

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

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

11 November 2020

**Environmental Resources Management**  
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# Contract No. HY/2012/08

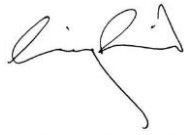
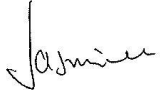


## Tuen Mun – Chek Lap Kok Link – Northern Connection Sub-sea Tunnel Section

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**Environmental Resources Management**

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Summary:  This document presents the Eighty-Fourth Monthly EM&A Report for Tuen Mun – Chek Lap Kok Link Northern Connection Sub-sea Tunnel Section.		Date: 11 November 2020			
		Approved by: 			
		Mr Craig Reid Partner			
		Certified by: 			
		Dr Jasmine Ng ET Leader			
	84 <sup>th</sup> Monthly EM&A Report	VAR	JN	CAR	11/11/20
Revision	Description	By	Checked	Approved	Date
<p>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.</p> <p>We disclaim any responsibility to the client and others in respect of any matters outside the scope of the above.</p>		<p>Distribution</p> <p><input type="checkbox"/> Internal</p> <p><input checked="" type="checkbox"/> Public</p> <p><input type="checkbox"/> Confidential</p> <div style="text-align: right;">   <small>OHSAS 18001:2007 Certificate No. OHS 515956</small>    <small>ISO 9001:2008 Certificate No. FS 32515</small> </div>			

11 November 2020

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  
84<sup>th</sup> Monthly EM&A Report for October 2020 (EP-354/2009/D)**

Reference is made to the Monthly EM&A Report for October 2020 (ET's ref.: "0212330\_84th Monthly EM&A\_20201111.doc") certified by the ET Leader and provided to us via e-mail on 11 November 2020.

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

### *Land-based Works*

- Carpark canopies installation - Portion S-A, S-B & S-C;
- Hard paving and footpath - Pump Sump Area at Northern Landfall;
- Installation of green roof system - South Ventilation Building; and
- Reinstatement at Box culvert.

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

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

#### *Implementation of Marine Mammal Exclusion Zone*

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

#### Summary of Breaches of Action/Limit Levels

##### *Breaches of Action and Limit Levels for Air Quality*

Four (4) Action Level exceedances of 1-hour TSP were recorded in the air quality monitoring during this reporting month. No exceedance of Action and Limit Levels for 24-hour TSP were recorded.

#### Environmental Complaints, Non-compliance & Summons

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

No environmental complaint was received in this reporting period.

No environmental summons was received in this reporting period.

#### Reporting Change

There was no reporting change in the reporting period.

#### Upcoming Works for the Next Reporting Month

Works to be undertaken in the next monitoring period of November 2020 include the following:

##### *Land-based Works*

- Carpark canopies installation - Portion S-A, S-B & S-C;
- Hard paving and footpath - Pump Sump Area at Northern Landfall;
- Installation of green roof system - South Ventilation Building; and
- Reinstatement at Box culvert.

### Future Key Issue

Potential environmental impacts arising from the above upcoming construction activities in the next reporting month of November 2020 are mainly associated with dust and 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 2020. The impact monitoring phase of the EM&A programme, including air quality, water quality, marine ecological monitoring and environmental site inspections, were commenced on 1 November 2013.

## 1.2 SCOPE OF REPORT

This is the Eighty-fourth 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 October 2020.

## 1.3 ORGANIZATION STRUCTURE

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

**Table 1.1**      *Contact Information of Key Personnel*

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

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

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

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

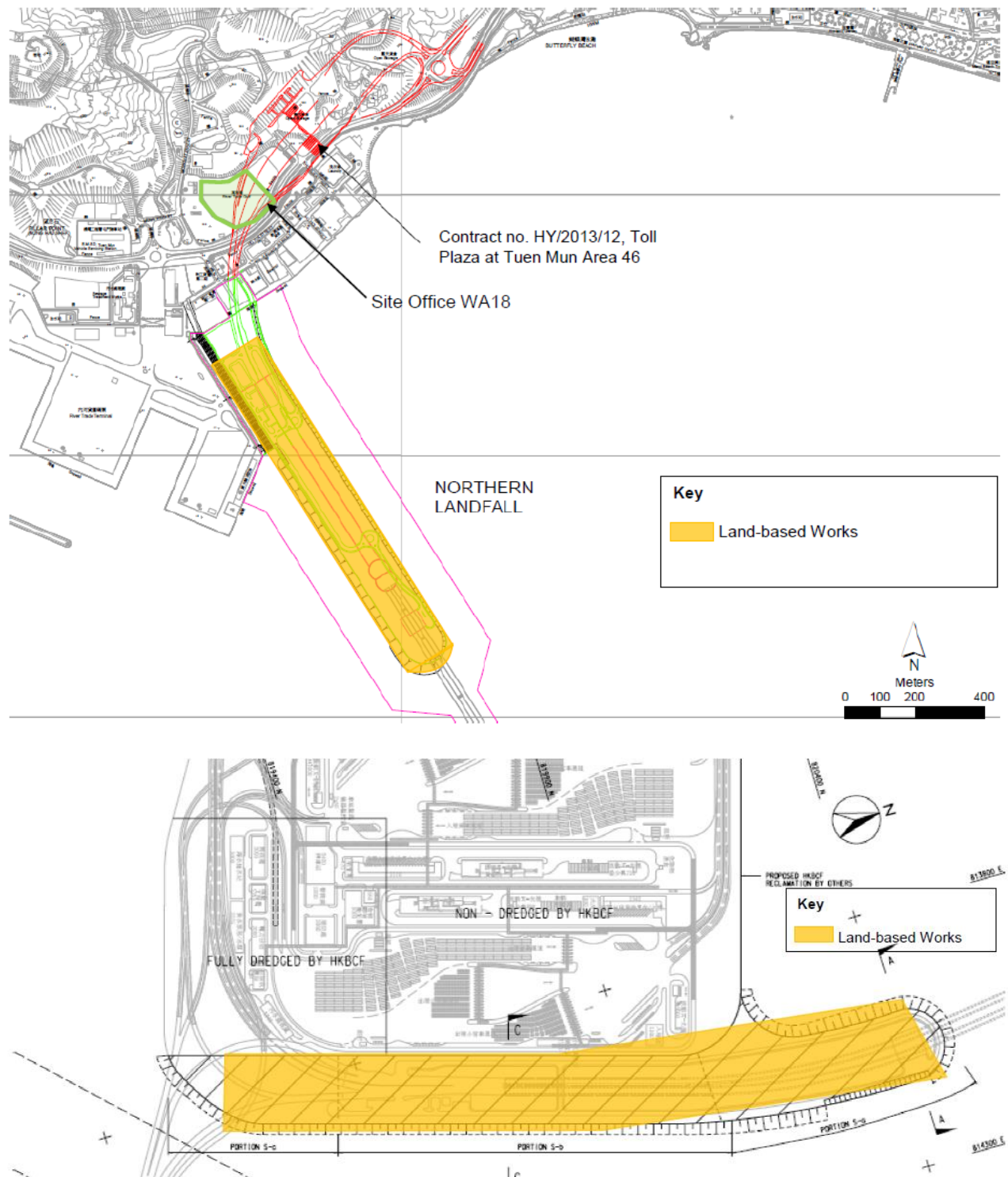
The implementation schedule of environmental mitigation measures is presented in *Appendix C*.

**Table 1.2** *Summary of Construction Activities Undertaken during the Reporting Period*

Construction Activities Undertaken
<i>Land-based Works</i>
<ul style="list-style-type: none"> <li>• Carpark canopies installation - Portion S-A, S-B &amp; S-C;</li> <li>• Hard paving and footpath - Pump Sump Area at Northern Landfall;</li> <li>• Installation of green roof system - South Ventilation Building; and</li> <li>• Reinstatement at Box culvert.</li> </ul>



Figure 1.2 Locations of Construction Activities – October 2020



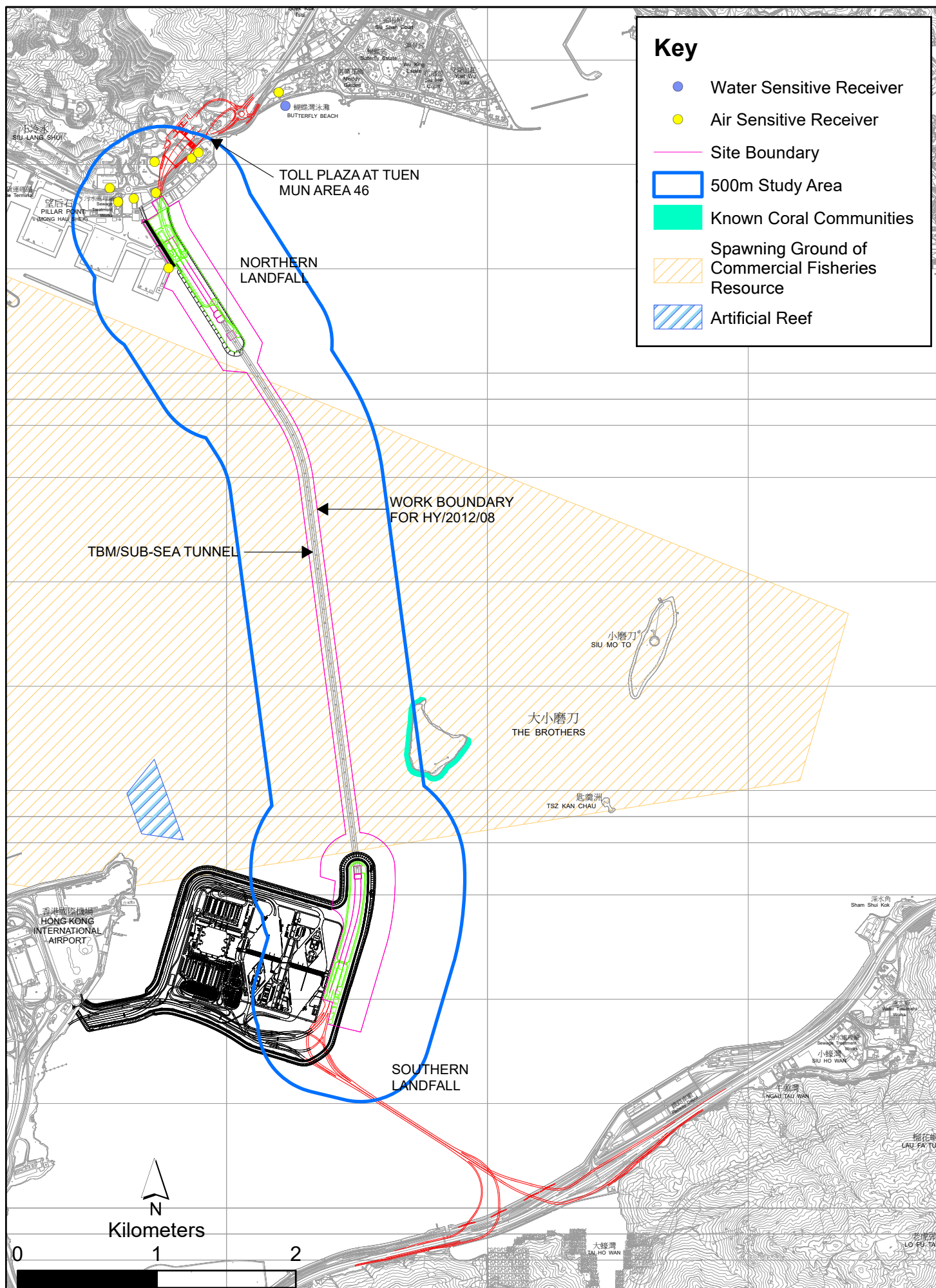


Figure 1.3 Environmental Sensitive Receivers in the vicinity of Contract No. HY/2012/08 Tuen Mun - Chek Lap Kok Link - Northern Connection Sub-Sea Tunnel Section

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Date: 15/4/2014

Environmental  
Resources  
Management



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

## 2.1 AIR QUALITY

### 2.1.1 Monitoring Requirements and Equipment

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

Excavation works for 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 5, 9, 15, 21 and 27 October 2020 at the five (5) air quality monitoring stations in accordance with the requirements stipulated in the Updated EM&A Manual (*Figure 2.1; Table 2.1*). Wind meter was installed at the rooftop of ASR5 for logging wind speed and wind direction. Details of the equipment deployed are provided in *Table 2.2*. Copies of the calibration certificates for the equipment are presented in *Appendix E*.

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

Monitoring Station	Monitoring Dates	Location	Description	Parameters & Frequency
ASR1	5, 9, 15, 21 and 27 October 2020	Tuen Mun Fireboat Station	Office	TSP monitoring <ul style="list-style-type: none"> <li>1-hour Total Suspended Particulates (1-hour TSP, <math>\mu\text{g}/\text{m}^3</math>), 3 times in every 6 days</li> </ul>
ASR5		Pillar Point Fire Station	Office	<ul style="list-style-type: none"> <li>24-hour Total Suspended Particulates (24-hour TSP, <math>\mu\text{g}/\text{m}^3</math>), daily for 24-hour in every 6 days</li> </ul>
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"> <li>1-hour Total Suspended Particulates (1-hour TSP,</li> </ul>

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 <ul style="list-style-type: none"> <li>24-hour Total Suspended Particulates (24-hour TSP, <math>\mu\text{g}/\text{m}^3</math>), daily for 24-hour in every 3 days</li> </ul>

**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 October 2020 is provided in *Appendix F*.

## 2.1.4 *Results and Observations*

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

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

Station	Average ( $\mu\text{g}/\text{m}^3$ )	Range ( $\mu\text{g}/\text{m}^3$ )	Action Level ( $\mu\text{g}/\text{m}^3$ )	Limit Level ( $\mu\text{g}/\text{m}^3$ )
ASR1	169	75 - 494	331	500
ASR5	186	100 - 474	340	500
AQMS1	124	63 - 193	335	500
ASR6	136	50 - 352	338	500
ASR10	74	42 - 108	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	113	64 - 165	213	260
ASR5	128	98 - 170	238	260
AQMS1	76	62 - 88	213	260
ASR6	84	61 - 105	238	260
ASR10	86	43 - 138	214	260

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



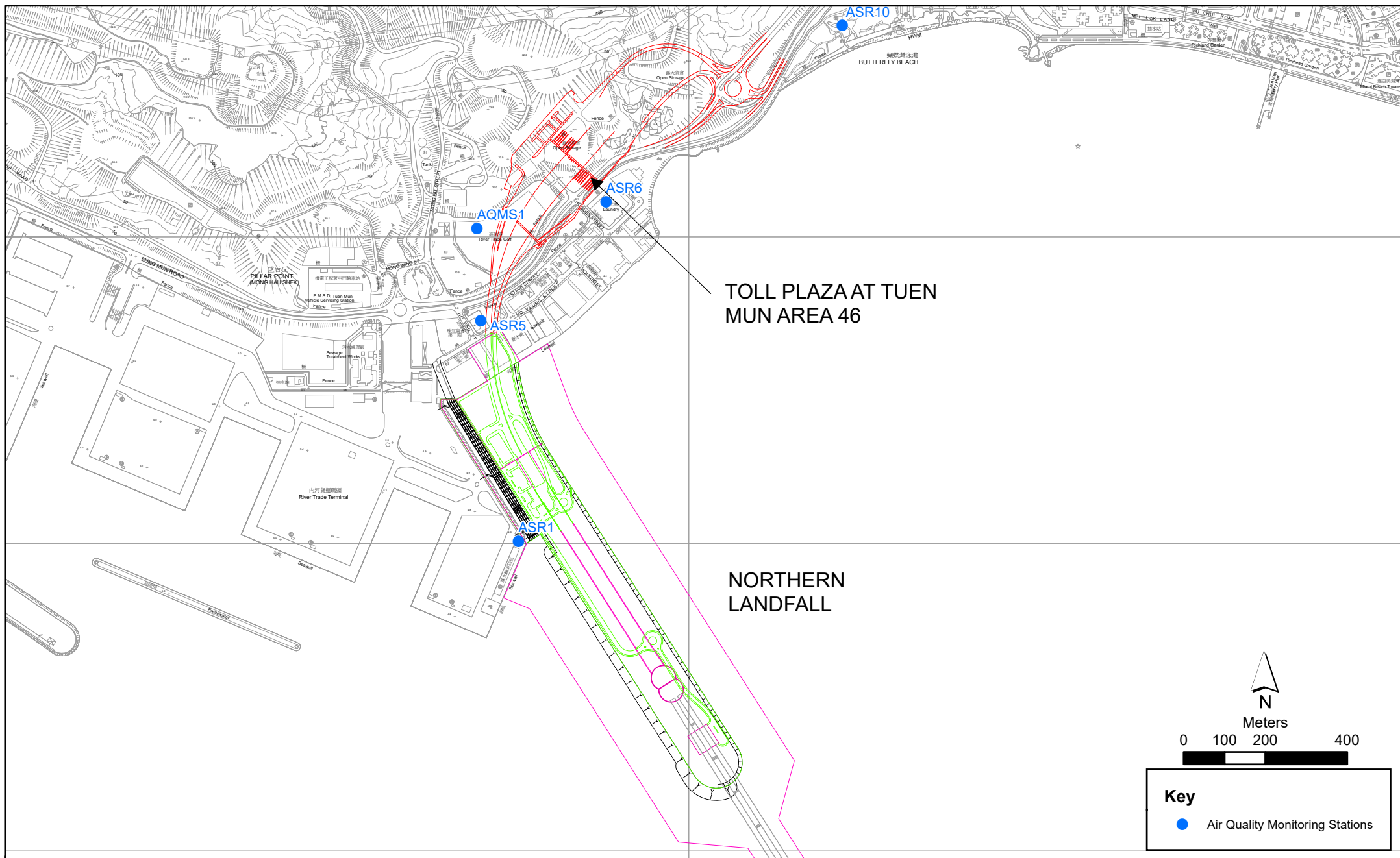


Figure 2.1

Air Quality Monitoring Stations for the Enhanced TSP Monitoring

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

A total of 5 1-hour TSP and 24-hour TSP monitoring were undertaken in this reporting month. Four (4) Action Level exceedances of 1-hour TSP were recorded in the air quality monitoring during this reporting month. No exceedance of Action and Limit Levels for 24-hour TSP were 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"> <li>• Temperature(°C)</li> <li>• pH(pH unit)</li> <li>• Turbidity (NTU)</li> <li>• Water depth (m)</li> <li>• Salinity (ppt)</li> </ul>	3 water depths: 1m below sea	Monthly at each station, at mid- flood and mid-ebb
SR4(N2)	Sensitive receiver (Tai Ho Inlet)	814688	817996	<ul style="list-style-type: none"> <li>• DO (mg/L and % of saturation)</li> </ul>	surface, mid- depth	tides during the construction
CS2(A)	Control Station	805232	818606	<ul style="list-style-type: none"> <li>• SS (mg/L)</li> </ul>	and 1m above sea bed.	period of the Contract.

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 16H104233; YSI 6920V2 00019CB2
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 October 2020 is provided in *Appendix F*.

### 2.2.3 Results and Observations

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





## 2.3 DOLPHIN MONITORING

### 2.3.1 Monitoring Requirements

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

### 2.3.2 Monitoring Equipment

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

**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.

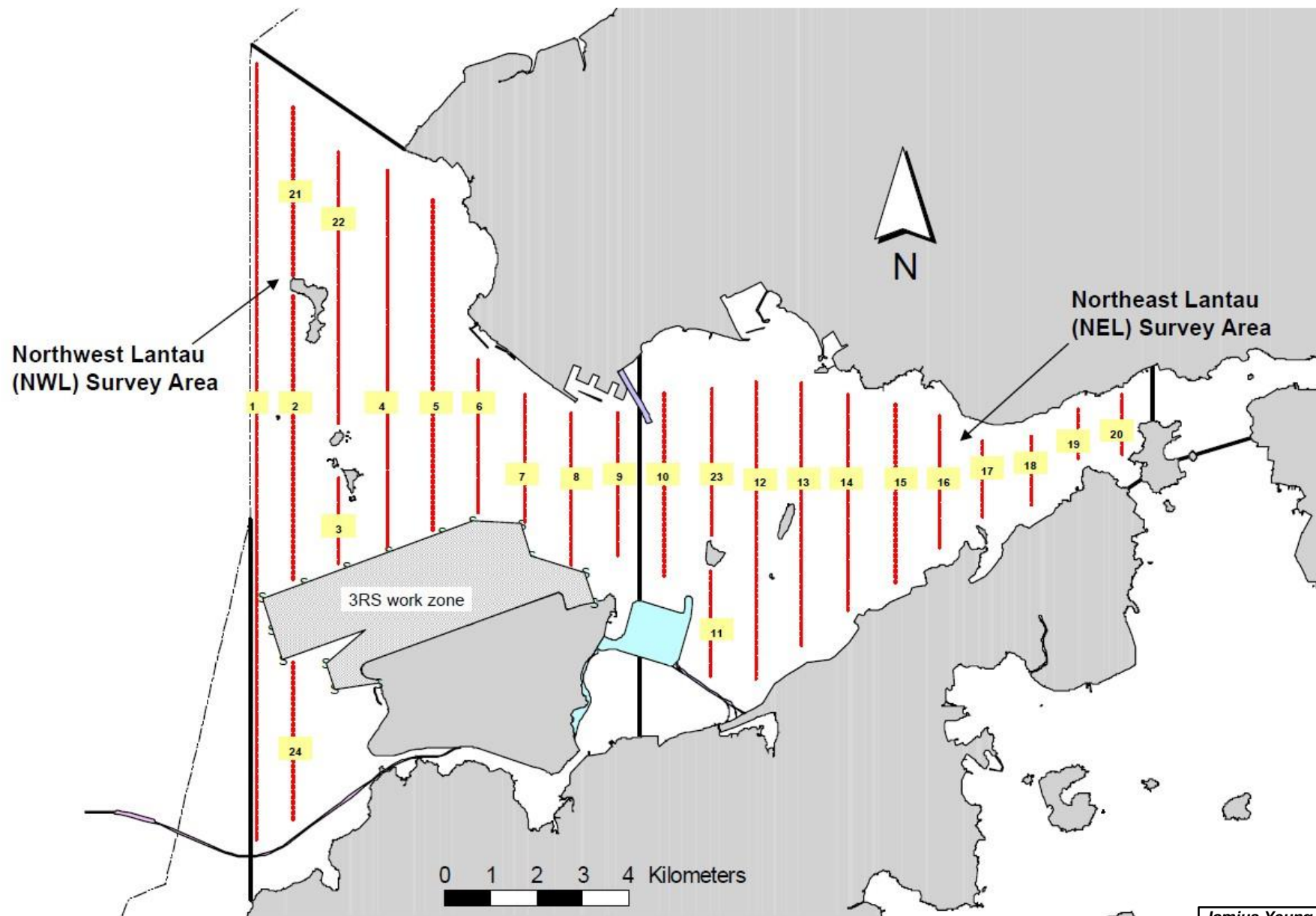


Figure 2.3

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 7, 12, 19 and 22 October 2020. The dolphin monitoring schedule for the reporting month is shown in *Appendix F*.

### 2.3.6 *Results & Observations*

A total of 254.00km 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 September 2020. Among the two areas, 93.30 km and 160.70 km of survey effort were collected from NEL and NWL survey areas, respectively. The total survey effort conducted on primary and secondary lines were 186.96 km and 67.04 km respectively. The survey efforts are summarized in *Appendix I*.

No Chinese White Dolphin sighting was recorded during the two sets of surveys in October 2020.

No dolphin sighting was made in the proximity of the TM-CLKL alignment. The southern end of transect line no. 8 was not travelled on 7 and 19 October 2020 during the dolphin monitoring due to the presence of construction boats along the transect line. Part of the transect line was not travelled due to safety concerns.

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

**Table 2.9** *Individual Survey Event Encounter Rates*

		Encounter rate (STG) (no. of on-effort dolphin sightings per 100 km of survey effort)	Encounter rate (ANI) (no. of dolphins from all on-effort sightings per 100 km of survey effort)
		Primary Lines Only	Primary Lines Only
NEL	Set 1: October 7th / 12th	0.0	0.0
	Set 2: October 19th / 22nd	0.0	0.0
NWL	Set 1: October 7th / 12th	0.0	0.0
	Set 2: October 19th / 22nd	0.0	0.0

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

**Table 2.10** *Monthly Average 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	Both Primary and Secondary Lines	Primary Lines Only	Both Primary and Secondary Lines
Northeast Lantau	0.0	0.0	0.0	0.0

Northwest Lantau	0.0	0.0	0.0	0.0
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Note: Overall dolphin encounter rates (sightings per 100 km of survey effort) from all four surveys are conducted in October 2020 on primary lines only as well as both primary lines and secondary lines in Northeast and Northwest Lantau.

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

### 2.3.7

#### *Implementation of Marine Mammal Exclusion Zone*

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

## 2.4 EM&A SITE INSPECTION

Site inspections were carried out on a weekly basis to monitor the implementation of proper environmental pollution control and mitigation measures under the Contract. In the reporting month, four (4) site inspections were carried out on 7, 14, 21 and 29 October 2020.

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

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

Inspection Date	Observations	Recommendations/ Remarks
7 October 2020	Southern Landfill <ul style="list-style-type: none"> <li>Accumulated residuals were observed on site.</li> </ul>	Southern Landfill <ul style="list-style-type: none"> <li>The Contractor was reminded to keep better housekeeping.</li> </ul>
14 October 2020	Northern Landfill <ul style="list-style-type: none"> <li>Stagnant water were observed in the drip tray on site.</li> </ul>	Northern Landfill <ul style="list-style-type: none"> <li>The Contractor was reminded to clean the stagnant water.</li> </ul>
21 October 2020	Southern Landfall (carpark nearby South Ventilation Building) <ul style="list-style-type: none"> <li>Nil.</li> </ul>	Southern Landfall (carpark nearby South Ventilation Building) <ul style="list-style-type: none"> <li>Nil.</li> </ul>
29 October 2020	Northern Landfall (box culvert and car canopy) <ul style="list-style-type: none"> <li>A rat carcase was observed on site.</li> <li>Chemicals were not placed in drip tray</li> </ul>	Northern Landfall (box culvert and car canopy) <ul style="list-style-type: none"> <li>The Contractor was reminded to keep better housekeeping.</li> <li>The Contractor was reminded to place the chemicals in drip tray.</li> </ul>

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	Inert Construction	Non-inert Construction	Recyclable Materials (c)	Chemical Wastes	Marine Sediment (m <sup>3</sup> )
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	Waste <sup>(a)</sup> (tonnes)	Waste Re- used (tonnes)	Waste <sup>(b)</sup> (tonnes)	(kg)	(kg)	Category L	Category M (M <sub>p</sub> & M <sub>f</sub> )	Mixed (L+M)
October 2020	253	0	145	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)
Construction Noise Permit	GW-RW0181-20	29 April 2020	14 October 2020	DBJV	Urmston Road in front of Pillar Point
Construction Noise Permit	GW-RS0418-20	22 June 2020	21 December 2020	DBJV	Southern Landfall

**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*

Four (4) Action Level exceedances of 1-hour TSP were recorded in the air quality monitoring during this reporting month. No exceedance of Action and Limit Levels for 24-hour TSP were recorded.

Cumulative statistics are provided in *Appendix L*.

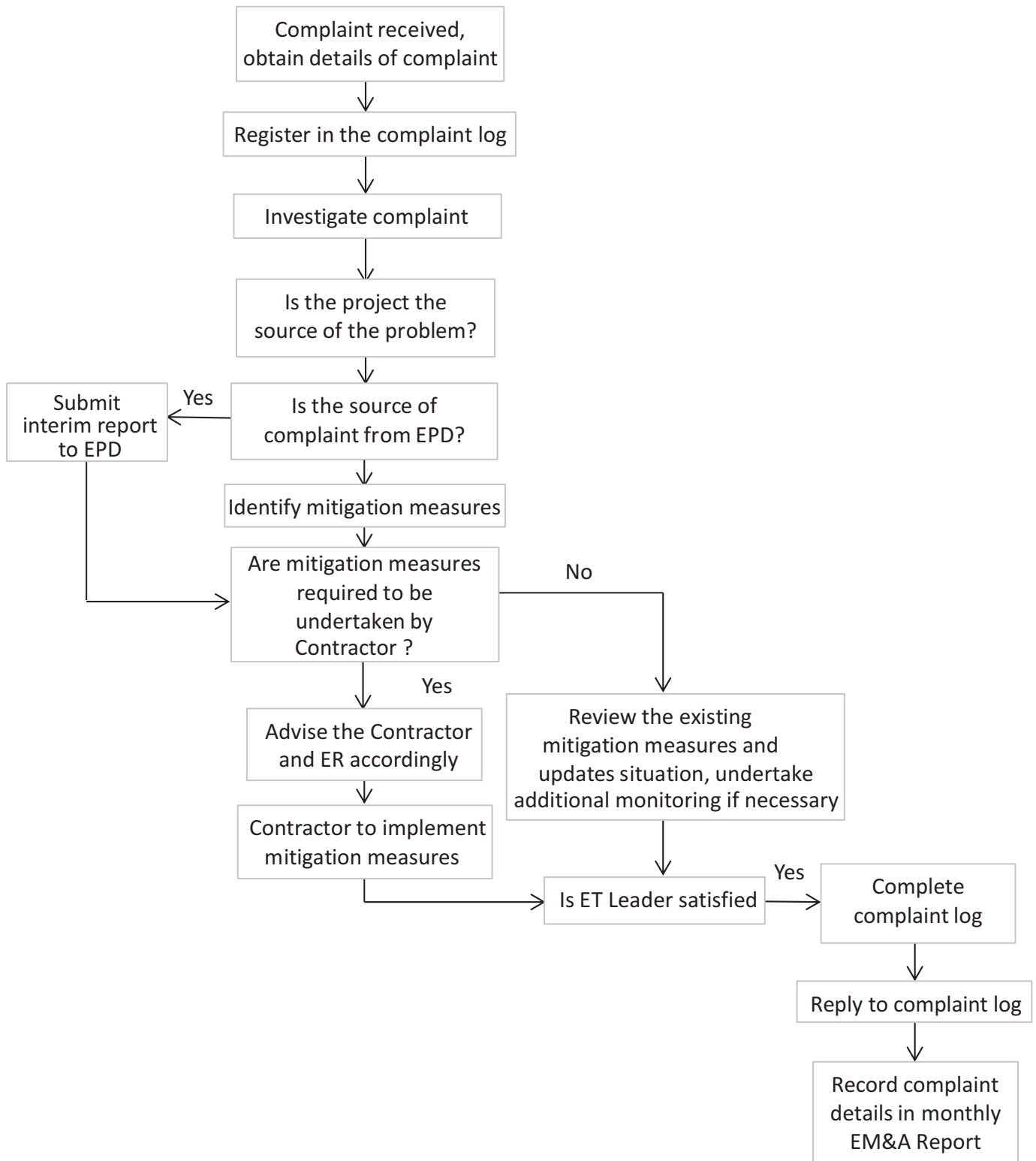
## 2.9 *SUMMARY OF COMPLAINTS, NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS*

The Environmental Complaint Handling Procedure is provided in *Figure 2.4*.

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 2.4

FILE: 0215660n2.cdr  
DATE: 06/12/2013

Environmental  
Resources  
Management



### 3 FUTURE KEY ISSUES

#### 3.1 CONSTRUCTION ACTIVITIES FOR THE COMING MONTH

As informed by the Contractor, the major works for the Contract in November 2020 are summarized in *Table 3.1*.

**Table 3.1** *Construction Works to Be Undertaken in the Coming Month*

Works to be undertaken
<i>Land-based Works</i>
<ul style="list-style-type: none"><li>• Carpark canopies installation - Portion S-A, S-B &amp; S-C;</li><li>• Hard paving and footpath - Pump Sump Area at Northern Landfall;</li><li>• Installation of green roof system - South Ventilation Building; and</li><li>• Reinstatement at Box culvert.</li></ul>

#### 3.2 KEY ISSUES FOR THE COMING MONTH

Potential environmental impacts arising from the above upcoming construction activities in the next reporting month of November 2020 are mainly associated with dust and waste management issues.

#### 3.3 MONITORING SCHEDULE FOR THE COMING MONTH

The tentative schedule for environmental monitoring in November 2020 is provided in *Appendix F*.

#### 4.1 CONCLUSIONS

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

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

Four (4) Action Level exceedances of 1-hour TSP were recorded in the air quality monitoring during this reporting month. No exceedance of Action and Limit Levels for 24-hour TSP were recorded.

No Chinese White Dolphin sighting was recorded during the two sets of surveys in October 2020.

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

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

No environmental complaint was received in this reporting period.

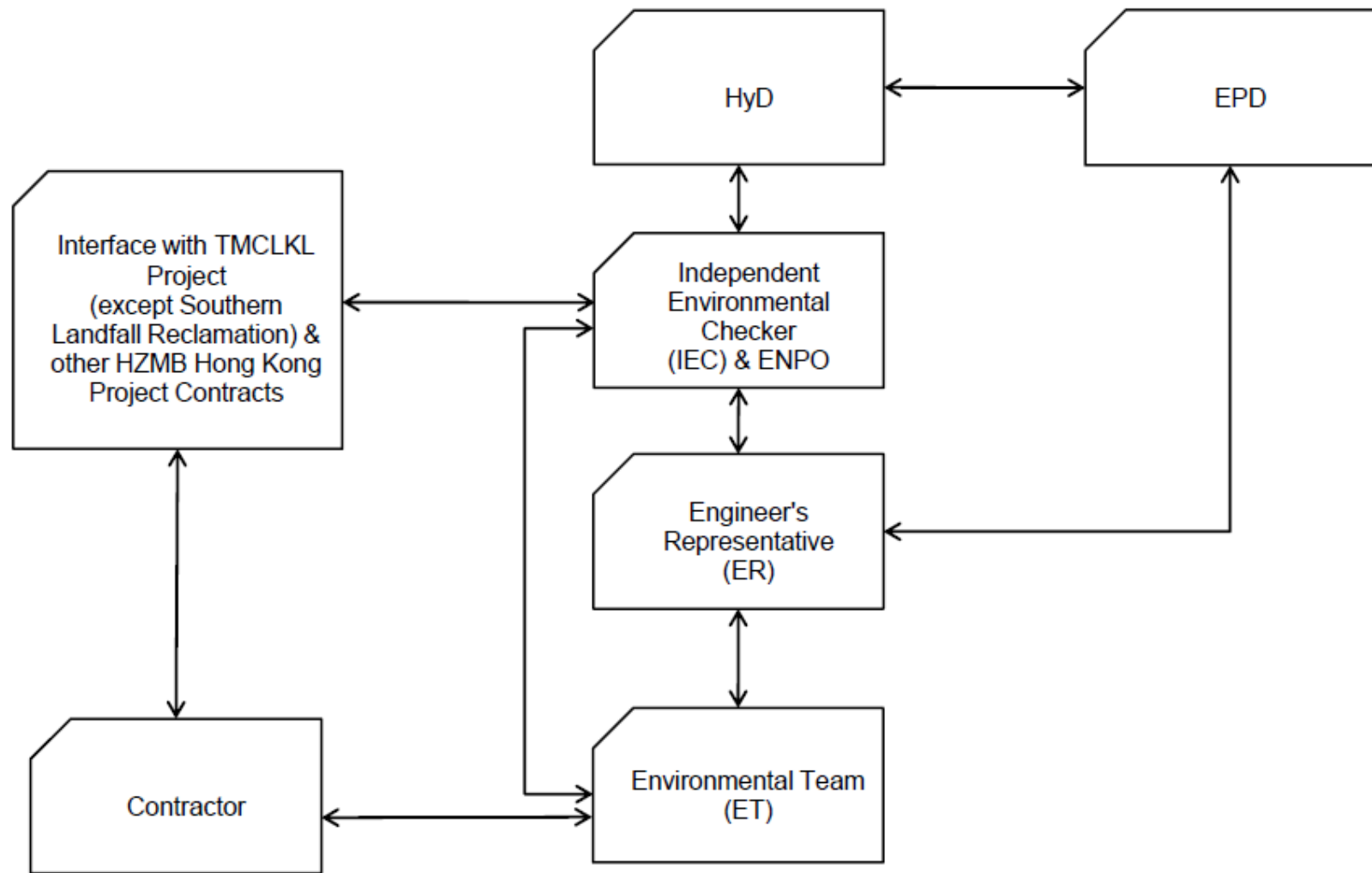
No environmental summons was received in this reporting period.

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

## Appendix A

# Project Organization for Environmental Works

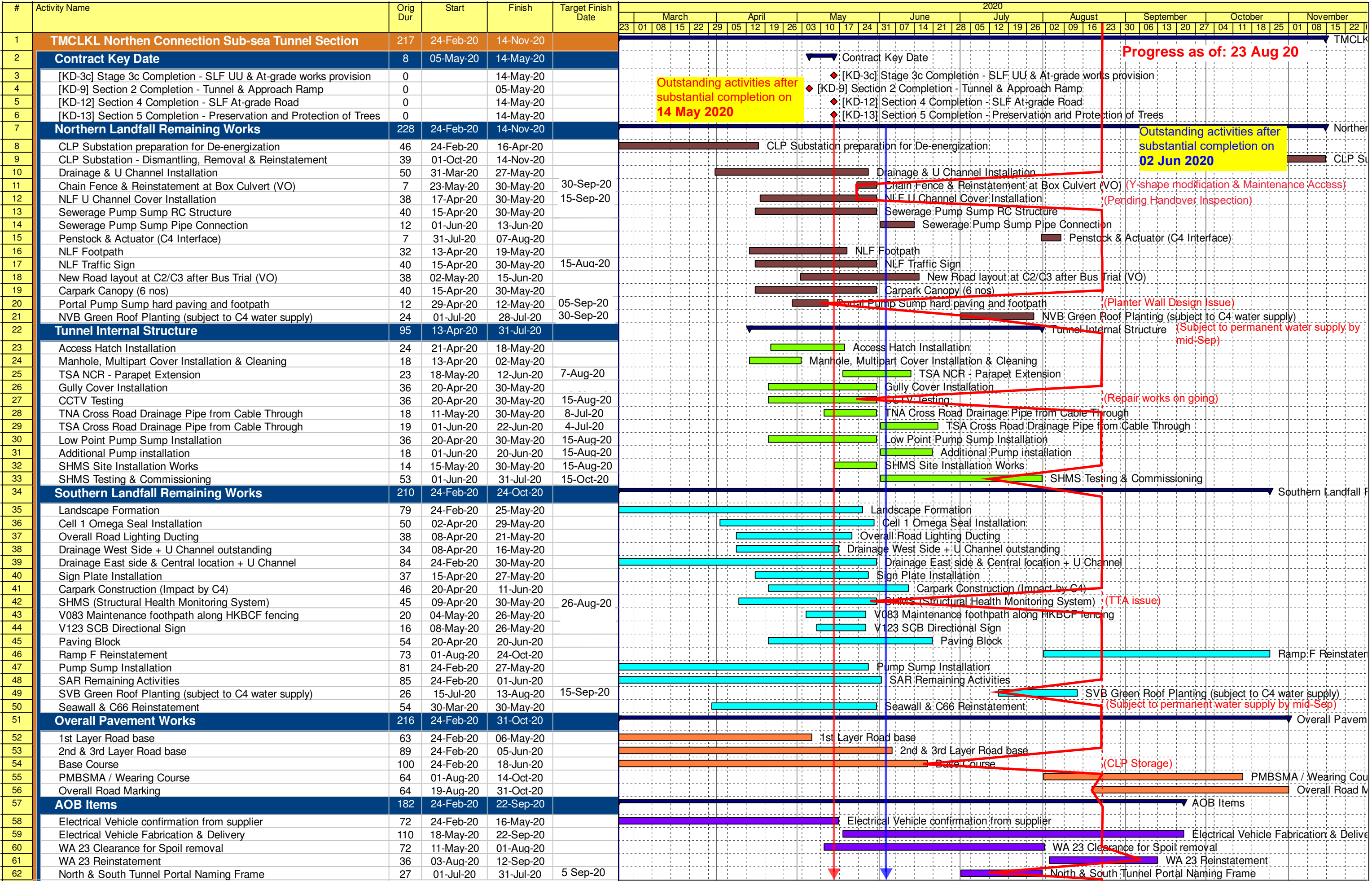




↔ Line of Communication

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		✓
<b>WATER QUALITY</b>									
<i>Marine Works (Sequence A)</i>									
6.1  Figure 6.2a Appendix D6a	Annex A	Construction of seawalls to be advanced by at least 200m before the main reclamation dredging and filling can commence. The protection by advanced seawall is a dynamic process depending on the progress of the construction activities and the stage when such protection could be realised is illustrated in Figure 6.2a and detailed in Appendix D6a. The part of the works where such measures can be undertaken for the majority of the time includes the following locations:  - TM-CLKL northern reclamation;	All areas/ prior to dredging and backfilling works	Contractor	TM-EIAO		Y		N/A
6.1	-	a maximum of 50% public fill to be used for all seawall filling below +2.5mPD for TM-CLKL southern and northern landfalls.	TM-CLKL seawall filling	Contractor	TM-EIAO		Y		N/A

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EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status *
						D	C	O	
6.1	-	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 all grab 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"> <li>- TM-CLKL northern reclamation;</li> <li>- Reclamation filling for Portion D of HKBCF; Reclamation filling for FSD berth of HKBCF; and</li> <li>- Reclamation dredging and filling for Portion 1 of HKLR;</li> </ul>	TM-CLKL northern landfall, Portion D of HKBCF and HKLR	Contractor	TM-EIAO		Y		N/A

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

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

**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

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	-	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

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

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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	
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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**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	
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 discharging the stormwater into the marine environment. The sumps will be maintained and cleaned at regular intervals.	Roadside/ design and operation	Design Consultant/ Contractor	TM-EIAO	Y		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	
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.
<b>ECOLOGY</b>									
8.14	6.3	Specification for and implement pre, during and post construction dolphin abundance monitoring.	All Areas/Detailed Design/ during construction works/post construction	Design Consultant/ Contractor	TMEIA	Y	Y	Y	✓

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**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	
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 3,600m <sup>2</sup> in an area where fishing activities are prohibited.	Area of prohibited fishing activities/Detailed Design/ towards end of construction period	TM-CLKL/ HKBCF Design Consultant/TM-CLKL/ HKBCF Contractor	TMEIA	Y		Y	N/A. To be implemented by AFCD.
8.14	6.3, 6.5	Specification and implementation of marine vessel control specifications	All areas/Detailed Design/ during construction works	Design Consultant/ Contractor	TMEIA	Y	Y		✓
8.14	6.3, 6.5	Design and implementation of acoustic decoupling methods for dredging and reclamation works	All areas/ Detailed Design/ during dredging and reclamation works	Design Consultant/ Contractor	TMEIA	Y	Y		✓
8.15	6.3, 6.4	Pre-construction phase survey and coral translocation	Detailed Design/Prior to construction	Design Consultant/ Contractor	TMEIA	Y	Y		✓
8.15	6.5	Audit coral translocation success	Post translocation	Contractor	TMEIA		Y		✓
7.13	6.5	The loss of habitat shall be supplemented by enhancement planting in accordance with the landscape mitigation schedule.	All areas / As soon as accessible	Contractor	TMEIA		Y		N/A
7.13	6.5	Spoil heaps shall be covered at all times.	All areas / Throughout construction period	Contractor	TMEIA		Y		✓
7.13	6.5	Avoid damage and disturbance to the remaining and surrounding natural habitat	All areas / Throughout construction period	Contractor	TMEIA		Y		✓
7.13	6.5	Placement of equipment in designated areas within the existing disturbed land	All areas / Throughout construction period	Contractor	TMEIA		Y		✓
7.13	6.5	Disturbed areas to be reinstated immediately after completion of the works.	All areas / Throughout construction period	Contractor	TMEIA		Y		✓
7.13	6.5	Construction activities should be restricted to the proposed works boundary.	All areas / Throughout construction period	Contractor	TMEIA		Y		✓
<b>LANDSCAPE AND VISUAL</b>									
10.9	7.6	The colour and shape of the toll control buildings, ventilation building and administration building shall adopt a design which could blend it into the vicinity elements, and the details will be developed in detailed design stage (DM2)	All areas/detailed design	Design Consultant	TMEIA	Y			N/A
10.9	7.6	Aesthetic design of the viaduct, retaining wall and other structures will be developed under ACABAS submission (DM5)	All areas/detailed design	Design Consultant	TMEIA	Y			N/A

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

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

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

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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	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		✓
<b>CULTURAL HERITAGE</b>									
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	260
	ASR5 = 238	
	AQMS1 = 213	
	ASR6 = 238	
	ASR10 = 214	
1 Hour TSP Level in $\mu\text{g} / \text{m}^3$	ASR1 = 331	500
	ASR5 = 340	
	AQMS1 = 335	
	ASR6 = 338	
	ASR10 = 337	

## 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 : 07/08/2020

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) : 1008  
Ta(K) : 304

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	12.2	3.450	1.685	55	54.32
2	13 holes	9.5	3.044	1.489	50	49.38
3	10 holes	7.1	2.632	1.290	43	42.47
4	7 holes	5.0	2.208	1.086	38	37.53
5	5 holes	2.6	1.593	0.789	30	29.63

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): 27.808                      Intercept(b): 7.409                      Correlation Coefficient(r): 0.9986

Checked by: Magnum Fan

Date: 11/08/2020

High-Volume TSP Sampler  
5-Point Calibration Record

Location : ASR10  
Calibrated by : K.T.Ho  
Date : 07/08/2020

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) : 1008  
Ta(K) : 304

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	11.6	3.364	1.644	56	55.31
2	13 holes	9.0	2.963	1.450	50	49.38
3	10 holes	6.5	2.518	1.235	42	41.48
4	7 holes	4.2	2.024	0.997	35	34.57
5	5 holes	2.5	1.562	0.774	28	27.65

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

Sampler Calibration Relationship (Linear Regression)

Slope(m): 31.949                      Intercept(b): 2.701                      Correlation Coefficient(r): 0.9994

Checked by: Magnum Fan

Date: 11/08/2020

High-Volume TSP Sampler  
5-Point Calibration Record

Location : AQMS1  
Calibrated by : K.T.Ho  
Date : 07/08/2020

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) : 1008  
Ta(K) : 304

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	12.2	3.450	1.685	54	53.33
2	13 holes	9.1	2.979	1.458	48	47.41
3	10 holes	6.8	2.575	1.263	43	42.47
4	7 holes	4.6	2.118	1.042	37	36.54
5	5 holes	2.3	1.498	0.743	28	27.65

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): 27.121                      Intercept(b): 7.896                      Correlation Coefficient(r): 0.9994

Checked by: Magnum Fan

Date: 11/08/2020



High-Volume TSP Sampler  
5-Point Calibration Record

Location : ASR 1  
Calibrated by : K.T.Ho  
Date : 07/08/2020

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) : 1008  
Ta(K) : 304

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	12.0	3.421	1.671	54	53.33
2	13 holes	9.2	2.996	1.466	49	48.39
3	10 holes	6.6	2.537	1.245	42	41.48
4	7 holes	4.2	2.024	0.997	36	35.55
5	5 holes	2.3	1.498	0.743	27	26.67

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): 28.492                      Intercept(b): 6.200                      Correlation Coefficient(r): 0.9979

Checked by: Magnum Fan

Date: 11/08/2020

High-Volume TSP Sampler  
5-Point Calibration Record

Location : ASR 6  
Calibrated by : K.T.Ho  
Date : 07/08/2020

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) : 1008  
Ta(K) : 304

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	12.2	3.450	1.685	56	55.31
2	13 holes	9.4	3.028	1.482	50	49.38
3	10 holes	6.8	2.575	1.263	44	43.46
4	7 holes	4.6	2.118	1.042	38	37.53
5	5 holes	2.3	1.498	0.743	30	29.63

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

Sampler Calibration Relationship (Linear Regression)

Slope(m): 27.168                      Intercept(b): 9.290                      Correlation Coefficient(r): 0.9999

Checked by: Magnum Fan

Date: 11/08/2020

High-Volume TSP Sampler  
5-Point Calibration Record

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

Sampler

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

Calibration Orifice and Standard Calibration Relationship

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

Standard Condition

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

Calibration Condition

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

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

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

Sampler Calibration Relationship (Linear Regression)

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

Checked by: Magnum Fan

Date: 11/10/2020

High-Volume TSP Sampler  
5-Point Calibration Record

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

Sampler

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

Calibration Orifice and Standard Calibration Relationship

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

Standard Condition

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

Calibration Condition

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

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

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

Sampler Calibration Relationship (Linear Regression)

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

Checked by: Magnum Fan

Date: 11/10/2020

High-Volume TSP Sampler  
5-Point Calibration Record

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

Sampler

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

Calibration Orifice and Standard Calibration Relationship

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

Standard Condition

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

Calibration Condition

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

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

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

Sampler Calibration Relationship (Linear Regression)

Slope(m): 26.943

Intercept(b): 8.253

Correlation Coefficient(r): 0.9997

Checked by: Magnum Fan

Date: 11/10/2020

High-Volume TSP Sampler  
5-Point Calibration Record

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

Sampler

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

Calibration Orifice and Standard Calibration Relationship

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

Standard Condition

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

Calibration Condition

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

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

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

Sampler Calibration Relationship (Linear Regression)

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

Checked by: Magnum Fan

Date: 11/10/2020

High-Volume TSP Sampler  
5-Point Calibration Record

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

Sampler

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

Calibration Orifice and Standard Calibration Relationship

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

Standard Condition

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

Calibration Condition

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

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

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

Sampler Calibration Relationship (Linear Regression)

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

Checked by: Magnum Fan

Date: 11/10/2020



RECALIBRATION

DUE DATE:

February 18, 2021

# Certificate of Calibration

## Calibration Certification Information

Cal. Date: February 18, 2020

Rootsmeter S/N: 438320

Ta: 294

°K

Operator: Jim Tisch

Pa: 753.1

mm Hg

Calibration Model #: TE-5025A

Calibrator S/N: 2454

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

## Data Tabulation

Vstd (m3)	Qstd (x-axis)	$\sqrt{\Delta H \left( \frac{Pa}{Pstd} \right) \left( \frac{Tstd}{Ta} \right)}$ (y-axis)	Va	Qa (x-axis)	$\sqrt{\Delta H \left( \frac{Ta}{Pa} \right)}$ (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
<b>QSTD</b>	m=	<b>2.07134</b>	<b>QA</b>	m=	<b>1.29704</b>
	b=	<b>-0.04091</b>		b=	<b>-0.02551</b>
	r=	<b>0.99999</b>		r=	<b>0.99999</b>

## Calculations

Vstd=	$\Delta Vol((Pa-\Delta P)/Pstd)(Tstd/Ta)$	Va=	$\Delta Vol((Pa-\Delta P)/Pa)$
Qstd=	Vstd/ΔTime	Qa=	Va/ΔTime
For subsequent flow rate calculations:			
<b>Qstd=</b> $1/m \left( \left( \sqrt{\Delta H \left( \frac{Pa}{Pstd} \right) \left( \frac{Tstd}{Ta} \right)} \right) - b \right)$		<b>Qa=</b> $1/m \left( \left( \sqrt{\Delta H \left( \frac{Ta}{Pa} \right)} \right) - b \right)$	

## 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 :  $(23 \pm 2)^{\circ}\text{C}$   
Line Voltage / 電壓 : ---

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

### TEST SPECIFICATIONS / 測試規範

Calibration check

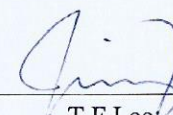
DATE OF TEST / 測試日期 : 9 June 2020

### TEST RESULTS / 測試結果

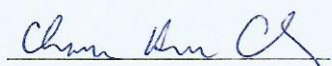
The results apply to the particular unit-under-test only.  
The results are detailed in the subsequent page(s).

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所書面批准。



# Certificate of Calibration

## 校正證書

Certificate No. : C203177

證書編號

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

Equipment ID  
CL386

Description  
Multi-function Measuring Instrument

Certificate No.  
S16494

4. Test procedure : MA130N.
5. Results :

### Air Velocity

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

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

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

### Note :

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

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

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 : 29 June 2020

Brand of Test Meter: Davis

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

Location : Roof of Tuen Mun Firestation

Procedures :

1. Wind Still Test: The wind speed sensor was hold by hand until it keep still
2. Wind Speed Test: The wind meter was on-site calibrated against the Anemometer
3. Wind Direction Test : The wind meter was on-site calibrated against the marine compass at four directions

Results:

Wind Still Test

Wind Speed (m/s)
0.00

Wind Speed Test

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

Wind Direction Test

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

Calibrated by: 

Yeung Ping Fai  
(Technical Officer)

Checked by : 

Ho Kam Fat  
(Senior Technical Officer)



專業化驗有限公司

QUALITY PRO TEST-CONSULT LIMITED

Unit 10, 14/F, Wah Wai Centre, 38-40 Au Pui Wan St., Fotan, Hong Kong

Email: info@qualityprotest.com; Website: www.qualityprotest.com

Tel: (852) 3956 8717; Fax: (852) 3956 3928

## REPORT OF EQUIPMENT PERFORMANCE CHECK/ CALIBRATION

Report No. : AJ090025  
Date of Issue : 07 September 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 ProDSS (Multi-Parameters)  
Manufacturer : YSI (a xylem brand)  
Serial Number : 16H104233  
Date of Received : Sep 07, 2020  
Date of Calibration : Sep 07, 2020  
Date of Next Calibration<sup>(a)</sup> : Dec 06, 2020

### PART C – REFERENCE METHODS/ DOCUMENTS FOR THE CALIBRATION

Parameter	Reference Method
pH at 25°C	APHA 21e 4500-H <sup>+</sup> 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<sup>(b,c)</sup>

#### (1) pH at 25°C

Target (pH unit)	Displayed Reading <sup>(d)</sup> (pH Unit)	Tolerance <sup>(e)</sup> (pH Unit)	Results
4.00	4.07	0.07	Satisfactory
7.42	7.45	0.03	Satisfactory
10.01	10.09	0.08	Satisfactory

Tolerance of pH should be less than  $\pm 0.20$  (pH unit)

#### (2) Temperature

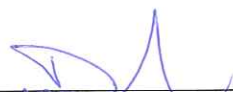
Reading of Ref. thermometer (°C)	Displayed Reading (°C)	Tolerance (°C)	Results
10	10.02	0.02	Satisfactory
25	25.08	0.08	Satisfactory
40	39.90	-0.10	Satisfactory

Tolerance limit of temperature should be less than  $\pm 2.0$  (°C)

~ CONTINUED ON NEXT PAGE ~

#### Remark(s): -

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

  
LEE Chun-ning, Desmond  
Senior Chemist





## REPORT OF EQUIPMENT PERFORMANCE CHECK/ CALIBRATION

Report No. : AJ090025  
Date of Issue : 07 September 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
0.10	0.31	0.21	Satisfactory
1.21	1.13	-0.08	Satisfactory
3.30	3.11	-0.19	Satisfactory
6.81	7.06	0.25	Satisfactory

Tolerance limit of dissolved oxygen should be less than  $\pm 0.50$  (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	147.6	0.48	Satisfactory
0.01	1412	1462	3.54	Satisfactory
0.1	12890	12753	-1.06	Satisfactory
0.5	58670	59448	1.33	Satisfactory
1.0	111900	110661	-1.11	Satisfactory

Tolerance limit of conductivity should be less than  $\pm 10.0$  (%)

#### (5) Salinity

Expected Reading (g/L)	Displayed Reading (g/L)	Tolerance (%)	Results
10	9.92	-0.80	Satisfactory
20	19.88	-0.60	Satisfactory
30	29.79	-0.70	Satisfactory

Tolerance limit of salinity should be less than  $\pm 10.0$  (%)

#### (6) Turbidity

Expected Reading (NTU)	Displayed Reading <sup>(f)</sup> (NTU)	Tolerance <sup>(g)</sup> (%)	Results
0	0.09	--	Satisfactory
10	9.92	-0.8	Satisfactory
20	19.89	-0.5	Satisfactory
100	98.46	-1.5	Satisfactory
800	795.37	-0.6	Satisfactory

Tolerance limit of turbidity should be less than  $\pm 10.0$  (%)

~ END OF REPORT ~

#### Remark(s): -

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

<sup>(g)</sup> 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.



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Unit 10, 14/F, Wah Wai Centre, 38-40 Au Pui Wan St., Fotan, Hong Kong

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## REPORT OF EQUIPMENT PERFORMANCE CHECK/ CALIBRATION

Report No. : AJ090026  
Date of Issue : 07 September 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 : 00019CB2  
Date of Received : Sep 07, 2020  
Date of Calibration : Sep 07, 2020  
Date of Next Calibration<sup>(a)</sup> : Dec 06, 2020

### PART C – REFERENCE METHODS/ DOCUMENTS FOR THE CALIBRATION

Parameter	Reference Method
pH at 25°C	APHA 21e 4500-H <sup>+</sup> 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<sup>(b,c)</sup>

#### (1) pH at 25°C

Target (pH unit)	Displayed Reading <sup>(d)</sup> (pH Unit)	Tolerance <sup>(e)</sup> (pH Unit)	Results
4.00	4.01	0.01	Satisfactory
7.42	7.45	0.03	Satisfactory
10.01	10.02	0.01	Satisfactory

Tolerance of pH should be less than  $\pm 0.20$  (pH unit)

#### (2) Temperature


Reading of Ref. thermometer (°C)	Displayed Reading (°C)	Tolerance (°C)	Results
10	10.08	0.08	Satisfactory
28	25.11	0.11	Satisfactory
48	39.98	-0.02	Satisfactory

Tolerance limit of temperature should be less than  $\pm 2.0$  (°C)

~ CONTINUED ON NEXT PAGE ~

#### Remark(s): -

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

  
LEE Chun-ning, Desmond  
Senior Chemist



專業化驗有限公司

QUALITY PRO TEST-CONSULT LIMITED

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## REPORT OF EQUIPMENT PERFORMANCE CHECK/ CALIBRATION

Report No. : AJ090026  
Date of Issue : 07 September 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
0.10	0.33	0.23	Satisfactory
1.21	1.08	-0.13	Satisfactory
3.30	3.13	-0.17	Satisfactory
6.81	7.12	0.31	Satisfactory

Tolerance limit of dissolved oxygen should be less than  $\pm 0.50$  (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	147.7	0.54	Satisfactory
0.01	1412	1482	4.96	Satisfactory
0.1	12890	12791	-0.77	Satisfactory
0.5	58670	59432	1.30	Satisfactory
1.0	111900	110533	-1.22	Satisfactory

Tolerance limit of conductivity should be less than  $\pm 10.0$  (%)

#### (5) Salinity

Expected Reading (g/L)	Displayed Reading (g/L)	Tolerance (%)	Results
10	9.96	-0.40	Satisfactory
20	19.88	-0.60	Satisfactory
30	29.82	-0.60	Satisfactory

Tolerance limit of salinity should be less than  $\pm 10.0$  (%)

#### (6) Turbidity

Expected Reading (NTU)	Displayed Reading <sup>(f)</sup> (NTU)	Tolerance <sup>(g)</sup> (%)	Results
0	0.1	--	Satisfactory
10	9.9	-1.0	Satisfactory
20	20.1	0.5	Satisfactory
100	99.2	-0.8	Satisfactory
800	796.6	-0.4	Satisfactory

Tolerance limit of turbidity should be less than  $\pm 10.0$  (%)

~ END OF REPORT ~

#### Remark(s): -

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

<sup>(g)</sup> 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**  
**Tentative Air Quality Impact Monitoring Schedule - October 2020**

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

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

**HY/2012/08 - Tuen Mun - Chek Lap Kok Link - Northern Landfall**  
**Operational Phase Marine Water Quality Monitoring (WQM) Schedule (October 2020)**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1-Oct	2-Oct	3-Oct
4-Oct	5-Oct	6-Oct	7-Oct	8-Oct	9-Oct	10-Oct
11-Oct	12-Oct	13-Oct	14-Oct	15-Oct	16-Oct	17-Oct
18-Oct	19-Oct	20-Oct	21-Oct	22-Oct	23-Oct	24-Oct
						ebb tide 7:43 - 11:13 flood tide 15:17 - 18:47
25-Oct	26-Oct	27-Oct	28-Oct	29-Oct	30-Oct	31-Oct

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

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

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

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

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

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 (November 2020)**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1-Nov	2-Nov	3-Nov	4-Nov	5-Nov	6-Nov	7-Nov
8-Nov	9-Nov	10-Nov	11-Nov	12-Nov	13-Nov	14-Nov
15-Nov	16-Nov	17-Nov	18-Nov	19-Nov	20-Nov	21-Nov
22-Nov	23-Nov	24-Nov	25-Nov	26-Nov	27-Nov	28-Nov
	ebb tide 5:26 - 8:56 flood tide 13:49 - 17:19					
29-Nov	30-Nov					

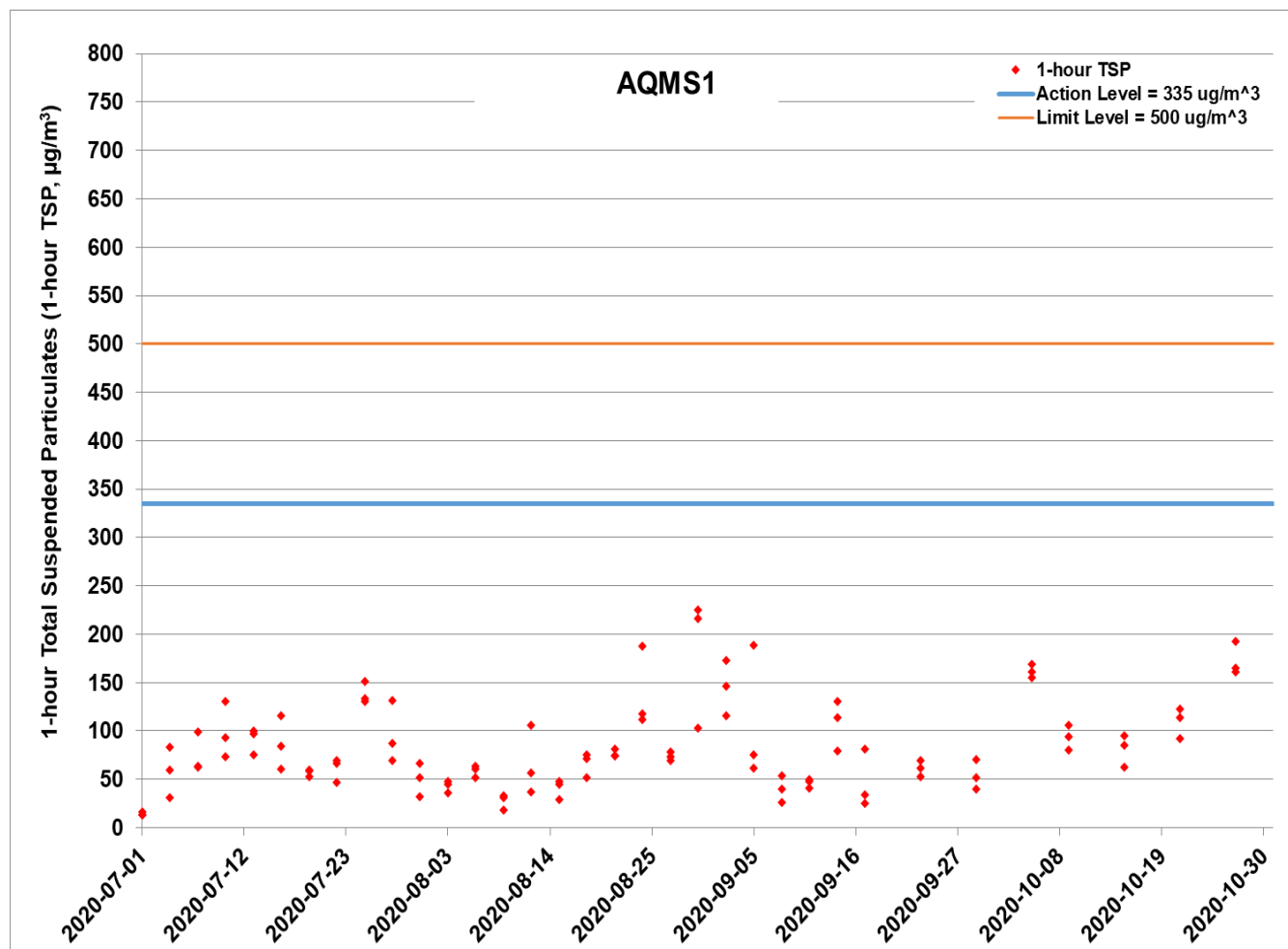
**HY/2012/08 - Tuen Mun - Chek Lap Kok Link**  
**Northern Connection Sub-sea Tunnel Section**  
**Tentative Operational Phase Dolphin Monitoring Survey Monitoring Schedule - November 2020**

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

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 July 2020 and 31 October 2020 during impact monitoring period. The weather conditions during the monitoring period were sunny. Major land-based construction activities included SVB green roof system – Portion S-A, S-B & S-C; Carpark canopies installation – Portion S-A, S-B & S-C; and Hard paving and footpath, reinstatement at Box culvert – Pump Sump Area at Northern Landfall (1/7/2020 – 31/10/2020)

Ref: 0212330\_Impact AQM graphs\_October 2020.xlsx





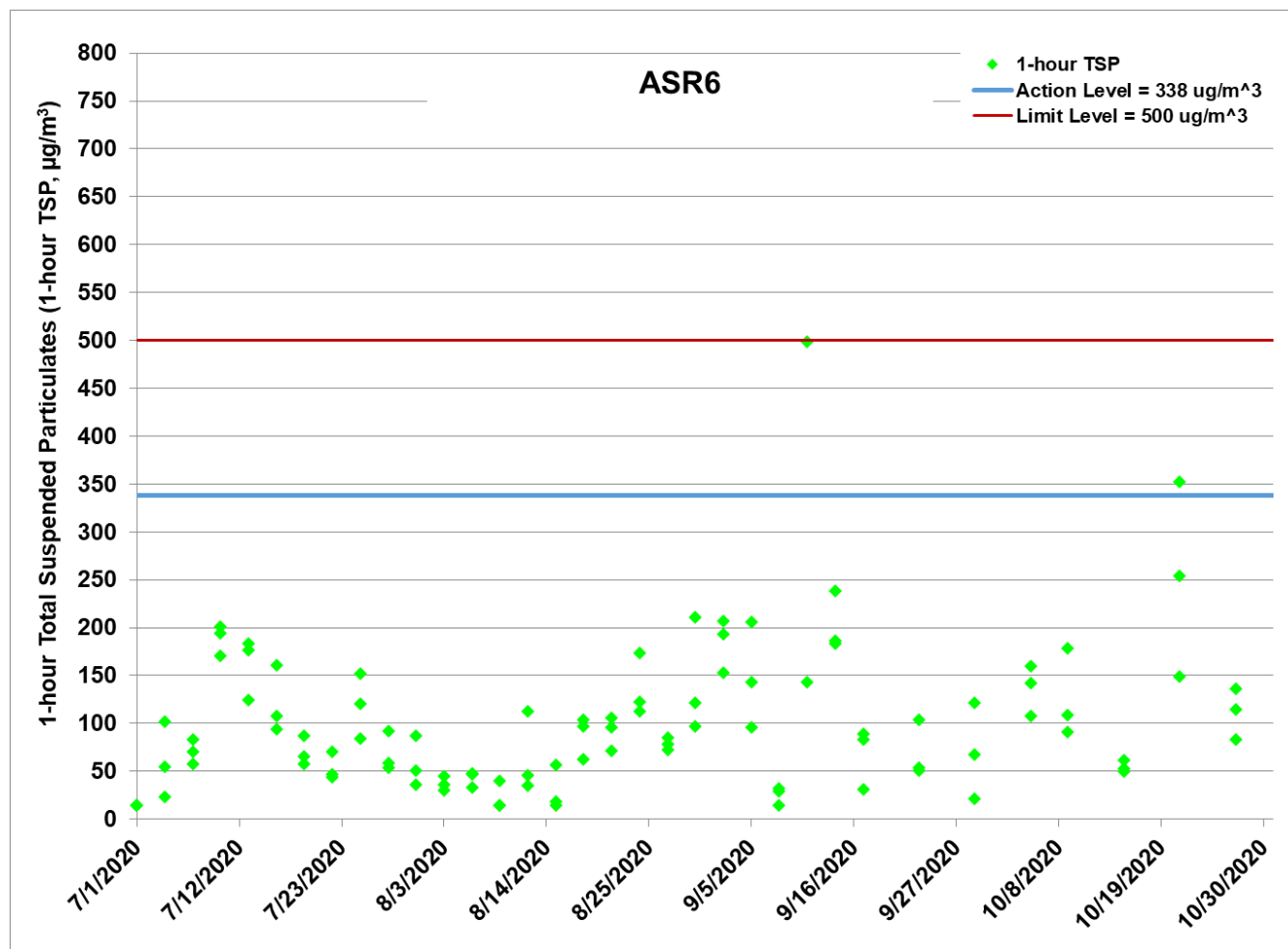
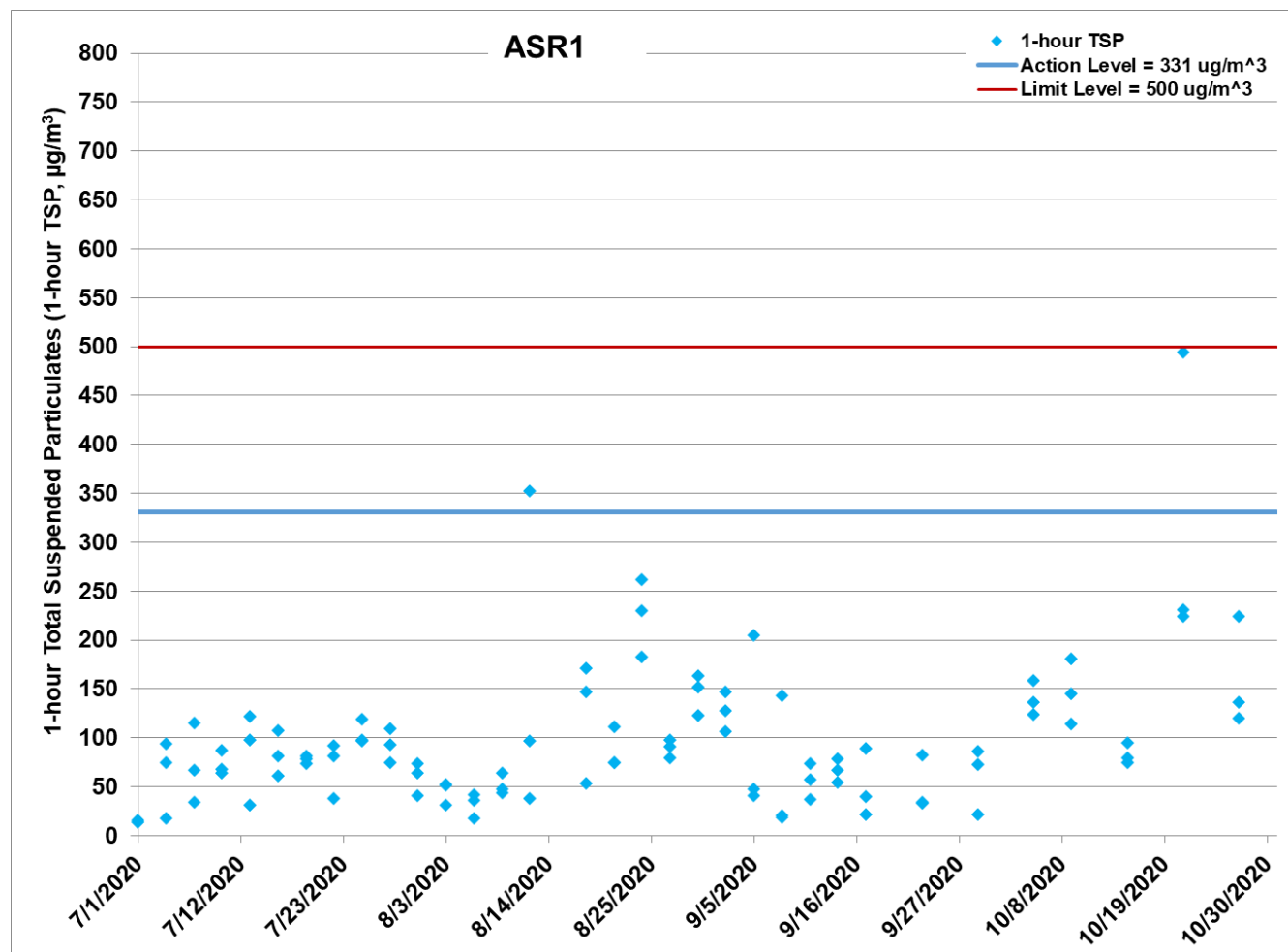


Figure G.2 Impact Monitoring - 1-hour Total Suspended Particulates ( $\mu\text{g}/\text{m}^3$ ) at ASR6 between 1 July 2020 and 31 October 2020 during impact monitoring period. The weather conditions during the monitoring period were sunny. Major land-based construction activities included SVB green roof system - Portion S-A, S-B & S-C; Carpark canopies installation - Portion S-A, S-B & S-C; and Hard paving and footpath, reinstatement at Box culvert - Pump Sump Area at Northern Landfall (1/7/2020 - 31/10/2020)

Ref: 0212330\_Impact AQM graphs\_October 2020.xlsx





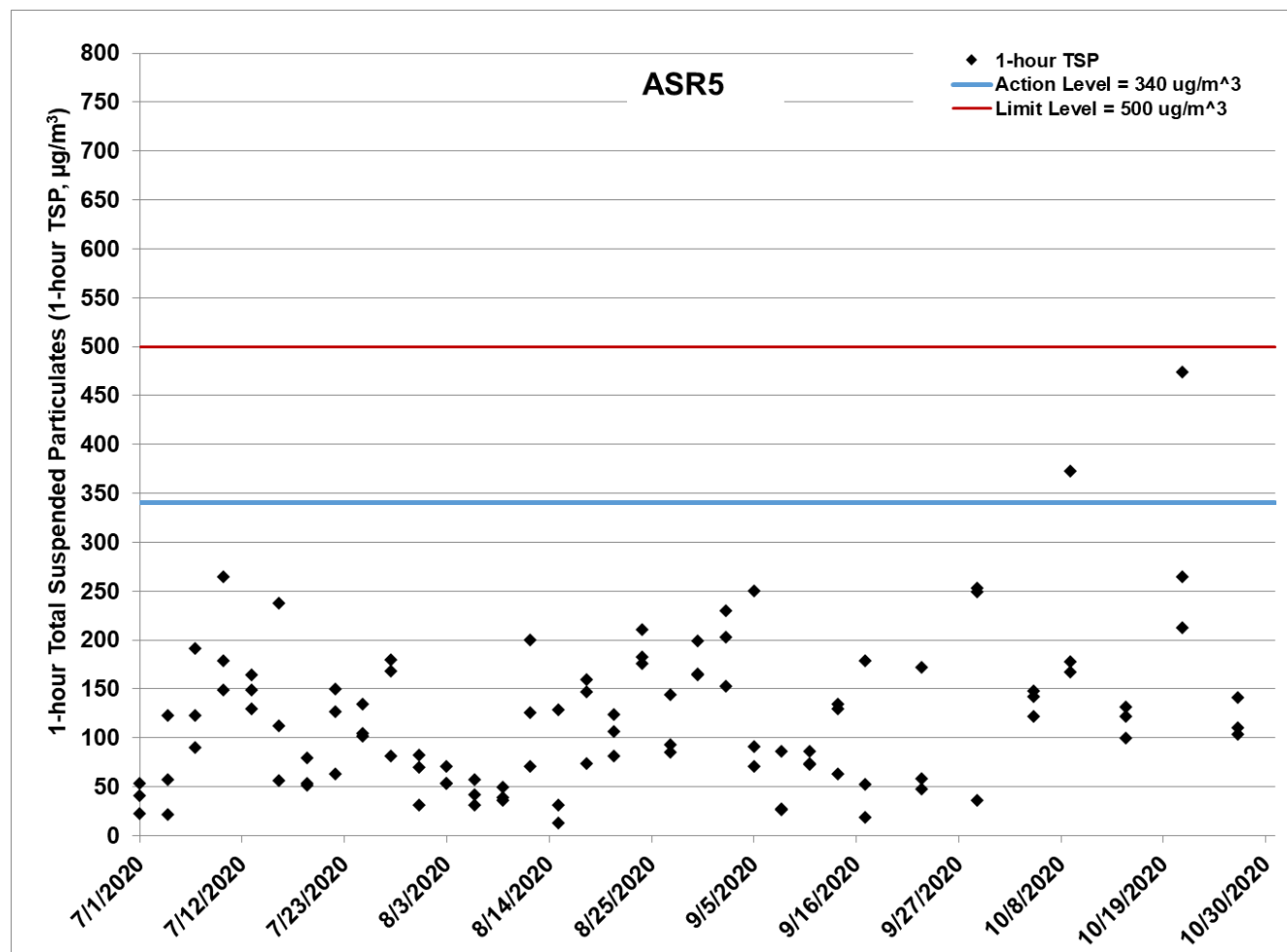


Figure G.4 Impact Monitoring - 1-hour Total Suspended Particulates ( $\mu\text{g}/\text{m}^3$ ) at ASR5 between 1 July 2020 and 31 October 2020 during impact monitoring period. The weather conditions during the monitoring period were sunny. Major land-based construction activities included SVB green roof system - Portion S-A, S-B & S-C; Carpark canopies installation - Portion S-A, S-B & S-C; and Hard paving and footpath, reinstatement at Box culvert - Pump Sump Area at Northern Landfall (1/7/2020 - 31/10/2020)

Ref: 0212330\_Impact AQM graphs\_October 2020.xlsx

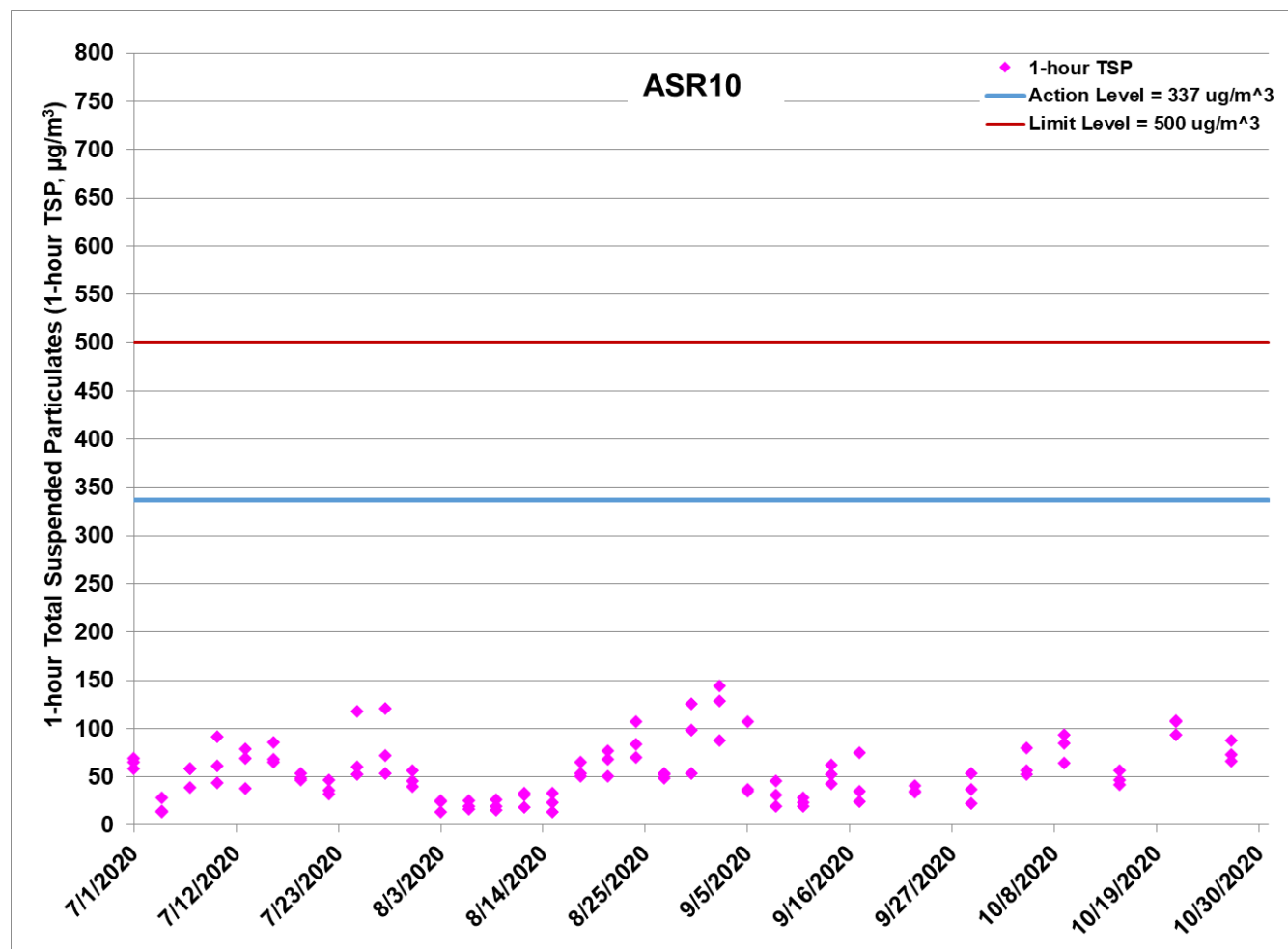


Figure G.5 Impact Monitoring - 1-hour Total Suspended Particulates ( $\mu\text{g}/\text{m}^3$ ) at ASR10 between 1 July 2020 and 31 October 2020 during impact monitoring period. The weather conditions during the monitoring period were sunny. Major land-based construction activities included SVB green roof system - Portion S-A, S-B & S-C; Carpark canopies installation - Portion S-A, S-B & S-C; and Hard paving and footpath, reinstatement at Box culvert - Pump Sump Area at Northern Landfall (1/7/2020 - 31/10/2020)

Ref: 0212330\_Impact AQM graphs\_October 2020.xlsx

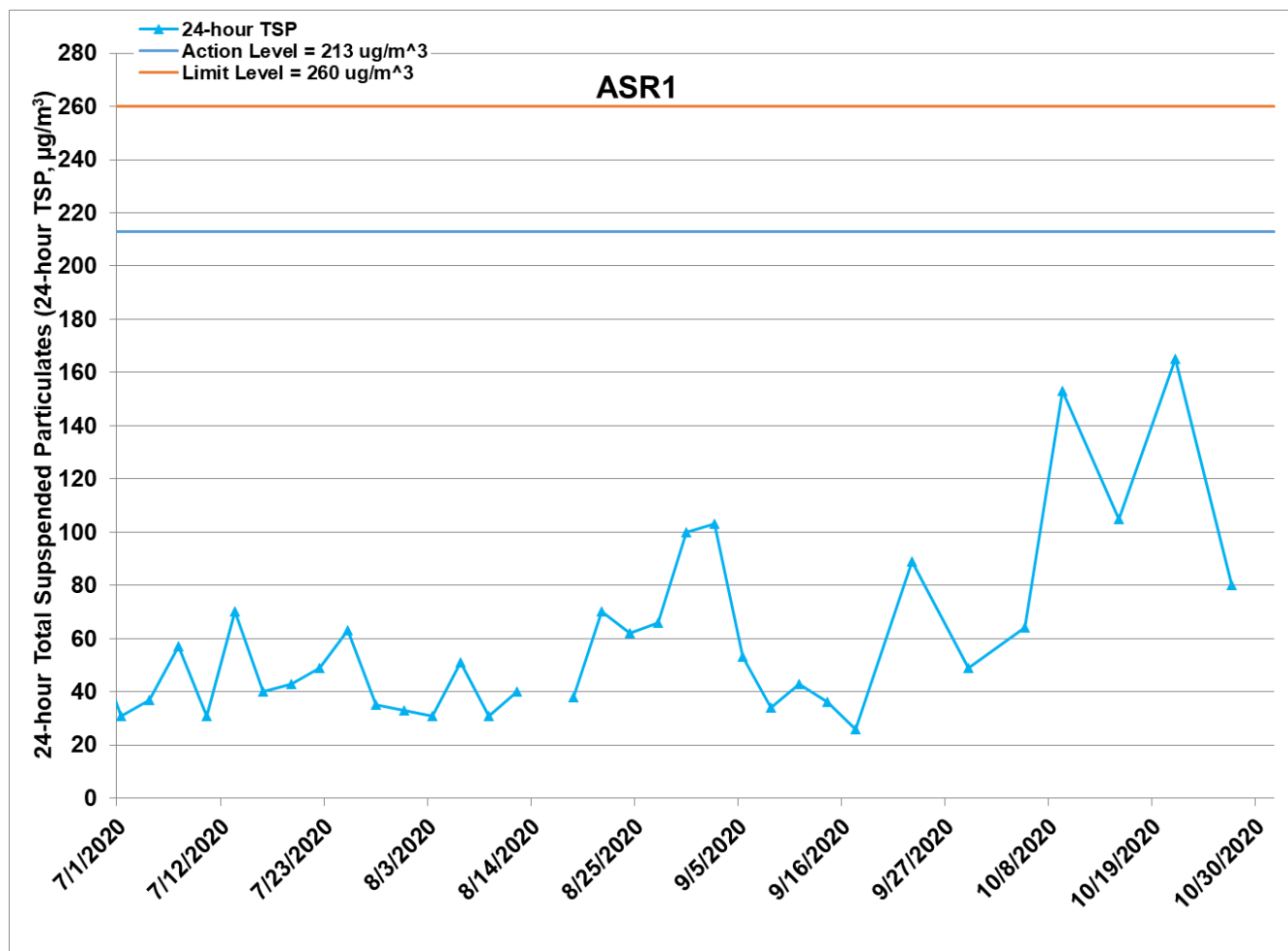


Figure G.6 Impact Monitoring – 24-hour Total Suspended Particulates (µg/m³) at ASR1 between 1 July 2020 and 31 October 2020 during impact monitoring period. The weather conditions during the monitoring period were sunny. Major land-based construction activities included SVB green roof system – Portion S-A, S-B & S-C; Carpark canopies installation – Portion S-A, S-B & S-C; and Hard paving and footpath, reinstatement at Box culvert – Pump Sump Area at Northern Landfall (1/7/2020 – 31/10/2020)

Ref: 0212330\_Impact AQM graphs\_October 2020.xlsx



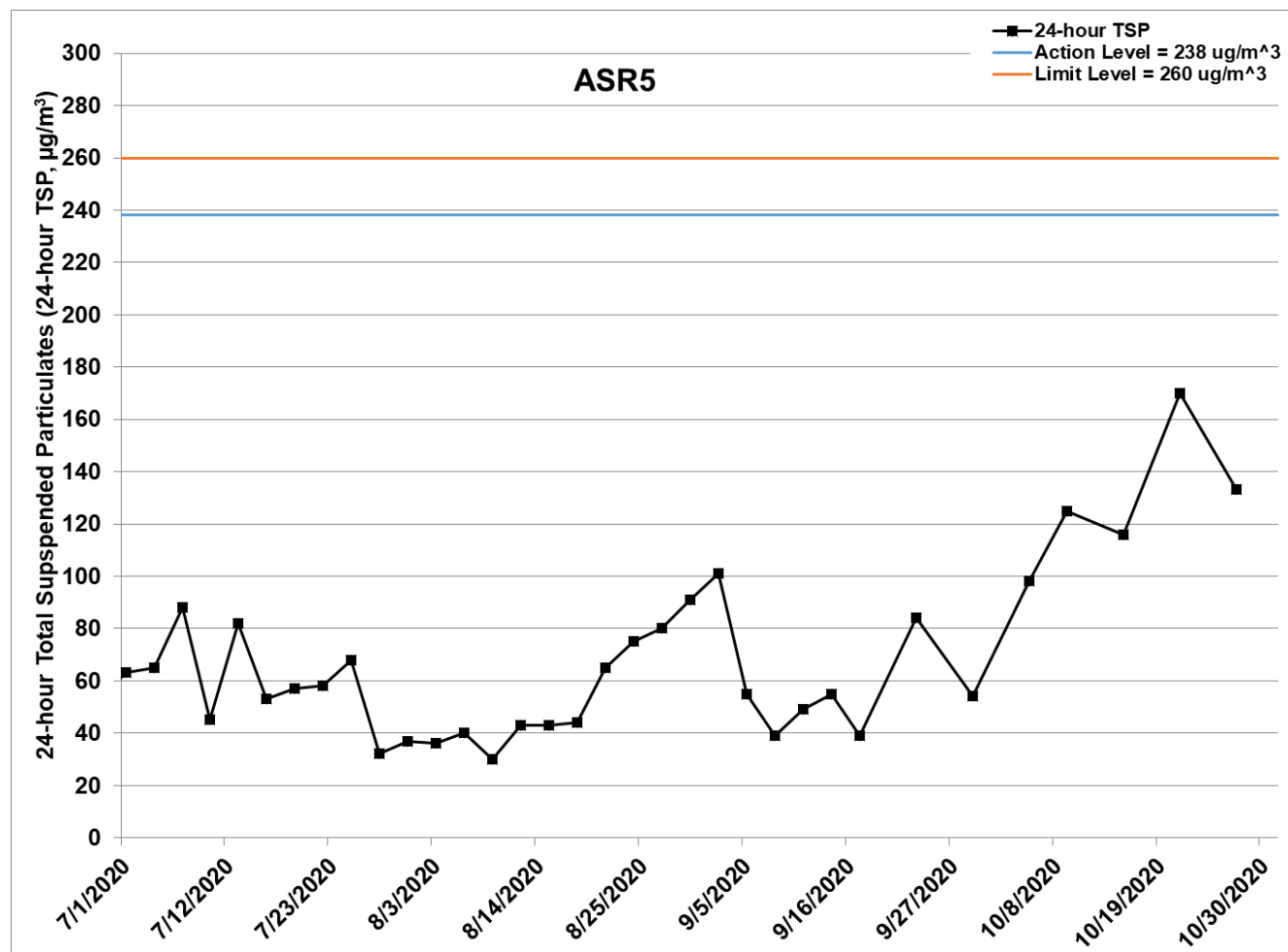


Figure G.7 Impact Monitoring - 24-hour Total Suspended Particulates ( $\mu\text{g}/\text{m}^3$ ) at ASR5 between 1 July 2020 and 31 October 2020 during impact monitoring period. The weather conditions during the monitoring period were sunny. Major land-based construction activities included SVB green roof system - Portion S-A, S-B & S-C; Carpark canopies installation - Portion S-A, S-B & S-C; and Hard paving and footpath, reinstatement at Box culvert - Pump Sump Area at Northern Landfall (1/7/2020 - 31/10/2020)

Ref: 0212330\_Impact AQM graphs\_October 2020.xlsx

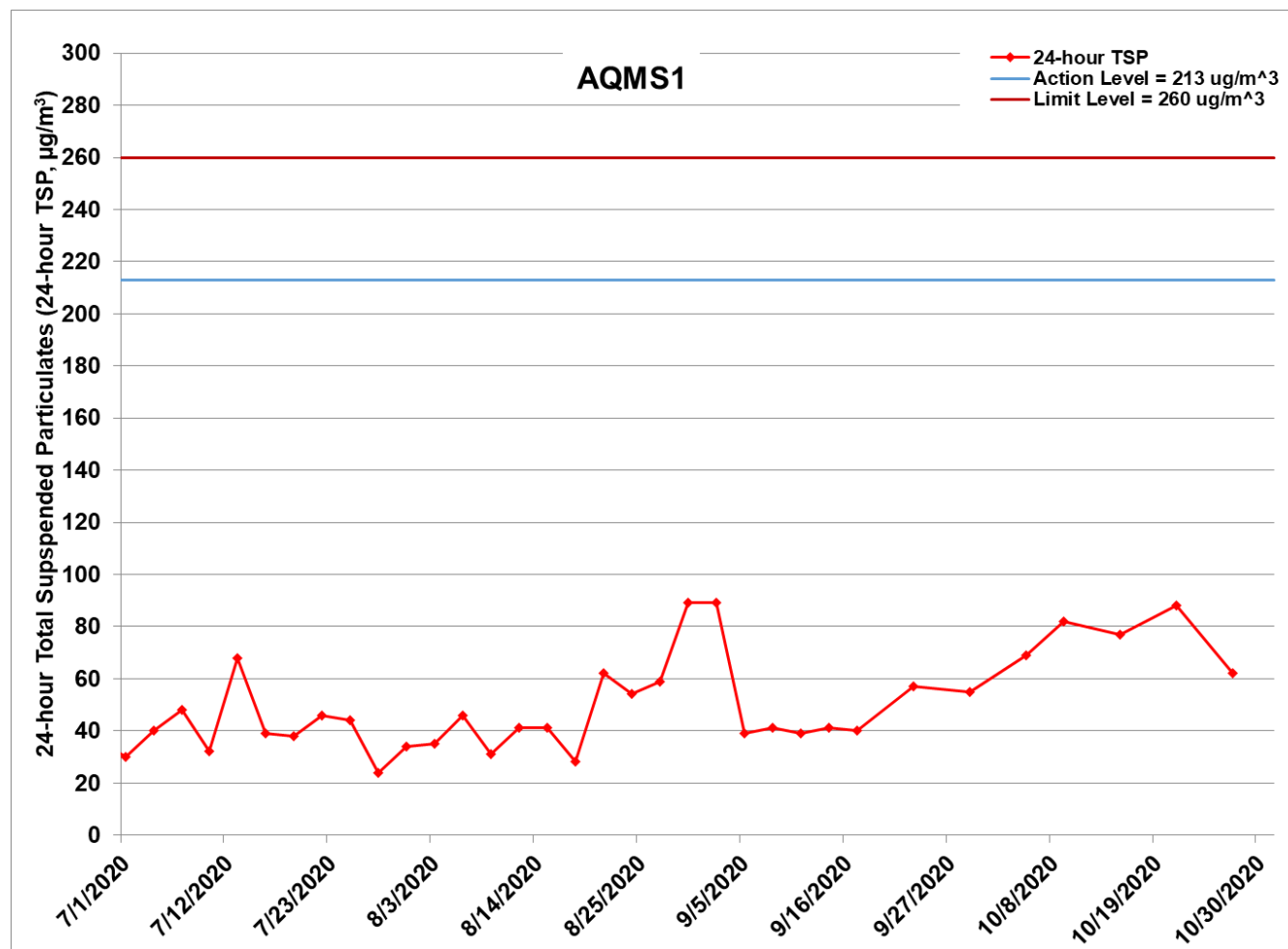


Figure G.8 Impact Monitoring - 24-hour Total Suspended Particulates ( $\mu\text{g}/\text{m}^3$ ) at AQMS1 between 1 July 2020 and 31 October 2020 during impact monitoring period. The weather conditions during the monitoring period were sunny. Major land-based construction activities included SVB green roof system - Portion S-A, S-B & S-C; Carpark canopies installation - Portion S-A, S-B & S-C; and Hard paving and footpath, reinstatement at Box culvert - Pump Sump Area at Northern Landfall (1/7/2020 - 31/10/2020)

Ref: 0212330\_Impact AQM graphs\_October 2020.xlsx



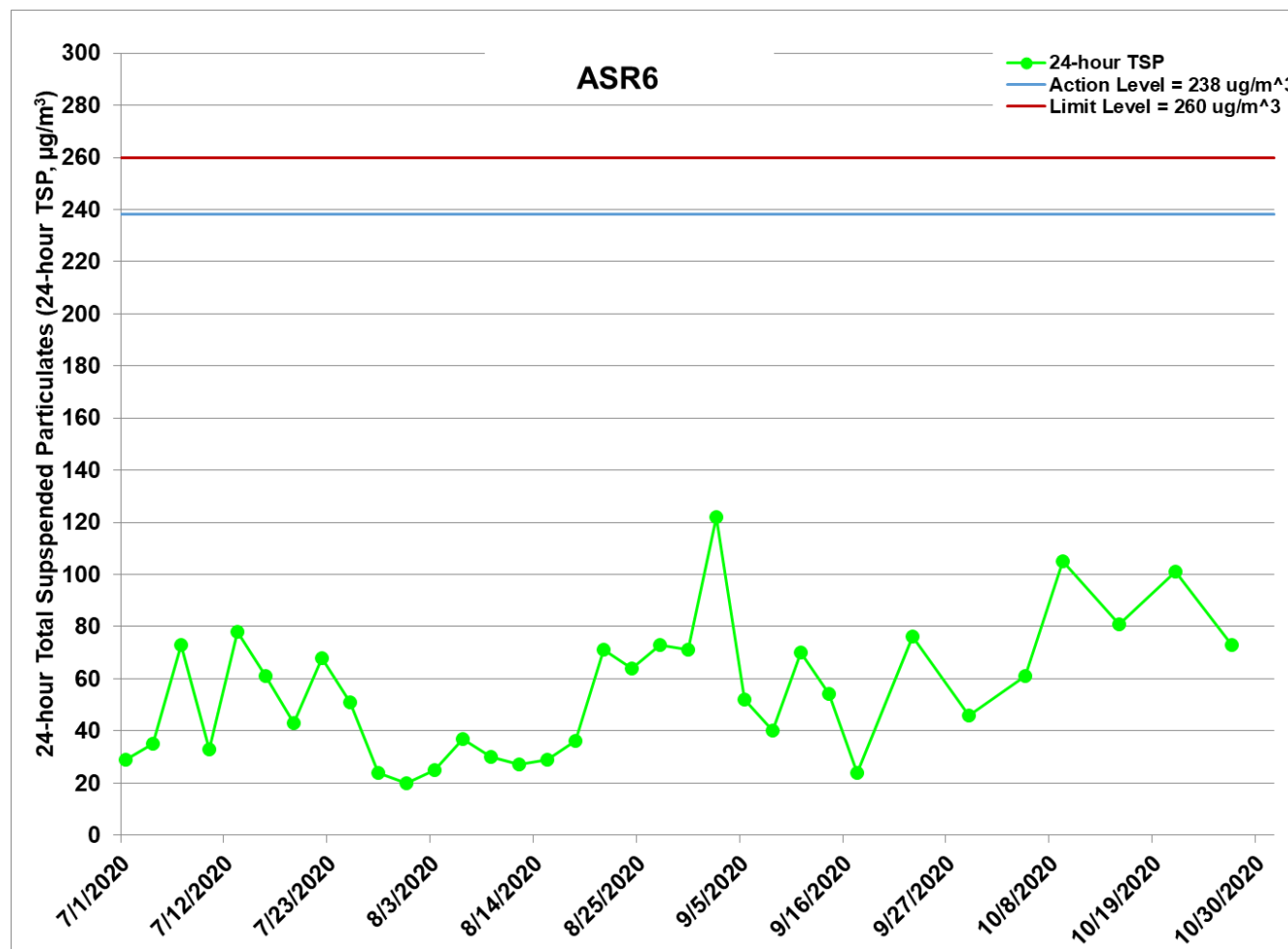


Figure G.9 Impact Monitoring - 24-hour Total Suspended Particulates ( $\mu\text{g}/\text{m}^3$ ) at ASR6 between 1 July 2020 and 31 October 2020 during impact monitoring period. The weather conditions during the monitoring period were sunny. Major land-based construction activities included SVB green roof system - Portion S-A, S-B & S-C; Carpark canopies installation - Portion S-A, S-B & S-C; and Hard paving and footpath, reinstatement at Box culvert - Pump Sump Area at Northern Landfall (1/7/2020 - 31/10/2020)

Ref: 0212330\_Impact AQM graphs\_October 2020.xlsx





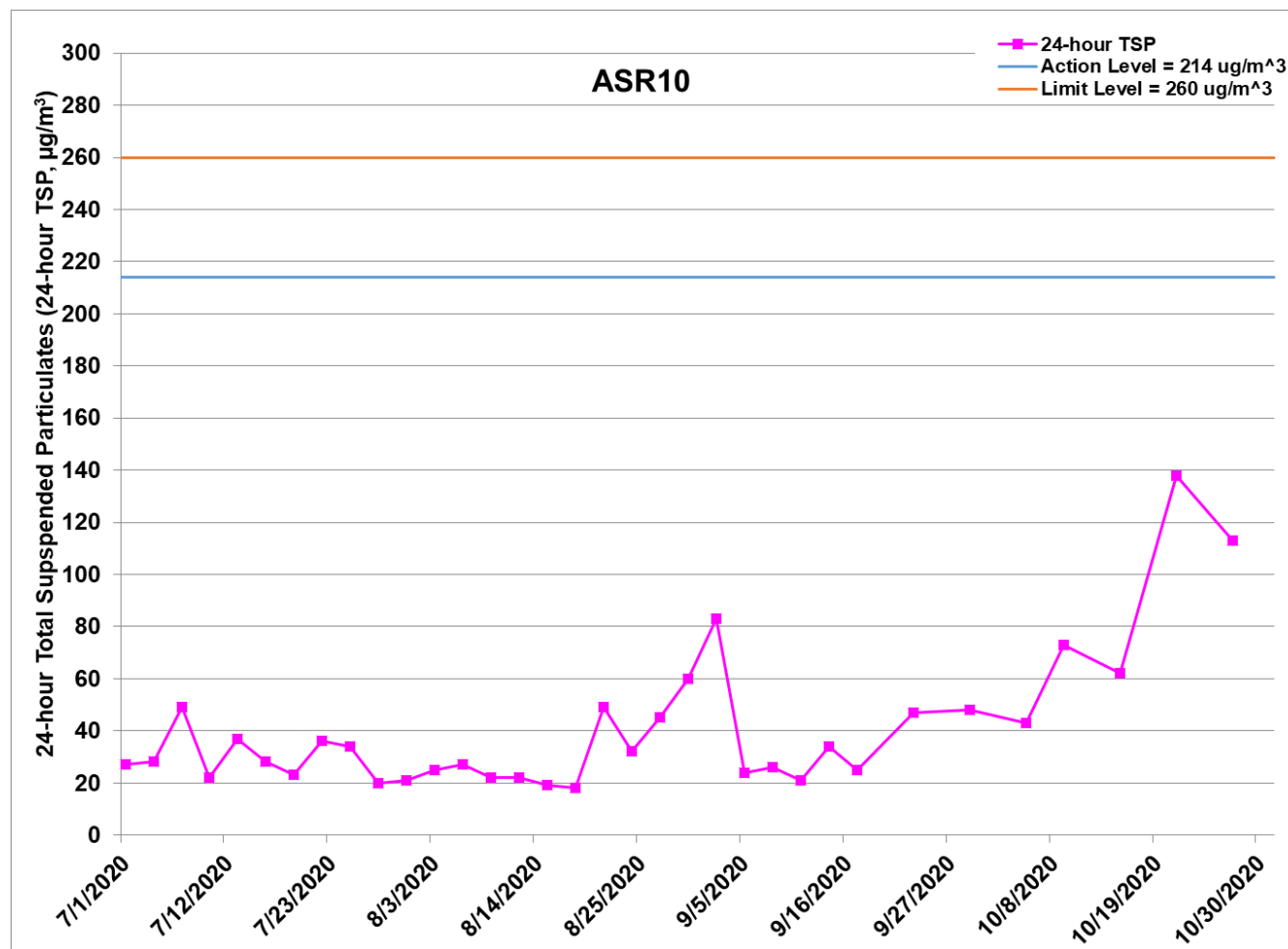


Figure G.10 Impact Monitoring – 24-hour Total Suspended Particulates ( $\mu\text{g}/\text{m}^3$ ) at ASR10 between 1 July 2020 and 31 October 2020 during impact monitoring period. The weather conditions during the monitoring period were sunny. Major land-based construction activities included SVB green roof system – Portion S-A, S-B & S-C; Carpark canopies installation – Portion S-A, S-B & S-C; and Hard paving and footpath, reinstatement at Box culvert – Pump Sump Area at Northern Landfall (1/7/2020 – 31/10/2020)

Ref: 0212330\_Impact AQM graphs\_October 2020.xlsx

Project	Contract	Date	Station	Weather	Start time	Parameters	Results	units
TMCLKL	HY/2012/08	2020-10-05	ASR10	Sunny	13:01	1-hour TSP	56	ug/m3
TMCLKL	HY/2012/08	2020-10-05	ASR10	Sunny	14:03	1-hour TSP	53	ug/m3
TMCLKL	HY/2012/08	2020-10-05	ASR10	Sunny	15:05	1-hour TSP	80	ug/m3
TMCLKL	HY/2012/08	2020-10-05	ASR6	Sunny	13:13	1-hour TSP	108	ug/m3
TMCLKL	HY/2012/08	2020-10-05	ASR6	Sunny	14:15	1-hour TSP	142	ug/m3
TMCLKL	HY/2012/08	2020-10-05	ASR6	Sunny	15:17	1-hour TSP	160	ug/m3
TMCLKL	HY/2012/08	2020-10-05	ASR5	Sunny	13:24	1-hour TSP	148	ug/m3
TMCLKL	HY/2012/08	2020-10-05	ASR5	Sunny	14:26	1-hour TSP	142	ug/m3
TMCLKL	HY/2012/08	2020-10-05	ASR5	Sunny	15:28	1-hour TSP	122	ug/m3
TMCLKL	HY/2012/08	2020-10-05	ASR1	Sunny	13:36	1-hour TSP	124	ug/m3
TMCLKL	HY/2012/08	2020-10-05	ASR1	Sunny	14:38	1-hour TSP	136	ug/m3
TMCLKL	HY/2012/08	2020-10-05	ASR1	Sunny	15:40	1-hour TSP	159	ug/m3
TMCLKL	HY/2012/08	2020-10-05	AQMS1	Sunny	13:48	1-hour TSP	161	ug/m3
TMCLKL	HY/2012/08	2020-10-05	AQMS1	Sunny	14:50	1-hour TSP	155	ug/m3
TMCLKL	HY/2012/08	2020-10-05	AQMS1	Sunny	15:52	1-hour TSP	169	ug/m3
TMCLKL	HY/2012/08	2020-10-09	ASR10	Sunny	8:10	1-hour TSP	94	ug/m3
TMCLKL	HY/2012/08	2020-10-09	ASR10	Sunny	9:12	1-hour TSP	64	ug/m3
TMCLKL	HY/2012/08	2020-10-09	ASR10	Sunny	10:14	1-hour TSP	85	ug/m3
TMCLKL	HY/2012/08	2020-10-09	ASR6	Sunny	8:20	1-hour TSP	178	ug/m3
TMCLKL	HY/2012/08	2020-10-09	ASR6	Sunny	9:22	1-hour TSP	91	ug/m3
TMCLKL	HY/2012/08	2020-10-09	ASR6	Sunny	10:24	1-hour TSP	109	ug/m3
TMCLKL	HY/2012/08	2020-10-09	ASR5	Sunny	8:32	1-hour TSP	373	ug/m3
TMCLKL	HY/2012/08	2020-10-09	ASR5	Sunny	9:34	1-hour TSP	178	ug/m3
TMCLKL	HY/2012/08	2020-10-09	ASR5	Sunny	10:36	1-hour TSP	167	ug/m3
TMCLKL	HY/2012/08	2020-10-09	ASR1	Sunny	8:44	1-hour TSP	181	ug/m3
TMCLKL	HY/2012/08	2020-10-09	ASR1	Sunny	9:46	1-hour TSP	145	ug/m3
TMCLKL	HY/2012/08	2020-10-09	ASR1	Sunny	10:48	1-hour TSP	114	ug/m3
TMCLKL	HY/2012/08	2020-10-09	AQMS1	Sunny	8:55	1-hour TSP	80	ug/m3
TMCLKL	HY/2012/08	2020-10-09	AQMS1	Sunny	9:57	1-hour TSP	106	ug/m3
TMCLKL	HY/2012/08	2020-10-09	AQMS1	Sunny	10:59	1-hour TSP	94	ug/m3
TMCLKL	HY/2012/08	2020-10-15	ASR10	Sunny	8:15	1-hour TSP	47	ug/m3

Project	Contract	Date	Station	Weather	Start time	Parameters	Results	units
TMCLKL	HY/2012/08	2020-10-15	ASR10	Sunny	9:17	1-hour TSP	42	ug/m3
TMCLKL	HY/2012/08	2020-10-15	ASR10	Sunny	10:19	1-hour TSP	56	ug/m3
TMCLKL	HY/2012/08	2020-10-15	ASR6	Sunny	8:26	1-hour TSP	53	ug/m3
TMCLKL	HY/2012/08	2020-10-15	ASR6	Sunny	9:28	1-hour TSP	62	ug/m3
TMCLKL	HY/2012/08	2020-10-15	ASR6	Sunny	10:30	1-hour TSP	50	ug/m3
TMCLKL	HY/2012/08	2020-10-15	ASR5	Sunny	08:37	1-hour TSP	132	ug/m3
TMCLKL	HY/2012/08	2020-10-15	ASR5	Sunny	09:39	1-hour TSP	122	ug/m3
TMCLKL	HY/2012/08	2020-10-15	ASR5	Sunny	10:41	1-hour TSP	100	ug/m3
TMCLKL	HY/2012/08	2020-10-15	ASR1	Sunny	8:49	1-hour TSP	95	ug/m3
TMCLKL	HY/2012/08	2020-10-15	ASR1	Sunny	9:51	1-hour TSP	79	ug/m3
TMCLKL	HY/2012/08	2020-10-15	ASR1	Sunny	10:53	1-hour TSP	75	ug/m3
TMCLKL	HY/2012/08	2020-10-15	AQMS1	Sunny	9:00	1-hour TSP	63	ug/m3
TMCLKL	HY/2012/08	2020-10-15	AQMS1	Sunny	10:02	1-hour TSP	85	ug/m3
TMCLKL	HY/2012/08	2020-10-15	AQMS1	Sunny	11:04	1-hour TSP	95	ug/m3
TMCLKL	HY/2012/08	2020-10-21	ASR10	Sunny	8:00	1-hour TSP	108	ug/m3
TMCLKL	HY/2012/08	2020-10-21	ASR10	Sunny	9:02	1-hour TSP	94	ug/m3
TMCLKL	HY/2012/08	2020-10-21	ASR10	Sunny	10:04	1-hour TSP	107	ug/m3
TMCLKL	HY/2012/08	2020-10-21	ASR6	Sunny	8:12	1-hour TSP	254	ug/m3
TMCLKL	HY/2012/08	2020-10-21	ASR6	Sunny	9:14	1-hour TSP	149	ug/m3
TMCLKL	HY/2012/08	2020-10-21	ASR6	Sunny	10:16	1-hour TSP	352	ug/m3
TMCLKL	HY/2012/08	2020-10-21	ASR5	Sunny	08:23	1-hour TSP	474	ug/m3
TMCLKL	HY/2012/08	2020-10-21	ASR5	Sunny	09:25	1-hour TSP	213	ug/m3
TMCLKL	HY/2012/08	2020-10-21	ASR5	Sunny	10:27	1-hour TSP	265	ug/m3
TMCLKL	HY/2012/08	2020-10-21	ASR1	Sunny	8:35	1-hour TSP	494	ug/m3
TMCLKL	HY/2012/08	2020-10-21	ASR1	Sunny	9:37	1-hour TSP	231	ug/m3
TMCLKL	HY/2012/08	2020-10-21	ASR1	Sunny	10:39	1-hour TSP	224	ug/m3
TMCLKL	HY/2012/08	2020-10-21	AQMS1	Sunny	8:47	1-hour TSP	92	ug/m3
TMCLKL	HY/2012/08	2020-10-21	AQMS1	Sunny	9:49	1-hour TSP	114	ug/m3
TMCLKL	HY/2012/08	2020-10-21	AQMS1	Sunny	10:51	1-hour TSP	123	ug/m3
TMCLKL	HY/2012/08	2020-10-27	ASR10	Sunny	8:10	1-hour TSP	88	ug/m3
TMCLKL	HY/2012/08	2020-10-27	ASR10	Sunny	9:12	1-hour TSP	66	ug/m3

Project	Contract	Date	Station	Weather	Start time	Parameters	Results	units
TMCLKL	HY/2012/08	2020-10-27	ASR10	Sunny	10:14	1-hour TSP	73	ug/m3
TMCLKL	HY/2012/08	2020-10-27	ASR6	Sunny	8:20	1-hour TSP	136	ug/m3
TMCLKL	HY/2012/08	2020-10-27	ASR6	Sunny	9:22	1-hour TSP	115	ug/m3
TMCLKL	HY/2012/08	2020-10-27	ASR6	Sunny	10:24	1-hour TSP	83	ug/m3
TMCLKL	HY/2012/08	2020-10-27	ASR5	Sunny	08:32	1-hour TSP	104	ug/m3
TMCLKL	HY/2012/08	2020-10-27	ASR5	Sunny	09:34	1-hour TSP	141	ug/m3
TMCLKL	HY/2012/08	2020-10-27	ASR5	Sunny	10:36	1-hour TSP	110	ug/m3
TMCLKL	HY/2012/08	2020-10-27	ASR1	Sunny	8:43	1-hour TSP	120	ug/m3
TMCLKL	HY/2012/08	2020-10-27	ASR1	Sunny	9:45	1-hour TSP	224	ug/m3
TMCLKL	HY/2012/08	2020-10-27	ASR1	Sunny	10:47	1-hour TSP	136	ug/m3
TMCLKL	HY/2012/08	2020-10-27	AQMS1	Sunny	8:55	1-hour TSP	165	ug/m3
TMCLKL	HY/2012/08	2020-10-27	AQMS1	Sunny	9:57	1-hour TSP	193	ug/m3
TMCLKL	HY/2012/08	2020-10-27	AQMS1	Sunny	10:59	1-hour TSP	161	ug/m3
TMCLKL	HY/2012/08	2020-10-05	ASR10	Sunny	16:07	24-hour TSP	43	ug/m3
TMCLKL	HY/2012/08	2020-10-05	ASR6	Sunny	16:19	24-hour TSP	61	ug/m3
TMCLKL	HY/2012/08	2020-10-05	ASR5	Sunny	16:30	24-hour TSP	98	ug/m3
TMCLKL	HY/2012/08	2020-10-05	ASR1	Sunny	16:42	24-hour TSP	64	ug/m3
TMCLKL	HY/2012/08	2020-10-05	AQMS1	Sunny	16:54	24-hour TSP	69	ug/m3
TMCLKL	HY/2012/08	2020-10-09	ASR10	Sunny	11:16	24-hour TSP	73	ug/m3
TMCLKL	HY/2012/08	2020-10-09	ASR6	Sunny	11:26	24-hour TSP	105	ug/m3
TMCLKL	HY/2012/08	2020-10-09	ASR5	Sunny	11:38	24-hour TSP	125	ug/m3
TMCLKL	HY/2012/08	2020-10-09	ASR1	Sunny	11:50	24-hour TSP	153	ug/m3
TMCLKL	HY/2012/08	2020-10-09	AQMS1	Sunny	12:01	24-hour TSP	82	ug/m3
TMCLKL	HY/2012/08	2020-10-15	ASR10	Sunny	11:21	24-hour TSP	62	ug/m3
TMCLKL	HY/2012/08	2020-10-15	ASR6	Sunny	11:32	24-hour TSP	81	ug/m3
TMCLKL	HY/2012/08	2020-10-15	ASR5	Sunny	11:43	24-hour TSP	116	ug/m3
TMCLKL	HY/2012/08	2020-10-15	ASR1	Sunny	11:55	24-hour TSP	105	ug/m3
TMCLKL	HY/2012/08	2020-10-15	AQMS1	Sunny	12:06	24-hour TSP	77	ug/m3
TMCLKL	HY/2012/08	2020-10-21	AQMS1	Sunny	11:06	24-hour TSP	88	ug/m3
TMCLKL	HY/2012/08	2020-10-21	ASR1	Sunny	11:18	24-hour TSP	165	ug/m3
TMCLKL	HY/2012/08	2020-10-21	ASR10	Sunny	11:29	24-hour TSP	138	ug/m3

Project	Contract	Date	Station	Weather	Start time	Parameters	Results	units
TMCLKL	HY/2012/08	2020-10-21	ASR5	Sunny	11:41	24-hour TSP	170	ug/m3
TMCLKL	HY/2012/08	2020-10-21	ASR6	Sunny	11:53	24-hour TSP	101	ug/m3
TMCLKL	HY/2012/08	2020-10-27	AQMS1	Sunny	11:16	24-hour TSP	62	ug/m3
TMCLKL	HY/2012/08	2020-10-27	ASR1	Sunny	11:26	24-hour TSP	80	ug/m3
TMCLKL	HY/2012/08	2020-10-27	ASR10	Sunny	11:38	24-hour TSP	113	ug/m3
TMCLKL	HY/2012/08	2020-10-27	ASR5	Sunny	11:49	24-hour TSP	133	ug/m3
TMCLKL	HY/2012/08	2020-10-27	ASR6	Sunny	12:01	24-hour TSP	73	ug/m3

## Appendix H

# Meteorological Data

Meteorological Data for Impact Monitoring in the reporting period			
Date (yy-mm-dd)	Time (24hrs)	Average of Wind Speed (m/s)	Average of Wind Direction(degree)
20/10/05	0:00	0.4	336
20/10/05	1:00	0.4	341
20/10/05	2:00	0	343
20/10/05	3:00	0.4	340
20/10/05	4:00	0	336
20/10/05	5:00	0.1	333
20/10/05	6:00	0	310
20/10/05	7:00	0.1	305
20/10/05	8:00	0	261
20/10/05	9:00	1.8	85
20/10/05	10:00	0.9	84
20/10/05	11:00	1.3	79
20/10/05	12:00	3.1	86
20/10/05	13:00	3.1	81
20/10/05	14:00	3.6	101
20/10/05	15:00	3.6	86
20/10/05	16:00	3.1	99
20/10/05	17:00	3.1	95
20/10/05	18:00	1.8	78
20/10/05	19:00	1.3	47
20/10/05	20:00	1.3	53
20/10/05	21:00	1.8	42
20/10/05	22:00	1.8	53
20/10/05	23:00	1.8	72
20/10/06	0:00	1.3	20
20/10/06	1:00	0.9	26
20/10/06	2:00	0.9	5
20/10/06	3:00	1.3	13
20/10/06	4:00	1.8	22
20/10/06	5:00	1.8	12
20/10/06	6:00	1.8	14
20/10/06	7:00	2.2	33
20/10/06	8:00	1.8	354
20/10/06	9:00	1.3	14
20/10/06	10:00	1.8	29
20/10/06	11:00	1.8	33
20/10/06	12:00	1.3	29
20/10/06	13:00	1.3	45
20/10/06	14:00	1.3	19
20/10/06	15:00	1.3	19
20/10/06	16:00	1.8	33
20/10/06	17:00	1.3	13
20/10/06	18:00	1.3	14
20/10/06	19:00	1.3	327
20/10/06	20:00	2.2	341
20/10/06	21:00	2.2	336
20/10/06	22:00	2.7	344
20/10/06	23:00	3.1	336
20/10/09	0:00	2.2	29
20/10/09	1:00	2.2	30
20/10/09	2:00	2.2	28
20/10/09	3:00	2.2	20
20/10/09	4:00	2.2	16
20/10/09	5:00	2.7	27
20/10/09	6:00	1.8	15

20/10/09	7:00	0.9	347
20/10/09	8:00	1.8	3
20/10/09	9:00	1.8	34
20/10/09	10:00	1.8	11
20/10/09	11:00	1.8	34
20/10/09	12:00	1.8	31
20/10/09	13:00	1.8	23
20/10/09	14:00	1.3	266
20/10/09	15:00	1.3	332
20/10/09	16:00	1.3	338
20/10/09	17:00	1.8	25
20/10/09	18:00	2.2	332
20/10/09	19:00	1.8	312
20/10/09	20:00	2.7	318
20/10/09	21:00	2.7	331
20/10/09	22:00	1.8	345
20/10/09	23:00	0.9	335
20/10/10	0:00	1.8	16
20/10/10	1:00	1.8	17
20/10/10	2:00	1.3	34
20/10/10	3:00	1.3	31
20/10/10	4:00	1.3	31
20/10/10	5:00	1.8	30
20/10/10	6:00	1.8	24
20/10/10	7:00	2.2	28
20/10/10	8:00	2.7	12
20/10/10	9:00	2.2	25
20/10/10	10:00	1.8	17
20/10/10	11:00	1.3	341
20/10/10	12:00	1.8	22
20/10/10	13:00	1.8	12
20/10/10	14:00	1.8	24
20/10/10	15:00	1.3	135
20/10/10	16:00	0.9	270
20/10/10	17:00	0.9	258
20/10/10	18:00	0.4	268
20/10/10	19:00	1.3	137
20/10/10	20:00	0.4	51
20/10/10	21:00	0.9	64
20/10/10	22:00	0.9	61
20/10/10	23:00	0.9	37
20/10/15	0:00	1.3	58
20/10/15	1:00	1.8	48
20/10/15	2:00	1.8	54
20/10/15	3:00	3.1	65
20/10/15	4:00	2.2	78
20/10/15	5:00	2.2	56
20/10/15	6:00	2.2	53
20/10/15	7:00	1.8	37
20/10/15	8:00	1.8	44
20/10/15	9:00	1.3	20
20/10/15	10:00	1.8	51
20/10/15	11:00	2.7	90
20/10/15	12:00	2.7	101
20/10/15	13:00	2.2	95
20/10/15	14:00	1.8	95
20/10/15	15:00	2.2	97



20/10/15	16:00	2.2	97
20/10/15	17:00	2.7	92
20/10/15	18:00	2.2	90
20/10/15	19:00	3.6	87
20/10/15	20:00	1.8	69
20/10/15	21:00	1.3	54
20/10/15	22:00	1.3	79
20/10/15	23:00	1.3	83
20/10/16	0:00	0.9	50
20/10/16	1:00	1.3	81
20/10/16	2:00	0.9	46
20/10/16	3:00	1.3	80
20/10/16	4:00	1.3	47
20/10/16	5:00	1.3	37
20/10/16	6:00	0.9	21
20/10/16	7:00	1.3	21
20/10/16	8:00	1.3	54
20/10/16	9:00	2.2	34
20/10/16	10:00	1.8	11
20/10/16	11:00	2.2	31
20/10/16	12:00	2.2	32
20/10/16	13:00	2.2	29
20/10/16	14:00	1.8	28
20/10/16	15:00	1.8	31
20/10/16	16:00	1.3	20
20/10/16	17:00	1.3	55
20/10/16	18:00	1.3	90
20/10/16	19:00	2.2	130
20/10/16	20:00	2.7	114
20/10/16	21:00	2.7	99
20/10/16	22:00	1.3	97
20/10/21	23:00	3.6	344
20/10/21	0:00	3.1	345
20/10/21	1:00	2.2	337
20/10/21	2:00	2.7	348
20/10/21	3:00	4.9	341
20/10/21	4:00	1.3	207
20/10/21	5:00	2.7	320
20/10/21	6:00	3.6	328
20/10/21	7:00	2.2	308
20/10/21	8:00	2.2	339
20/10/21	9:00	2.2	345
20/10/21	10:00	2.2	322
20/10/21	11:00	3.1	303
20/10/21	12:00	2.7	337
20/10/21	13:00	2.7	341
20/10/21	14:00	2.7	320
20/10/21	15:00	2.2	321
20/10/21	16:00	2.2	320
20/10/21	17:00	1.3	323
20/10/21	18:00	2.2	309
20/10/21	19:00	3.6	341
20/10/21	20:00	4	339
20/10/21	21:00	1.8	315
20/10/21	22:00	2.7	348
20/10/22	23:00	1.8	346
20/10/22	0:00	1.8	315

20/10/22	1:00	1.8	339
20/10/22	2:00	1.3	329
20/10/22	3:00	1.8	297
20/10/22	4:00	0.9	320
20/10/22	5:00	1.3	304
20/10/22	6:00	1.8	314
20/10/22	7:00	4	336
20/10/22	8:00	3.6	340
20/10/22	9:00	3.6	335
20/10/22	10:00	1.8	321
20/10/22	11:00	1.8	308
20/10/22	12:00	2.7	323
20/10/22	13:00	2.2	305
20/10/22	14:00	2.2	346
20/10/22	15:00	3.1	28
20/10/22	16:00	3.6	340
20/10/22	17:00	4.5	331
20/10/22	18:00	4.5	329
20/10/22	19:00	4	336
20/10/22	20:00	1.8	329
20/10/22	21:00	2.2	22
20/10/22	22:00	2.2	33
20/10/27	23:00	1.3	42
20/10/27	0:00	0.9	56
20/10/27	1:00	0.9	19
20/10/27	2:00	1.3	39
20/10/27	3:00	1.8	36
20/10/27	4:00	0.9	331
20/10/27	5:00	0.9	29
20/10/27	6:00	1.3	16
20/10/27	7:00	1.3	129
20/10/27	8:00	1.3	153
20/10/27	9:00	1.3	132
20/10/27	10:00	1.8	125
20/10/27	11:00	1.8	99
20/10/27	12:00	2.2	141
20/10/27	13:00	1.8	132
20/10/27	14:00	1.8	92
20/10/27	15:00	1.8	79
20/10/27	16:00	2.2	118
20/10/27	17:00	2.7	80
20/10/27	18:00	2.7	101
20/10/27	19:00	1.8	36
20/10/27	20:00	1.3	44
20/10/27	21:00	1.3	13
20/10/27	22:00	1.3	88
20/10/28	23:00	0.9	46
20/10/28	0:00	0.9	28
20/10/28	1:00	0.9	56
20/10/28	2:00	1.3	44
20/10/28	3:00	1.3	20
20/10/28	4:00	1.3	13
20/10/28	5:00	1.3	15
20/10/28	6:00	1.3	26
20/10/28	7:00	1.3	83
20/10/28	8:00	1.8	17
20/10/28	9:00	2.2	20

20/10/28	10:00	1.3	27
20/10/28	11:00	0.9	96
20/10/28	12:00	1.3	16
20/10/28	13:00	2.2	134
20/10/28	14:00	2.2	80
20/10/28	15:00	0.9	81
20/10/28	16:00	0.4	38
20/10/28	17:00	1.3	69
20/10/28	18:00	0.4	18
20/10/28	19:00	0.4	34
20/10/28	20:00	0.9	66
20/10/28	21:00	1.3	73
20/10/28	22:00	0.9	26

## Appendix I

# Operational Phase Dolphin Monitoring Survey

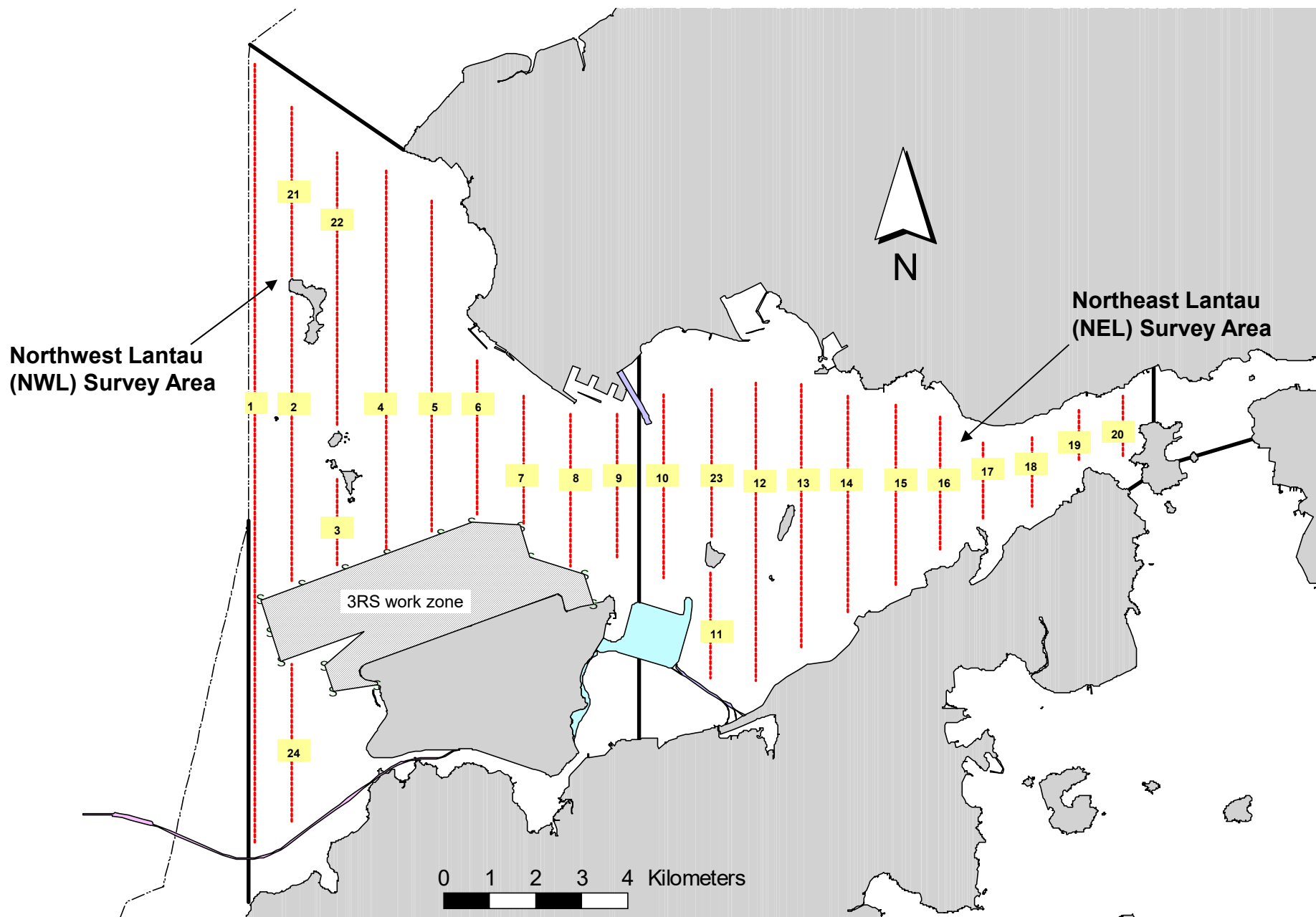


Figure 1. Transect Line Layout in Northwest and Northeast Lantau Survey Areas

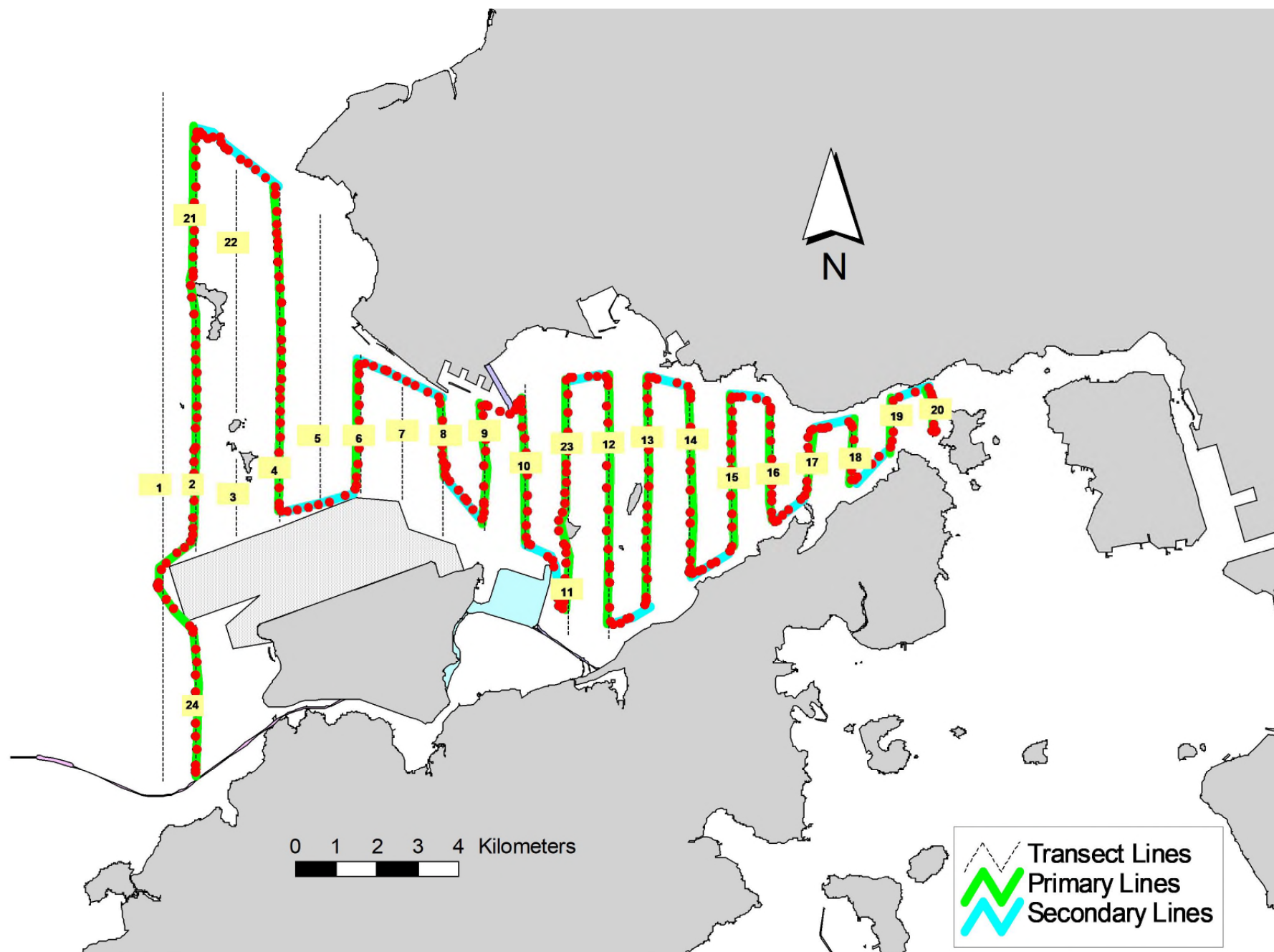


Figure 2. Survey Route on October 7<sup>th</sup>, 2020

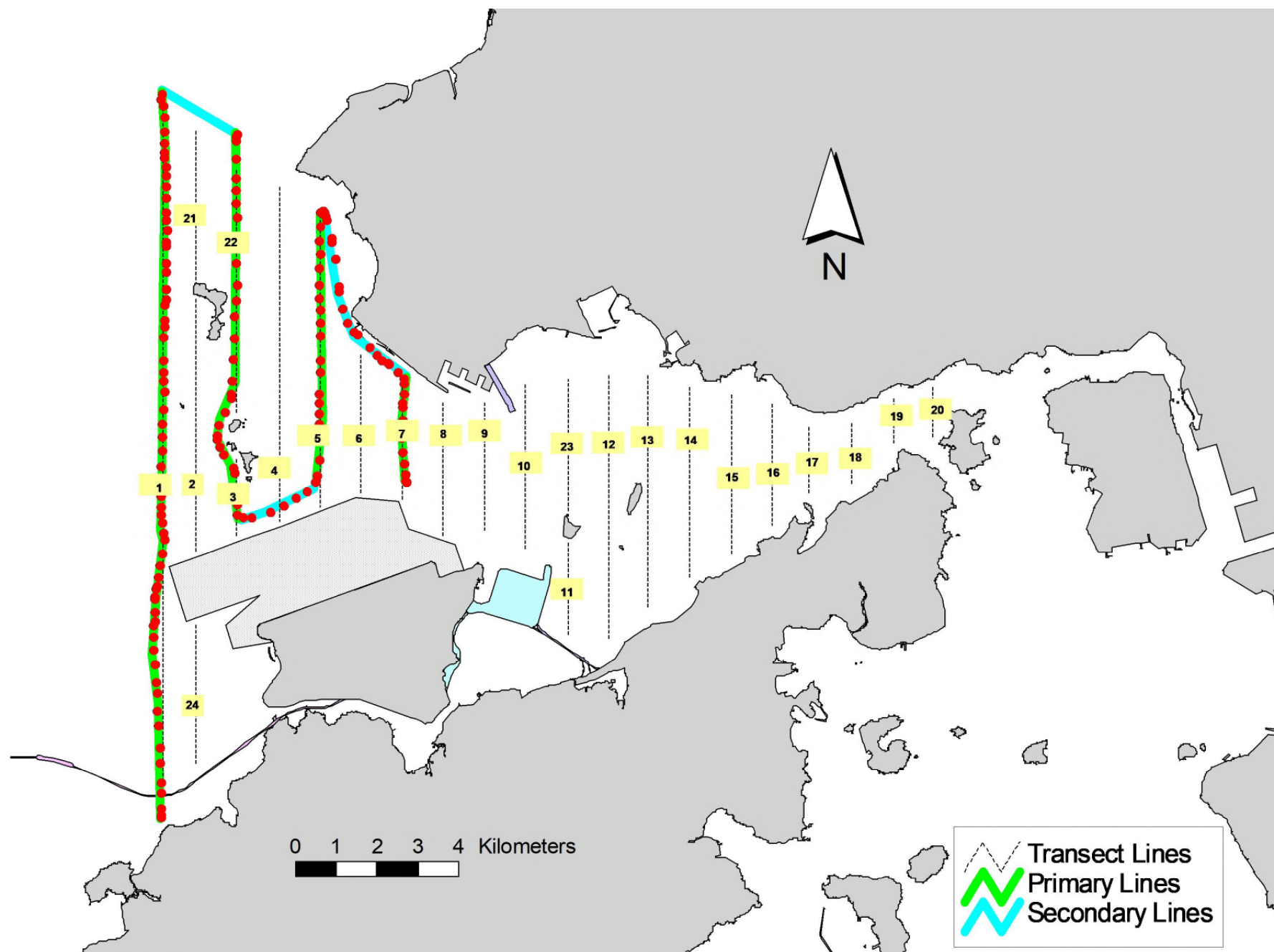


Figure 3. Survey Route on October 12<sup>th</sup>, 2020

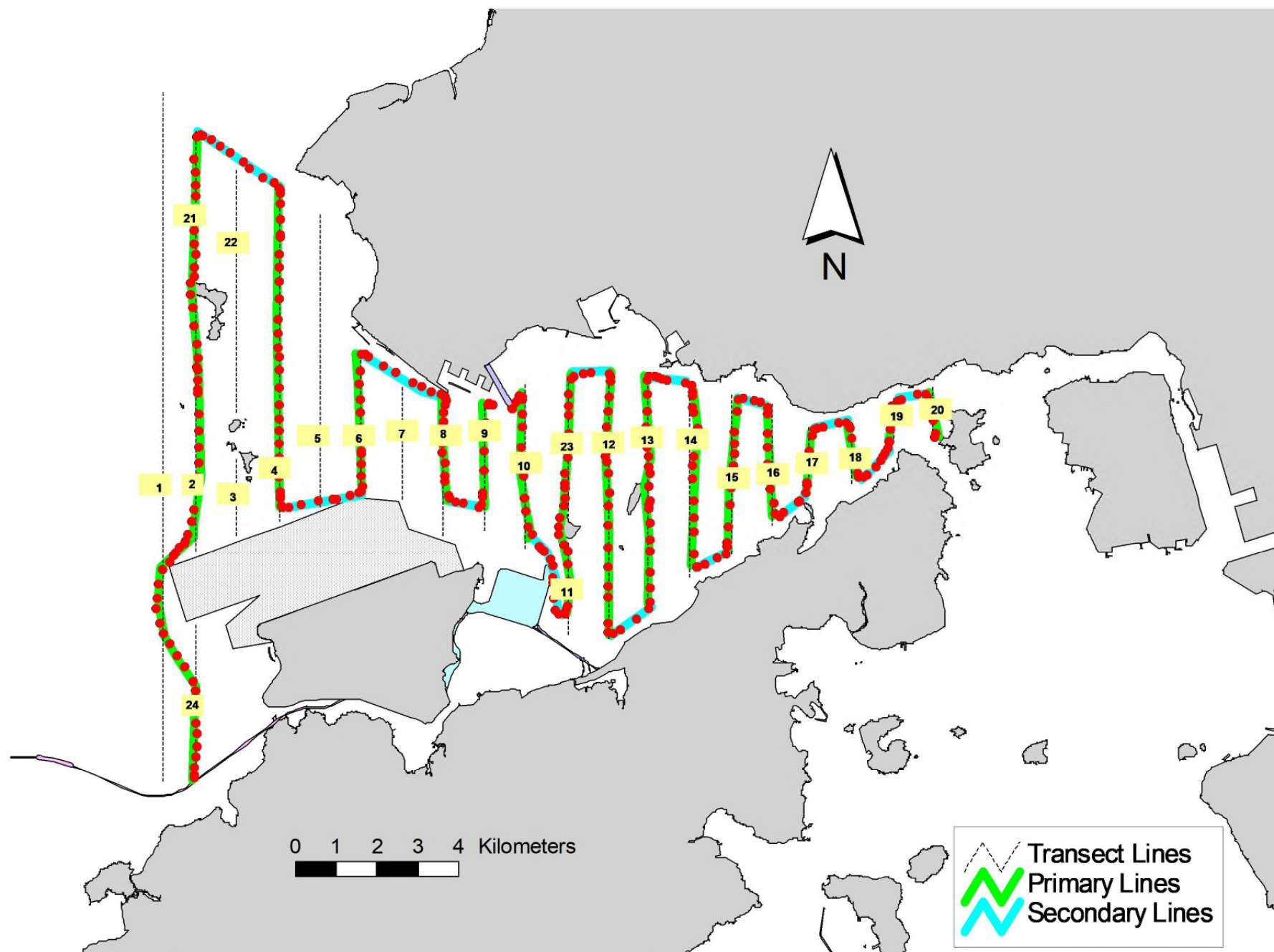


Figure 4. Survey Route on October 19<sup>th</sup>, 2020



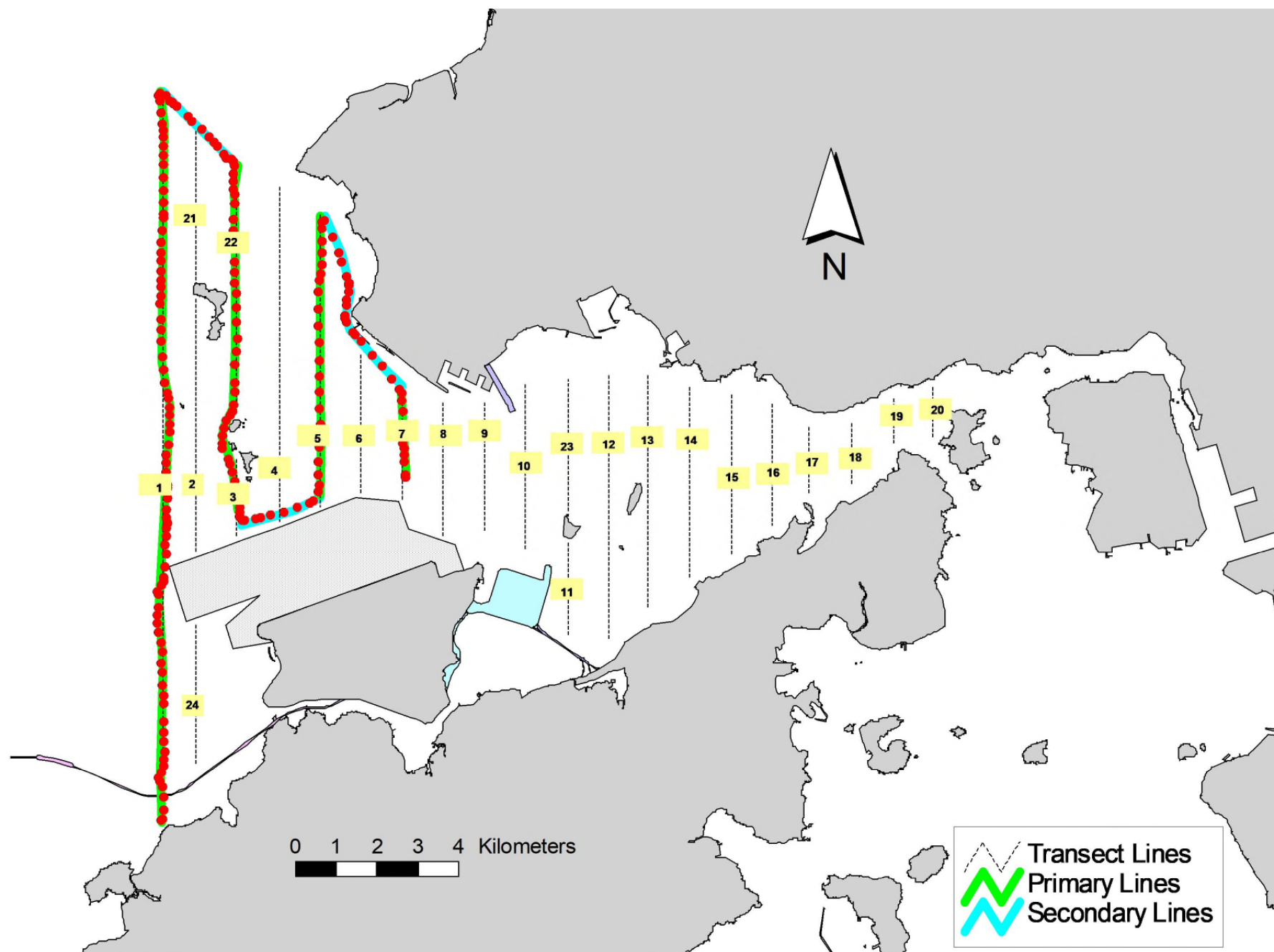


Figure 5. Survey Route on October 22<sup>nd</sup>, 2020

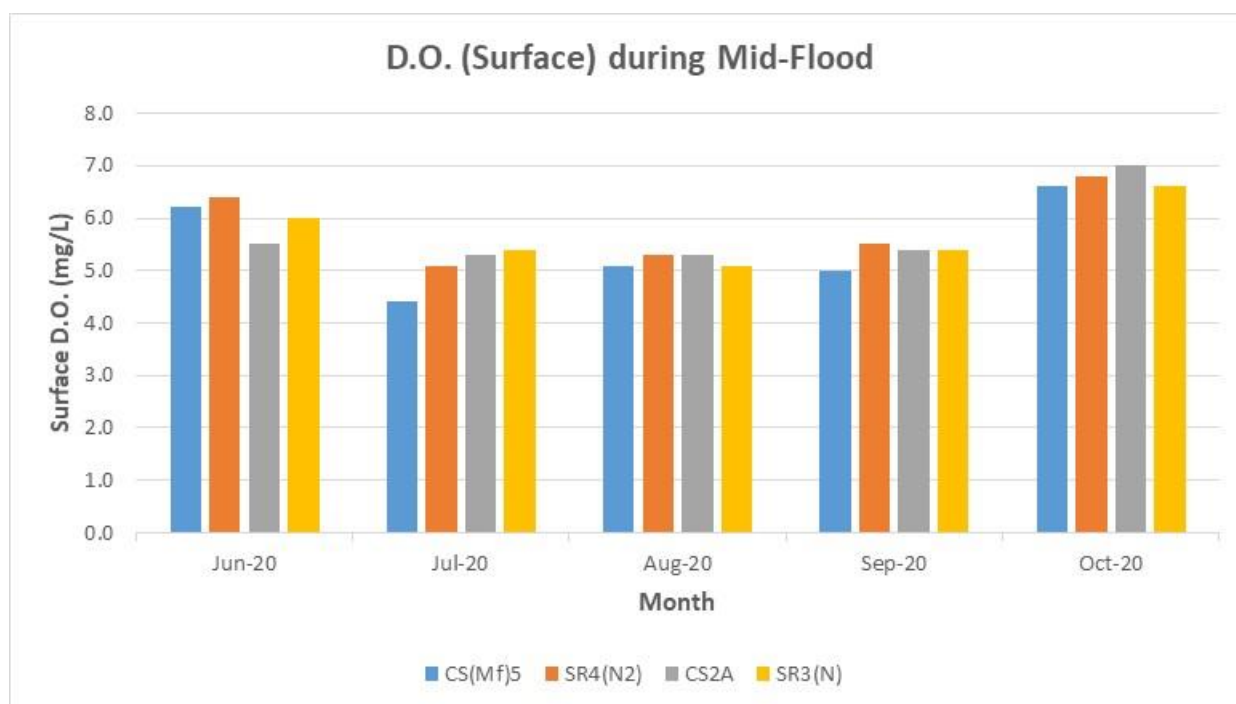
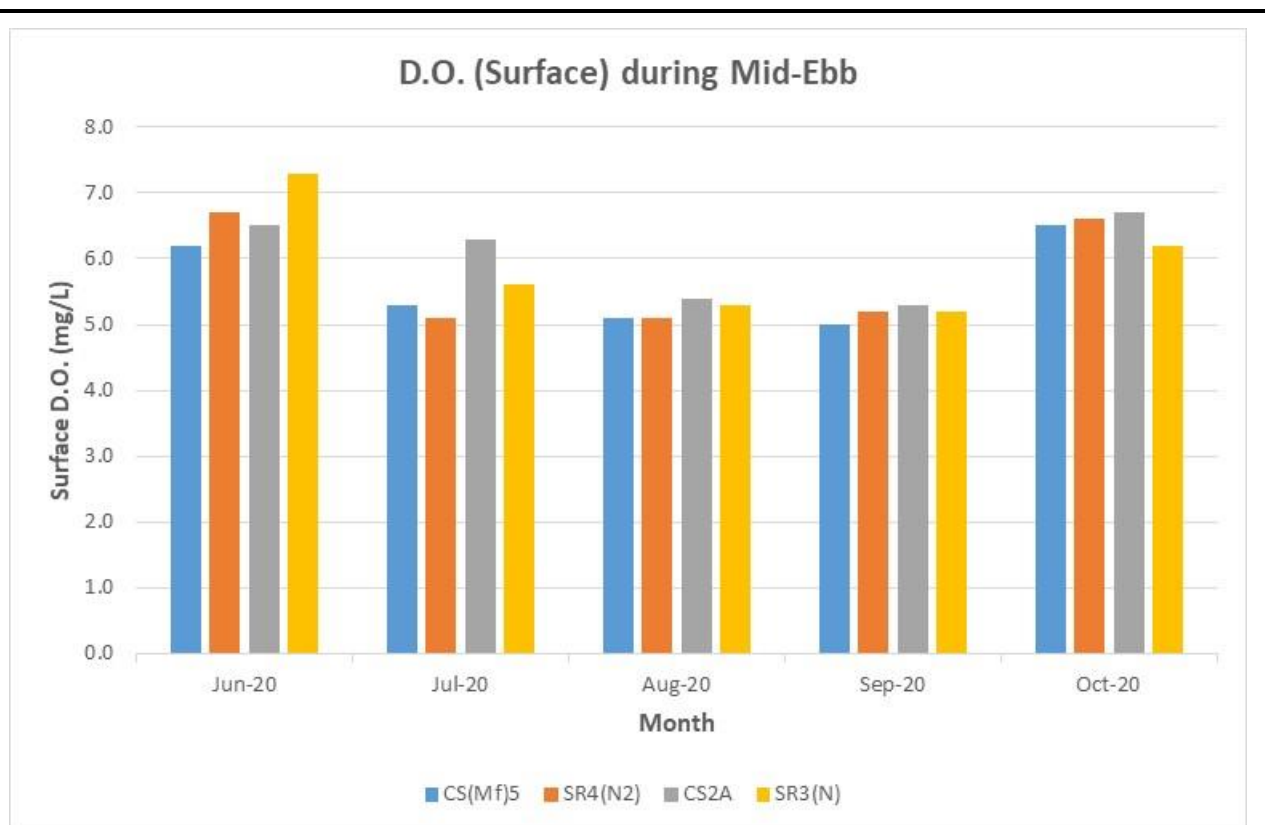
## Appendix I. TMCLKL Survey Effort Database (October 2020)

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

DATE	AREA	BEAU	EFFORT	SEASON	VESSEL	TYPE	P/S
7-Oct-20	NW LANTAU	2	6.09	AUTUMN	STANDARD36826	TMCLKL	P
7-Oct-20	NW LANTAU	3	20.74	AUTUMN	STANDARD36826	TMCLKL	P
7-Oct-20	NW LANTAU	2	3.90	AUTUMN	STANDARD36826	TMCLKL	S
7-Oct-20	NW LANTAU	3	7.77	AUTUMN	STANDARD36826	TMCLKL	S
7-Oct-20	NE LANTAU	2	31.32	AUTUMN	STANDARD36826	TMCLKL	P
7-Oct-20	NE LANTAU	3	3.11	AUTUMN	STANDARD36826	TMCLKL	P
7-Oct-20	NE LANTAU	2	10.22	AUTUMN	STANDARD36826	TMCLKL	S
7-Oct-20	NE LANTAU	3	2.25	AUTUMN	STANDARD36826	TMCLKL	S
12-Oct-20	NW LANTAU	2	16.39	AUTUMN	STANDARD36826	TMCLKL	P
12-Oct-20	NW LANTAU	3	15.53	AUTUMN	STANDARD36826	TMCLKL	P
12-Oct-20	NW LANTAU	2	8.68	AUTUMN	STANDARD36826	TMCLKL	S
19-Oct-20	NW LANTAU	2	14.73	AUTUMN	STANDARD36826	TMCLKL	P
19-Oct-20	NW LANTAU	3	11.54	AUTUMN	STANDARD36826	TMCLKL	P
19-Oct-20	NW LANTAU	2	7.60	AUTUMN	STANDARD36826	TMCLKL	S
19-Oct-20	NW LANTAU	3	4.63	AUTUMN	STANDARD36826	TMCLKL	S
19-Oct-20	NE LANTAU	1	3.80	AUTUMN	STANDARD36826	TMCLKL	P
19-Oct-20	NE LANTAU	2	28.13	AUTUMN	STANDARD36826	TMCLKL	P
19-Oct-20	NE LANTAU	3	3.00	AUTUMN	STANDARD36826	TMCLKL	P
19-Oct-20	NE LANTAU	1	1.20	AUTUMN	STANDARD36826	TMCLKL	S
19-Oct-20	NE LANTAU	2	9.47	AUTUMN	STANDARD36826	TMCLKL	S
19-Oct-20	NE LANTAU	3	0.80	AUTUMN	STANDARD36826	TMCLKL	S
22-Oct-20	NW LANTAU	3	32.58	AUTUMN	STANDARD36826	TMCLKL	P
22-Oct-20	NW LANTAU	2	0.90	AUTUMN	STANDARD36826	TMCLKL	S
22-Oct-20	NW LANTAU	3	9.62	AUTUMN	STANDARD36826	TMCLKL	S

## Appendix J

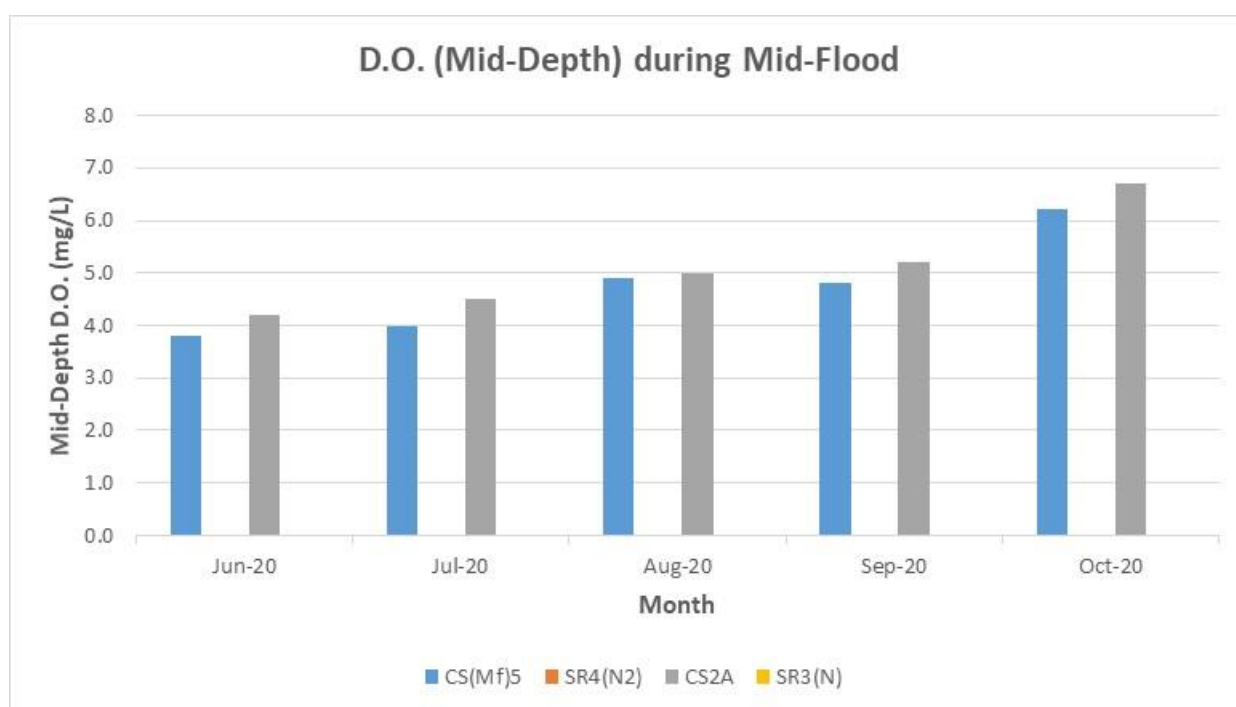
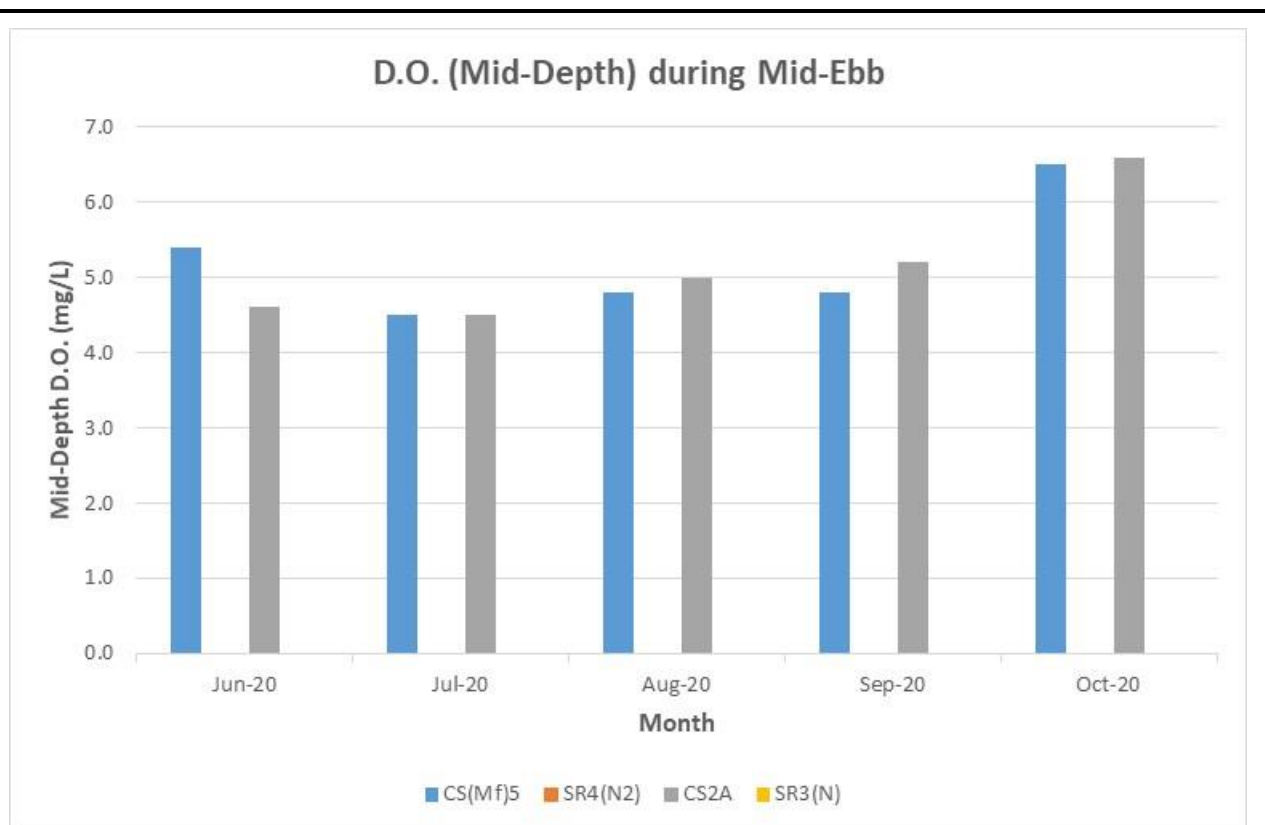
# Operational Phase Water Quality Monitoring Results



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

Ref: 0212330\_Impact-WQM\_October 2020 \_graphs\_Rev a.xls

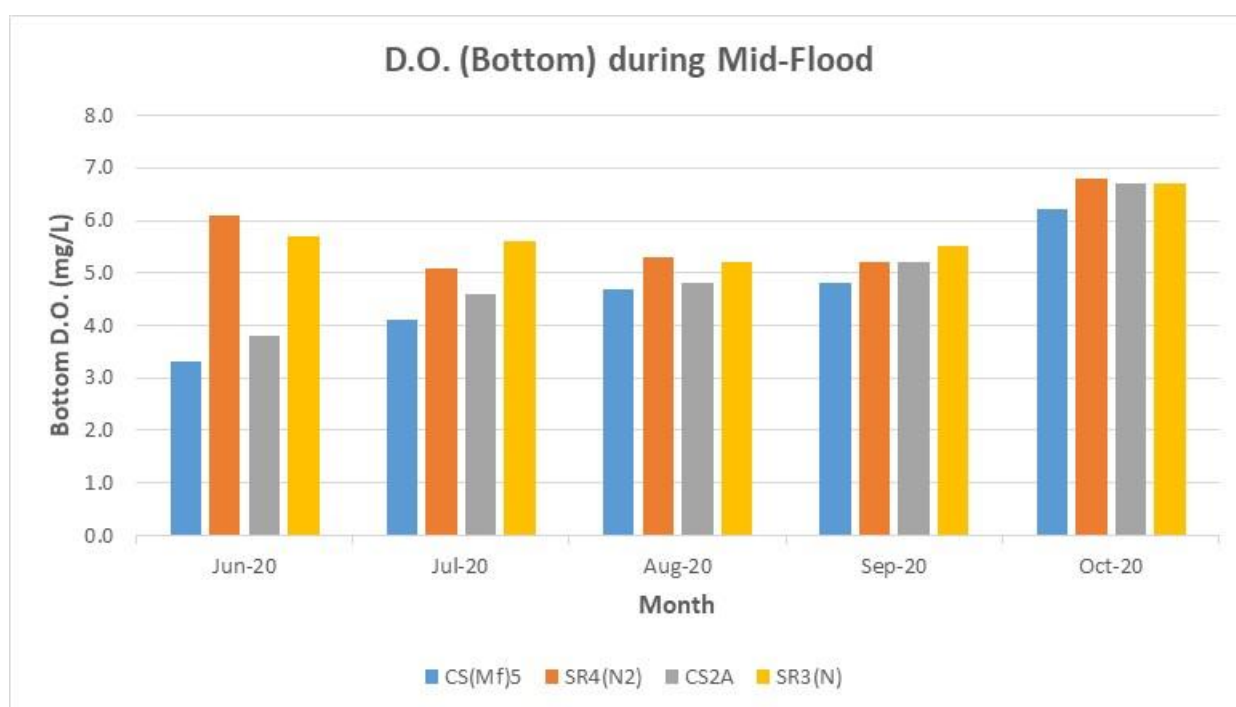
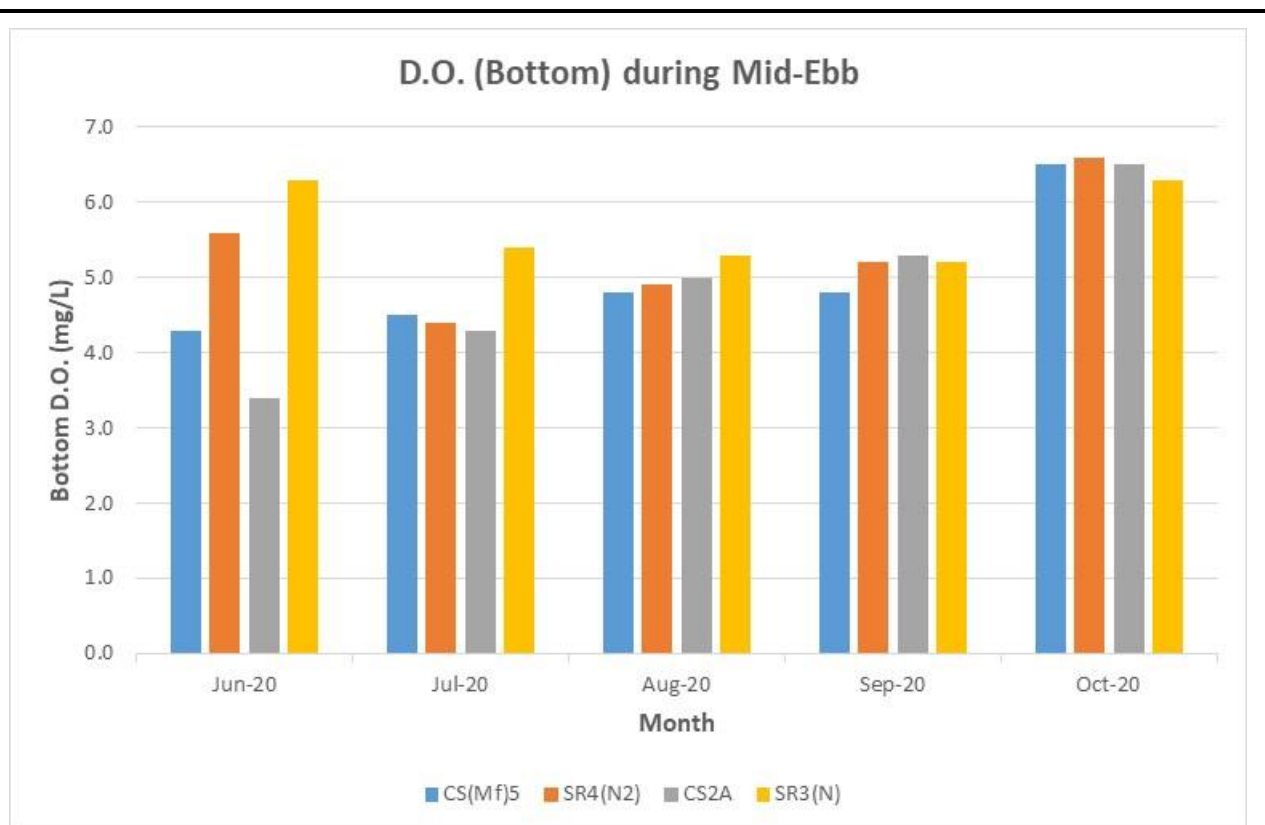




**Figure J2 Operational Phase Monitoring - Mean Level of Dissolved Oxygen (mg/L) in mid-depth waters between 1 June 2020 and 31 October 2020.** The weather conditions during the monitoring period varied mostly from sunny to cloudy.

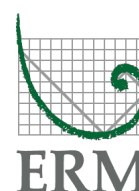
Ref: 0212330\_Impact-WQM\_October 2020\_graphs\_Rev a.xls

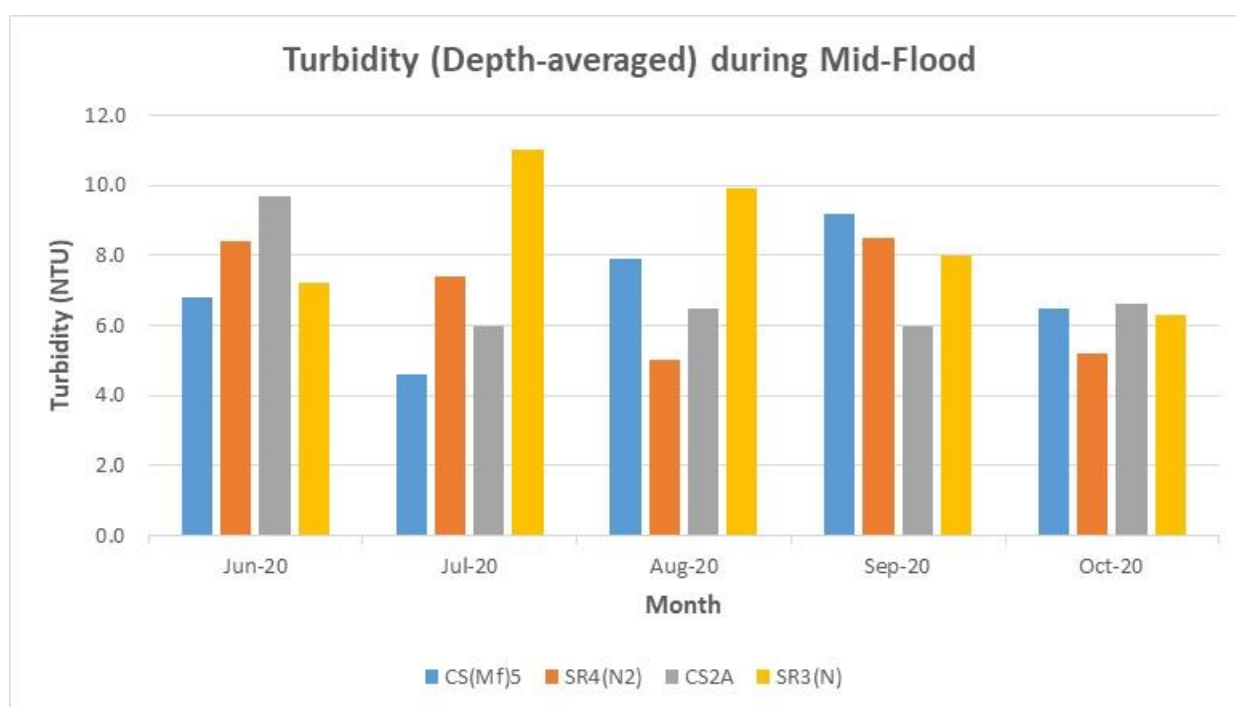
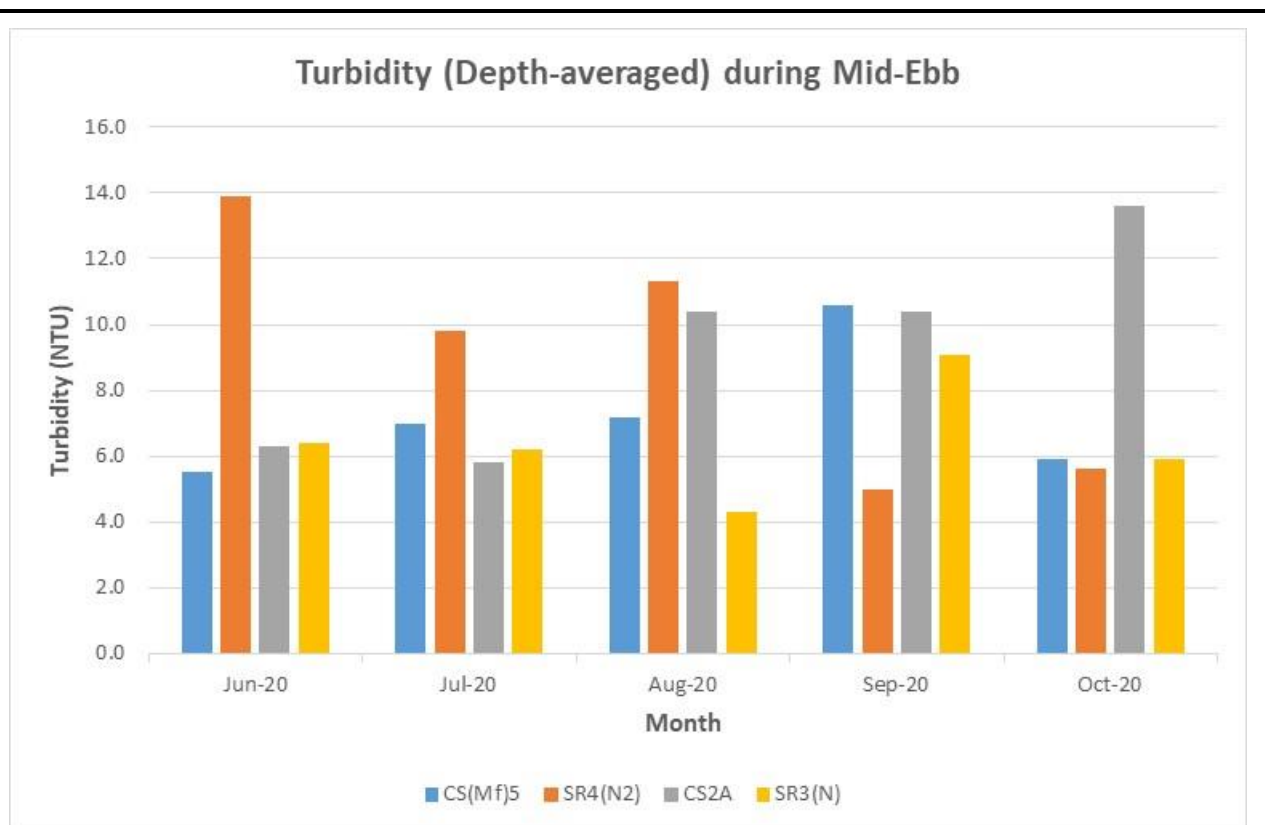




**Figure J3 Operational Phase Monitoring - Mean Level of Dissolved Oxygen (mg/L) in bottom waters between 1 June 2020 and 31 October 2020. The weather conditions during the monitoring period varied mostly from sunny to cloudy.**

Ref: 0212330\_Impact-WQM\_October 2020 \_graphs\_Rev a.xls

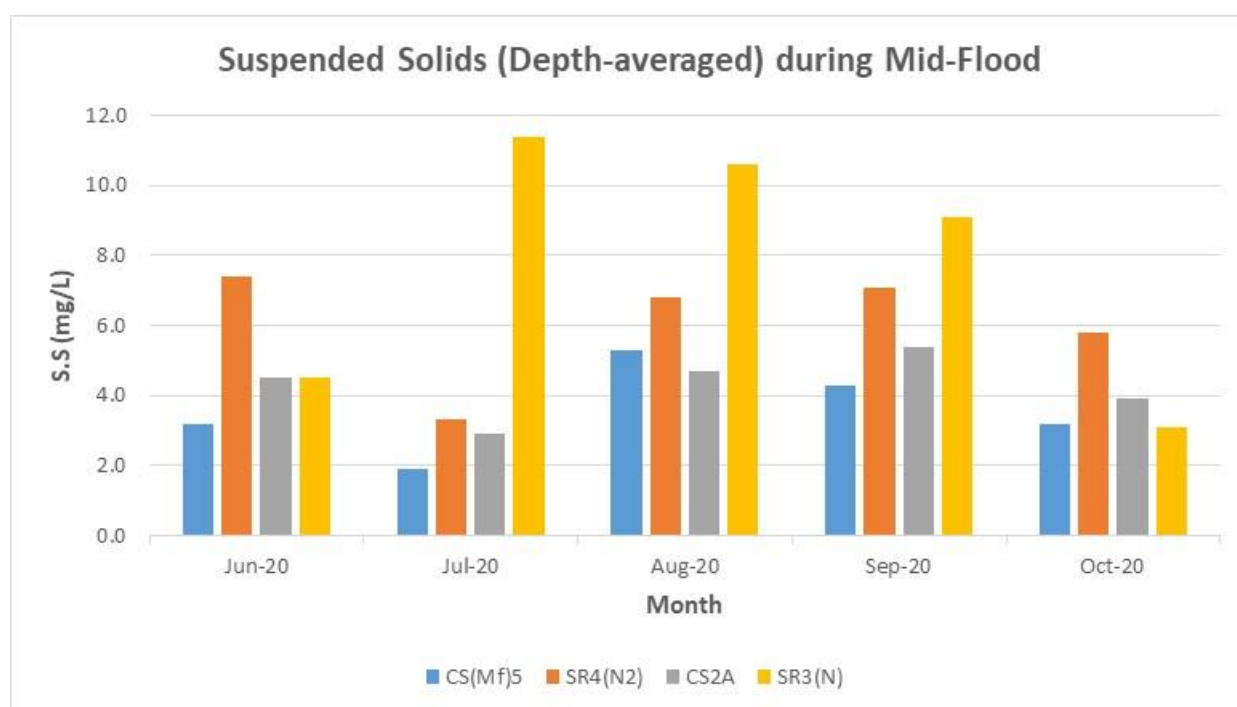
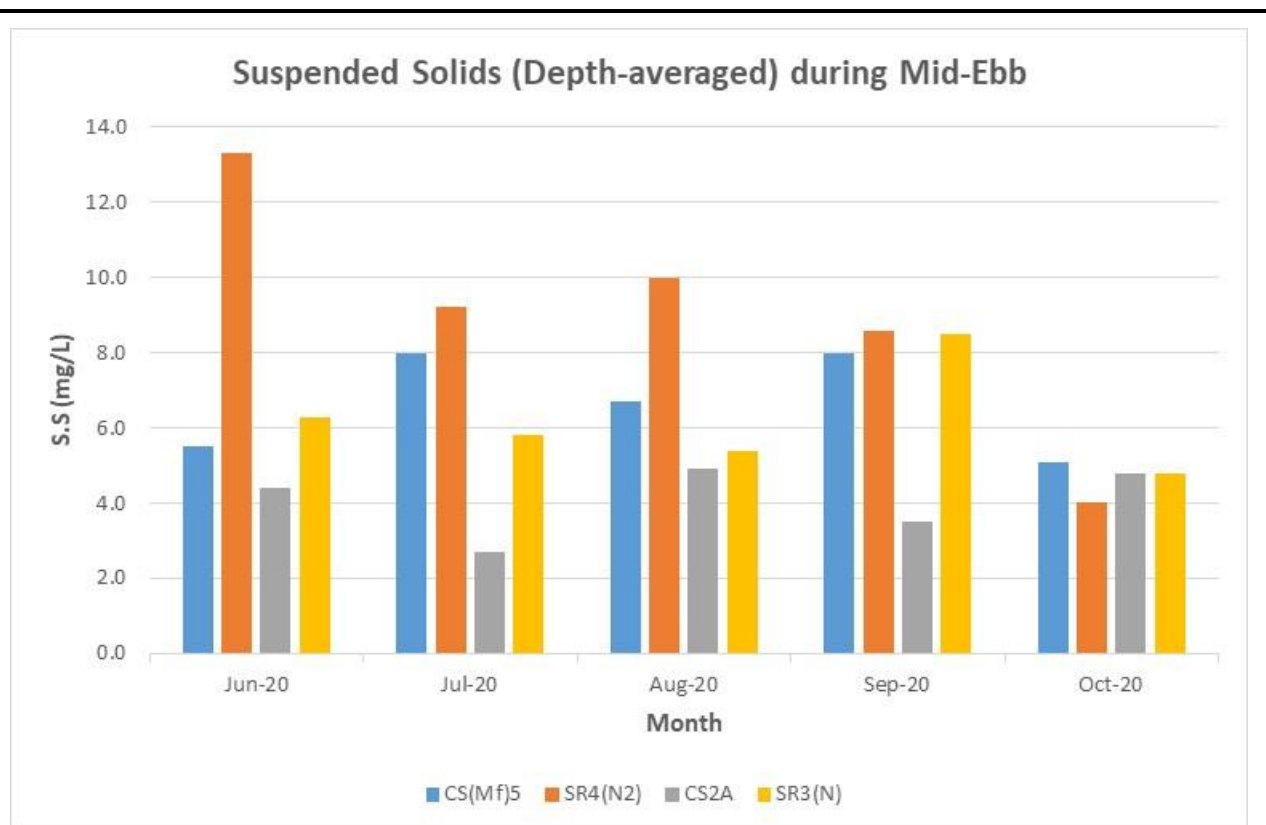




**Figure J4 Operational Phase Monitoring – Mean Depth-averaged Level of Turbidity (NTU) between 1 June 2020 and 31 October 2020. The weather conditions during the monitoring period varied mostly from sunny to cloudy.**

Ref: 0212330\_Impact-WQM\_October 2020 \_graphs\_Rev a.xls





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

Ref: 0212330\_Impact-WQM\_October 2020\_graphs\_Rev a.xls





Date	Tide	Station	Weather Condition	Sea Condition	Sampling Time	Water Depth (m)	Water Level	Sampling depth (m)	Replicate	Water Temperature (°C)	pH	Salinity (ppt)	Dissolved Oxygen (DO) (mg/L)	DO Saturation (%)	Turbidity (NTU)	Suspended Solids (SS) (mg/L)	Depth-averaged		
																	DO (mg/L)	Turbidity (NTU)	SS (mg/L)
26-10-20	Mid-Ebb	CS(M05)	Sunny	Moderate	8:25	12.6	Surface	1.0	1	24.7	8.2	32.1	6.5	93.9	4.5	6.0	6.5	5.9	5.1
									2	24.7	8.2	32.1	6.5	93.8	4.5	5.7			
							Middle	6.3	1	24.5	8.2	32.2	6.5	93.2	6.2	5.2			
									2	24.5	8.2	32.2	6.5	93.2	6.3	4.9			
		SR4(N2)	Sunny	Moderate	9:56	3.8	Bottom	11.6	1	24.5	8.3	32.2	6.5	93.5	6.7	4.4	6.5		
									2	24.5	8.2	32.2	6.5	93.5	6.9	4.1			
							Surface	1.0	1	24.6	8.2	32.1	6.6	95.7	5.4	3.6			
									2	24.6	8.2	32.1	6.6	95.7	5.4	3.2			
		CS2A	Sunny	Moderate	10:33	6.2	Bottom	2.8	1	24.6	8.2	32.1	6.6	95.7	5.7	4.4	6.6	5.6	4.0
									2	24.6	8.2	32.1	6.6	95.7	5.7	4.6			
							Surface	1.0	1	24.6	8.2	32.4	6.7	96.8	14.0	3.3			
									2	24.6	8.2	32.4	6.7	96.7	13.4	3.5			
		SR3(N)	Sunny	Moderate	9:13	4.3	Middle	3.1	1	24.1	8.2	32.5	6.6	94.0	12.2	4.5	6.7	13.6	4.8
									2	24.1	8.2	32.5	6.6	94.0	12.1	4.8			
							Bottom	5.2	1	24.1	8.3	32.5	6.5	93.7	15.1	6.1			
									2	24.1	8.3	32.5	6.5	93.7	15.0	6.4			
							Surface	1.0	1	24.7	8.2	31.9	6.2	89.6	5.2	3.6	6.2	5.9	4.8
									2	24.7	8.2	31.8	6.2	90.1	6.4	3.3			
							Bottom	3.3	1	24.7	8.2	31.9	6.2	89.8	5.9	6.2			
									2	24.7	8.2	31.9	6.3	90.4	6.1	6.1			
26-10-20	Mid-Flood	CS(M05)	Cloudy	Moderate	17:38	12.5	Surface	1.0	1	24.7	8.3	32.2	6.6	95.2	3.0	2.4	6.3		
									2	24.7	8.3	32.2	6.6	95.1	3.0	2.4			
							Middle	6.3	1	24.8	8.2	32.4	6.2	90.2	5.1	3.5			
									2	24.8	8.2	32.4	6.2	90.2	4.6	3.2			
		SR4(N2)	Cloudy	Moderate	16:10	3.5	Bottom	11.5	1	24.7	8.2	32.4	6.2	90.1	11.7	4.1	6.2	6.5	3.2
									2	24.7	8.2	32.4	6.2	90.2	11.3	3.8			
							Surface	1.0	1	24.9	8.3	32.0	6.8	98.8	5.2	6.8			
									2	24.9	8.3	32.0	6.8	98.2	5.3	6.9			
		CS2A	Cloudy	Moderate	15:34	6.1	Bottom	2.5	1	24.9	8.3	32.0	6.8	98.7	5.0	4.7	6.8	5.2	5.8
									2	24.8	8.3	32.0	6.7	97.1	5.1	4.8			
							Surface	1.0	1	24.6	8.3	31.6	7.1	101.3	5.0	3.1			
									2	24.6	8.3	31.6	6.9	99.3	5.2	3.1			
		SR3(N)	Cloudy	Moderate	16:50	4.7	Middle	3.1	1	24.3	8.3	32.0	6.7	96.5	7.4	4.2	6.9	6.6	3.9
									2	24.3	8.3	31.9	6.7	96.3	7.5	3.8			
							Bottom	5.1	1	24.3	8.3	32.2	6.7	96.2	7.1	4.4			
									2	24.3	8.3	32.3	6.7	95.5	7.4	4.7			
							Surface	1.0	1	25.2	8.3	32.1	6.6	96.6	6.1	2.8	6.6	6.3	3.1
									2	25.2	8.3	32.1	6.6	96.1	6.6	2.9			
							Bottom	3.7	1	25.2	8.3	32.1	6.7	97.4	6.4	3.4			
									2	25.3	8.3	32.0	6.6	96.1	6.1	3.2			

## Appendix K

# Event and Action Plan

### *Event and Action Plan for Impact Air Monitoring*

	Action			
	ET (a)	IEC (a)	SOR (a)	Contractor(s)
<b>Action Level Exceedance</b>				
	<ol style="list-style-type: none"> <li>1. Identify the source.</li> <li>2. Repeat measurement to confirm finding. If two consecutive measurements exceed Action Level, the exceedance is then confirmed.</li> <li>3. Inform the IEC and the SOR.</li> <li>4. Investigate the cause of exceedance and check Contractor's working procedures to determine possible mitigation to be implemented.</li> <li>5. If the exceedance is confirmed to be Project related after investigation, increase monitoring frequency to daily.</li> <li>6. Discuss with the IEC and the Contractor on remedial actions required.</li> <li>7. If exceedance continues, arrange meeting with the IEC and the SOR.</li> <li>8. If exceedance stops, cease additional monitoring.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by the ET.</li> <li>2. Check the Contractor's working method.</li> <li>3. If the exceedance is confirmed to be Project related after investigation, discuss with the ET and the Contractor on possible remedial measures.</li> <li>4. Advise the SOR on the effectiveness of the proposed remedial measures.</li> <li>5. Supervise implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of failure in writing.</li> <li>2. Notify the Contractor.</li> <li>3. Ensure remedial measures properly implemented.</li> </ol>	<ol style="list-style-type: none"> <li>1. Rectify any unacceptable practice</li> <li>2. Amend working methods if appropriate</li> <li>3. If the exceedance is confirmed to be Project related, submit proposals for remedial actions to IEC within 3 working days of notification</li> <li>4. Implement the agreed proposals</li> <li>5. Amend proposal if appropriate</li> </ol>

	Action			
	ET (a)	IEC (a)	SOR (a)	Contractor(s)
<b>Limit Level Exceedance</b>				
	<ol style="list-style-type: none"> <li>1. Identify the source.</li> <li>2. Repeat measurement to confirm finding. If two consecutive measurements exceed Limit Level, the exceedance is then confirmed.</li> <li>3. Inform the IEC, the SOR, the DEP and the Contractor.</li> <li>4. Investigate the cause of exceedance and check Contractor's working procedures to determine possible mitigation to be implemented.</li> <li>5. If the exceedance is confirmed to be Project related after investigation, increase monitoring frequency to daily.</li> <li>6. Carry out analysis of the Contractor's working procedures to determine possible mitigation to be implemented.</li> <li>7. Arrange meeting with the IEC and the SOR to discuss the remedial actions to be taken.</li> <li>8. Assess effectiveness of the Contractor's remedial actions and keep the IEC, the DEP and the SOR informed of the results.</li> <li>9. If exceedance stops, cease additional monitoring.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by the ET.</li> <li>2. Check Contractor's working method.</li> <li>3. If the exceedance is confirmed to be Project related after investigation, discuss with the ET and the Contractor on possible remedial measures.</li> <li>4. Advise the SOR on the effectiveness of the proposed remedial measures.</li> <li>5. Supervise implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of failure in writing.</li> <li>2. Notify the Contractor.</li> <li>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.</li> <li>4. Ensure remedial measures are properly implemented.</li> <li>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.</li> </ol>	<ol style="list-style-type: none"> <li>1. Take immediate action to avoid further exceedance.</li> <li>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.</li> <li>3. Implement the agreed proposals.</li> <li>4. Amend proposal if appropriate.</li> <li>5. Stop the relevant activity of works as determined by the SOR until the exceedance is abated.</li> </ol>

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	4	116
	Limit	0	14
24-hr TSP	Action	0	10
	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 (October 2020)	0	0	0
Total No. received since Contract commencement	17	1	0

Email  
message

Environmental  
Resources  
Management

**To** Ramboll Hong Kong, Limited (ENPO)

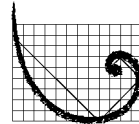
**From** ERM- Hong Kong, Limited

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

**Subject** Notification of Exceedance for Air Quality  
Impact Monitoring

**Date** 22 October 2020

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



**ERM**

---

Dear Sir or Madam,

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

0212330\_9October2020\_1hrTSP\_Station ASR5

One Action Level Exceedance was recorded on 9 October 2020.

Regards,

Dr Jasmine Ng  
Environmental Team Leader

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ERM-Hong Kong, Limited

CONTRACT NO. HY/2012/08  
TUN 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_9October2020_1hrTSP_Station ASR5  [Total No. of Exceedances = 1]	
Date	9 October 2020 (Measured) 22 October 2020 (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 ( $373 \mu\text{g}/\text{m}^3$ ) during 0832 – 0932.	
Works Undertaken (at the time of monitoring event)	On 9 October 2020, no construction works were carried out at the project area.	
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"> <li>With reference to the recorded wind direction (ranged between <math>3^\circ</math> and <math>34^\circ</math>), blowing from northerly direction) and wind speed (<math>1.8 \text{ m/s}</math>), Station ASR5 is located upstream to the project site, which is unlikely impacted by the Project.</li> <li>No construction works was carried out on 9 October 2020.</li> <li>Dust suppression measures were implemented properly on site. Water spraying was applied on site to prevent dust. Water spraying was also applied on exposed soil within the Contract site and associated works areas (refer to <i>Annex A</i>).</li> </ul> <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.	



<b>Remarks</b>	The monitoring results, wind data and the locations of air quality monitoring stations are attached ( <i>Annex B</i> ).
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Annex A

## Watering Record

Site Location 地盤位置: Northern Landfall  
Date 日期: 5 Oct 2020 to 11 Oct 2020

	Time 時間	Monday 星期一	Tuesday 星期二	Wednesday 星期三	Thursday 星期四	Friday 星期五	Saturday 星期六	Sunday 星期日
1	8:00 - 8:45	/	/	/	/	/	/	/
2	8:45 - 9:30	/	/	/	/	/	/	/
3	9:30 - 10:15	/	/	/	/	/	/	/
4	10:15 - 11:00	/	/	/	/	/	/	/
5	11:00 - 11:45	/	/	/	/	/	/	/
6	11:45 - 12:30	/	/	/	/	/	/	/
7	12:30 - 13:15	/	/	/	/	/	/	/
8	13:15 - 14:00	/	/	/	/	/	/	/
9	14:00 - 14:45	/	/	/	/	/	/	/
10	14:45 - 15:30	/	/	/	/	/	/	/
11	15:30 - 16:45	/	/	/	/	/	/	/
12	16:45 - 17:30	/	/	/	/	/	/	/
	Verified by Site Foreman 地盤科文簽署確認	7	7	7	7	7	7	7

**Night shift 夜間工作 (if necessary 如需要)**

	17:30 - 19:00						
	19:00 - 20:30						
	20:30 - 22:00						
	22:00 - 23:00						

\*Please - tick (✓) in the box if complete the spraying of water.  
circle (O) in the box if it is raining.

\*如果 - 已經完成灑水, 請於方格內加上剔號(✓)。  
是下雨天, 請於方格內加上圓圈(O)。

**Remarks:**

- Pursuant to EP Clause 3.15, the Permit Holder shall undertake watering at least 12 times per day on all exposed soil within the Project site and associated work areas in Tuen Mun area throughout the construction phase.
- Spraying position includes the main haul road, open area, slopes, stockpiles and any other dusty materials.
- If it is raining, no water spraying is needed.
- The no of spraying will be increased due to site condition.

**備註:**

- 根據環境許可證 3.15 條例, 在整個施工階段內, 許可證持有人須每天至少 12 次在屯門區項目工地和相關的工作區域內的所有暴露土壤灑水。
- 灑水位置包括主要運輸道路, 空曠地帶, 斜坡, 存料堆, 以及任何其他產生塵埃物料。
- 當下雨時, 地盤將不需要灑水。
- 如果地盤情況更改或有需要時, 灑水次數會相應增加。

Annex B

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

Air quality monitoring results on 9/10/2020								
Project	Contract	Date	Station	Weather	Start time	Parameters	Results	Unit
TMCLKL	HY/2012/08	2020-10-09	ASR10	Sunny	8:10:00	1-hour TSP	94	ug/m3
TMCLKL	HY/2012/08	2020-10-09	ASR10	Sunny	9:12:00	1-hour TSP	64	ug/m3
TMCLKL	HY/2012/08	2020-10-09	ASR10	Sunny	10:14:00	1-hour TSP	85	ug/m3
TMCLKL	HY/2012/08	2020-10-09	ASR6	Sunny	8:20:00	1-hour TSP	178	ug/m3
TMCLKL	HY/2012/08	2020-10-09	ASR6	Sunny	9:22:00	1-hour TSP	91	ug/m3
TMCLKL	HY/2012/08	2020-10-09	ASR6	Sunny	10:24:00	1-hour TSP	109	ug/m3
TMCLKL	HY/2012/08	2020-10-09	ASR5	Sunny	8:32:00	1-hour TSP	373	ug/m3
TMCLKL	HY/2012/08	2020-10-09	ASR5	Sunny	9:34:00	1-hour TSP	178	ug/m3
TMCLKL	HY/2012/08	2020-10-09	ASR5	Sunny	10:36:00	1-hour TSP	167	ug/m3
TMCLKL	HY/2012/08	2020-10-09	ASR1	Sunny	8:44:00	1-hour TSP	181	ug/m3
TMCLKL	HY/2012/08	2020-10-09	ASR1	Sunny	9:46:00	1-hour TSP	145	ug/m3
TMCLKL	HY/2012/08	2020-10-09	ASR1	Sunny	10:48:00	1-hour TSP	114	ug/m3
TMCLKL	HY/2012/08	2020-10-09	AQMS1	Sunny	8:55:00	1-hour TSP	80	ug/m3
TMCLKL	HY/2012/08	2020-10-09	AQMS1	Sunny	9:57:00	1-hour TSP	106	ug/m3
TMCLKL	HY/2012/08	2020-10-09	AQMS1	Sunny	10:59:00	1-hour TSP	94	ug/m3
TMCLKL	HY/2012/08	2020-10-09	ASR10	Sunny	11:16:00	24-hour TSP	73	ug/m3
TMCLKL	HY/2012/08	2020-10-09	ASR6	Sunny	11:26:00	24-hour TSP	105	ug/m3
TMCLKL	HY/2012/08	2020-10-09	ASR5	Sunny	11:38:00	24-hour TSP	125	ug/m3
TMCLKL	HY/2012/08	2020-10-09	ASR1	Sunny	11:50:00	24-hour TSP	153	ug/m3
TMCLKL	HY/2012/08	2020-10-09	AQMS1	Sunny	12:01:00	24-hour TSP	82	ug/m3

Action level exceedance

Limit level exceedance

Meteorological Data for Impact Monitoring in the reporting period			
Date (yy-mm-dd)	Time (24hrs)	Average of Wind Speed (m/s)	Average of Wind Direction(degree)
20/10/09	0:00	2.2	29
20/10/09	1:00	2.2	30
20/10/09	2:00	2.2	28
20/10/09	3:00	2.2	20
20/10/09	4:00	2.2	16
20/10/09	5:00	2.7	27
20/10/09	6:00	1.8	15
20/10/09	7:00	0.9	347
20/10/09	8:00	1.8	3
20/10/09	9:00	1.8	34
20/10/09	10:00	1.8	11
20/10/09	11:00	1.8	34
20/10/09	12:00	1.8	31
20/10/09	13:00	1.8	23
20/10/09	14:00	1.3	266
20/10/09	15:00	1.3	332
20/10/09	16:00	1.3	338
20/10/09	17:00	1.8	25
20/10/09	18:00	2.2	332
20/10/09	19:00	1.8	312
20/10/09	20:00	2.7	318
20/10/09	21:00	2.7	331
20/10/09	22:00	1.8	345
20/10/09	23:00	0.9	335

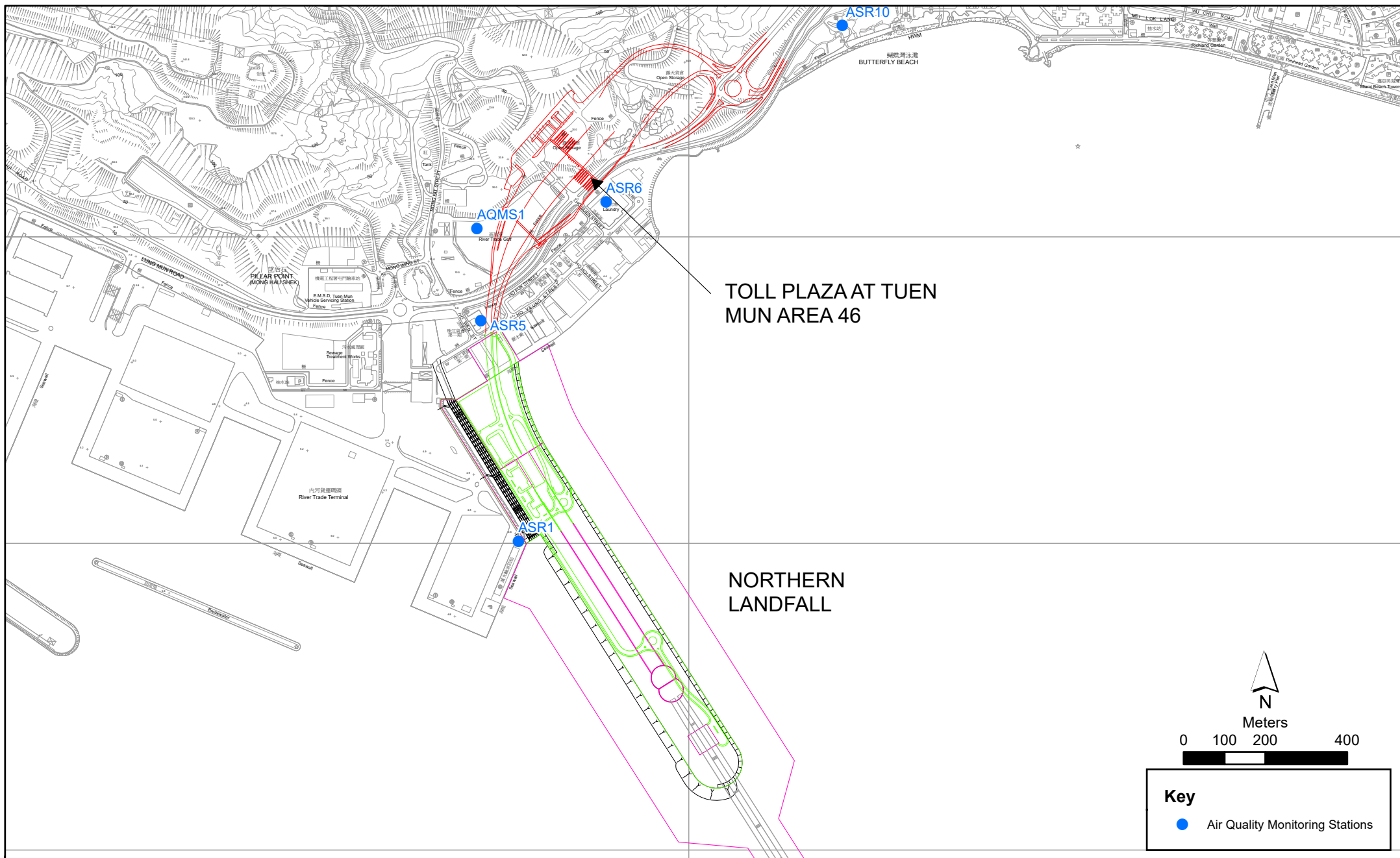


Figure 2.1

Air Quality Monitoring Stations for the Enhanced TSP Monitoring

File: T:\GIS\CONTRACT\0212330\Mxd\0212330\_ASR\_for\_Enhanced\_TSP\_monitoring.mxd  
Date: 21/2/2014

Environmental  
Resources  
Management



Email  
message

Environmental  
Resources  
Management

**To** Ramboll Hong Kong, Limited (ENPO)

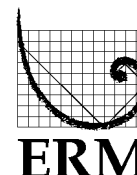
**From** ERM- Hong Kong, Limited

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

**Subject** Notification of Exceedance for Air Quality  
Impact Monitoring

**Date** 9 November 2020

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



---

Dear Sir or Madam,

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

0212330\_21October2020\_1hrTSP\_Station ASR6  
0212330\_21October2020\_1hrTSP\_Station ASR5  
0212330\_21October2020\_1hrTSP\_Station ASR1

Three Action Level Exceedances were recorded on 21 October 2020.

Regards,

Dr Jasmine Ng  
Environmental Team Leader

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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**

<b>Log No.</b>	<u><b>Action Level Exceedance</b></u> 0212330_21October2020_1hrTSP_Station ASR6 0212330_21October2020_1hrTSP_Station ASR5 0212330_21October2020_1hrTSP_Station ASR1  <b>[Total No. of Exceedances = 3]</b>	
<b>Date</b>	21 October 2020 (Measured) 9 November 2020 (Laboratory results received by ERM)	
<b>Monitoring Station</b>	ASR6, ASR5, ASR1	
<b>Parameter(s) with Exceedance(s)</b>	1-hr TSP	
<b>Action Levels</b>	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
<b>Limit Levels</b>	1-hr TSP ( $\mu\text{g}/\text{m}^3$ )	500
	24-hr TSP ( $\mu\text{g}/\text{m}^3$ )	260
<b>Measured Levels</b>	Action Level Exceedance for 1-hr TSP is observed at ASR6 ( $352 \mu\text{g}/\text{m}^3$ ) during 1016 – 1116. Action Level Exceedance for 1-hr TSP is observed at ASR5 ( $474 \mu\text{g}/\text{m}^3$ ) during 0823 – 0923. Action Level Exceedance for 1-hr TSP is observed at ASR1 ( $494 \mu\text{g}/\text{m}^3$ ) during 0835 – 0935.	
<b>Works Undertaken (at the time of monitoring event)</b>	On 21 October 2020, no construction works were carried out at the project area.	
<b>Possible Reason for Action or Limit Level Exceedance(s)</b>	<p>The exceedances are unlikely to be due to this Contract, in view of the following:</p> <ul style="list-style-type: none"> <li>• With reference to the recorded wind direction (ranged between <math>303^\circ</math> and <math>345^\circ</math>), blowing from north-westerly direction) and wind speed (ranged between 2.2 and 3.1 m/s), Station ASR6 and ASR5 are located upstream to the project site, which are unlikely impacted by the Project.</li> <li>• No construction works was carried out on 21 October 2020 and thus results of 1-hr TSP taken at Station ASR1 is unlikely impacted by the Project.</li> <li>• Dust suppression measures were implemented properly on site. Water spraying was applied on site to prevent dust. Water spraying was also applied on exposed soil within the Contract site and associated works areas (refer to <i>Annex A</i>).</li> </ul> <p>Based on the above, the exceedances are unlikely to be due to this Contract.</p>	

<b>Actions Taken / To Be Taken</b>	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.
<b>Remarks</b>	The monitoring results, wind data and the locations of air quality monitoring stations are attached ( <i>Annex B</i> ).

Annex A

## Watering Record

Site Location 地盤位置:

Northern Landfill

Date

日期:

19 Oct 2020 to 至 25 Oct 2020

	Time 時間	Monday 星期一	Tuesday 星期二	Wednesday 星期三	Thursday 星期四	Friday 星期五	Saturday 星期六	Sunday 星期日
1	8:00 – 8:45	/	/	/	/	/	/	/
2	8:45 – 9:30	/	/	/	/	/	/	/
3	9:30 – 10:15	/	/	/	/	/	/	/
4	10:15 – 11:00	/	/	/	/	/	/	/
5	11:00 – 11:45	/	/	/	/	/	/	/
6	11:45 – 12:30	/	/	/	/	/	/	/
7	12:30 – 13:15	/	/	/	/	/	/	/
8	13:15 – 14:00	/	/	/	/	/	/	/
9	14:00 – 14:45	/	/	/	/	/	/	/
10	14:45 – 15:30	/	/	/	/	/	/	/
11	15:30 – 16:45	/	/	/	/	/	/	/
12	16:45 – 17:30	/	/	/	/	/	/	/
	Verified by Site Foreman 地盤科文簽署確認	<i>W</i>	<i>W</i>	<i>W</i>	<i>W</i>	<i>W</i>	<i>W</i>	<i>W</i>

**Night shift 夜間工作 (if necessary 如需要)**

	17:30 – 19:00						
	19:00 – 20:30						
	20:30 – 22:00						
	22:00 – 23:00						

\*Please - tick (✓) in the box if complete the spraying of water.  
circle (O) in the box if it is raining.

\*如果 - 已經完成灑水, 請於方格內加上剔號(✓).  
是下雨天, 請於方格內加上圓圈(O).

**Remarks:**

- Pursuant to EP Clause 3.15, the Permit Holder shall undertake watering at least 12 times per day on all exposed soil within the Project site and associated work areas in Tuen Mun area throughout the construction phase.
- Spraying position includes the main haul road, open area, slopes, stockpiles and any other dusty materials.
- If it is raining, no water spraying is needed.
- The no of spraying will be increased due to site condition.

**備註:**

- 根據環境許可證 3.15 條例, 在整個施工階段內, 許可證持有人須每天至少 12 次在屯門區項目工地和相關的工作區域內的所有暴露土壤灑水。
- 灑水位置包括主要運輸道路, 空曠地帶, 斜坡, 存料堆, 以及任何其他產生塵埃物料。
- 當下雨時, 地盤將不需要灑水。
- 如果地盤情況更改或有需要時, 灑水次數會相應增加。

Annex B

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

Air quality monitoring results on 21/10/2020								
Project	Contract	Date	Station	Weather	Start time	Parameters	Results	Unit
TMCLKL	HY/2012/08	2020-10-21	ASR10	Sunny	8:00:00	1-hour TSP	108	ug/m3
TMCLKL	HY/2012/08	2020-10-21	ASR10	Sunny	9:02:00	1-hour TSP	94	ug/m3
TMCLKL	HY/2012/08	2020-10-21	ASR10	Sunny	10:04:00	1-hour TSP	107	ug/m3
TMCLKL	HY/2012/08	2020-10-21	ASR6	Sunny	8:12:00	1-hour TSP	254	ug/m3
TMCLKL	HY/2012/08	2020-10-21	ASR6	Sunny	9:14:00	1-hour TSP	149	ug/m3
TMCLKL	HY/2012/08	2020-10-21	ASR6	Sunny	10:16:00	1-hour TSP	352	ug/m3
TMCLKL	HY/2012/08	2020-10-21	ASR5	Sunny	8:23:00	1-hour TSP	474	ug/m3
TMCLKL	HY/2012/08	2020-10-21	ASR5	Sunny	9:25:00	1-hour TSP	213	ug/m3
TMCLKL	HY/2012/08	2020-10-21	ASR5	Sunny	10:27:00	1-hour TSP	265	ug/m3
TMCLKL	HY/2012/08	2020-10-21	ASR1	Sunny	8:35:00	1-hour TSP	494	ug/m3
TMCLKL	HY/2012/08	2020-10-21	ASR1	Sunny	9:37:00	1-hour TSP	231	ug/m3
TMCLKL	HY/2012/08	2020-10-21	ASR1	Sunny	10:39:00	1-hour TSP	224	ug/m3
TMCLKL	HY/2012/08	2020-10-21	AQMS1	Sunny	8:47:00	1-hour TSP	92	ug/m3
TMCLKL	HY/2012/08	2020-10-21	AQMS1	Sunny	9:49:00	1-hour TSP	114	ug/m3
TMCLKL	HY/2012/08	2020-10-21	AQMS1	Sunny	10:51:00	1-hour TSP	123	ug/m3
TMCLKL	HY/2012/08	2020-10-21	ASR10	Sunny	11:06:00	24-hour TSP	88	ug/m3
TMCLKL	HY/2012/08	2020-10-21	ASR6	Sunny	11:18:00	24-hour TSP	165	ug/m3
TMCLKL	HY/2012/08	2020-10-21	ASR5	Sunny	11:29:00	24-hour TSP	138	ug/m3
TMCLKL	HY/2012/08	2020-10-21	ASR1	Sunny	11:41:00	24-hour TSP	170	ug/m3
TMCLKL	HY/2012/08	2020-10-21	AQMS1	Sunny	11:53:00	24-hour TSP	101	ug/m3

Action level exceedance

Limit level exceedance

Meteorological Data for Impact Monitoring in the reporting period			
Date (yy-mm-dd)	Time (24hrs)	Average of Wind Speed (m/s)	Average of Wind Direction(degree)
20/10/21	0:00	3.1	345
20/10/21	1:00	2.2	337
20/10/21	2:00	2.7	348
20/10/21	3:00	4.9	341
20/10/21	4:00	1.3	207
20/10/21	5:00	2.7	320
20/10/21	6:00	3.6	328
20/10/21	7:00	2.2	308
20/10/21	8:00	2.2	339
20/10/21	9:00	2.2	345
20/10/21	10:00	2.2	322
20/10/21	11:00	3.1	303
20/10/21	12:00	2.7	337
20/10/21	13:00	2.7	341
20/10/21	14:00	2.7	320
20/10/21	15:00	2.2	321
20/10/21	16:00	2.2	320
20/10/21	17:00	1.3	323
20/10/21	18:00	2.2	309
20/10/21	19:00	3.6	341
20/10/21	20:00	4	339
20/10/21	21:00	1.8	315
20/10/21	22:00	2.7	348
20-10-21	23:00	1.8	346

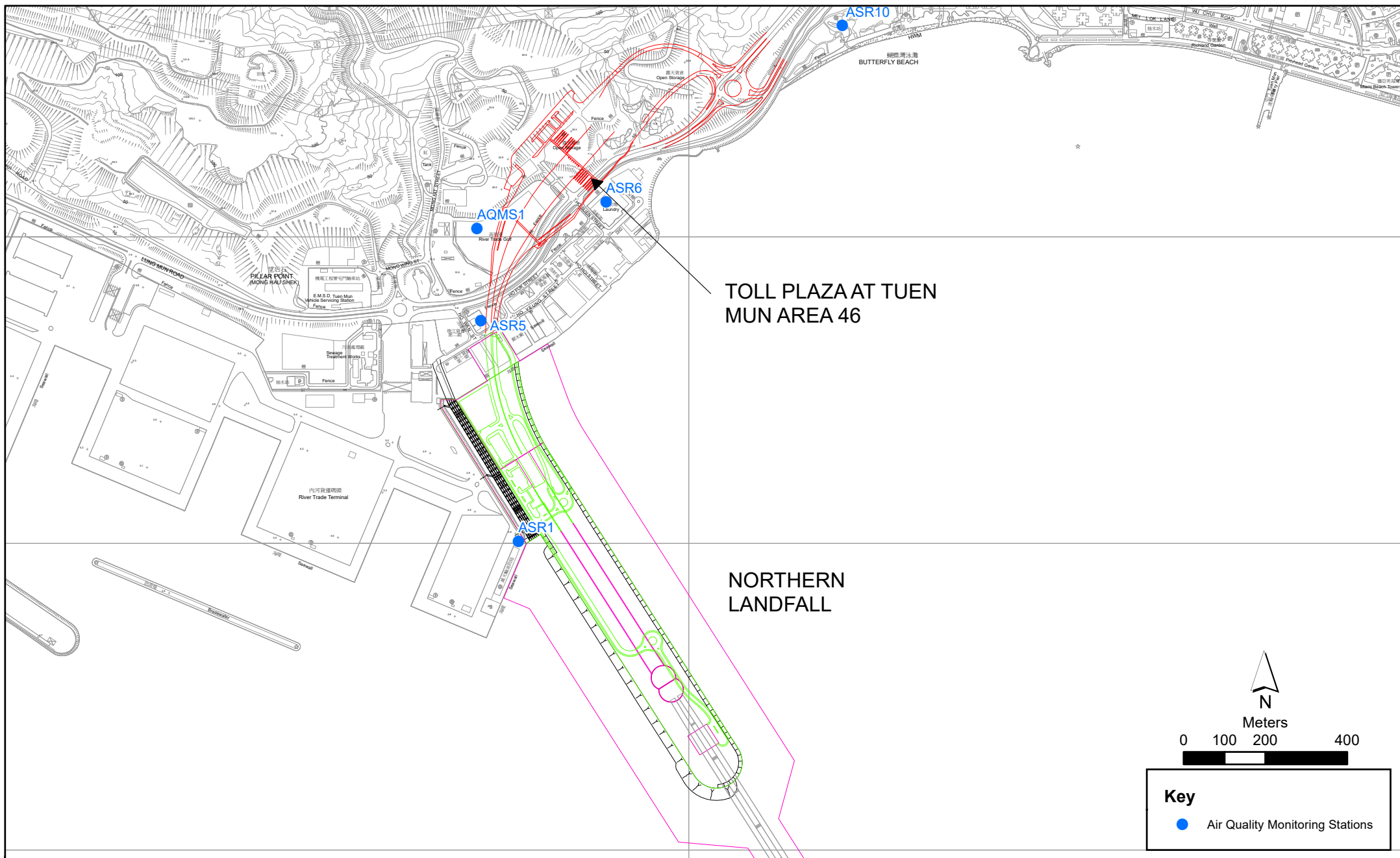


Figure 2.1b

### Air Quality Monitoring Stations for the Enhanced TSP Monitoring

File: T:\GIS\CONTRACT\0212330\Mxd\0212330\_ASR\_for\_Enhanced\_TSP\_monitoring.mxd  
Date: 21/2/2014

Environmental  
Resources  
Management





## 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 October 2020 [to be submitted not later than the 15<sup>th</sup> 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	3008.812	0.000	336.902	889.467	1782.443
Jan-2020	174.69	0.000	0.000	0.000	174.69
Feb-2020	1.455	0.000	0.000	0.000	1.455
Mar-2020	3.252	0.000	0.000	0.000	3.252
Apr-2020	4.200	0.000	0.000	0.000	4.200
May-2020	7.015	0.000	0.000	0.000	7.015
Jun-2020	2.670	0.000	0.000	0.000	2.693
Half Year Sub-total	193.282	0.000	0.000	0.000	193.305
Jul-2020	1.440	0.000	0.000	0.000	1.440
Aug-2020	1.159	0.000	0.000	0.000	1.159
Sep-2020	0.074	0.000	0.000	0.000	0.074
Oct-2020	0.253	0.000	0.000	0.000	0.253
Nov-2020					
Dec-2020					
Project Total Quantities	3205.020	0.000	336.902	889.467	1978.674

Month	Actual Quantities of <u>Non-inert</u> Construction Waste Generated Monthly								
	Metals		Paper/ cardboard packaging		Plastics (see Note 3)		Chemical Waste		Others, e.g. General Refuse disposed at Landfill
	(in '000kg)		(in '000kg)		(in '000kg)		(in '000kg)		(in '000ton)
	generated	recycled	generated	recycled	generated	recycled	generated	Disposed	generated
Sub-total	9890.77	9890.77	14.64	14.64	16.84	16.84	85.807	85.807	21.943
Jan-2020	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.54
Feb-2020	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.349
Mar-2020	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.226
Apr-2020	22.14	22.14	1.30	1.30	0.00	0.00	6.40	6.40	0.521
May-2020	6.2	6.2	0.54	0.54	0.00	0.00	0.60	0.60	0.536
Jun-2020	0.00	0.00	0.74	0.74	0.00	0.00	1.00	1.00	0.303
Half Year Sub-total	28.34	28.34	2.58	2.58	0.00	0.00	8.00	8.00	5.475
Jul-2020	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.140
Aug-2020	0.00	0.00	1.06	1.06	0.00	0.00	0.00	0.00	0.110
Sep-2020	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.100
Oct-2020	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.145
Nov-2020									
Dec-2020									
Project Total Quantities	9919.11	9919.11	18.28	18.28	16.84	16.84	93.807	93.807	27.913

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

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

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