

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

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

11 March 2021

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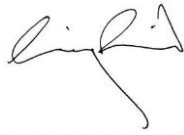
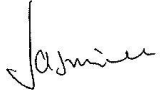



Contract No. HY/2012/08 Tuen Mun – Chek Lap Kok Link – Northern Connection Sub-sea Tunnel Section

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

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Summary: This document presents the Eighty-Eighth Monthly EM&A Report for Tuen Mun – Chek Lap Kok Link Northern Connection Sub-sea Tunnel Section.		Date: 11 March 2021			
		Approved by: 			
		<i>Mr Craig Reid Partner</i>			
		Certified by: 			
		<i>Dr Jasmine Ng ET Leader</i>			
	88 th Monthly EM&A Report	VAR	JN	CAR	11/03/21
Revision	Description	By	Checked	Approved	Date
This report has been prepared by Environmental Resources Management the trading name of 'ERM Hong-Kong, Limited', with all reasonable skill, care and diligence within the terms of the Contract with the client, incorporating our General Terms and Conditions of Business and taking account of the resources devoted to it by agreement with the client. We disclaim any responsibility to the client and others in respect of any matters outside the scope of the above.		Distribution			
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11 March 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
88th Monthly EM&A Report for February 2021 (EP-354/2009/D)**

Reference is made to the Monthly EM&A Report for February 2021 (ET's ref.: "0212330_88th Monthly EM&A_20210311.doc") certified by the ET Leader and provided to us via e-mail on 11 March 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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EXECUTIVE SUMMARY

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-eighth Monthly EM&A report presenting the EM&A works carried out during the period from 1 to 28 February 2021 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, there was no major activities undertaken in the reporting period.

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

24-hour TSP Monitoring	6 sessions
1-hour TSP Monitoring	6 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

Two (2) Action Level exceedances of 1-hour TSP were recorded in the air quality monitoring during this reporting month. No Action and Limit Level exceedance 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

As informed by the Contractor, there was no major activities undertaken in the next monitoring period of March 2021.

Future Key Issue

Potential environmental impacts in the next reporting month of March 2021 are mainly associated with waste management issues.

1.1

BACKGROUND

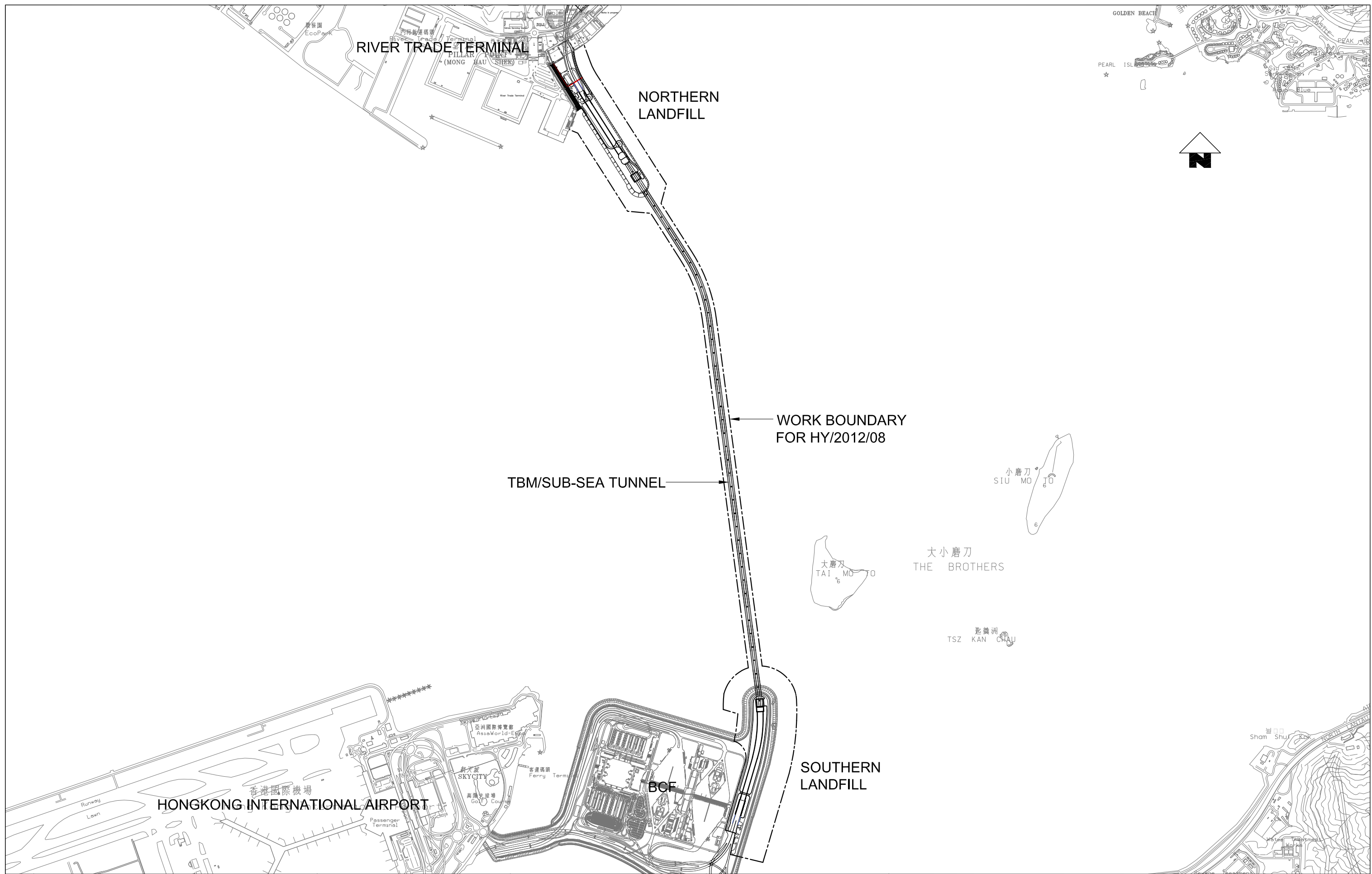
According to the findings of the Northwest New Territories (NWNT) Traffic and Infrastructure Review conducted by the Transport Department, Tuen Mun Road, Ting Kau Bridge, Lantau Link and North Lantau Highway would be operating beyond capacity after 2016. This forecast has been based on the estimated 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 2021. 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.



Designed By	PKV	Date	11SEP2013
Drawn By	DAI	Checked	PKV
Approved By	SPo	Date	11SEP2013
Rev.	Description	Date	Checked
A	FIRST ISSUE	11SEP13	PKV

Main Contractor

Dragages - Bouygues Joint Venture 寶嘉 - 布依格聯營

Client

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-eighth 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 February 2021.

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

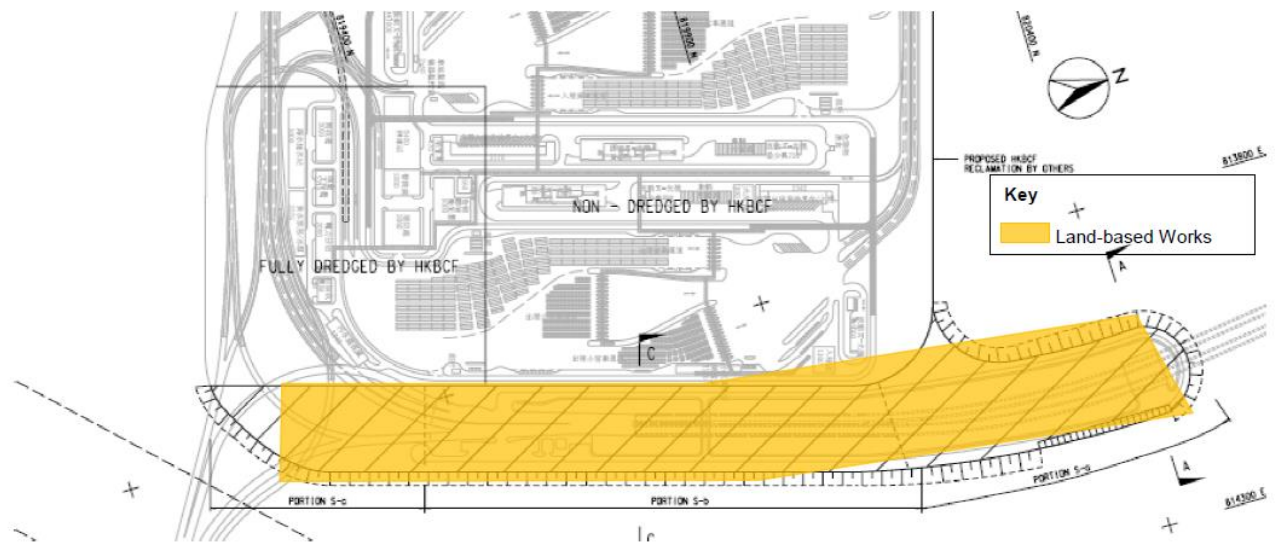
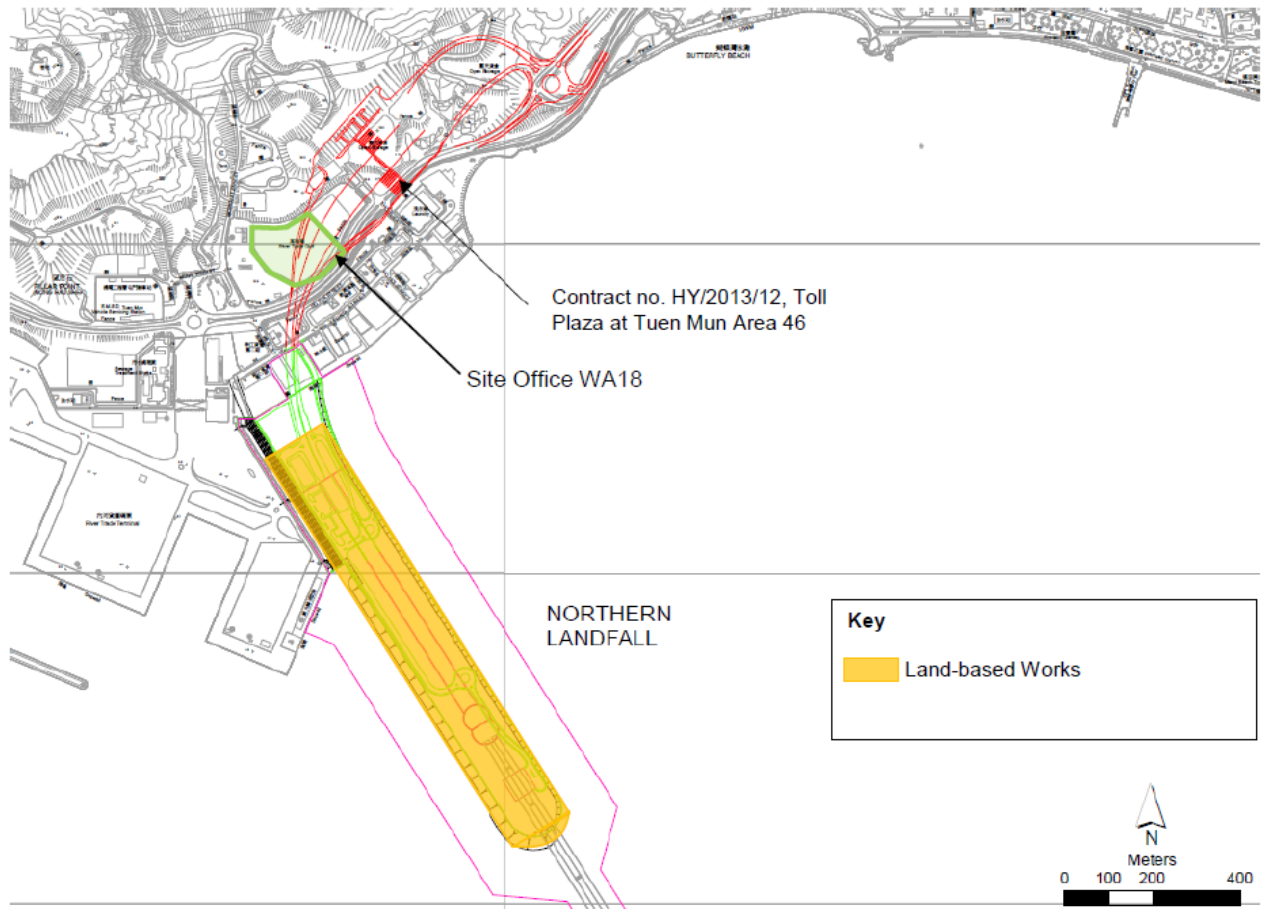
The construction phase of this Contract was commenced on 1 November 2013. The construction programme is shown in *Appendix B*.

As per DBJV's information, there was no major activities undertaken in the reporting period.

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*.

Figure 1.2 General layout plan of the site



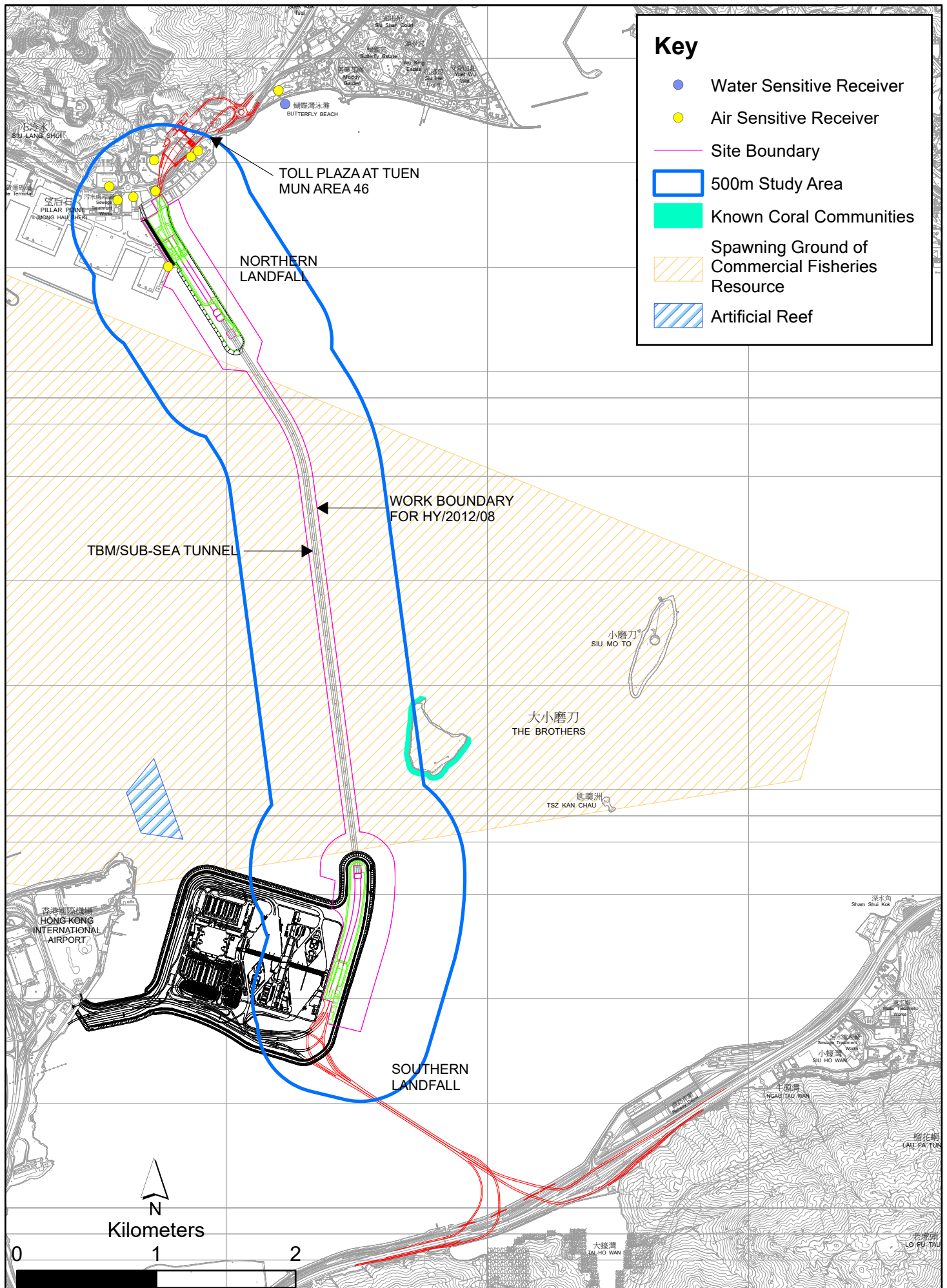


Figure 1.3 Environmental Sensitive Receivers in the vicinity of Contract No. HY/2012/08 Tuen Mun - Chek Lap Kok Link - Northern Connection Sub-Sea Tunnel Section

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 launching 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 1, 5, 10, 16, 22 and 27 February 2021 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	1, 5, 10, 16, 22 and 27 February 2021	Tuen Mun Fireboat Station	Office	TSP monitoring
ASR5		Pillar Point Fire Station	Office	<ul style="list-style-type: none"> 1-hour Total Suspended Particulates (1-hour TSP, $\mu\text{g}/\text{m}^3$), 3 times in every 6 days 24-hour Total Suspended Particulates (24-hour TSP, $\mu\text{g}/\text{m}^3$), daily for 24-hour in every 6 days
AQMS1		Previous River Trade Golf	Bare ground	Enhanced TSP monitoring (commenced on 24 October 2014)
ASR6		Butterfly Beach Laundry	Office	<ul style="list-style-type: none"> 1-hour Total Suspended Particulates (1-hour TSP,

Monitoring Station	Monitoring Dates	Location	Description	Parameters & Frequency
ASR10		Butterfly Beach Park	Recreational uses	$\mu\text{g}/\text{m}^3$), 3 times in every 3 days • 24-hour Total Suspended Particulates (24-hour TSP, $\mu\text{g}/\text{m}^3$), 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 February 2021 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 ($\mu\text{g}/\text{m}^3$)	Range ($\mu\text{g}/\text{m}^3$)	Action Level ($\mu\text{g}/\text{m}^3$)	Limit Level ($\mu\text{g}/\text{m}^3$)
ASR1	134	78 - 237	331	500
ASR5	179	86 - 472	340	500
AQMS1	124	58 - 240	335	500
ASR6	148	61 - 261	338	500
ASR10	93	62 - 151	337	500

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

Station	Average ($\mu\text{g}/\text{m}^3$)	Range ($\mu\text{g}/\text{m}^3$)	Action Level ($\mu\text{g}/\text{m}^3$)	Limit Level ($\mu\text{g}/\text{m}^3$)
ASR1	87	47 - 118	213	260
ASR5	88	49 - 139	238	260
AQMS1	73	37 - 98	213	260
ASR6	89	62 - 143	238	260
ASR10	61	46 - 75	214	260

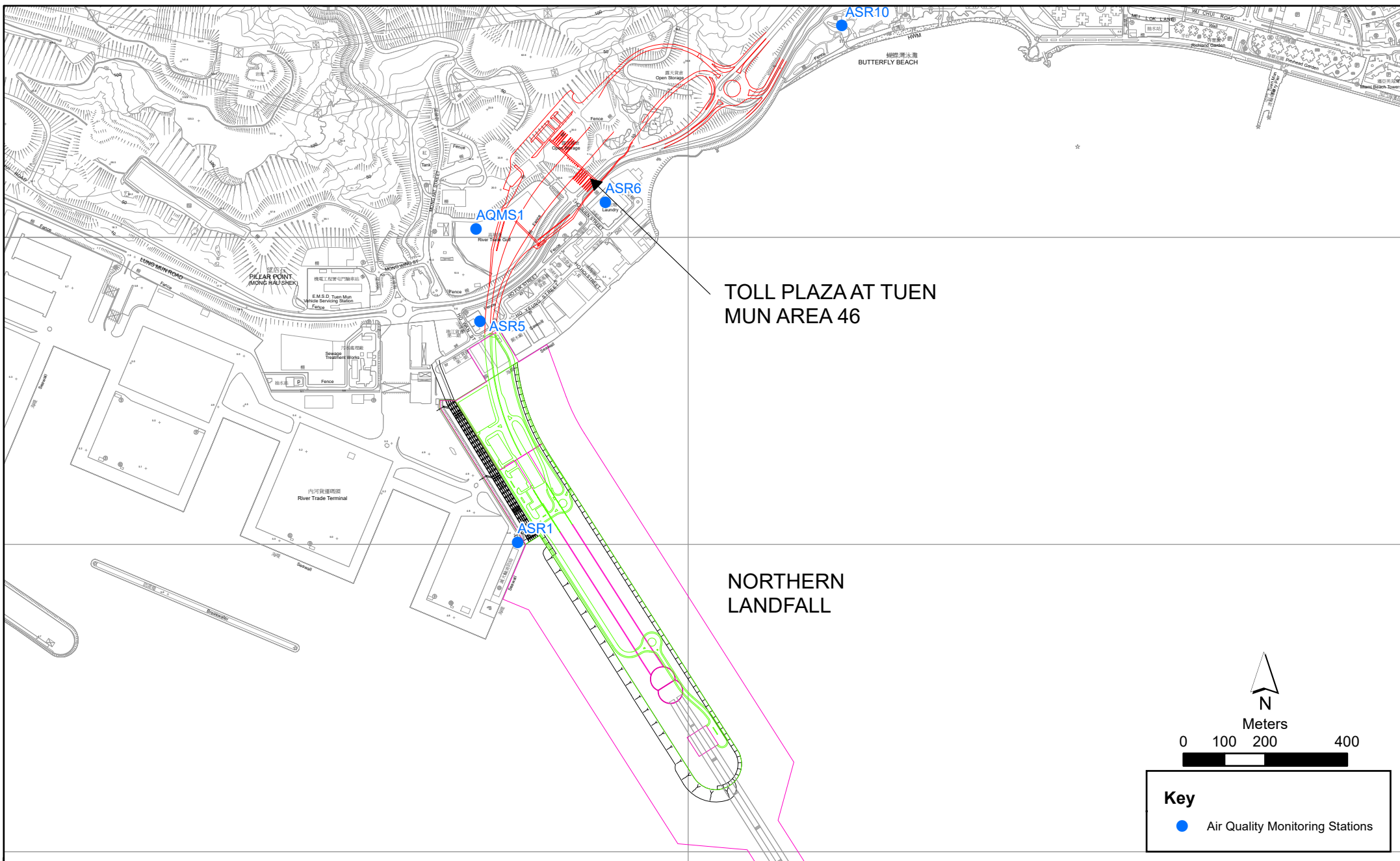


Figure 2.1

Air Quality Monitoring Stations for the Enhanced TSP Monitoring

The weather condition during the monitoring period varied from sunny to hazy. The major dust sources in the reporting period included construction activities under the Contract as well as nearby traffic emissions.

A total of 6 1-hour TSP and 24-hour TSP monitoring were undertaken in this reporting month. Two (2) Action Level exceedances of 1-hour TSP were recorded in the air quality monitoring during this reporting month. No Action and Limit Level exceedance of 24-hour TSP was recorded.

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	<ul style="list-style-type: none"> • Temperature(°C) • pH(pH unit) • Turbidity (NTU) • Water depth (m) • Salinity (ppt) 	3 water depths: 1m below sea	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	<ul style="list-style-type: none"> • DO (mg/L and % of saturation) 	surface, mid- depth and 1m above sea bed.	
CS2(A)	Control Station	805232	818606	<ul style="list-style-type: none"> • SS (mg/L) 		

Station ID	Type	Coordinates		*Parameters, unit	Depth	Frequency
CS(Mf)5	Control Station	817990	821129		If the water depth is less than 3m, mid-depth sampling only. If water depth is less than 6m, mid-depth may be omitted.	

***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 16H104234; 18A104824
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 February 2021 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*.

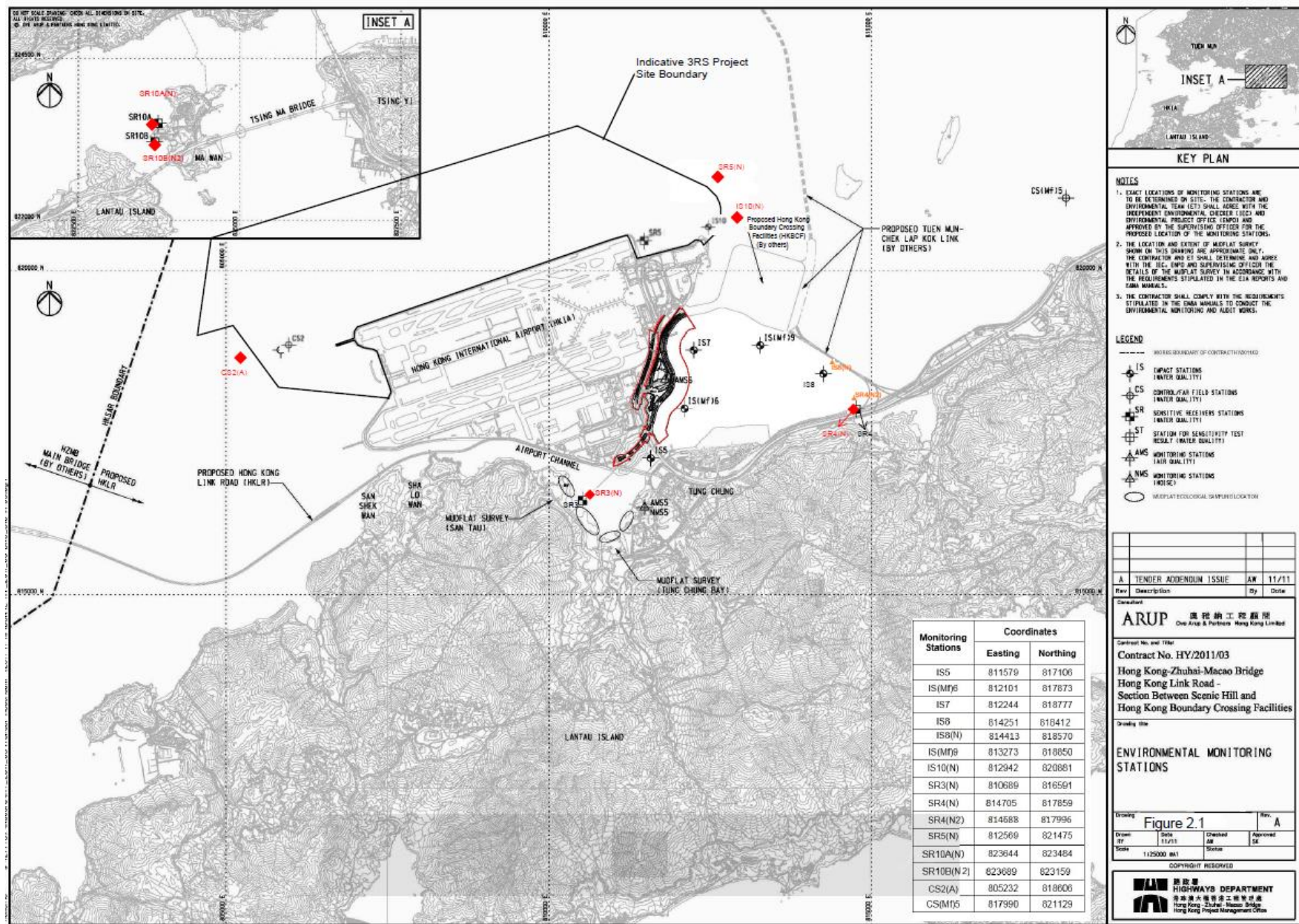


Figure 2.2

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)

Environmental
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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.

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.

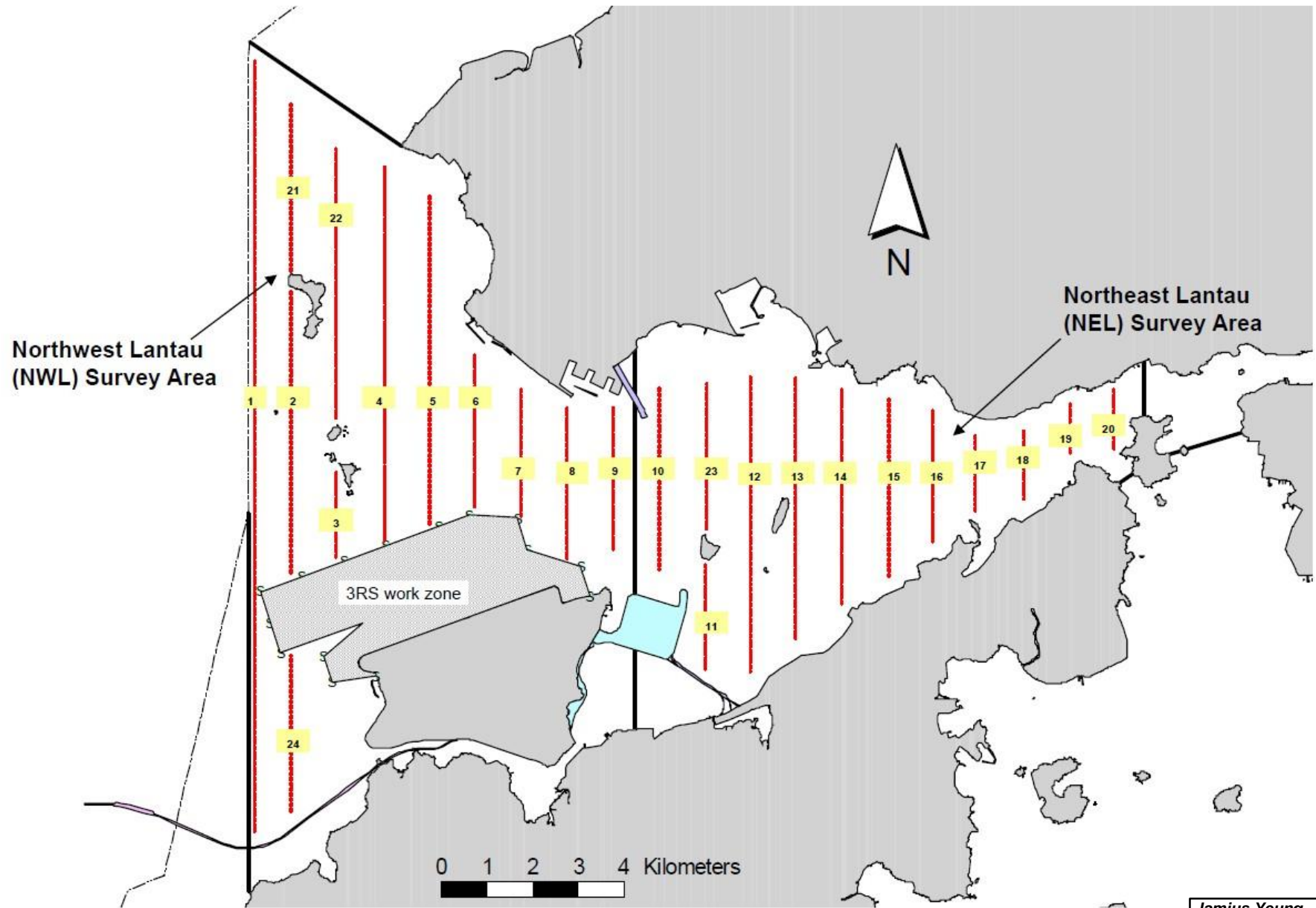


Figure 2.3

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

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 2, 8, 18 and 23 February 2021. The dolphin monitoring schedule for the reporting month is shown in *Appendix F*.

2.3.6 *Results & Observations*

A total of 261.83 km of survey effort was collected, with 100% of the total survey effort being conducted under favourable weather conditions (i.e. Beaufort Sea State 3 or below with good visibility) in February 2021. Among the two areas, 97.70 km and 164.13 km of survey effort were collected from NEL and NWL survey areas, respectively. The total survey effort conducted on primary and secondary lines were 194.39 km and 67.44 km respectively. The survey efforts are summarized in *Appendix I*.

Five groups of 13 Chinese White Dolphins was sighted in the two sets of surveys in February 2021. 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 primary 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 2 and 18 February 2021 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 February 2021 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: February 2nd / 8th	0.0	0.0
	Set 2: February 18th / 23rd	0.0	0.0
NWL	Set 1: February 2nd / 8th	4.9	17.8
	Set 2: February 18th / 23rd	1.6	1.6

Note: Dolphin Encounter Rates are deduced from the Two Sets of Surveys (Two Surveys in Each Set) in February 2021 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-
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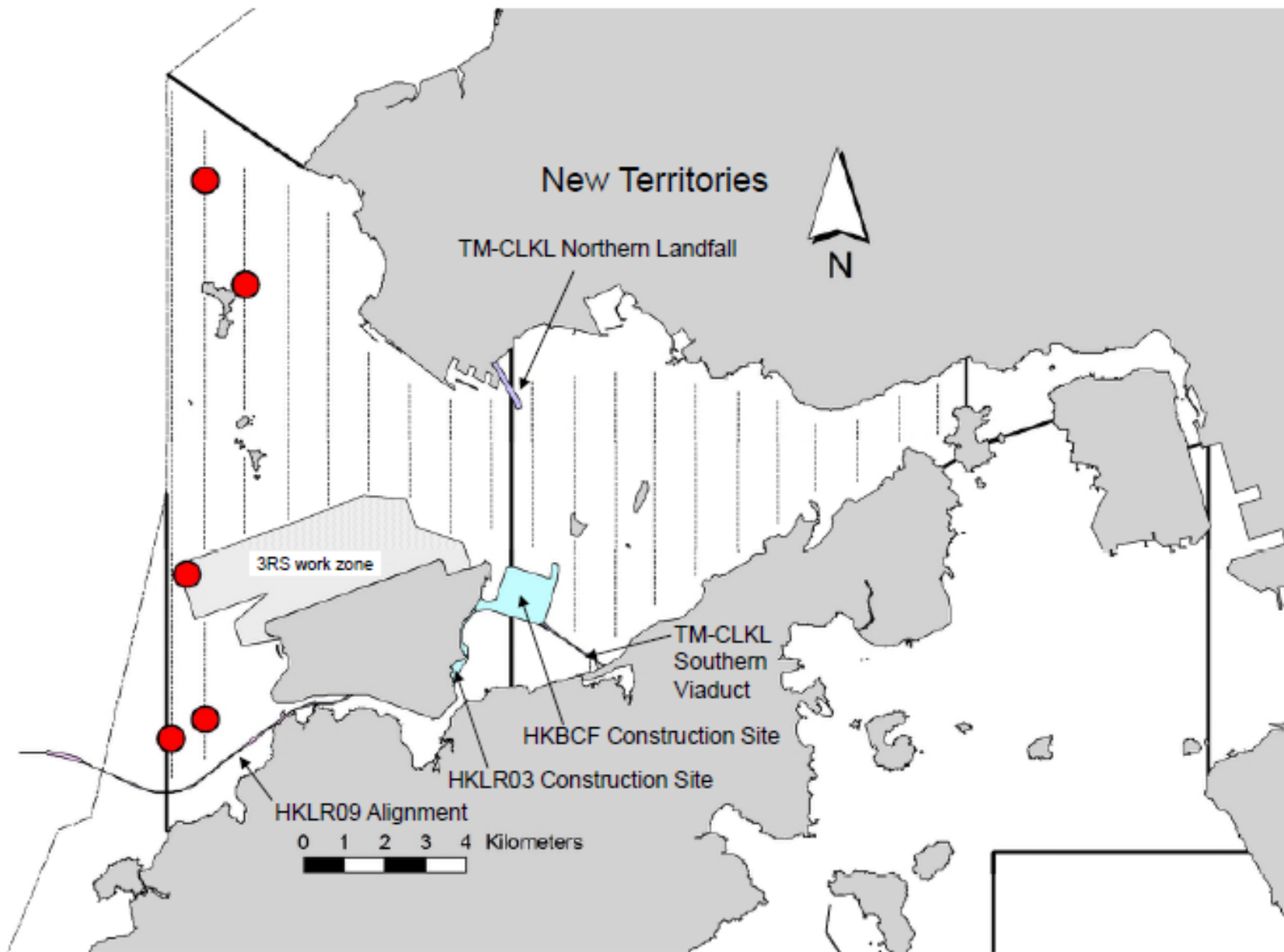


Figure 2.4

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

	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	4.1	2.4	10.5	7.3

Note: Overall dolphin encounter rates (sightings per 100 km of survey effort) from all four surveys are conducted in February 2021 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 February 2021 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 3, 10, 17 and 24 February 2021.

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
3 February 2021	CLP Substation <ul style="list-style-type: none"> Empty chemical containers were not disposed properly. 	CLP Substation <ul style="list-style-type: none"> The Contractor was reminded to dispose chemical containers properly.
10 February 2021	CLP Substation <ul style="list-style-type: none"> Chemicals were not placed in drip tray. Northern Landfall (N6) <ul style="list-style-type: none"> Oil leakage was observed on site. Northern Landfall (Storage Area) <ul style="list-style-type: none"> Chemicals were not placed in drip tray. Bags of cement were not covered properly. 	CLP Substation <ul style="list-style-type: none"> The Contractor was reminded to place the chemicals in drip tray. Northern Landfall (N6) <ul style="list-style-type: none"> The Contractor was reminded to clean the oil and prevent oil leakage. Northern Landfall (Storage Area) <ul style="list-style-type: none"> The Contractor was reminded to place the chemicals in drip tray. The Contractor was reminded to cover the cements properly.
17 February 2021	Northern Landfall (N6 and Zone C) <ul style="list-style-type: none"> Chemical containers were observed not placed in drip tray. 	Northern Landfall (N6 and Zone C) <ul style="list-style-type: none"> The Contractor was reminded to place chemical containers in drip tray.
24 February 2021	CLP Substation <ul style="list-style-type: none"> Chemicals were not placed in drip tray. Northern Landfall (Storage Area) <ul style="list-style-type: none"> Chemicals were not placed in drip tray. 	CLP Substation <ul style="list-style-type: none"> The Contractor was reminded to place the chemicals in drip tray. Northern Landfall (Storage Area) <ul style="list-style-type: none"> The Contractor was reminded to place the chemicals 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)
February 2020	210	0	11	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*

Two (2) Action Level exceedances of 1-hour TSP were recorded in the air quality monitoring during this reporting month. No Action and Limit Level exceedance of 24-hour TSP was recorded.

Cumulative statistics are provided in *Appendix L*.

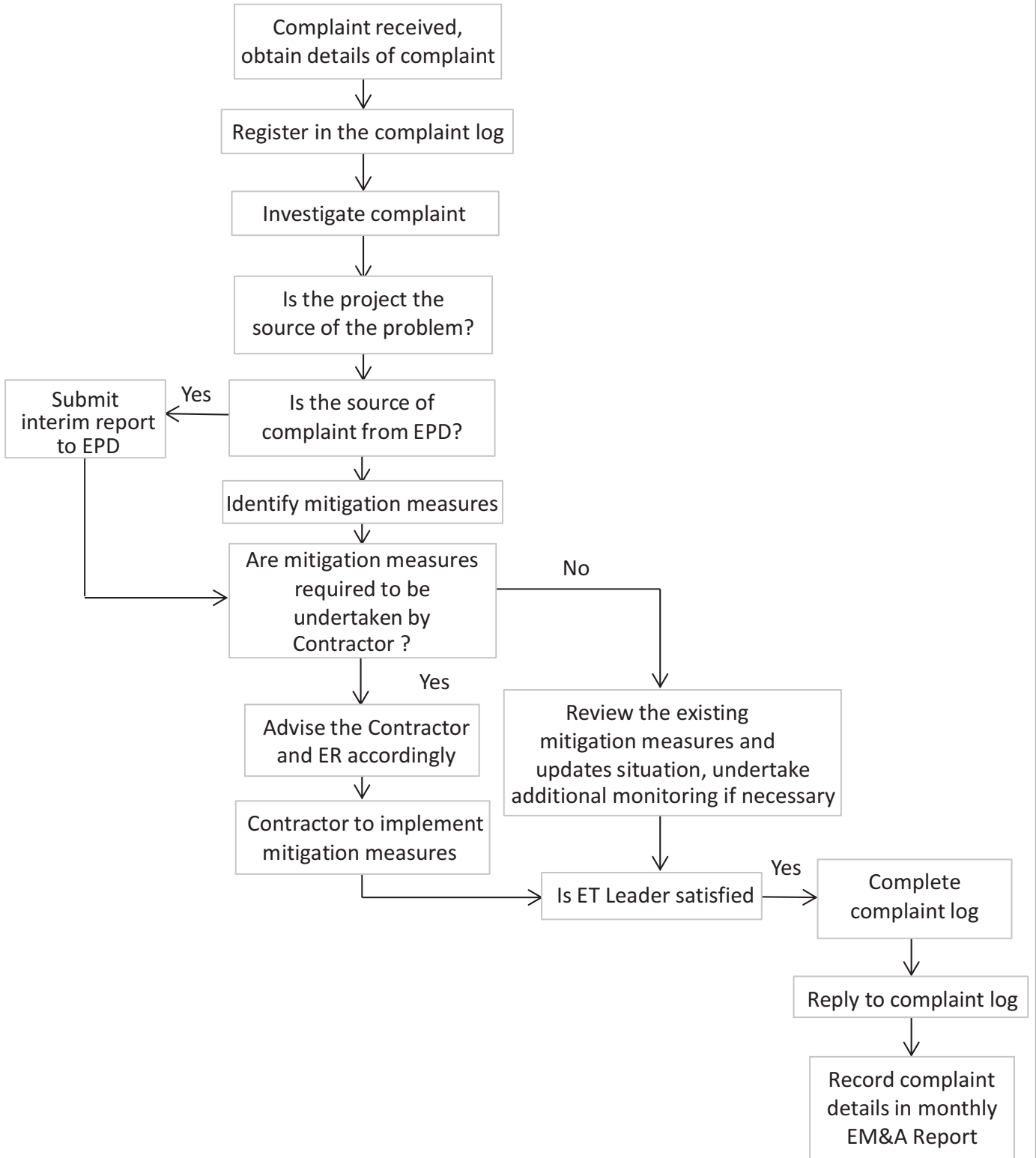
2.9 *SUMMARY OF COMPLAINTS, NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS*

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

Environmental
Resources
Management



3 *FUTURE KEY ISSUES*

3.1 *CONSTRUCTION ACTIVITIES FOR THE COMING MONTH*

As informed by the Contractor, there was no major activities undertaken in the reporting period.

3.2 *KEY ISSUES FOR THE COMING MONTH*

Potential environmental impacts in the next reporting month of March 2021 are mainly associated with waste management issues.

3.3 *MONITORING SCHEDULE FOR THE COMING MONTH*

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

4.1*CONCLUSIONS*

This Eighty-eighth Monthly EM&A Report presents the findings of the EM&A activities undertaken during the period from 1 to 28 February 2021, 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.

Two (2) Action Level exceedances of 1-hour TSP were recorded in the air quality monitoring during this reporting month. No Action and Limit Level exceedance of 24-hour TSP was recorded.

Five groups of 13 Chinese White Dolphins was sighted in the two sets of surveys in February 2021. 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 February 2021. 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.

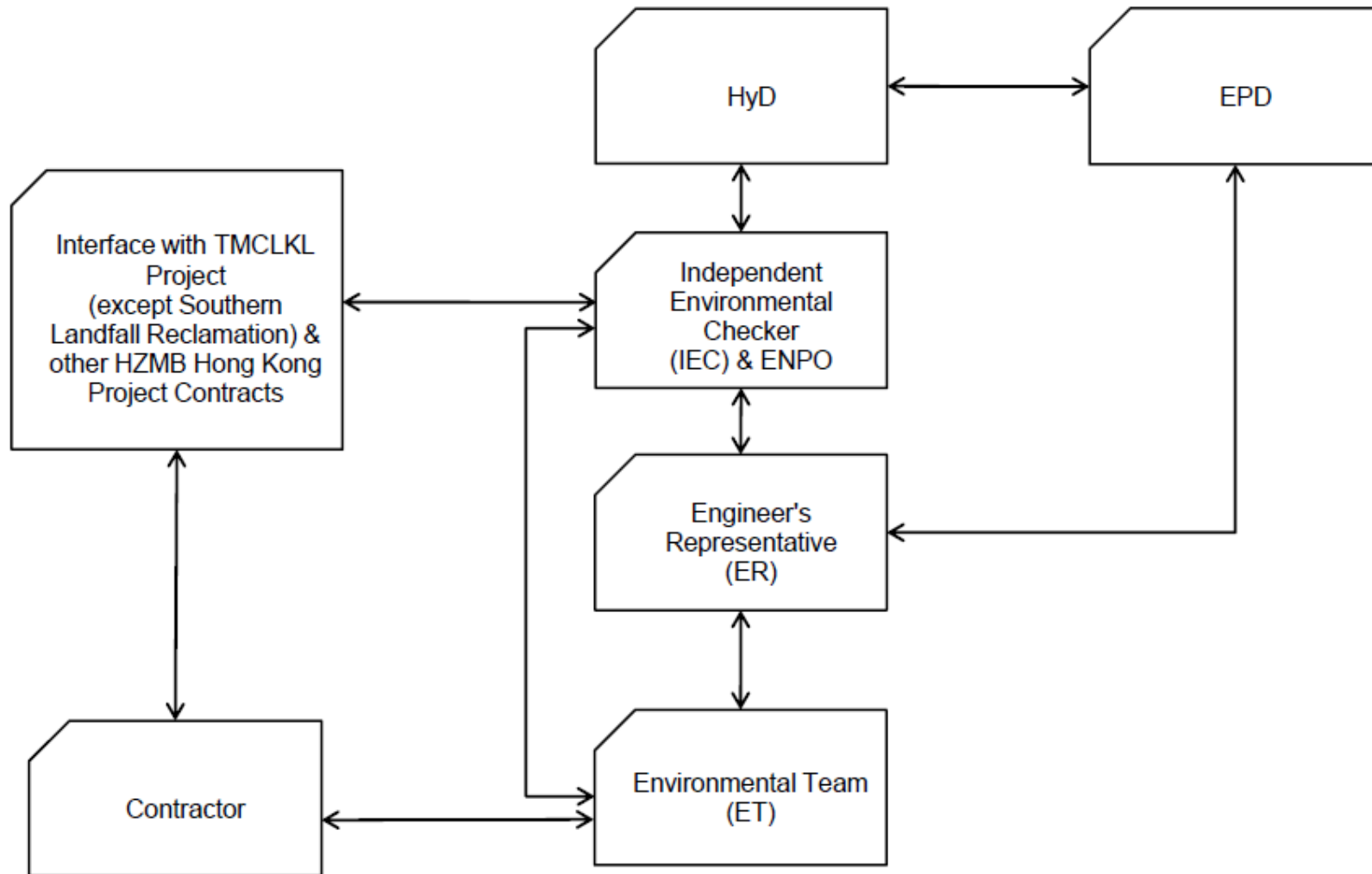
No environmental complaint was received in this reporting period.

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

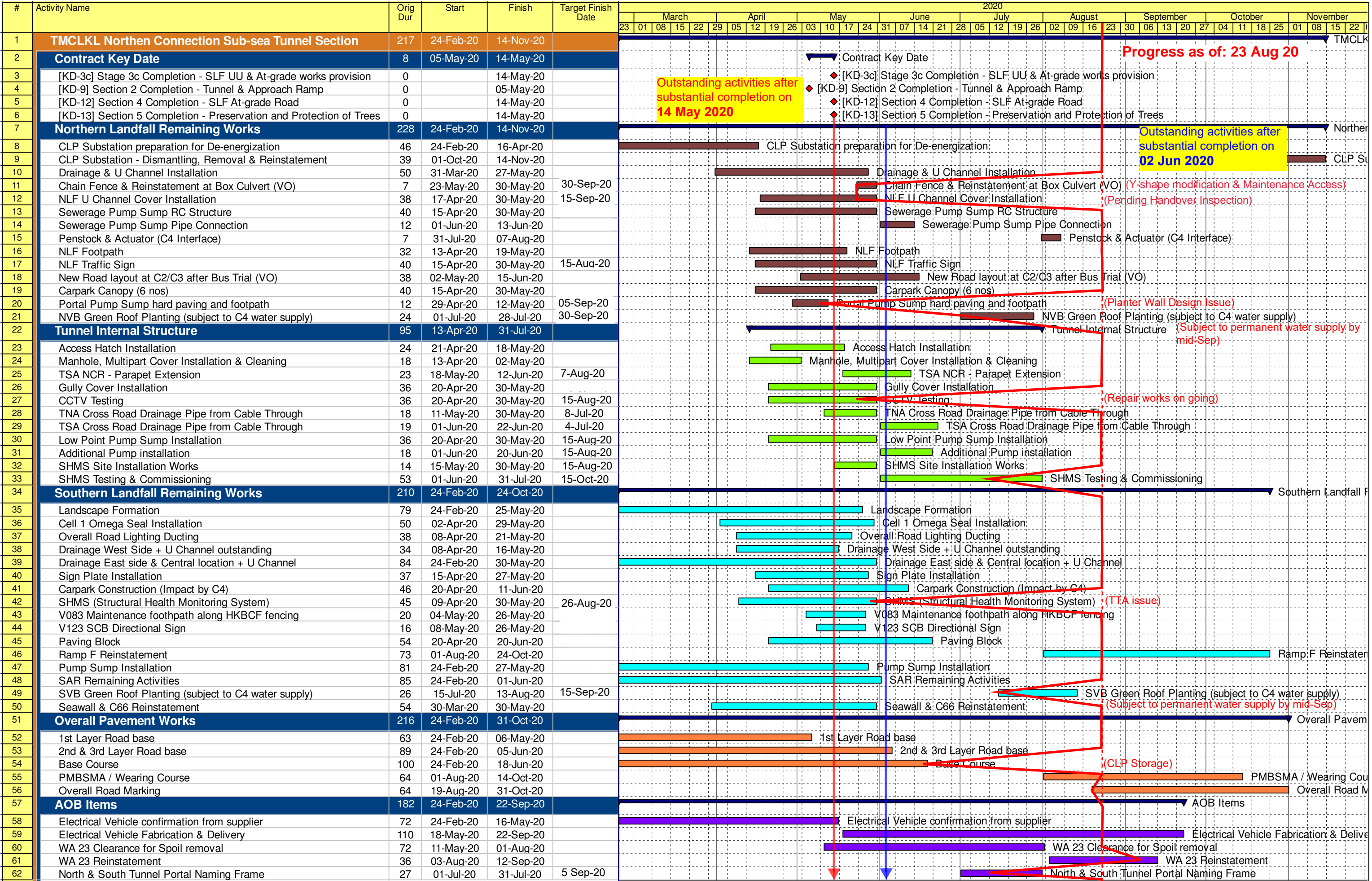
Project Organization for Environmental Works



↔ Line of Communication

Appendix B

Construction Programme



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

*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	
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									
<i>Marine Works (Sequence A)</i>									
6.1	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

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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	
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	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: <ul style="list-style-type: none"> - 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
Figure 6.2b Appendix D6b									

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

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	
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
<i>General Marine Works</i>									
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

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*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	
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

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

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*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	
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
<i>Land Works</i>									
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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*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	
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	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.	operation	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		✓
<i>Water Quality Monitoring</i>									
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	✓
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		✓

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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	
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
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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Tuen Mun – Chek Lap Kok Link
Northern Connection Sub-sea Tunnel Section
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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; 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.	All areas / throughout construction period	Contractor	TMEIA		Y		↔

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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	
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		✓
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 $\mu\text{g}/\text{m}^3$	ASR1 = 213 ASR5 = 238 AQMS1 = 213 ASR6 = 238 ASR10 = 214	260
1 Hour TSP Level in $\mu\text{g} / \text{m}^3$	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 : 07/12/2020

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: $Z = \sqrt{dH(Pa/Pstd)(Tstd/Ta)}$, $X = Z/m - b$, $Y(\text{Corrected Flow}) = IC * \{\sqrt{Pa/Pstd}(Tstd/Ta)\}$

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: $Z = \sqrt{dH(Pa/Pstd)(Tstd/Ta)}$, $X = Z/m - b$, $Y(\text{Corrected Flow}) = IC * \{\sqrt{Pa/Pstd}(Tstd/Ta)\}$

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: $Z = \sqrt{dH(Pa/Pstd)(Tstd/Ta)}$, $X = Z/m - b$, $Y(\text{Corrected Flow}) = IC * \sqrt{Pa/Pstd}(Tstd/Ta)$

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: $Z = \sqrt{dH(Pa/Pstd)(Tstd/Ta)}$, $X = Z/m - b$, $Y(\text{Corrected Flow}) = IC * \sqrt{Pa/Pstd}(Tstd/Ta)$

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: $Z = \sqrt{dH(Pa/Pstd)(Tstd/Ta)}$, $X = Z/m - b$, $Y(\text{Corrected Flow}) = IC * \{\sqrt{Pa/Pstd}(Tstd/Ta)\}$

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

High-Volume TSP Sampler
5-Point Calibration Record

Location : ASR 5
 Calibrated by : K.T.Ho
 Date : 07/02/2021

Sampler

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

Calibration Orifice and Standard Calibration Relationship

Serial Number : 2454
 Service Date : 28 January 2021
 Slope (m) : 2.06072
 Intercept (b) : -0.01465
 Correlation Coefficient(r) : 0.99993

Standard Condition

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

Calibration Condition

Pa (hpa) : 1019
 Ta(K) : 294

Resistance Plate	dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1 18 holes	10.8	3.318	1.617	56	56.55
2 13 holes	8.6	2.961	1.444	51	51.50
3 10 holes	6.2	2.514	1.227	45	45.44
4 7 holes	4.0	2.020	0.987	37	37.36
5 5 holes	2.4	1.564	0.766	28	28.27

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

Sampler Calibration Relationship (Linear Regression)

Slope(m): 32.819 Intercept(b): 4.165 Correlation Coefficient(r): 0.9968

Checked by: Magnum Fan

Date: 11/02/2021

High-Volume TSP Sampler
5-Point Calibration Record

Location : ASR10
 Calibrated by : K.T.Ho
 Date : 07/02/2021

Sampler

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

Calibration Orifice and Standard Calibration Relationship

Serial Number : 2454
 Service Date : 28 January 2021
 Slope (m) : 2.06072
 Intercept (b) : -0.01465
 Correlation Coefficient(r) : 0.99993

Standard Condition

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

Calibration Condition

Pa (hpa) : 1019
 Ta(K) : 294

Resistance Plate	dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1 18 holes	11.6	3.439	1.676	59	59.6
2 13 holes	9.3	3.079	1.501	53	53.5
3 10 holes	7.0	2.672	1.304	46	46.4
4 7 holes	4.6	2.166	1.058	38	38.4
5 5 holes	2.8	1.690	0.827	28	28.3

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

Sampler Calibration Relationship (Linear Regression)

Slope(m): 36.361 Intercept(b): -1.058 Correlation Coefficient(r): 0.9987

Checked by: Magnum Fan

Date: 11/02/2021

High-Volume TSP Sampler
5-Point Calibration Record

Location : AQMS1
 Calibrated by : K.T.Ho
 Date : 07/02/2021

Sampler

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

Calibration Orifice and Standard Calibration Relationship

Serial Number : 2454
 Service Date : 28 January 2021
 Slope (m) : 2.06072
 Intercept (b) : -0.01465
 Correlation Coefficient(r) : 0.99993

Standard Condition

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

Calibration Condition

Pa (hpa) : 1019
 Ta(K) : 294

Resistance Plate	dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1 18 holes	11.6	3.439	1.676	55	55.54
2 13 holes	9.2	3.063	1.493	50	50.49
3 10 holes	6.7	2.614	1.275	44	44.43
4 7 holes	4.6	2.166	1.058	37	37.36
5 5 holes	2.4	1.564	0.766	28	28.27

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

Sampler Calibration Relationship (Linear Regression)

Slope(m): 30.072 Intercept(b): 5.512 Correlation Coefficient(r): 0.9994

Checked by: Magnum Fan

Date: 11/02/2021

High-Volume TSP Sampler
5-Point Calibration Record

Location : ASR 1
 Calibrated by : K.T.Ho
 Date : 07/02/2021

Sampler

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

Calibration Orifice and Standard Calibration Relationship

Serial Number : 2454
 Service Date : 28 January 2021
 Slope (m) : 2.06072
 Intercept (b) : -0.01465
 Correlation Coefficient(r) : 0.99993

Standard Condition

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

Calibration Condition

Pa (hpa) : 1019
 Ta(K) : 294

Resistance Plate	dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1 18 holes	10.2	3.225	1.572	56	56.55
2 13 holes	8.0	2.856	1.393	49	49.48
3 10 holes	5.8	2.432	1.187	42	42.41
4 7 holes	3.8	1.968	0.962	36	36.35
5 5 holes	2.3	1.531	0.750	28	28.27

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

Sampler Calibration Relationship (Linear Regression)

Slope(m): 33.527 Intercept(b): 3.286 Correlation Coefficient(r): 0.9982

Checked by: Magnum Fan

Date: 11/02/2021

High-Volume TSP Sampler
5-Point Calibration Record

Location : ASR 6
 Calibrated by : K.T.Ho
 Date : 07/02/2021

Sampler

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

Calibration Orifice and Standard Calibration Relationship

Serial Number : 2454
 Service Date : 28 January 2021
 Slope (m) : 2.06072
 Intercept (b) : -0.01465
 Correlation Coefficient(r) : 0.99993

Standard Condition

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

Calibration Condition

Pa (hpa) : 1019
 Ta(K) : 294

Resistance Plate	dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1 18 holes	11.7	3.454	1.683	59	59.58
2 13 holes	9.0	3.029	1.477	52	52.51
3 10 holes	6.7	2.614	1.275	45	45.44
4 7 holes	4.8	2.212	1.081	38	38.37
5 5 holes	2.7	1.659	0.812	29	29.28

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

Sampler Calibration Relationship (Linear Regression)

Slope(m): 34.929 Intercept(b): 0.824 Correlation Coefficient(r): 0.9999

Checked by: Magnum Fan

Date: 11/02/2021

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		

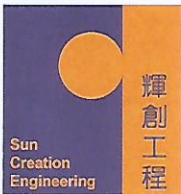
Run	Vol. Init (m3)	Vol. Final (m3)	ΔVol. (m3)	ΔTime (min)	ΔP (mm Hg)	ΔH (in H2O)
1	1	2	1	1.4190	3.2	2.00
2	3	4	1	1.0100	6.4	4.00
3	5	6	1	0.9020	7.9	5.00
4	7	8	1	0.8600	8.8	5.50
5	9	10	1	0.7110	12.7	8.00

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)	$\sqrt{\Delta H \left(\frac{Ta}{Pa} \right)}$ (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=	$\Delta Vol \left(\frac{Pa - \Delta P}{Pstd} \right) \left(\frac{Tstd}{Ta} \right)$	Va=	$\Delta Vol \left(\frac{Pa - \Delta P}{Pa} \right)$
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= $1/m \left(\left(\sqrt{\Delta H \left(\frac{Ta}{Pa} \right)} \right) - b \right)$	

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



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

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

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 : 11 June 2020
簽發日期

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

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

Certificate of Calibration

校正證書

Certificate No. : C203177

證書編號

- The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours before the commencement of the test.
- The results presented are the mean of 10 measurements at each calibration point.
- Test equipment :

<u>Equipment ID</u>	<u>Description</u>	<u>Certificate No.</u>
CL386	Multi-function Measuring Instrument	S16494

- Test procedure : MA130N.

- 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.

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

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

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: Ho
Yeung Ping Fai
(Technical Officer)

Checked by : Fat
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. : BA010041
Date of Issue : 18 January 2021
Page No. : 1 of 2

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 ProDSS (Multi-Parameters)
Manufacturer : YSI (a xylem brand)
Serial Number : 16H104234
Date of Received : Jan 18, 2021
Date of Calibration : Jan 18, 2021
Date of Next Calibration^(a) : Apr 17, 2021

PART C – REFERENCE METHODS/ DOCUMENTS FOR THE CALIBRATION

<u>Parameter</u>	<u>Reference Method</u>
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	4.11	0.11	Satisfactory
7.42	7.42	0.00	Satisfactory
10.01	10.09	0.08	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
15	15.0	0.0	Satisfactory
30	29.9	-0.1	Satisfactory
40	41.0	1.0	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 from 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 the acceptance criteria applicable for similar equipment used by Quality Pro Test-Consult Ltd. or quoted from relevant international standards..


LEE Chun-ning, Desmond
Senior Chemist



REPORT OF EQUIPMENT PERFORMANCE CHECK/ CALIBRATION

Report No. : BA010041
Date of Issue : 18 January 2021
Page No. : 2 of 2

PART D – CALIBRATION RESULTS (Cont'd)

(3) Dissolved Oxygen

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)	Results
1.37	1.43	0.06	Satisfactory
4.90	4.93	0.03	Satisfactory
6.88	6.91	0.03	Satisfactory
8.58	8.77	0.19	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 ($\mu\text{S}/\text{cm}$)	Displayed Reading ($\mu\text{S}/\text{cm}$)	Tolerance (%)	Results
0.001	146.9	148.7	1.23	Satisfactory
0.01	1412	1325	-6.16	Satisfactory
0.1	12890	12810	-0.62	Satisfactory
0.5	58670	59884	2.07	Satisfactory
1.0	111900	112830	0.83	Satisfactory

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

(5) Salinity

Expected Reading (g/L)	Displayed Reading (g/L)	Tolerance (%)	Results
10	10.05	0.50	Satisfactory
20	20.03	0.15	Satisfactory
30	31.13	3.77	Satisfactory

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

(6) Turbidity

Expected Reading (NTU)	Displayed Reading ^(f) (NTU)	Tolerance ^(g) (%)	Results
0	0.04	--	Satisfactory
10	10.12	1.2	Satisfactory
20	20.89	4.5	Satisfactory
100	103.42	3.4	Satisfactory
800	798.71	-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 from relevant international standards.



專業化驗有限公司
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REPORT OF EQUIPMENT PERFORMANCE CHECK/ CALIBRATION

Report No. : AJ120010
Date of Issue : 02 December 2020
Page No. : 1 of 2

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 : 18A104824
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	4.03	0.03	Satisfactory
7.42	7.40	-0.02	Satisfactory
10.01	9.91	-0.10	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	20.1	0.1	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 from 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

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REPORT OF EQUIPMENT PERFORMANCE CHECK/ CALIBRATION

Report No. : AJ120010
Date of Issue : 02 December 2020
Page No. : 2 of 2

PART D – CALIBRATION RESULTS (Cont'd)

(3) Dissolved Oxygen

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)	Results
0.06	0.46	0.40	Satisfactory
1.80	1.42	-0.38	Satisfactory
5.14	4.80	-0.34	Satisfactory
8.44	8.70	0.26	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 ($\mu\text{S/cm}$)	Displayed Reading ($\mu\text{S/cm}$)	Tolerance (%)	Results
0.001	146.9	159.0	8.24	Satisfactory
0.01	1412	1384	-1.98	Satisfactory
0.1	12890	12846	-0.34	Satisfactory
0.5	58670	57821	-1.45	Satisfactory
1.0	111900	111884	-0.01	Satisfactory

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

(5) Salinity

Expected Reading (g/L)	Displayed Reading (g/L)	Tolerance (%)	Results
10	9.89	-1.10	Satisfactory
20	19.88	-0.60	Satisfactory
30	29.74	-0.87	Satisfactory

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

(6) Turbidity

Expected Reading (NTU)	Displayed Reading ⁽¹⁾ (NTU)	Tolerance ⁽²⁾ (%)	Results
0	0.11	--	Satisfactory
10	10.13	1.3	Satisfactory
20	20.20	1.0	Satisfactory
100	108.72	8.7	Satisfactory
800	796.13	-0.5	Satisfactory

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

~ END OF REPORT ~

Remark(s): -

⁽¹⁾ "Displayed Reading" presents the figures shown on item under calibration/ checking regardless of equipment precision or significant figures.

⁽²⁾ The "Tolerance Limit" mentioned is the acceptance criteria applicable for similar equipment used by Quality Pro Test-Consult Ltd. or quoted from relevant international standards.

Appendix F

EM&A Monitoring Schedules

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

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

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

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

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

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

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 (February 2021)**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1-Feb	2-Feb	3-Feb	4-Feb	5-Feb	6-Feb
7-Feb	8-Feb	9-Feb	10-Feb	11-Feb	12-Feb	13-Feb
14-Feb	15-Feb	16-Feb	17-Feb	18-Feb	19-Feb	20-Feb
21-Feb	22-Feb	23-Feb	24-Feb	25-Feb	26-Feb	27-Feb
			ebb tide 10:46 - 13:00 flood tide 14:33 - 18:03			
28-Feb						

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

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1-Mar	2-Mar	3-Mar	4-Mar	5-Mar	6-Mar
7-Mar	8-Mar	9-Mar	10-Mar	11-Mar	12-Mar	13-Mar
14-Mar	15-Mar	16-Mar	17-Mar	18-Mar	19-Mar	20-Mar
21-Mar	22-Mar	23-Mar	24-Mar	25-Mar	26-Mar	27-Mar
					ebb tide 10:59 - 13:33 flood tide 15:23 - 18:53	
28-Mar	29-Mar	30-Mar	31-Mar			

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

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

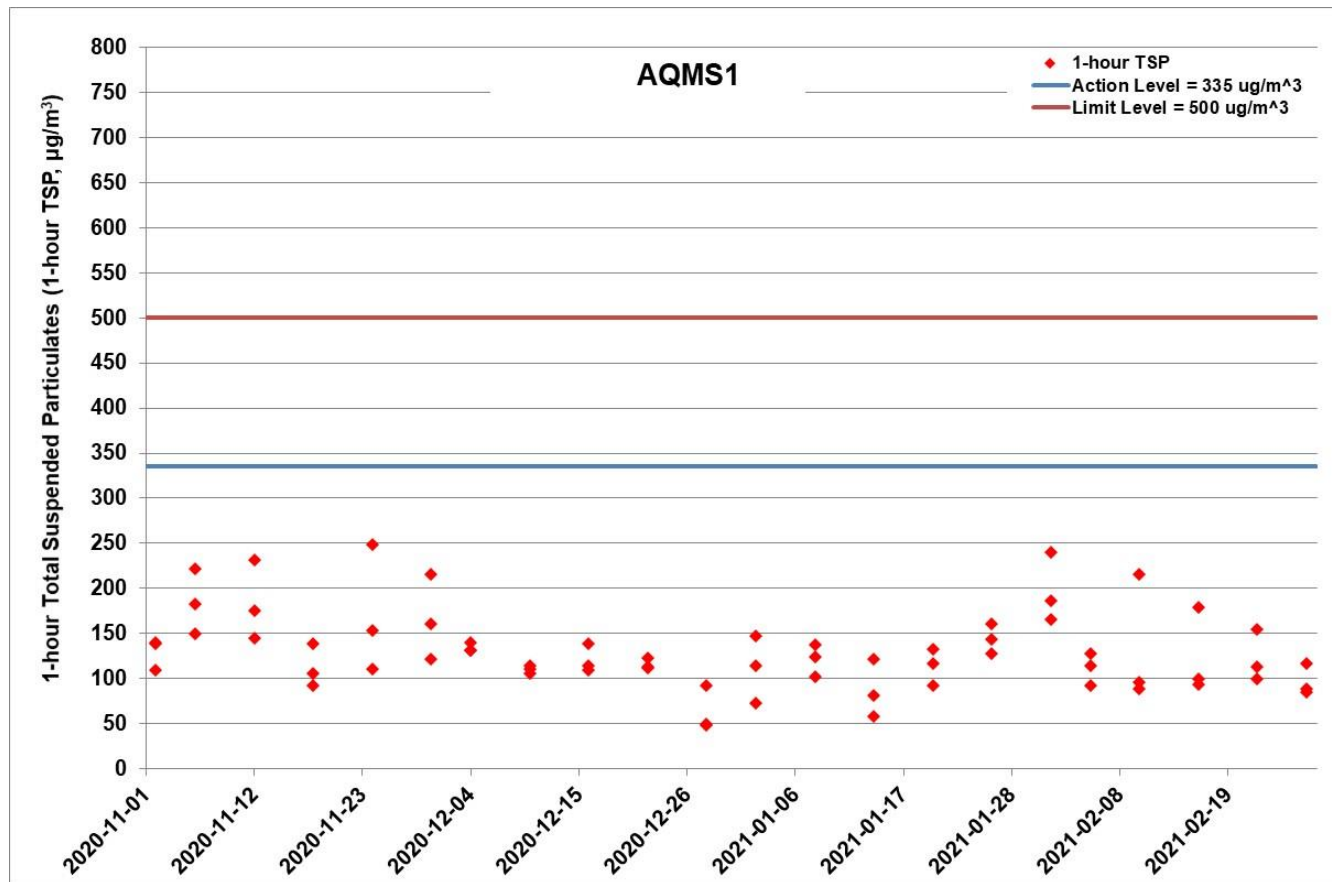
**HY/2012/08 - Tuen Mun - Chek Lap Kok Link
Northern Connection Sub-sea Tunnel Section
Tentative Operational Phase Dolphin Monitoring Survey Monitoring Schedule - March 2021**

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

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 ($\mu\text{g}/\text{m}^3$) at AQMS1 between 1 November 2020 and 28 February 2021 during impact monitoring period. The weather conditions during the monitoring period were sunny and hazy. No major land-based construction activities was conducted in the reporting period (1/11/2020 – 28/2/2021)**

Ref: 0212330_Impact AQM graphs_February 2021.xlsx



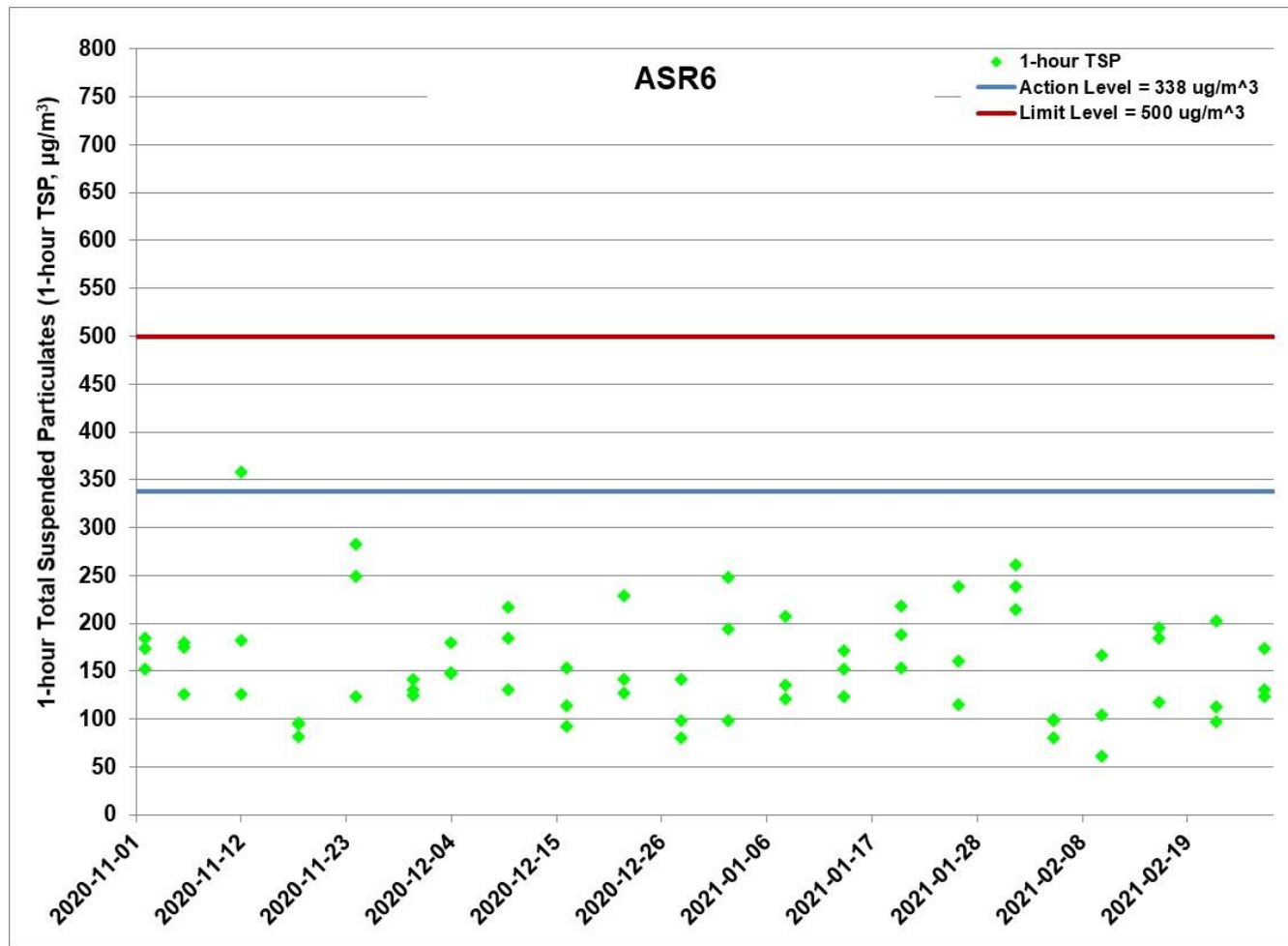


Figure G.2 Impact Monitoring – 1-hour Total Suspended Particulates ($\mu\text{g}/\text{m}^3$) at ASR6 between 1 November 2020 and 28 February 2021 during impact monitoring period. The weather conditions during the monitoring period were sunny and hazy. No major land-based construction activities was conducted in the reporting period (1/11/2020 – 28/2/2021)

Ref: 0212330_Impact AQM graphs_February 2021.xlsx



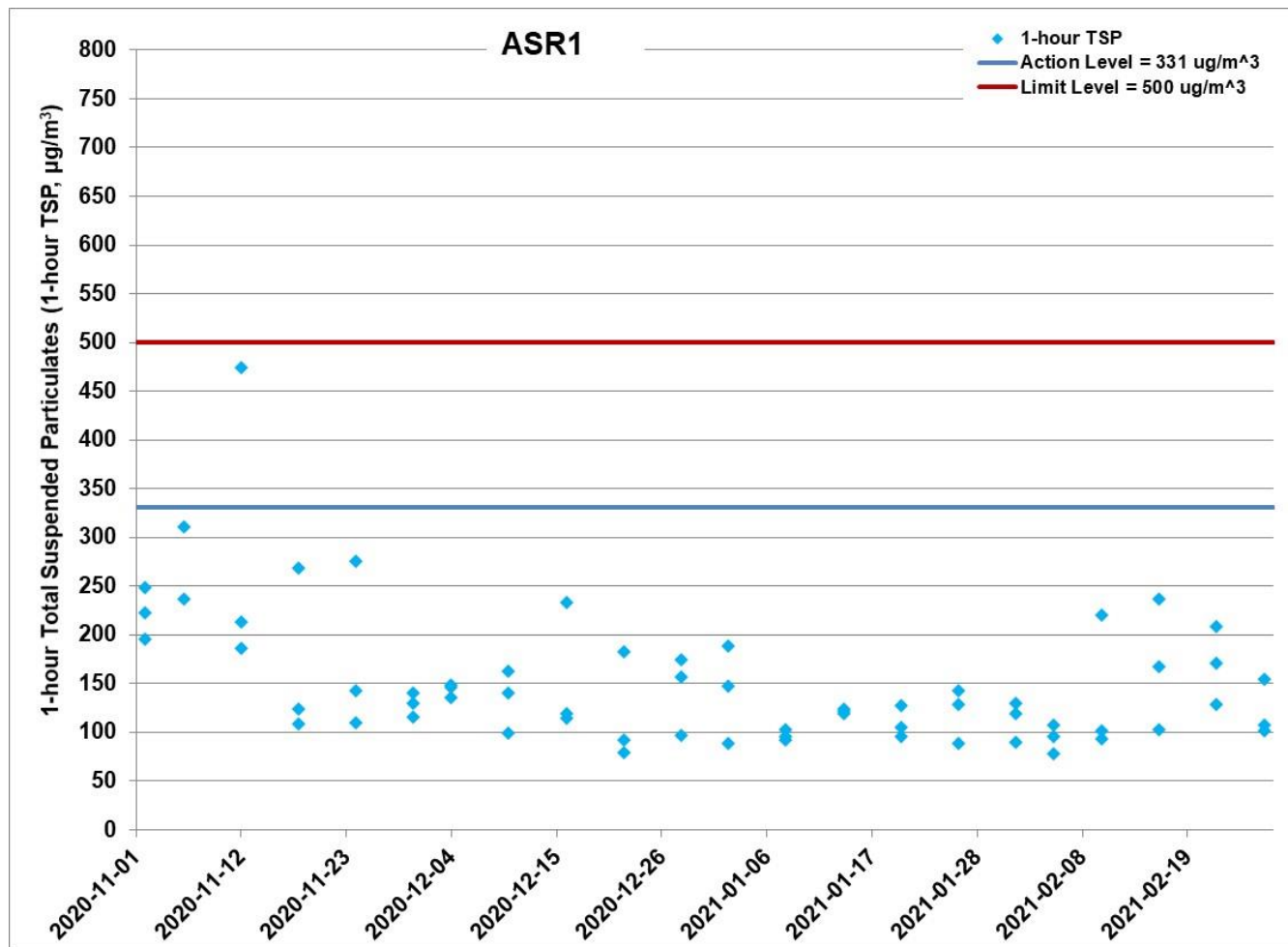


Figure G.3 Impact Monitoring – 1-hour Total Suspended Particulates ($\mu\text{g}/\text{m}^3$) at ASR1 between 1 November 2020 and 28 February 2021 during impact monitoring period. The weather conditions during the monitoring period were sunny and hazy. No major land-based construction activities was conducted in the reporting period (1/11/2020 – 28/2/2021)

Ref: 0212330_Impact AQM graphs_February 2021.xlsx



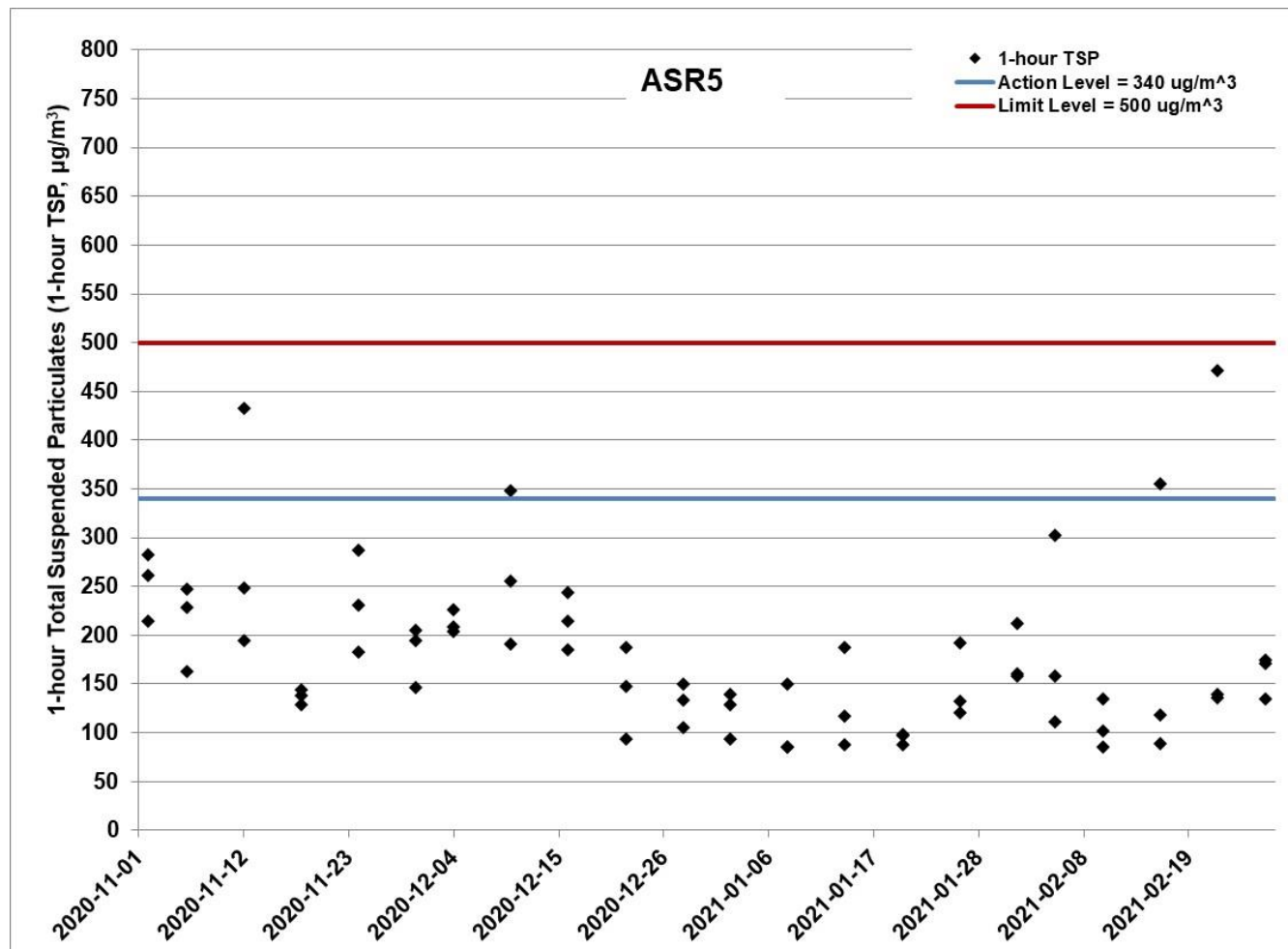


Figure G.4 Impact Monitoring - 1-hour Total Suspended Particulates ($\mu\text{g}/\text{m}^3$) at ASR5 between 1 November 2020 and 28 February 2021 during impact monitoring period. The weather conditions during the monitoring period were sunny and hazy. No major land-based construction activities was conducted in the reporting period (1/11/2020 - 28/2/2021)

Ref: 0212330_Impact AQM graphs_February 2021.xlsx



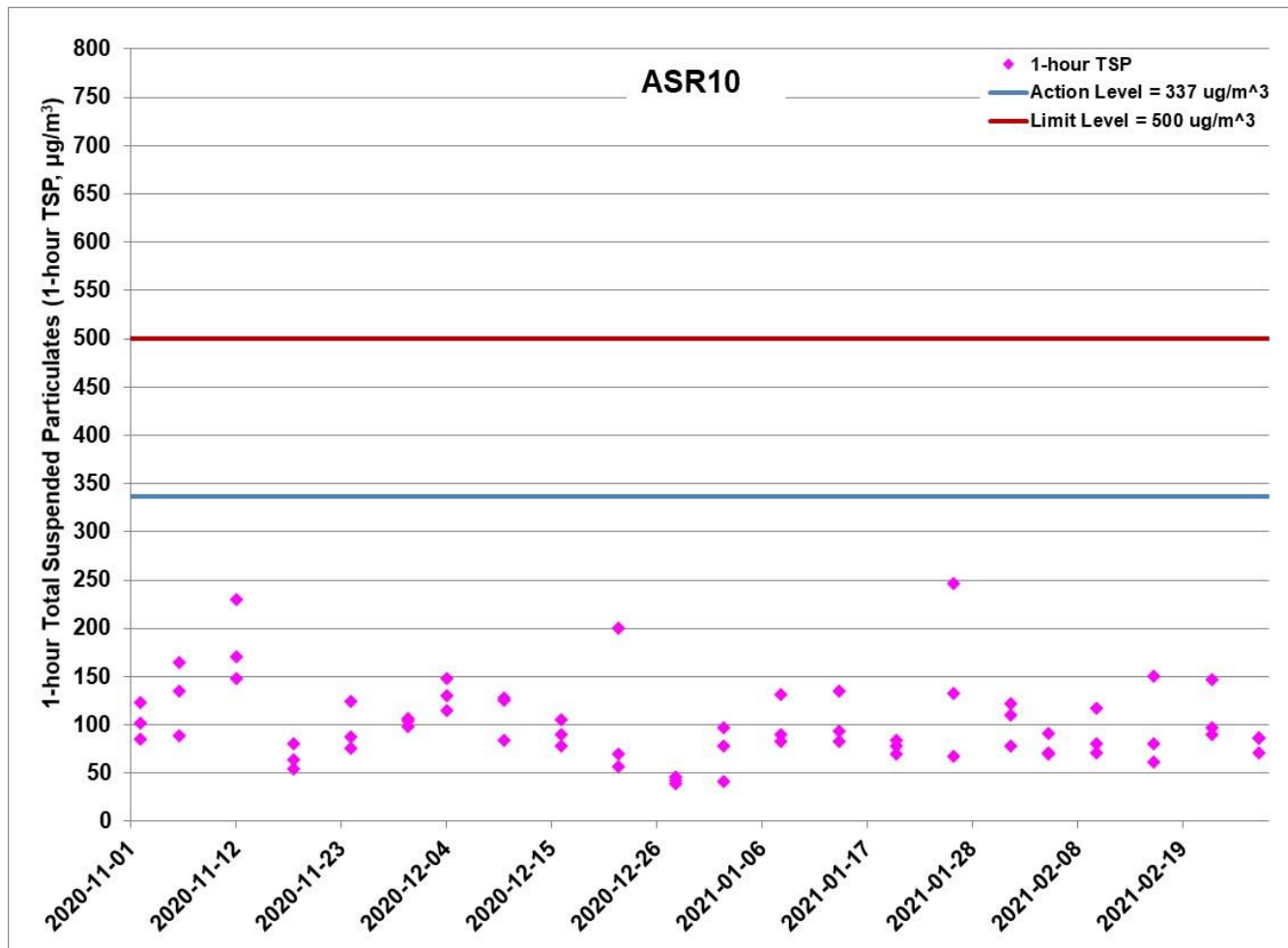


Figure G.5 Impact Monitoring - 1-hour Total Suspended Particulates ($\mu\text{g}/\text{m}^3$) at ASR10 between 1 November 2020 and 28 February 2021 during impact monitoring period. The weather conditions during the monitoring period were sunny and hazy. No major land-based construction activities was conducted in the reporting period (1/11/2020 - 28/2/2021)

Ref: 0212330_Impact AQM graphs_February 2021.xlsx



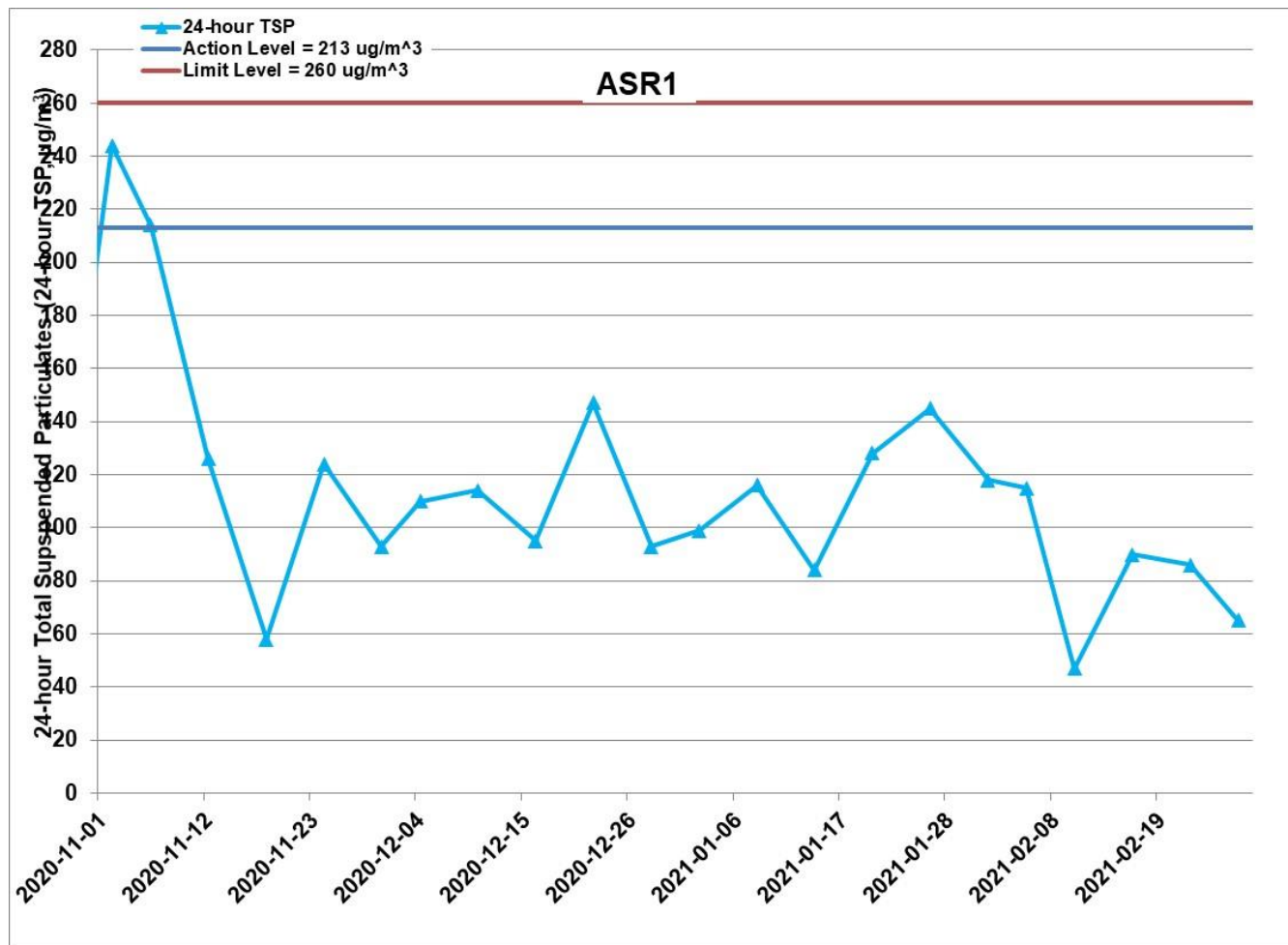


Figure G.6 Impact Monitoring – 24-hour Total Suspended Particulates ($\mu\text{g}/\text{m}^3$) at ASR1 between 1 November 2020 and 28 February 2021 during impact monitoring period. The weather conditions during the monitoring period were sunny and hazy. No major land-based construction activities was conducted in the reporting period (1/11/2020 – 28/2/2021)

Ref: 0212330_Impact AQM graphs_February 2021.xlsx



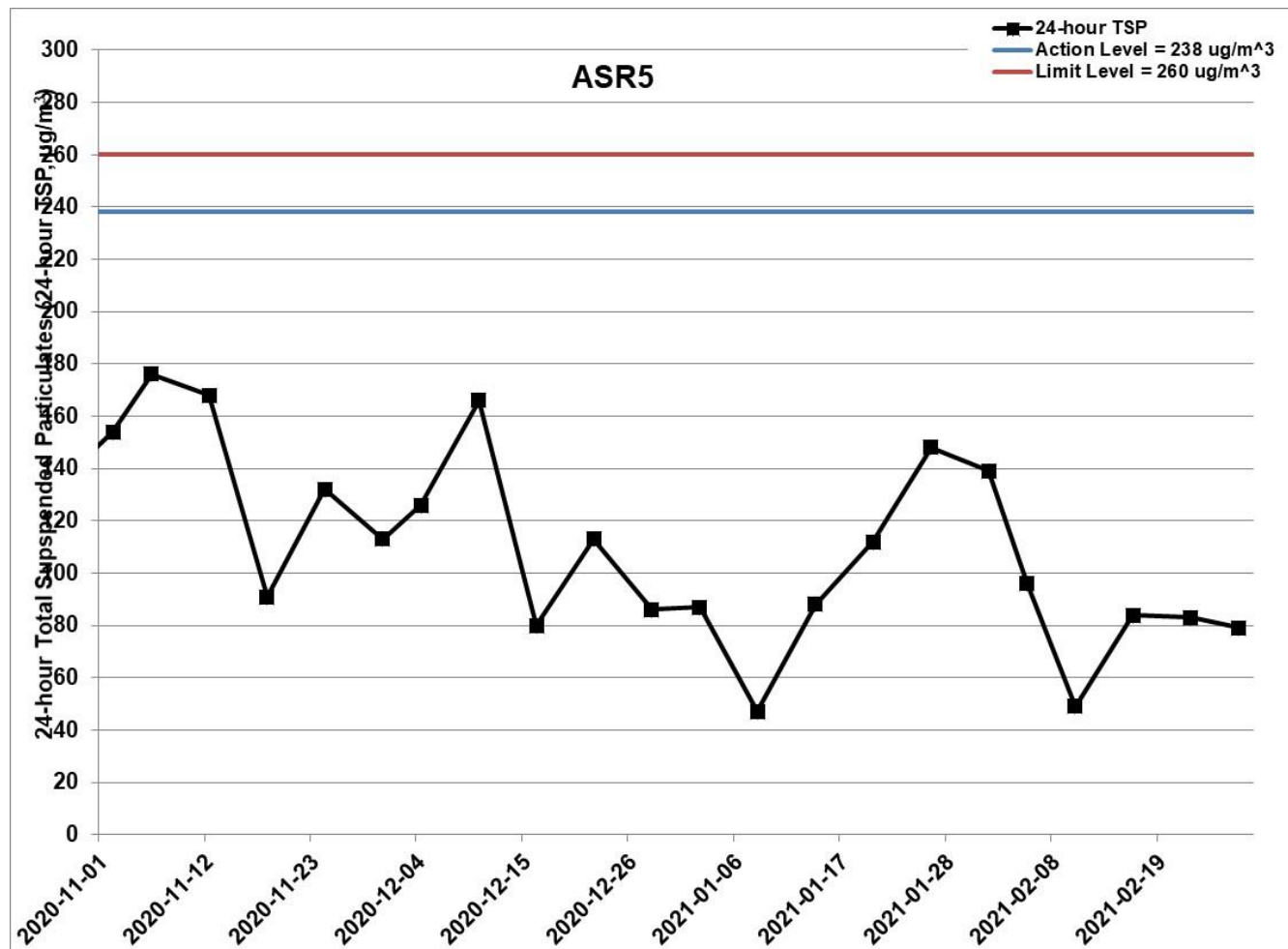


Figure G.7 Impact Monitoring - 24-hour Total Suspended Particulates ($\mu\text{g}/\text{m}^3$) at ASR5 between 1 November 2020 and 28 February 2021 during impact monitoring period. The weather conditions during the monitoring period were sunny and hazy. No major land-based construction activities was conducted in the reporting period (1/11/2020 - 28/2/2021)

Ref: 0212330_Impact AQM graphs_February 2021.xlsx



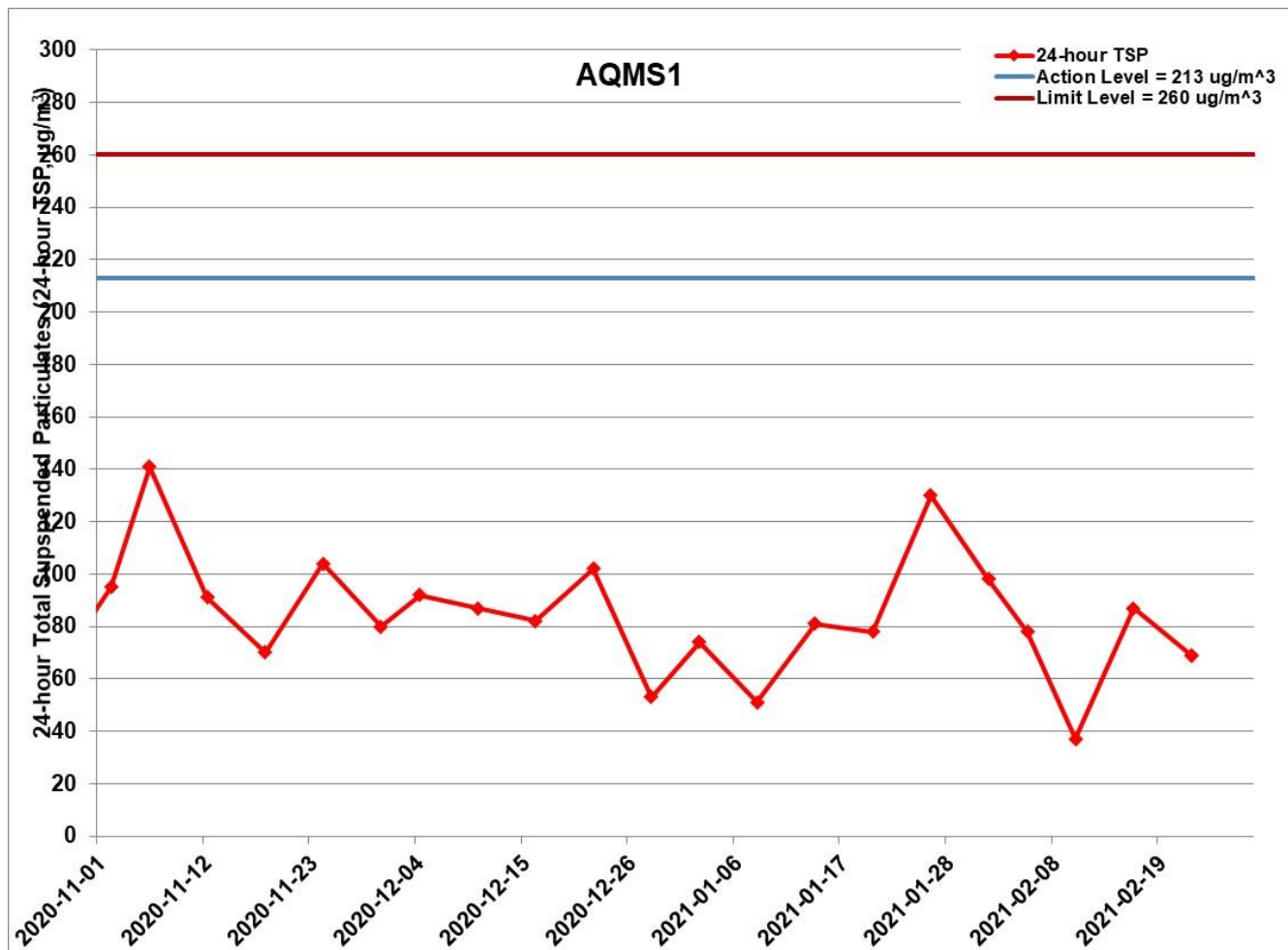


Figure G.8 Impact Monitoring - 24-hour Total Suspended Particulates ($\mu\text{g}/\text{m}^3$) at AQMS1 between 1 November 2020 and 28 February 2021 during impact monitoring period. The weather conditions during the monitoring period were sunny and hazy. No major land-based construction activities was conducted in the reporting period (1/11/2020 - 28/2/2021)

Ref: 0212330_Impact AQM graphs_February 2021.xlsx



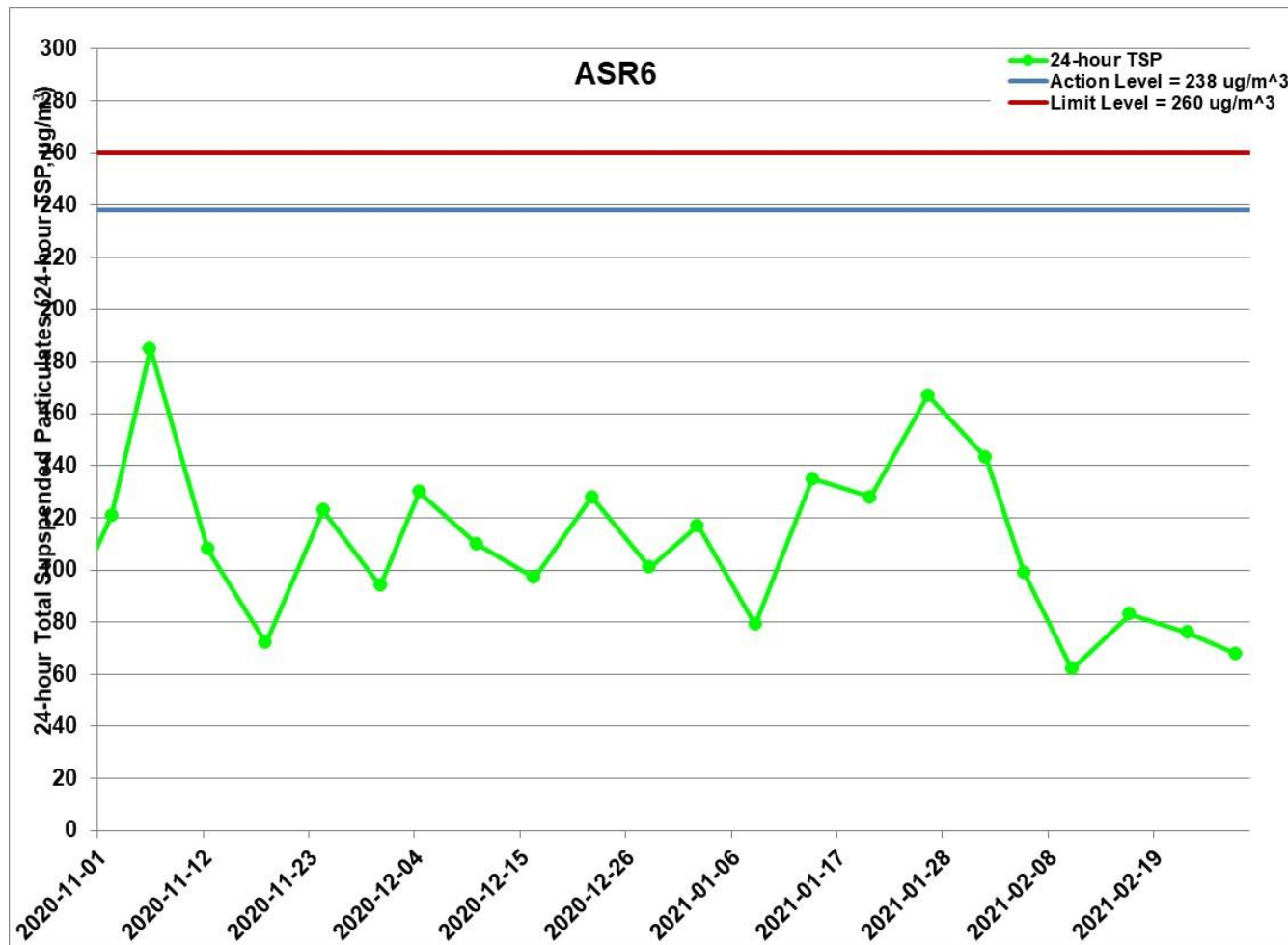


Figure G.9 Impact Monitoring - 24-hour Total Suspended Particulates ($\mu\text{g}/\text{m}^3$) at ASR6 between 1 November 2020 and 28 February 2021 during impact monitoring period. The weather conditions during the monitoring period were sunny and hazy. No major land-based construction activities was conducted in the reporting period (1/11/2020 - 28/2/2021)

Ref: 0212330_Impact AQM graphs_February 2021.xlsx



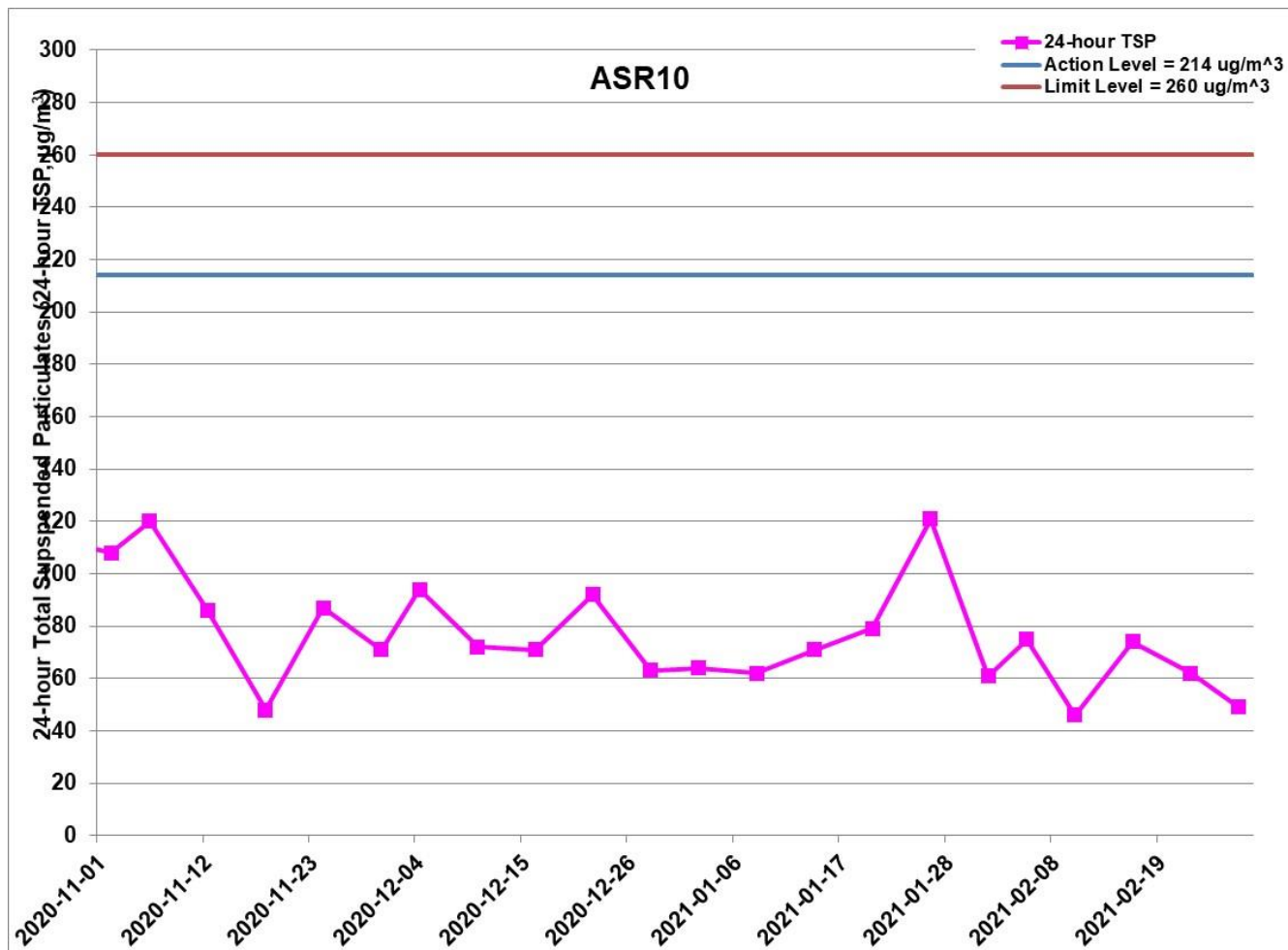


Figure G.10 Impact Monitoring - 24-hour Total Suspended Particulates ($\mu\text{g}/\text{m}^3$) at ASR10 between 1 November 2020 and 28 February 2021 during impact monitoring period. The weather conditions during the monitoring period were sunny and hazy. No major land-based construction activities was conducted in the reporting period (1/11/2020 - 28/2/2021)

Ref: 0212330_Impact AQM graphs_February 2021.xlsx



Project	Contract	Date	Station	Weather	Start time	Parameters	Results	units
TMCLKL	HY/2012/08	01-02-21	ASR10	Hazy	13:02	1-hour TSP	78	ug/m3
TMCLKL	HY/2012/08	01-02-21	ASR10	Hazy	14:04	1-hour TSP	122	ug/m3
TMCLKL	HY/2012/08	01-02-21	ASR10	Hazy	15:06	1-hour TSP	110	ug/m3
TMCLKL	HY/2012/08	01-02-21	ASR6	Hazy	13:13	1-hour TSP	214	ug/m3
TMCLKL	HY/2012/08	01-02-21	ASR6	Hazy	14:15	1-hour TSP	238	ug/m3
TMCLKL	HY/2012/08	01-02-21	ASR6	Hazy	15:17	1-hour TSP	261	ug/m3
TMCLKL	HY/2012/08	01-02-21	ASR5	Hazy	13:24	1-hour TSP	212	ug/m3
TMCLKL	HY/2012/08	01-02-21	ASR5	Hazy	14:26	1-hour TSP	161	ug/m3
TMCLKL	HY/2012/08	01-02-21	ASR5	Hazy	15:28	1-hour TSP	158	ug/m3
TMCLKL	HY/2012/08	01-02-21	ASR1	Hazy	13:35	1-hour TSP	130	ug/m3
TMCLKL	HY/2012/08	01-02-21	ASR1	Hazy	14:37	1-hour TSP	119	ug/m3
TMCLKL	HY/2012/08	01-02-21	ASR1	Hazy	15:39	1-hour TSP	90	ug/m3
TMCLKL	HY/2012/08	01-02-21	AQMS1	Hazy	13:46	1-hour TSP	165	ug/m3
TMCLKL	HY/2012/08	01-02-21	AQMS1	Hazy	14:48	1-hour TSP	240	ug/m3
TMCLKL	HY/2012/08	01-02-21	AQMS1	Hazy	15:50	1-hour TSP	186	ug/m3
TMCLKL	HY/2012/08	05-02-21	ASR10	Sunny	8:11	1-hour TSP	70	ug/m3
TMCLKL	HY/2012/08	05-02-21	ASR10	Sunny	9:13	1-hour TSP	71	ug/m3
TMCLKL	HY/2012/08	05-02-21	ASR10	Sunny	10:15	1-hour TSP	91	ug/m3
TMCLKL	HY/2012/08	05-02-21	ASR6	Sunny	8:22	1-hour TSP	98	ug/m3
TMCLKL	HY/2012/08	05-02-21	ASR6	Sunny	9:24	1-hour TSP	81	ug/m3
TMCLKL	HY/2012/08	05-02-21	ASR6	Sunny	10:26	1-hour TSP	100	ug/m3
TMCLKL	HY/2012/08	05-02-21	ASR5	Sunny	8:32	1-hour TSP	111	ug/m3
TMCLKL	HY/2012/08	05-02-21	ASR5	Sunny	9:34	1-hour TSP	302	ug/m3
TMCLKL	HY/2012/08	05-02-21	ASR5	Sunny	10:36	1-hour TSP	158	ug/m3
TMCLKL	HY/2012/08	05-02-21	ASR1	Sunny	8:46	1-hour TSP	78	ug/m3
TMCLKL	HY/2012/08	05-02-21	ASR1	Sunny	9:48	1-hour TSP	95	ug/m3
TMCLKL	HY/2012/08	05-02-21	ASR1	Sunny	10:50	1-hour TSP	107	ug/m3
TMCLKL	HY/2012/08	05-02-21	AQMS1	Sunny	8:56	1-hour TSP	127	ug/m3
TMCLKL	HY/2012/08	05-02-21	AQMS1	Sunny	9:58	1-hour TSP	114	ug/m3
TMCLKL	HY/2012/08	05-02-21	AQMS1	Sunny	11:00	1-hour TSP	92	ug/m3
TMCLKL	HY/2012/08	10-02-21	ASR10	Rainy	13:25	1-hour TSP	71	ug/m3

Project	Contract	Date	Station	Weather	Start time	Parameters	Results	units
TMCLKL	HY/2012/08	10-02-21	ASR10	Rainy	14:27	1-hour TSP	80	ug/m3
TMCLKL	HY/2012/08	10-02-21	ASR10	Rainy	15:29	1-hour TSP	117	ug/m3
TMCLKL	HY/2012/08	10-02-21	ASR6	Rainy	13:35	1-hour TSP	167	ug/m3
TMCLKL	HY/2012/08	10-02-21	ASR6	Rainy	14:37	1-hour TSP	104	ug/m3
TMCLKL	HY/2012/08	10-02-21	ASR6	Rainy	15:39	1-hour TSP	61	ug/m3
TMCLKL	HY/2012/08	10-02-21	ASR5	Rainy	13:46	1-hour TSP	102	ug/m3
TMCLKL	HY/2012/08	10-02-21	ASR5	Rainy	14:48	1-hour TSP	86	ug/m3
TMCLKL	HY/2012/08	10-02-21	ASR5	Rainy	15:50	1-hour TSP	135	ug/m3
TMCLKL	HY/2012/08	10-02-21	ASR1	Rainy	13:57	1-hour TSP	93	ug/m3
TMCLKL	HY/2012/08	10-02-21	ASR1	Rainy	14:59	1-hour TSP	102	ug/m3
TMCLKL	HY/2012/08	10-02-21	ASR1	Rainy	16:01	1-hour TSP	220	ug/m3
TMCLKL	HY/2012/08	10-02-21	AQMS1	Rainy	14:08	1-hour TSP	89	ug/m3
TMCLKL	HY/2012/08	10-02-21	AQMS1	Rainy	15:10	1-hour TSP	96	ug/m3
TMCLKL	HY/2012/08	10-02-21	AQMS1	Rainy	16:12	1-hour TSP	215	ug/m3
TMCLKL	HY/2012/08	16-02-21	ASR10	Sunny	13:10	1-hour TSP	81	ug/m3
TMCLKL	HY/2012/08	16-02-21	ASR10	Sunny	14:12	1-hour TSP	151	ug/m3
TMCLKL	HY/2012/08	16-02-21	ASR10	Sunny	15:14	1-hour TSP	62	ug/m3
TMCLKL	HY/2012/08	16-02-21	ASR6	Sunny	13:22	1-hour TSP	195	ug/m3
TMCLKL	HY/2012/08	16-02-21	ASR6	Sunny	14:24	1-hour TSP	117	ug/m3
TMCLKL	HY/2012/08	16-02-21	ASR6	Sunny	15:26	1-hour TSP	184	ug/m3
TMCLKL	HY/2012/08	16-02-21	ASR5	Sunny	13:33	1-hour TSP	118	ug/m3
TMCLKL	HY/2012/08	16-02-21	ASR5	Sunny	14:35	1-hour TSP	89	ug/m3
TMCLKL	HY/2012/08	16-02-21	ASR5	Sunny	15:37	1-hour TSP	355	ug/m3
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TMCLKL	HY/2012/08	16-02-21	ASR1	Sunny	14:48	1-hour TSP	237	ug/m3
TMCLKL	HY/2012/08	16-02-21	ASR1	Sunny	15:50	1-hour TSP	167	ug/m3
TMCLKL	HY/2012/08	16-02-21	AQMS1	Sunny	13:58	1-hour TSP	100	ug/m3
TMCLKL	HY/2012/08	16-02-21	AQMS1	Sunny	15:00	1-hour TSP	93	ug/m3
TMCLKL	HY/2012/08	16-02-21	AQMS1	Sunny	16:02	1-hour TSP	179	ug/m3
TMCLKL	HY/2012/08	22-02-21	ASR10	Sunny	13:10	1-hour TSP	97	ug/m3
TMCLKL	HY/2012/08	22-02-21	ASR10	Sunny	14:12	1-hour TSP	90	ug/m3

Project	Contract	Date	Station	Weather	Start time	Parameters	Results	units
TMCLKL	HY/2012/08	22-02-21	ASR10	Sunny	15:14	1-hour TSP	147	ug/m3
TMCLKL	HY/2012/08	22-02-21	ASR6	Sunny	13:22	1-hour TSP	113	ug/m3
TMCLKL	HY/2012/08	22-02-21	ASR6	Sunny	14:24	1-hour TSP	97	ug/m3
TMCLKL	HY/2012/08	22-02-21	ASR6	Sunny	15:26	1-hour TSP	203	ug/m3
TMCLKL	HY/2012/08	22-02-21	ASR5	Sunny	13:34	1-hour TSP	136	ug/m3
TMCLKL	HY/2012/08	22-02-21	ASR5	Sunny	14:36	1-hour TSP	139	ug/m3
TMCLKL	HY/2012/08	22-02-21	ASR5	Sunny	15:38	1-hour TSP	472	ug/m3
TMCLKL	HY/2012/08	22-02-21	ASR1	Sunny	13:47	1-hour TSP	128	ug/m3
TMCLKL	HY/2012/08	22-02-21	ASR1	Sunny	14:49	1-hour TSP	209	ug/m3
TMCLKL	HY/2012/08	22-02-21	ASR1	Sunny	15:51	1-hour TSP	171	ug/m3
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TMCLKL	HY/2012/08	22-02-21	AQMS1	Sunny	16:02	1-hour TSP	154	ug/m3
TMCLKL	HY/2012/08	27-02-21	ASR10	Sunny	08:05	1-hour TSP	71	ug/m3
TMCLKL	HY/2012/08	27-02-21	ASR10	Sunny	09:07	1-hour TSP	86	ug/m3
TMCLKL	HY/2012/08	27-02-21	ASR10	Sunny	10:09	1-hour TSP	87	ug/m3
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TMCLKL	HY/2012/08	27-02-21	ASR6	Sunny	09:19	1-hour TSP	174	ug/m3
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TMCLKL	HY/2012/08	27-02-21	ASR5	Sunny	10:32	1-hour TSP	175	ug/m3
TMCLKL	HY/2012/08	27-02-21	ASR1	Sunny	08:40	1-hour TSP	154	ug/m3
TMCLKL	HY/2012/08	27-02-21	ASR1	Sunny	09:42	1-hour TSP	101	ug/m3
TMCLKL	HY/2012/08	27-02-21	ASR1	Sunny	10:44	1-hour TSP	107	ug/m3
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TMCLKL	HY/2012/08	27-02-21	AQMS1	Sunny	09:56	1-hour TSP	89	ug/m3
TMCLKL	HY/2012/08	27-02-21	AQMS1	Sunny	10:58	1-hour TSP	117	ug/m3
TMCLKL	HY/2012/08	01-02-21	ASR10	Hazy	16:08	24-hour TSP	61	ug/m3
TMCLKL	HY/2012/08	01-02-21	ASR6	Hazy	16:19	24-hour TSP	143	ug/m3
TMCLKL	HY/2012/08	01-02-21	ASR5	Hazy	16:30	24-hour TSP	139	ug/m3

Project	Contract	Date	Station	Weather	Start time	Parameters	Results	units
TMCLKL	HY/2012/08	01-02-21	ASR1	Hazy	16:41	24-hour TSP	118	ug/m3
TMCLKL	HY/2012/08	01-02-21	AQMS1	Hazy	16:52	24-hour TSP	98	ug/m3
TMCLKL	HY/2012/08	05-02-21	ASR10	Sunny	11:17	24-hour TSP	75	ug/m3
TMCLKL	HY/2012/08	05-02-21	ASR6	Sunny	11:28	24-hour TSP	99	ug/m3
TMCLKL	HY/2012/08	05-02-21	ASR5	Sunny	11:38	24-hour TSP	96	ug/m3
TMCLKL	HY/2012/08	05-02-21	ASR1	Sunny	11:52	24-hour TSP	115	ug/m3
TMCLKL	HY/2012/08	05-02-21	AQMS1	Sunny	12:02	24-hour TSP	78	ug/m3
TMCLKL	HY/2012/08	10-02-21	ASR10	Rainy	16:31	24-hour TSP	46	ug/m3
TMCLKL	HY/2012/08	10-02-21	ASR6	Rainy	16:41	24-hour TSP	62	ug/m3
TMCLKL	HY/2012/08	10-02-21	ASR5	Rainy	16:52	24-hour TSP	49	ug/m3
TMCLKL	HY/2012/08	10-02-21	ASR1	Rainy	17:03	24-hour TSP	47	ug/m3
TMCLKL	HY/2012/08	10-02-21	AQMS1	Rainy	17:14	24-hour TSP	37	ug/m3
TMCLKL	HY/2012/08	16-02-21	ASR10	Sunny	16:16	24-hour TSP	74	ug/m3
TMCLKL	HY/2012/08	16-02-21	ASR6	Sunny	16:28	24-hour TSP	83	ug/m3
TMCLKL	HY/2012/08	16-02-21	ASR5	Sunny	16:39	24-hour TSP	84	ug/m3
TMCLKL	HY/2012/08	16-02-21	ASR1	Sunny	16:52	24-hour TSP	90	ug/m3
TMCLKL	HY/2012/08	16-02-21	AQMS1	Sunny	17:04	24-hour TSP	87	ug/m3
TMCLKL	HY/2012/08	22-02-21	ASR10	Sunny	16:16	24-hour TSP	62	ug/m3
TMCLKL	HY/2012/08	22-02-21	ASR6	Sunny	16:28	24-hour TSP	76	ug/m3
TMCLKL	HY/2012/08	22-02-21	ASR5	Sunny	16:40	24-hour TSP	83	ug/m3
TMCLKL	HY/2012/08	22-02-21	ASR1	Sunny	16:53	24-hour TSP	86	ug/m3
TMCLKL	HY/2012/08	22-02-21	AQMS1	Sunny	17:04	24-hour TSP	69	ug/m3
TMCLKL	HY/2012/08	27-02-21	ASR10	Sunny	11:11	24-hour TSP	49	ug/m3
TMCLKL	HY/2012/08	27-02-21	ASR6	Sunny	11:23	24-hour TSP	68	ug/m3
TMCLKL	HY/2012/08	27-02-21	ASR5	Sunny	11:34	24-hour TSP	79	ug/m3
TMCLKL	HY/2012/08	27-02-21	ASR1	Sunny	11:46	24-hour TSP	65	ug/m3
TMCLKL	HY/2012/08	27-02-21	AQMS1	Sunny	12:00	24-hour TSP	52	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)
21/02/01	1:00	0.4	116
21/02/01	2:00	0.4	84
21/02/01	3:00	0.9	306
21/02/01	4:00	0.9	303
21/02/01	5:00	0.4	88
21/02/01	6:00	0	81
21/02/01	7:00	0.4	34
21/02/01	8:00	0.4	175
21/02/01	9:00	0.9	190
21/02/01	10:00	1.3	211
21/02/01	11:00	1.3	206
21/02/01	12:00	1.8	192
21/02/01	13:00	1.8	204
21/02/01	14:00	1.8	196
21/02/01	15:00	1.3	219
21/02/01	16:00	1.3	192
21/02/01	17:00	0.9	72
21/02/01	18:00	0.9	57
21/02/01	19:00	0.9	34
21/02/01	20:00	0.9	78
21/02/01	21:00	0.9	99
21/02/01	22:00	0.4	45
21/02/01	23:00	0.4	53
21/02/02	0:00	0	46
21/02/02	1:00	0	44
21/02/02	2:00	0.4	14
21/02/02	3:00	0	16
21/02/02	4:00	0	29
21/02/02	5:00	0	14
21/02/02	6:00	0	21
21/02/02	7:00	0	17
21/02/02	8:00	0.4	108
21/02/02	9:00	1.8	205
21/02/02	10:00	1.8	196
21/02/02	11:00	1.8	198
21/02/02	12:00	2.2	195
21/02/02	13:00	1.3	272
21/02/02	14:00	2.2	203
21/02/02	15:00	1.8	212
21/02/02	16:00	0.9	135
21/02/02	17:00	3.6	97
21/02/02	18:00	3.6	79
21/02/02	19:00	3.1	85
21/02/02	20:00	3.1	74
21/02/02	21:00	3.1	73
21/02/02	22:00	2.7	64
21/02/02	23:00	3.1	34
21/02/05	0:00	1.8	67
21/02/05	1:00	1.8	48
21/02/05	2:00	1.8	42
21/02/05	3:00	2.2	76
21/02/05	4:00	2.7	58
21/02/05	5:00	3.1	79
21/02/05	6:00	2.2	72
21/02/05	7:00	0.4	18

21/02/05	8:00	0.9	78
21/02/05	9:00	0.4	164
21/02/05	10:00	0.9	145
21/02/05	11:00	1.3	144
21/02/05	12:00	2.2	136
21/02/05	13:00	1.8	208
21/02/05	14:00	1.8	201
21/02/05	15:00	1.8	214
21/02/05	16:00	1.8	207
21/02/05	17:00	0.9	137
21/02/05	18:00	0.9	42
21/02/05	19:00	1.3	53
21/02/05	20:00	1.3	34
21/02/05	21:00	1.3	35
21/02/05	22:00	1.3	45
21/02/05	23:00	0.9	47
21/02/06	0:00	0	144
21/02/06	1:00	0.4	128
21/02/06	2:00	0.9	286
21/02/06	3:00	0.9	350
21/02/06	4:00	0.4	353
21/02/06	5:00	0.9	335
21/02/06	6:00	0.9	336
21/02/06	7:00	0.4	340
21/02/06	8:00	0.4	173
21/02/06	9:00	0.9	171
21/02/06	10:00	1.3	228
21/02/06	11:00	2.2	209
21/02/06	12:00	2.2	193
21/02/06	13:00	2.2	198
21/02/06	14:00	1.8	226
21/02/06	15:00	1.3	208
21/02/06	16:00	1.3	124
21/02/06	17:00	1.3	36
21/02/06	18:00	0.9	62
21/02/06	19:00	0.9	77
21/02/06	20:00	0.4	62
21/02/06	21:00	0.4	117
21/02/06	22:00	0	101
21/02/06	23:00	0.4	123
21/02/10	0:00	5.4	77
21/02/10	1:00	4.5	62
21/02/10	2:00	4.5	56
21/02/10	3:00	4.5	49
21/02/10	4:00	4	37
21/02/10	5:00	1.3	336
21/02/10	6:00	1.3	311
21/02/10	7:00	1.8	341
21/02/10	8:00	3.1	316
21/02/10	9:00	3.6	335
21/02/10	10:00	4.5	345
21/02/10	11:00	3.1	27
21/02/10	12:00	2.2	32
21/02/10	13:00	2.7	16
21/02/10	14:00	3.6	23
21/02/10	15:00	4.5	14
21/02/10	16:00	4.5	26

21/02/10	17:00	3.6	22
21/02/10	18:00	0.9	308
21/02/10	19:00	0.9	266
21/02/10	20:00	0.4	271
21/02/10	21:00	1.3	287
21/02/10	22:00	1.3	282
21/02/10	23:00	0.4	301
21/02/11	0:00	0.4	284
21/02/11	1:00	0.9	309
21/02/11	2:00	0	316
21/02/11	3:00	0	326
21/02/11	4:00	0.4	273
21/02/11	5:00	0.9	325
21/02/11	6:00	0.9	17
21/02/11	7:00	0.4	114
21/02/11	8:00	0.4	51
21/02/11	9:00	0.9	355
21/02/11	10:00	1.3	23
21/02/11	11:00	1.3	27
21/02/11	12:00	1.3	32
21/02/11	13:00	0.9	27
21/02/11	14:00	1.3	316
21/02/11	15:00	1.8	305
21/02/11	16:00	0.9	335
21/02/11	17:00	0.9	305
21/02/11	18:00	0.4	302
21/02/11	19:00	0.9	314
21/02/11	20:00	0.9	296
21/02/11	21:00	0.4	300
21/02/11	22:00	0.9	297
21/02/11	23:00	0	290
21/02/16	0:00	1.8	78
21/02/16	1:00	1.8	70
21/02/16	2:00	1.3	86
21/02/16	3:00	1.3	58
21/02/16	4:00	1.3	85
21/02/16	5:00	2.7	100
21/02/16	6:00	2.7	79
21/02/16	7:00	1.8	41
21/02/16	8:00	2.2	56
21/02/16	9:00	2.2	93
21/02/16	10:00	1.8	111
21/02/16	11:00	1.8	129
21/02/16	12:00	1.3	101
21/02/16	13:00	1.3	131
21/02/16	14:00	1.3	196
21/02/16	15:00	0.9	274
21/02/16	16:00	0.9	277
21/02/16	17:00	0.9	198
21/02/16	18:00	0.9	261
21/02/16	19:00	0.9	299
21/02/16	20:00	0.9	324
21/02/16	21:00	0.4	328
21/02/16	22:00	0.4	288
21/02/16	23:00	0.4	273
21/02/17	0:00	1.3	308
21/02/17	1:00	0.9	303

21/02/17	2:00	0	295
21/02/17	3:00	0	303
21/02/17	4:00	0.4	2
21/02/17	5:00	1.3	5
21/02/17	6:00	1.8	18
21/02/17	7:00	2.2	20
21/02/17	8:00	1.8	19
21/02/17	9:00	2.7	32
21/02/17	10:00	1.8	90
21/02/17	11:00	2.2	23
21/02/17	12:00	1.8	33
21/02/17	13:00	1.8	28
21/02/17	14:00	1.8	24
21/02/17	15:00	1.8	144
21/02/17	16:00	0.9	18
21/02/17	17:00	1.3	81
21/02/17	18:00	1.3	78
21/02/17	19:00	1.3	53
21/02/17	20:00	1.3	66
21/02/17	21:00	1.3	38
21/02/17	22:00	1.8	48
21/02/17	23:00	1.8	49
21/02/22	0:00	0.9	45
21/02/22	1:00	0.4	45
21/02/22	2:00	0	32
21/02/22	3:00	0	21
21/02/22	4:00	0	19
21/02/22	5:00	0	14
21/02/22	6:00	0.4	358
21/02/22	7:00	0.4	307
21/02/22	8:00	0.9	138
21/02/22	9:00	0.9	126
21/02/22	10:00	0.9	183
21/02/22	11:00	1.3	203
21/02/22	12:00	1.8	233
21/02/22	13:00	1.3	236
21/02/22	14:00	1.8	203
21/02/22	15:00	1.8	211
21/02/22	16:00	1.3	212
21/02/22	17:00	1.3	67
21/02/22	18:00	1.3	60
21/02/22	19:00	1.3	71
21/02/22	20:00	1.3	50
21/02/22	21:00	0.9	60
21/02/22	22:00	0.4	57
21/02/22	23:00	0.4	35
21/02/23	0:00	0.4	46
21/02/23	1:00	0.9	322
21/02/23	2:00	0.4	328
21/02/23	3:00	0.4	341
21/02/23	4:00	0	303
21/02/23	5:00	0	322
21/02/23	6:00	0.4	308
21/02/23	7:00	0	317
21/02/23	8:00	0	113
21/02/23	9:00	1.3	218
21/02/23	10:00	1.3	193

21/02/23	11:00	0.9	130
21/02/23	12:00	1.8	210
21/02/23	13:00	1.8	200
21/02/23	14:00	1.3	230
21/02/23	15:00	2.2	100
21/02/23	16:00	2.7	92
21/02/23	17:00	3.1	104
21/02/23	18:00	2.2	86
21/02/23	19:00	2.2	97
21/02/23	20:00	2.7	94
21/02/23	21:00	2.7	87
21/02/23	22:00	2.2	98
21/02/23	23:00	2.7	81
21/02/27	0:00	1.3	326
21/02/27	1:00	0.4	323
21/02/27	2:00	0.9	11
21/02/27	3:00	1.3	11
21/02/27	4:00	1.8	24
21/02/27	5:00	2.2	15
21/02/27	6:00	1.8	13
21/02/27	7:00	1.8	14
21/02/27	8:00	1.8	6
21/02/27	9:00	1.3	347
21/02/27	10:00	1.3	34
21/02/27	11:00	0.9	42
21/02/27	12:00	1.8	33
21/02/27	13:00	0.9	1
21/02/27	14:00	1.3	16
21/02/27	15:00	1.8	13
21/02/27	16:00	1.8	17
21/02/27	17:00	1.3	14
21/02/27	18:00	1.3	22
21/02/27	19:00	1.3	24
21/02/27	20:00	1.3	16
21/02/27	21:00	0.9	26
21/02/27	22:00	0.4	258
21/02/27	23:00	0.4	78
21/02/28	0:00	0.9	99
21/02/28	1:00	0.9	74
21/02/28	2:00	0.4	110
21/02/28	3:00	0.4	51
21/02/28	4:00	0.9	38
21/02/28	5:00	1.3	38
21/02/28	6:00	1.8	40
21/02/28	7:00	2.2	42
21/02/28	8:00	2.2	73
21/02/28	9:00	2.2	57
21/02/28	10:00	2.2	76
21/02/28	11:00	1.8	86
21/02/28	12:00	3.1	81
21/02/28	13:00	2.7	85
21/02/28	14:00	2.2	80
21/02/28	15:00	2.2	85
21/02/28	16:00	2.7	95
21/02/28	17:00	2.2	96
21/02/28	18:00	1.8	100
21/02/28	19:00	1.3	125

21/02/28	20:00	1.3	126
21/02/28	21:00	0.9	96
21/02/28	22:00	0.9	101
21/02/28	23:00	0.9	50

Appendix I

Operational Phase Dolphin Monitoring Survey

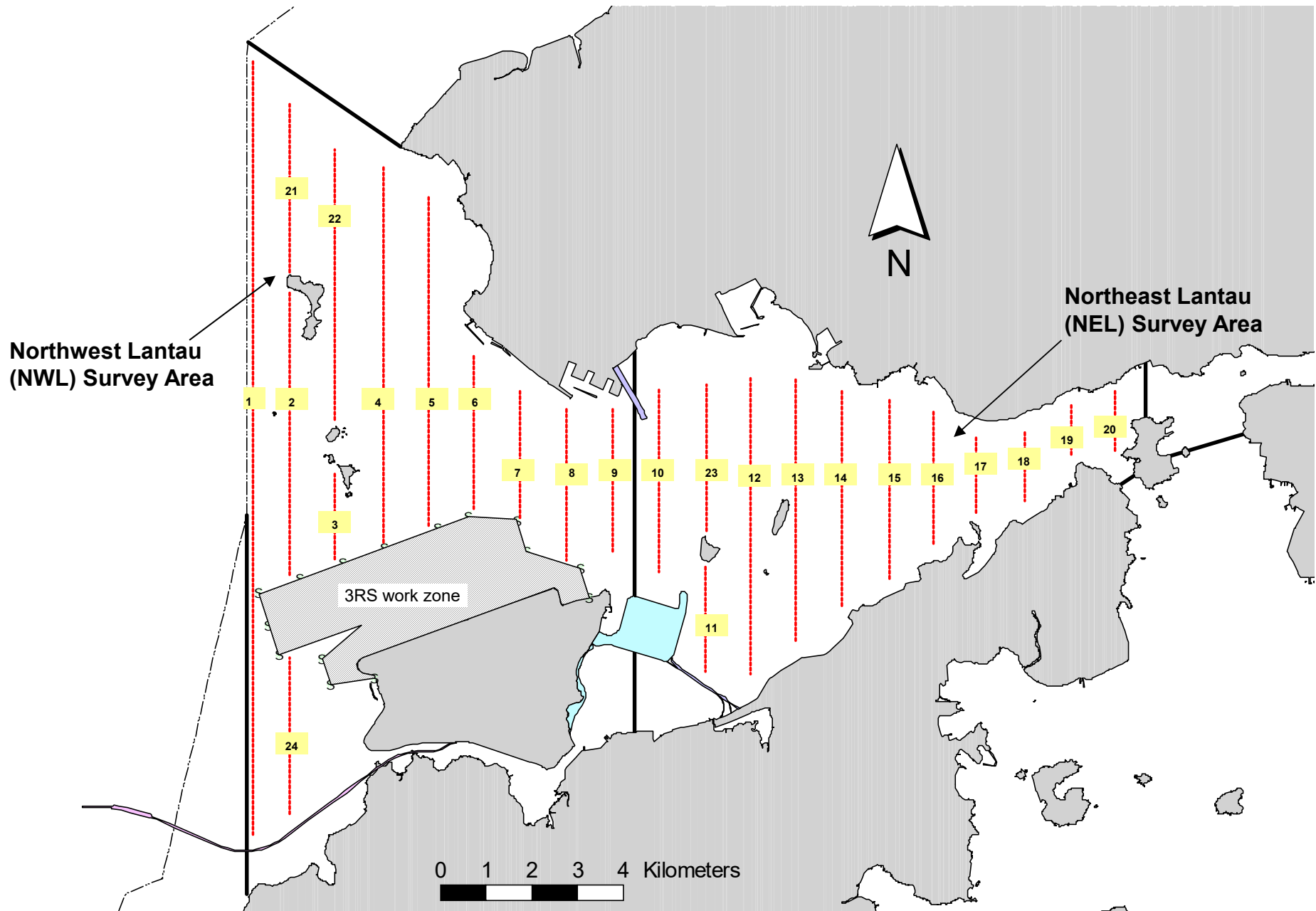


Figure 1. Transect Line Layout in Northwest and Northeast Lantau Survey Areas

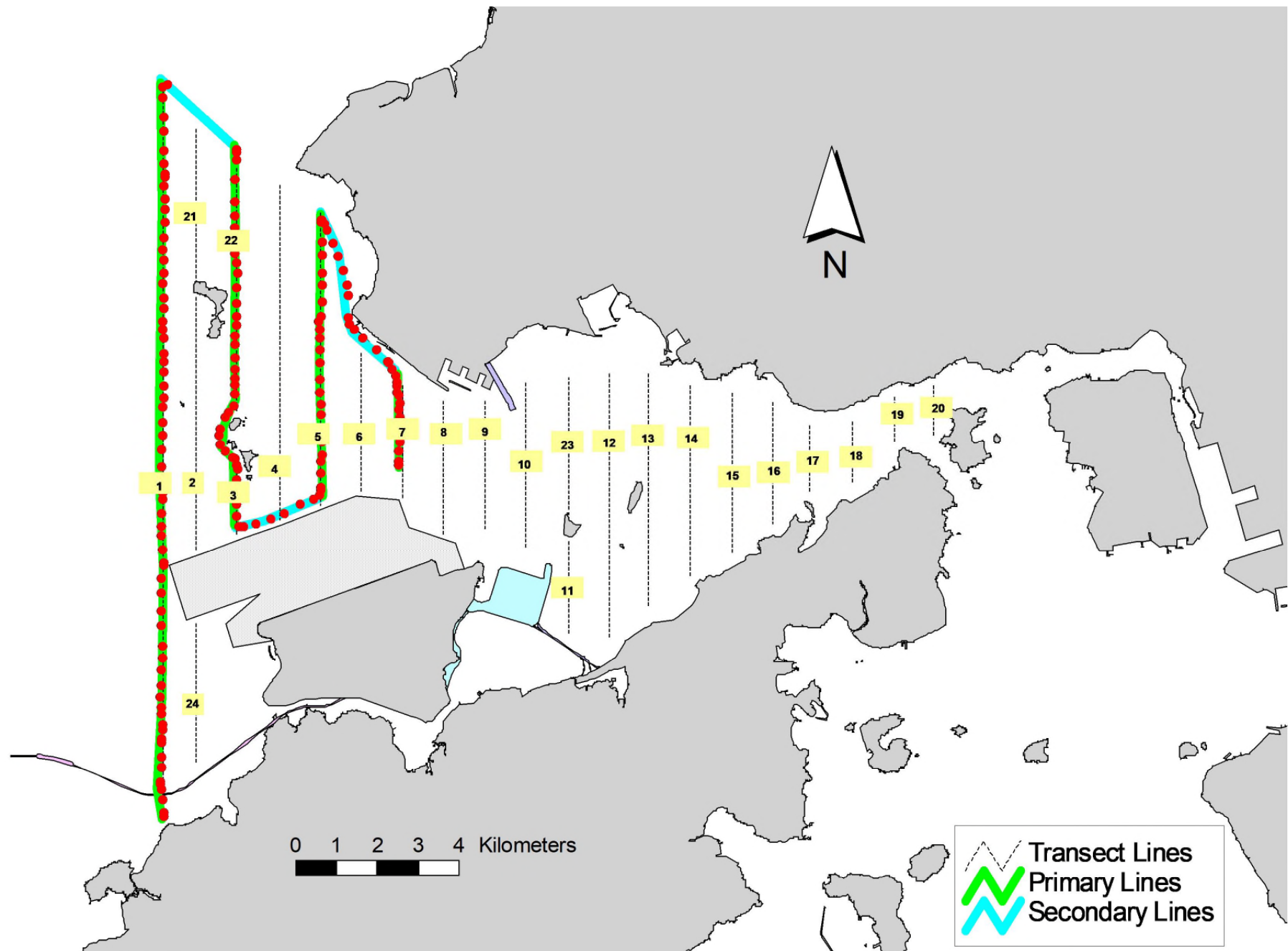


Figure 3. Survey Route on February 8th, 2021

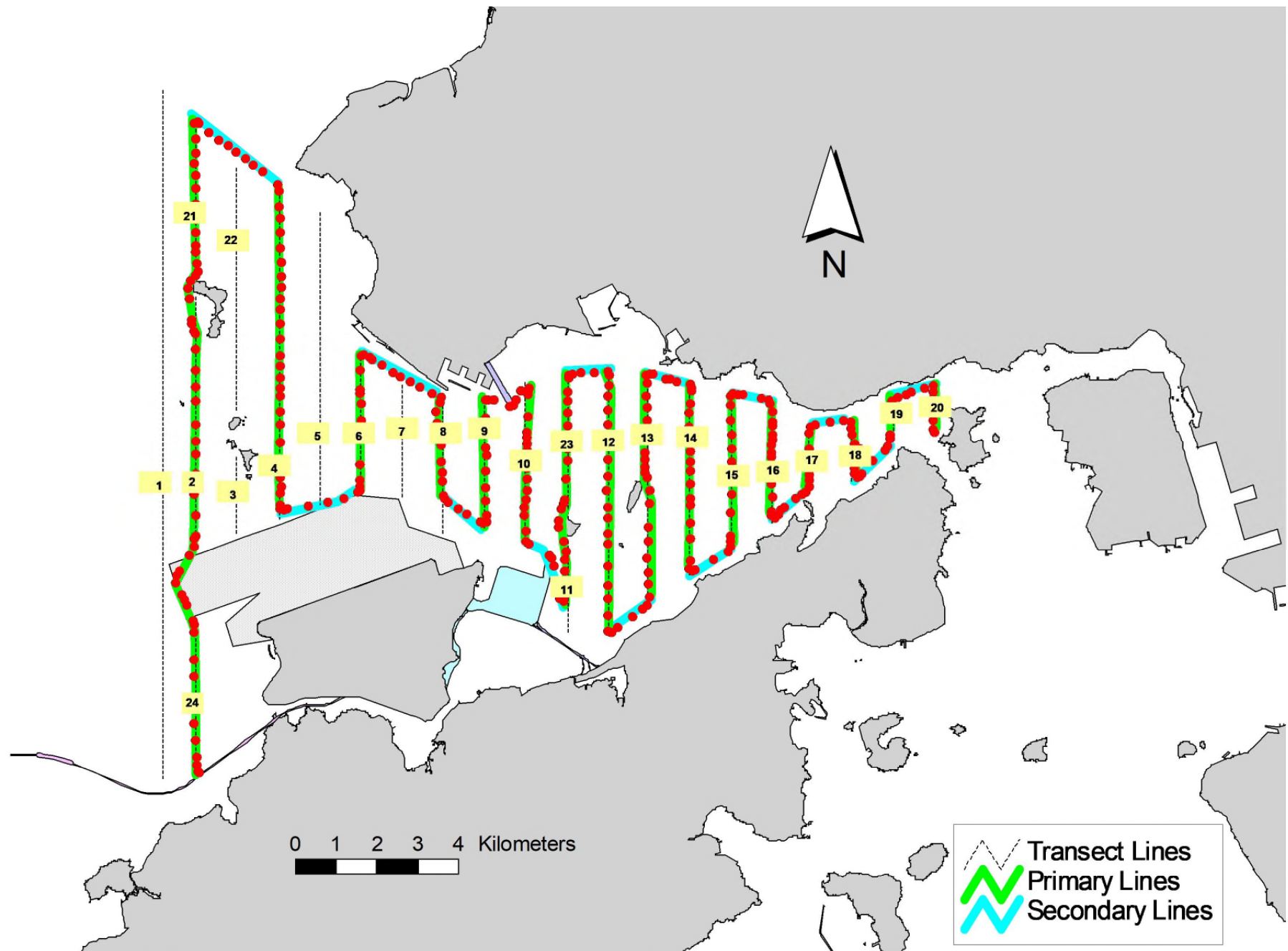


Figure 4. Survey Route on February 18th, 2021

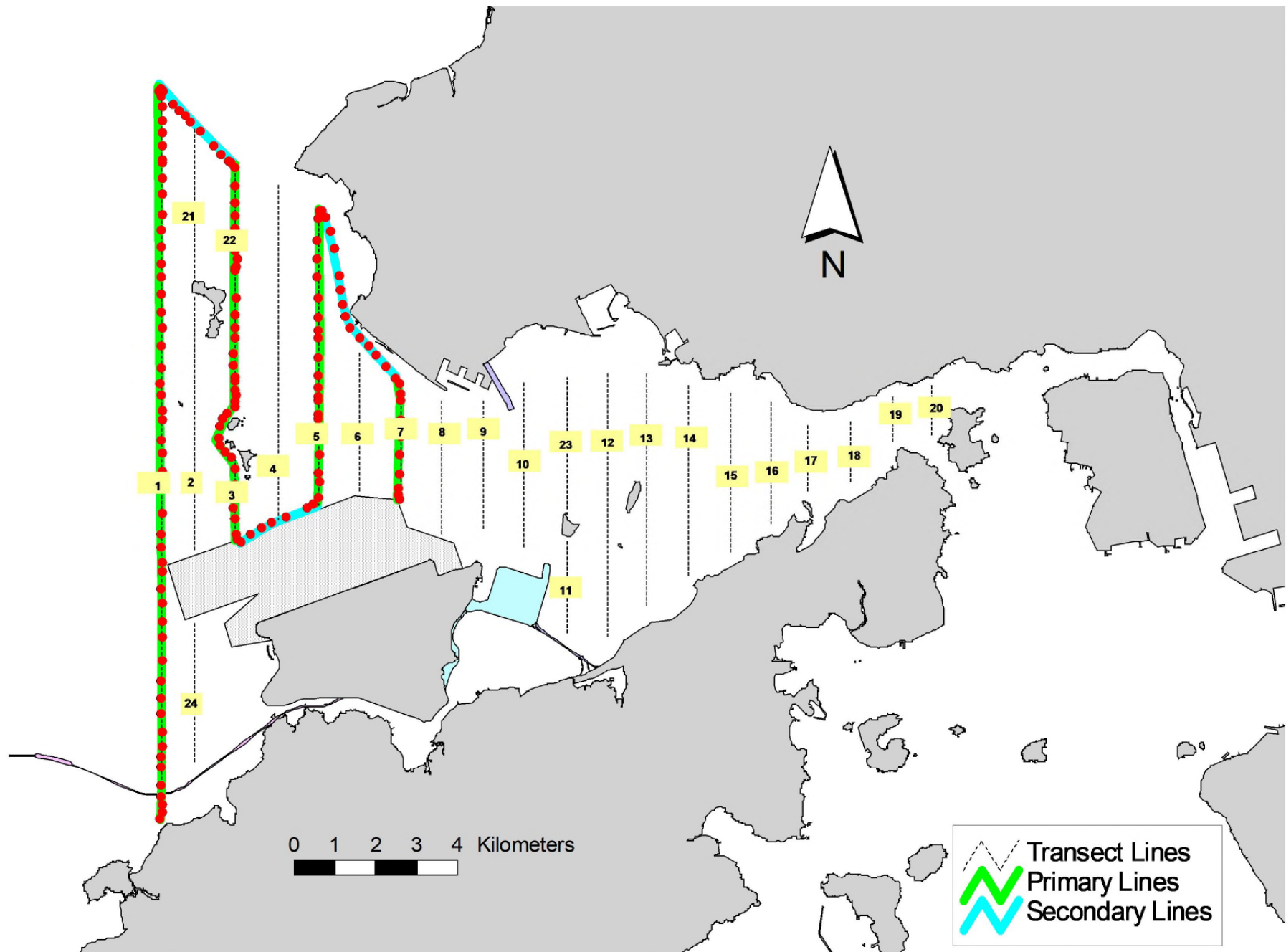


Figure 5. Survey Route on February 23rd, 2021

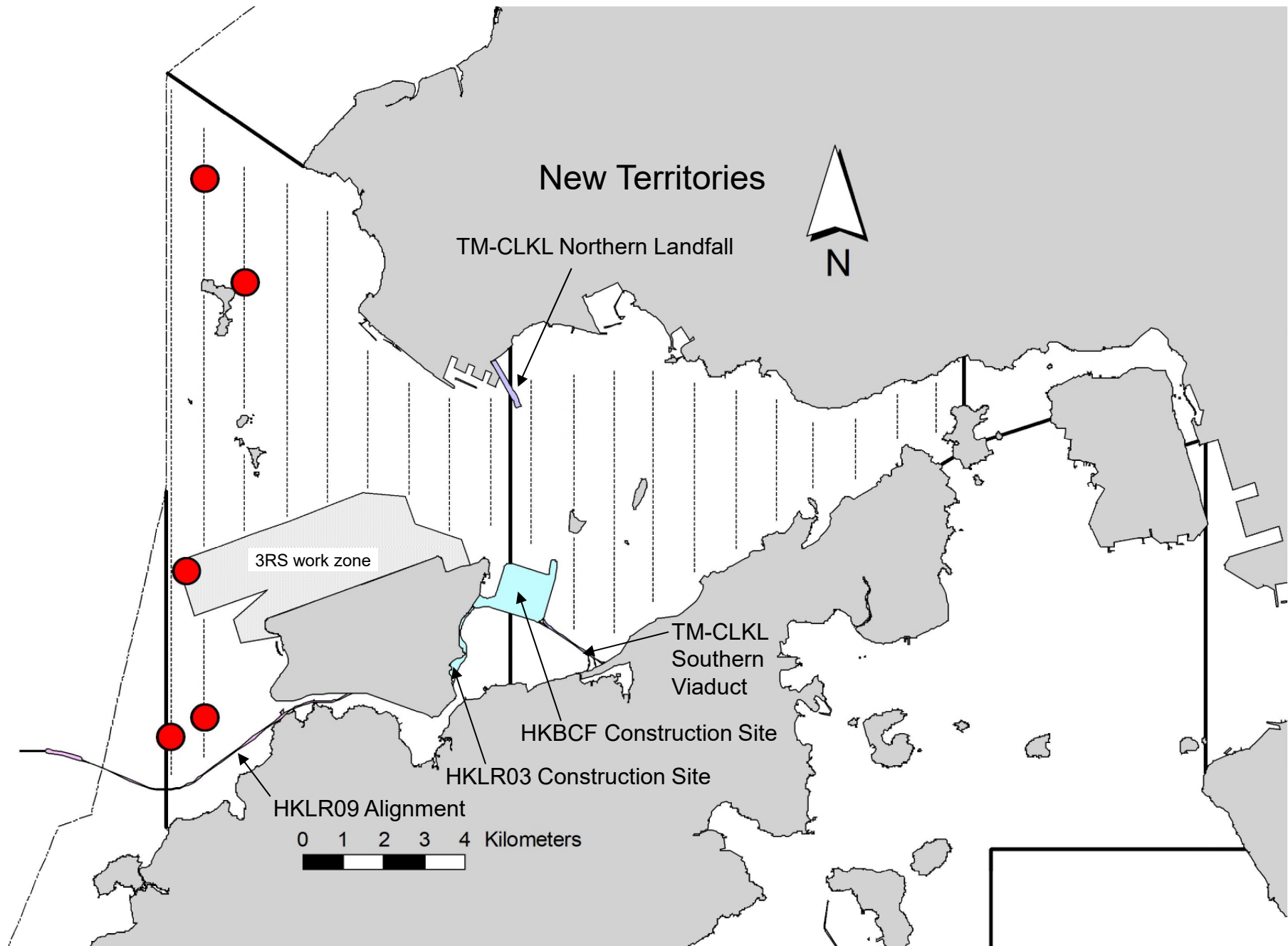


Figure 6. Distribution of Chinese White Dolphin Sightings during February 2021 Monitoring Surveys

Appendix I. TMCLKL Survey Effort Database (February 2021)

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

DATE	AREA	BEAU	EFFORT	SEASON	VESSEL	TYPE	P/S
2-Feb-21	NW LANTAU	1	3.60	WINTER	STANDARD36826	TMCLKL	P
2-Feb-21	NW LANTAU	2	24.81	WINTER	STANDARD36826	TMCLKL	P
2-Feb-21	NW LANTAU	1	2.45	WINTER	STANDARD36826	TMCLKL	S
2-Feb-21	NW LANTAU	2	7.70	WINTER	STANDARD36826	TMCLKL	S
2-Feb-21	NE LANTAU	0	1.60	WINTER	STANDARD36826	TMCLKL	P
2-Feb-21	NE LANTAU	1	15.60	WINTER	STANDARD36826	TMCLKL	P
2-Feb-21	NE LANTAU	2	18.77	WINTER	STANDARD36826	TMCLKL	P
2-Feb-21	NE LANTAU	1	5.60	WINTER	STANDARD36826	TMCLKL	S
2-Feb-21	NE LANTAU	2	8.33	WINTER	STANDARD36826	TMCLKL	S
8-Feb-21	NW LANTAU	2	9.76	WINTER	STANDARD36826	TMCLKL	P
8-Feb-21	NW LANTAU	3	23.48	WINTER	STANDARD36826	TMCLKL	P
8-Feb-21	NW LANTAU	2	0.90	WINTER	STANDARD36826	TMCLKL	S
8-Feb-21	NW LANTAU	3	7.33	WINTER	STANDARD36826	TMCLKL	S
18-Feb-21	NW LANTAU	1	5.60	WINTER	STANDARD36826	TMCLKL	P
18-Feb-21	NW LANTAU	2	18.88	WINTER	STANDARD36826	TMCLKL	P
18-Feb-21	NW LANTAU	3	3.50	WINTER	STANDARD36826	TMCLKL	P
18-Feb-21	NW LANTAU	1	1.50	WINTER	STANDARD36826	TMCLKL	S
18-Feb-21	NW LANTAU	2	10.02	WINTER	STANDARD36826	TMCLKL	S
18-Feb-21	NE LANTAU	1	9.55	WINTER	STANDARD36826	TMCLKL	P
18-Feb-21	NE LANTAU	2	20.88	WINTER	STANDARD36826	TMCLKL	P
18-Feb-21	NE LANTAU	3	4.70	WINTER	STANDARD36826	TMCLKL	P
18-Feb-21	NE LANTAU	1	2.74	WINTER	STANDARD36826	TMCLKL	S
18-Feb-21	NE LANTAU	2	8.73	WINTER	STANDARD36826	TMCLKL	S
18-Feb-21	NE LANTAU	3	1.20	WINTER	STANDARD36826	TMCLKL	S
23-Feb-21	NW LANTAU	1	9.54	WINTER	STANDARD36826	TMCLKL	P
23-Feb-21	NW LANTAU	2	18.92	WINTER	STANDARD36826	TMCLKL	P
23-Feb-21	NW LANTAU	3	5.20	WINTER	STANDARD36826	TMCLKL	P
23-Feb-21	NW LANTAU	1	7.39	WINTER	STANDARD36826	TMCLKL	S
23-Feb-21	NW LANTAU	2	3.55	WINTER	STANDARD36826	TMCLKL	S

Appendix II. TMCLKL Chinese White Dolphin Sighting Database (February 2021)

(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
2-Feb-21	1	1011	7	NW LANTAU	1	215	ON	TMCLKL	816841	805468	WINTER	NONE	P
2-Feb-21	2	1050	1	NW LANTAU	2	1589	ON	TMCLKL	820219	805032	WINTER	NONE	S
2-Feb-21	3	1127	1	NW LANTAU	2	112	ON	TMCLKL	829332	805473	WINTER	NONE	P
8-Feb-21	1	1022	3	NW LANTAU	2	172	ON	TMCLKL	816378	804643	WINTER	NONE	P
23-Feb-21	1	1136	1	NW LANTAU	2	71	ON	TMCLKL	826949	806446	WINTER	NONE	P

Appendix III. Individual dolphins identified during TMCLKL monitoring surveys in (February 2021)

ID#	DATE	STG#	AREA
CH240	02/02/21	1	NW LANTAU
NL202	23/02/21	1	NW LANTAU
NL331	02/02/21	1	NW LANTAU
WL98	08/02/21	1	NW LANTAU
WL145	02/02/21	1	NW LANTAU
WL179	02/02/21	3	NW LANTAU
WL283	02/02/21	1	NW LANTAU
WL301	02/02/21	1	NW LANTAU
WL304	08/02/21	1	NW LANTAU



Appendix IV. Photograph of Identified Individual Dolphin in February 2021 (TMCLKL)

Appendix J

Operational
Phase Water
Quality
Monitoring
Results

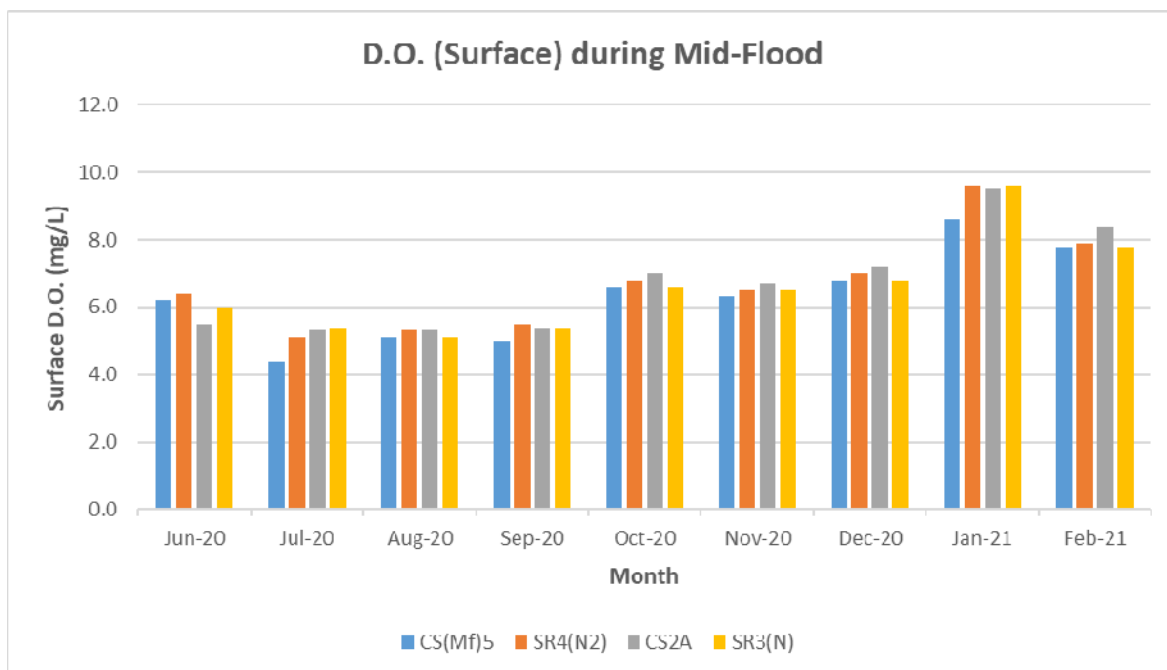
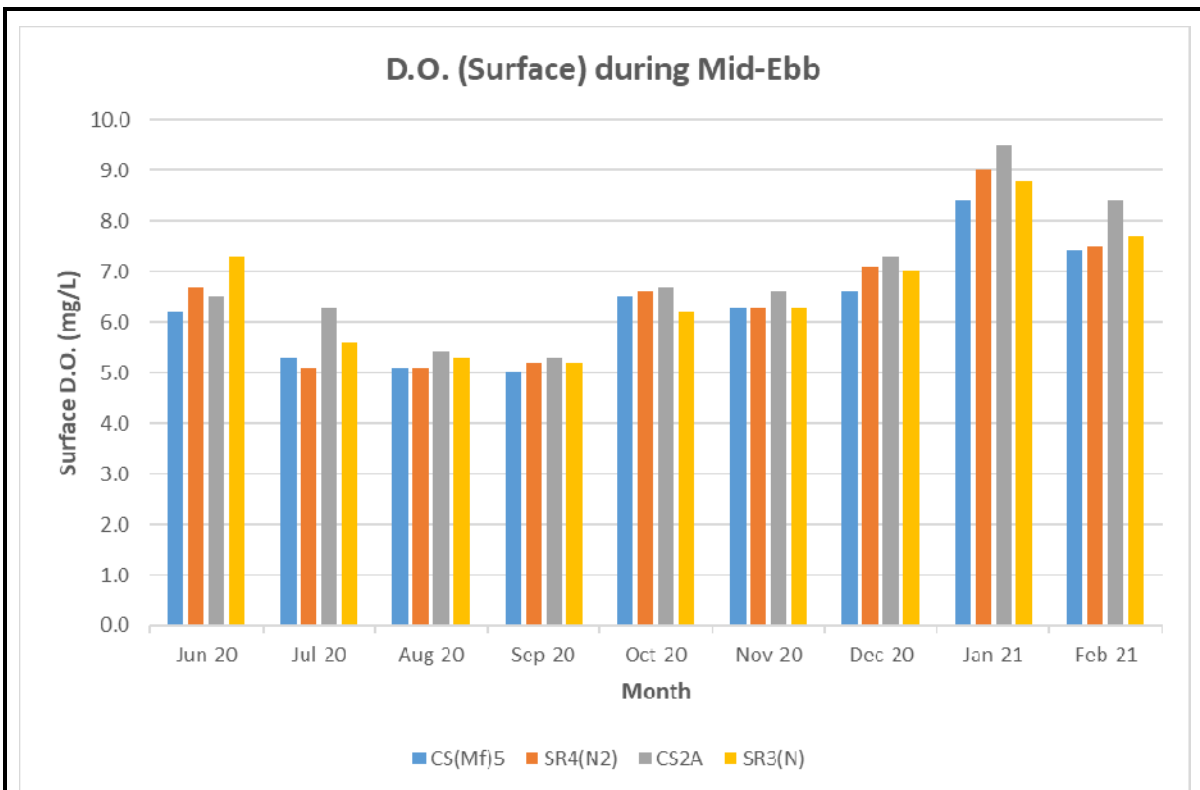
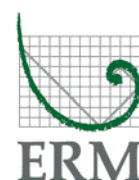


Figure J1 Operational Phase Monitoring – Mean Level of Dissolved Oxygen (mg/L) in surface waters between 1 June 2020 and 28 February 2021. The weather conditions during the monitoring period varied mostly from sunny to cloudy.

Ref: 0212330_Impact-WQM_February 2021_graphs_Rev a.xls



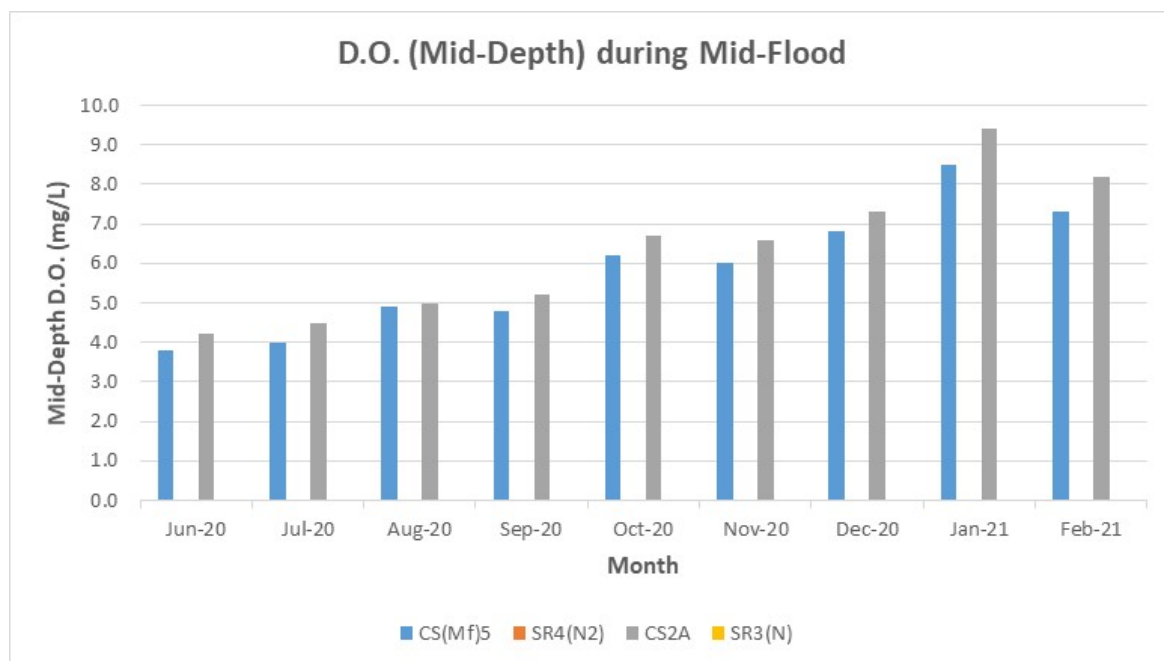
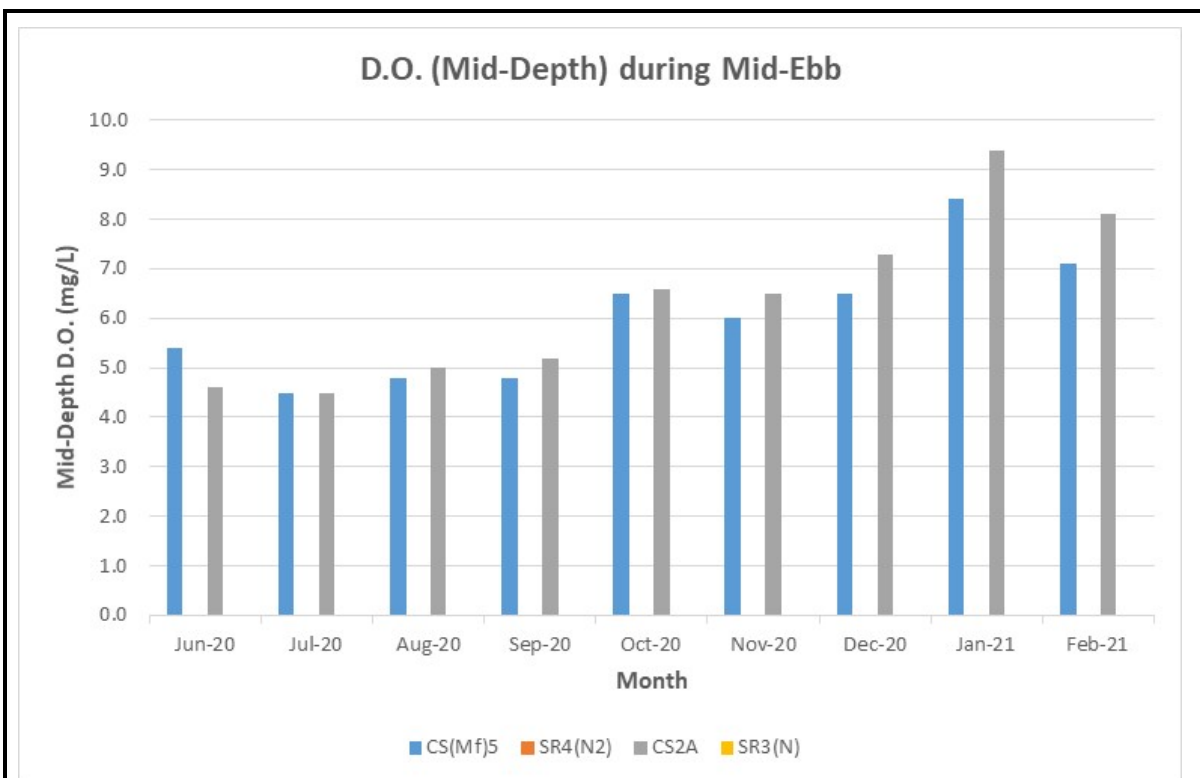


Figure J2 Operational Phase Monitoring - Mean Level of Dissolved Oxygen (mg/L) in mid-depth waters between 1 June 2020 and 28 February 2021. The weather conditions during the monitoring period varied mostly from sunny to cloudy.

Ref: 0212330_Impact-WQM_February 2021_graphs_Rev a.xls



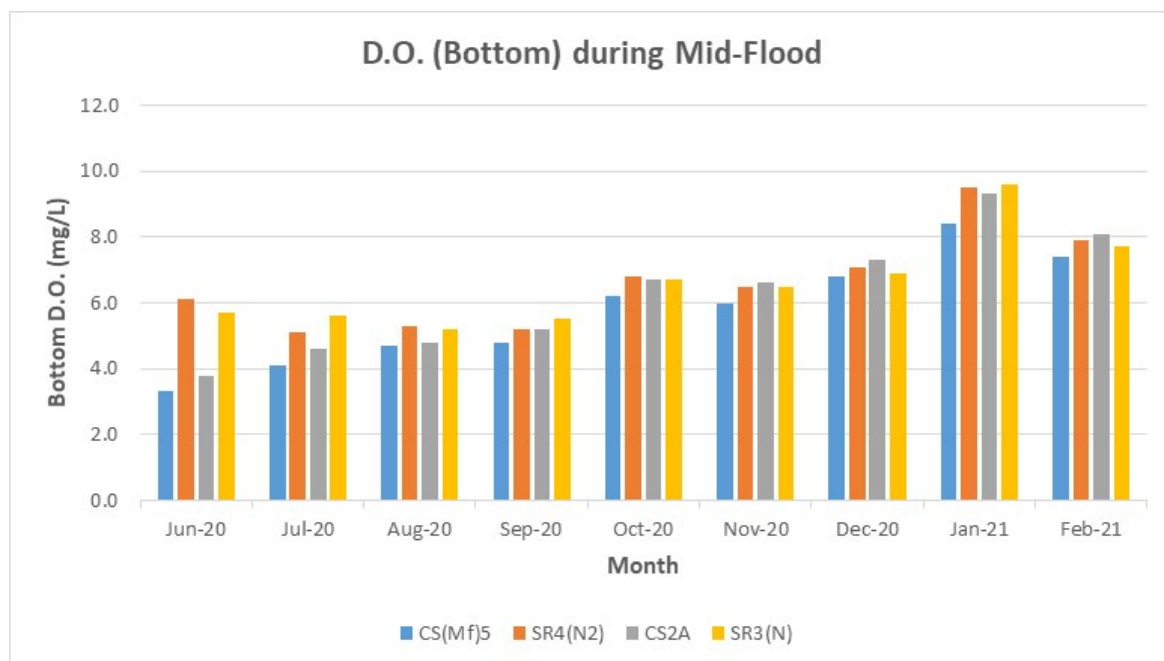
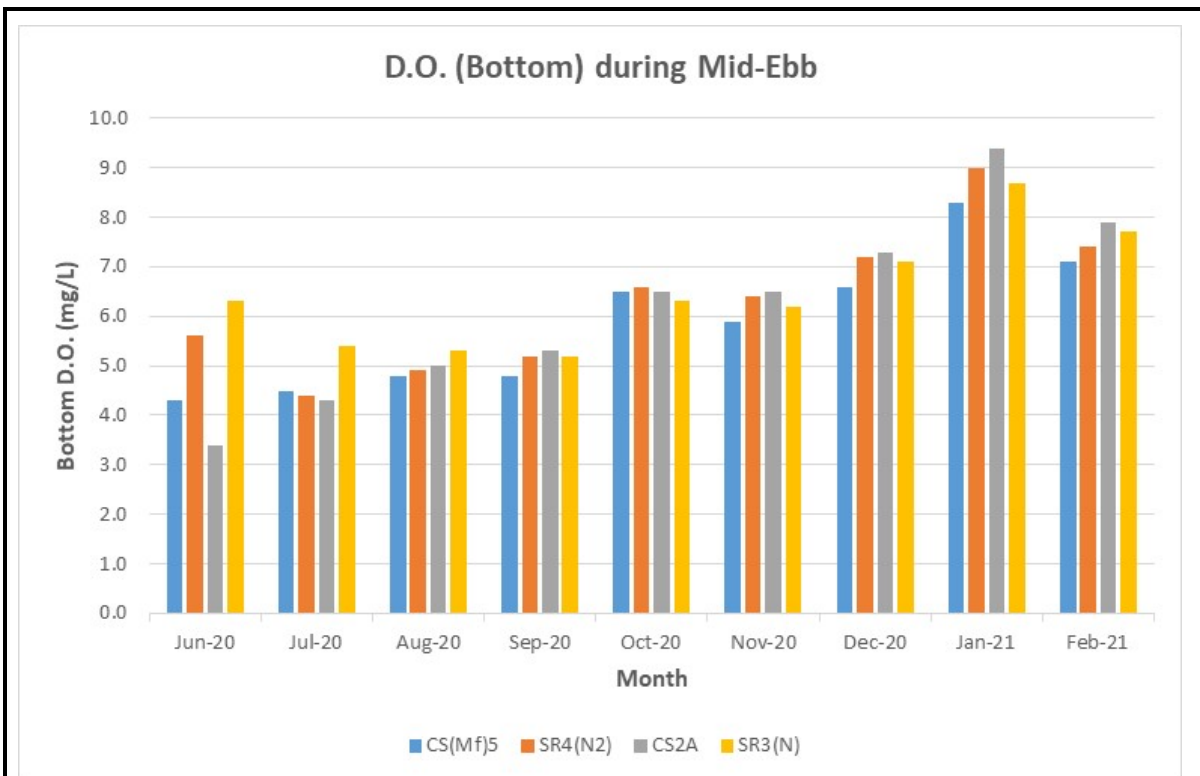


Figure J3 Operational Phase Monitoring – Mean Level of Dissolved Oxygen (mg/L) in bottom waters between 1 June 2020 and 28 February 2021. The weather conditions during the monitoring period varied mostly from sunny to cloudy.

Ref: 0212330_Impact-WQM_February 2021_graphs_Rev a.xls



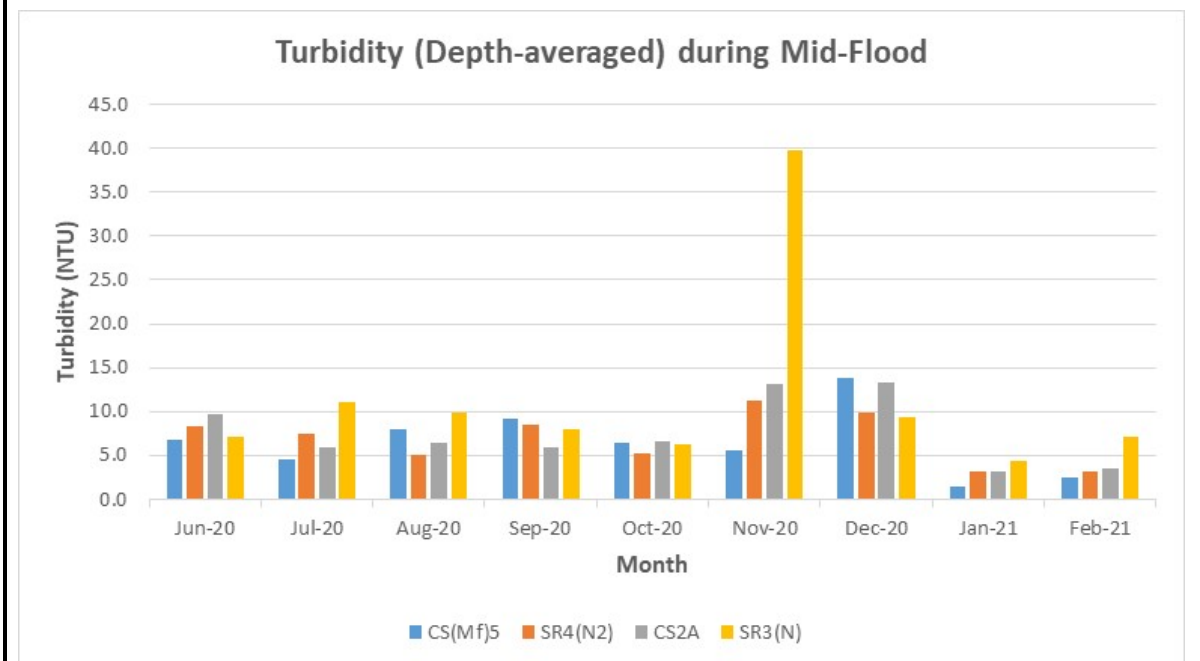
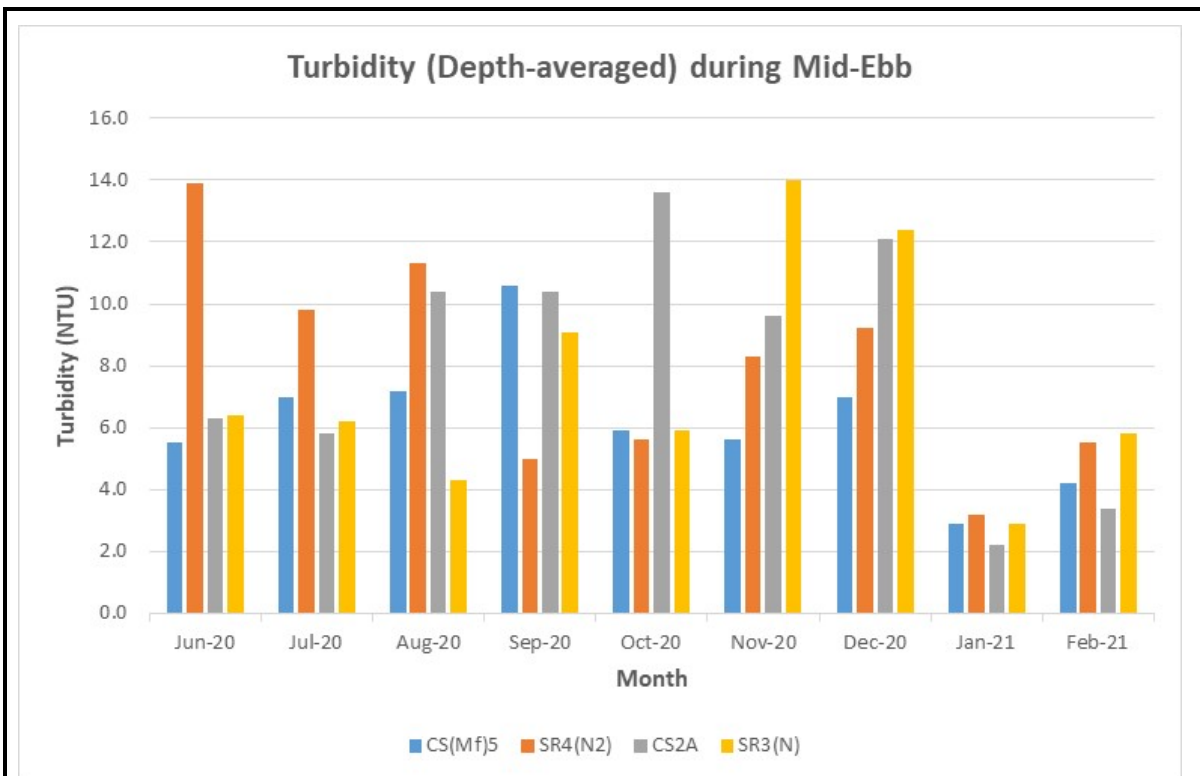
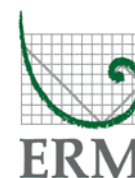


Figure J4 Operational Phase Monitoring – Mean Depth-averaged Level of Turbidity (NTU) between 1 June 2020 and 28 February 2021. The weather conditions during the monitoring period varied mostly from sunny to cloudy.

Ref: 0212330_Impact-WQM_February 2021_graphs_Rev a.xls



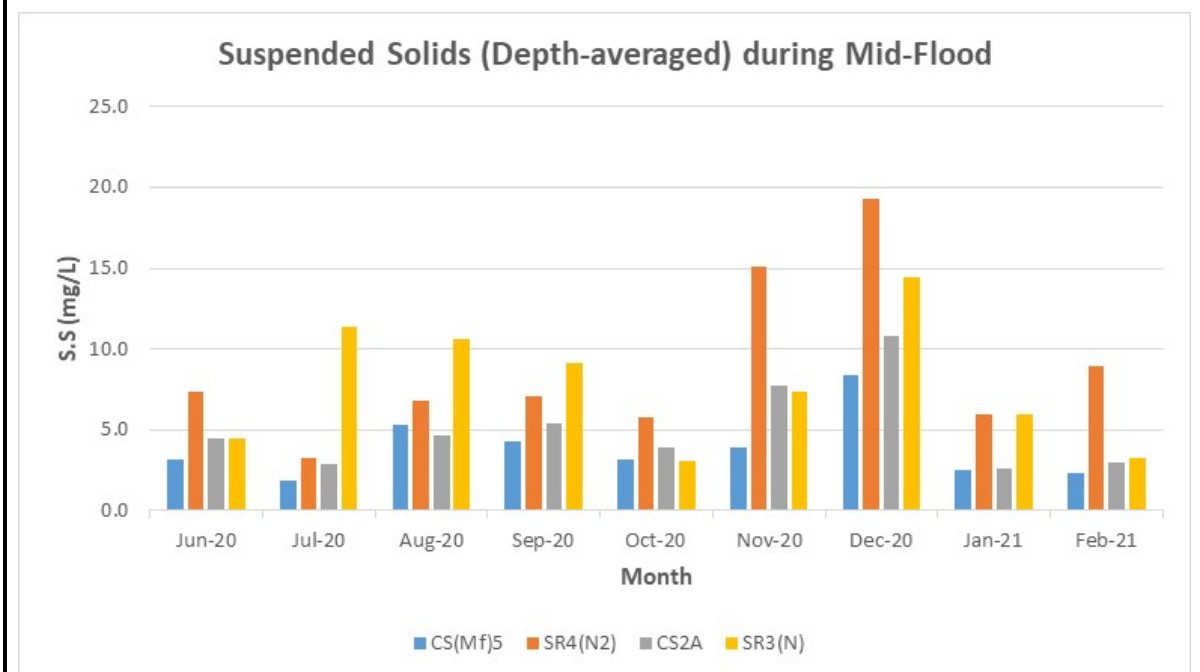
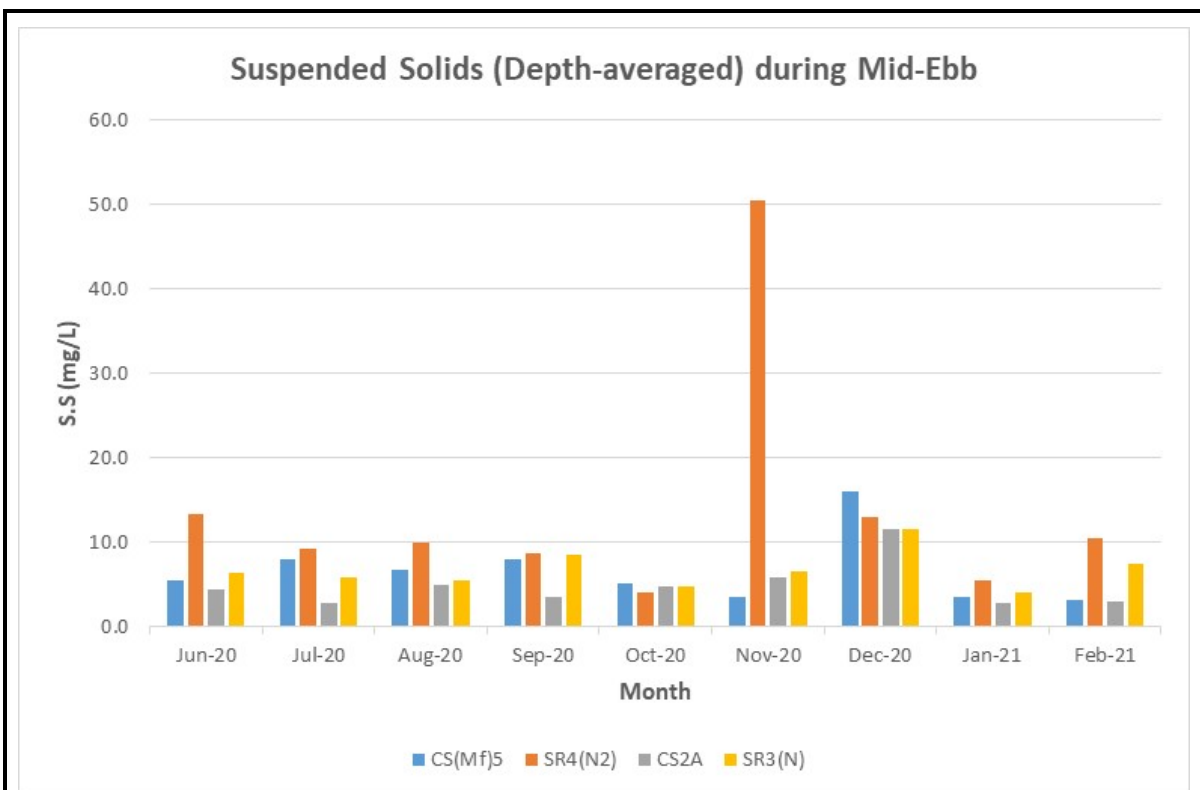
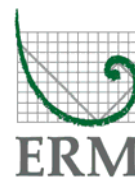


Figure J5 Operational Phase Monitoring – Mean Depth-averaged Level of Suspended Solids (mg/L) between 1 June 2020 and 28 February 2021. The weather conditions during the monitoring period varied mostly from sunny to cloudy.

Ref: 0212330_Impact-WQM_February 2021_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)
24-02-21	Mid-Ebb	CS(M05)	Cloudy	Moderate	11:03	13.0	Surface	1.0	1	20.3	8.2	30.5	7.3	97.2	3.0	2.8	7.2	4.2	3.1
									2	20.3	8.2	30.5	7.4	98.2	2.7	2.0			
							Middle	6.5	1	19.9	8.1	32.1	7.1	93.7	4.7	3.1			
									2	19.9	8.1	32.1	7.1	93.7	4.5	3.3			
							Bottom	12.0	1	19.8	8.1	32.2	7.0	92.8	5.0	3.6			
									2	19.9	8.1	32.1	7.1	93.5	5.3	3.9			
		SR4(N2)	Cloudy	Calm	12:37	4.2	Surface	1.0	1	21.2	8.2	29.3	7.5	100.5	5.6	3.2	7.5	5.5	10.4
									2	21.2	8.2	29.3	7.5	100.6	5.5	9.6			
							Bottom	3.2	1	20.9	8.2	29.7	7.4	98.7	5.4	16.2			
									2	20.9	8.2	29.7	7.4	98.8	5.4	12.4			
							Surface	1.0	1	20.5	8.2	31.1	8.4	111.6	2.8	2.5			
									2	20.5	8.2	31.1	8.4	111.6	2.4	3.0			
		CS2A	Cloudy	Moderate	12:27	6.2	Surface	3.1	1	20.3	8.2	31.4	8.1	107.5	3.5	2.5	8.3	3.4	2.9
									2	20.3	8.2	31.4	8.1	107.5	3.7	3.1			
							Middle	3.1	1	20.3	8.2	31.4	8.1	107.5	3.7	3.1			
									2	20.3	8.2	31.4	8.1	107.5	3.7	3.1			
							Bottom	5.2	1	20.0	8.2	31.9	7.9	105.0	4.2	3.5			
									2	20.0	8.2	31.9	7.9	104.9	4.0	2.6			
		SR3(N)	Cloudy	Calm	11:56	4.8	Surface	1.0	1	20.6	8.2	29.4	7.7	101.1	5.8	6.5	7.7	5.8	7.5
									2	20.6	8.2	29.4	7.7	101.7	6.1	7.4			
							Bottom	3.8	1	20.6	8.2	29.4	7.6	100.2	5.6	7.7			
									2	20.6	8.2	29.4	7.7	101.2	5.8	8.4			
							Surface	1.0	1	20.5	8.2	31.6	7.7	101.6	2.1	1.9			
									2	20.6	8.2	31.5	7.9	107.1	1.9	1.7			
24-02-21	Mid-Flood	CS(M05)	Cloudy	Moderate	16:58	12.8	Surface	1.0	1	20.5	8.2	31.6	7.7	101.6	2.1	1.9	7.6	2.5	2.3
									2	20.6	8.2	31.5	7.9	107.1	1.9	1.7			
							Middle	6.4	1	20.0	8.1	32.2	7.3	97.7	2.7	2.3			
									2	20.0	8.1	32.2	7.3	97.6	2.5	2.7			
							Bottom	11.8	1	19.9	8.1	32.3	7.4	97.9	2.9	2.7			
									2	19.9	8.1	32.3	7.4	98.0	3.1	2.2			
		SR4(N2)	Cloudy	Calm	15:27	4.2	Surface	1.0	1	21.1	8.2	29.5	7.8	104.5	3.1	8.6	7.9	3.1	8.9
									2	21.1	8.2	29.6	7.9	105.5	3.2	8.8			
							Bottom	3.2	1	21.1	8.2	29.6	7.8	103.7	3.1	9.0			
									2	21.1	8.2	29.6	7.9	105.0	3.1	9.1			
							Surface	1.0	1	20.6	8.2	31.2	8.4	112.3	2.9	2.5			
									2	20.6	8.2	31.2	8.4	111.8	3.0	2.8			
		CS2A	Cloudy	Moderate	14:50	6.3	Surface	5.3	1	20.4	8.2	31.4	8.2	109.2	3.6	2.3	8.3	3.6	3.0
									2	20.4	8.2	31.4	8.2	109.2	3.6	2.3			
							Middle	5.2	1	20.4	8.2	31.4	8.1	108.2	3.5	2.9			
									2	20.4	8.2	31.4	8.2	109.2	3.6	2.3			
							Bottom	5.3	1	19.9	8.2	32.1	8.0	105.8	4.5	3.2			
									2	19.9	8.2	32.1	8.1	107.9	4.3	4.1			
		SR3(N)	Cloudy	Calm	16:08	5.3	Surface	1.0	1	20.4	8.2	29.9	7.7	101.9	7.2	3.0	7.8	7.2	3.3
									2	20.4	8.2	30.0	7.8	102.6	6.9	3.7			
							Bottom	4.3	1	20.3	8.2	30.4	7.6	100.8	7.5	2.7			
									2	20.4	8.2	30.1	7.7	102.2	7.3	3.8			
							Surface	1.0	1	20.4	8.2	29.9	7.7	101.9	7.2	3.0			
									2	20.4	8.2	30.0	7.8	102.6	6.9	3.7			

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				
	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing. 2. Notify the Contractor. 3. Ensure remedial measures properly implemented. 	<ol style="list-style-type: none"> 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				
	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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	2	122
	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 (February 2021)	0	0	0
Total No. received since Contract commencement	17	1	0



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_16February2021_1hrTSP_Station ASR5 [Total No. of Exceedances = 1]	
Date	16 February 2021 (Measured) 2 March 2021 (Laboratory results received by ERM)	
Monitoring Station	ASR5	
Parameter(s) with Exceedance(s)	1-hr TSP	
Action Levels	24-hr TSP ($\mu\text{g}/\text{m}^3$)	ASR1 = 213 ASR5 = 238 AQMS1 = 213 ASR6 = 238 ASR10 = 214
	1-hr TSP ($\mu\text{g}/\text{m}^3$)	ASR1 = 331 ASR5 = 340 AQMS1 = 335 ASR6 = 338 ASR10 = 337
Limit Levels	1-hr TSP ($\mu\text{g}/\text{m}^3$)	500
	24-hr TSP ($\mu\text{g}/\text{m}^3$)	260
Measured Levels	Action Level Exceedance for 1-hr TSP is observed at ASR5 ($355 \mu\text{g}/\text{m}^3$) between sampling period 15:37 and 16:37 on 16 February 2021.	
Works Undertaken (at the time of monitoring event)	No construction works was conducted on 16 February 2021.	
Possible Reason for Action or Limit Level Exceedance(s)	<p>The exceedance is unlikely to be due to this Contract, in view of the following:</p> <ul style="list-style-type: none"> • With reference to the recorded wind direction (vary between 274° and 277°) and wind speed (0.9 m/s), the wind was mainly from north-westerly direction. • Informed by the Contractor, no construction works was conducted on 16 February 2021. <p>Based on the above, the exceedance is unlikely to be due to this Contract.</p>	
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 A).	

Annex A

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

Air quality monitoring results on 16/2/2021								
Project	Contract	Date	Station	Weather	Start time	Parameters	Results	Unit
TMCLKL	HY/2012/08	2021-02-16	ASR10	Sunny	13:10:00	1-hour TSP	81	ug/m3
TMCLKL	HY/2012/08	2021-02-16	ASR10	Sunny	14:12:00	1-hour TSP	151	ug/m3
TMCLKL	HY/2012/08	2021-02-16	ASR10	Sunny	15:14:00	1-hour TSP	62	ug/m3
TMCLKL	HY/2012/08	2021-02-16	ASR6	Sunny	13:22:00	1-hour TSP	195	ug/m3
TMCLKL	HY/2012/08	2021-02-16	ASR6	Sunny	14:24:00	1-hour TSP	117	ug/m3
TMCLKL	HY/2012/08	2021-02-16	ASR6	Sunny	15:26:00	1-hour TSP	184	ug/m3
TMCLKL	HY/2012/08	2021-02-16	ASR5	Sunny	13:33:00	1-hour TSP	118	ug/m3
TMCLKL	HY/2012/08	2021-02-16	ASR5	Sunny	14:35:00	1-hour TSP	89	ug/m3
TMCLKL	HY/2012/08	2021-02-16	ASR5	Sunny	15:37:00	1-hour TSP	355	ug/m3
TMCLKL	HY/2012/08	2021-02-16	ASR1	Sunny	13:46:00	1-hour TSP	103	ug/m3
TMCLKL	HY/2012/08	2021-02-16	ASR1	Sunny	14:48:00	1-hour TSP	237	ug/m3
TMCLKL	HY/2012/08	2021-02-16	ASR1	Sunny	15:50:00	1-hour TSP	167	ug/m3
TMCLKL	HY/2012/08	2021-02-16	AQMS1	Sunny	13:58:00	1-hour TSP	100	ug/m3
TMCLKL	HY/2012/08	2021-02-16	AQMS1	Sunny	15:00:00	1-hour TSP	93	ug/m3
TMCLKL	HY/2012/08	2021-02-16	AQMS1	Sunny	16:02:00	1-hour TSP	179	ug/m3
TMCLKL	HY/2012/08	2021-02-16	ASR10	Sunny	16:16:00	24-hour TSP	74	ug/m3
TMCLKL	HY/2012/08	2021-02-16	ASR6	Sunny	16:28:00	24-hour TSP	83	ug/m3
TMCLKL	HY/2012/08	2021-02-16	ASR5	Sunny	16:39:00	24-hour TSP	84	ug/m3
TMCLKL	HY/2012/08	2021-02-16	ASR1	Sunny	16:52:00	24-hour TSP	90	ug/m3
TMCLKL	HY/2012/08	2021-02-16	AQMS1	Sunny	17:04:00	24-hour TSP	87	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)
21/02/16	0:00	1.8	78
21/02/16	1:00	1.8	70
21/02/16	2:00	1.3	86
21/02/16	3:00	1.3	58
21/02/16	4:00	1.3	85
21/02/16	5:00	2.7	100
21/02/16	6:00	2.7	79
21/02/16	7:00	1.8	41
21/02/16	8:00	2.2	56
21/02/16	9:00	2.2	93
21/02/16	10:00	1.8	111
21/02/16	11:00	1.8	129
21/02/16	12:00	1.3	101
21/02/16	13:00	1.3	131
21/02/16	14:00	1.3	196
21/02/16	15:00	0.9	274
21/02/16	16:00	0.9	277
21/02/16	17:00	0.9	198
21/02/16	18:00	0.9	261
21/02/16	19:00	0.9	299
21/02/16	20:00	0.9	324
21/02/16	21:00	0.4	328
21/02/16	22:00	0.4	288
21/02/16	23:00	0.4	273
21/02/17	0:00	1.3	308
21/02/17	1:00	0.9	303
21/02/17	2:00	0	295
21/02/17	3:00	0	303
21/02/17	4:00	0.4	2
21/02/17	5:00	1.3	5
21/02/17	6:00	1.8	18
21/02/17	7:00	2.2	20
21/02/17	8:00	1.8	19
21/02/17	9:00	2.7	32
21/02/17	10:00	1.8	90
21/02/17	11:00	2.2	23
21/02/17	12:00	1.8	33
21/02/17	13:00	1.8	28
21/02/17	14:00	1.8	24
21/02/17	15:00	1.8	144
21/02/17	16:00	0.9	18
21/02/17	17:00	1.3	81
21/02/17	18:00	1.3	78
21/02/17	19:00	1.3	53
21/02/17	20:00	1.3	66
21/02/17	21:00	1.3	38
21/02/17	22:00	1.8	48
21/02/17	23:00	1.8	49

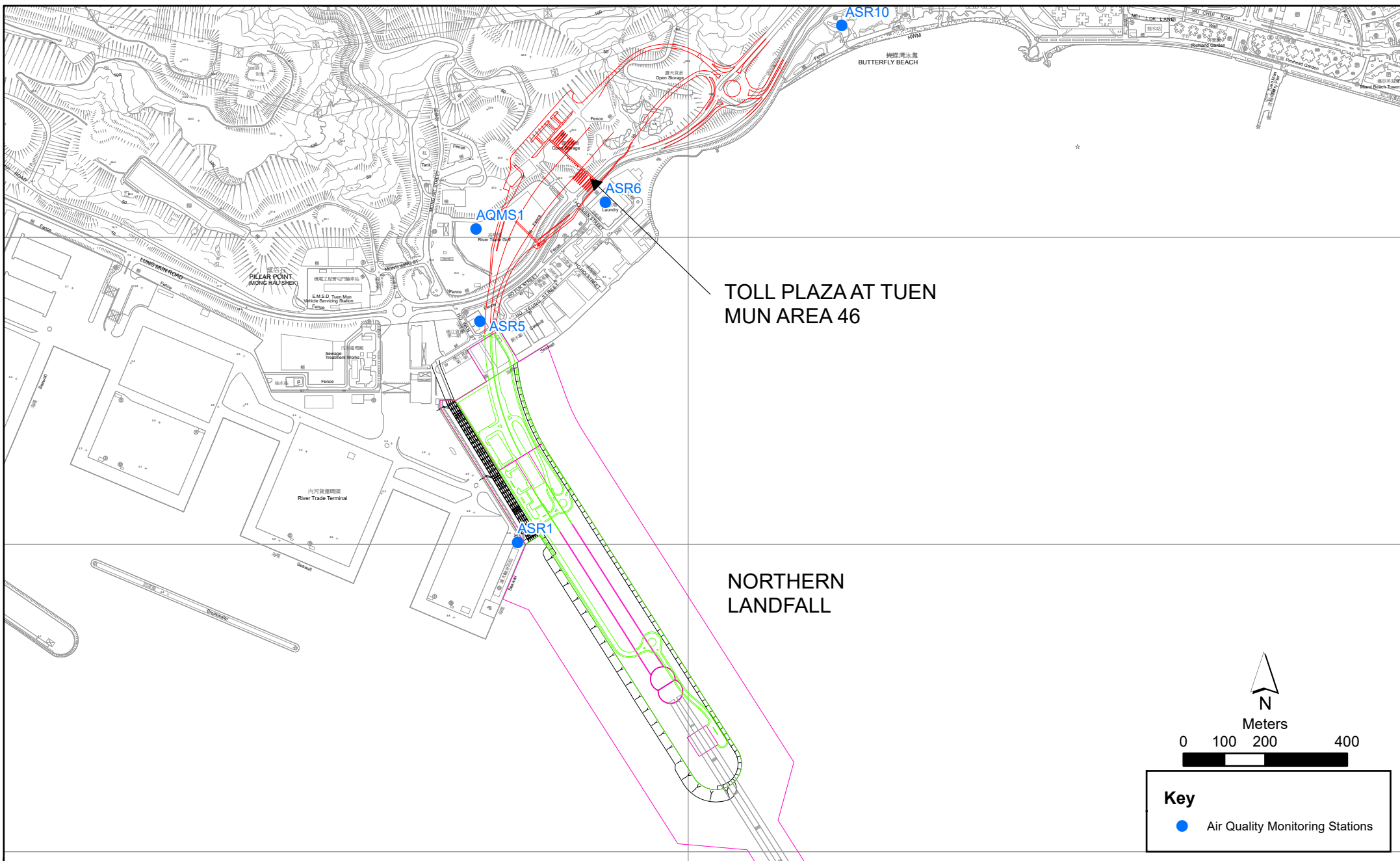


Figure 2.1

Air Quality Monitoring Stations for the Enhanced TSP Monitoring



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_22February2021_1hrTSP_Station ASR5 [Total No. of Exceedances = 1]	
Date	22 February 2021 (Measured) 3 March 2021 (Laboratory results received by ERM)	
Monitoring Station	ASR5	
Parameter(s) with Exceedance(s)	1-hr TSP	
Action Levels	24-hr TSP ($\mu\text{g}/\text{m}^3$)	ASR1 = 213 ASR5 = 238 AQMS1 = 213 ASR6 = 238 ASR10 = 214
	1-hr TSP ($\mu\text{g}/\text{m}^3$)	ASR1 = 331 ASR5 = 340 AQMS1 = 335 ASR6 = 338 ASR10 = 337
Limit Levels	1-hr TSP ($\mu\text{g}/\text{m}^3$)	500
	24-hr TSP ($\mu\text{g}/\text{m}^3$)	260
Measured Levels	Action Level Exceedance for 1-hr TSP is observed at ASR5 ($355 \mu\text{g}/\text{m}^3$) between sampling period 15:38 and 16:38 on 22 February 2021.	
Works Undertaken (at the time of monitoring event)	No construction works was conducted on 22 February 2021.	
Possible Reason for Action or Limit Level Exceedance(s)	<p>The exceedance is unlikely to be due to this Contract, in view of the following:</p> <ul style="list-style-type: none"> • With reference to the recorded wind direction (vary between 211° and 212°) and wind speed (vary between 1.3 and 1.8 m/s), the wind was mainly from south-westerly direction. • Informed by the Contractor, no construction works was conducted on 22 February 2021. <p>Based on the above, the exceedance is unlikely to be due to this Contract.</p>	
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 A).	

Annex A

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

Air quality monitoring results on 22/2/2021								
Project	Contract	Date	Station	Weather	Start time	Parameters	Results	Unit
TMCLKL	HY/2012/08	2021-02-22	ASR10	Sunny	13:10:00	1-hour TSP	97	ug/m3
TMCLKL	HY/2012/08	2021-02-22	ASR10	Sunny	14:12:00	1-hour TSP	90	ug/m3
TMCLKL	HY/2012/08	2021-02-22	ASR10	Sunny	15:14:00	1-hour TSP	147	ug/m3
TMCLKL	HY/2012/08	2021-02-22	ASR6	Sunny	13:22:00	1-hour TSP	113	ug/m3
TMCLKL	HY/2012/08	2021-02-22	ASR6	Sunny	14:24:00	1-hour TSP	97	ug/m3
TMCLKL	HY/2012/08	2021-02-22	ASR6	Sunny	15:26:00	1-hour TSP	203	ug/m3
TMCLKL	HY/2012/08	2021-02-22	ASR5	Sunny	13:34:00	1-hour TSP	136	ug/m3
TMCLKL	HY/2012/08	2021-02-22	ASR5	Sunny	14:36:00	1-hour TSP	139	ug/m3
TMCLKL	HY/2012/08	2021-02-22	ASR5	Sunny	15:38:00	1-hour TSP	472	ug/m3
TMCLKL	HY/2012/08	2021-02-22	ASR1	Sunny	13:47:00	1-hour TSP	128	ug/m3
TMCLKL	HY/2012/08	2021-02-22	ASR1	Sunny	14:49:00	1-hour TSP	209	ug/m3
TMCLKL	HY/2012/08	2021-02-22	ASR1	Sunny	15:51:00	1-hour TSP	171	ug/m3
TMCLKL	HY/2012/08	2021-02-22	AQMS1	Sunny	13:58:00	1-hour TSP	99	ug/m3
TMCLKL	HY/2012/08	2021-02-22	AQMS1	Sunny	15:00:00	1-hour TSP	113	ug/m3
TMCLKL	HY/2012/08	2021-02-22	AQMS1	Sunny	16:02:00	1-hour TSP	154	ug/m3
TMCLKL	HY/2012/08	2021-02-22	ASR10	Sunny	16:16:00	24-hour TSP	62	ug/m3
TMCLKL	HY/2012/08	2021-02-22	ASR6	Sunny	16:28:00	24-hour TSP	76	ug/m3
TMCLKL	HY/2012/08	2021-02-22	ASR5	Sunny	16:40:00	24-hour TSP	83	ug/m3
TMCLKL	HY/2012/08	2021-02-22	ASR1	Sunny	16:53:00	24-hour TSP	86	ug/m3
TMCLKL	HY/2012/08	2021-02-22	AQMS1	Sunny	17:04:00	24-hour TSP	69	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)
21/02/22	0:00	0.9	45
21/02/22	1:00	0.4	45
21/02/22	2:00	0	32
21/02/22	3:00	0	21
21/02/22	4:00	0	19
21/02/22	5:00	0	14
21/02/22	6:00	0.4	358
21/02/22	7:00	0.4	307
21/02/22	8:00	0.9	138
21/02/22	9:00	0.9	126
21/02/22	10:00	0.9	183
21/02/22	11:00	1.3	203
21/02/22	12:00	1.8	233
21/02/22	13:00	1.3	236
21/02/22	14:00	1.8	203
21/02/22	15:00	1.8	211
21/02/22	16:00	1.3	212
21/02/22	17:00	1.3	67
21/02/22	18:00	1.3	60
21/02/22	19:00	1.3	71
21/02/22	20:00	1.3	50
21/02/22	21:00	0.9	60
21/02/22	22:00	0.4	57
21/02/22	23:00	0.4	35
21/02/23	0:00	0.4	46
21/02/23	1:00	0.9	322
21/02/23	2:00	0.4	328
21/02/23	3:00	0.4	341
21/02/23	4:00	0	303
21/02/23	5:00	0	322
21/02/23	6:00	0.4	308
21/02/23	7:00	0	317
21/02/23	8:00	0	113
21/02/23	9:00	1.3	218
21/02/23	10:00	1.3	193
21/02/23	11:00	0.9	130
21/02/23	12:00	1.8	210
21/02/23	13:00	1.8	200
21/02/23	14:00	1.3	230
21/02/23	15:00	2.2	100
21/02/23	16:00	2.7	92
21/02/23	17:00	3.1	104
21/02/23	18:00	2.2	86
21/02/23	19:00	2.2	97
21/02/23	20:00	2.7	94
21/02/23	21:00	2.7	87
21/02/23	22:00	2.2	98
21/02/23	23:00	2.7	81

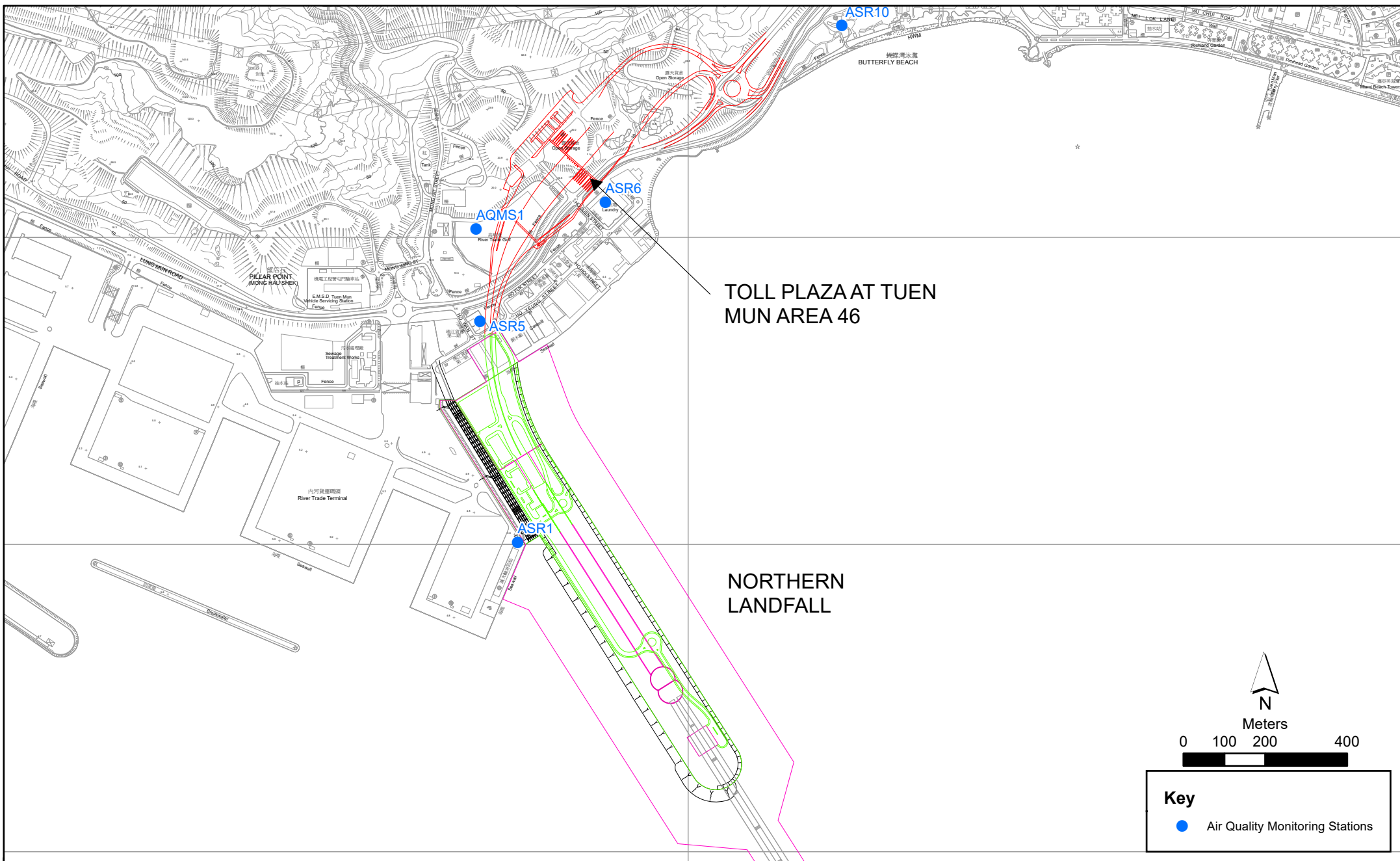


Figure 2.1

Air Quality Monitoring Stations for the Enhanced TSP Monitoring

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 **February 2021** [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 <u>Inert</u> 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	3205.825	0.000	336.902	889.467	1979.479
Jan-2020	1.031	0.000	0.000	0.000	1.031
Feb-2020	0.210	0.000	0.000	0.000	0.210
Mar-2020					
Apr-2020					
May-2020					
Jun-2020					
Half Year Sub-total					
Jul-2020					
Aug-2020					
Sep-2020					
Oct-2020					
Nov-2020					
Dec-2020					
Project Total Quantities	3207.066	0.000	336.902	889.467	1980.720

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	9919.11	9919.11	18.28	18.28	16.84	16.84	93.807	93.807	28.243
Jan-2020	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.071
Feb-2020	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.011
Mar-2020									
Apr-2020									
May-2020									
Jun-2020									
Half Year Sub-total									
Jul-2020									
Aug-2020									
Sep-2020									
Oct-2020									
Nov-2020									
Dec-2020									
Project Total Quantities	9919.11	9919.11	18.28	18.28	16.84	16.84	93.807	93.807	28.325

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 m³. (**ER Part 8 Clause 8.8.5 (d) (ii)** refers).