 12:06 flood tide 13:59 - 17:29					
31-Jan						

The schedule is subject to agreement from the EPD on the monitoring times. The schedule will be revised after reviewing the progress of the construction works or due to adverse (safety,weather etc) conditions.

HY/2012/08 - Tuen Mun - Chek Lap Kok Link
Northern Connection Sub-sea Tunnel Section
Tentative Operational Phase Dolphin Monitoring Survey Monitoring Schedule - December 2020

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		01-Dec	02-Dec	03-Dec	04-Dec	05-Dec
		Operational Phase Dolphin Monitoring		**Operational Phase Dolphin Monitoring**		
06-Dec	07-Dec	08-Dec	09-Dec	10-Dec	11-Dec	12-Dec
		Operational Phase Dolphin Monitoring		**Operational Phase Dolphin Monitoring**		
13-Dec	14-Dec	15-Dec	16-Dec	17-Dec	18-Dec	19-Dec
20-Dec	21-Dec	22-Dec	23-Dec	24-Dec	25-Dec	26-Dec
27-Dec	28-Dec	29-Dec	30-Dec	31-Dec		

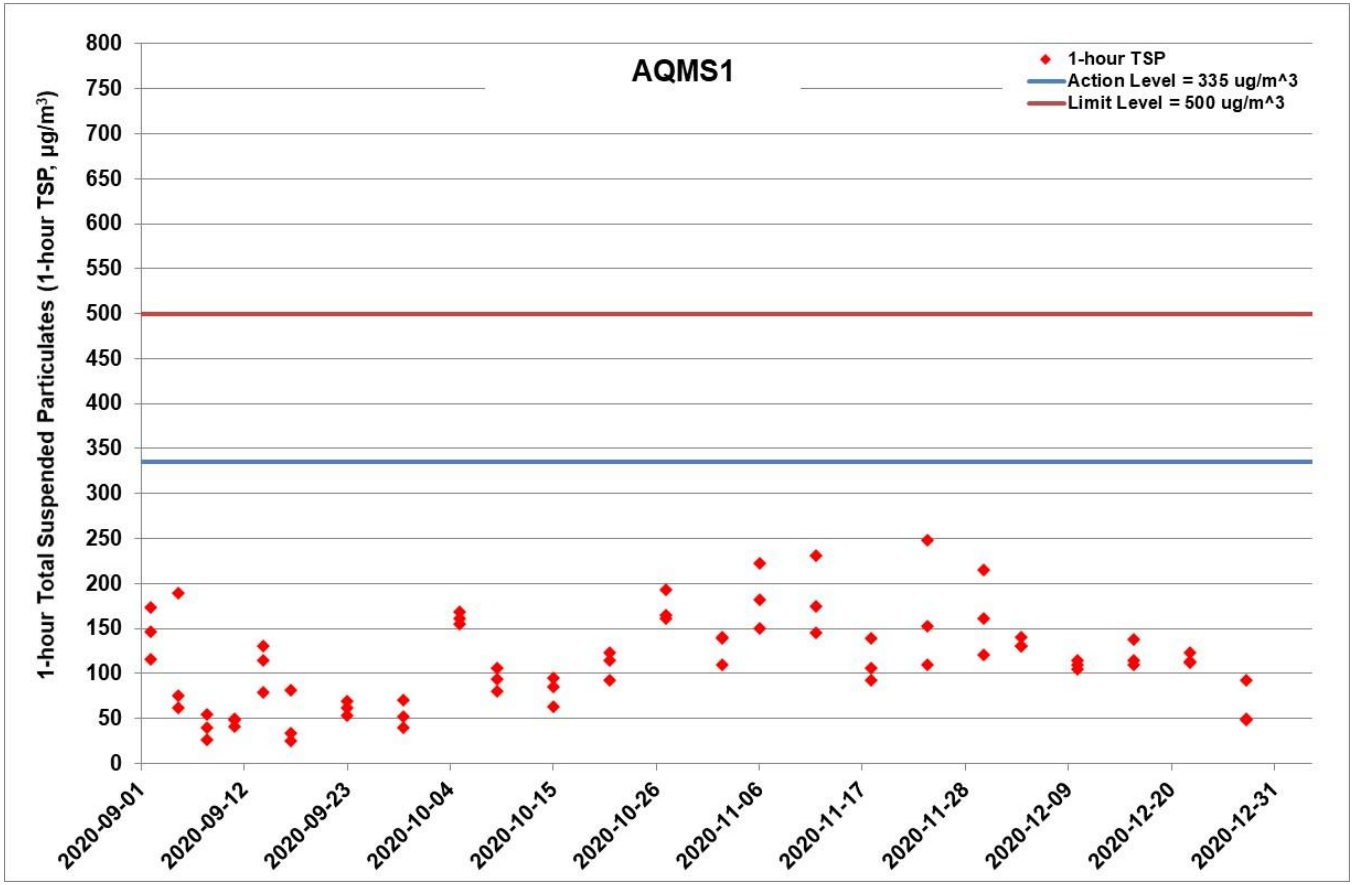
HY/2012/08 - Tuen Mun - Chek Lap Kok Link
Northern Connection Sub-sea Tunnel Section
Tentative Operational Phase Dolphin Monitoring Survey Monitoring Schedule - January 2021

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					01-Jan	02-Jan
03-Jan	04-Jan	05-Jan	06-Jan	07-Jan	08-Jan	09-Jan
10-Jan	11-Jan	12-Jan	13-Jan	14-Jan	15-Jan	16-Jan
17-Jan	18-Jan	19-Jan	20-Jan	21-Jan	22-Jan	23-Jan
24-Jan	25-Jan	26-Jan	27-Jan	28-Jan	29-Jan	30-Jan
	Operational Phase Dolphin Monitoring	**Operational Phase Dolphin Monitoring**	**Operational Phase Dolphin Monitoring**	**Operational Phase Dolphin Monitoring**		
31-Jan						

The schedule is subject to agreement from the EPD on the monitoring times. The schedule will be revised in view of adverse(safety,weather etc) conditions.

Appendix G

Impact Air Quality Monitoring Results



- **Figure G.1 Impact Monitoring – 1-hour Total Suspended Particulates (µg/m³) at AQMS1 between 1 September 2020 and 31 December 2020 during impact monitoring period. The weather conditions during the monitoring period were sunny and hazy. Major land-based construction activities included SVB green roof system & chain fence – South Ventilation Building; Defect works for reinstatement at Box culvert - Northern Landfall (1/9/2020 – 31/12/2020)**

Ref: 0212330_Impact AQM graphs_December 2020.xlsx

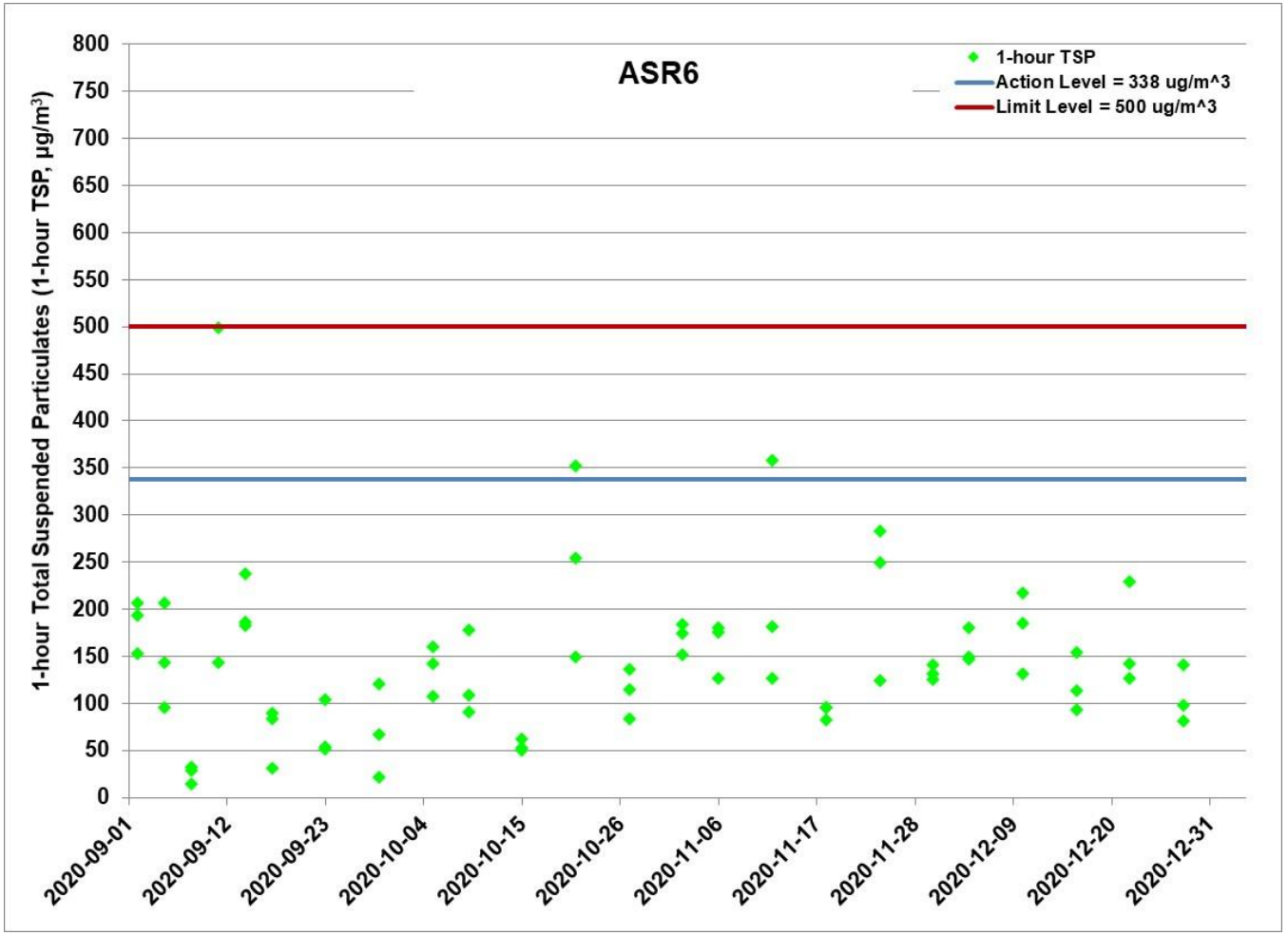


Figure G.2 Impact Monitoring – 1-hour Total Suspended Particulates (µg/m³) at ASR6 between 1 September 2020 and 31 December 2020 during impact monitoring period. The weather conditions during the monitoring period were sunny and hazy. Major land-based construction activities included SVB green roof system & chain fence – South Ventilation Building; Defect works for reinstatement at Box culvert - Northern Landfall (1/9/2020 – 31/12/2020)

Ref: 0212330_Impact AQM graphs_December 2020.xlsx

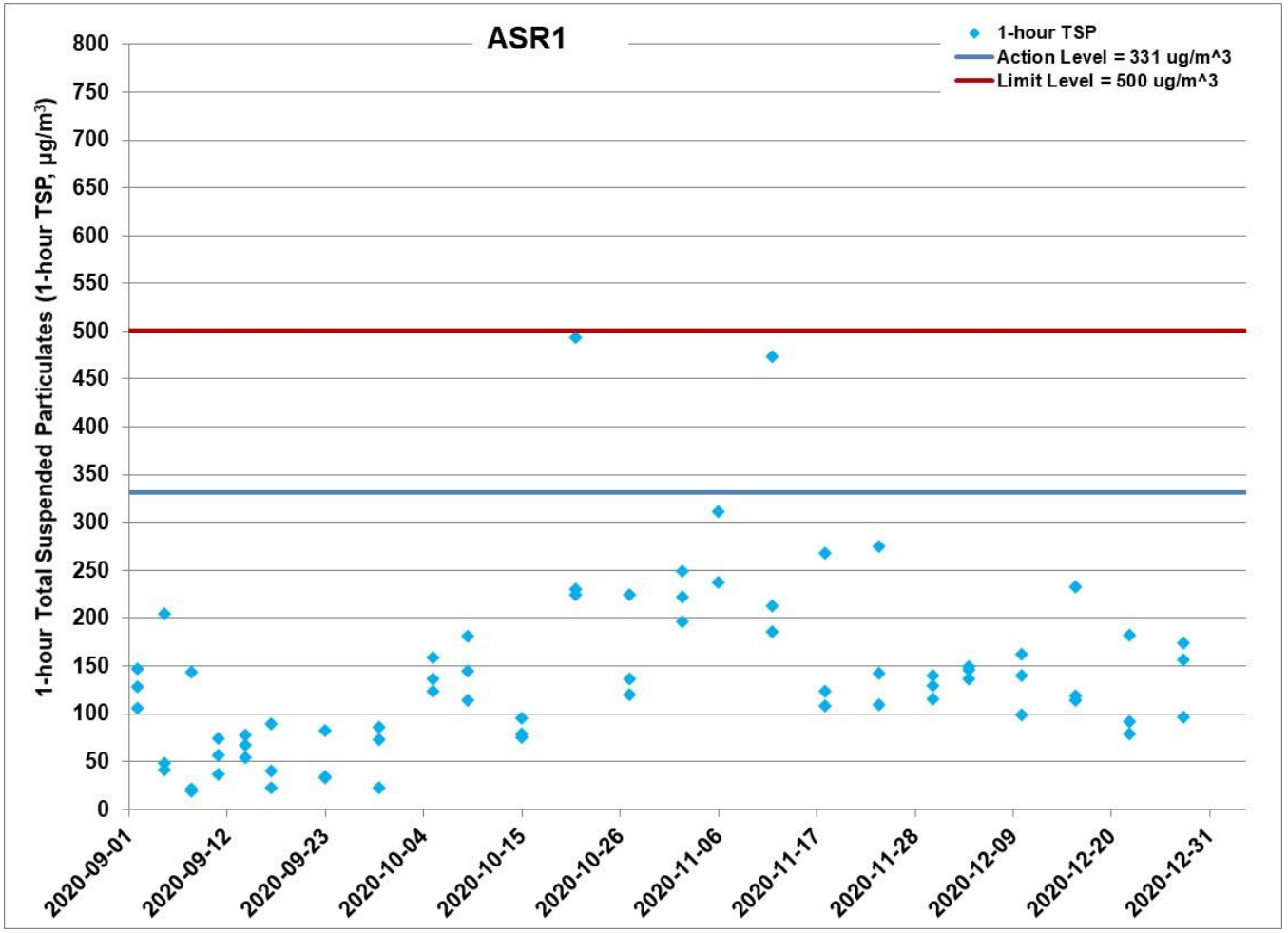


Figure G.3 Impact Monitoring – 1-hour Total Suspended Particulates (µg/m³) at ASR1 between 1 September 2020 and 31 December 2020 during impact monitoring period. The weather conditions during the monitoring period were sunny and hazy. Major land-based construction activities included SVB green roof system & chain fence – South Ventilation Building; Defect works for reinstatement at Box culvert - Northern Landfall (1/9/2020 – 31/12/2020)

Ref: 0212330_Impact AQM graphs_December 2020.xlsx

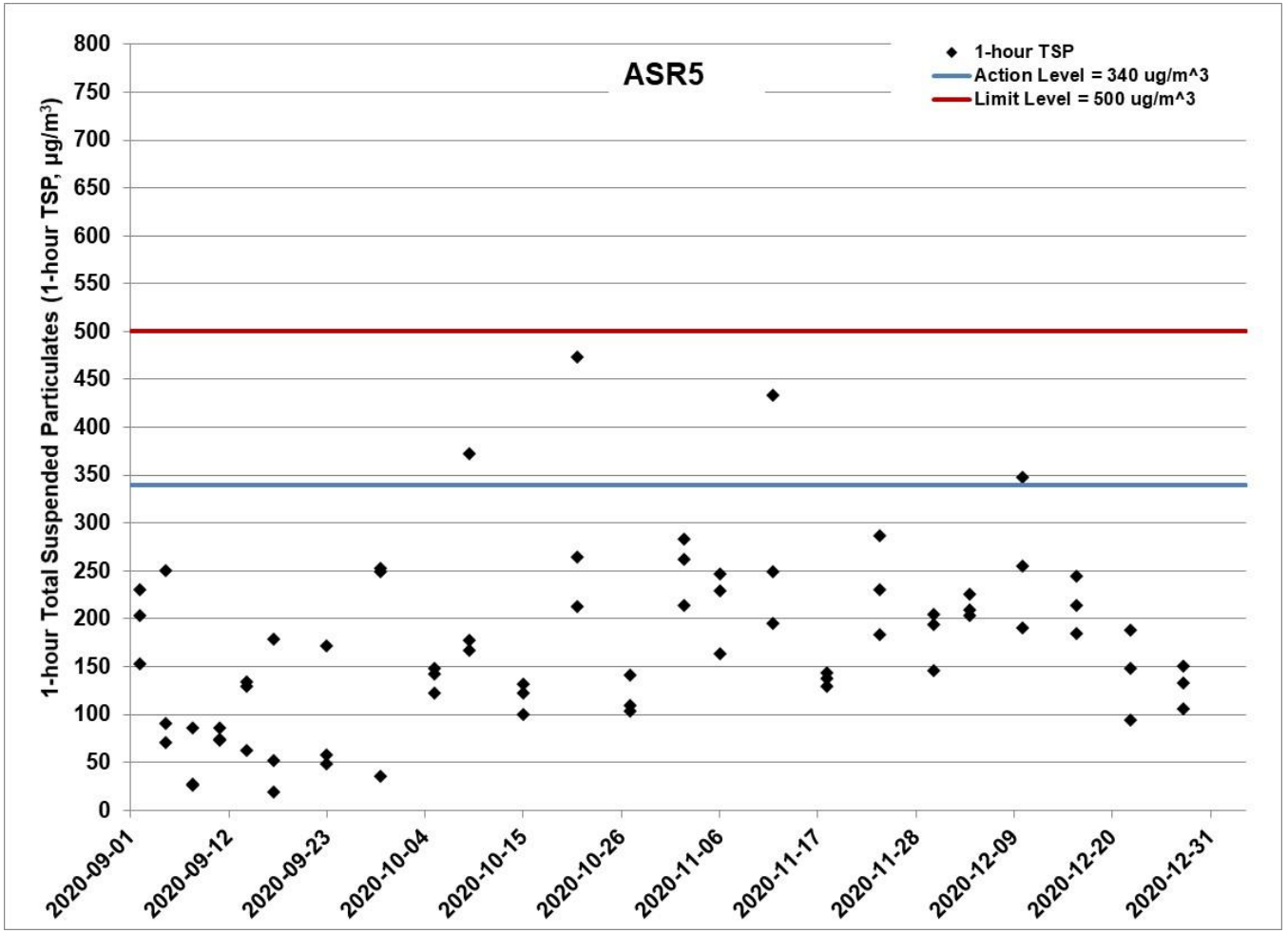


Figure G.4 Impact Monitoring – 1-hour Total Suspended Particulates (µg/m³) at ASR5 between 1 September 2020 and 31 December 2020 during impact monitoring period. The weather conditions during the monitoring period were sunny and hazy. Major land-based construction activities included SVB green roof system & chain fence – South Ventilation Building; Defect works for reinstatement at Box culvert - Northern Landfall (1/9/2020 – 31/12/2020)

Ref: 0212330_Impact AQM graphs_December 2020.xlsx

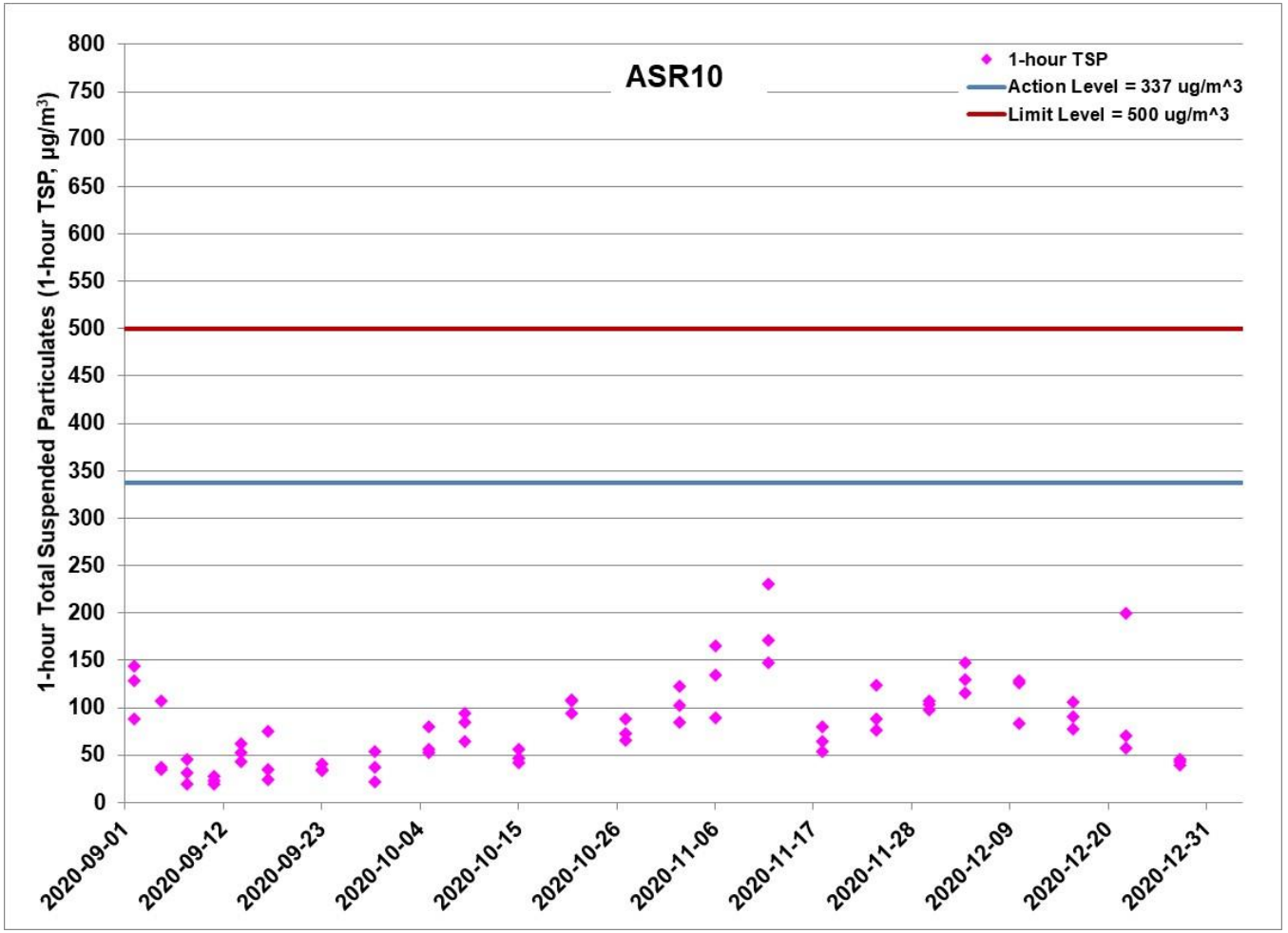


Figure G.5 Impact Monitoring – 1-hour Total Suspended Particulates (µg/m³) at ASR10 between 1 September 2020 and 31 December 2020 during impact monitoring period. The weather conditions during the monitoring period were sunny and hazy. Major land-based construction activities included SVB green roof system & chain fence – South Ventilation Building; Defect works for reinstatement at Box culvert - Northern Landfall (1/9/2020 – 31/12/2020)

Ref: 0212330_Impact AQM graphs_December 2020.xlsx

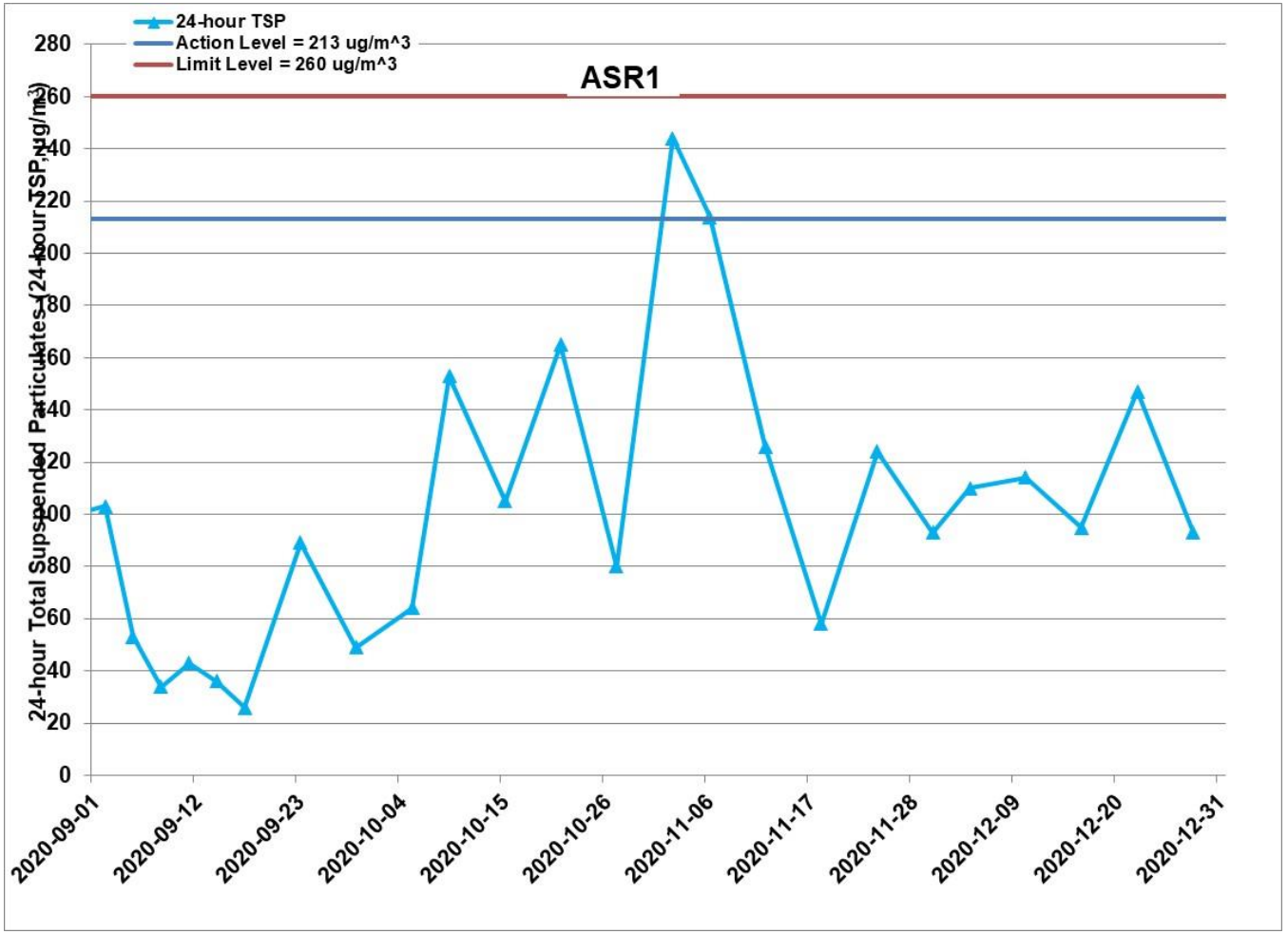


Figure G.6 Impact Monitoring – 24-hour Total Suspended Particulates (μg/m³) at ASR1 between 1 September 2020 and 31 December 2020 during impact monitoring period. The weather conditions during the monitoring period were sunny and hazy. Major land-based construction activities included SVB green roof system & chain fence – South Ventilation Building; Defect works for reinstatement at Box culvert - Northern Landfall (1/9/2020 – 31/12/2020)

Ref: 0212330_Impact AQM graphs_December 2020.xlsx

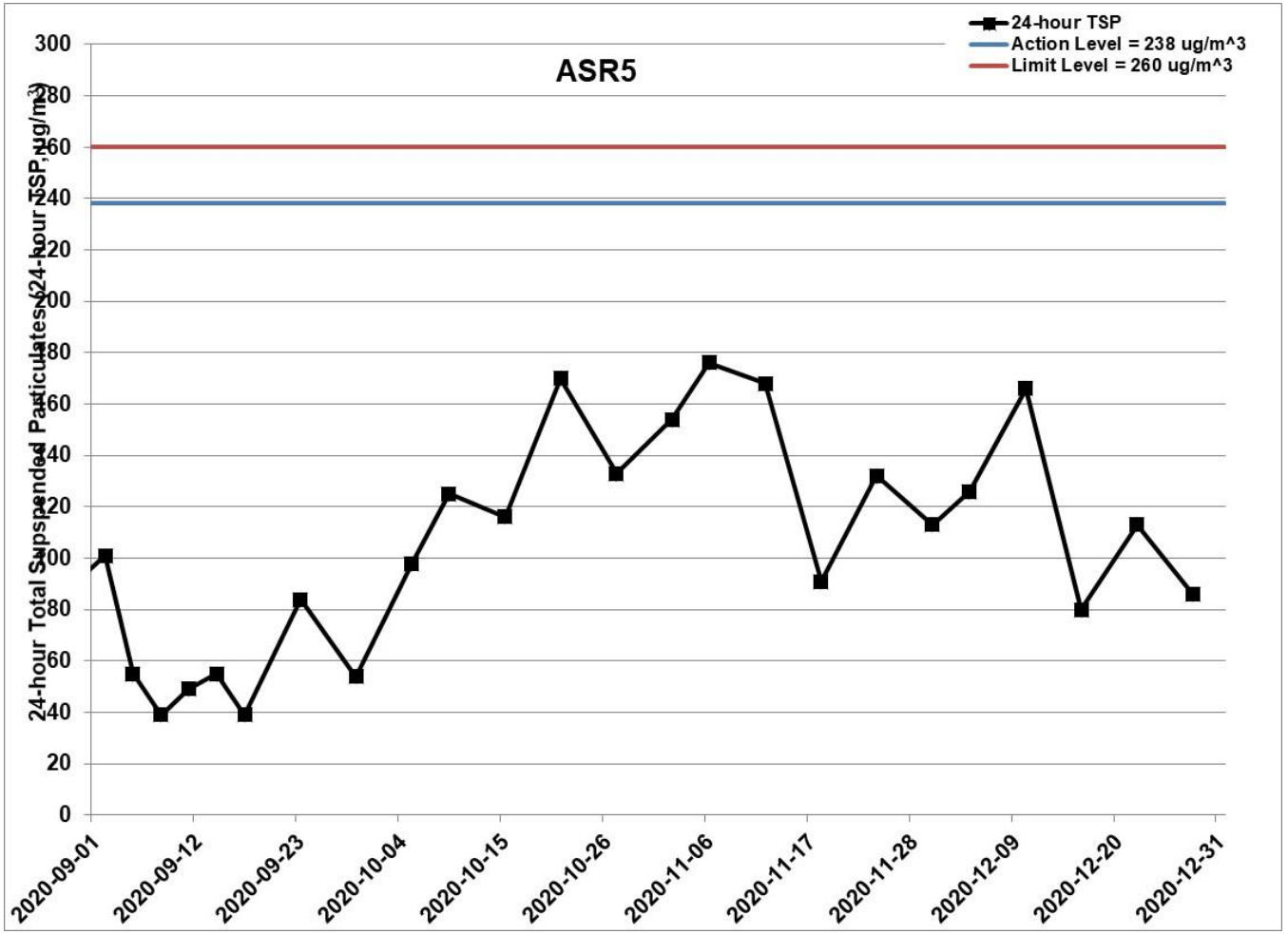


Figure G.7 Impact Monitoring – 24-hour Total Suspended Particulates (μg/m³) at ASR5 between 1 September 2020 and 31 December 2020 during impact monitoring period. The weather conditions during the monitoring period were sunny and hazy. Major land-based construction activities included SVB green roof system & chain fence – South Ventilation Building; Defect works for reinstatement at Box culvert - Northern Landfall (1/9/2020 – 31/12/2020)

Ref: 0212330_Impact AQM graphs_December 2020.xlsx

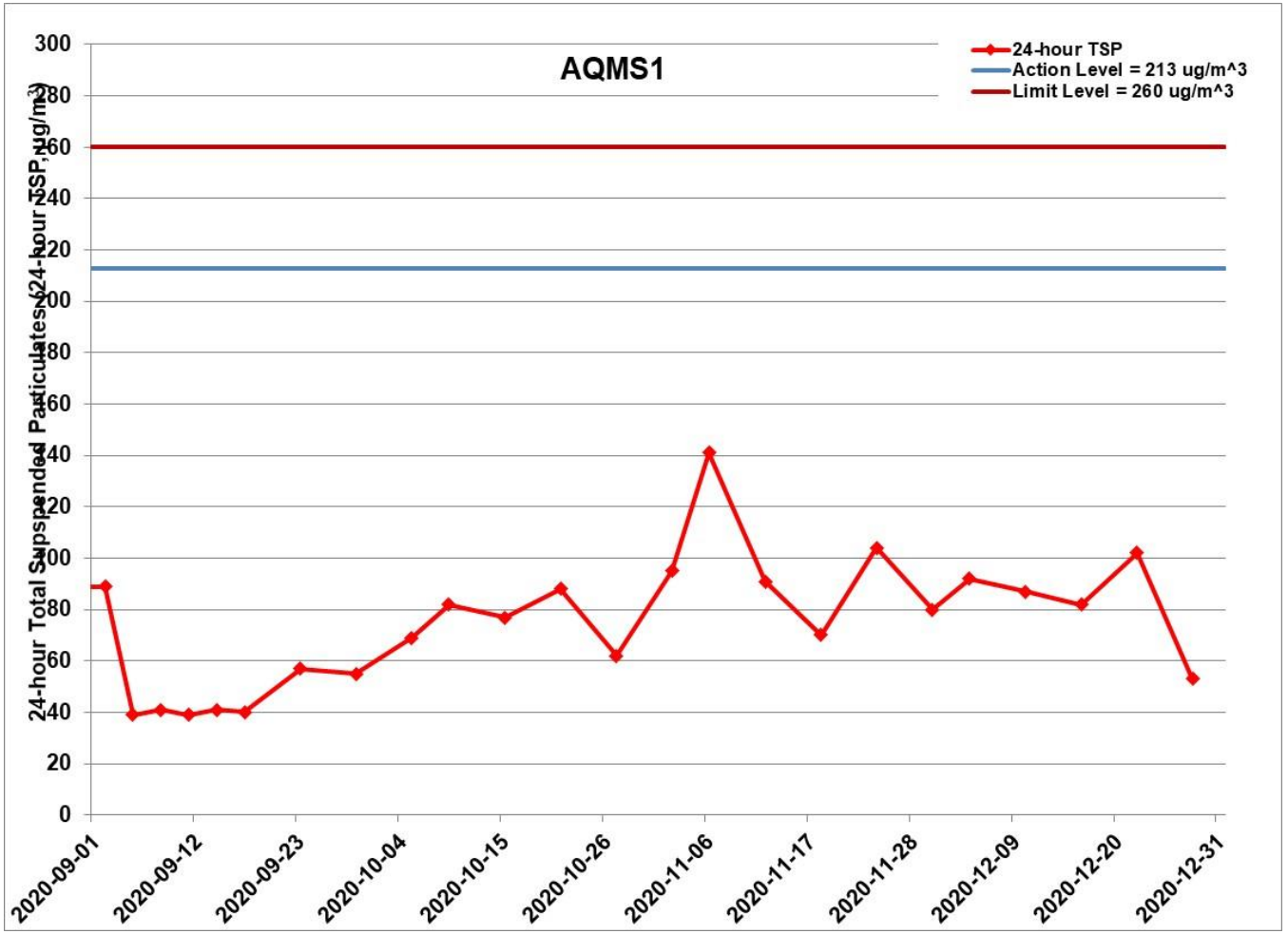


Figure G.8 Impact Monitoring – 24-hour Total Suspended Particulates (µg/m³) at AQMS1 between 1 September 2020 and 31 December 2020 during impact monitoring period. The weather conditions during the monitoring period were sunny and hazy. Major land-based construction activities included SVB green roof system & chain fence – South Ventilation Building; Defect works for reinstatement at Box culvert - Northern Landfall (1/9/2020 – 31/12/2020)

Ref: 0212330_Impact AQM graphs_December 2020.xlsx

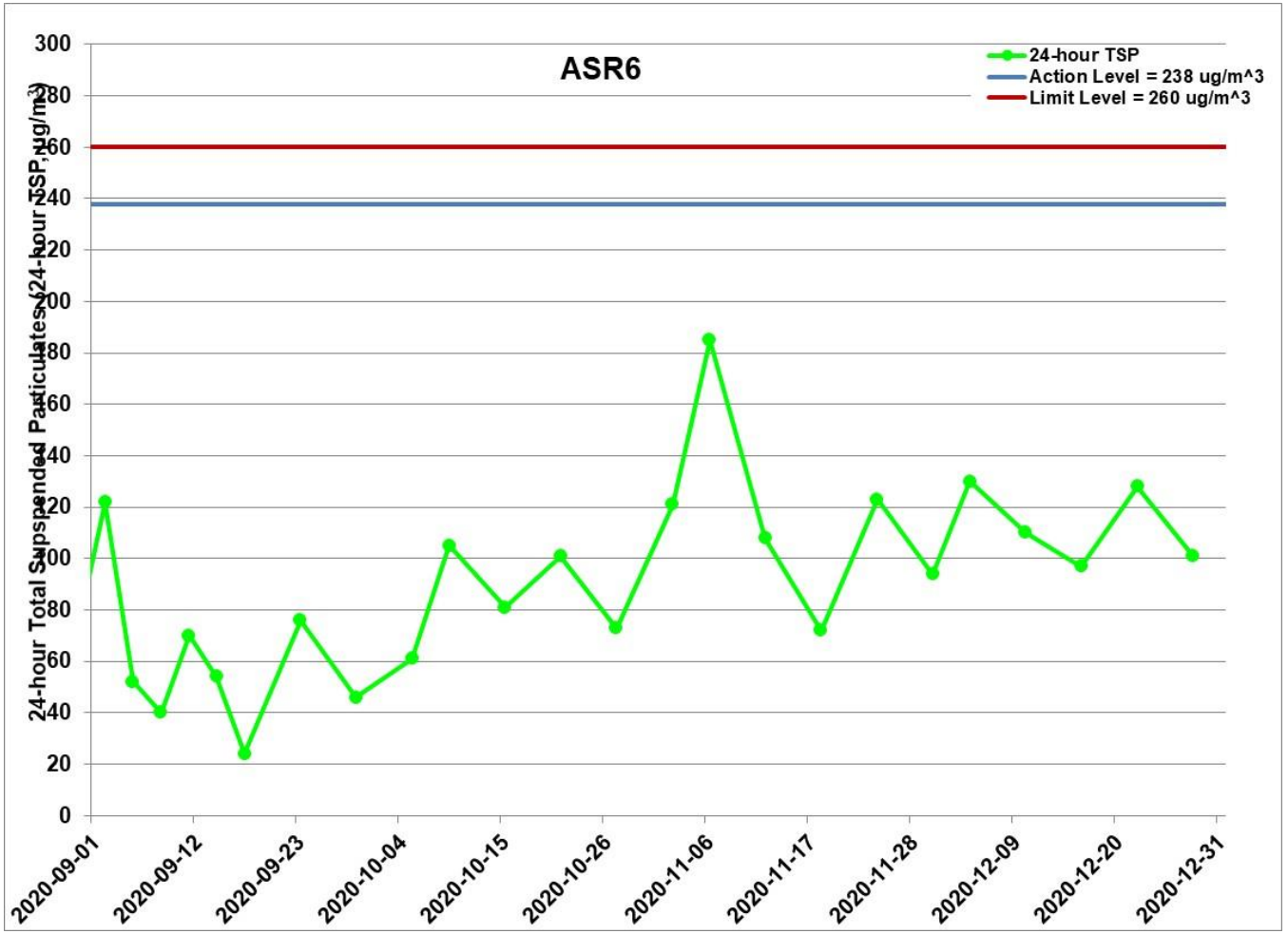


Figure G.9 Impact Monitoring – 24-hour Total Suspended Particulates (µg/m³) at ASR6 between 1 September 2020 and 31 December 2020 during impact monitoring period. The weather conditions during the monitoring period were sunny and hazy. Major land-based construction activities included SVB green roof system & chain fence – South Ventilation Building; Defect works for reinstatement at Box culvert - Northern Landfall (1/9/2020 – 31/12/2020)

Ref: 0212330_Impact AQM graphs_December 2020.xlsx

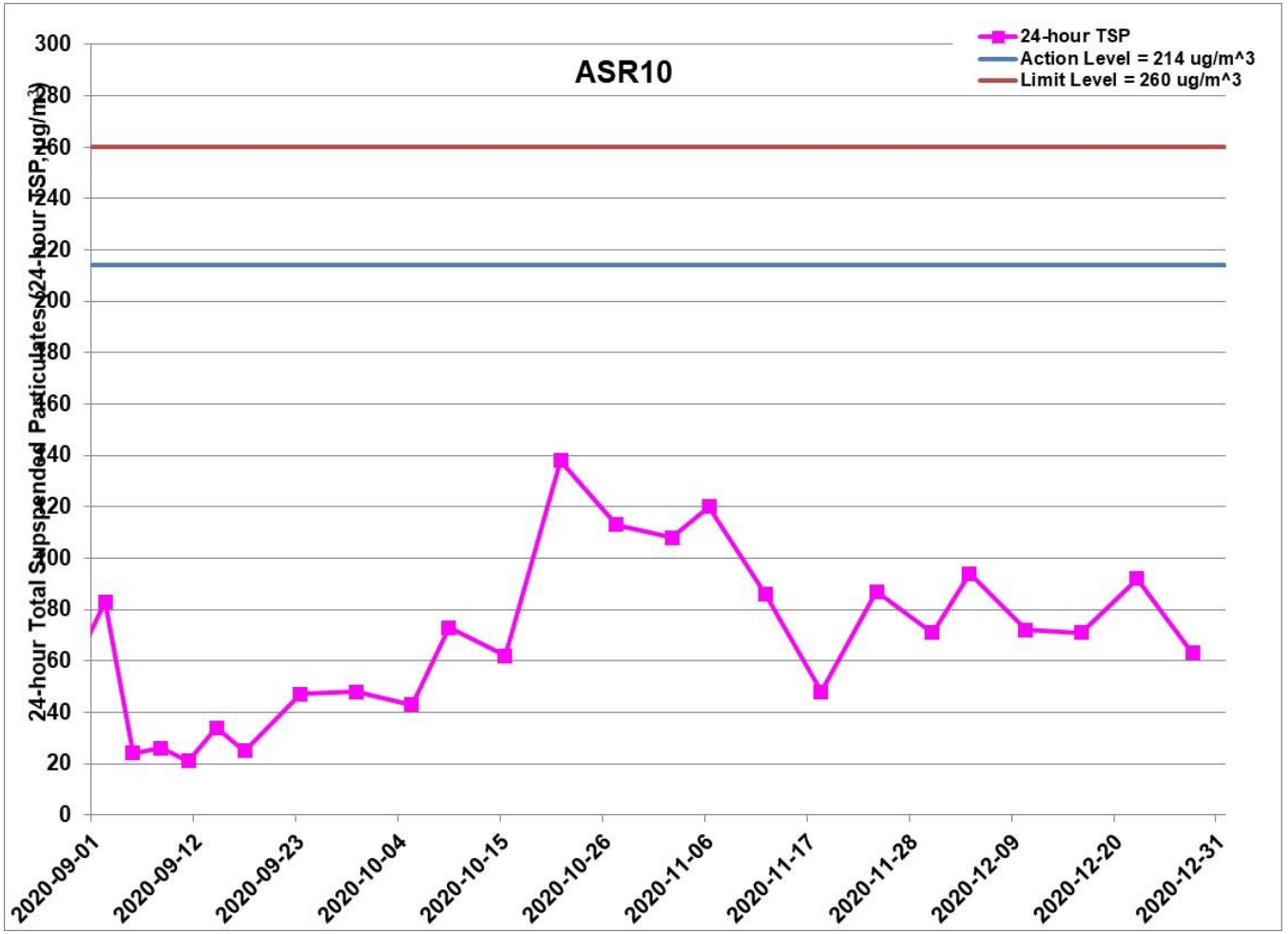


Figure G.10 Impact Monitoring – 24-hour Total Suspended Particulates (μg/m³) at ASR10 between 1 September 2020 and 31 December 2020 during impact monitoring period. The weather conditions during the monitoring period were sunny and hazy. Major land-based construction activities included SVB green roof system & chain fence – South Ventilation Building; Defect works for reinstatement at Box culvert - Northern Landfall (1/9/2020 – 31/12/2020)

Ref: 0212330_Impact AQM graphs_December 2020.xlsx

Project	Contract	Date	Station	Weather	Start time	Parameters	Results	units
TMCLKL	HY/2012/08	04-12-20	ASR10	Sunny	8:12	1-hour TSP	148	ug/m3
TMCLKL	HY/2012/08	04-12-20	ASR10	Sunny	9:14	1-hour TSP	130	ug/m3
TMCLKL	HY/2012/08	04-12-20	ASR10	Sunny	10:16	1-hour TSP	115	ug/m3
TMCLKL	HY/2012/08	04-12-20	ASR6	Sunny	8:23	1-hour TSP	180	ug/m3
TMCLKL	HY/2012/08	04-12-20	ASR6	Sunny	9:25	1-hour TSP	149	ug/m3
TMCLKL	HY/2012/08	04-12-20	ASR6	Sunny	10:27	1-hour TSP	147	ug/m3
TMCLKL	HY/2012/08	04-12-20	ASR5	Sunny	8:34	1-hour TSP	204	ug/m3
TMCLKL	HY/2012/08	04-12-20	ASR5	Sunny	9:36	1-hour TSP	209	ug/m3
TMCLKL	HY/2012/08	04-12-20	ASR5	Sunny	10:38	1-hour TSP	226	ug/m3
TMCLKL	HY/2012/08	04-12-20	ASR1	Sunny	8:45	1-hour TSP	149	ug/m3
TMCLKL	HY/2012/08	04-12-20	ASR1	Sunny	9:47	1-hour TSP	136	ug/m3
TMCLKL	HY/2012/08	04-12-20	ASR1	Sunny	10:49	1-hour TSP	146	ug/m3
TMCLKL	HY/2012/08	04-12-20	AQMS1	Sunny	8:57	1-hour TSP	140	ug/m3
TMCLKL	HY/2012/08	04-12-20	AQMS1	Sunny	9:59	1-hour TSP	131	ug/m3
TMCLKL	HY/2012/08	04-12-20	AQMS1	Sunny	11:01	1-hour TSP	131	ug/m3
TMCLKL	HY/2012/08	10-12-20	ASR10	Hazy	8:08	1-hour TSP	126	ug/m3
TMCLKL	HY/2012/08	10-12-20	ASR10	Hazy	9:10	1-hour TSP	84	ug/m3
TMCLKL	HY/2012/08	10-12-20	ASR10	Hazy	10:12	1-hour TSP	128	ug/m3
TMCLKL	HY/2012/08	10-12-20	ASR6	Hazy	8:18	1-hour TSP	185	ug/m3
TMCLKL	HY/2012/08	10-12-20	ASR6	Hazy	9:20	1-hour TSP	217	ug/m3
TMCLKL	HY/2012/08	10-12-20	ASR6	Hazy	10:22	1-hour TSP	131	ug/m3
TMCLKL	HY/2012/08	10-12-20	ASR5	Hazy	8:30	1-hour TSP	255	ug/m3
TMCLKL	HY/2012/08	10-12-20	ASR5	Hazy	9:32	1-hour TSP	348	ug/m3
TMCLKL	HY/2012/08	10-12-20	ASR5	Hazy	10:34	1-hour TSP	191	ug/m3
TMCLKL	HY/2012/08	10-12-20	ASR1	Hazy	8:42	1-hour TSP	140	ug/m3
TMCLKL	HY/2012/08	10-12-20	ASR1	Hazy	9:44	1-hour TSP	162	ug/m3
TMCLKL	HY/2012/08	10-12-20	ASR1	Hazy	10:46	1-hour TSP	99	ug/m3
TMCLKL	HY/2012/08	10-12-20	AQMS1	Hazy	8:53	1-hour TSP	110	ug/m3
TMCLKL	HY/2012/08	10-12-20	AQMS1	Hazy	9:55	1-hour TSP	114	ug/m3
TMCLKL	HY/2012/08	10-12-20	AQMS1	Hazy	10:57	1-hour TSP	105	ug/m3
TMCLKL	HY/2012/08	16-12-20	ASR10	Cloudy	8:15	1-hour TSP	78	ug/m3

Project	Contract	Date	Station	Weather	Start time	Parameters	Results	units
TMCLKL	HY/2012/08	16-12-20	ASR10	Cloudy	9:17	1-hour TSP	90	ug/m3
TMCLKL	HY/2012/08	16-12-20	ASR10	Cloudy	10:19	1-hour TSP	106	ug/m3
TMCLKL	HY/2012/08	16-12-20	ASR6	Cloudy	8:25	1-hour TSP	93	ug/m3
TMCLKL	HY/2012/08	16-12-20	ASR6	Cloudy	9:27	1-hour TSP	114	ug/m3
TMCLKL	HY/2012/08	16-12-20	ASR6	Cloudy	10:29	1-hour TSP	154	ug/m3
TMCLKL	HY/2012/08	16-12-20	ASR5	Cloudy	8:36	1-hour TSP	185	ug/m3
TMCLKL	HY/2012/08	16-12-20	ASR5	Cloudy	9:38	1-hour TSP	214	ug/m3
TMCLKL	HY/2012/08	16-12-20	ASR5	Cloudy	10:40	1-hour TSP	244	ug/m3
TMCLKL	HY/2012/08	16-12-20	ASR1	Cloudy	8:46	1-hour TSP	114	ug/m3
TMCLKL	HY/2012/08	16-12-20	ASR1	Cloudy	9:48	1-hour TSP	119	ug/m3
TMCLKL	HY/2012/08	16-12-20	ASR1	Cloudy	10:50	1-hour TSP	233	ug/m3
TMCLKL	HY/2012/08	16-12-20	AQMS1	Cloudy	8:58	1-hour TSP	109	ug/m3
TMCLKL	HY/2012/08	16-12-20	AQMS1	Cloudy	10:00	1-hour TSP	114	ug/m3
TMCLKL	HY/2012/08	16-12-20	AQMS1	Cloudy	11:02	1-hour TSP	138	ug/m3
TMCLKL	HY/2012/08	22-12-20	ASR10	Hazy	8:00	1-hour TSP	200	ug/m3
TMCLKL	HY/2012/08	22-12-20	ASR10	Hazy	9:02	1-hour TSP	70	ug/m3
TMCLKL	HY/2012/08	22-12-20	ASR10	Hazy	10:04	1-hour TSP	57	ug/m3
TMCLKL	HY/2012/08	22-12-20	ASR6	Hazy	8:10	1-hour TSP	229	ug/m3
TMCLKL	HY/2012/08	22-12-20	ASR6	Hazy	9:12	1-hour TSP	127	ug/m3
TMCLKL	HY/2012/08	22-12-20	ASR6	Hazy	10:14	1-hour TSP	142	ug/m3
TMCLKL	HY/2012/08	22-12-20	ASR5	Hazy	8:21	1-hour TSP	188	ug/m3
TMCLKL	HY/2012/08	22-12-20	ASR5	Hazy	9:23	1-hour TSP	148	ug/m3
TMCLKL	HY/2012/08	22-12-20	ASR5	Hazy	10:25	1-hour TSP	94	ug/m3
TMCLKL	HY/2012/08	22-12-20	ASR1	Hazy	8:33	1-hour TSP	182	ug/m3
TMCLKL	HY/2012/08	22-12-20	ASR1	Hazy	9:35	1-hour TSP	92	ug/m3
TMCLKL	HY/2012/08	22-12-20	ASR1	Hazy	10:37	1-hour TSP	79	ug/m3
TMCLKL	HY/2012/08	22-12-20	AQMS1	Hazy	8:45	1-hour TSP	123	ug/m3
TMCLKL	HY/2012/08	22-12-20	AQMS1	Hazy	9:47	1-hour TSP	112	ug/m3
TMCLKL	HY/2012/08	22-12-20	AQMS1	Hazy	10:49	1-hour TSP	113	ug/m3
TMCLKL	HY/2012/08	28-12-20	ASR10	Sunny	13:00	1-hour TSP	39	ug/m3
TMCLKL	HY/2012/08	28-12-20	ASR10	Sunny	14:02	1-hour TSP	46	ug/m3

Project	Contract	Date	Station	Weather	Start time	Parameters	Results	units
TMCLKL	HY/2012/08	28-12-20	ASR10	Sunny	15:04	1-hour TSP	43	ug/m3
TMCLKL	HY/2012/08	28-12-20	ASR6	Sunny	13:10	1-hour TSP	98	ug/m3
TMCLKL	HY/2012/08	28-12-20	ASR6	Sunny	14:12	1-hour TSP	81	ug/m3
TMCLKL	HY/2012/08	28-12-20	ASR6	Sunny	15:14	1-hour TSP	141	ug/m3
TMCLKL	HY/2012/08	28-12-20	ASR5	Sunny	13:21	1-hour TSP	133	ug/m3
TMCLKL	HY/2012/08	28-12-20	ASR5	Sunny	14:23	1-hour TSP	106	ug/m3
TMCLKL	HY/2012/08	28-12-20	ASR5	Sunny	15:25	1-hour TSP	150	ug/m3
TMCLKL	HY/2012/08	28-12-20	ASR1	Sunny	13:33	1-hour TSP	97	ug/m3
TMCLKL	HY/2012/08	28-12-20	ASR1	Sunny	14:35	1-hour TSP	174	ug/m3
TMCLKL	HY/2012/08	28-12-20	ASR1	Sunny	15:37	1-hour TSP	157	ug/m3
TMCLKL	HY/2012/08	28-12-20	AQMS1	Sunny	13:44	1-hour TSP	48	ug/m3
TMCLKL	HY/2012/08	28-12-20	AQMS1	Sunny	14:46	1-hour TSP	92	ug/m3
TMCLKL	HY/2012/08	28-12-20	AQMS1	Sunny	15:48	1-hour TSP	49	ug/m3
TMCLKL	HY/2012/08	04-12-20	AQMS1	Sunny	12:03	24-hour TSP	92	ug/m3
TMCLKL	HY/2012/08	04-12-20	ASR1	Sunny	11:51	24-hour TSP	110	ug/m3
TMCLKL	HY/2012/08	04-12-20	ASR10	Sunny	11:18	24-hour TSP	94	ug/m3
TMCLKL	HY/2012/08	04-12-20	ASR5	Sunny	11:40	24-hour TSP	126	ug/m3
TMCLKL	HY/2012/08	04-12-20	ASR6	Sunny	11:29	24-hour TSP	130	ug/m3
TMCLKL	HY/2012/08	10-12-20	AQMS1	Hazy	11:59	24-hour TSP	87	ug/m3
TMCLKL	HY/2012/08	10-12-20	ASR1	Hazy	11:48	24-hour TSP	114	ug/m3
TMCLKL	HY/2012/08	10-12-20	ASR10	Hazy	11:14	24-hour TSP	72	ug/m3
TMCLKL	HY/2012/08	10-12-20	ASR5	Hazy	11:36	24-hour TSP	166	ug/m3
TMCLKL	HY/2012/08	10-12-20	ASR6	Hazy	11:24	24-hour TSP	110	ug/m3
TMCLKL	HY/2012/08	16-12-20	AQMS1	Cloudy	12:04	24-hour TSP	82	ug/m3
TMCLKL	HY/2012/08	16-12-20	ASR1	Cloudy	11:52	24-hour TSP	95	ug/m3
TMCLKL	HY/2012/08	16-12-20	ASR10	Cloudy	11:21	24-hour TSP	71	ug/m3
TMCLKL	HY/2012/08	16-12-20	ASR5	Cloudy	11:42	24-hour TSP	80	ug/m3
TMCLKL	HY/2012/08	16-12-20	ASR6	Cloudy	11:31	24-hour TSP	97	ug/m3
TMCLKL	HY/2012/08	22-12-20	AQMS1	Hazy	11:51	24-hour TSP	102	ug/m3
TMCLKL	HY/2012/08	22-12-20	ASR1	Hazy	11:39	24-hour TSP	147	ug/m3
TMCLKL	HY/2012/08	22-12-20	ASR10	Hazy	11:06	24-hour TSP	92	ug/m3

Project	Contract	Date	Station	Weather	Start time	Parameters	Results	units
TMCLKL	HY/2012/08	22-12-20	ASR5	Hazy	11:27	24-hour TSP	113	ug/m3
TMCLKL	HY/2012/08	22-12-20	ASR6	Hazy	11:16	24-hour TSP	128	ug/m3
TMCLKL	HY/2012/08	28-12-20	AQMS1	Sunny	16:50	24-hour TSP	53	ug/m3
TMCLKL	HY/2012/08	28-12-20	ASR1	Sunny	16:39	24-hour TSP	93	ug/m3
TMCLKL	HY/2012/08	28-12-20	ASR10	Sunny	16:06	24-hour TSP	63	ug/m3
TMCLKL	HY/2012/08	28-12-20	ASR5	Sunny	16:27	24-hour TSP	86	ug/m3
TMCLKL	HY/2012/08	28-12-20	ASR6	Sunny	16:16	24-hour TSP	101	ug/m3

Appendix H

Meteorological Data

Meteorological Data for Impact Monitoring in the reporting period			
Date (yy-mm-dd)	**Time (24hrs)**	**Average of Wind Speed (m/s)**	**Average of Wind Direction(degree)**
20/12/04	0:00	2.7	336
20/12/04	1:00	0.9	280
20/12/04	2:00	1.3	288
20/12/04	3:00	0.9	272
20/12/04	4:00	1.3	335
20/12/04	5:00	1.8	304
20/12/04	6:00	2.7	2
20/12/04	7:00	3.6	27
20/12/04	8:00	3.1	23
20/12/04	9:00	3.6	23
20/12/04	10:00	3.6	31
20/12/04	11:00	2.2	12
20/12/04	12:00	2.7	16
20/12/04	13:00	2.7	334
20/12/04	14:00	2.2	347
20/12/04	15:00	1.8	338
20/12/04	16:00	0.9	337
20/12/04	17:00	0.9	326
20/12/04	18:00	2.7	328
20/12/04	19:00	2.2	330
20/12/04	20:00	2.7	343
20/12/04	21:00	2.2	4
20/12/04	22:00	1.8	332
20/12/04	23:00	1.8	30
20/12/05	0:00	6.3	36
20/12/05	1:00	2.7	22
20/12/05	2:00	1.8	32
20/12/05	3:00	1.3	34
20/12/05	4:00	1.3	336
20/12/05	5:00	0.9	258
20/12/05	6:00	1.3	260
20/12/05	7:00	0.9	266
20/12/05	8:00	1.8	29
20/12/05	9:00	1.8	12
20/12/05	10:00	1.3	15
20/12/05	11:00	1.3	34
20/12/05	12:00	1.8	340
20/12/05	13:00	2.2	312
20/12/05	14:00	1.8	32
20/12/05	15:00	1.3	34
20/12/05	16:00	1.3	25
20/12/05	17:00	1.8	326
20/12/05	18:00	1.8	308
20/12/05	19:00	0.9	328
20/12/05	20:00	0.4	308
20/12/05	21:00	0.9	323
20/12/05	22:00	0.9	31
20/12/05	23:00	1.3	23
20/12/10	0:00	0.4	102
20/12/10	1:00	0.4	29
20/12/10	2:00	0.4	20
20/12/10	3:00	0.4	30
20/12/10	4:00	0	97
20/12/10	5:00	0.9	351
20/12/10	6:00	0.4	335
20/12/10	7:00	0.4	49

20/12/10	8:00	1.3	12
20/12/10	9:00	1.3	24
20/12/10	10:00	1.3	13
20/12/10	11:00	1.3	19
20/12/10	12:00	1.3	21
20/12/10	13:00	0.9	202
20/12/10	14:00	1.3	192
20/12/10	15:00	1.3	261
20/12/10	16:00	0.9	279
20/12/10	17:00	0.4	96
20/12/10	18:00	0.4	96
20/12/10	19:00	0	85
20/12/10	20:00	0.4	78
20/12/10	21:00	0.9	38
20/12/10	22:00	1.3	101
20/12/10	23:00	1.8	82
20/12/11	0:00	1.8	91
20/12/11	1:00	0.4	87
20/12/11	2:00	0.9	38
20/12/11	3:00	0.9	13
20/12/11	4:00	0.4	16
20/12/11	5:00	0	102
20/12/11	6:00	0	114
20/12/11	7:00	0	103
20/12/11	8:00	0.4	135
20/12/11	9:00	1.3	141
20/12/11	10:00	0.4	130
20/12/11	11:00	0.9	141
20/12/11	12:00	1.3	206
20/12/11	13:00	0.9	203
20/12/11	14:00	1.8	201
20/12/11	15:00	1.3	207
20/12/11	16:00	0.4	276
20/12/11	17:00	0.9	269
20/12/11	18:00	0.4	267
20/12/11	19:00	0.4	274
20/12/11	20:00	0	58
20/12/11	21:00	0	158
20/12/11	22:00	0.4	290
20/12/11	23:00	0.4	306
20/12/16	0:00	1.8	34
20/12/16	1:00	1.8	21
20/12/16	2:00	1.3	16
20/12/16	3:00	1.3	11
20/12/16	4:00	2.2	30
20/12/16	5:00	1.8	24
20/12/16	6:00	1.8	23
20/12/16	7:00	1.8	17
20/12/16	8:00	1.3	112
20/12/16	9:00	1.3	36
20/12/16	10:00	1.3	21
20/12/16	11:00	0.9	109
20/12/16	12:00	1.3	109
20/12/16	13:00	2.7	17
20/12/16	14:00	2.7	20
20/12/16	15:00	2.2	27
20/12/16	16:00	1.3	29
20/12/16	17:00	1.3	17

20/12/16	18:00	1.8	14
20/12/16	19:00	1.8	22
20/12/16	20:00	2.2	11
20/12/16	21:00	2.2	29
20/12/16	22:00	1.8	13
20/12/16	23:00	1.3	21
20/12/17	0:00	2.2	25
20/12/17	1:00	2.2	26
20/12/17	2:00	1.8	31
20/12/17	3:00	2.2	17
20/12/17	4:00	1.8	13
20/12/17	5:00	1.8	22
20/12/17	6:00	1.8	29
20/12/17	7:00	1.8	13
20/12/17	8:00	1.3	16
20/12/17	9:00	1.3	14
20/12/17	10:00	1.3	24
20/12/17	11:00	1.3	17
20/12/17	12:00	0.9	316
20/12/17	13:00	0.9	337
20/12/17	14:00	1.8	313
20/12/17	15:00	2.2	312
20/12/17	16:00	1.8	344
20/12/17	17:00	1.3	315
20/12/17	18:00	1.3	326
20/12/17	19:00	2.2	332
20/12/17	20:00	1.8	22
20/12/17	21:00	1.3	21
20/12/17	22:00	1.3	341
20/12/17	23:00	0.9	328
20/12/22	0:00	2.2	32
20/12/22	1:00	2.2	25
20/12/22	2:00	1.8	29
20/12/22	3:00	2.7	20
20/12/22	4:00	2.7	31
20/12/22	5:00	2.7	11
20/12/22	6:00	2.2	23
20/12/22	7:00	1.8	46
20/12/22	8:00	1.8	25
20/12/22	9:00	1.3	14
20/12/22	10:00	1.3	163
20/12/22	11:00	0.9	152
20/12/22	12:00	1.3	197
20/12/22	13:00	1.3	234
20/12/22	14:00	1.8	273
20/12/22	15:00	0.9	217
20/12/22	16:00	1.3	294
20/12/22	17:00	1.3	281
20/12/22	18:00	0.9	323
20/12/22	19:00	0.9	322
20/12/22	20:00	0	309
20/12/22	21:00	0.4	132
20/12/22	22:00	0.9	78
20/12/22	23:00	0.9	48
20/12/23	0:00	0.9	75
20/12/23	1:00	0.9	326
20/12/23	2:00	0.4	56
20/12/23	3:00	0.9	307

20/12/23	4:00	1.3	330
20/12/23	5:00	0.9	5
20/12/23	6:00	0.4	308
20/12/23	7:00	1.3	24
20/12/23	8:00	0.9	15
20/12/23	9:00	0.9	28
20/12/23	10:00	1.3	30
20/12/23	11:00	1.3	135
20/12/23	12:00	1.3	135
20/12/23	13:00	1.3	26
20/12/23	14:00	0.9	22
20/12/23	15:00	1.3	235
20/12/23	16:00	0.9	130
20/12/23	17:00	1.3	85
20/12/23	18:00	0.9	100
20/12/23	19:00	0.9	136
20/12/23	20:00	1.3	357
20/12/23	21:00	0.4	131
20/12/23	22:00	0.9	18
20/12/23	23:00	1.3	91
20/12/28	0:00	0.4	2
20/12/28	1:00	0.4	69
20/12/28	2:00	0.4	318
20/12/28	3:00	0.4	58
20/12/28	4:00	0.4	72
20/12/28	5:00	0.9	56
20/12/28	6:00	0.9	358
20/12/28	7:00	0.4	334
20/12/28	8:00	0.4	77
20/12/28	9:00	0.9	141
20/12/28	10:00	2.2	86
20/12/28	11:00	3.1	128
20/12/28	12:00	3.1	123
20/12/28	13:00	3.6	114
20/12/28	14:00	4.5	134
20/12/28	15:00	4.5	143
20/12/28	16:00	3.6	108
20/12/28	17:00	4	123
20/12/28	18:00	3.1	89
20/12/28	19:00	2.2	60
20/12/28	20:00	1.8	57
20/12/28	21:00	2.7	98
20/12/28	22:00	2.2	91
20/12/28	23:00	1.8	73
20/12/29	0:00	2.2	75
20/12/29	1:00	1.8	79
20/12/29	2:00	1.3	38
20/12/29	3:00	1.8	65
20/12/29	4:00	1.3	75
20/12/29	5:00	1.3	71
20/12/29	6:00	1.3	58
20/12/29	7:00	1.8	87
20/12/29	8:00	1.8	96
20/12/29	9:00	1.8	91
20/12/29	10:00	1.3	109
20/12/29	11:00	1.3	133
20/12/29	12:00	1.3	104
20/12/29	13:00	1.8	212

20/12/29	14:00	1.8	246
20/12/29	15:00	1.3	215
20/12/29	16:00	0.9	311
20/12/29	17:00	0.9	216
20/12/29	18:00	0.4	222
20/12/29	19:00	0	225
20/12/29	20:00	0	236
20/12/29	21:00	0	227
20/12/29	22:00	0.4	218
20/12/29	23:00	2.2	288

Appendix I

Operational Phase Dolphin Monitoring Survey

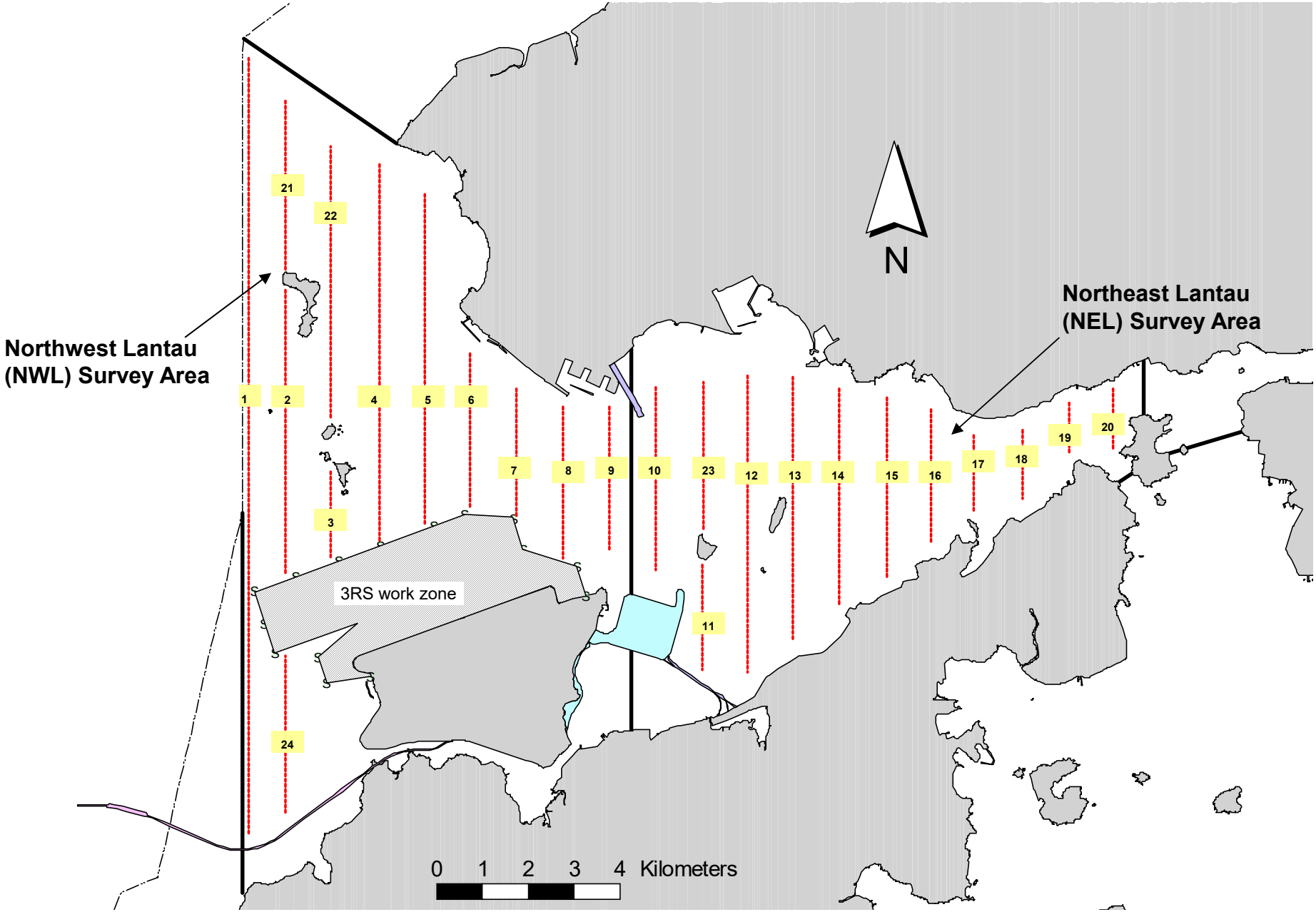


Figure 1. Transect Line Layout in Northwest and Northeast Lantau Survey Areas

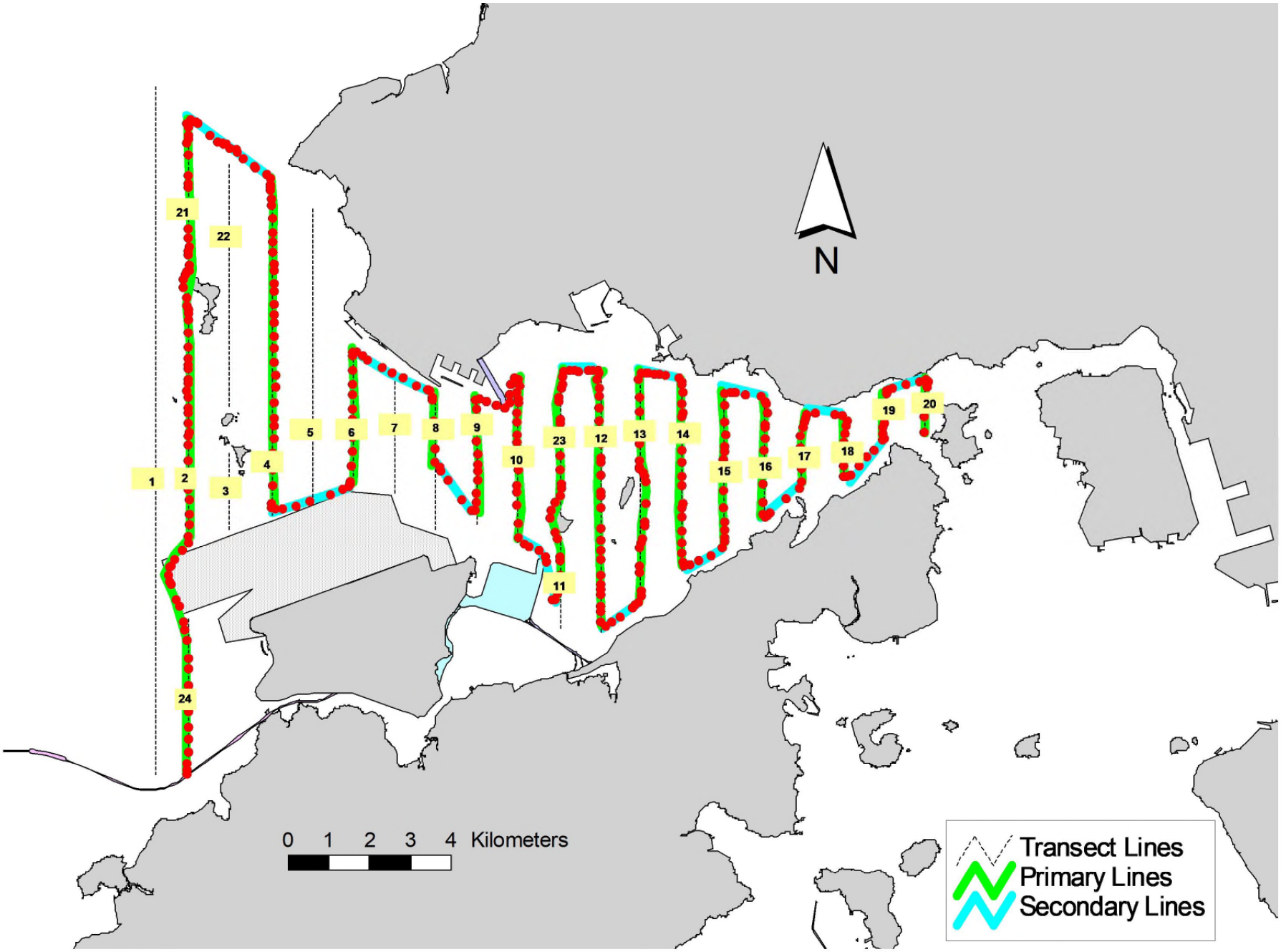


Figure 2. Survey Route on December 1st, 2020

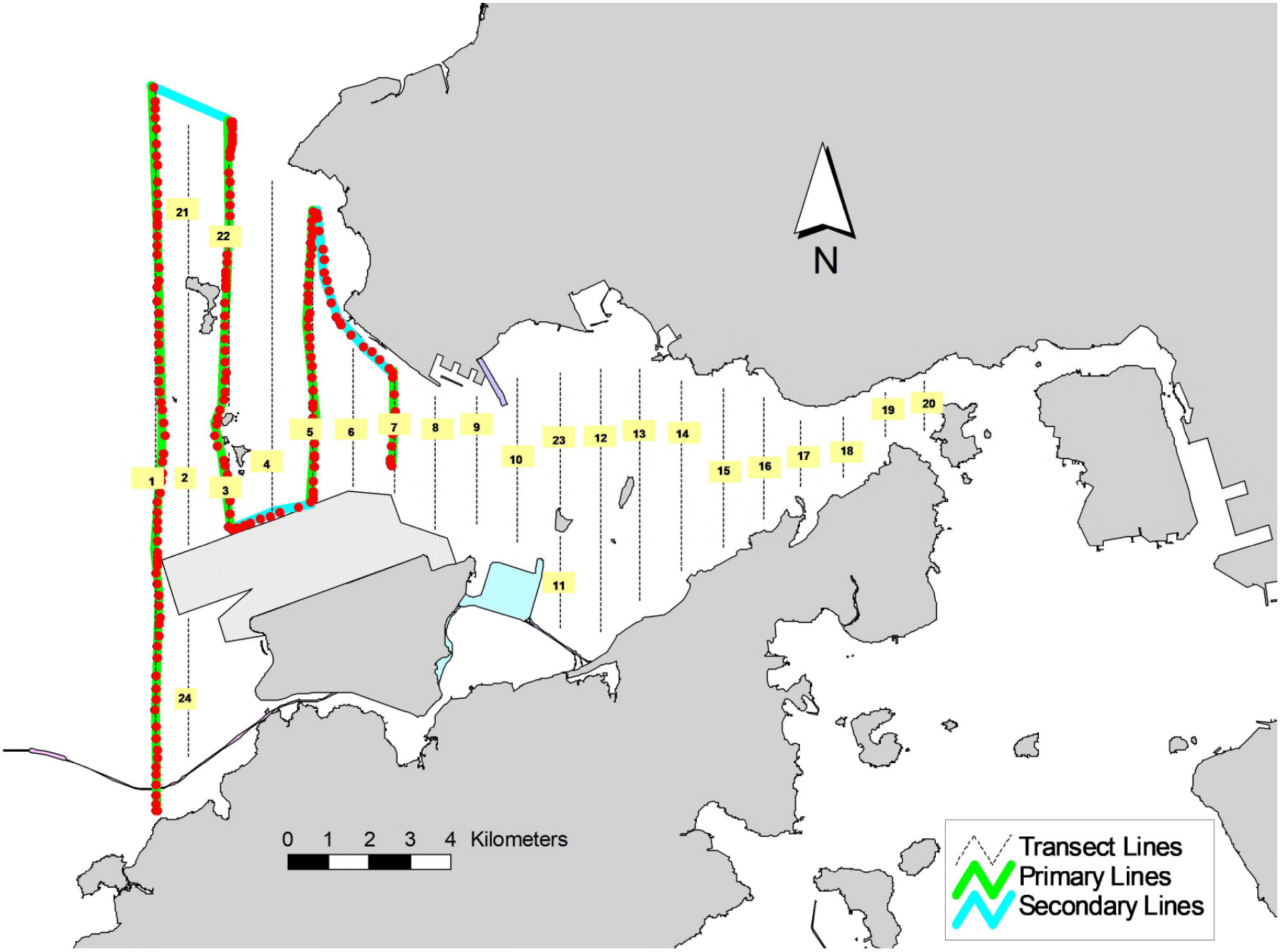


Figure 3. Survey Route on December 3rd, 2020

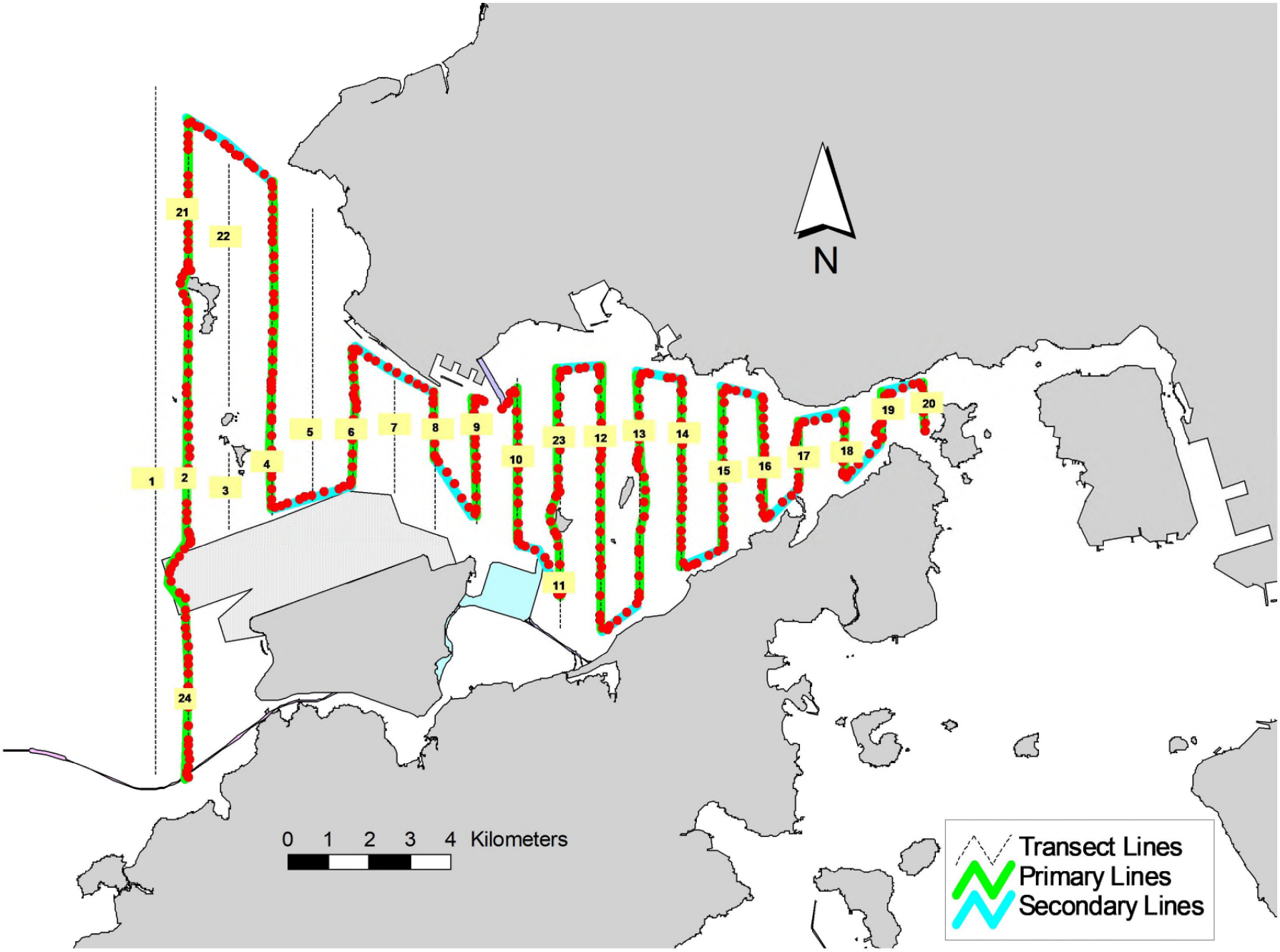


Figure 4. Survey Route on December 8th, 2020

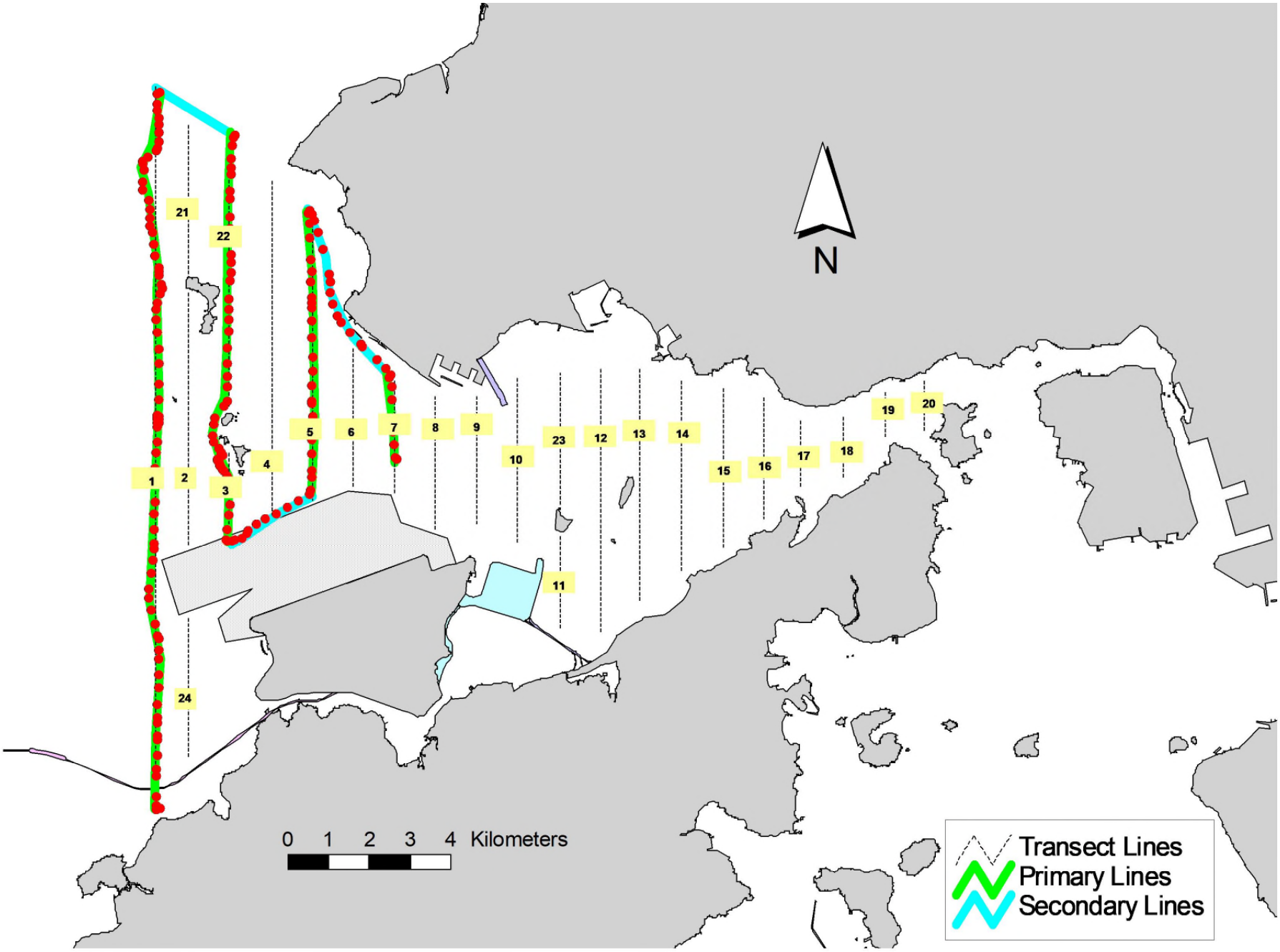


Figure 5. Survey Route on December 10th, 2020

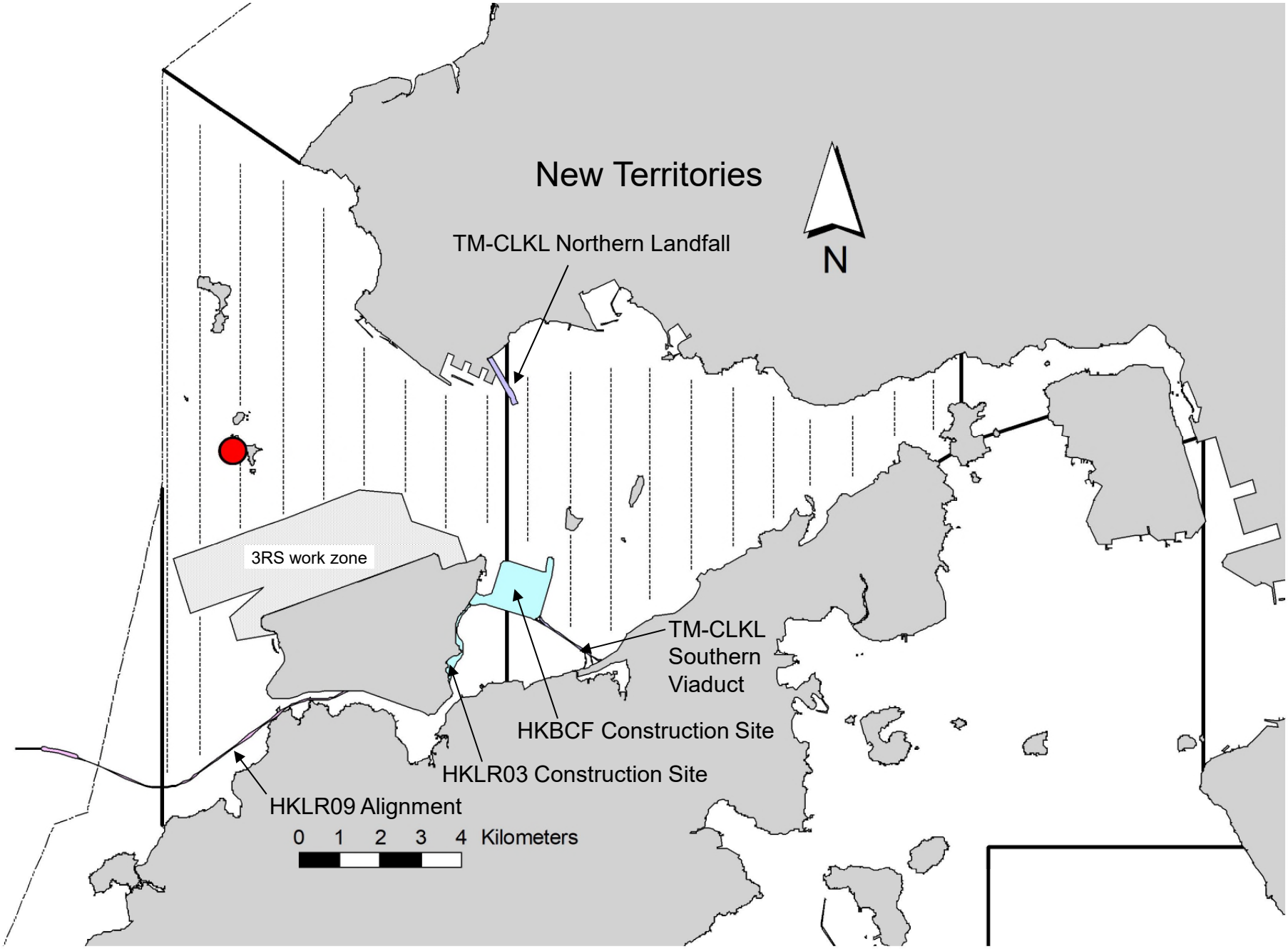


Figure 6. Distribution of Chinese White Dolphin Sightings during December 2020 Monitoring Surveys

Appendix I. TMCLKL Survey Effort Database (December 2020)

(Abbreviations: BEAU = Beaufort Sea State; P = Primary Line Effort; S = Secondary Line Effort)

DATE	AREA	BEAU	EFFORT	SEASON	VESSEL	TYPE	P/S
1-Dec-20	NW LANTAU	2	9.10	WINTER	STANDARD36826	TMCLKL	P
1-Dec-20	NW LANTAU	3	13.63	WINTER	STANDARD36826	TMCLKL	P
1-Dec-20	NW LANTAU	4	4.83	WINTER	STANDARD36826	TMCLKL	P
1-Dec-20	NW LANTAU	2	9.00	WINTER	STANDARD36826	TMCLKL	S
1-Dec-20	NW LANTAU	3	2.44	WINTER	STANDARD36826	TMCLKL	S
1-Dec-20	NE LANTAU	1	2.50	WINTER	STANDARD36826	TMCLKL	P
1-Dec-20	NE LANTAU	2	32.93	WINTER	STANDARD36826	TMCLKL	P
1-Dec-20	NE LANTAU	1	1.20	WINTER	STANDARD36826	TMCLKL	S
1-Dec-20	NE LANTAU	2	11.77	WINTER	STANDARD36826	TMCLKL	S
3-Dec-20	NW LANTAU	2	1.43	WINTER	STANDARD36826	TMCLKL	P
3-Dec-20	NW LANTAU	3	23.50	WINTER	STANDARD36826	TMCLKL	P
3-Dec-20	NW LANTAU	4	8.46	WINTER	STANDARD36826	TMCLKL	P
3-Dec-20	NW LANTAU	2	1.84	WINTER	STANDARD36826	TMCLKL	S
3-Dec-20	NW LANTAU	3	6.47	WINTER	STANDARD36826	TMCLKL	S
8-Dec-20	NW LANTAU	2	5.40	WINTER	STANDARD36826	TMCLKL	P
8-Dec-20	NW LANTAU	3	22.14	WINTER	STANDARD36826	TMCLKL	P
8-Dec-20	NW LANTAU	2	3.60	WINTER	STANDARD36826	TMCLKL	S
8-Dec-20	NW LANTAU	3	8.06	WINTER	STANDARD36826	TMCLKL	S
8-Dec-20	NE LANTAU	2	35.51	WINTER	STANDARD36826	TMCLKL	P
8-Dec-20	NE LANTAU	2	12.49	WINTER	STANDARD36826	TMCLKL	S
10-Dec-20	NW LANTAU	2	27.88	WINTER	STANDARD36826	TMCLKL	P
10-Dec-20	NW LANTAU	3	4.95	WINTER	STANDARD36826	TMCLKL	P
10-Dec-20	NW LANTAU	2	8.26	WINTER	STANDARD36826	TMCLKL	S

Appendix II. TMCLKL Chinese White Dolphin Sighting Database (December 2020)

(Abberviations: STG# = Sighting Number; HRD SZ = Dolphin Herd Size; BEAU = Beaufort Sea State; PSD = Perpendicular Distance; BOAT ASSOC. = Fishing Boat Association; P/S: Sighting Made on Primary/Secondary Lines)

DATE	STG #	TIME	HRD SZ	AREA	BEAU	PSD	EFFORT	TYPE	NORTHING	EASTING	SEASON	BOAT ASSOC.	P/S
10-Dec-20	1	1326	2	NW LANTAU	2	6	ON	TMCLKL	822941	806253	AUTUMN	NONE	S

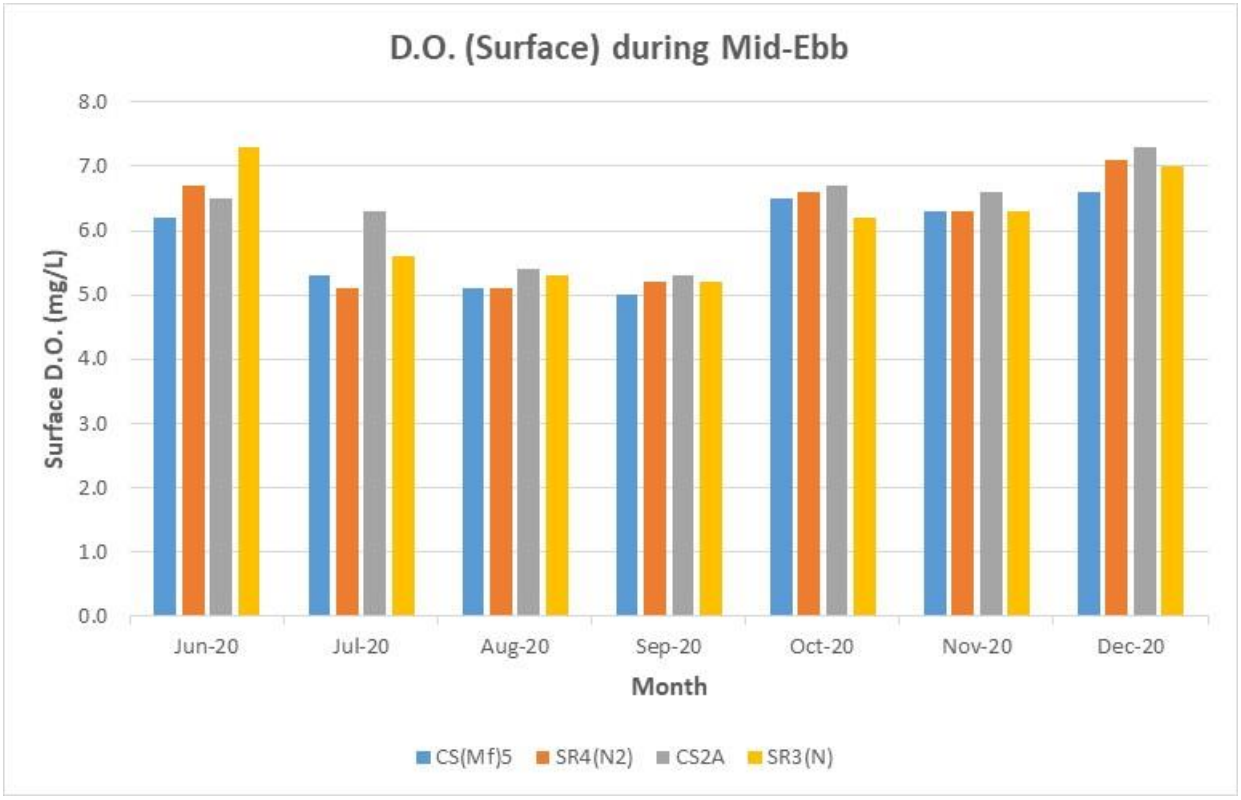
Appendix III. Individual dolphins identified during TMCLKL monitoring surveys in (December 2020)

ID#	DATE	STG#	AREA
NL261	10/12/20	1	NW LANTAU
SL67	10/12/20	1	NW LANTAU

Appendix IV. Photograph of Identified Individual Dolphin in December 2020 (TMCLKL)

Appendix J

Operational Phase Water Quality Monitoring Results



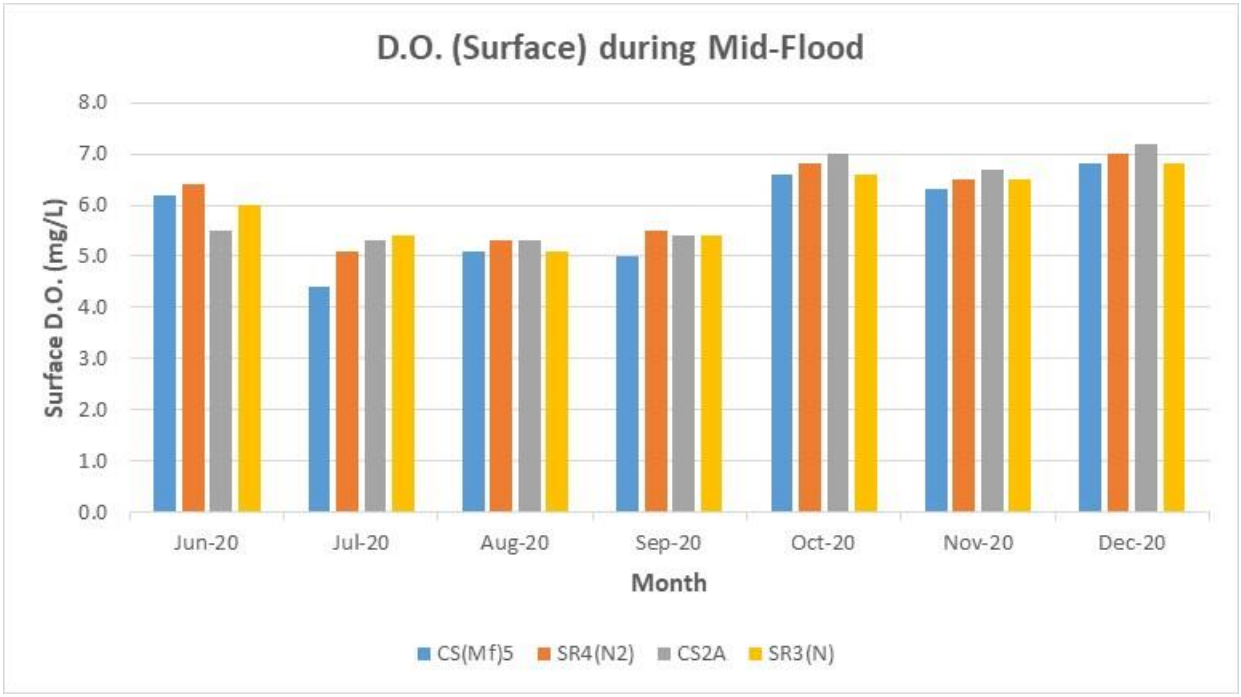
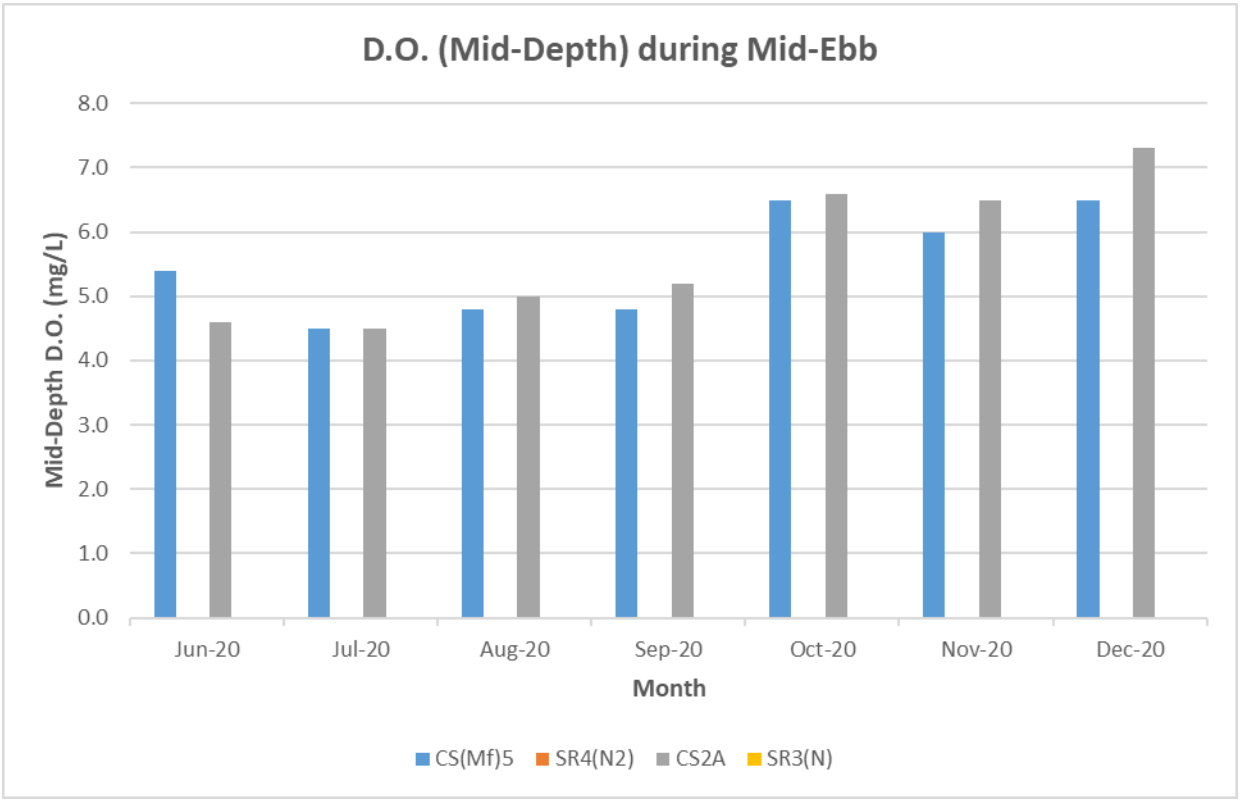


Figure J1 Operational Phase Monitoring – Mean Level of Dissolved Oxygen (mg/L) in surface waters between 1 June 2020 and 31 December 2020. The weather conditions during the monitoring period varied mostly from sunny to cloudy.

Ref: 0212330_Impact-WQM_December 2020 _graphs_Rev a.xls



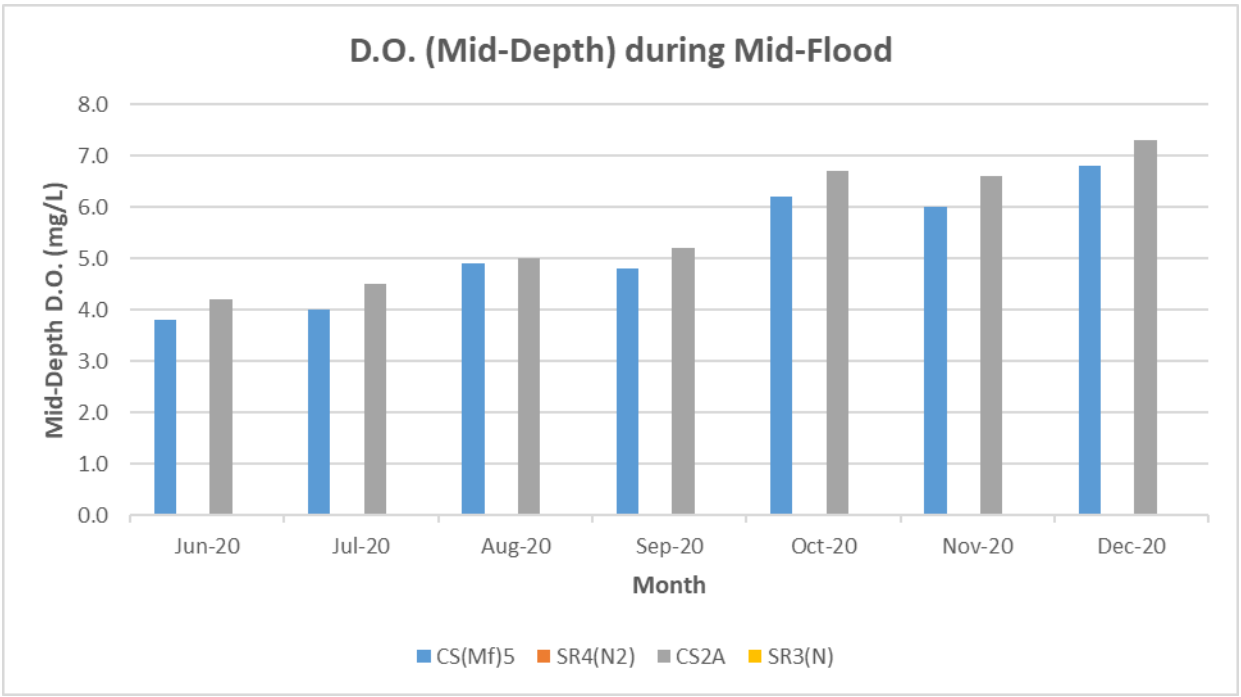
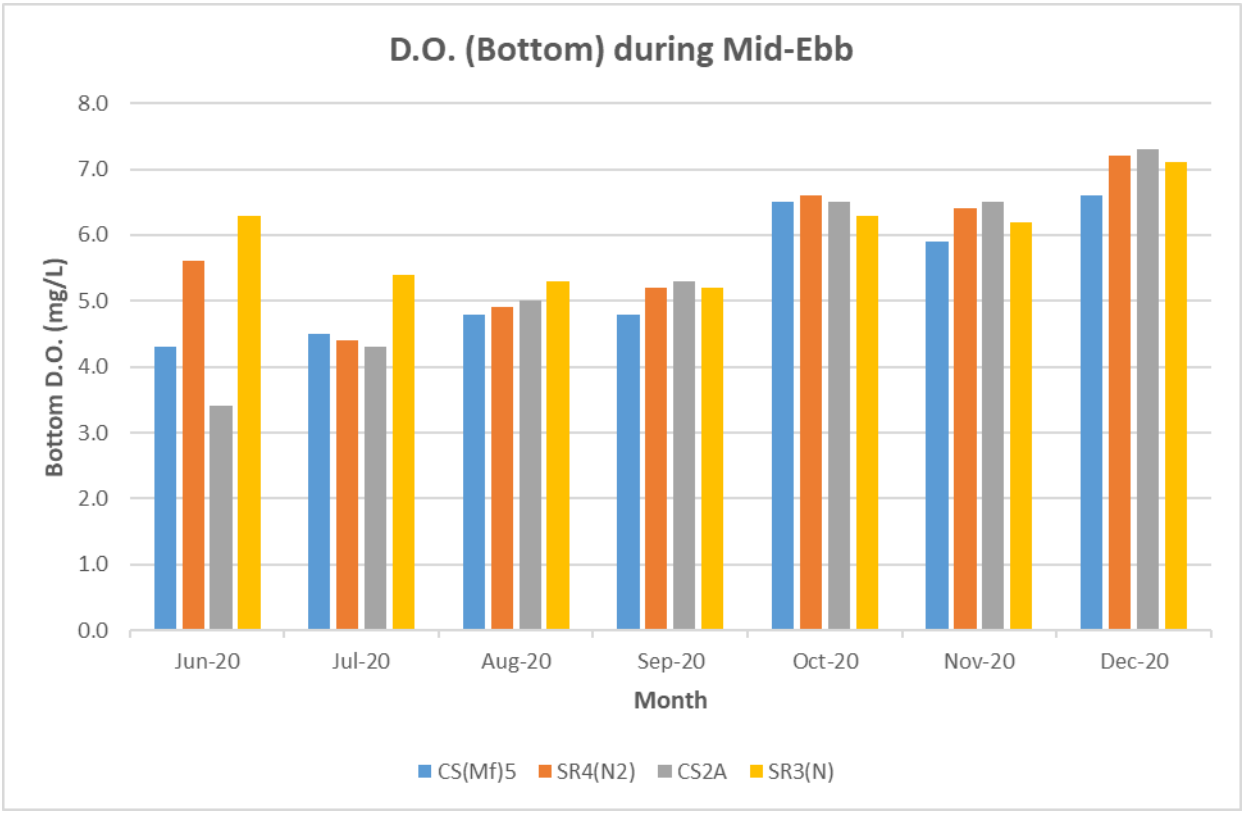


Figure J2 Operational Phase Monitoring – Mean Level of Dissolved Oxygen (mg/L) in mid-depth waters between 1 June 2020 and 31 December 2020. The weather conditions during the monitoring period varied mostly from sunny to cloudy.

Ref: 0212330_Impact-WQM_December 2020 _graphs_Rev a.xls



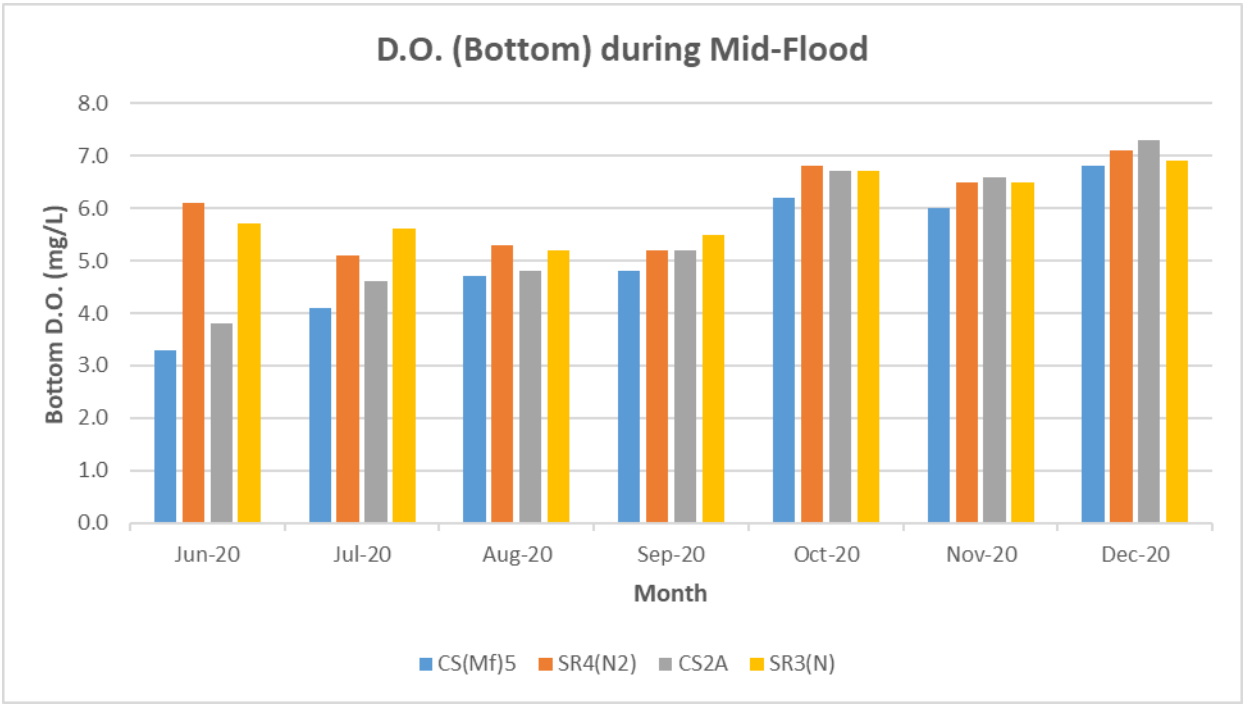
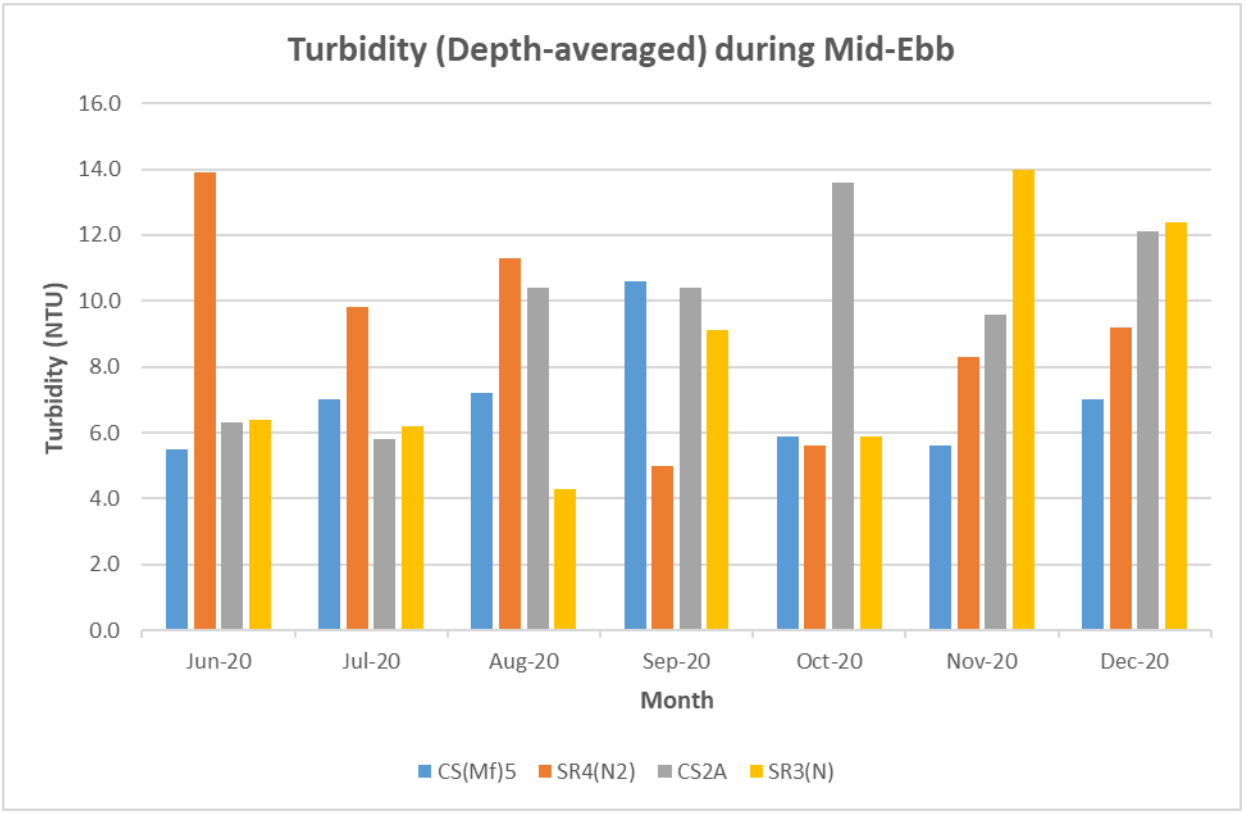


Figure J3 Operational Phase Monitoring – Mean Level of Dissolved Oxygen (mg/L) in bottom waters between 1 June 2020 and 31 December 2020. The weather conditions during the monitoring period varied mostly from sunny to cloudy.

Ref: 0212330_Impact-WQM_December 2020 _graphs_Rev a.xls



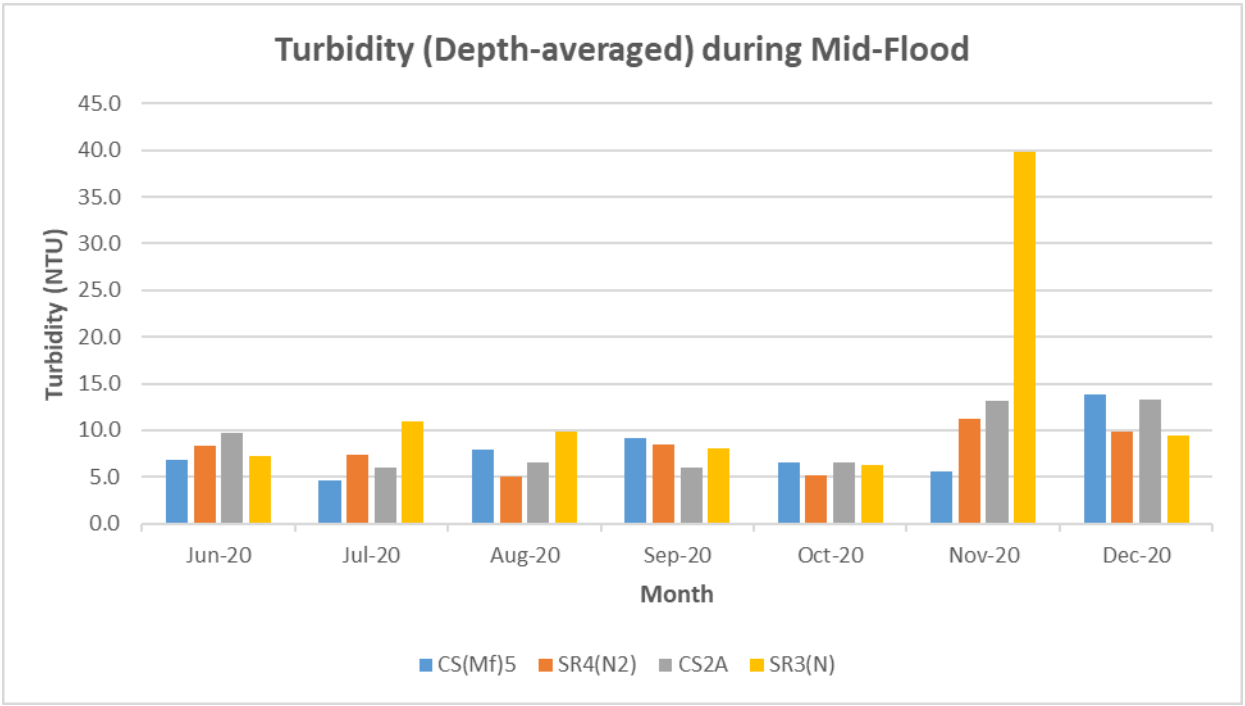
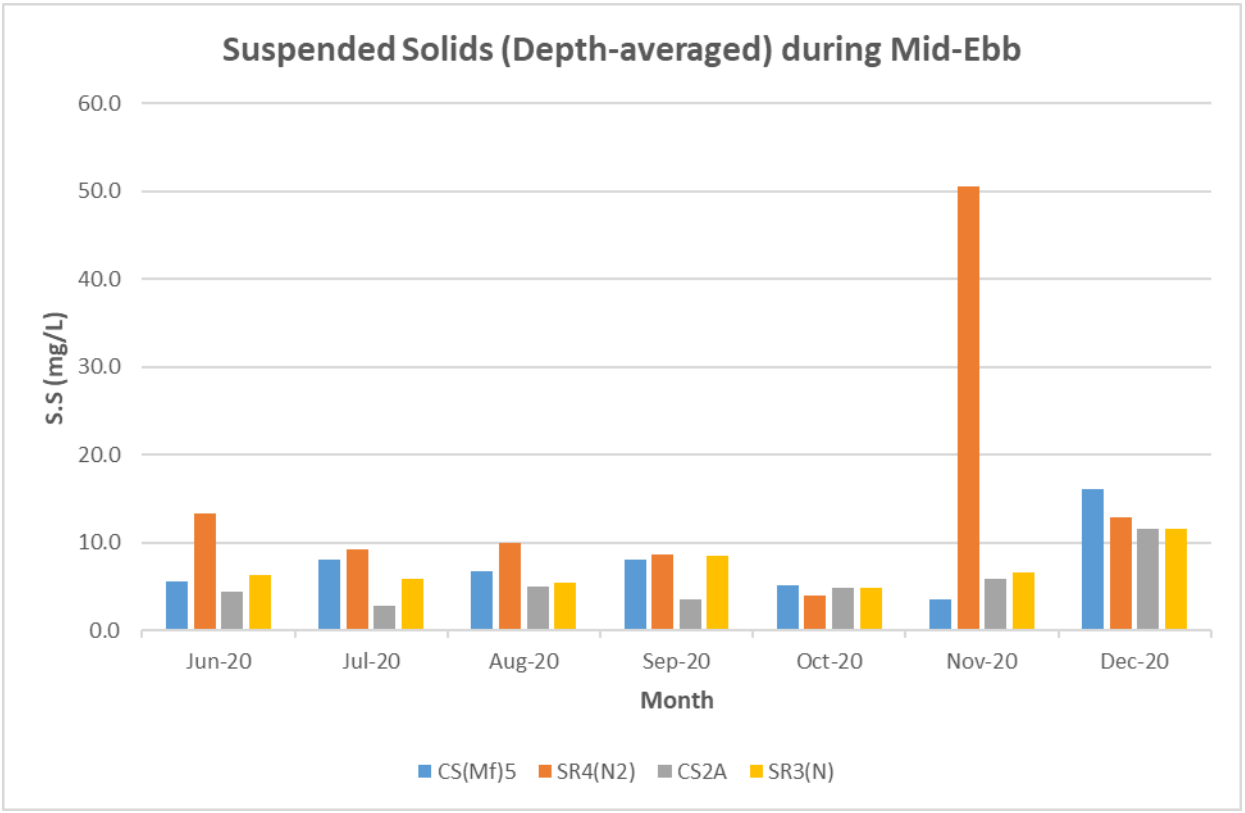


Figure J4 Operational Phase Monitoring – Mean Depth-averaged Level of Turbidity (NTU) between 1 June 2020 and 31 December 2020. The weather conditions during the monitoring period varied mostly from sunny to cloudy.

Ref: 0212330_Impact-WQM_December 2020 _graphs_Rev a.xls

ERM



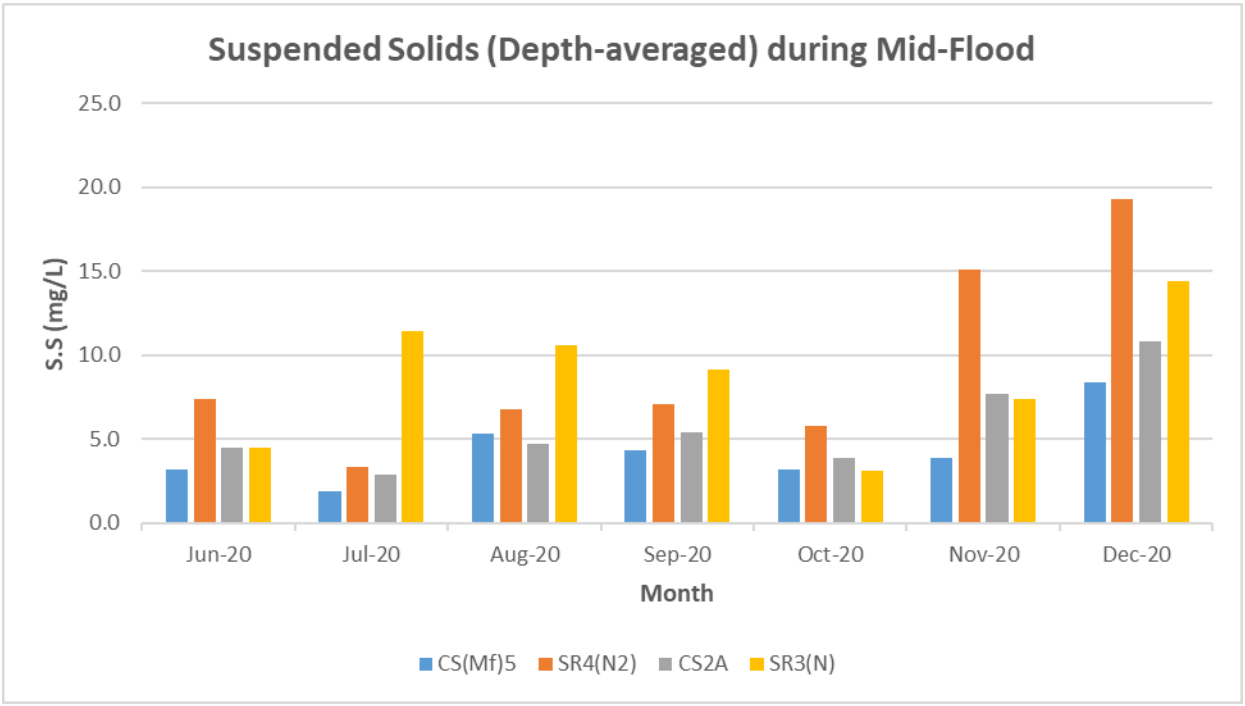


Figure J5 Operational Phase Monitoring – Mean Depth-averaged Level of Suspended Solids (mg/L) between 1 June 2020 and 31 December 2020. The weather conditions during the monitoring period varied mostly from sunny to cloudy.

Ref: 0212330_Impact-WQM_December 2020 _graphs_Rev a.xls

Date	Tide	Station	Weather Condition	Sea Condition	Sampling Time	Water Depth (m)	Water Level	Sampling depth (m)	Replicate	Water Temperature (°C)	pH	Salinity (ppt)	Dissolved Oxygen (DO) (mg/L)	DO Saturation (%)	Turbidity (NTU)	Suspended Solids (SS) (mg/L)	Depth-averaged		
																	DO (mg/L)	Turbidity (NTU)	SS (mg/L)
16-12-20	Mid-Ebb	CS(Mf)5	Cloudy	Moderate	15:02	12.8	Surface	1.0	1	20.2	8.0	30.7	6.6	86.6	6.2	13.2	6.6	7.0	16.0
									2	20.2	8.1	30.7	6.6	86.5	6.2	14.5			
							Middle	6.4	1	20.2	8.0	30.7	6.5	86.5	6.4	14.7			
									2	20.2	8.1	30.7	6.5	85.8	7.8	14.0			
							Bottom	11.8	1	20.2	8.0	30.8	6.6	87.3	7.6	20.1	6.6		
									2	20.2	8.1	30.7	6.5	86.2	7.6	19.3			
		SR4(N2)	Cloudy	Calm	13:28	4.5	Surface	1.0	1	19.2	8.1	30.2	7.1	92.0	8.9	12.1	7.1	9.2	12.9
									2	19.2	8.1	30.2	7.0	91.1	9.0	12.2			
							Bottom	3.5	1	19.2	8.1	30.2	7.2	93.1	9.4	13.7	7.2		
									2	19.1	8.1	30.3	7.1	91.1	9.3	13.5			
		CS2A	Cloudy	Rough	12:55	6.5	Surface	1.0	1	19.3	8.1	30.3	7.3	94.2	10.0	11.1	7.3	12.1	11.6
									2	19.3	8.1	30.3	7.3	94.2	10.5	11.3			
							Middle	3.3	1	19.3	8.1	30.3	7.3	94.1	12.1	11.4			
									2	19.3	8.1	30.3	7.3	94.1	12.1	12.0			
							Bottom	5.5	1	19.3	8.1	30.4	7.3	94.4	13.9	11.7	7.3		
									2	19.3	8.1	30.3	7.3	94.2	13.7	12.0			
		SR3(N)	Cloudy	Calm	14:16	4.7	Surface	1.0	1	19.5	8.1	30.4	7.0	90.9	12.2	9.9	7.0	12.4	11.5
									2	19.5	8.1	30.4	6.9	90.5	12.4	10.8			
							Bottom	3.7	1	19.5	8.1	30.3	7.1	92.1	12.5	12.7	7.1		
									2	19.5	8.1	30.4	7.0	90.6	12.5	12.5			
16-12-20	Mid-Flood	CS(Mf)5	Cloudy	Moderate	8:23	12.9	Surface	1.0	1	19.9	8.1	30.6	6.8	88.9	11.5	6.6	6.8	13.9	8.4
									2	19.9	8.0	30.6	6.7	88.6	11.9	6.9			
							Middle	6.5	1	19.9	8.0	30.6	6.8	89.0	13.8	8.5			
									2	19.9	8.1	30.6	6.7	88.6	13.7	9.4			
							Bottom	11.9	1	19.9	8.0	30.6	6.8	89.2	16.3	9.0	6.8		
									2	19.9	8.1	30.6	6.8	88.8	16.2	10.0			
		SR4(N2)	Cloudy	Calm	9:53	4.8	Surface	1.0	1	19.2	8.1	30.3	7.0	91.0	9.5	19.2	7.0	9.8	19.3
									2	19.2	8.1	30.3	7.0	90.8	9.5	20.6			
							Bottom	3.8	1	19.2	8.0	30.3	7.1	91.4	10.1	18.4	7.1		
									2	19.2	8.1	30.3	7.0	90.5	10.0	18.8			
		CS2A	Cloudy	Moderate	10:28	6.3	Surface	1.0	1	19.3	8.1	30.4	7.2	93.8	11.5	11.0	7.2	13.3	10.8
									2	19.3	8.1	30.4	7.2	93.5	11.8	11.0			
							Middle	3.2	1	19.2	8.0	30.4	7.3	94.2	13.3	10.9			
									2	19.3	8.1	30.4	7.2	93.5	13.4	10.6			
							Bottom	5.3	1	19.2	8.0	30.4	7.4	95.8	14.9	10.7	7.3		
									2	19.3	8.1	30.4	7.2	93.6	14.7	10.4			
		SR3(N)	Cloudy	Calm	9:18	4.5	Surface	1.0	1	19.5	8.0	30.5	6.8	89.2	9.3	12.9	6.8	9.4	14.4
									2	19.5	8.1	30.4	6.8	88.4	8.9	13.5			
							Bottom	3.5	1	19.5	8.1	30.4	7.0	91.0	9.5	15.3	6.9		
									2	19.5	8.1	30.5	6.8	88.7	9.7	16.0			

Appendix K

Event and Action Plan

Event and Action Plan for Impact Air Monitoring

	Action			
	ET [(a)]	**IEC [(a)]**	**SOR [(a)]**	**Contractor(s)**
Action Level Exceedance				
	1. Identify the source. 2. Repeat measurement to confirm finding. If two consecutive measurements exceed Action Level, the exceedance is then confirmed. 3. Inform the IEC and the SOR. 4. Investigate the cause of exceedance and check Contractor's working procedures to determine possible mitigation to be implemented. 5. If the exceedance is confirmed to be Project related after investigation, increase monitoring frequency to daily. 6. Discuss with the IEC and the Contractor on remedial actions required. 7. If exceedance continues, arrange meeting with the IEC and the SOR. 8. If exceedance stops, cease additional monitoring.	1. Check monitoring data submitted by the ET. 2. Check the Contractor's working method. 3. If the exceedance is confirmed to be Project related after investigation, discuss with the ET and the Contractor on possible remedial measures. 4. Advise the SOR on the effectiveness of the proposed remedial measures. 5. Supervise implementation of remedial measures.	1. Confirm receipt of notification of failure in writing. 2. Notify the Contractor. 3. Ensure remedial measures properly implemented.	1. Rectify any unacceptable practice 2. Amend working methods if appropriate 3. If the exceedance is confirmed to be Project related, submit proposals for remedial actions to IEC within 3 working days of notification 4. Implement the agreed proposals 5. Amend proposal if appropriate

	Action			
	ET [(a)]	**IEC [(a)]**	**SOR [(a)]**	**Contractor(s)**
Limit Level Exceedance				
	1. Identify the source. 2. Repeat measurement to confirm finding. If two consecutive measurements exceed Limit Level, the exceedance is then confirmed. 3. Inform the IEC, the SOR, the DEP and the Contractor. 4. Investigate the cause of exceedance and check Contractor's working procedures to determine possible mitigation to be implemented. 5. If the exceedance is confirmed to be Project related after investigation, increase monitoring frequency to daily. 6. Carry out analysis of the Contractor's working procedures to determine possible mitigation to be implemented. 7. Arrange meeting with the IEC and the SOR to discuss the remedial actions to be taken. 8. Assess effectiveness of the Contractor's remedial actions and keep the IEC, the DEP and the SOR informed of the results. 9. If exceedance stops, cease additional monitoring.	1. Check monitoring data submitted by the ET. 2. Check Contractor's working method. 3. If the exceedance is confirmed to be Project related after investigation, discuss with the ET and the Contractor on possible remedial measures. 4. Advise the SOR on the effectiveness of the proposed remedial measures. 5. Supervise implementation of remedial measures.	1. Confirm receipt of notification of failure in writing. 2. Notify the Contractor. 3. If the exceedance is confirmed to be Project related after investigation, in consultation with the IEC, agree with the Contractor on the remedial measures to be implemented. 4. Ensure remedial measures are properly implemented. 5. If exceedance continues, consider what activity of the work is responsible and instruct the Contractor to stop that activity of work until the exceedance is abated.	1. Take immediate action to avoid further exceedance. 2. If the exceedance is confirmed to be Project related after investigation, submit proposals for remedial actions to IEC within 3 working days of notification. 3. Implement the agreed proposals. 4. Amend proposal if appropriate. 5. Stop the relevant activity of works as determined by the SOR until the exceedance is abated.

Note: (a) ET – Environmental Team; IEC – Independent Environmental Checker; SOR – Supervising Officer's Representative

Appendix L

Cumulative Statistics on Exceedances, Complaints, Notifications of Summons and Successful Prosecutions

Table L1 Cumulative Statistics on Exceedances

Parameters	Level of Exceedance	Total No. recorded in this reporting month	Total No. recorded since Contract commencement
1-hr TSP	Action	1	120
	Limit	0	15
24-hr TSP	Action	0	12
	Limit	0	4
Water Quality	Action	0	167
	Limit	0	19
Impact Dolphin Monitoring	Action	0	11
	Limit	0	19

Table L2 Cumulative Statistics on Complaints, Notifications of Summons and Successful Prosecutions

Reporting Period	Cumulative Statistics		
	Complaints	Notifications of Summons	Successful Prosecutions
This Reporting Month (December 2020)	0	0	0
Total No. received since Contract commencement	17	1	0

Email message

Environmental Resources Management

2507, 25/F One Harbourfront
18 Tak Fung Street
Hunghom, Kowloon
Hong Kong
Telephone: (852) 2271 3000
Facsimile: (852) 2723 5660

To	Ramboll Hong Kong, Limited (ENPO)
From	ERM- Hong Kong, Limited
Ref/Project number	Contract No. HY/2012/08 Tuen Mun–Chek Lap Kok Link–Northern Connection Sub-sea Tunnel Section
Subject	Notification of Exceedance for Air Quality Impact Monitoring
Date	22 December 2020

Dear Sir or Madam,

Please find attached the Notification of Exceedance (NOE) of the following Log no.:

Action Level Exceedances:
0212330_10December2020_1hrTSP_Station ASR5

Three Action Level Exceedances were recorded on 10 December 2020.

Regards,

Dr Jasmine Ng
Environmental Team Leader

ERM-Hong Kong, Limited

CONTRACT NO. HY/2012/08
TUEN MUN – CHEK LAP KOK LINK – NORTHERN CONNECTION SUB-SEA TUNNEL SECTION

Air Quality Impact Monitoring
Notification of Exceedance

Log No.	**<u>Action Level Exceedance</u> 0212330_10December2020_1hrTSP_Station ASR5 [Total No. of Exceedances = 1]**	
Date	10 December 2020 (Measured) 22 December 2020 (Laboratory results received by ERM)	
Monitoring Station	ASR5	
Parameter(s) with Exceedance(s)	1-hr TSP	
Action Levels	24-hr TSP (µg/m³)	ASR1 = 213 ASR5 = 238 AQMS1 = 213 ASR6 = 238 ASR10 = 214
	1-hr TSP (µg/m³)	ASR1 = 331 ASR5 = 340 AQMS1 = 335 ASR6 = 338 ASR10 = 337
Limit Levels	1-hr TSP (µg/m³)	500
	24-hr TSP (µg/m³)	260
Measured Levels	Action Level Exceedance for 1-hr TSP is observed at ASR5 (348 µg/m³) between sampling period 9:32 and 10:32 on 10 December 2020.	
Works Undertaken (at the time of monitoring event)	On 10 December 2020, demolition of CLP substation was conducted.	
Possible Reason for Action or Limit Level Exceedance(s)	The exceedance is unlikely to be due to this Contract, in view of the following: • With reference to the recorded wind direction (vary between 13° and 24°) and wind speed (1.3 m/s), the wind was mainly from north-easterly direction. Haze was observed during the sampling time. • Dust suppression measures were implemented properly on site. Water spraying was applied during rock/cement breaking to prevent dust (refer to *Annex A*). Based on the above, the exceedance is unlikely to be due to this Contract.	
Actions Taken / To Be Taken	The Contractor has been reminded to implement the required mitigation measures as per the EP, approved EIA and Updated EM&A Manual including watering to maintain all exposed road surfaces and dust sources wet, use of sprinklers for water spraying, covering the materials having the potential to create dust by clean tarpaulin, use of water truck and watering on all exposed soil within the Contract site throughout the construction period.	
Remarks	The monitoring results, wind data and the locations of air quality monitoring stations are attached (*Annex B*).	

Annex A

Watering Photo

Photo 1 - Water spraying was applied during rock/cement breaking to prevent dust

Annex B

Results of Air Quality Monitoring, Wind Data & Locations of Air Quality Monitoring Stations

Air quality monitoring results on 10/12/2020								
Project	Contract	Date	Station	Weather	Start time	Parameters	Results	Unit
TMCLKL	HY/2012/08	2020-12-10	ASR10	Hazy	8:08:00	1-hour TSP	126	ug/m3
TMCLKL	HY/2012/08	2020-12-10	ASR10	Hazy	9:10:00	1-hour TSP	84	ug/m3
TMCLKL	HY/2012/08	2020-12-10	ASR10	Hazy	10:12:00	1-hour TSP	128	ug/m3
TMCLKL	HY/2012/08	2020-12-10	ASR6	Hazy	8:18:00	1-hour TSP	185	ug/m3
TMCLKL	HY/2012/08	2020-12-10	ASR6	Hazy	9:20:00	1-hour TSP	217	ug/m3
TMCLKL	HY/2012/08	2020-12-10	ASR6	Hazy	10:22:00	1-hour TSP	131	ug/m3
TMCLKL	HY/2012/08	2020-12-10	ASR5	Hazy	8:30:00	1-hour TSP	255	ug/m3
TMCLKL	HY/2012/08	2020-12-10	ASR5	Hazy	9:32:00	1-hour TSP	348	ug/m3
TMCLKL	HY/2012/08	2020-12-10	ASR5	Hazy	10:34:00	1-hour TSP	191	ug/m3
TMCLKL	HY/2012/08	2020-12-10	ASR1	Hazy	8:42:00	1-hour TSP	140	ug/m3
TMCLKL	HY/2012/08	2020-12-10	ASR1	Hazy	9:44:00	1-hour TSP	162	ug/m3
TMCLKL	HY/2012/08	2020-12-10	ASR1	Hazy	10:46:00	1-hour TSP	99	ug/m3
TMCLKL	HY/2012/08	2020-12-10	AQMS1	Hazy	8:53:00	1-hour TSP	110	ug/m3
TMCLKL	HY/2012/08	2020-12-10	AQMS1	Hazy	9:55:00	1-hour TSP	114	ug/m3
TMCLKL	HY/2012/08	2020-12-10	AQMS1	Hazy	10:57:00	1-hour TSP	105	ug/m3
TMCLKL	HY/2012/08	2020-12-10	AQMS1	Hazy	11:59:00	24-hour TSP	87	ug/m3
TMCLKL	HY/2012/08	2020-12-10	ASR1	Hazy	11:48:00	24-hour TSP	114	ug/m3
TMCLKL	HY/2012/08	2020-12-10	ASR10	Hazy	11:14:00	24-hour TSP	72	ug/m3
TMCLKL	HY/2012/08	2020-12-10	ASR5	Hazy	11:36:00	24-hour TSP	166	ug/m3
TMCLKL	HY/2012/08	2020-12-10	ASR6	Hazy	11:24:00	24-hour TSP	110	ug/m3

Action level exceedance
Limit level exceedance

Meteorological Data for Impact Monitoring in the reporting period			
Date (yy-mm-dd)	**Time (24hrs)**	**Average of Wind Speed (m/s)**	**Average of Wind Direction(degree)**
20/12/10	0:00	0.4	102
20/12/10	1:00	0.4	29
20/12/10	2:00	0.4	20
20/12/10	3:00	0.4	30
20/12/10	4:00	0	97
20/12/10	5:00	0.9	351
20/12/10	6:00	0.4	335
20/12/10	7:00	0.4	49
20/12/10	8:00	1.3	12
20/12/10	9:00	1.3	24
20/12/10	10:00	1.3	13
20/12/10	11:00	1.3	19
20/12/10	12:00	1.3	21
20/12/10	13:00	0.9	202
20/12/10	14:00	1.3	192
20/12/10	15:00	1.3	261
20/12/10	16:00	0.9	279
20/12/10	17:00	0.4	96
20/12/10	18:00	0.4	96
20/12/10	19:00	0	85
20/12/10	20:00	0.4	78
20/12/10	21:00	0.9	38
20/12/10	22:00	1.3	101
20/12/10	23:00	1.8	82
20/12/11	0:00	1.8	91
20/12/11	1:00	0.4	87
20/12/11	2:00	0.9	38
20/12/11	3:00	0.9	13
20/12/11	4:00	0.4	16
20/12/11	5:00	0	102
20/12/11	6:00	0	114
20/12/11	7:00	0	103
20/12/11	8:00	0.4	135
20/12/11	9:00	1.3	141
20/12/11	10:00	0.4	130
20/12/11	11:00	0.9	141
20/12/11	12:00	1.3	206
20/12/11	13:00	0.9	203
20/12/11	14:00	1.8	201
20/12/11	15:00	1.3	207
20/12/11	16:00	0.4	276
20/12/11	17:00	0.9	269
20/12/11	18:00	0.4	267
20/12/11	19:00	0.4	274
20/12/11	20:00	0	58
20/12/11	21:00	0	158
20/12/11	22:00	0.4	290
20/12/11	23:00	0.4	306

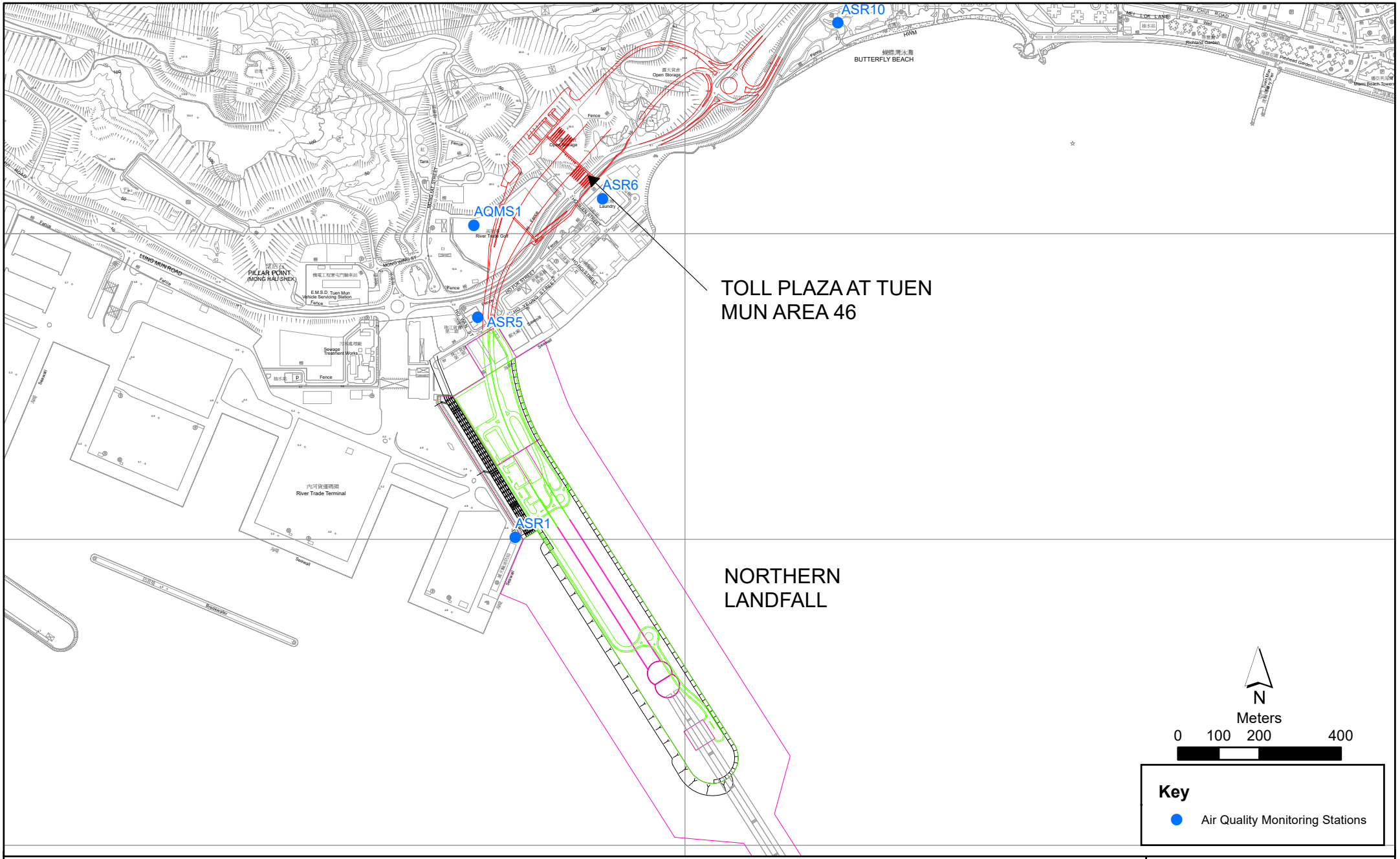


Figure 2.1b

Air Quality Monitoring Stations for the Enhanced TSP Monitoring

File: T:\GIS\CONTRACT\0212330\Mxd\0212330_ASR_for_Enhanced_TSP_monitoring.mxd
Date: 21/2/2014

Environmental Resources Management

ERM

Appendix M

Waste Flow Table

Monthly Summary Waste Flow Table

Name of Department: HyD **Contract No. / Works Order No.: HY/2012/08**

Monthly Summary Waste Flow Table for December 2020 [to be submitted not later than the 15th day of each month following reporting month] (All quantities shall be rounded off to 3 decimal places.)

Month	Monthly Break-down of Inert Construction & Demolition Materials (i.e. Public Fill Materials)				
	(a)=(b)+(c)+(d)+(e) Total Quantity Generated	(b) Hard Rock and Large Broken Concrete	(c) Reused in the Contract	(d) Reused in other Projects	(e) Disposed of as Public Fill
	(in '000 ton)	(in '000 ton)	(in '000 ton)	(in '000 ton)	(in '000 ton)
Sub-total	3008.812	0.000	336.902	889.467	1782.443
Jan-2020	174.69	0.000	0.000	0.000	174.69
Feb-2020	1.455	0.000	0.000	0.000	1.455
Mar-2020	3.252	0.000	0.000	0.000	3.252
Apr-2020	4.200	0.000	0.000	0.000	4.200
May-2020	7.015	0.000	0.000	0.000	7.015
Jun-2020	2.670	0.000	0.000	0.000	2.693
Half Year Sub-total	193.282	0.000	0.000	0.000	193.305
Jul-2020	1.440	0.000	0.000	0.000	1.440
Aug-2020	1.159	0.000	0.000	0.000	1.159
Sep-2020	0.074	0.000	0.000	0.000	0.074
Oct-2020	0.253	0.000	0.000	0.000	0.253
Nov-2020	0.251	0.000	0.000	0.000	0.251
Dec-2020	0.554	0.000	0.000	0.000	0.554
Project Total Quantities	3205.825	0.000	336.902	889.467	1979.479

Month	**Actual Quantities of <u>Non-inert</u> Construction Waste Generated Monthly**								
	Metals		Paper/ cardboard packaging		Plastics (see Note 3)		Chemical Waste		Others, e.g. General Refuse disposed at Landfill
	(in '000kg)		(in '000kg)		(in '000kg)		(in '000kg)		(in '000ton)
	generated	recycled	generated	recycled	generated	recycled	generated	Disposed	generated
Sub-total	9890.77	9890.77	14.64	14.64	16.84	16.84	85.807	85.807	21.943
Jan-2020	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.54
Feb-2020	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.349
Mar-2020	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.226
Apr-2020	22.14	22.14	1.30	1.30	0.00	0.00	6.40	6.40	0.521
May-2020	6.2	6.2	0.54	0.54	0.00	0.00	0.60	0.60	0.536
Jun-2020	0.00	0.00	0.74	0.74	0.00	0.00	1.00	1.00	0.303
Half Year Sub-total	28.34	28.34	2.58	2.58	0.00	0.00	8.00	8.00	5.475
Jul-2020	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.140
Aug-2020	0.00	0.00	1.06	1.06	0.00	0.00	0.00	0.00	0.110
Sep-2020	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.100
Oct-2020	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.145
Nov-2020	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.167
Dec-2020	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.173
Project Total Quantities	9919.11	9919.11	18.28	18.28	16.84	16.84	93.807	93.807	28.243

Forecast of Total Quantities of Construction and Demolition Materials to be Generated from the Contract*				
Total Quantity Generated	Hard Rock and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed of as Public Fill
(in '000 ton)	(in '000 ton)	(in '000 ton)	(in '000 ton)	(in '000 ton)
3200.000	0.000	350.000	1000.000	2000.000

Forecast of Total Quantities of Construction and Demolition Materials to be Generated from the Contract*				
Metals	Paper/ cardboard packaging	Plastics (see Note 3)	Chemical Waste	General Refuse disposed of at Landfill
(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000 ton)
10000.00	20.00	18.00	120.00	30.000

Notes:
(1) The performance targets are given in the **ER Appendix 8J Clause 14** and the EM & A Manual(s).
(2) The waste flow table shall also include C&D materials to be imported for use at the Site.
(3) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material.
(4) The Contractor shall also submit the latest forecast of the total amount of C&D materials expected to be generated from the Works, together with a breakdown of the nature where the amount of C&D materials expected to be generated from the Works is equal to or exceeding 50,000 m^3. (**ER Part 8 Clause 8.8.5 (d) (ii)** refers).