



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

*Fifty-third Monthly Environmental Monitoring &  
Audit (EM&A) Report*

13 April 2018

**Environmental Resources Management**  
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Ref.: HYDHZMBEEM00\_0\_6410L.18

16 April 2018

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

By Fax (2293 6300) and By Post

Attention: Messrs. Andy Westmoreland / Roger Man

Dear Sirs,

**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**

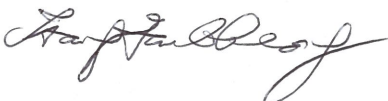
**Contract No. HY/2012/08 TM-CLKL Northern Connection Sub-sea  
Tunnel Section  
53<sup>rd</sup> Monthly EM&A Report for March 2018 (EP-354/2009/D)**

Reference is made to the Monthly Environmental Monitoring and Audit (EM&A) Report (March 2018) (ET's ref.: "0212330\_53rd Monthly EM&A\_20180413.doc" dated 13 April 2018) certified by the ET Leader and provided to us via e-mail on 13 April 2018.

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,



F. C. Tsang  
Independent Environmental Checker  
Tuen Mun – Chek Lap Kok Link

c.c. HyD – Mr. Stephen Chan (By Fax: 3188 6614)  
HyD – Mr. Vico Cheung (By Fax: 3188 6614)  
AECOM – Mr. Conrad Ng (By Fax: 3922 9797)  
ERM – Mr. Jovy Tam (By Fax: 2723 5660)  
Dragages – Bouygues JV - Mr. Bryan Lee (By Fax: 2293 7499)

Internal: DY, YH, TMC, ENPO Site

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

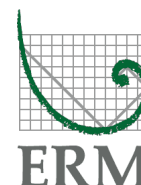
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*Fifty-third Monthly Environmental Monitoring & Audit  
(EM&A) Report*

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Client:  DBJV		Project No:  0212330			
Summary:  This document presents the Fifty-third Monthly EM&A Report for Tuen Mun – Chek Lap Kok Link Northern Connection Sub-sea Tunnel Section.		Date: 13 April 2018			
		Approved by:  			
		Mr Craig Reid Partner			
		Certified by:  			
		Mr Jovy Tam ET Leader			
	53 <sup>rd</sup> Monthly EM&A Report	VAR	JT	CAR	13/04/18
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>			
		 			



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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 their 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 Project commenced on 1 November 2013 and will tentatively be completed by the end of 2018. 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 Fifty-third Monthly EM&A report presenting the EM&A works carried out during the period from 1 to 31 March 2018 for the *Contract No. HY/2012/08 Northern Connection Sub-sea Tunnel Section* (the “Project”) in accordance with the Updated EM&A Manual of the TM-CLK Link Project. As informed by the Contractor, major activities in the reporting period included:

### *Land-based Works*

- Box Culvert Extension at Works Area – Portion N-A;
- Construction of North Ventilation Building – Portion N-C;
- Construction of Cross Passage Tympanum – TBM tunnel;
- Cross Passage Lining Installation – TBM Tunnel;
- Cross Passage Construction by Pipe Jacking – TBM Tunnel;
- Corbel & OVHD Construction – TBM Tunnel;
- Parapet wall Installation – TBM Tunnel;
- Bulk Excavation – Portion S-A;
- CSM treatment, Jet Grouting works and D-wall Construction; and
- Ground Freezing Works – Portion S-A

There was no dredging, reclamation or marine sheet piling works in open waters during this reporting period.

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

24-hour TSP Monitoring	10 sessions
1-hour TSP Monitoring	10 sessions
Impact Dolphin Monitoring	2 sessions
Joint Environmental Site Inspection	4 sessions

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

There was no dredging, reclamation or marine sheet piling works in open waters during this reporting period. Thus, Passive Acoustic Monitoring (PAM) and the day-time monitoring of Dolphin Exclusion Zone (DEZ) by dolphin observers were not in effect during the reporting period.

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

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

One (1) Action Level exceedance of 1-hour TSP was recorded on 2 March 2018. One (1) Action Level exceedance of 1-hour TSP was recorded on 20 March 2018. Investigation reports are provided in Appendix K.

##### *Breaches of Action and Limit Levels for Dolphin Monitoring*

Due to monthly variation in dolphin occurrence within the survey area, it would be more appropriate to draw conclusion on whether any unacceptable impacts on dolphins have been detected in relation to the construction activities of this Project in the quarterly EM&A reports, where comparison on distribution, group size and encounter rates of dolphins between the quarterly impact monitoring period and baseline monitoring period will be made.

#### Summary of Marine Travel Route record

No non-compliance with EIA recommendations, EP conditions and other requirements associated with the marine travel route record of this Contract was recorded in March 2018.

#### 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 required in the reporting period.

### Upcoming Works for the Next Reporting Month

Works to be undertaken in the next monitoring period of April 2018 include the following:

#### *Land-based Works*

- Box Culvert Extension at Works Area – Portion N-A;
- Construction of North Ventilation Building – Portion N-C;
- Construction of Cross Passage Tympanum – TBM tunnel;
- Cross Passage Lining Installation – TBM Tunnel;
- Excavation of Sub-sea Tunnel – TBM tunnel;
- Corbel Construction – TBM Tunnel;
- Bulk Excavation – Portion S-A;
- TBM Excavation – Portion S-A;
- CSM treatment, Jet Grouting works and D-wall Construction; and
- Ground Freezing Works – Portion S-A

#### *Marine-based Works*

- Seawall Modificaton Works – Portion S-A

### Future Key Issue

Potential environmental impacts arising from the above upcoming construction activities in the next reporting month of April 2018 are mainly associated with dust, marine water quality, marine ecology and waste management issues.



## 1.1

## BACKGROUND

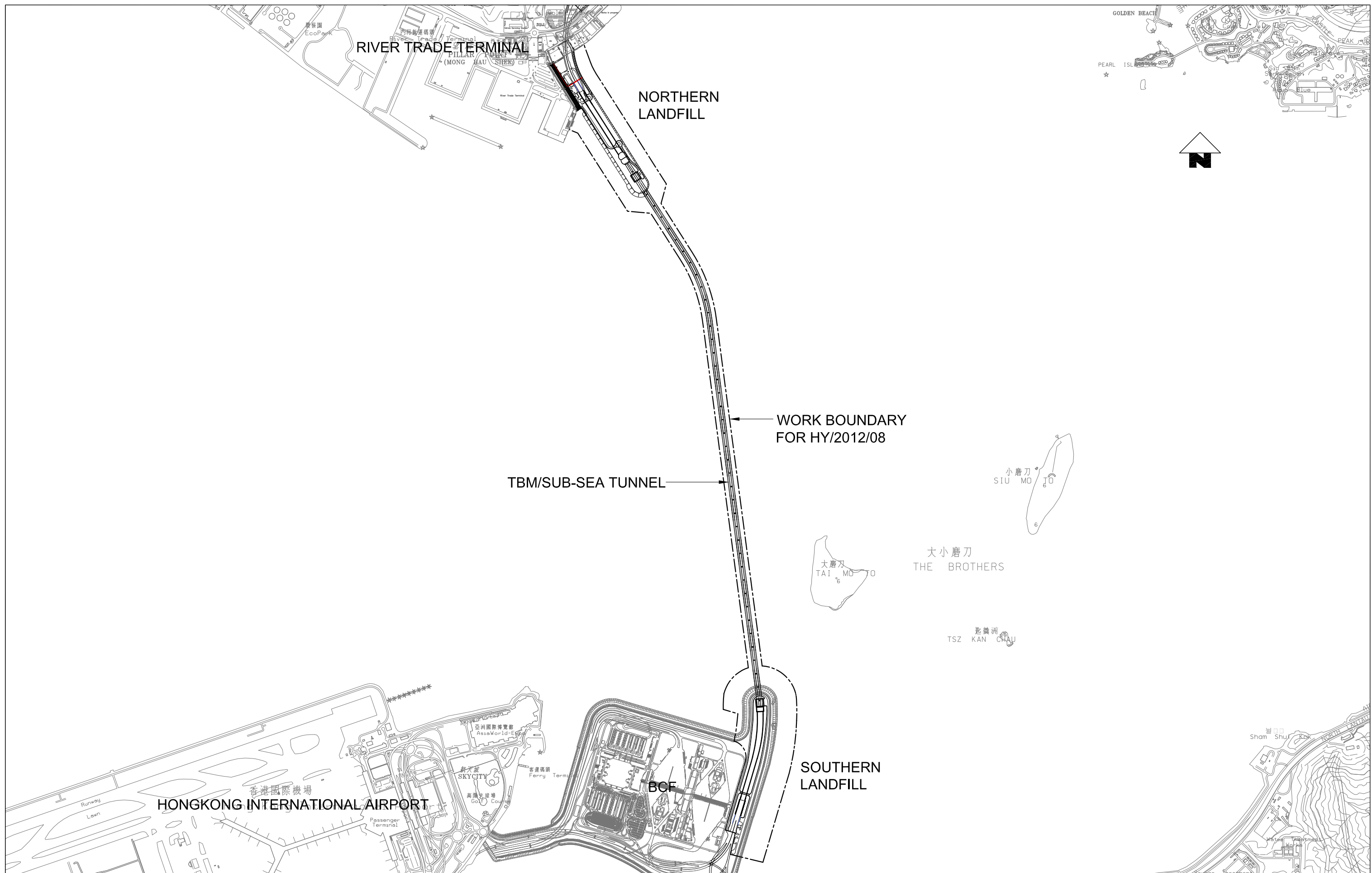
According to the findings of the Northwest New Territories (NWNT) Traffic and Infrastructure Review conducted by the Transport Department, Tuen Mun Road, Ting Kau Bridge, Lantau Link and North Lantau Highway would be operating beyond capacity after 2016. This forecast has been based on the estimated 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 by 2018. The impact monitoring phase of the EM&A programme, including air quality, water quality, marine ecological monitoring and environmental site inspections, were commenced on 1 November 2013.



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

Main Contractor	 
Client	
Contractor's Designer	



  
 A member of the Bouygues Construction group  
**Dragages - Bouygues Joint Venture 寶嘉 - 布依格聯營**


  
**HIGHWAYS DEPARTMENT**


  
 Ove Arup & Partners  
 Hong Kong Limited

Project Contract No. HY/2012/08  
 Tuen Mun - Chek Lap Kok Link -  
 Northern Connection Sub-Sea Tunnel Section  
 Drawing Title **Figure 1.1**

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

## 1.2 SCOPE OF REPORT

This is the Fifty-third 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 March 2018.

## 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 22/HZMB	Chow Man Lung, Andrew	2762 4110	2762 4110
SOR (AECOM Asia Company Limited)	Chief Resident Engineer	Roger Man	2293 6388	2293 6300
		Andrew Westmoreland	2293 6360	2293 6300
ENPO / IEC (Ramboll Hong Kong Ltd.)	ENPO Leader	Y.H. Hui	3465 2850	3465 2899
	IEC	Dr. F.C. Tsang	3465 2851	3465 2899
Contractor (Dragages – Bouygues Joint Venture)	Environmental Officer	Bryan Lee	2293 7323	2293 7499
	24-hour complaint hotline	Rachel Lam	2293 7330	
ET (ERM-HK)	ET Leader	Jovy Tam	2271 3113	2723 5660

## 1.4 SUMMARY OF CONSTRUCTION WORKS

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

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

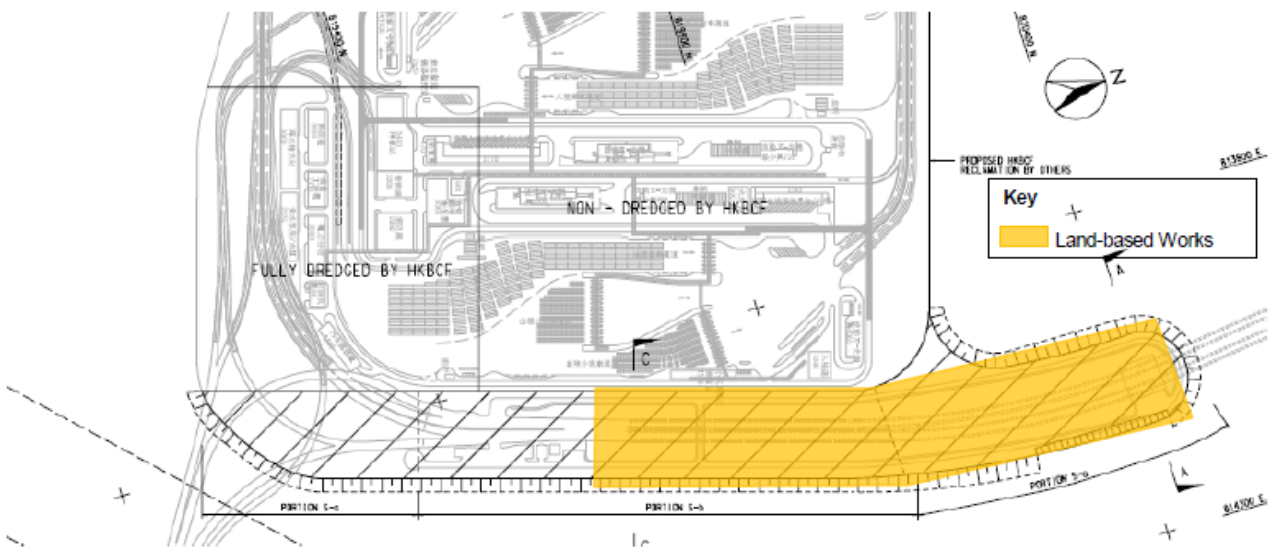
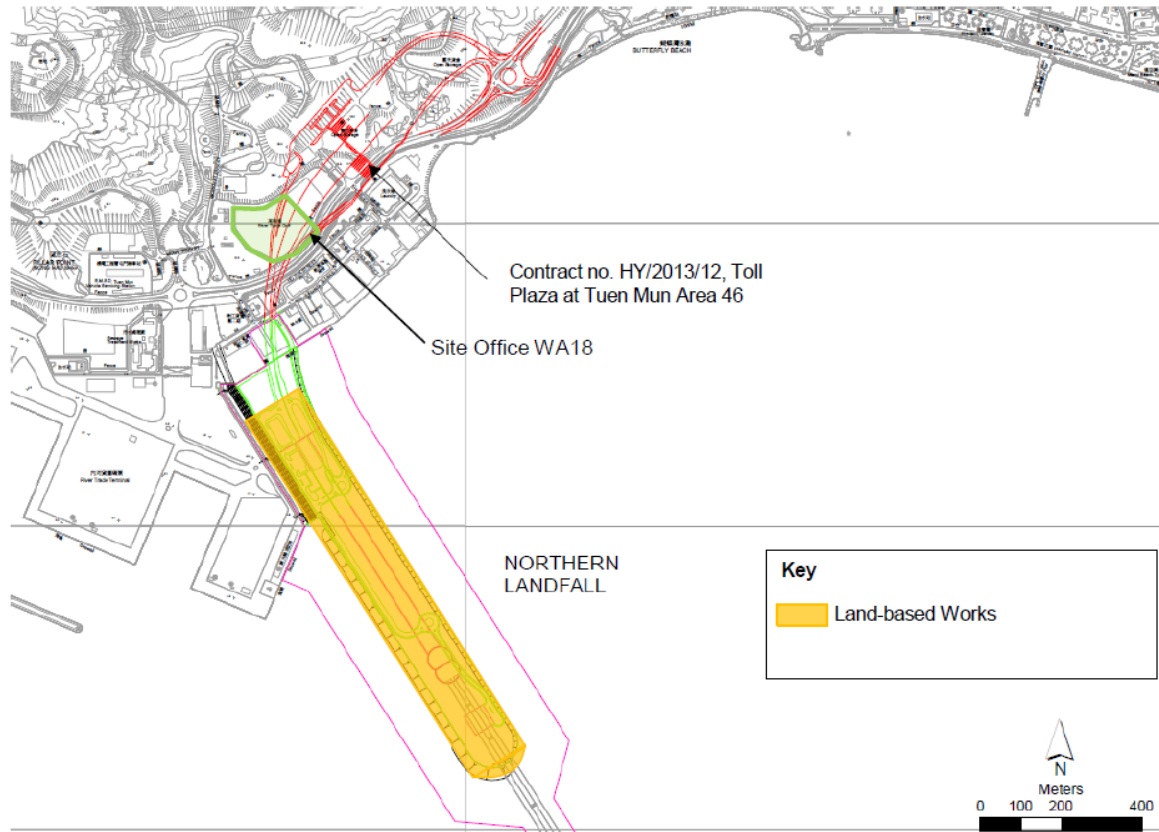
The general layout plan of the site showing the detailed works areas is shown in *Figure 1.2*. The Environmental Sensitive Receivers in the vicinity of the Project are shown in *Figure 1.3*.

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

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

<b>Construction Activities Undertaken</b>
<i>Land-based Works</i>
<ul style="list-style-type: none"><li>• Box Culvert Extension at Works Area – Portion N-A;</li><li>• Construction of North Ventilation Building – Portion N-C;</li><li>• Construction of Cross Passage Tympanum – TBM tunnel;</li><li>• Cross Passage Lining Installation – TBM Tunnel;</li><li>• Cross Passage Construction by Pipe Jacking – TBM Tunnel;</li><li>• Corbel &amp; OVHD Construction – TBM Tunnel;</li><li>• Parapet wall Installation – TBM Tunnel;</li><li>• Bulk Excavation – Portion S-A;</li><li>• CSM treatment, Jet Grouting works and D-wall Construction; and</li><li>• Ground Freezing Works – Portion S-A</li></ul>

Figure 1.2 Locations of Construction Activities – March 2018



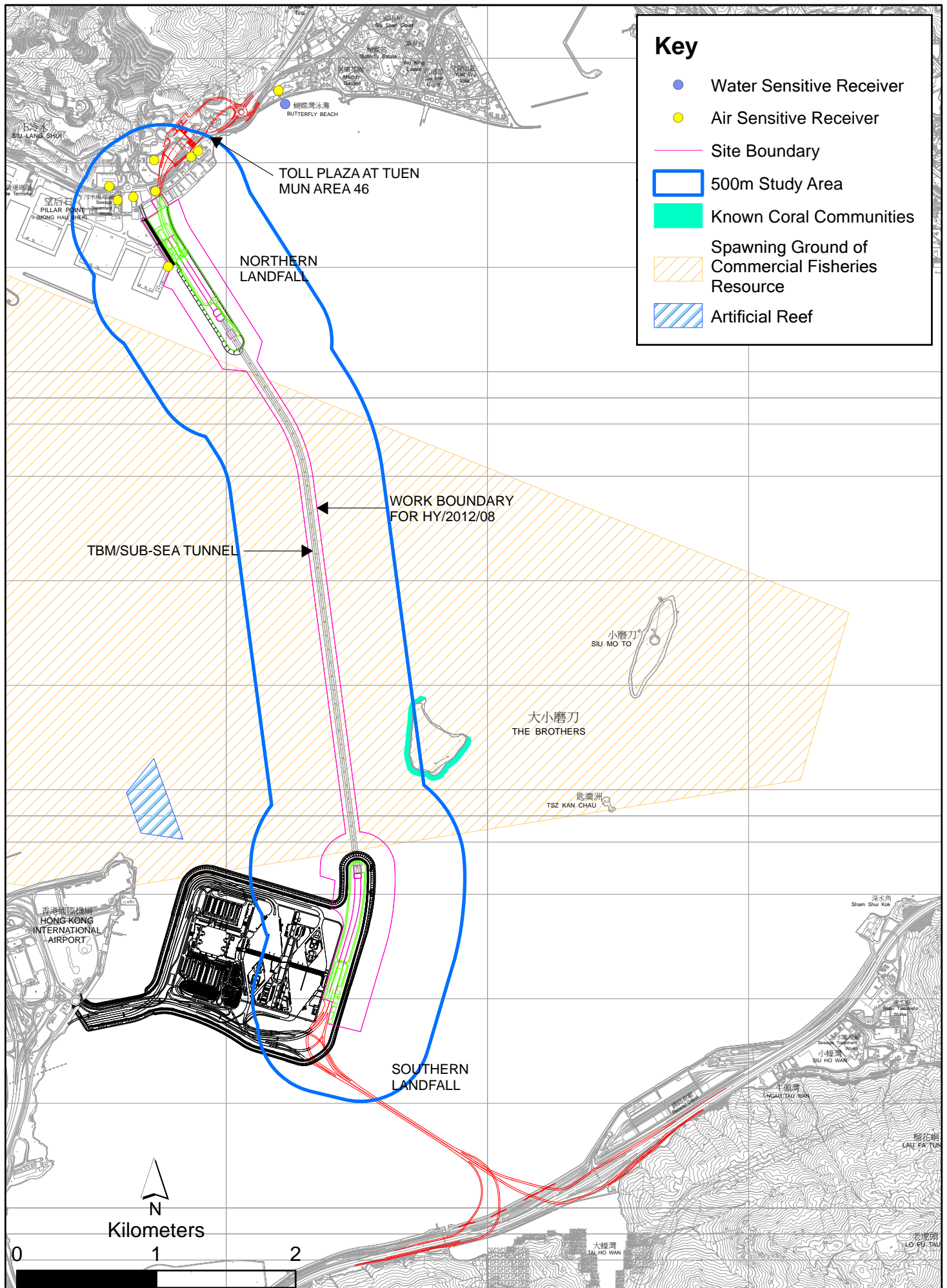


Figure 1.3 Environmental Sensitive Receivers in the vicinity of Contract No. HY/2012/08 Tuen Mun - Chek Lap Kok Link - Northern Connection Sub-Sea Tunnel Section

File: T:\GIS\CONTRACT\0212330\I\mxd\0212330\_EMnA\_Env\_Sensitive\_Receiver.mxd  
Date: 15/4/2014

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.

High volume samplers (HVSs) were used to carry out the 1-hour and 24-hour TSP monitoring on 2, 5, 8, 11, 14, 17, 20, 23, 26 and 29 March 2018 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	2, 5, 8, 11, 14, 17, 20, 23, 26 and 29 March 2018	Tuen Mun Fireboat Station	Office	TSP monitoring
ASR5		Pillar Point Fire Station	Office	<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> <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, <math>\mu\text{g}/\text{m}^3</math>), 3 times in every 3 days</li> </ul>
ASR10		Butterfly Beach Park	Recreational uses	<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>

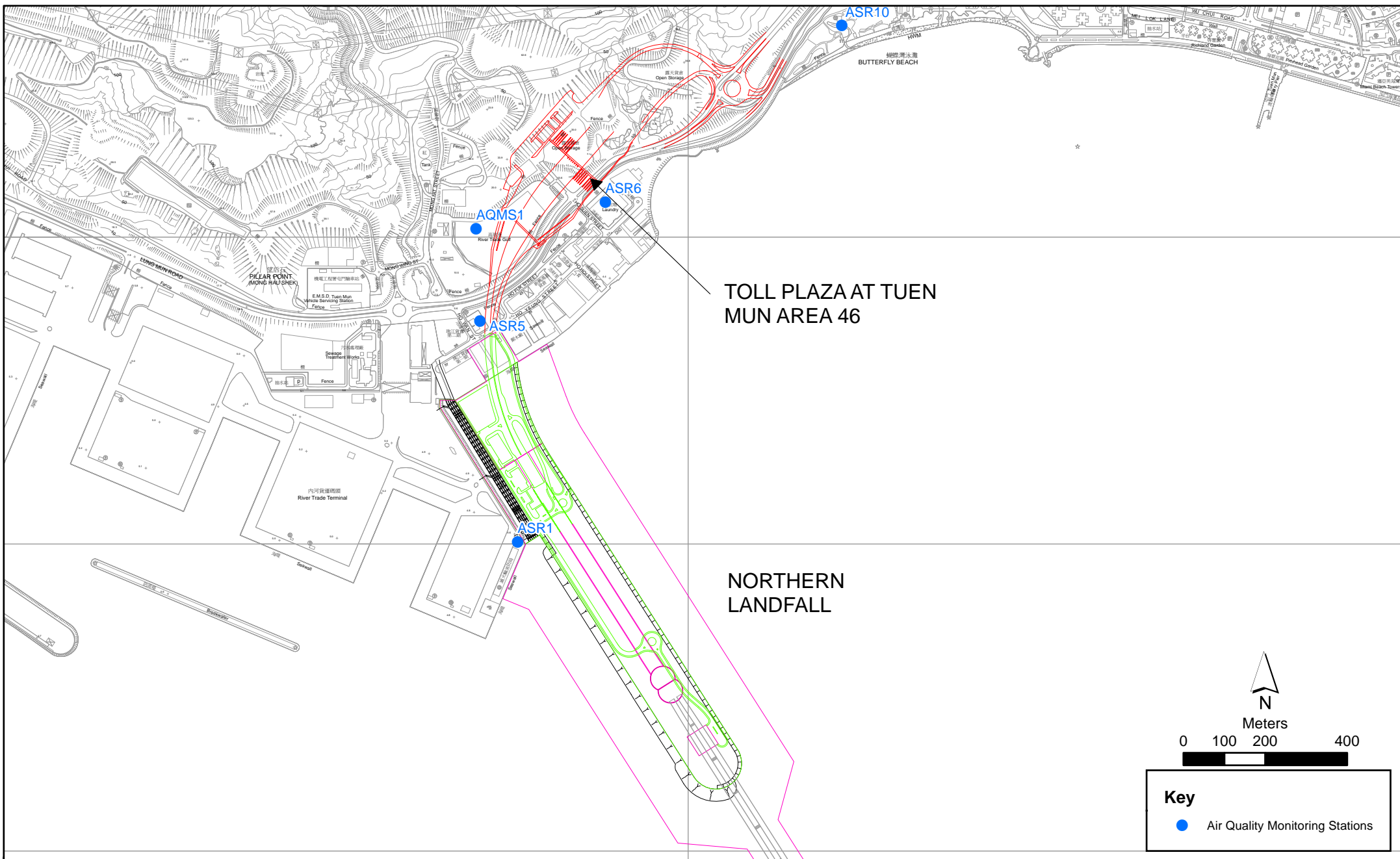


Figure 2.1

Air Quality Monitoring Stations for the Enhanced TSP Monitoring



**Table 2.2 Air Quality Monitoring Equipment**

<b>Equipment</b>	<b>Brand and Model</b>
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 J*.

**2.1.3 Monitoring Schedule for the Reporting Month**

The schedule for air quality monitoring in March 2018 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**

<b>Station</b>	<b>Average (µg/m³)</b>	<b>Range (µg/m³)</b>	<b>Action Level (µg/m³)</b>	<b>Limit Level (µg/m³)</b>
ASR1	155	63 - 460	331	500
ASR5	171	81 - 289	340	500
AQMS1	98	22 - 172	335	500
ASR6	111	33 - 295	338	500
ASR10	70	28 - 190	337	500

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

<b>Station</b>	<b>Average (µg/m³)</b>	<b>Range (µg/m³)</b>	<b>Action Level (µg/m³)</b>	<b>Limit Level (µg/m³)</b>
ASR1	106	83 - 153	213	260
ASR5	109	65 - 142	238	260
AQMS1	70	49 - 93	213	260
ASR6	80	56 - 120	238	260
ASR10	58	39 - 100	214	260

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

A total of 10 1-hour TSP and 24-hour TSP monitoring were undertaken in which two (2) Action Level exceedances of 1-hour TSP were recorded in this reporting month.

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

## 2.2 WATER QUALITY MONITORING

Seawall Enhancement Works at Northern Landfall has been completed on 31 December 2017. Notification of suspension of water quality monitoring has been approved by EPD on 2 March 2018. Water Quality Monitoring will resume after the commencement of Seawall Modification Works at Southern Landfall in April 2018 tentatively.

## 2.3 DOLPHIN MONITORING

### 2.3.1 Monitoring Requirements

Impact 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, the on-going impact line transect dolphin monitoring data collected by HyD's *Contract No. HY/2011/03 Hong Kong-Zhuhai-Macao Bridge. Hong Kong Link Road - Section between Scenic Hill and Hong Kong Boundary Crossing Facilities* on the monthly basis is adopted to avoid duplicates of survey effort.

### 2.3.2 Monitoring Equipment

Table 2.5 summarises the equipment used for the impact dolphin monitoring.

**Table 2.5 Dolphin Monitoring Equipment**

<b>Equipment</b>	<b>Model</b>
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. 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.

### 2.3.4 *Monitoring Location*

The impact dolphin monitoring was carried out in the NEL and NWL along the line transect as depicted in *Figure 2.2*. The co-ordinates of all transect lines are shown in *Table 2.6* below.

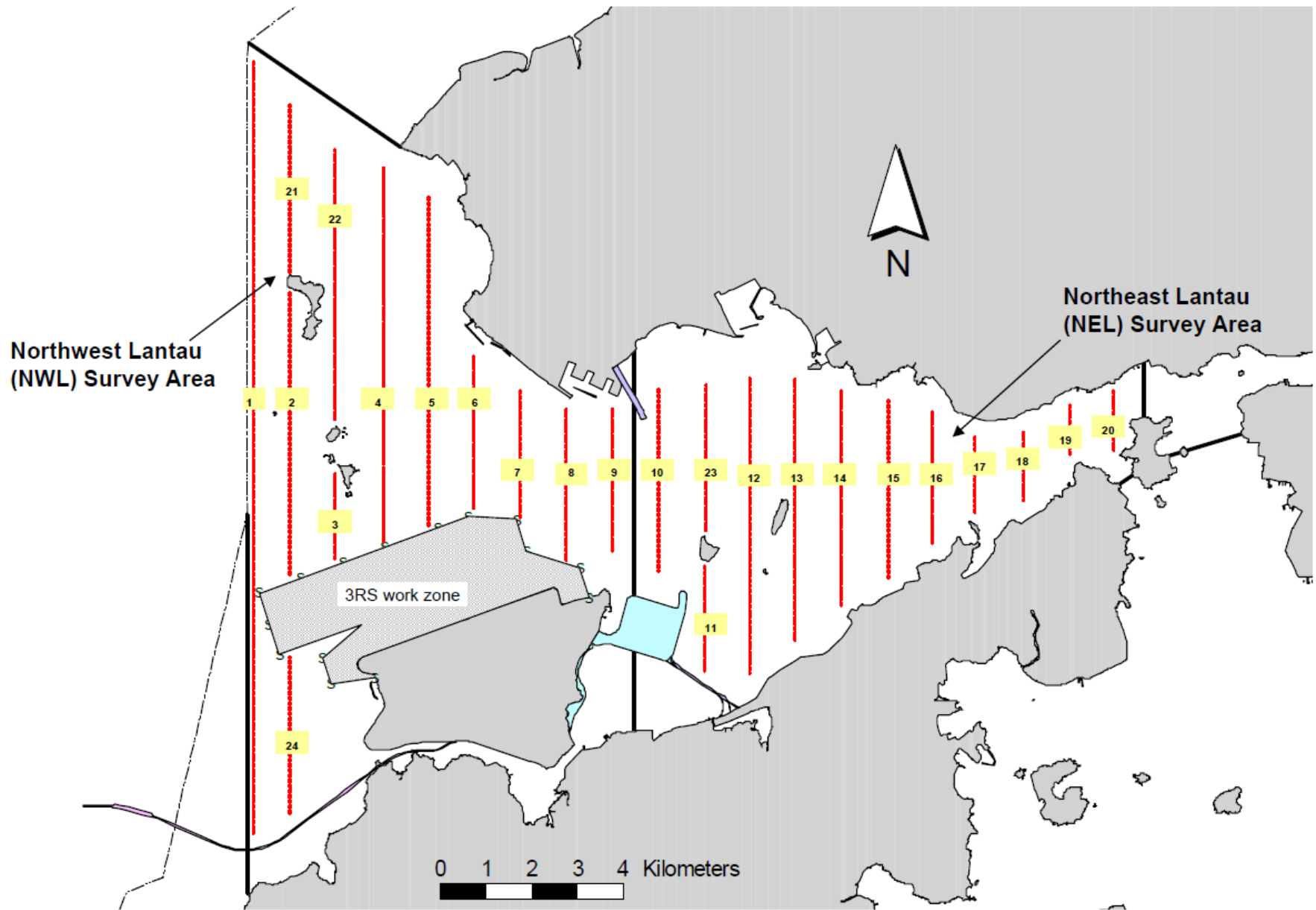


Figure 2.2

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

**Table 2.6 Impact 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 Action & Limit Levels

The Action and Limit levels of impact dolphin monitoring are shown in *Appendix D*. The Event and Action plan is presented in *Appendix J*.

### 2.3.6 *Monitoring Schedule for the Reporting Month*

Dolphin monitoring was carried out on 8, 12, 20 and 23 of March 2018. The dolphin monitoring schedule for the reporting month is shown in *Appendix F*.

### 2.3.7 *Results & Observations*

A total of 263.34 km of survey effort was collected, with 85.3% of the total survey effort being conducted under favourable weather conditions (i.e. Beaufort Sea State 3 or below with good visibility) in March 2018. Among the two areas, 98.00 km and 165.34 km of survey effort were collected from NEL and NWL survey areas, respectively. The total survey effort conducted on primary and secondary lines were 192.21 km and 71.13 km respectively. The survey efforts are summarized in *Appendix I*.

Six groups of 26 Chinese White Dolphins sightings were recorded during the two sets of surveys in March 2018. All dolphin sightings were made in NWL, while none was sighted in NEL. All dolphin sightings were made during on-effort search and all were made on primary lines. None of the dolphin groups were associated with any operating fishing vessel.

No dolphin sighting was made in the proximity of the TM-CLKL alignment. The distribution of dolphin sightings during the reporting month is shown in *Figure 2.3*.

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 March 2018 with the results present in *Tables 2.7* and *2.8*.

**Table 2.7 *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: March 8 <sup>th</sup> / 12 <sup>th</sup>	0.0	0.0
	Set 2: March 20 <sup>th</sup> / 23 <sup>rd</sup>	0.0	0.0
NWL	Set 1: March 8 <sup>th</sup> / 12 <sup>th</sup>	1.7	5.2
	Set 2: March 20 <sup>th</sup> / 23 <sup>rd</sup>	12.3	56.7

Note: Dolphin Encounter Rates are deduced from the Two Sets of Surveys (Two Surveys in Each Set) in March 2018 in Northeast (NEL) and Northwest Lantau (NWL)

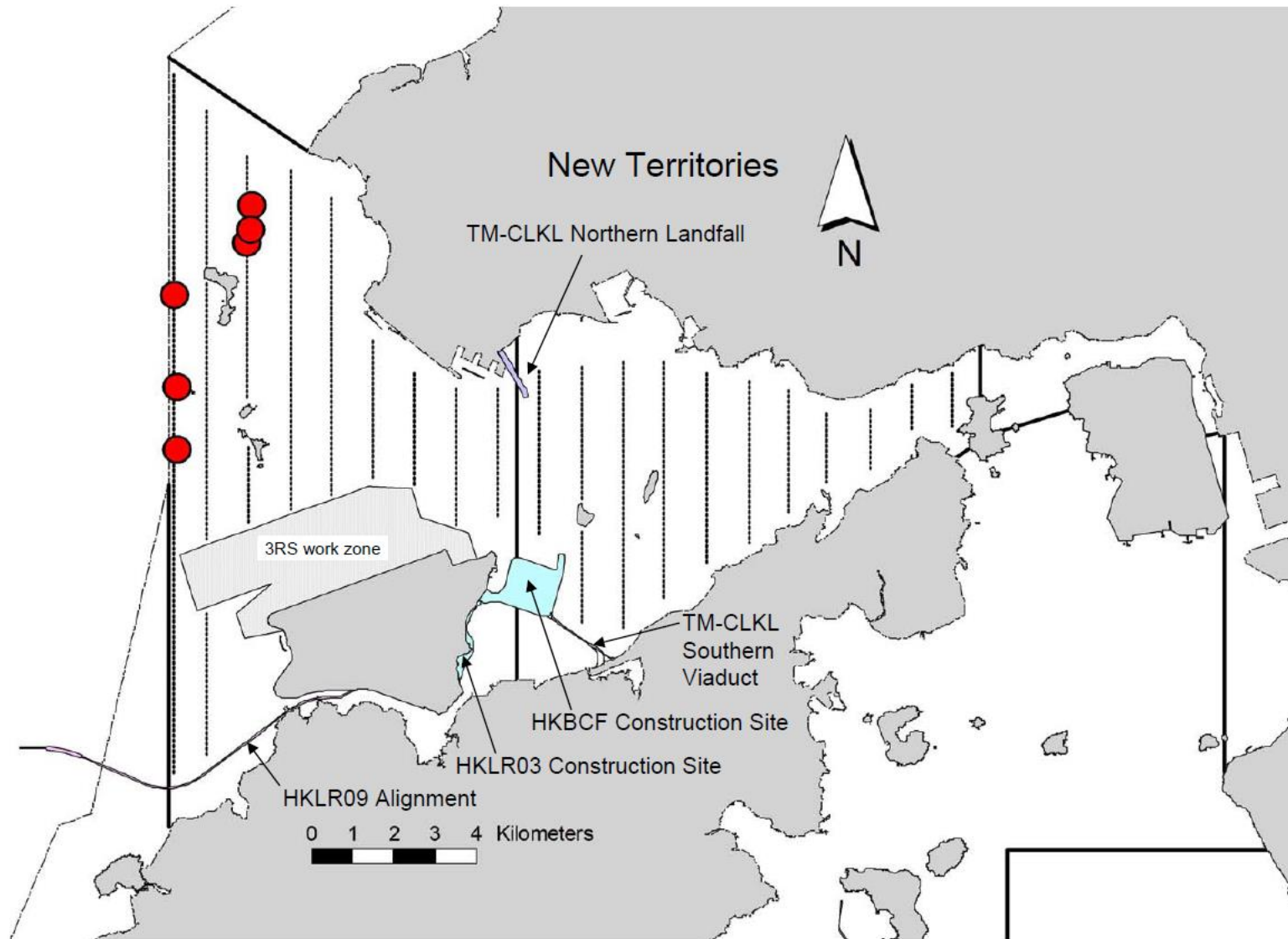


Figure 2.3

HY/2012/08 TM-CLKL Northern Connection Sub-sea Tunnel Section  
 The distribution of dolphin sightings during the reporting period  
 (Source: Adopted from HKLR03 Monitoring Survey in March 2018)

Environmental  
 Resources  
 Management



**Table 2.8 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
<b>Northeast Lantau</b>	0.0	0.0	0.0	0.0
<b>Northwest Lantau</b>	6.1	4.6	26.4	19.8

Note: Overall dolphin encounter rates (sightings per 100 km of survey effort) from all four surveys are conducted in March 2018 on primary lines only as well as both primary lines and secondary lines in Northeast and Northwest Lantau.

Due to monthly variation in dolphin occurrence within the survey area, it would be more appropriate to draw conclusion on whether any unacceptable impacts on dolphins have been detected in relation to the construction activities of this Project in the quarterly EM&A reports, where comparison on distribution, group size and encounter rates of dolphins between the quarterly impact monitoring period and baseline monitoring period will be made.

**2.3.8 Implementation of Marine Mammal Exclusion Zone**

There was no dredging, reclamation or marine sheet piling works in open waters during this reporting period. Thus, Passive Acoustic Monitoring (PAM) and the day-time monitoring of Dolphin Exclusion Zone (DEZ) by dolphin observers were not in effect 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 28 March 2018.

Key observations and recommendations during the site inspections in this reporting period are summarized in *Table 2.9*.

**Table 2.9** *Specific Observations and Recommendations during the Weekly Site Inspection in this Reporting Month*

<b>Inspection Date</b>	<b>Observations</b>	<b>Recommendations/ Remarks</b>
7 March 2018	<p>Works Area – Portion N-C</p> <ul style="list-style-type: none"> <li>Accumulated waste in the waste container should be removed.</li> <li>Drip tray should be provided for the oil drum.</li> <li>Cement bags should be covered with tarpaulin sheeting.</li> </ul> <p>Works Area – Portion S-A</p> <ul style="list-style-type: none"> <li>U-channel should be installed for collection of rainwater.</li> </ul> <p>Reminder from SOR</p> <p>Works Area – Portion S-A</p> <ul style="list-style-type: none"> <li>The tip of excavator should be mounted with noise absorbent.</li> </ul>	<p>Works Area – Portion N-C</p> <ul style="list-style-type: none"> <li>The Contractor was reminded to remove the accumulated waste in the waste container.</li> <li>The Contractor was reminded to provide drip tray for the oil drum.</li> <li>The Contractor was reminded to cover the cement bags with tarpaulin sheeting.</li> </ul> <p>Works Area – Portion S-A</p> <ul style="list-style-type: none"> <li>The Contractor was reminded to install U-channel for collection of rainwater.</li> </ul> <p>Reminder from SOR</p> <p>Works Area – Portion S-A</p> <ul style="list-style-type: none"> <li>The Contractor was reminded to mount the tip of excavator with noise absorbent.</li> </ul>
14 March 2018	<p>Works Area – TBM tunnel</p> <ul style="list-style-type: none"> <li>Drip tray should be provided for the chemical containers.</li> <li>Cement bags should be covered with tarpaulin sheeting.</li> </ul> <p>Works Area –Portion S-B</p> <ul style="list-style-type: none"> <li>Cement bags should be covered with tarpaulin sheeting.</li> <li>Drip tray should be provided for the chemical containers.</li> <li>Drip tray should be provided for the chemical containers.</li> </ul>	<p>Works Area – TBM tunnel</p> <ul style="list-style-type: none"> <li>The Contractor was reminded to provide drip tray for the chemical containers.</li> <li>The Contractor was reminded to cover the cement bags with tarpaulin sheeting.</li> </ul> <p>Works Area –Portion S-B</p> <ul style="list-style-type: none"> <li>The Contractor was reminded to cover the cement bags with tarpaulin sheeting.</li> <li>The Contractor was reminded to provide drip tray for the chemical containers.</li> <li>The Contractor was reminded to provide drip tray for the chemical containers.</li> </ul>

Inspection Date	Observations	Recommendations/ Remarks
21 March 2018	<p>Works Area - Portion N-C</p> <ul style="list-style-type: none"> <li>Drip tray should be provided for the chemical containers.</li> <li>Cement bags should be covered with tarpaulin sheeting.</li> </ul> <p>Works Area - Portion N-A</p> <ul style="list-style-type: none"> <li>Drip tray should be provided for the chemical containers.</li> </ul> <p>Works Area - Portion S-A</p> <ul style="list-style-type: none"> <li>The top and 3 sides of the grout mixer should be enclosed with impervious sheeting.</li> <li>Drip tray should be provided for the oil drums.</li> </ul>	<p>Works Area - Portion N-C</p> <ul style="list-style-type: none"> <li>The Contractor was reminded to provide drip tray for the chemical containers.</li> <li>The Contractor was reminded to cover the cement bags with tarpaulin sheeting.</li> </ul> <p>Works Area - Portion N-A</p> <ul style="list-style-type: none"> <li>The Contractor was reminded to provide drip tray for the chemical containers.</li> </ul> <p>Works Area - Portion S-A</p> <ul style="list-style-type: none"> <li>The Contractor was reminded to enclose the top and 3 sides of the grout mixer with impervious sheeting.</li> <li>The Contractor was reminded to provide drip tray for the oil drums.</li> </ul>
28 March 2018	<p>Works Area - Portion N-C</p> <ul style="list-style-type: none"> <li>Drip tray should be provided for the chemical containers.</li> </ul> <p>Works Area - Portion N-A</p> <ul style="list-style-type: none"> <li>Dusty material should be covered with tarpaulin sheets.</li> <li>Proper NRMM label should be displayed.</li> </ul> <p>Works Area - Portion S-C</p> <ul style="list-style-type: none"> <li>The cement bags should be covered with impervious sheeting.</li> </ul> <p>Works Area - Portion S-B</p> <ul style="list-style-type: none"> <li>Drip tray should be provided for the chemical containers.</li> <li>Drip tray should be provided for the chemical containers.</li> <li>The chemical should be stored properly..</li> </ul>	<p>Works Area - Portion N-C</p> <ul style="list-style-type: none"> <li>The Contractor was reminded to provide drip tray for the chemical containers.</li> </ul> <p>Works Area - Portion N-A</p> <ul style="list-style-type: none"> <li>The Contractor was reminded to cover the dusty material with tarpaulin sheetings.</li> <li>The Contractor was reminded to display proper NRMM label.</li> </ul> <p>Works Area - Portion S-C</p> <ul style="list-style-type: none"> <li>The Contractor was reminded to cover the cement bags with impervious sheeting.</li> </ul> <p>Works Area - Portion S-B</p> <ul style="list-style-type: none"> <li>The Contractor was reminded to provide drip tray for the chemical containers.</li> <li>The Contractor was reminded to provide drip tray for the chemical containers.</li> <li>The Contractor was reminded to store the chemical properly.</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), chemical wastes and marine sediment.

Reference has been made to the waste flow table prepared by the Contractor (*Appendix L*). The quantities of different types of wastes are summarized in *Table 2.10*.

**Table 2.10 Quantities of Different Waste Generated in the Reporting Month**

Month/Year	Inert Construction Waste <sup>(a)</sup> (tonnes)	Inert Construction Waste Re-used (tonnes)	Non-inert Construction Waste <sup>(b)</sup> (tonnes)	Recyclable Materials <sup>(c)</sup> (kg)	Chemical Wastes (kg)	Marine Sediment (m <sup>3</sup> )	
						Category L	Category M (M <sub>p</sub> & M <sub>f</sub> )
March 2018	66,457	62,247	459	229,360	2,000	0	6,195

**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 2.11* below.

**Table 2.11 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	363510	19 August 2013	Throughout the Contract	DBJV	Northern Landfall
Construction Dust Notification	403620	10 June 2016	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	WT00017707-2013	18 November 2013	30 November 2018	DBJV	For site WA18
Waste Water Discharge License	WT00019248-2014	5 June 2014	30 June 2019	DBJV	For site Portion N6 and Reclamation Area E
Waste Water Discharge License	WT00025944-2016	15 December 2016	31 December 2021	DBJV	Southern Landfall
Marine Dumping Permit	EP/MD/18-125	21 February 2018	20 March 2018	DBJV	Type 1 (Dedicated site) and Type 2 (Confined Marine Disposal)
Marine Dumping Permit	EP/MD/18-133	22 March 2018	21 April 2018	DBJV	Type 1 (Dedicated site) and Type 2 (Confined Marine Disposal)
Construction Noise Permit	GW-RW0538-17	16 October 2017	15 April 2018	DBJV	For Urmston Road in front of Pillar Point
Construction Noise Permit	GW-RW0641-17	16 December 2017	6 December 2018	DBJV	WA23 @ Tsing Yi
Construction Noise Permit	PP-RS0026-17	1 December 2017	29 March 2018	DBJV	Southern Landfall (Percussive Piling)
Construction Noise Permit	GW-RS0878-17	11 October 2017	2 April 2018	DBJV	Southern Landfall
Construction Noise Permit	GW-RW0060-18	20 February 2018	19 August 2018	DBJV	WA23 @ Tsing Yi
Construction Noise Permit	GW-RS0027-18	22 January 2018	14 July 2018	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***

One (1) Action Level exceedance of 1-hour TSP was recorded on 2 March 2018. One (1) Action Level exceedance of 1-hour TSP was recorded on 20 March 2018. Investigation reports are provided in *Appendix K*.

Cumulative statistics are provided in *Appendix K*.

## 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 K*.

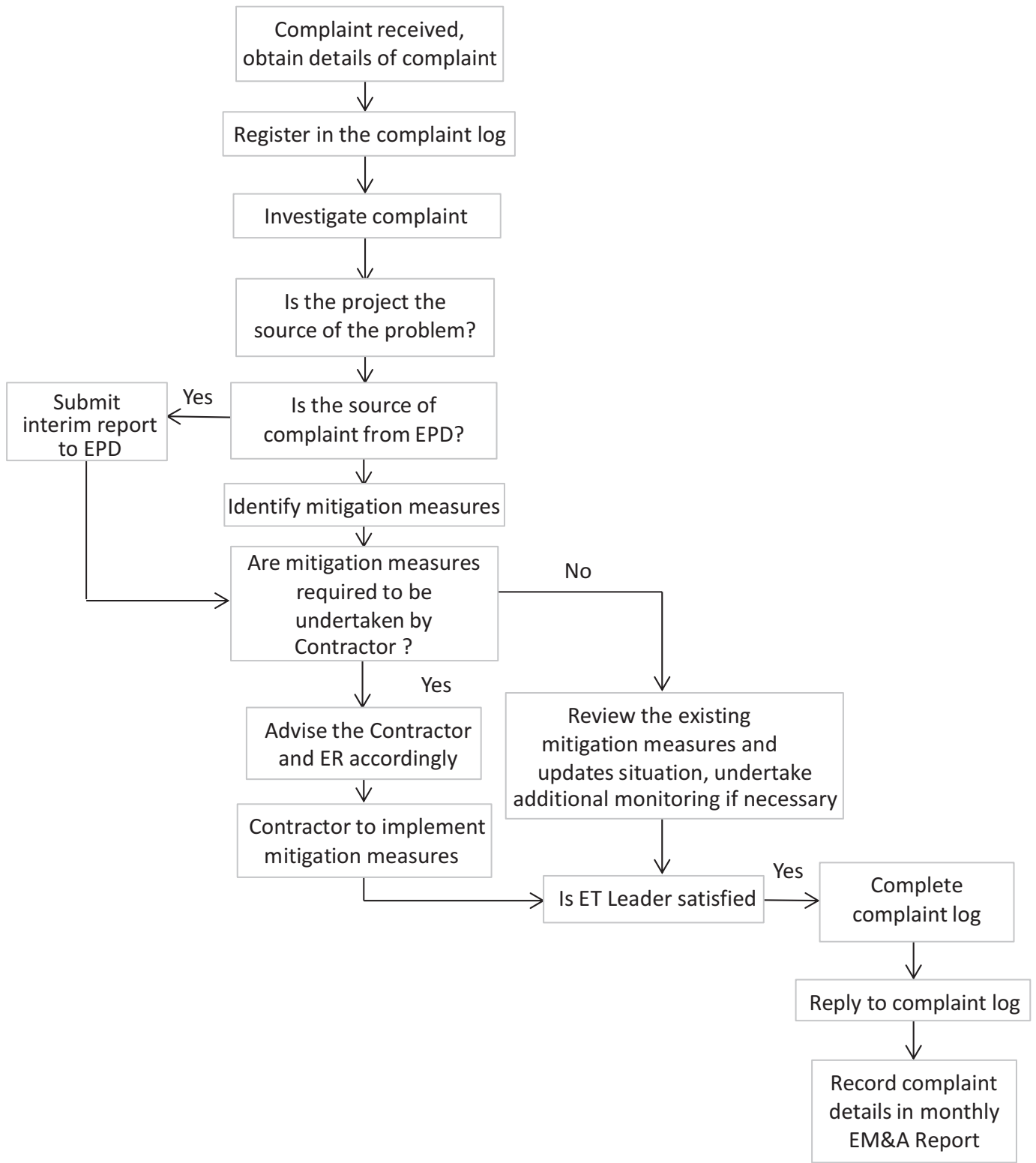


Figure 2.4

Environmental Complaint Handling Procedure

### 3 FUTURE KEY ISSUES

#### 3.1 CONSTRUCTION ACTIVITIES FOR THE COMING MONTH

As informed by the Contractor, the major works for the Project in April 2018 are summarized in *Table 3.1*.

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

---

<b>Works to be undertaken</b>
<i>Land-based Works</i>
<ul style="list-style-type: none"><li>• Box Culvert Extension at Works Area – Portion N-A;</li><li>• Construction of North Ventilation Building – Portion N-C;</li><li>• Construction of Cross Passage Tympanum – TBM tunnel;</li><li>• Cross Passage Lining Installation – TBM Tunnel;</li><li>• Excavation of Sub-sea Tunnel – TBM tunnel;</li><li>• Corbel Construction – TBM Tunnel;</li><li>• Bulk Excavation – Portion S-A;</li><li>• TBM Excavation – Portion S-A;</li><li>• CSM treatment, Jet Grouting works and D-wall Construction; and</li><li>• Ground Freezing Works – Portion S-A</li></ul>
<i>Marine-based Works</i>
<ul style="list-style-type: none"><li>• Seawall Modificaton Works – Portion S-A</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 April 2018 are mainly associated with dust, marine ecology, water quality and waste management issues.

#### 3.3 MONITORING SCHEDULE FOR THE COMING MONTH

The tentative schedule for environmental monitoring in April 2018 is provided in *Appendix F*.

**4.1 CONCLUSIONS**

This Fifty-third Monthly EM&A Report presents the findings of the EM&A activities undertaken during the period from 1 to 31 March 2018, 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) and dolphin monitoring were carried out in this reporting month.

One (1) Action Level exceedance of 1-hour TSP was recorded on 2 March 2018. One (1) Action Level exceedance of 1-hour TSP was recorded on 20 March 2018. Investigation reports are provided in Appendix K.

Six groups of 26 Chinese White Dolphins sightings were recorded during the two sets of surveys in March 2018. All dolphin sightings were made in NWL, while none was sighted in NEL. All dolphin sightings were made during on-effort search and all were made on primary lines. None of the dolphin groups were associated with any operating fishing vessel.

Environmental site inspection was carried out four (4) times in March 2018. 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	
<b>Air Quality</b>									
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	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		✓
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		✓

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	-	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		✓
6.1	-	Use of cage type silt curtains round allgrab dredgers during the HKBCF, HKLR and TM-CLKL southern reclamation works.	All areas dredging works	Contractor	TM-EIAO		Y		✓
	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		✓
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		✓
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		✓
6.1	Annex A  Figure 6.2b Appendix D6b	For other parts of the reclamation works construction of seawalls to be advanced by at least 200m before the main reclamation dredging and filling can commence. It should be noted that the protection by advanced seawall is a dynamic process depending on the progress of the construction activities and the stage when such protection could be realised is illustrated in Figure 6.2b and detailed in Appendices D6b. The part of the works where such measures can be undertaken for the majority of the time includes the following locations:  - TM-CLKL northern reclamation;  - Reclamation filling for Portion D of HKBCF; Reclamation filling for FSD berth of HKBCF; and	TM-CLKL northern landfall, Portion D of HKBCF and HKLR	Contractor	TM-EIAO		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

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						D	C	O	
		- Reclamation dredging and filling for Portion 1 of HKLR;							
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		✓
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		✓
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		✓
<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		✓
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		✓
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		Y		✓

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						D	C	O	
					Guidelines. DASO permit conditions.				
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		✓
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		✓
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		✓
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		Y		✓

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						D	C	O	
					conditions.				
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		✓
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		✓
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		✓
<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		✓

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						D	C	O	
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		✓
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		✓

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						D	C	O	
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	✓
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		✓
<b>Water Quality Monitoring</b>									
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	✓
<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	✓
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		✓

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						D	C	O	
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

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						D	C	O	
10.9	7.6	Aesthetic design of the viaduct, retaining wall and other structures will be developed under ACABAS submission (DM5)	All areas/detailed design	Design Consultant	TMEIA	Y			N/A
10.9	7.6	Screening of construction works by hoardings around works area in visually unobtrusive colours, to screen works (CM5)	All areas/detailed design/ during construction/post construction	Design Consultant/ Contractor	TMEIA	Y	Y		✓
10.9	7.6	Control night-time lighting and glare by hooding all lights (CM6)	All areas/detailed design/ during construction	Design Consultant/ Contractor	TMEIA	Y	Y		N/A
10.9	7.6	Ensure no run-off into water body adjacent to the Project Area (CM7)	All areas/detailed design/ during construction	Design Consultant/ Contractor	TMEIA	Y	Y		✓
10.9	7.6	Avoidance of excessive height and bulk of buildings and structures (CM8)	All areas/detailed design/ during construction	Design Consultant/ Contractor	TMEIA	Y	Y		✓
10.9	7.6	Aesthetically pleasing design (visually unobtrusive and non-reflective) as regard to the form, material and finishes shall be incorporated to all buildings, engineering structures and associated infrastructure facilities (OM5)	All areas/detailed design/ during construction / during operation	Design Consultant/ Contractor	TMEIA	Y	Y	Y	N/A
10.9	7.6	Avoidance of excessive height and bulk of buildings and structures (OM6)	All areas/detailed design/ during construction / during operation	Design Consultant/ Contractor	TMEIA	Y	Y	Y	N/A
<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		Y		✓

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						D	C	O	
					Provisions) Ordinance (Cap 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		✓

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						D	C	O	
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		✓
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:  if 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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						D	C	O	
		<p>f Having a capacity of &lt;450L unless the specifications have been approved by the EPD; and</p> <p>w Chinese according to the instructions prescribed in Schedule 2 of the Regulations.</p> <p>f Clearly labelled and used solely for the storage of chemical wastes;</p> <p>f Enclosed with at least 3 sides;</p> <p>f Impermeable floor and bund with capacity to accommodate 110% of the volume of the largest container or 20% by volume of the chemical waste stored in the area, whichever is greatest;</p> <p>f Adequate ventilation;</p> <p>f Sufficiently covered to prevent rainfall entering (water collected within the bund must be tested and disposed of as chemical waste, if necessary); and</p> <p>f Incompatible materials are adequately separated.</p>							
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

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						D	C	O	
12.6	8.1	General refuse arising on-site should be stored in enclosed bins or compaction units separately from C&D and chemical wastes. Sufficient dustbins shall be provided for storage of waste as required under the Public Cleansing and Prevention of Nuisances By-laws. In addition, general refuse shall be cleared daily and shall be disposed of to the nearest licensed landfill or refuse transfer station. Burning of refuse on construction sites is prohibited.	All areas / throughout construction period	Contractor	TMEIA		Y		<>
12.6	8.1	All waste containers shall be in a secure area on hardstanding;	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	Training shall be provided to workers about the concepts of site cleanliness and appropriate waste management procedure, including waste reduction, reuse and recycling.	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	Office wastes can be reduced by recycling of paper if such volume is sufficiently large to warrant collection. Participation in a local collection scheme by the Contractor should be advocated. Waste separation facilities for paper, aluminium cans, plastic bottles, etc should be provided on-site.	Site Offices/ throughout construction period	Contractor	TMEIA		Y		✓
12.6	Section 8	EM&A of waste handling, storage, transportation, disposal procedures and documentation through the site audit programme shall be undertaken.	All areas / throughout construction period	Contractor	EM&A Manual		Y		✓
<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*

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

**Table D2** *Action and Limit Levels for Impact Dolphin Monitoring*

	<b>North Lantau Social Cluster</b>	
	<b>NEL</b>	<b>NWL</b>
Action Level	STG < 70% of baseline & ANI < 70% of baseline	STG < 70% of baseline & ANI < 70% of baseline
Limit Level	[STG < 40% of baseline & ANI < 40% of baseline] and STG < 40% of baseline & ANI < 40% of baseline	

**Notes:**

1. STG means quarterly encounter rate of number of dolphin sightings, which is **6.00 in NEL** and **9.85 in NWL** during the baseline monitoring period
2. ANI means quarterly encounter rate of total number of dolphins, which is **22.19 in NEL** and **44.66 in NWL** during the baseline monitoring period
3. For North Lantau Social Cluster, AL will be trigger if NEL or NWL fall below the criteria; LL will be triggered if both NEL and NWL fall below the criteria.

**Table D3** *Derived Value of Action Level (AL) and Limit Level (LL)*

	<b>North Lantau Social Cluster</b>	
	<b>NEL</b>	<b>NWL</b>
Action Level	STG < 4.2 & ANI < 15.5	STG < 6.9 & ANI < 31.3
Limit Level	NEL = [STG < 2.4 & ANI < 8.9] and NWL = [STG < 3.9 & ANI < 17.9]	

Appendix E

Copies of Calibration  
Certificates for Air  
Quality Monitoring

High-Volume TSP Sampler  
5-Point Calibration Record

Location : ASR 5  
 Calibrated by : P.F. Yeung  
 Date : 09/02/2018

Sampler

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

Calibration Orifice and Standard Calibration Relationship

Serial Number : 2454  
 Service Date : 20 March 2017  
 Slope (m) : 2.08464  
 Intercept (b) : -0.036840  
 Correlation Coefficient(r) : 0.99994

Standard Condition

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

Calibration Condition

Pa (hpa) : 1017  
 Ta(K) : 289

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	12.5	3.597	1.743	52	52.91
2	13 holes	9.5	3.136	1.522	47	47.82
3	10 holes	7.0	2.692	1.309	40	40.70
4	7 holes	4.8	2.229	1.087	35	35.61
5	5 holes	2.3	1.543	0.758	28	28.49

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): 25.228                      Intercept(b): 8.717                      Correlation Coefficient(r): 0.9969

Checked by: Magnum Fan

Date: 13/02/2018



High-Volume TSP Sampler  
5-Point Calibration Record

Location : ASR10  
Calibrated by : P.F. Yeung  
Date : 09/02/2018

Sampler

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

Calibration Orifice and Standard Calibration Relationship

Serial Number : 2454  
Service Date : 20 March 2017  
Slope (m) : 2.08464  
Intercept (b) : -0.036840  
Correlation Coefficient(r) : 0.99994

Standard Condition

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

Calibration Condition

Pa (hpa) : 1017  
Ta(K) : 289

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	10.7	3.328	1.614	52	52.91
2	13 holes	8.6	2.984	1.449	48	48.84
3	10 holes	6.8	2.653	1.290	43	43.75
4	7 holes	4.8	2.229	1.087	35	35.61
5	5 holes	3.2	1.820	0.891	28	28.49

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

Sampler Calibration Relationship (Linear Regression)

Slope(m): 34.451                                  Intercept(b): -1.705                          Correlation Coefficient(r): 0.9966

Checked by: Magnum Fan

Date: 13/02/2018

High-Volume TSP Sampler  
5-Point Calibration Record

Location : AQMS1  
 Calibrated by : P.F. Yeung  
 Date : 09/02/2018

Sampler

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

Calibration Orifice and Standard Calibration Relationship

Serial Number : 2454  
 Service Date : 20 March 2017  
 Slope (m) : 2.08464  
 Intercept (b) : -0.036840  
 Correlation Coefficient(r) : 0.99994

Standard Condition

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

Calibration Condition

Pa (hpa) : 1017  
 Ta(K) : 289

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	13.8	3.780	1.831	50	50.87
2	13 holes	10.8	3.344	1.622	45	45.79
3	10 holes	8.2	2.914	1.415	40	40.70
4	7 holes	5.6	2.408	1.173	33	33.58
5	5 holes	3.8	1.983	0.969	26	26.45

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): 28.118                      Intercept(b): 0.059                      Correlation Coefficient(r): 0.9971

Checked by: Magnum Fan

Date: 13/02/2018

High-Volume TSP Sampler  
5-Point Calibration Record

Location : ASR 1  
 Calibrated by : P.F. Yeung  
 Date : 09/02/2018

Sampler

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

Calibration Orifice and Standard Calibration Relationship

Serial Number : 2454  
 Service Date : 20 March 2017  
 Slope (m) : 2.08464  
 Intercept (b) : -0.036840  
 Correlation Coefficient(r) : 0.99994

Standard Condition

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

Calibration Condition

Pa (hpa) : 1017  
 Ta(K) : 289

Resistance Plate	dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1   18 holes	11.3	3.420	1.658	54	54.94
2   13 holes	9.3	3.103	1.506	50	50.87
3   10 holes	7.2	2.730	1.327	45	45.79
4   7 holes	4.7	2.206	1.076	40	40.70
5   5 holes	3.0	1.762	0.863	33	33.58

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): 26.132                      Intercept(b): 11.566                      Correlation Coefficient(r): 0.9973

Checked by: Magnum Fan

Date: 13/02/2018

High-Volume TSP Sampler  
5-Point Calibration Record

Location : ASR 6  
 Calibrated by : P.F. Yeung  
 Date : 09/02/2018

Sampler

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

Calibration Orifice and Standard Calibration Relationship

Serial Number : 2454  
 Service Date : 20 March 2017  
 Slope (m) : 2.08464  
 Intercept (b) : -0.036840  
 Correlation Coefficient(r) : 0.99994

Standard Condition

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

Calibration Condition

Pa (hpa) : 1017  
 Ta(K) : 289

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	13.5	3.738	1.811	57	57.99
2	13 holes	11.2	3.405	1.651	50	50.87
3	10 holes	8.2	2.914	1.415	45	45.79
4	7 holes	5.6	2.408	1.173	37	37.65
5	5 holes	3.6	1.930	0.944	30	30.52

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

Sampler Calibration Relationship (Linear Regression)

Slope(m): 30.692                      Intercept(b): 1.634                      Correlation Coefficient(r): 0.9966

Checked by: Magnum Fan

Date: 13/02/2018

**ENVIROTECH SERVICES CO.**

**Calibration Report of Wind Meter**

Date of Calibration : 18 October 2017

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)
0.7	0.8
1.2	1.4
2.5	2.8

Wind Direction Test

Davis (o)	Marine Compass (o)
272	270
1	0
91	90
181	180

Calibrated by:   
Yeung Ping Fai  
(Technical Officer)

Checked by :   
Ho Kam Fat  
(Senior Technical Officer)



輝創工程有限公司

Sun Creation Engineering Limited

Calibration and Testing Laboratory

# Certificate of Calibration 校正證書

Certificate No. : C175727  
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC17-2277)      Date of Receipt / 收件日期 : 3 October 2017

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

## TEST CONDITIONS / 測試條件

Temperature / 溫度 : (23 ± 2)°C      Relative Humidity / 相對濕度 : (55 ± 20)%  
Line Voltage / 電壓 : ---

## TEST SPECIFICATIONS / 測試規範


Calibration check

DATE OF TEST / 測試日期 : 13 October 2017

## 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 H C Chan  
Engineer

Certified By :   
核證 K C Lee  
Engineer

Date of Issue : 16 October 2017  
簽發日期

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.  
本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗室書面批准。

# Certificate of Calibration

## 校正證書

Certificate No. : C175727

證書編號

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

<u>Equipment ID</u>	<u>Description</u>	<u>Certificate No.</u>
CL386	Multi-function Measuring Instrument	S16493

- Test procedure : MA130N.

- Results :

### Air Velocity

Applied Value (m/s)	UUT Reading (m/s)	Measured Correction		
		Value (m/s)	Measurement Uncertainty	
			Expanded Uncertainty (m/s)	Coverage Factor
1.9	1.7	+0.2	0.2	2.0
4.0	3.8	+0.2	0.2	2.0
6.0	5.9	+0.1	0.3	2.0
8.0	8.0	0.0	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 are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

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

Sun Creation Engineering Limited Calibration & Testing Laboratory

c/o 4F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong

輝創工程有限公司 校正及檢測實驗室

c/o 香港新界屯門興安里一號青山灣機樓四樓

Tel 電話: 2927 2606

Fax 傳真: 2744 8986

E-mail 電郵: callab@suncreation.com

Website 網址: www.suncreation.com

Appendix F

## EM&A Monitoring Schedules



**HY/2012/08 - Tuen Mun - Chek Lap Kok Link  
Northern Connection Sub-sea Tunnel Section  
Air Quality Impact Monitoring Schedule - March 2018**

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

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1-Mar	2-Mar	3-Mar
					1-hour TSP - 3 times 24-hour TSP - 1 time  Impact AQM	
4-Mar	5-Mar	6-Mar	7-Mar	8-Mar	9-Mar	10-Mar
	1-hour TSP - 3 times 24-hour TSP - 1 time  Impact AQM			1-hour TSP - 3 times 24-hour TSP - 1 time  Impact AQM		
11-Mar	12-Mar	13-Mar	14-Mar	15-Mar	16-Mar	17-Mar
1-hour TSP - 3 times 24-hour TSP - 1 time  Impact AQM			1-hour TSP - 3 times 24-hour TSP - 1 time  Impact AQM			1-hour TSP - 3 times 24-hour TSP - 1 time  Impact AQM
18-Mar	19-Mar	20-Mar	21-Mar	22-Mar	23-Mar	24-Mar
		1-hour TSP - 3 times 24-hour TSP - 1 time  Impact AQM			1-hour TSP - 3 times 24-hour TSP - 1 time  Impact AQM	
25-Mar	26-Mar	27-Mar	28-Mar	29-Mar	30-Mar	31-Mar
	1-hour TSP - 3 times 24-hour TSP - 1 time  Impact AQM			1-hour TSP - 3 times 24-hour TSP - 1 time  Impact AQM		

**HY/2012/08 - Tuen Mun - Chek Lap Kok Link  
Northern Connection Sub-sea Tunnel Section  
Tentative Air Quality Impact Monitoring Schedule - April 2018**

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

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1-Apr	Public Holiday 2-Apr	3-Apr	4-Apr	Public Holiday 5-Apr	6-Apr	7-Apr
1-hour TSP - 3 times 24-hour TSP - 1 time  Impact AQM			1-hour TSP - 3 times 24-hour TSP - 1 time  Impact AQM			1-hour TSP - 3 times 24-hour TSP - 1 time  Impact AQM
8-Apr	9-Apr	10-Apr	11-Apr	12-Apr	13-Apr	14-Apr
		1-hour TSP - 3 times 24-hour TSP - 1 time  Impact AQM			1-hour TSP - 3 times 24-hour TSP - 1 time  Impact AQM	
15-Apr	16-Apr	17-Apr	18-Apr	19-Apr	20-Apr	21-Apr
	1-hour TSP - 3 times 24-hour TSP - 1 time  Impact AQM			1-hour TSP - 3 times 24-hour TSP - 1 time  Impact AQM		
22-Apr	23-Apr	24-Apr	25-Apr	26-Apr	27-Apr	28-Apr
1-hour TSP - 3 times 24-hour TSP - 1 time  Impact AQM			1-hour TSP - 3 times 24-hour TSP - 1 time  Impact AQM			1-hour TSP - 3 times 24-hour TSP - 1 time  Impact AQM
29-Apr	30-Apr					

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

**HY/2012/08 - Tuen Mun - Chek Lap Kok Link  
Northern Connection Sub-sea Tunnel Section  
Impact Dolphin Monitoring Survey Monitoring Schedule - March 2018**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1-Mar	2-Mar	3-Mar
4-Mar	5-Mar	6-Mar	7-Mar	8-Mar	9-Mar	10-Mar
				<b>Impact Dolphin Monitoring</b>		
11-Mar	12-Mar	13-Mar	14-Mar	15-Mar	16-Mar	17-Mar
	<b>Impact Dolphin Monitoring</b>					
18-Mar	19-Mar	20-Mar	21-Mar	22-Mar	23-Mar	24-Mar
		<b>Impact Dolphin Monitoring</b>			<b>Impact Dolphin Monitoring</b>	
25-Mar	26-Mar	27-Mar	28-Mar	29-Mar	Public Holiday 30-Mar	Public Holiday 31-Mar

**HY/2012/08 - Tuen Mun - Chek Lap Kok Link  
Northern Connection Sub-sea Tunnel Section  
Tentative Impact Dolphin Monitoring Survey Monitoring Schedule - April 2018**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1-Apr	Public Holiday 2-Apr	3-Apr	4-Apr	Public Holiday 5-Apr	6-Apr	7-Apr
8-Apr	9-Apr	10-Apr	11-Apr	12-Apr	13-Apr	14-Apr
15-Apr	16-Apr	17-Apr	18-Apr	19-Apr	20-Apr	21-Apr
22-Apr	23-Apr	24-Apr	25-Apr	26-Apr	27-Apr	28-Apr
29-Apr	30-Apr					

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.

Appendix G

## Impact Air Quality Monitoring Results

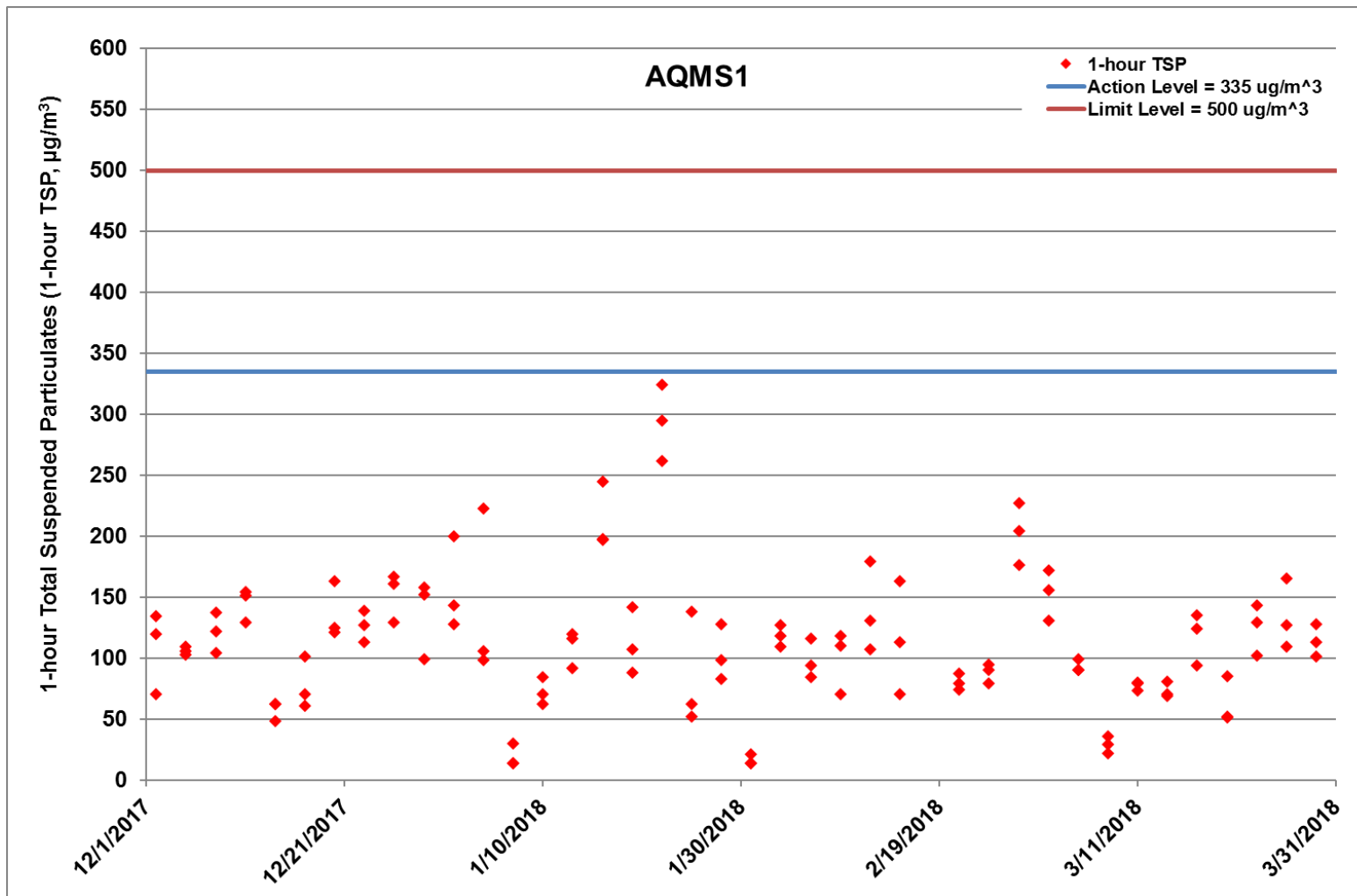
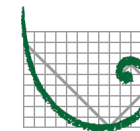


Figure G.1 Impact Monitoring – 1-hour Total Suspended Particulates ( $\mu\text{g}/\text{m}^3$ ) at AQMS1 between 1 December 2017 and 31 March 2018 during impact monitoring period. The weather conditions during the monitoring period varied from sunny to cloudy. Major land-based construction activities included: Box Culvert Extension, Construction of North Ventilation Building (1/12/2017 – 31/3/2018)

Ref: 0212330\_Impact AQM graphs\_March 2018\_REV a.xlsx



ERM

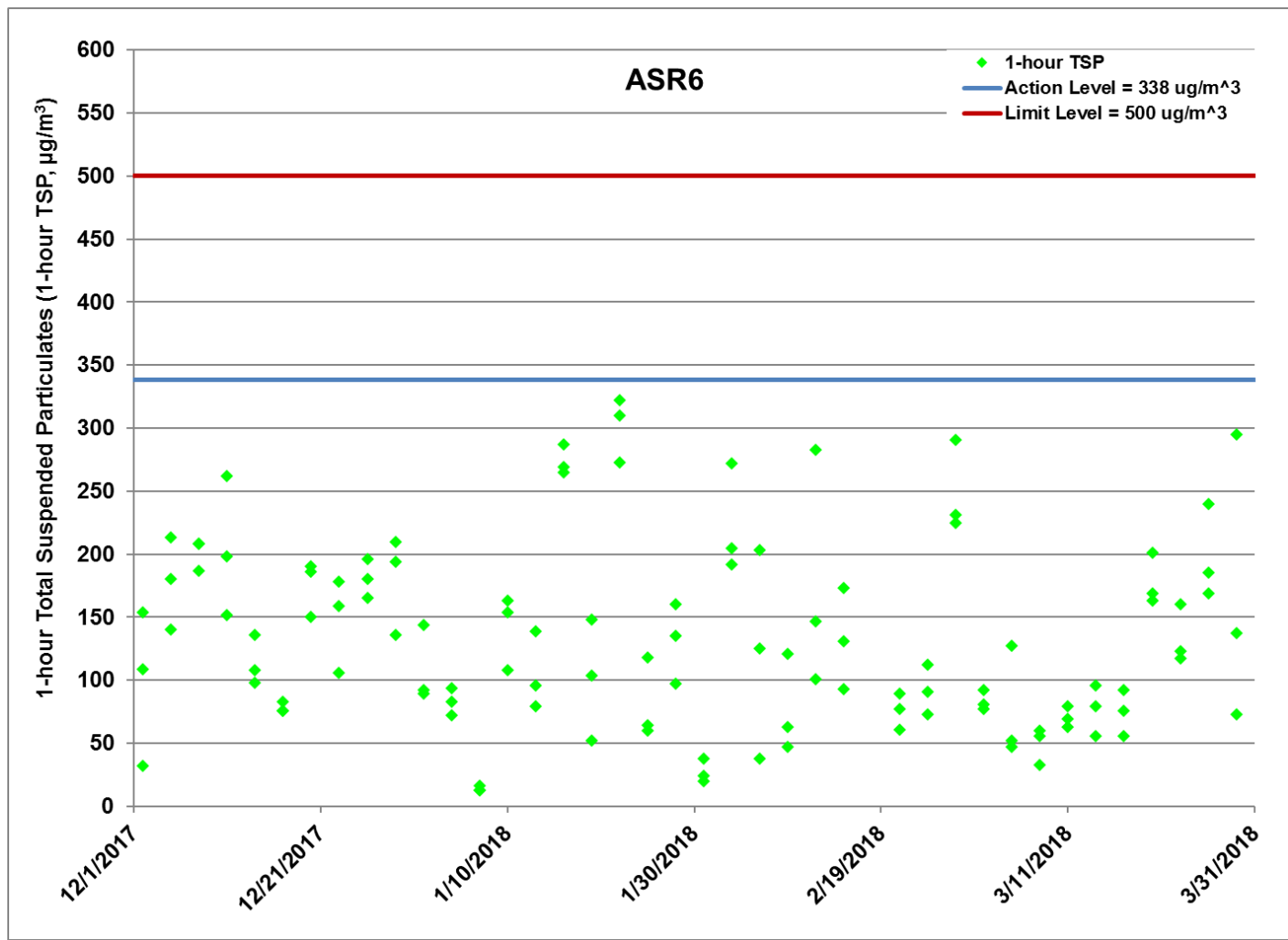


Figure G.2 Impact Monitoring - 1-hour Total Suspended Particulates ( $\mu\text{g}/\text{m}^3$ ) at ASR6 between 1 December 2017 and 31 March 2018 during impact monitoring period. The weather conditions during the monitoring period varied from sunny to cloudy. Major land-based construction activities included: Box Culvert Extension, Construction of North Ventilation Building (1/12/2017 - 31/3/2018)

Ref: 0212330\_Impact AQM graphs\_March 2018\_REV a.xlsx



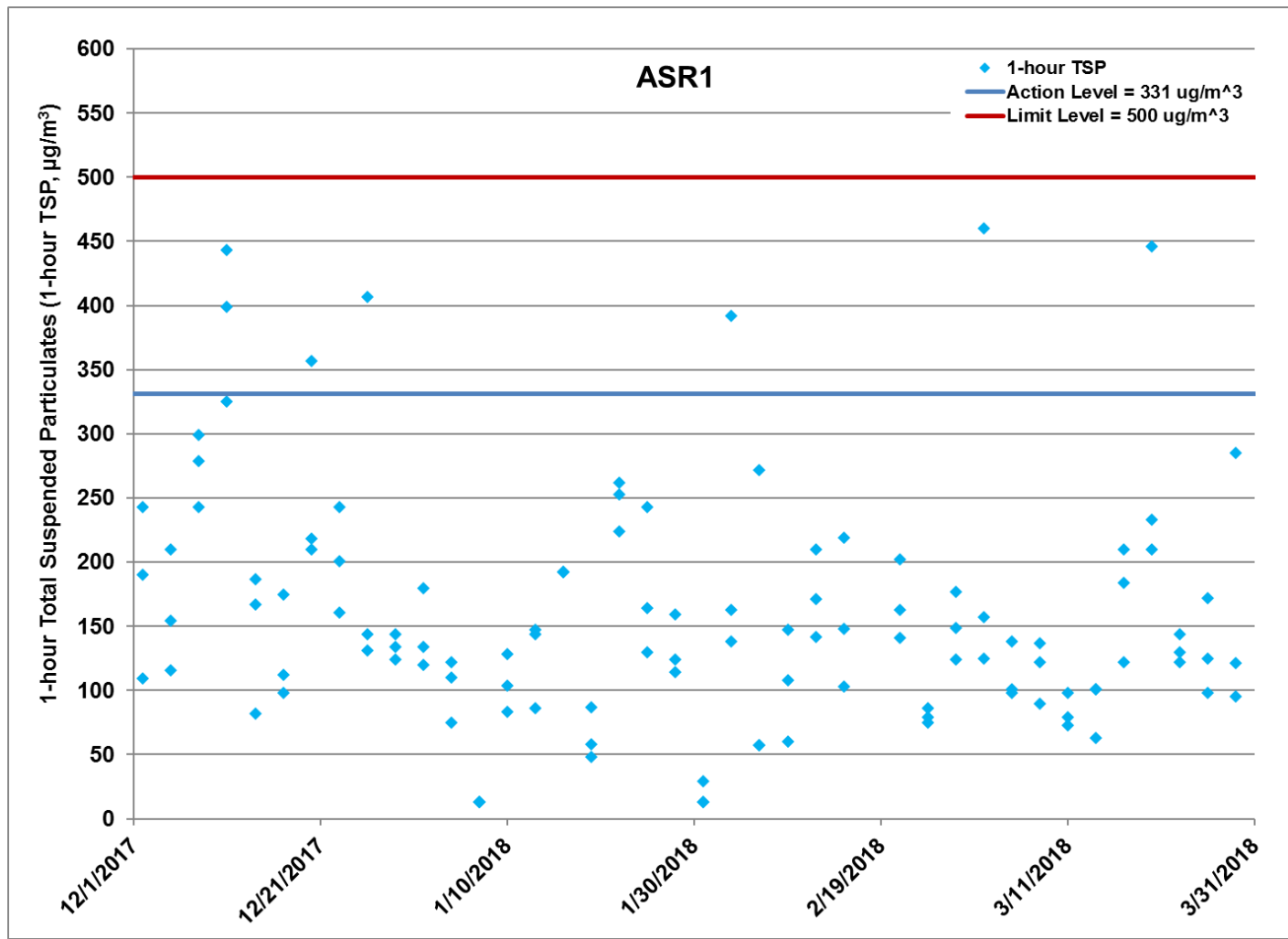


Figure G.3 Impact Monitoring - 1-hour Total Suspended Particulates ( $\mu\text{g}/\text{m}^3$ ) at ASR1 between 1 December 2017 and 31 March 2018 during impact monitoring period. The weather conditions during the monitoring period varied from sunny to cloudy. Major land-based construction activities included: Box Culvert Extension, Construction of North Ventilation Building (1/12/2017 - 31/3/2018)

Ref: 0212330\_Impact AQM graphs\_March 2018\_REV a.xlsx





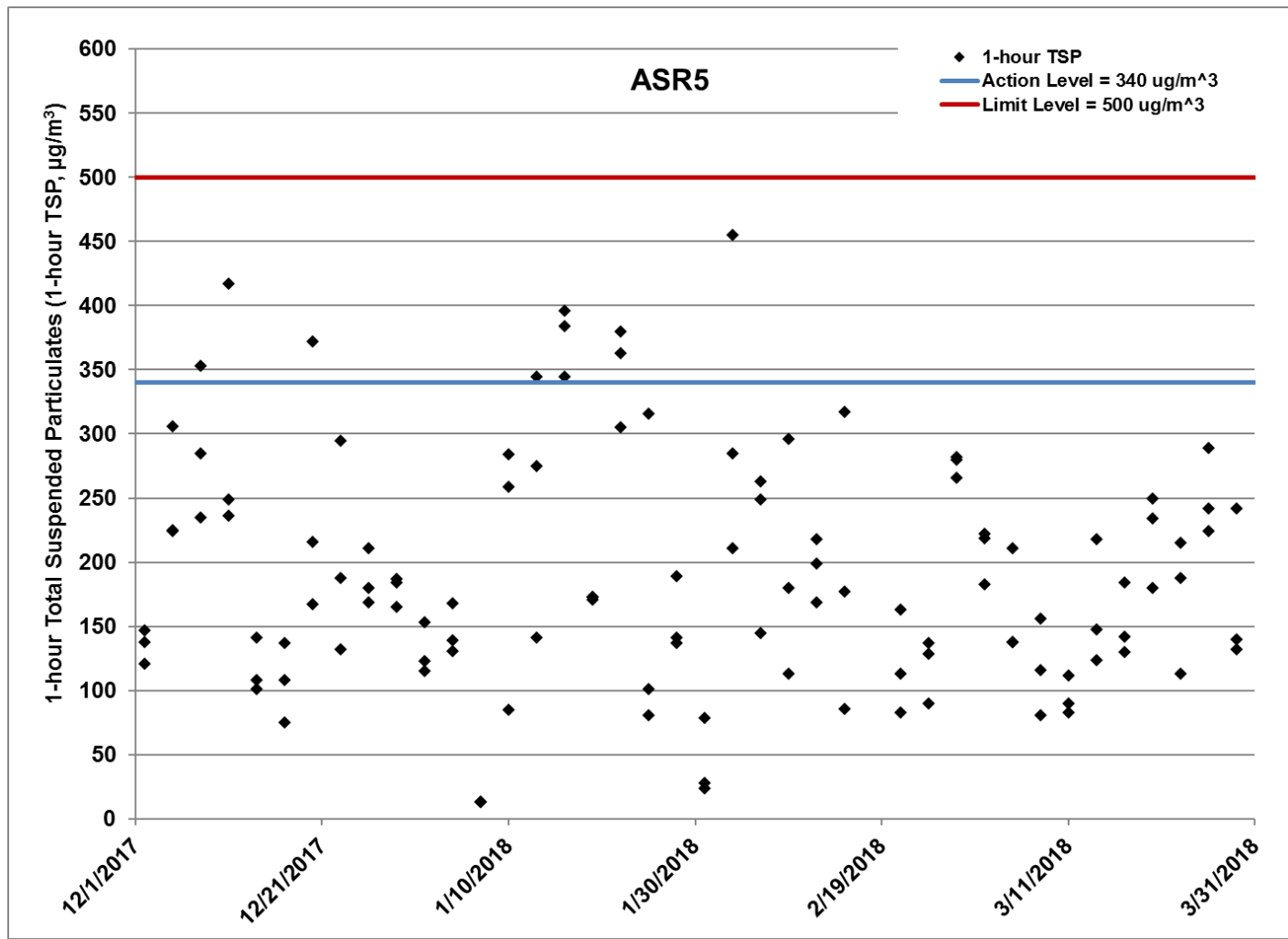


Figure G.4 Impact Monitoring - 1-hour Total Suspended Particulates ( $\mu\text{g}/\text{m}^3$ ) at ASR5 between 1 December 2017 and 31 March 2018 during impact monitoring period. The weather conditions during the monitoring period varied from sunny to cloudy. Major land-based construction activities included: Box Culvert Extension, Construction of North Ventilation Building (1/12/2017 - 31/3/2018)

Ref: 0212330\_Impact AQM graphs\_March 2018\_REV a.xlsx



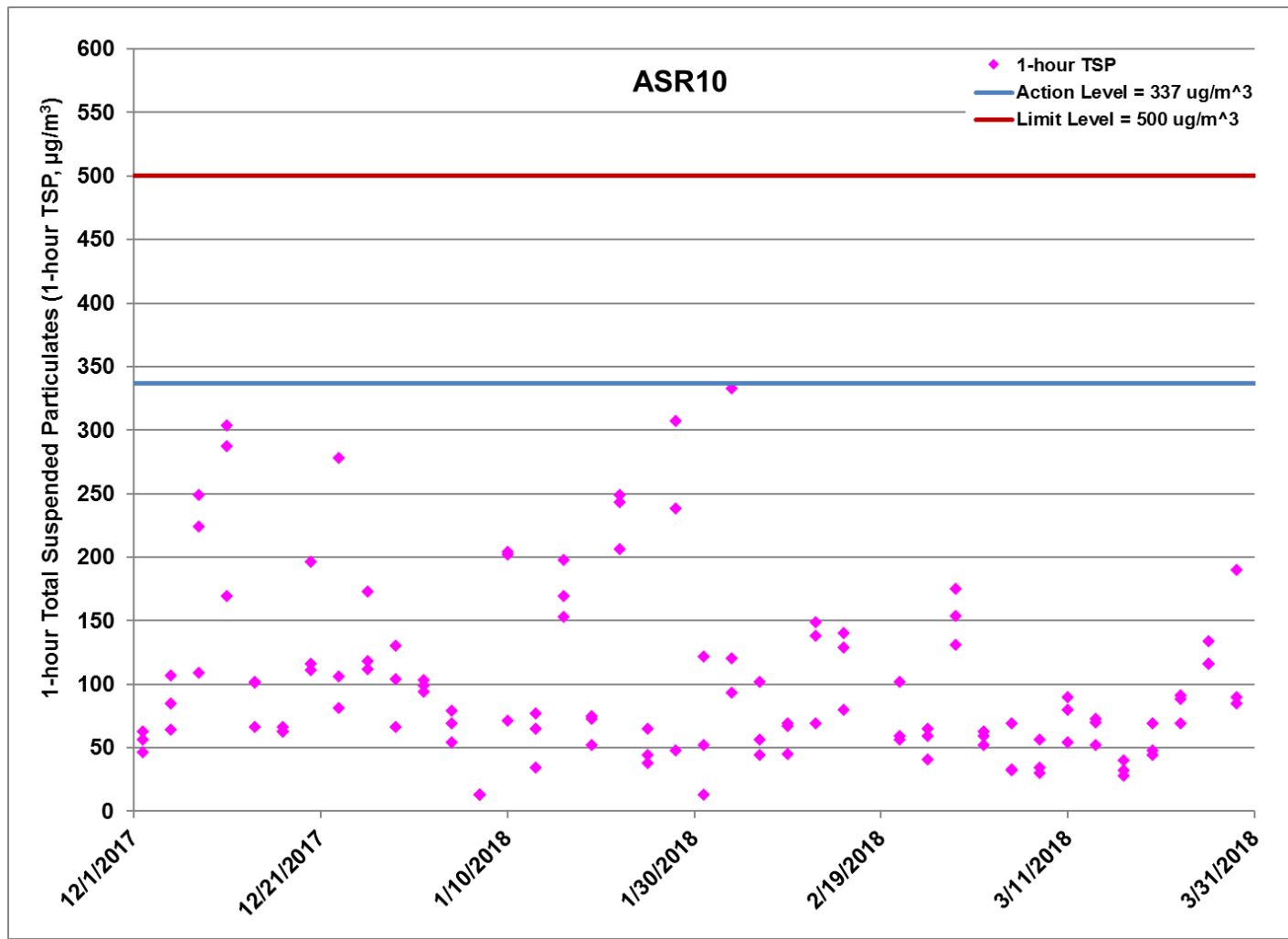


Figure G.5 Impact Monitoring - 1-hour Total Suspended Particulates ( $\mu\text{g}/\text{m}^3$ ) at ASR10 between 1 December 2017 and 31 March 2018 during impact monitoring period. The weather conditions during the monitoring period varied from sunny to cloudy. Major land-based construction activities included: Box Culvert Extension, Construction of North Ventilation Building (1/12/2017 - 31/3/2018)

Ref: 0212330\_Impact AQM graphs\_March 2018\_REV a.xlsx



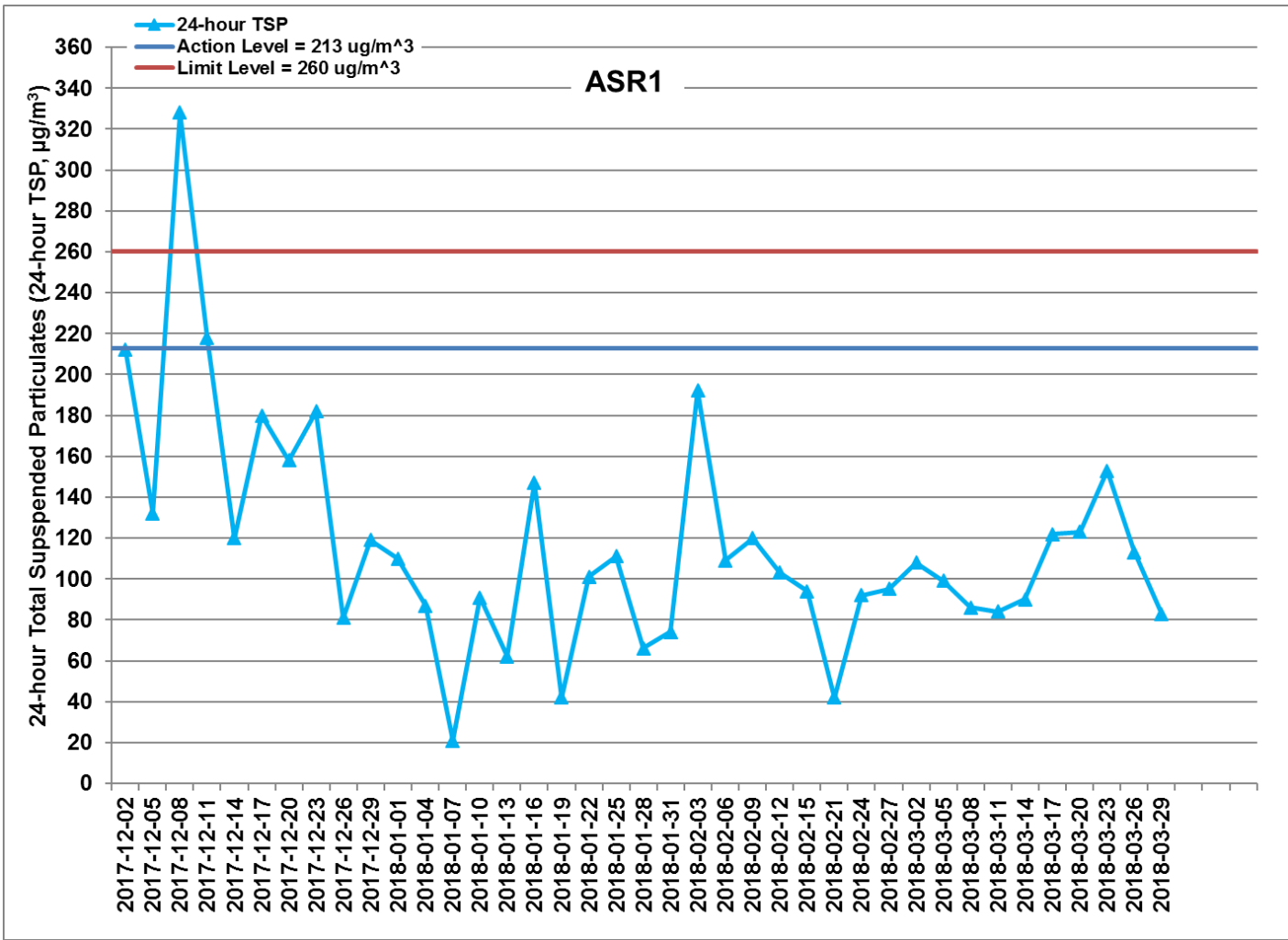


Figure G.6 Impact Monitoring - 24-hour Total Suspended Particulates ( $\mu\text{g}/\text{m}^3$ ) at ASR1 between 1 December 2017 and 31 March 2018 during impact monitoring period. The weather conditions during the monitoring period varied from sunny to cloudy. Major land-based construction activities included: Box Culvert Extension, Construction of North Ventilation Building (1/12/2017 - 31/3/2018)

Ref: 0212330\_Impact AQM graphs\_March 2018\_REV a.xlsx



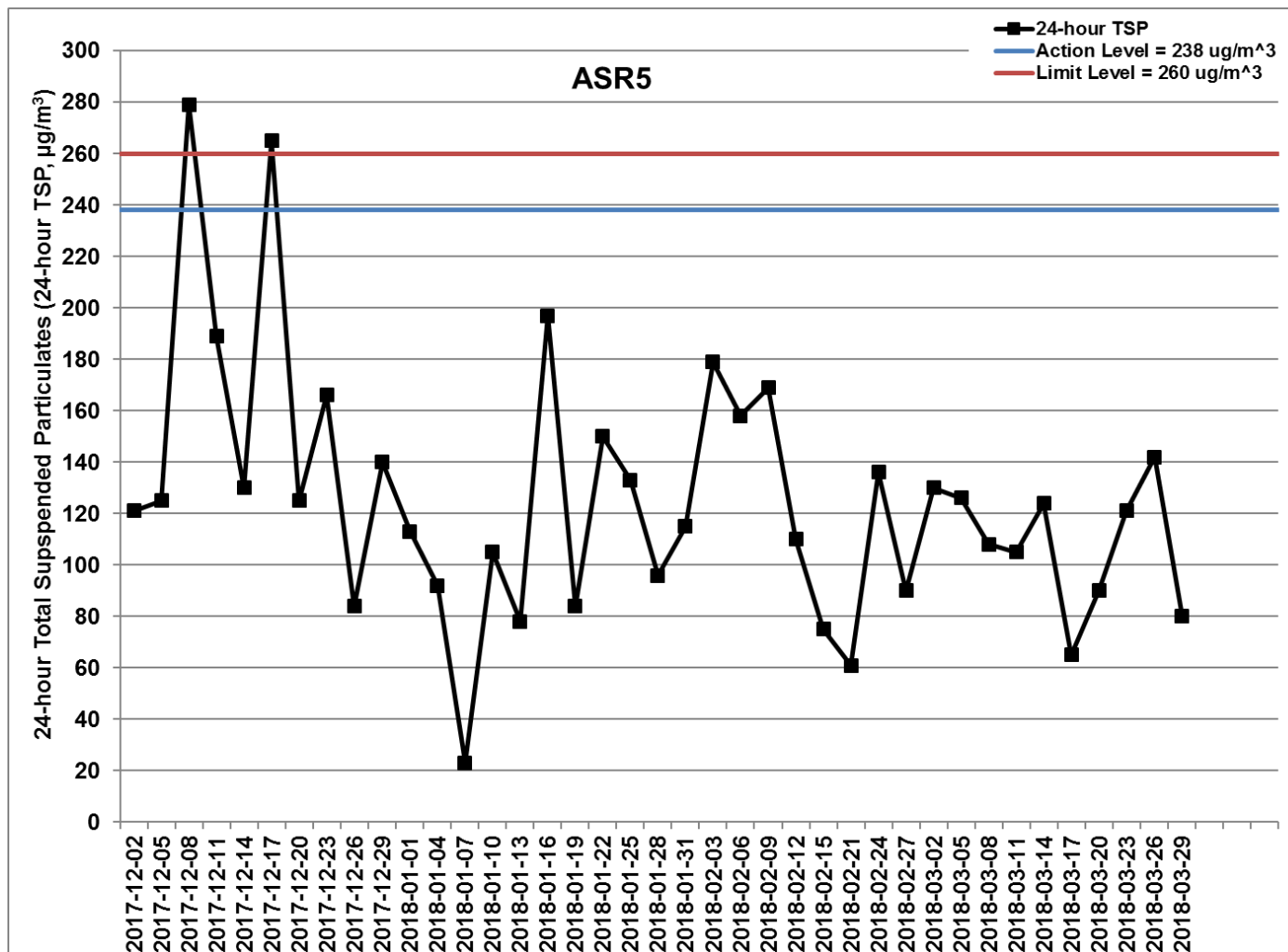
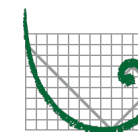


Figure G.7 Impact Monitoring - 24-hour Total Suspended Particulates ( $\mu\text{g}/\text{m}^3$ ) at ASR5 between 1 December 2017 and 31 March 2018 during impact monitoring period. The weather conditions during the monitoring period varied from sunny to cloudy. Major land-based construction activities included: Box Culvert Extension, Construction of North Ventilation Building (1/12/2017 - 31/3/2018)

Ref: 0212330\_Impact AQM graphs\_March 2018\_REV a.xlsx



ERM

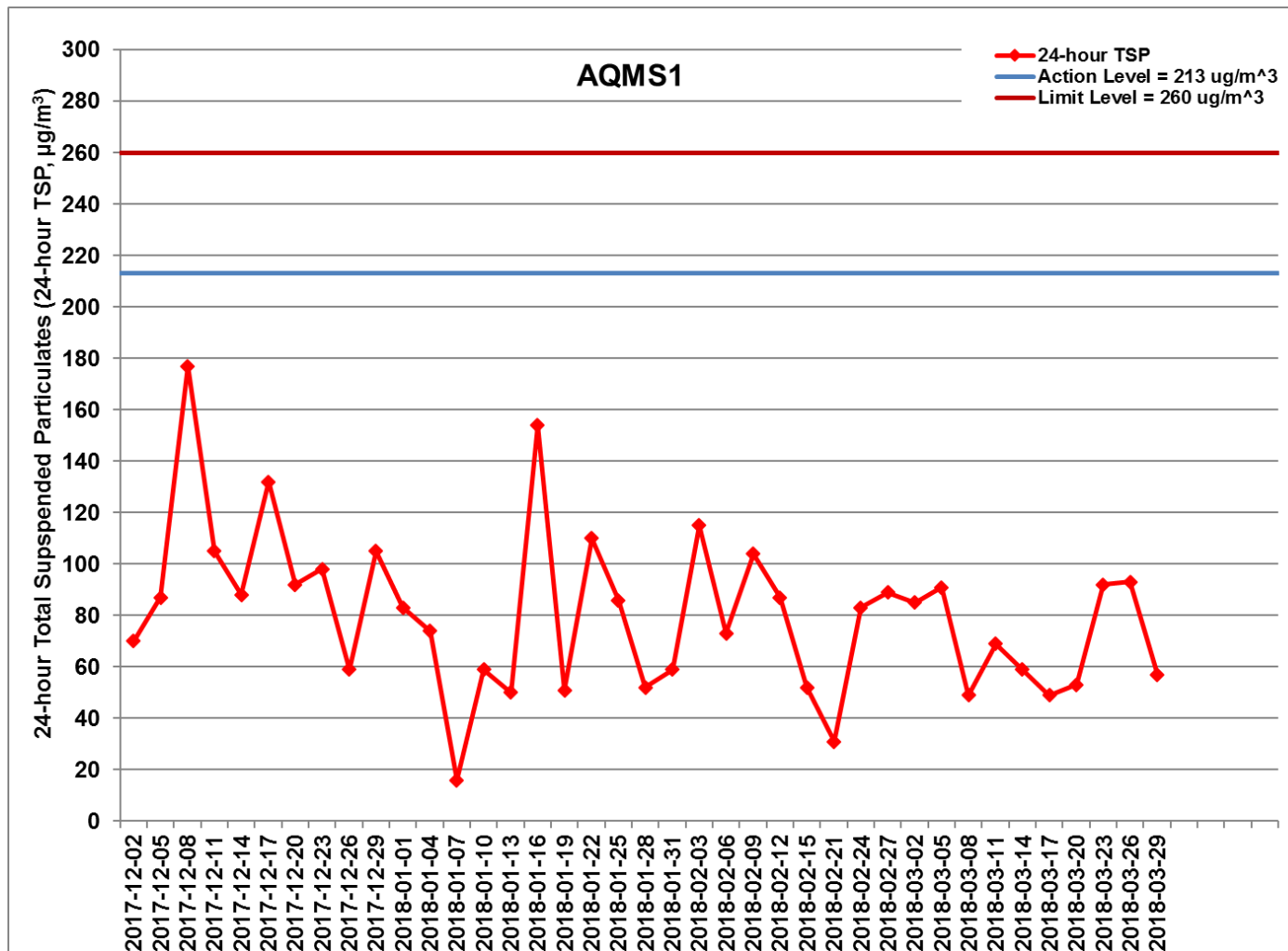


Figure G.8 Impact Monitoring - 24-hour Total Suspended Particulates ( $\mu\text{g}/\text{m}^3$ ) at AQMS1 between 1 December 2017 and 31 March 2018 during impact monitoring period. The weather conditions during the monitoring period varied from sunny to cloudy. Major land-based construction activities included: Box Culvert Extension, Construction of North Ventilation Building (1/12/2017 - 31/3/2018)

Ref: 0212330\_Impact AQM graphs\_March 2018\_REV a.xlsx



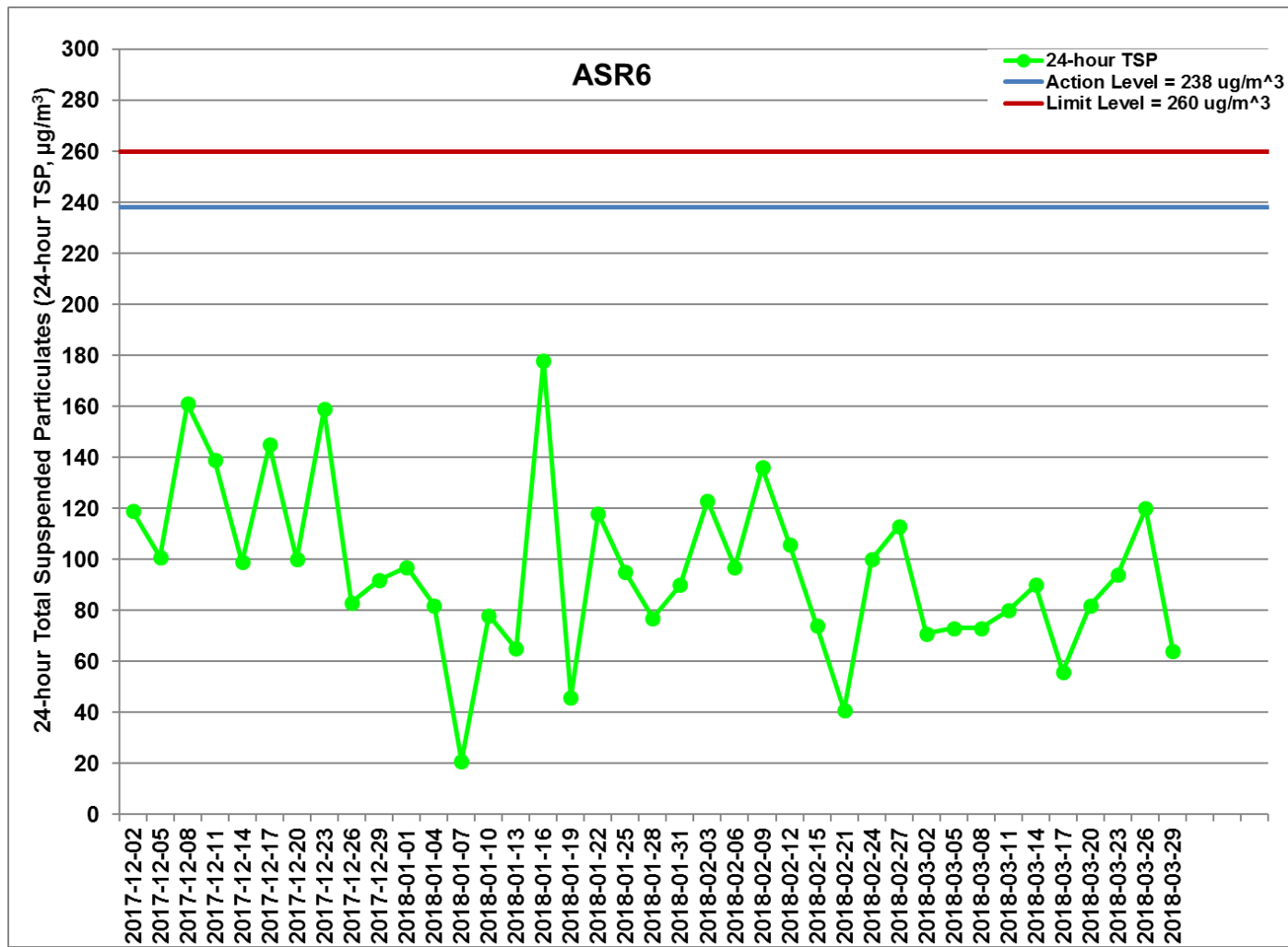


Figure G.9 Impact Monitoring - 24-hour Total Suspended Particulates ( $\mu\text{g}/\text{m}^3$ ) at ASR6 between 1 December 2017 and 31 March 2018 during impact monitoring period. The weather conditions during the monitoring period varied from sunny to cloudy. Major land-based construction activities included: Box Culvert Extension, Construction of North Ventilation Building (1/12/2017 - 31/3/2018)

Ref: 0212330\_Impact AQM graphs\_March 2018\_REV a.xlsx



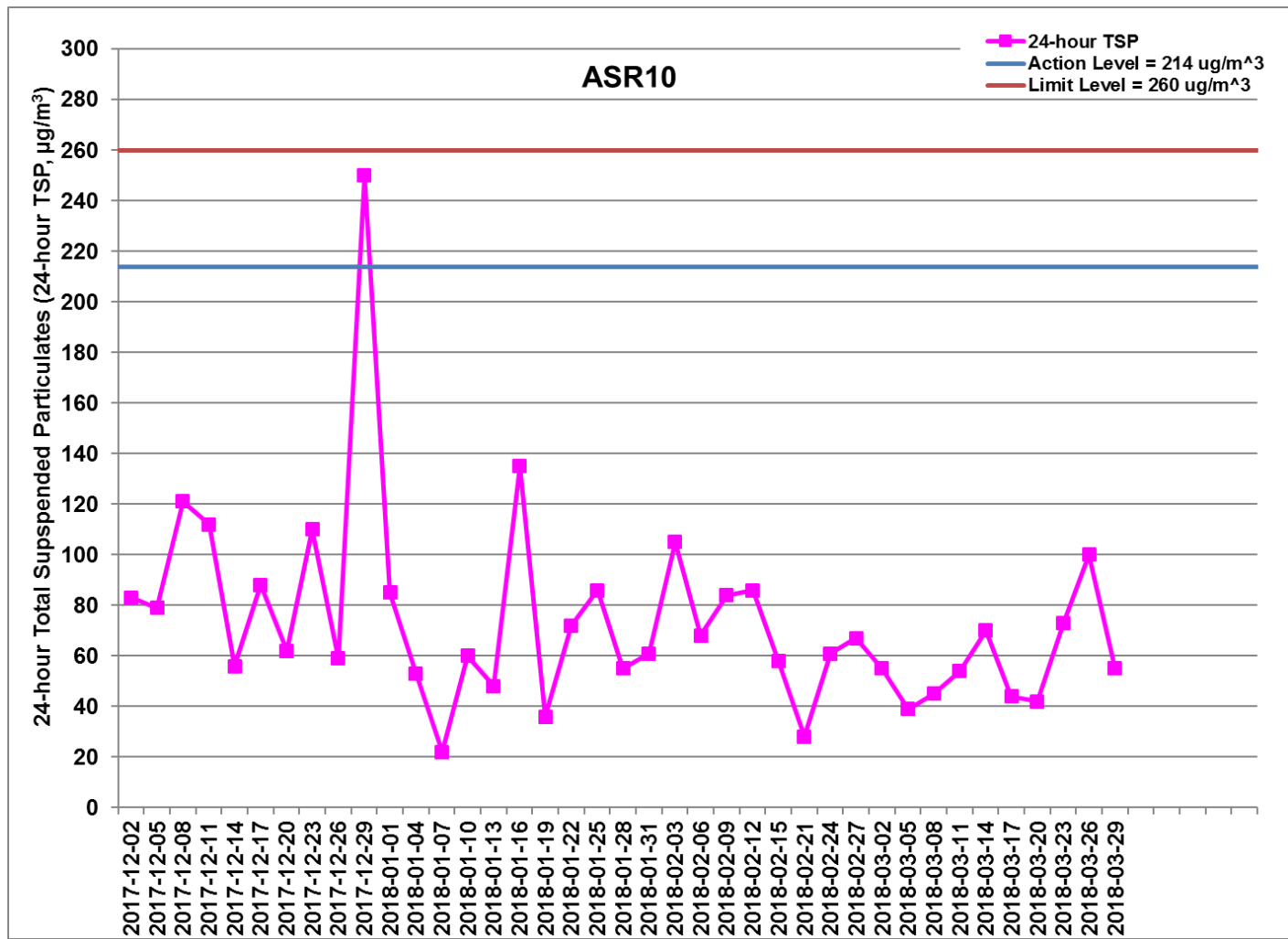


Figure G.10 Impact Monitoring - 24-hour Total Suspended Particulates ( $\mu\text{g}/\text{m}^3$ ) at ASR10 between 1 December 2017 and 31 March 2018 during impact monitoring period. The weather conditions during the monitoring period varied from sunny to cloudy. Major land-based construction activities included: Box Culvert Extension, Construction of North Ventilation Building (1/12/2017 - 31/3/2018)

Ref: 0212330\_Impact AQM graphs\_March 2018\_REV a.xlsx



Project	Works	Date	Station	Weather	Start time	Parameters	Results	units
TMCLKL	HY/2012/08	2018-03-02	AQMS1	Sunny	09:07	1-hour TSP	156	ug/m3
TMCLKL	HY/2012/08	2018-03-02	AQMS1	Sunny	10:09	1-hour TSP	172	ug/m3
TMCLKL	HY/2012/08	2018-03-02	AQMS1	Sunny	11:11	1-hour TSP	131	ug/m3
TMCLKL	HY/2012/08	2018-03-02	ASR1	Sunny	08:55	1-hour TSP	125	ug/m3
TMCLKL	HY/2012/08	2018-03-02	ASR1	Sunny	09:57	1-hour TSP	460	ug/m3
TMCLKL	HY/2012/08	2018-03-02	ASR1	Sunny	10:59	1-hour TSP	157	ug/m3
TMCLKL	HY/2012/08	2018-03-02	ASR10	Sunny	08:22	1-hour TSP	63	ug/m3
TMCLKL	HY/2012/08	2018-03-02	ASR10	Sunny	09:24	1-hour TSP	52	ug/m3
TMCLKL	HY/2012/08	2018-03-02	ASR10	Sunny	10:26	1-hour TSP	59	ug/m3
TMCLKL	HY/2012/08	2018-03-02	ASR5	Sunny	08:44	1-hour TSP	222	ug/m3
TMCLKL	HY/2012/08	2018-03-02	ASR5	Sunny	09:46	1-hour TSP	183	ug/m3
TMCLKL	HY/2012/08	2018-03-02	ASR5	Sunny	10:48	1-hour TSP	219	ug/m3
TMCLKL	HY/2012/08	2018-03-02	ASR6	Sunny	08:32	1-hour TSP	92	ug/m3
TMCLKL	HY/2012/08	2018-03-02	ASR6	Sunny	09:34	1-hour TSP	77	ug/m3
TMCLKL	HY/2012/08	2018-03-02	ASR6	Sunny	10:36	1-hour TSP	81	ug/m3
TMCLKL	HY/2012/08	2018-03-05	AQMS1	Sunny	14:00	1-hour TSP	90	ug/m3
TMCLKL	HY/2012/08	2018-03-05	AQMS1	Sunny	15:02	1-hour TSP	90	ug/m3
TMCLKL	HY/2012/08	2018-03-05	AQMS1	Sunny	16:04	1-hour TSP	99	ug/m3
TMCLKL	HY/2012/08	2018-03-05	ASR1	Sunny	13:47	1-hour TSP	98	ug/m3
TMCLKL	HY/2012/08	2018-03-05	ASR1	Sunny	14:49	1-hour TSP	138	ug/m3
TMCLKL	HY/2012/08	2018-03-05	ASR1	Sunny	15:55	1-hour TSP	101	ug/m3
TMCLKL	HY/2012/08	2018-03-05	ASR10	Sunny	13:14	1-hour TSP	69	ug/m3
TMCLKL	HY/2012/08	2018-03-05	ASR10	Sunny	14:16	1-hour TSP	32	ug/m3
TMCLKL	HY/2012/08	2018-03-05	ASR10	Sunny	15:18	1-hour TSP	33	ug/m3
TMCLKL	HY/2012/08	2018-03-05	ASR5	Sunny	13:36	1-hour TSP	138	ug/m3
TMCLKL	HY/2012/08	2018-03-05	ASR5	Sunny	14:38	1-hour TSP	138	ug/m3
TMCLKL	HY/2012/08	2018-03-05	ASR5	Sunny	15:40	1-hour TSP	211	ug/m3
TMCLKL	HY/2012/08	2018-03-05	ASR6	Sunny	13:25	1-hour TSP	127	ug/m3
TMCLKL	HY/2012/08	2018-03-05	ASR6	Sunny	14:27	1-hour TSP	52	ug/m3
TMCLKL	HY/2012/08	2018-03-05	ASR6	Sunny	15:29	1-hour TSP	47	ug/m3



Project	Works	Date	Station	Weather	Start time	Parameters	Results	units
TMCLKL	HY/2012/08	2018-03-08	AQMS1	Cloudy	13:55	1-hour TSP	36	ug/m3
TMCLKL	HY/2012/08	2018-03-08	AQMS1	Cloudy	14:57	1-hour TSP	22	ug/m3
TMCLKL	HY/2012/08	2018-03-08	AQMS1	Cloudy	15:59	1-hour TSP	29	ug/m3
TMCLKL	HY/2012/08	2018-03-08	ASR1	Cloudy	13:44	1-hour TSP	90	ug/m3
TMCLKL	HY/2012/08	2018-03-08	ASR1	Cloudy	14:46	1-hour TSP	137	ug/m3
TMCLKL	HY/2012/08	2018-03-08	ASR1	Cloudy	15:48	1-hour TSP	122	ug/m3
TMCLKL	HY/2012/08	2018-03-08	ASR10	Cloudy	13:10	1-hour TSP	56	ug/m3
TMCLKL	HY/2012/08	2018-03-08	ASR10	Cloudy	14:12	1-hour TSP	30	ug/m3
TMCLKL	HY/2012/08	2018-03-08	ASR10	Cloudy	15:14	1-hour TSP	34	ug/m3
TMCLKL	HY/2012/08	2018-03-08	ASR5	Cloudy	13:32	1-hour TSP	81	ug/m3
TMCLKL	HY/2012/08	2018-03-08	ASR5	Cloudy	14:34	1-hour TSP	156	ug/m3
TMCLKL	HY/2012/08	2018-03-08	ASR5	Cloudy	15:36	1-hour TSP	116	ug/m3
TMCLKL	HY/2012/08	2018-03-08	ASR6	Cloudy	13:21	1-hour TSP	33	ug/m3
TMCLKL	HY/2012/08	2018-03-08	ASR6	Cloudy	14:23	1-hour TSP	56	ug/m3
TMCLKL	HY/2012/08	2018-03-08	ASR6	Cloudy	15:25	1-hour TSP	60	ug/m3
TMCLKL	HY/2012/08	2018-03-11	AQMS1	Sunny	14:02	1-hour TSP	80	ug/m3
TMCLKL	HY/2012/08	2018-03-11	AQMS1	Sunny	15:04	1-hour TSP	79	ug/m3
TMCLKL	HY/2012/08	2018-03-11	AQMS1	Sunny	16:06	1-hour TSP	73	ug/m3
TMCLKL	HY/2012/08	2018-03-11	ASR1	Sunny	13:50	1-hour TSP	98	ug/m3
TMCLKL	HY/2012/08	2018-03-11	ASR1	Sunny	14:52	1-hour TSP	79	ug/m3
TMCLKL	HY/2012/08	2018-03-11	ASR1	Sunny	15:54	1-hour TSP	73	ug/m3
TMCLKL	HY/2012/08	2018-03-11	ASR10	Sunny	13:17	1-hour TSP	90	ug/m3
TMCLKL	HY/2012/08	2018-03-11	ASR10	Sunny	14:19	1-hour TSP	54	ug/m3
TMCLKL	HY/2012/08	2018-03-11	ASR10	Sunny	15:21	1-hour TSP	80	ug/m3
TMCLKL	HY/2012/08	2018-03-11	ASR5	Sunny	13:39	1-hour TSP	112	ug/m3
TMCLKL	HY/2012/08	2018-03-11	ASR5	Sunny	14:41	1-hour TSP	83	ug/m3
TMCLKL	HY/2012/08	2018-03-11	ASR5	Sunny	15:43	1-hour TSP	90	ug/m3
TMCLKL	HY/2012/08	2018-03-11	ASR6	Sunny	13:27	1-hour TSP	79	ug/m3
TMCLKL	HY/2012/08	2018-03-11	ASR6	Sunny	14:29	1-hour TSP	63	ug/m3
TMCLKL	HY/2012/08	2018-03-11	ASR6	Sunny	15:31	1-hour TSP	69	ug/m3

Project	Works	Date	Station	Weather	Start time	Parameters	Results	units
TMCLKL	HY/2012/08	2018-03-14	AQMS1	Sunny	13:50	1-hour TSP	69	ug/m3
TMCLKL	HY/2012/08	2018-03-14	AQMS1	Sunny	14:52	1-hour TSP	81	ug/m3
TMCLKL	HY/2012/08	2018-03-14	AQMS1	Sunny	15:54	1-hour TSP	70	ug/m3
TMCLKL	HY/2012/08	2018-03-14	ASR1	Sunny	13:39	1-hour TSP	101	ug/m3
TMCLKL	HY/2012/08	2018-03-14	ASR1	Sunny	14:41	1-hour TSP	63	ug/m3
TMCLKL	HY/2012/08	2018-03-14	ASR1	Sunny	15:43	1-hour TSP	101	ug/m3
TMCLKL	HY/2012/08	2018-03-14	ASR10	Sunny	13:05	1-hour TSP	73	ug/m3
TMCLKL	HY/2012/08	2018-03-14	ASR10	Sunny	14:07	1-hour TSP	52	ug/m3
TMCLKL	HY/2012/08	2018-03-14	ASR10	Sunny	15:09	1-hour TSP	70	ug/m3
TMCLKL	HY/2012/08	2018-03-14	ASR5	Sunny	13:27	1-hour TSP	124	ug/m3
TMCLKL	HY/2012/08	2018-03-14	ASR5	Sunny	14:29	1-hour TSP	218	ug/m3
TMCLKL	HY/2012/08	2018-03-14	ASR5	Sunny	15:31	1-hour TSP	148	ug/m3
TMCLKL	HY/2012/08	2018-03-14	ASR6	Sunny	13:16	1-hour TSP	96	ug/m3
TMCLKL	HY/2012/08	2018-03-14	ASR6	Sunny	14:18	1-hour TSP	56	ug/m3
TMCLKL	HY/2012/08	2018-03-14	ASR6	Sunny	15:20	1-hour TSP	79	ug/m3
TMCLKL	HY/2012/08	2018-03-17	AQMS1	Sunny	09:03	1-hour TSP	94	ug/m3
TMCLKL	HY/2012/08	2018-03-17	AQMS1	Sunny	10:05	1-hour TSP	124	ug/m3
TMCLKL	HY/2012/08	2018-03-17	AQMS1	Sunny	11:07	1-hour TSP	135	ug/m3
TMCLKL	HY/2012/08	2018-03-17	ASR1	Sunny	08:52	1-hour TSP	184	ug/m3
TMCLKL	HY/2012/08	2018-03-17	ASR1	Sunny	09:54	1-hour TSP	122	ug/m3
TMCLKL	HY/2012/08	2018-03-17	ASR1	Sunny	10:56	1-hour TSP	210	ug/m3
TMCLKL	HY/2012/08	2018-03-17	ASR10	Sunny	08:18	1-hour TSP	32	ug/m3
TMCLKL	HY/2012/08	2018-03-17	ASR10	Sunny	09:20	1-hour TSP	28	ug/m3
TMCLKL	HY/2012/08	2018-03-17	ASR10	Sunny	10:22	1-hour TSP	40	ug/m3
TMCLKL	HY/2012/08	2018-03-17	ASR5	Sunny	08:40	1-hour TSP	130	ug/m3
TMCLKL	HY/2012/08	2018-03-17	ASR5	Sunny	09:42	1-hour TSP	184	ug/m3
TMCLKL	HY/2012/08	2018-03-17	ASR5	Sunny	10:44	1-hour TSP	142	ug/m3
TMCLKL	HY/2012/08	2018-03-17	ASR6	Sunny	08:29	1-hour TSP	56	ug/m3
TMCLKL	HY/2012/08	2018-03-17	ASR6	Sunny	09:31	1-hour TSP	76	ug/m3
TMCLKL	HY/2012/08	2018-03-17	ASR6	Sunny	10:33	1-hour TSP	92	ug/m3

Project	Works	Date	Station	Weather	Start time	Parameters	Results	units
TMCLKL	HY/2012/08	2018-03-20	AQMS1	Sunny	14:00	1-hour TSP	85	ug/m3
TMCLKL	HY/2012/08	2018-03-20	AQMS1	Sunny	15:02	1-hour TSP	52	ug/m3
TMCLKL	HY/2012/08	2018-03-20	AQMS1	Sunny	16:04	1-hour TSP	51	ug/m3
TMCLKL	HY/2012/08	2018-03-20	ASR1	Sunny	13:48	1-hour TSP	210	ug/m3
TMCLKL	HY/2012/08	2018-03-20	ASR1	Sunny	14:50	1-hour TSP	233	ug/m3
TMCLKL	HY/2012/08	2018-03-20	ASR1	Sunny	15:52	1-hour TSP	446	ug/m3
TMCLKL	HY/2012/08	2018-03-20	ASR10	Sunny	13:16	1-hour TSP	69	ug/m3
TMCLKL	HY/2012/08	2018-03-20	ASR10	Sunny	14:18	1-hour TSP	44	ug/m3
TMCLKL	HY/2012/08	2018-03-20	ASR10	Sunny	15:20	1-hour TSP	48	ug/m3
TMCLKL	HY/2012/08	2018-03-20	ASR5	Sunny	13:37	1-hour TSP	234	ug/m3
TMCLKL	HY/2012/08	2018-03-20	ASR5	Sunny	14:39	1-hour TSP	180	ug/m3
TMCLKL	HY/2012/08	2018-03-20	ASR5	Sunny	15:41	1-hour TSP	250	ug/m3
TMCLKL	HY/2012/08	2018-03-20	ASR6	Sunny	13:27	1-hour TSP	169	ug/m3
TMCLKL	HY/2012/08	2018-03-20	ASR6	Sunny	14:29	1-hour TSP	201	ug/m3
TMCLKL	HY/2012/08	2018-03-20	ASR6	Sunny	15:31	1-hour TSP	163	ug/m3
TMCLKL	HY/2012/08	2018-03-23	AQMS1	Sunny	09:00	1-hour TSP	102	ug/m3
TMCLKL	HY/2012/08	2018-03-23	AQMS1	Sunny	10:02	1-hour TSP	143	ug/m3
TMCLKL	HY/2012/08	2018-03-23	AQMS1	Sunny	11:04	1-hour TSP	129	ug/m3
TMCLKL	HY/2012/08	2018-03-23	ASR1	Sunny	08:50	1-hour TSP	122	ug/m3
TMCLKL	HY/2012/08	2018-03-23	ASR1	Sunny	09:52	1-hour TSP	130	ug/m3
TMCLKL	HY/2012/08	2018-03-23	ASR1	Sunny	10:54	1-hour TSP	144	ug/m3
TMCLKL	HY/2012/08	2018-03-23	ASR10	Sunny	08:17	1-hour TSP	88	ug/m3
TMCLKL	HY/2012/08	2018-03-23	ASR10	Sunny	09:19	1-hour TSP	91	ug/m3
TMCLKL	HY/2012/08	2018-03-23	ASR10	Sunny	10:21	1-hour TSP	69	ug/m3
TMCLKL	HY/2012/08	2018-03-23	ASR5	Sunny	08:39	1-hour TSP	113	ug/m3
TMCLKL	HY/2012/08	2018-03-23	ASR5	Sunny	09:41	1-hour TSP	215	ug/m3
TMCLKL	HY/2012/08	2018-03-23	ASR5	Sunny	10:43	1-hour TSP	188	ug/m3
TMCLKL	HY/2012/08	2018-03-23	ASR6	Sunny	08:28	1-hour TSP	123	ug/m3
TMCLKL	HY/2012/08	2018-03-23	ASR6	Sunny	09:30	1-hour TSP	160	ug/m3
TMCLKL	HY/2012/08	2018-03-23	ASR6	Sunny	10:32	1-hour TSP	117	ug/m3

Project	Works	Date	Station	Weather	Start time	Parameters	Results	units
TMCLKL	HY/2012/08	2018-03-26	AQMS1	Sunny	13:49	1-hour TSP	165	ug/m3
TMCLKL	HY/2012/08	2018-03-26	AQMS1	Sunny	14:51	1-hour TSP	127	ug/m3
TMCLKL	HY/2012/08	2018-03-26	AQMS1	Sunny	15:53	1-hour TSP	109	ug/m3
TMCLKL	HY/2012/08	2018-03-26	ASR1	Sunny	13:38	1-hour TSP	125	ug/m3
TMCLKL	HY/2012/08	2018-03-26	ASR1	Sunny	14:40	1-hour TSP	98	ug/m3
TMCLKL	HY/2012/08	2018-03-26	ASR1	Sunny	15:42	1-hour TSP	172	ug/m3
TMCLKL	HY/2012/08	2018-03-26	ASR10	Sunny	13:05	1-hour TSP	134	ug/m3
TMCLKL	HY/2012/08	2018-03-26	ASR10	Sunny	14:07	1-hour TSP	116	ug/m3
TMCLKL	HY/2012/08	2018-03-26	ASR10	Sunny	15:09	1-hour TSP	116	ug/m3
TMCLKL	HY/2012/08	2018-03-26	ASR5	Sunny	13:26	1-hour TSP	289	ug/m3
TMCLKL	HY/2012/08	2018-03-26	ASR5	Sunny	14:28	1-hour TSP	242	ug/m3
TMCLKL	HY/2012/08	2018-03-26	ASR5	Sunny	15:30	1-hour TSP	224	ug/m3
TMCLKL	HY/2012/08	2018-03-26	ASR6	Sunny	13:15	1-hour TSP	240	ug/m3
TMCLKL	HY/2012/08	2018-03-26	ASR6	Sunny	14:17	1-hour TSP	169	ug/m3
TMCLKL	HY/2012/08	2018-03-26	ASR6	Sunny	15:19	1-hour TSP	185	ug/m3
TMCLKL	HY/2012/08	2018-03-29	AQMS1	Sunny	14:12	1-hour TSP	101	ug/m3
TMCLKL	HY/2012/08	2018-03-29	AQMS1	Sunny	15:14	1-hour TSP	128	ug/m3
TMCLKL	HY/2012/08	2018-03-29	AQMS1	Sunny	16:16	1-hour TSP	113	ug/m3
TMCLKL	HY/2012/08	2018-03-29	ASR1	Sunny	14:00	1-hour TSP	95	ug/m3
TMCLKL	HY/2012/08	2018-03-29	ASR1	Sunny	15:02	1-hour TSP	121	ug/m3
TMCLKL	HY/2012/08	2018-03-29	ASR1	Sunny	16:04	1-hour TSP	285	ug/m3
TMCLKL	HY/2012/08	2018-03-29	ASR10	Sunny	13:28	1-hour TSP	85	ug/m3
TMCLKL	HY/2012/08	2018-03-29	ASR10	Sunny	14:30	1-hour TSP	90	ug/m3
TMCLKL	HY/2012/08	2018-03-29	ASR10	Sunny	15:32	1-hour TSP	190	ug/m3
TMCLKL	HY/2012/08	2018-03-29	ASR5	Sunny	13:50	1-hour TSP	140	ug/m3
TMCLKL	HY/2012/08	2018-03-29	ASR5	Sunny	14:52	1-hour TSP	132	ug/m3
TMCLKL	HY/2012/08	2018-03-29	ASR5	Sunny	15:54	1-hour TSP	242	ug/m3
TMCLKL	HY/2012/08	2018-03-29	ASR6	Sunny	13:38	1-hour TSP	137	ug/m3
TMCLKL	HY/2012/08	2018-03-29	ASR6	Sunny	14:40	1-hour TSP	295	ug/m3
TMCLKL	HY/2012/08	2018-03-29	ASR6	Sunny	15:42	1-hour TSP	73	ug/m3

Project	Works	Date	Station	Weather	Start time	Parameters	Results	units
TMCLKL	HY/2012/08	2018-03-02	AQMS1	Sunny	12:13	24-hour TSP	85	ug/m3
TMCLKL	HY/2012/08	2018-03-02	ASR1	Sunny	12:01	24-hour TSP	108	ug/m3
TMCLKL	HY/2012/08	2018-03-02	ASR10	Sunny	11:28	24-hour TSP	55	ug/m3
TMCLKL	HY/2012/08	2018-03-02	ASR5	Sunny	11:50	24-hour TSP	130	ug/m3
TMCLKL	HY/2012/08	2018-03-02	ASR6	Sunny	11:38	24-hour TSP	71	ug/m3
TMCLKL	HY/2012/08	2018-03-05	AQMS1	Sunny	17:06	24-hour TSP	91	ug/m3
TMCLKL	HY/2012/08	2018-03-05	ASR1	Sunny	16:53	24-hour TSP	99	ug/m3
TMCLKL	HY/2012/08	2018-03-05	ASR10	Sunny	16:20	24-hour TSP	39	ug/m3
TMCLKL	HY/2012/08	2018-03-05	ASR5	Sunny	16:42	24-hour TSP	126	ug/m3
TMCLKL	HY/2012/08	2018-03-05	ASR6	Sunny	16:31	24-hour TSP	73	ug/m3
TMCLKL	HY/2012/08	2018-03-08	AQMS1	Cloudy	17:01	24-hour TSP	49	ug/m3
TMCLKL	HY/2012/08	2018-03-08	ASR1	Cloudy	16:50	24-hour TSP	86	ug/m3
TMCLKL	HY/2012/08	2018-03-08	ASR10	Cloudy	16:16	24-hour TSP	45	ug/m3
TMCLKL	HY/2012/08	2018-03-08	ASR5	Cloudy	16:38	24-hour TSP	108	ug/m3
TMCLKL	HY/2012/08	2018-03-08	ASR6	Cloudy	16:27	24-hour TSP	73	ug/m3
TMCLKL	HY/2012/08	2018-03-11	AQMS1	Sunny	17:08	24-hour TSP	69	ug/m3
TMCLKL	HY/2012/08	2018-03-11	ASR1	Sunny	16:56	24-hour TSP	84	ug/m3
TMCLKL	HY/2012/08	2018-03-11	ASR10	Sunny	16:23	24-hour TSP	54	ug/m3
TMCLKL	HY/2012/08	2018-03-11	ASR5	Sunny	16:45	24-hour TSP	105	ug/m3
TMCLKL	HY/2012/08	2018-03-11	ASR6	Sunny	16:33	24-hour TSP	80	ug/m3
TMCLKL	HY/2012/08	2018-03-14	AQMS1	Sunny	16:56	24-hour TSP	59	ug/m3
TMCLKL	HY/2012/08	2018-03-14	ASR1	Sunny	16:45	24-hour TSP	90	ug/m3
TMCLKL	HY/2012/08	2018-03-14	ASR10	Sunny	16:11	24-hour TSP	70	ug/m3
TMCLKL	HY/2012/08	2018-03-14	ASR5	Sunny	16:33	24-hour TSP	124	ug/m3
TMCLKL	HY/2012/08	2018-03-14	ASR6	Sunny	16:22	24-hour TSP	90	ug/m3
TMCLKL	HY/2012/08	2018-03-17	AQMS1	Sunny	12:09	24-hour TSP	49	ug/m3
TMCLKL	HY/2012/08	2018-03-17	ASR1	Sunny	11:58	24-hour TSP	122	ug/m3
TMCLKL	HY/2012/08	2018-03-17	ASR10	Sunny	11:24	24-hour TSP	44	ug/m3
TMCLKL	HY/2012/08	2018-03-17	ASR5	Sunny	11:46	24-hour TSP	65	ug/m3
TMCLKL	HY/2012/08	2018-03-17	ASR6	Sunny	11:35	24-hour TSP	56	ug/m3

Project	Works	Date	Station	Weather	Start time	Parameters	Results	units
TMCLKL	HY/2012/08	2018-03-20	AQMS1	Sunny	17:06	24-hour TSP	53	ug/m3
TMCLKL	HY/2012/08	2018-03-20	ASR1	Sunny	16:54	24-hour TSP	123	ug/m3
TMCLKL	HY/2012/08	2018-03-20	ASR10	Sunny	16:22	24-hour TSP	42	ug/m3
TMCLKL	HY/2012/08	2018-03-20	ASR5	Sunny	16:43	24-hour TSP	90	ug/m3
TMCLKL	HY/2012/08	2018-03-20	ASR6	Sunny	16:33	24-hour TSP	82	ug/m3
TMCLKL	HY/2012/08	2018-03-23	AQMS1	Sunny	12:06	24-hour TSP	92	ug/m3
TMCLKL	HY/2012/08	2018-03-23	ASR1	Sunny	11:56	24-hour TSP	153	ug/m3
TMCLKL	HY/2012/08	2018-03-23	ASR10	Sunny	11:23	24-hour TSP	73	ug/m3
TMCLKL	HY/2012/08	2018-03-23	ASR5	Sunny	11:45	24-hour TSP	121	ug/m3
TMCLKL	HY/2012/08	2018-03-23	ASR6	Sunny	11:34	24-hour TSP	94	ug/m3
TMCLKL	HY/2012/08	2018-03-26	AQMS1	Sunny	16:55	24-hour TSP	93	ug/m3
TMCLKL	HY/2012/08	2018-03-26	ASR1	Sunny	16:44	24-hour TSP	113	ug/m3
TMCLKL	HY/2012/08	2018-03-26	ASR10	Sunny	16:11	24-hour TSP	100	ug/m3
TMCLKL	HY/2012/08	2018-03-26	ASR5	Sunny	16:32	24-hour TSP	142	ug/m3
TMCLKL	HY/2012/08	2018-03-26	ASR6	Sunny	16:21	24-hour TSP	120	ug/m3
TMCLKL	HY/2012/08	2018-03-29	AQMS1	Sunny	17:18	24-hour TSP	57	ug/m3
TMCLKL	HY/2012/08	2018-03-29	ASR1	Sunny	17:06	24-hour TSP	83	ug/m3
TMCLKL	HY/2012/08	2018-03-29	ASR10	Sunny	16:34	24-hour TSP	55	ug/m3
TMCLKL	HY/2012/08	2018-03-29	ASR5	Sunny	16:56	24-hour TSP	80	ug/m3
TMCLKL	HY/2012/08	2018-03-29	ASR6	Sunny	16:44	24-hour TSP	64	ug/m3

Appendix H

## Meteorological Data

**Meteorological Data for Impact Monitoring in the reporting period**

<b>Date (yy-mm-dd)</b>	<b>Time (24hrs)</b>	<b>Average of Wind Speed (m/s)</b>	<b>Average of Wind Direction(degree)</b>
18/03/02	0:00	1.8	92
18/03/02	1:00	1.8	95
18/03/02	2:00	1.3	70
18/03/02	3:00	1.3	46
18/03/02	4:00	1.3	92
18/03/02	5:00	1.3	44
18/03/02	6:00	1.8	93
18/03/02	7:00	1.3	65
18/03/02	8:00	2.2	92
18/03/02	9:00	2.2	81
18/03/02	10:00	2.7	93
18/03/02	11:00	2.7	96
18/03/02	12:00	1.8	97
18/03/02	13:00	1.8	75
18/03/02	14:00	1.3	70
18/03/02	15:00	1.8	93
18/03/02	16:00	1.8	71
18/03/02	17:00	1.3	46
18/03/02	18:00	1.8	50
18/03/02	19:00	1.8	42
18/03/02	20:00	1.8	43
18/03/02	21:00	1.3	52
18/03/02	22:00	1.3	51
18/03/02	23:00	1.8	93
18/03/03	0:00	1.3	39
18/03/03	1:00	0.9	68
18/03/03	2:00	0.9	39
18/03/03	3:00	0.4	41
18/03/03	4:00	0.4	45
18/03/03	5:00	0.4	77
18/03/03	6:00	0.9	51
18/03/03	7:00	1.3	46
18/03/03	8:00	1.8	40
18/03/03	9:00	1.8	45
18/03/03	10:00	1.3	47
18/03/03	11:00	2.2	92
18/03/03	12:00	2.2	95
18/03/03	13:00	2.2	74
18/03/03	14:00	2.2	50
18/03/03	15:00	1.8	40
18/03/03	16:00	1.8	43
18/03/03	17:00	1.8	98
18/03/03	18:00	1.3	70
18/03/03	19:00	1.3	42
18/03/03	20:00	1.3	92
18/03/03	21:00	0.9	80
18/03/03	22:00	0.4	61
18/03/03	23:00	0.4	47
18/03/05	0:00	0.4	15
18/03/05	1:00	0.4	112
18/03/05	2:00	0.4	312
18/03/05	3:00	0	-
18/03/05	4:00	0	-
18/03/05	5:00	0	-
18/03/05	6:00	0	-



**Meteorological Data for Impact Monitoring in the reporting period**

<b>Date (yy-mm-dd)</b>	<b>Time (24hrs)</b>	<b>Average of Wind Speed (m/s)</b>	<b>Average of Wind Direction(degree)</b>
18/03/05	7:00	0.4	44
18/03/05	8:00	0.9	13
18/03/05	9:00	1.3	11
18/03/05	10:00	1.3	70
18/03/05	11:00	1.3	141
18/03/05	12:00	1.8	223
18/03/05	13:00	1.3	230
18/03/05	14:00	1.3	91
18/03/05	15:00	1.3	66
18/03/05	16:00	0.9	75
18/03/05	17:00	0.9	74
18/03/05	18:00	0.9	93
18/03/05	19:00	1.3	90
18/03/05	20:00	0.9	69
18/03/05	21:00	0.9	71
18/03/05	22:00	0.9	73
18/03/05	23:00	0.4	74
18/03/06	0:00	0.4	65
18/03/06	1:00	0.4	59
18/03/06	2:00	0	-
18/03/06	3:00	0	-
18/03/06	4:00	0	-
18/03/06	5:00	0	-
18/03/06	6:00	2.7	113
18/03/06	7:00	3.6	121
18/03/06	8:00	4.9	95
18/03/06	9:00	4.9	100
18/03/06	10:00	4.9	101
18/03/06	11:00	5.4	94
18/03/06	12:00	4.9	93
18/03/06	13:00	5.4	89
18/03/06	14:00	5.4	74
18/03/06	15:00	4.9	70
18/03/06	16:00	4.9	65
18/03/06	17:00	4.9	58
18/03/06	18:00	4.9	93
18/03/06	19:00	4.5	102
18/03/06	20:00	4.5	99
18/03/06	21:00	4.5	95
18/03/06	22:00	4	86
18/03/06	23:00	4.9	81
18/03/08	0:00	1.3	285
18/03/08	1:00	1.3	291
18/03/08	2:00	3.6	16
18/03/08	3:00	3.6	20
18/03/08	4:00	2.7	14
18/03/08	5:00	2.2	11
18/03/08	6:00	0.9	8
18/03/08	7:00	0.9	43
18/03/08	8:00	0.9	13
18/03/08	9:00	0.9	223
18/03/08	10:00	0.9	92
18/03/08	11:00	1.3	16
18/03/08	12:00	1.3	40
18/03/08	13:00	1.8	311

**Meteorological Data for Impact Monitoring in the reporting period**

<b>Date (yy-mm-dd)</b>	<b>Time (24hrs)</b>	<b>Average of Wind Speed (m/s)</b>	<b>Average of Wind Direction(degree)</b>
18/03/08	14:00	1.8	316
18/03/08	15:00	1.3	345
18/03/08	16:00	1.3	309
18/03/08	17:00	1.3	285
18/03/08	18:00	1.3	294
18/03/08	19:00	1.3	351
18/03/08	20:00	1.3	13
18/03/08	21:00	1.8	288
18/03/08	22:00	1.3	355
18/03/08	23:00	2.2	352
18/03/09	0:00	2.7	4
18/03/09	1:00	3.6	16
18/03/09	2:00	3.1	11
18/03/09	3:00	3.6	13
18/03/09	4:00	4	17
18/03/09	5:00	3.6	21
18/03/09	6:00	2.7	10
18/03/09	7:00	3.6	13
18/03/09	8:00	3.6	15
18/03/09	9:00	3.6	9
18/03/09	10:00	2.7	11
18/03/09	11:00	2.2	12
18/03/09	12:00	1.8	8
18/03/09	13:00	2.2	7
18/03/09	14:00	1.3	44
18/03/09	15:00	2.2	225
18/03/09	16:00	1.3	117
18/03/09	17:00	1.8	65
18/03/09	18:00	1.8	93
18/03/09	19:00	1.3	46
18/03/09	20:00	0.9	42
18/03/09	21:00	0.9	51
18/03/09	22:00	0.9	44
18/03/09	23:00	0.9	4
18/03/11	0:00	0.9	46
18/03/11	1:00	1.3	39
18/03/11	2:00	1.3	51
18/03/11	3:00	0.9	32
18/03/11	4:00	1.3	48
18/03/11	5:00	1.3	38
18/03/11	6:00	1.3	50
18/03/11	7:00	2.2	93
18/03/11	8:00	3.1	94
18/03/11	9:00	3.6	121
18/03/11	10:00	2.2	136
18/03/11	11:00	1.3	110
18/03/11	12:00	1.8	142
18/03/11	13:00	2.2	111
18/03/11	14:00	1.8	109
18/03/11	15:00	2.2	125
18/03/11	16:00	1.8	226
18/03/11	17:00	0.4	261
18/03/11	18:00	0.9	43
18/03/11	19:00	1.3	51
18/03/11	20:00	1.3	92

**Meteorological Data for Impact Monitoring in the reporting period**

<b>Date (yy-mm-dd)</b>	<b>Time (24hrs)</b>	<b>Average of Wind Speed (m/s)</b>	<b>Average of Wind Direction(degree)</b>
18/03/11	21:00	0.9	44
18/03/11	22:00	0.9	53
18/03/11	23:00	0.9	60
18/03/12	0:00	0.9	59
18/03/12	1:00	0.9	71
18/03/12	2:00	0.4	75
18/03/12	3:00	0	-
18/03/12	4:00	0.4	38
18/03/12	5:00	0	-
18/03/12	6:00	0.4	42
18/03/12	7:00	0.9	93
18/03/12	8:00	1.3	113
18/03/12	9:00	1.8	135
18/03/12	10:00	1.8	146
18/03/12	11:00	1.3	150
18/03/12	12:00	1.3	108
18/03/12	13:00	2.2	195
18/03/12	14:00	1.8	256
18/03/12	15:00	1.8	222
18/03/12	16:00	1.3	74
18/03/12	17:00	1.8	72
18/03/12	18:00	1.3	46
18/03/12	19:00	1.3	47
18/03/12	20:00	1.3	40
18/03/12	21:00	1.3	38
18/03/12	22:00	1.3	96
18/03/12	23:00	1.3	68
18/03/14	0:00	1.3	65
18/03/14	1:00	1.8	92
18/03/14	2:00	1.3	44
18/03/14	3:00	1.3	95
18/03/14	4:00	1.8	96
18/03/14	5:00	1.8	97
18/03/14	6:00	1.3	84
18/03/14	7:00	1.3	93
18/03/14	8:00	0.9	92
18/03/14	9:00	0.4	63
18/03/14	10:00	0.9	115
18/03/14	11:00	1.8	92
18/03/14	12:00	1.8	117
18/03/14	13:00	1.3	90
18/03/14	14:00	1.3	97
18/03/14	15:00	1.3	113
18/03/14	16:00	1.3	105
18/03/14	17:00	1.8	84
18/03/14	18:00	4	86
18/03/14	19:00	2.2	88
18/03/14	20:00	1.8	91
18/03/14	21:00	3.1	83
18/03/14	22:00	4	82
18/03/14	23:00	1.3	256
18/03/15	0:00	1.3	49
18/03/15	1:00	0.4	13
18/03/15	2:00	0.4	44
18/03/15	3:00	0.4	117

**Meteorological Data for Impact Monitoring in the reporting period**

<b>Date (yy-mm-dd)</b>	<b>Time (24hrs)</b>	<b>Average of Wind Speed (m/s)</b>	<b>Average of Wind Direction(degree)</b>
18/03/15	4:00	0	-
18/03/15	5:00	0.4	171
18/03/15	6:00	0	-
18/03/15	7:00	0	-
18/03/15	8:00	0.9	94
18/03/15	9:00	0.4	99
18/03/15	10:00	0.9	73
18/03/15	11:00	0.9	85
18/03/15	12:00	0.9	119
18/03/15	13:00	2.2	309
18/03/15	14:00	1.3	113
18/03/15	15:00	1.3	145
18/03/15	16:00	1.3	246
18/03/15	17:00	0.9	251
18/03/15	18:00	0	-
18/03/15	19:00	0.4	92
18/03/15	20:00	0.9	71
18/03/15	21:00	1.3	46
18/03/15	22:00	0.9	68
18/03/15	23:00	0.9	64
18/03/17	0:00	0.9	63
18/03/17	1:00	1.8	92
18/03/17	2:00	4	85
18/03/17	3:00	4	80
18/03/17	4:00	4	93
18/03/17	5:00	3.6	94
18/03/17	6:00	4	81
18/03/17	7:00	3.6	79
18/03/17	8:00	3.6	85
18/03/17	9:00	3.6	86
18/03/17	10:00	4.5	83
18/03/17	11:00	4.5	114
18/03/17	12:00	4.5	92
18/03/17	13:00	4.5	113
18/03/17	14:00	4	100
18/03/17	15:00	4	101
18/03/17	16:00	3.6	116
18/03/17	17:00	4.5	114
18/03/17	18:00	3.6	94
18/03/17	19:00	3.6	90
18/03/17	20:00	3.1	93
18/03/17	21:00	2.2	95
18/03/17	22:00	3.1	92
18/03/17	23:00	2.7	102
18/03/18	0:00	3.6	94
18/03/18	1:00	3.1	100
18/03/18	2:00	3.1	103
18/03/18	3:00	3.6	84
18/03/18	4:00	3.6	114
18/03/18	5:00	4	85
18/03/18	6:00	3.1	92
18/03/18	7:00	2.7	98
18/03/18	8:00	3.6	96
18/03/18	9:00	2.7	93
18/03/18	10:00	2.7	113
18/03/18	11:00	2.2	105

**Meteorological Data for Impact Monitoring in the reporting period**

<b>Date (yy-mm-dd)</b>	<b>Time (24hrs)</b>	<b>Average of Wind Speed (m/s)</b>	<b>Average of Wind Direction(degree)</b>
18/03/18	12:00	2.2	116
18/03/18	13:00	2.7	97
18/03/18	14:00	2.2	91
18/03/18	15:00	2.2	88
18/03/18	16:00	2.2	85
18/03/18	17:00	2.7	92
18/03/18	18:00	3.1	84
18/03/18	19:00	2.7	83
18/03/18	20:00	1.3	85
18/03/18	21:00	1.3	92
18/03/18	22:00	0.4	48
18/03/18	23:00	0.4	44
18/03/20	0:00	0	-
18/03/20	1:00	0.4	194
18/03/20	2:00	1.3	312
18/03/20	3:00	1.3	311
18/03/20	4:00	2.2	310
18/03/20	5:00	1.8	284
18/03/20	6:00	0.9	277
18/03/20	7:00	2.2	294
18/03/20	8:00	1.8	291
18/03/20	9:00	1.3	274
18/03/20	10:00	1.8	349
18/03/20	11:00	2.7	351
18/03/20	12:00	2.7	339
18/03/20	13:00	3.1	345
18/03/20	14:00	3.1	351
18/03/20	15:00	3.6	339
18/03/20	16:00	3.6	350
18/03/20	17:00	2.7	354
18/03/20	18:00	1.3	352
18/03/20	19:00	1.3	305
18/03/20	20:00	1.3	314
18/03/20	21:00	1.3	311
18/03/20	22:00	1.3	352
18/03/20	23:00	0.9	350
18/03/21	0:00	1.3	2
18/03/21	1:00	0.9	265
18/03/21	2:00	0.9	309
18/03/21	3:00	1.8	352
18/03/21	4:00	1.3	345
18/03/21	5:00	1.3	355
18/03/21	6:00	1.8	350
18/03/21	7:00	1.8	342
18/03/21	8:00	2.2	12
18/03/21	9:00	2.7	14
18/03/21	10:00	1.8	10
18/03/21	11:00	2.2	355
18/03/21	12:00	2.7	317
18/03/21	13:00	1.8	4
18/03/21	14:00	1.8	10
18/03/21	15:00	1.8	351
18/03/21	16:00	1.8	19
18/03/21	17:00	1.8	344
18/03/21	18:00	1.8	339
18/03/21	19:00	1.3	351
18/03/21	20:00	0.4	355

**Meteorological Data for Impact Monitoring in the reporting period**

<b>Date (yy-mm-dd)</b>	<b>Time (24hrs)</b>	<b>Average of Wind Speed (m/s)</b>	<b>Average of Wind Direction(degree)</b>
18/03/21	21:00	0.4	2
18/03/21	22:00	1.8	350
18/03/21	23:00	3.1	357
18/03/23	0:00	0.9	46
18/03/23	1:00	0.9	17
18/03/23	2:00	0.9	44
18/03/23	3:00	0.4	70
18/03/23	4:00	0.4	51
18/03/23	5:00	0.4	55
18/03/23	6:00	0.9	49
18/03/23	7:00	0.9	60
18/03/23	8:00	2.2	84
18/03/23	9:00	1.8	71
18/03/23	10:00	2.2	110
18/03/23	11:00	2.2	139
18/03/23	12:00	2.2	141
18/03/23	13:00	1.8	132
18/03/23	14:00	1.8	200
18/03/23	15:00	2.7	132
18/03/23	16:00	3.6	135
18/03/23	17:00	2.7	140
18/03/23	18:00	2.2	116
18/03/23	19:00	1.8	92
18/03/23	20:00	1.3	88
18/03/23	21:00	0.9	74
18/03/23	22:00	0.9	38
18/03/23	23:00	0.4	39
18/03/24	0:00	0.9	68
18/03/24	1:00	0.9	42
18/03/24	2:00	0.9	69
18/03/24	3:00	1.3	40
18/03/24	4:00	0.9	72
18/03/24	5:00	0.4	35
18/03/24	6:00	0.4	10
18/03/24	7:00	0.4	68
18/03/24	8:00	1.3	113
18/03/24	9:00	1.8	100
18/03/24	10:00	3.6	114
18/03/24	11:00	2.7	116
18/03/24	12:00	3.1	105
18/03/24	13:00	3.1	120
18/03/24	14:00	4	117
18/03/24	15:00	3.6	111
18/03/24	16:00	4	120
18/03/24	17:00	3.1	93
18/03/24	18:00	2.7	95
18/03/24	19:00	2.7	84
18/03/24	20:00	2.2	88
18/03/24	21:00	2.2	86
18/03/24	22:00	1.3	82
18/03/24	23:00	1.8	97
18/03/26	0:00	0	-
18/03/26	1:00	0.4	67
18/03/26	2:00	0.4	71
18/03/26	3:00	0.9	70
18/03/26	4:00	0.9	39
18/03/26	5:00	0.4	77

**Meteorological Data for Impact Monitoring in the reporting period**

<b>Date (yy-mm-dd)</b>	<b>Time (24hrs)</b>	<b>Average of Wind Speed (m/s)</b>	<b>Average of Wind Direction(degree)</b>
18/03/26	6:00	0.4	66
18/03/26	7:00	0.4	50
18/03/26	8:00	0.4	69
18/03/26	9:00	1.3	135
18/03/26	10:00	0.9	129
18/03/26	11:00	1.8	225
18/03/26	12:00	1.8	230
18/03/26	13:00	3.1	221
18/03/26	14:00	1.8	219
18/03/26	15:00	2.2	227
18/03/26	16:00	1.3	276
18/03/26	17:00	1.3	220
18/03/26	18:00	0.9	311
18/03/26	19:00	0.4	92
18/03/26	20:00	0.9	71
18/03/26	21:00	0.4	65
18/03/26	22:00	0.4	355
18/03/26	23:00	0.4	344
18/03/27	0:00	0	-
18/03/27	1:00	0	-
18/03/27	2:00	0	-
18/03/27	3:00	0.9	92
18/03/27	4:00	0.4	115
18/03/27	5:00	0	-
18/03/27	6:00	0	-
18/03/27	7:00	0.4	340
18/03/27	8:00	0	-
18/03/27	9:00	0.9	171
18/03/27	10:00	0.9	176
18/03/27	11:00	0.9	181
18/03/27	12:00	1.3	140
18/03/27	13:00	1.8	229
18/03/27	14:00	2.2	226
18/03/27	15:00	2.7	201
18/03/27	16:00	2.7	194
18/03/27	17:00	2.2	232
18/03/27	18:00	0.9	274
18/03/27	19:00	0.9	70
18/03/27	20:00	1.3	93
18/03/27	21:00	1.3	95
18/03/27	22:00	0.9	77
18/03/27	23:00	0.9	42
18/03/29	0:00	1.8	95
18/03/29	1:00	1.8	84
18/03/29	2:00	1.8	80
18/03/29	3:00	1.3	79
18/03/29	4:00	0.9	81
18/03/29	5:00	0	-
18/03/29	6:00	0	-
18/03/29	7:00	0	-
18/03/29	8:00	0.4	43
18/03/29	9:00	0.9	107
18/03/29	10:00	1.8	92
18/03/29	11:00	1.8	81
18/03/29	12:00	1.8	87
18/03/29	13:00	2.2	133
18/03/29	14:00	2.2	226

**Meteorological Data for Impact Monitoring in the reporting period**

<b>Date (yy-mm-dd)</b>	<b>Time (24hrs)</b>	<b>Average of Wind Speed (m/s)</b>	<b>Average of Wind Direction(degree)</b>
18/03/29	15:00	2.7	231
18/03/29	16:00	1.8	229
18/03/29	17:00	1.3	111
18/03/29	18:00	1.8	95
18/03/29	19:00	1.8	88
18/03/29	20:00	1.8	87
18/03/29	21:00	1.3	96
18/03/29	22:00	1.3	75
18/03/29	23:00	1.3	71
18/03/30	0:00	0.9	80
18/03/30	1:00	0.9	67
18/03/30	2:00	1.3	101
18/03/30	3:00	0.9	94
18/03/30	4:00	0.4	46
18/03/30	5:00	0.4	42
18/03/30	6:00	0.9	41
18/03/30	7:00	0.9	311
18/03/30	8:00	0.9	95
18/03/30	9:00	2.2	98
18/03/30	10:00	3.1	113
18/03/30	11:00	2.2	105
18/03/30	12:00	3.1	135
18/03/30	13:00	2.7	137
18/03/30	14:00	2.2	226
18/03/30	15:00	1.8	231
18/03/30	16:00	1.3	107
18/03/30	17:00	2.2	95
18/03/30	18:00	2.7	90
18/03/30	19:00	1.8	91
18/03/30	20:00	2.2	88
18/03/30	21:00	3.6	110
18/03/30	22:00	3.1	91
18/03/30	23:00	3.6	95



Appendix I

# Impact Dolphin Monitoring Survey

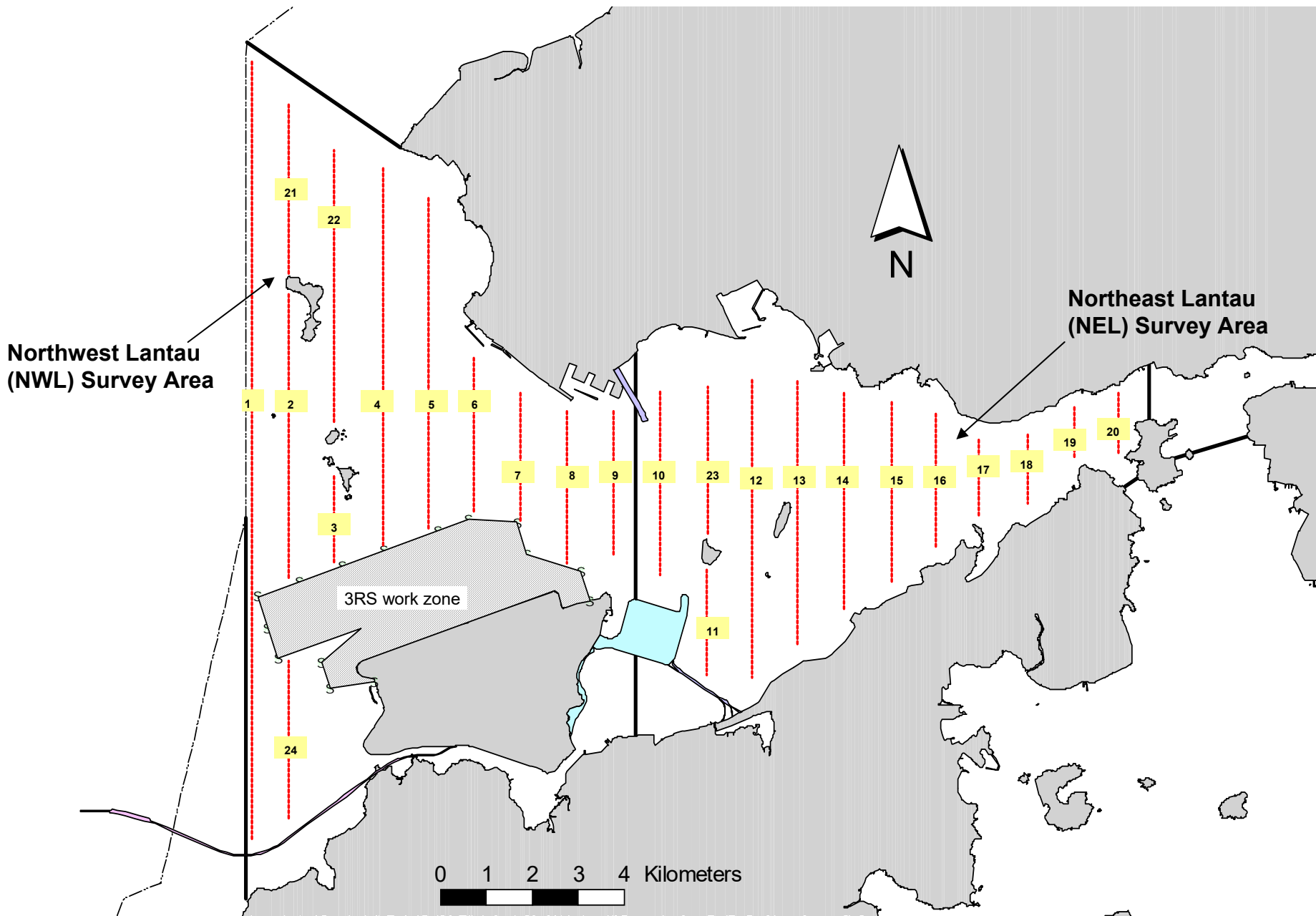


Figure 1. Transect Line Layout in Northwest and Northeast Lantau Survey Areas

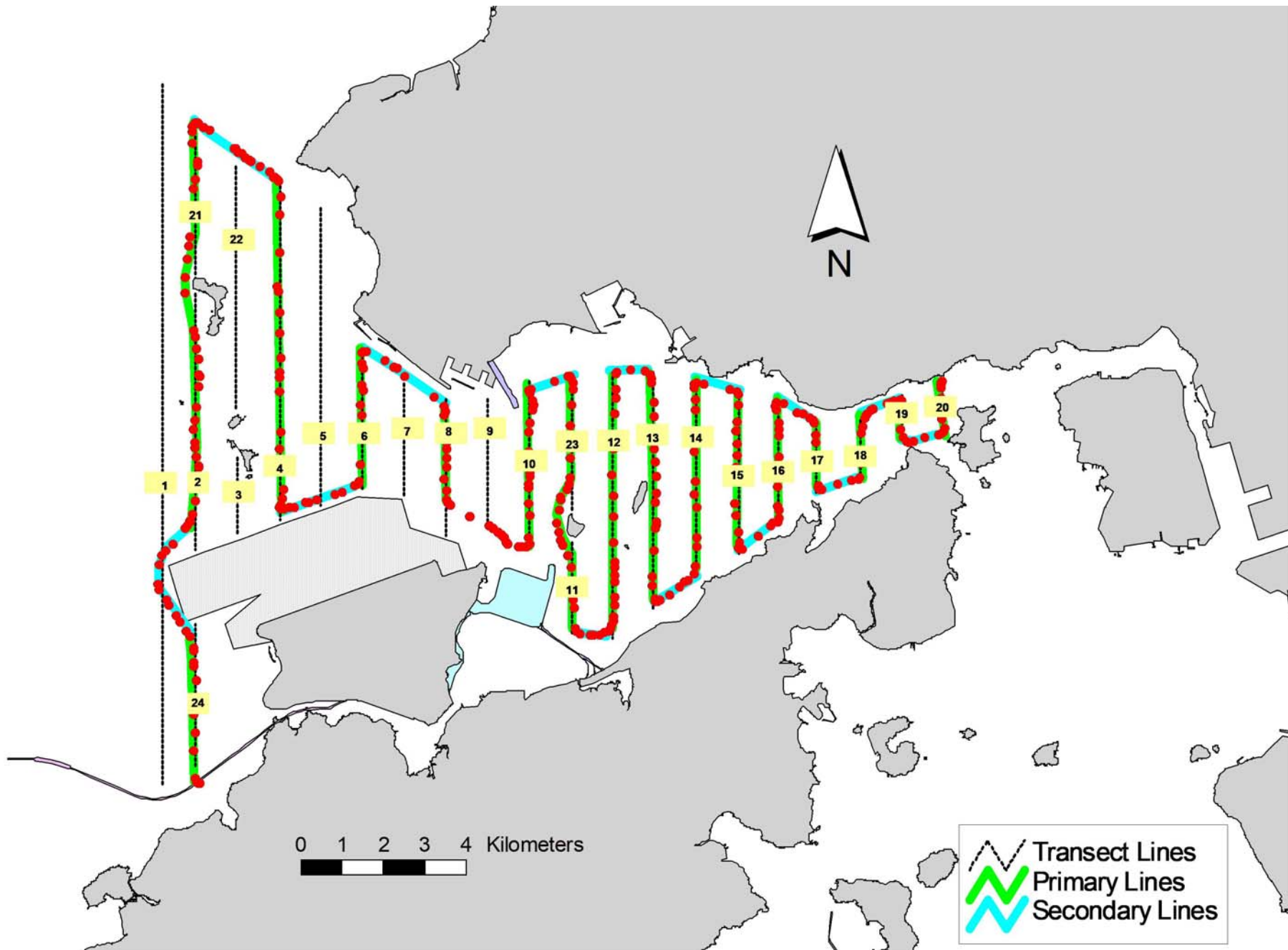


Figure 2. Survey Route on March 8<sup>th</sup>, 2018 (from HKLR03 project)

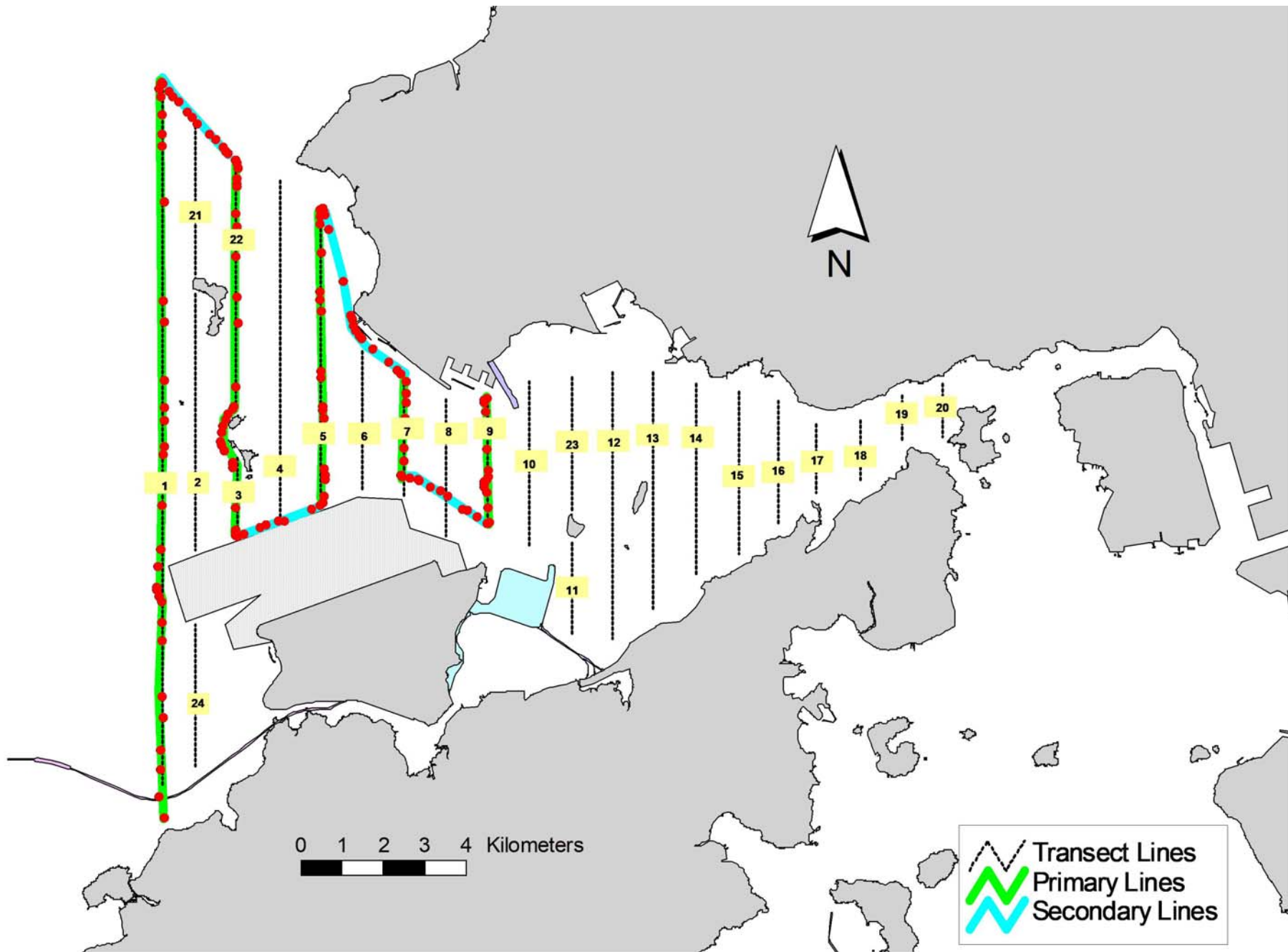


Figure 3. Survey Route on March 12<sup>th</sup>, 2018 (from HKLR03 project)

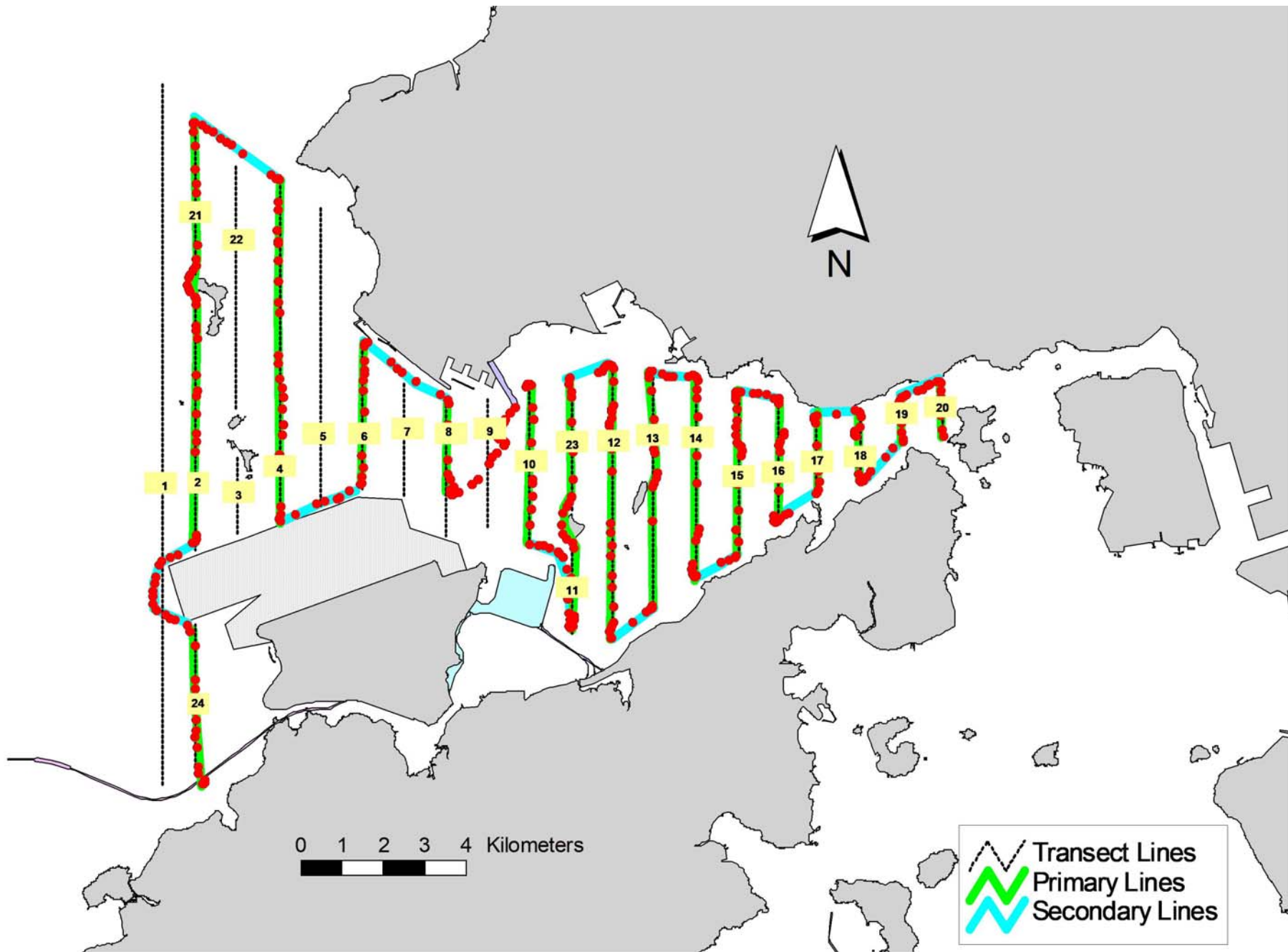


Figure 4. Survey Route on March 20<sup>th</sup>, 2018 (from HKLR03 project)

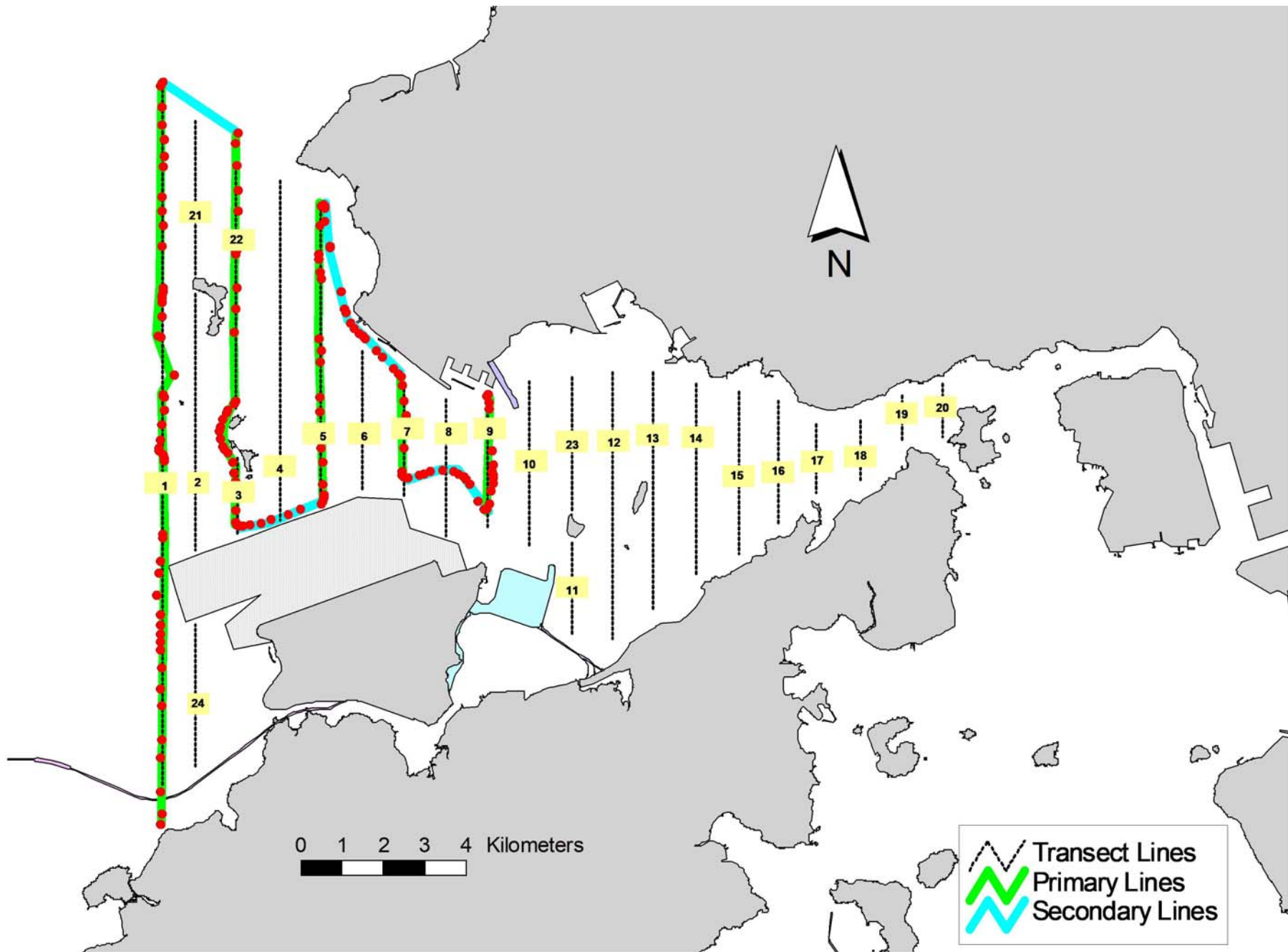


Figure 5. Survey Route on March 23<sup>rd</sup>, 2018 (from HKLR03 project)

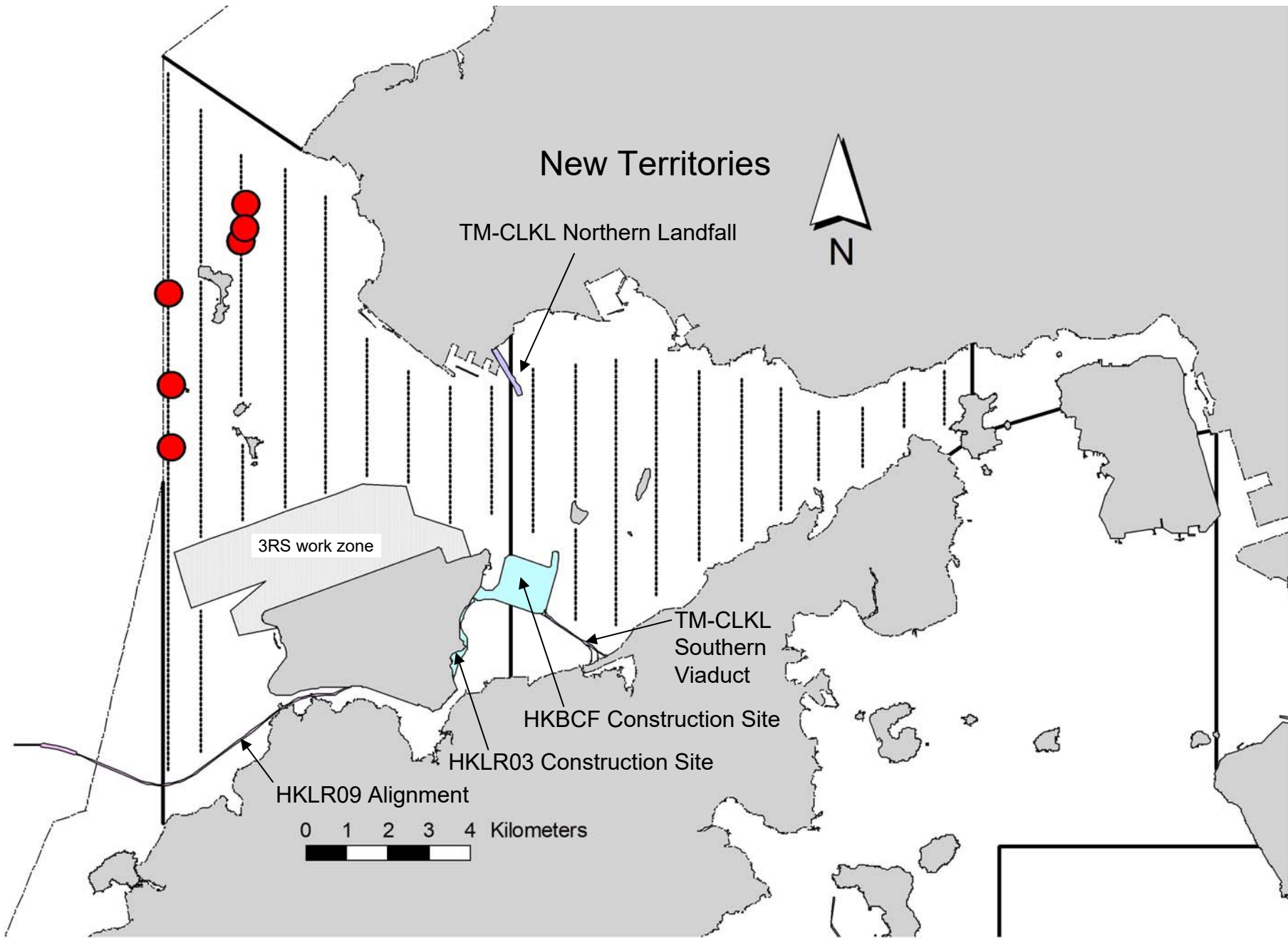


Figure 6. Distribution of Chinese White Dolphin Sightings during March 2018 HKLR03 Monitoring Surveys

## Appendix I. HKLR03 Survey Effort Database (March 2018)

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

DATE	AREA	BEAU	EFFORT	SEASON	VESSEL	TYPE	P/S
8-Mar-18	NE LANTAU	2	21.56	SPRING	STANDARD36826	HKLR	P
8-Mar-18	NE LANTAU	3	13.44	SPRING	STANDARD36826	HKLR	P
8-Mar-18	NE LANTAU	2	6.79	SPRING	STANDARD36826	HKLR	S
8-Mar-18	NE LANTAU	3	4.71	SPRING	STANDARD36826	HKLR	S
8-Mar-18	NW LANTAU	2	5.20	SPRING	STANDARD36826	HKLR	P
8-Mar-18	NW LANTAU	3	17.08	SPRING	STANDARD36826	HKLR	P
8-Mar-18	NW LANTAU	4	2.40	SPRING	STANDARD36826	HKLR	P
8-Mar-18	NW LANTAU	2	3.42	SPRING	STANDARD36826	HKLR	S
8-Mar-18	NW LANTAU	3	1.60	SPRING	STANDARD36826	HKLR	S
8-Mar-18	NW LANTAU	4	5.60	SPRING	STANDARD36826	HKLR	S
12-Mar-18	NW LANTAU	1	4.88	SPRING	STANDARD36826	HKLR	P
12-Mar-18	NW LANTAU	2	30.68	SPRING	STANDARD36826	HKLR	P
12-Mar-18	NW LANTAU	1	1.00	SPRING	STANDARD36826	HKLR	S
12-Mar-18	NW LANTAU	2	12.34	SPRING	STANDARD36826	HKLR	S
20-Mar-18	NE LANTAU	2	7.92	SPRING	STANDARD36826	HKLR	P
20-Mar-18	NE LANTAU	3	26.28	SPRING	STANDARD36826	HKLR	P
20-Mar-18	NE LANTAU	4	3.00	SPRING	STANDARD36826	HKLR	P
20-Mar-18	NE LANTAU	2	4.82	SPRING	STANDARD36826	HKLR	S
20-Mar-18	NE LANTAU	3	8.18	SPRING	STANDARD36826	HKLR	S
20-Mar-18	NE LANTAU	4	1.30	SPRING	STANDARD36826	HKLR	S
20-Mar-18	NW LANTAU	2	0.77	SPRING	STANDARD36826	HKLR	P
20-Mar-18	NW LANTAU	3	6.09	SPRING	STANDARD36826	HKLR	P
20-Mar-18	NW LANTAU	4	17.10	SPRING	STANDARD36826	HKLR	P
20-Mar-18	NW LANTAU	5	2.10	SPRING	STANDARD36826	HKLR	P
20-Mar-18	NW LANTAU	3	3.40	SPRING	STANDARD36826	HKLR	S
20-Mar-18	NW LANTAU	4	4.54	SPRING	STANDARD36826	HKLR	S
20-Mar-18	NW LANTAU	5	2.60	SPRING	STANDARD36826	HKLR	S
23-Mar-18	NW LANTAU	1	4.22	SPRING	STANDARD36826	HKLR	P
23-Mar-18	NW LANTAU	2	19.38	SPRING	STANDARD36826	HKLR	P
23-Mar-18	NW LANTAU	3	10.11	SPRING	STANDARD36826	HKLR	P
23-Mar-18	NW LANTAU	2	9.28	SPRING	STANDARD36826	HKLR	S
23-Mar-18	NW LANTAU	3	1.55	SPRING	STANDARD36826	HKLR	S



**Appendix II. HKLR03 Chinese White Dolphin Sighting Database (March 2018)**

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

DATE	STG #	TIME	HRD SZ	AREA	BEAU	PSD	EFFORT	TYPE	NORTHING	EASTING	SEASON	BOAT ASSOC.	P/S
12-Mar-18	1	1207	3	NW LANTAU	1	149	ON	HKLR	827547	806417	SPRING	NONE	P
23-Mar-18	1	1046	4	NW LANTAU	3	705	ON	HKLR	822867	804739	SPRING	NONE	P
23-Mar-18	2	1055	12	NW LANTAU	2	96	ON	HKLR	824284	804721	SPRING	NONE	P
23-Mar-18	3	1122	2	NW LANTAU	2	251	ON	HKLR	826377	804684	SPRING	NONE	P
23-Mar-18	4	1322	2	NW LANTAU	1	515	ON	HKLR	828400	806542	SPRING	NONE	P
23-Mar-18	5	1328	3	NW LANTAU	2	486	ON	HKLR	827846	806510	SPRING	NONE	P

**Appendix III. Individual dolphins identified during HKLR03 monitoring surveys in March 2018**

<b>ID#</b>	<b>DATE</b>	<b>STG#</b>	<b>AREA</b>
CH34	12/03/18	1	NW LANTAU
NL98	23/03/18	2	NW LANTAU
NL120	23/03/18	2	NW LANTAU
NL136	12/03/18	1	NW LANTAU
NL182	12/03/18	1	NW LANTAU
NL226	23/03/18	2	NW LANTAU
NL269	23/03/18	2	NW LANTAU
NL329	23/03/18	2	NW LANTAU
WL124	23/03/18	2	NW LANTAU
WL145	23/03/18	2	NW LANTAU
WL179	23/03/18	2	NW LANTAU
WL276	23/03/18	2	NW LANTAU

CH34\_20180312\_1



NL136\_20180312\_1



NL182\_20180312\_1



NL98\_20180323\_2



NL120\_20180323\_2



NL226\_20180323\_2



NL269\_20180323\_2



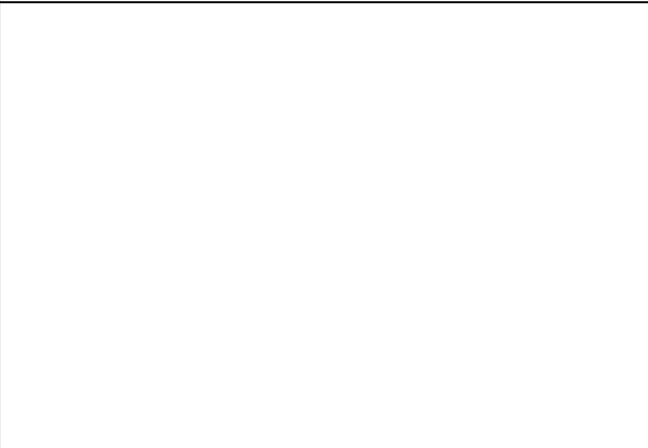
NL329\_20180323\_2



WL124\_20180323\_2



Appendix IV. Photographs of Identified Individual Dolphins in March 2018 (HKLR03)



Appendix IV. (cont'd)

Appendix J

## Event and Action Plan

*Event and Action Plan for Impact Air Monitoring*

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

	<b>Action</b>			
	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

**Event / Action Plan for Impact Dolphin Monitoring**

EVENT	ACTION			
	ET	IEC	SOR	Contractor
Action Level	<ol style="list-style-type: none"> <li>1. Repeat statistical data analysis to confirm findings;</li> <li>2. Review all available and relevant data, including raw data and statistical analysis results of other parameters covered in the EM&amp;A, to ascertain if differences are as a result of natural variation or previously observed seasonal differences;</li> <li>3. Identify source(s) of impact;</li> <li>4. Inform the IEC, SOR and Contractor;</li> <li>5. Check monitoring data.</li> <li>6. Review to ensure all the dolphin protective measures are fully and properly implemented and advise on additional measures if necessary.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by ET and Contractor;</li> <li>2. Discuss monitoring results and finding with the ET and the Contractor.</li> </ol>	<ol style="list-style-type: none"> <li>1. Discuss monitoring with the IEC and any other measures proposed by the ET;</li> <li>2. If SOR is satisfied with the proposal of any other measures, SOR to signify the agreement in writing on the measures to be implemented.</li> </ol>	<ol style="list-style-type: none"> <li>1. Inform the SOR and confirm notification of the non-compliance in writing;</li> <li>2. Discuss with the ET and the IEC and propose measures to the IEC and the SOR;</li> <li>3. Implement the agreed measures.</li> </ol>
Limit Level	<ol style="list-style-type: none"> <li>1. Repeat statistical data analysis to confirm findings;</li> <li>2. Review all available and relevant data, including raw data and statistical analysis results of other parameters covered in the EM&amp;A, to ascertain if differences are as a result of natural variation or previously observed seasonal differences;</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by ET and Contractor;</li> <li>2. Discuss monitoring results and findings with the ET and the Contractor;</li> <li>3. Attend the meeting to discuss with ET, SOR and</li> </ol>	<ol style="list-style-type: none"> <li>1. Attend the meeting to discuss with ET, IEC and Contractor the necessity of additional dolphin monitoring and any other potential mitigation measures.</li> <li>2. If SOR is satisfied with the</li> </ol>	<ol style="list-style-type: none"> <li>1. Inform the SOR and confirm notification of the non-compliance in writing;</li> <li>2. Attend the meeting to discuss with ET, IEC and SOR the necessity of additional dolphin monitoring and any other</li> </ol>



EVENT	ACTION			
	ET	IEC	SOR	Contractor
	<ol style="list-style-type: none"> <li>3. Identify source(s) of impact;</li> <li>4. Inform the IEC, SOR and Contractor of findings;</li> <li>5. Check monitoring data;</li> <li>6. Repeat review to ensure all the dolphin protective measures are fully and properly implemented and advise on additional measures if necessary.</li> <li>7. If ET proves that the source of impact is caused by any of the construction activity by the works contract, ET to arrange a meeting to discuss with IEC, SOR and Contractor the necessity of additional dolphin monitoring and/or any other potential mitigation measures (e.g., consider to modify the perimeter silt curtain or consider to control/temporarily stop relevant construction activity etc.) and submit to IEC a proposal of additional dolphin monitoring and/or mitigation measures where necessary.</li> </ol>	<p>Contractor the necessity of additional dolphin monitoring and any other potential mitigation measures.</p> <ol style="list-style-type: none"> <li>4. Review proposals for additional monitoring and any other mitigation measures submitted by ET and Contractor and advise SOR of the results and findings accordingly.</li> <li>5. Supervise / Audit the implementation of additional monitoring and/or any other mitigation measures and advise SOR the results and findings accordingly.</li> </ol>	<p>proposals for additional dolphin monitoring and/or any other mitigation measures submitted by ET and Contractor and verified by IEC, SOR to signify the agreement in writing on such proposals and any other mitigation measures.</p> <ol style="list-style-type: none"> <li>3. Supervise the implementation of additional monitoring and/or any other mitigation measures.</li> </ol>	<p>potential mitigation measures.</p> <ol style="list-style-type: none"> <li>3. Jointly submit with ET to IEC a proposal of additional dolphin monitoring and/or any other mitigation measures when necessary.</li> <li>4. Implement the agreed additional dolphin monitoring and/or any other mitigation measures.</li> </ol>

Note: ET – Environmental Team, IEC – Independent Environmental Checker, SOR – Supervising Officer’s Representative

Appendix K

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

**Table K1** *Cumulative Statistics on Exceedances*

Parameters	Level of Exceedance	Total No. recorded in this reporting month	Total No. recorded since project commencement
1-hr TSP	Action	2	66
	Limit	0	4
24-hr TSP	Action	0	7
	Limit	0	4
Water Quality	Action	0	20
	Limit	0	1
Impact Dolphin Monitoring	Action	0	11
	Limit	0	11

**Table K2** *Cumulative Statistics on Complaints, Notifications of Summons and Successful Prosecutions*

Reporting Period	Cumulative Statistics		
	Complaints	Notifications of Summons	Successful Prosecutions
This Reporting Month (March 2018)	0	0	0
Total No. received since project commencement	16	1	0

Email  
message

**Environmental  
Resources  
Management**

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

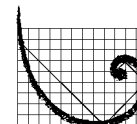
**From** ERM- Hong Kong, Limited

**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** 16 March 2018

16/F Berkshire House,  
25 Westlands Road  
Quarry Bay, Hong Kong  
Telephone: (852) 2271 3113  
Facsimile: (852) 2723 5660  
E-mail: jovy.tam@erm.com



**ERM**

---

Dear Sir or Madam,

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

**0212330\_2March2018\_1hrTSP\_Station ASR1**

One Action Level Exceedance was recorded on 2 March 2018.

Regards,

A handwritten signature in black ink, appearing to be 'Jovy Tam'.

Mr Jovy Tam  
Environmental Team Leader

---

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This facsimile transmission is intended only for the use of the addressee and is confidential. If you are not the addressee it may be unlawful for you to read, copy, distribute, disclose or otherwise use the information in this facsimile. If you are not the intended recipient, please telephone or fax us.

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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

Log No.	0212330_2March2018_1hrTSP_Station ASR1 [Total No. of Exceedances = 1]	
Date	2 March 2018 (Measured) 16 March 2018 (Laboratory results received by ERM)	
Monitoring Station	ASR1, ASR5, ASR6, ASR10 and AQMS1	
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 ASR1 ( $460 \mu\text{g}/\text{m}^3$ ) during 0957 - 1057 hrs.	
Works Undertaken (at the time of monitoring event)	On 2 March 2018, box culvert extension was carried out at Works Area Portion N-A and Construction of Ventilation Building at Portion N-C.	
Possible Reason for Action or Limit Level Exceedance(s)	<p>The exceedance is unlikely to be due to the Project, in view of the following:</p> <ul style="list-style-type: none"> <li>According to the construction information provided by the Contractor, the majority of ground construction works on 2 March 2018 were box culvert extension at Works Area Portion N-A and Construction of Ventilation Building at Portions N-C. During the period of the land-based construction works, the Contractor has implemented the required mitigation measures as per the EP, approved EIA and Updated EM&amp;A Manual (e.g. water spraying on exposed soil within the Project site and associated works areas; exposed soil covered by tarpaulin sheets).</li> <li>The exceedances are unlikely to be due to the project as dust suppression measures were implemented properly on site. Water spraying was applied. Exposed soil at Portion N-A was also covered by tarpaulin sheets.</li> </ul> <p>Based on the above, the exceedances are unlikely to be due to the project.</p>	

<p><b>Actions Taken/ To Be Taken</b></p>	<p>According to the photo record on 2 March 2018, the Contractor has properly implemented dust suppression measures on site. Follow up site inspection was carried out on 19 March 2018. Box culvert extension was carried out at Works Area Portion N-A and Construction of Ventilation Building was carried out at Portion N-C. Water spraying was applied to prevent dust. Photo record is provided in Annex A. Photos taken during AQM were also provided. No significant dust impact was observed at ASR1. Dust suppression measures were properly implemented during the site inspections.</p> <p>The Contractor has been reminded to implement the required mitigation measures as per the EP, approved EIA and Updated EM&amp;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 Project site) throughout the construction period. The Contractor was also reminded to ensure all dust mitigation measures are provided at Portion N-A and Portion N-C, where the construction works are carried out.</p> <p>As occasional exceedances were observed at ASR1, the Contractor has been reminded to enhance their dust mitigation measures at the works area, especially Portion N-A, which is closest to ASR1. Water spraying should be applied more frequently to prevent dust. The Contractor should also ensure that the exposed soil at Portion N-A was covered by tarpaulin sheets.</p>
<p><b>Remarks</b></p>	<p>The monitoring results and the locations of air quality monitoring stations are attached.</p>



## Annex A Photos provided by the Contractor

\*Note: Photos taken on 2/3/2018



Water spraying was applied frequently on site.  
(Works Area Portion N-A)



Exposed soil at Portion N-A was covered by tarpaulin sheets. (Works Area Portion N-A)



## Annex A Photos taken during site inspection

\*Note: Photos taken on 19/3/2018



Water spraying was applied frequently on site.  
(Works Area Portion N-C)



Water spraying was applied frequently on site.  
(Works Area Portion N-B)





**Annex A      Photos taken during AQM monitoring**

\*Note: Photos taken on 2/3/2018



ASR1

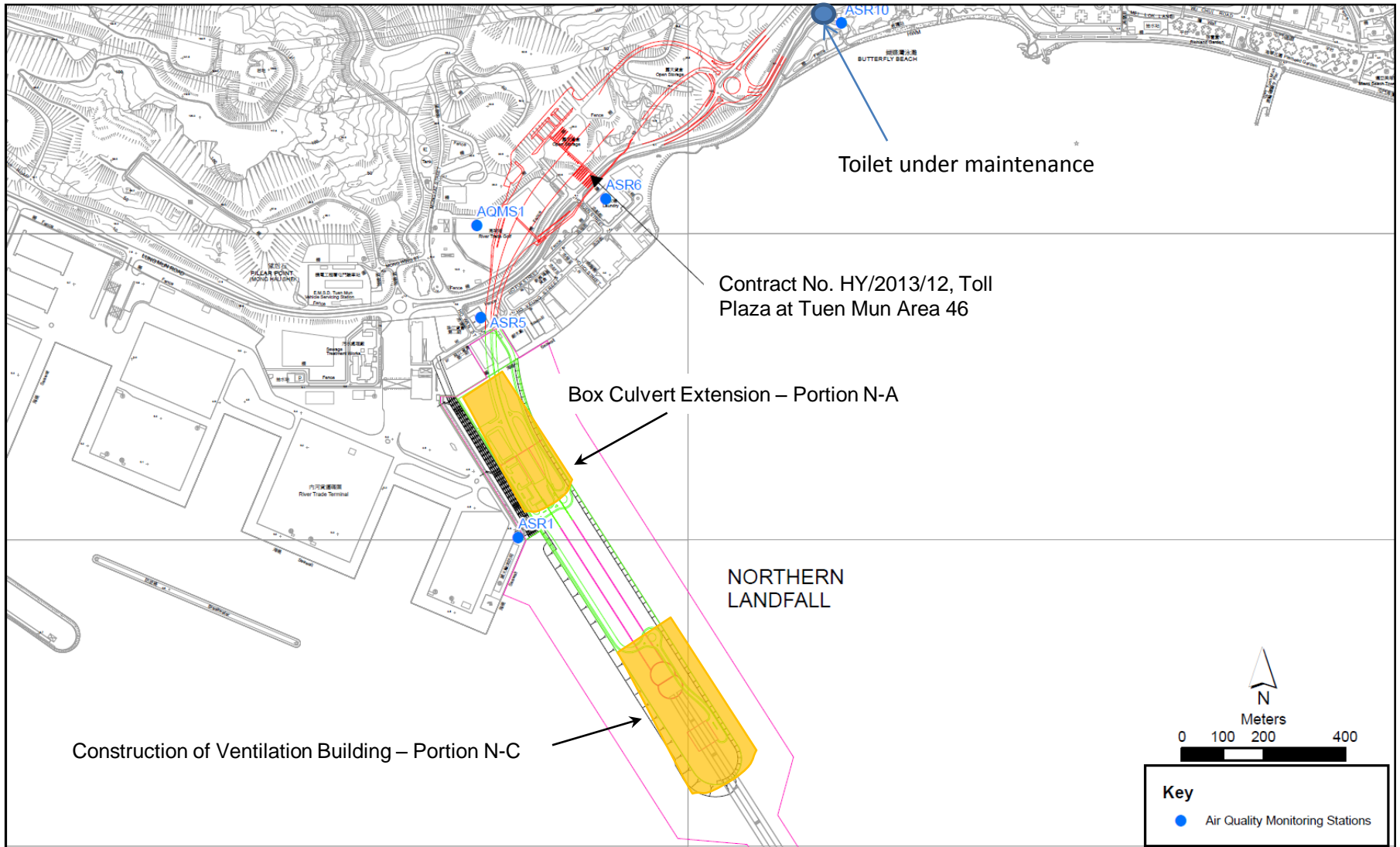


Figure 1

Indicative Construction Works Area on 2 March 2018

TMCLKL	HY/2012/08	2/3/2018	AQMS1	Sunny	9:07	1-hour TSP	156	ug/m3
TMCLKL	HY/2012/08	2/3/2018	AQMS1	Sunny	10:09	1-hour TSP	172	ug/m3
TMCLKL	HY/2012/08	2/3/2018	AQMS1	Sunny	11:11	1-hour TSP	131	ug/m3
TMCLKL	HY/2012/08	2/3/2018	ASR1	Sunny	8:55	1-hour TSP	125	ug/m3
TMCLKL	HY/2012/08	2/3/2018	ASR1	Sunny	9:57	1-hour TSP	460	ug/m3
TMCLKL	HY/2012/08	2/3/2018	ASR1	Sunny	10:59	1-hour TSP	157	ug/m3
TMCLKL	HY/2012/08	2/3/2018	ASR10	Sunny	8:22	1-hour TSP	63	ug/m3
TMCLKL	HY/2012/08	2/3/2018	ASR10	Sunny	9:24	1-hour TSP	52	ug/m3
TMCLKL	HY/2012/08	2/3/2018	ASR10	Sunny	10:26	1-hour TSP	59	ug/m3
TMCLKL	HY/2012/08	2/3/2018	ASR5	Sunny	8:44	1-hour TSP	222	ug/m3
TMCLKL	HY/2012/08	2/3/2018	ASR5	Sunny	9:46	1-hour TSP	183	ug/m3
TMCLKL	HY/2012/08	2/3/2018	ASR5	Sunny	10:48	1-hour TSP	219	ug/m3
TMCLKL	HY/2012/08	2/3/2018	ASR6	Sunny	8:32	1-hour TSP	92	ug/m3
TMCLKL	HY/2012/08	2/3/2018	ASR6	Sunny	9:34	1-hour TSP	77	ug/m3
TMCLKL	HY/2012/08	2/3/2018	ASR6	Sunny	10:36	1-hour TSP	81	ug/m3
TMCLKL	HY/2012/08	2/3/2018	AQMS1	Sunny	12:13	24-hour TSP	85	ug/m3
TMCLKL	HY/2012/08	2/3/2018	ASR1	Sunny	12:01	24-hour TSP	108	ug/m3
TMCLKL	HY/2012/08	2/3/2018	ASR10	Sunny	11:28	24-hour TSP	55	ug/m3
TMCLKL	HY/2012/08	2/3/2018	ASR5	Sunny	11:50	24-hour TSP	130	ug/m3
TMCLKL	HY/2012/08	2/3/2018	ASR6	Sunny	11:38	24-hour TSP	71	ug/m3

<b>Meteorological Data for Impact Monitoring in the reporting period</b>			
<b>Date (yy-mm-dd)</b>	<b>Time (24hrs)</b>	<b>Average of Wind Speed (m/s)</b>	<b>Average of Wind Direction(degree)</b>
18/03/02	0:00	1.8	92
18/03/02	1:00	1.8	95
18/03/02	2:00	1.3	70
18/03/02	3:00	1.3	46
18/03/02	4:00	1.3	92
18/03/02	5:00	1.3	44
18/03/02	6:00	1.8	93
18/03/02	7:00	1.3	65
18/03/02	8:00	2.2	92
18/03/02	9:00	2.2	81
18/03/02	10:00	2.7	93
18/03/02	11:00	2.7	96
18/03/02	12:00	1.8	97
18/03/02	13:00	1.8	75
18/03/02	14:00	1.3	70
18/03/02	15:00	1.8	93
18/03/02	16:00	1.8	71
18/03/02	17:00	1.3	46
18/03/02	18:00	1.8	50
18/03/02	19:00	1.8	42
18/03/02	20:00	1.8	43
18/03/02	21:00	1.3	52
18/03/02	22:00	1.3	51
18/03/02	23:00	1.8	93

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** 3 April 2018

16/F Berkshire House,  
25 Westlands Road  
Quarry Bay, Hong Kong  
Telephone: (852) 2271 3113  
Facsimile: (852) 2723 5660  
E-mail: jovy.tam@erm.com



**ERM**

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Dear Sir or Madam,

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

0212330\_20March2018\_1hrTSP\_Station ASR1

One Action Level Exceedance was recorded on 20 March 2018.

Regards,



Mr Jovy Tam  
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>	0212330_20March2018_1hrTSP_Station ASR1 [Total No. of Exceedances = 1]	
<b>Date</b>	20 March 2018 (Measured) 1 April 2018 (Laboratory results received by ERM)	
<b>Monitoring Station</b>	ASR1, ASR5, ASR6, ASR10 and AQMS1	
<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 ASR1 (446 $\mu\text{g}/\text{m}^3$ ) during 1552 - 1652 hrs.	
<b>Works Undertaken (at the time of monitoring event)</b>	On 20 March 2018, box culvert extension was carried out at Works Area Portion N-A and Construction of Ventilation Building at Portion N-C.	
<b>Possible Reason for Action or Limit Level Exceedance(s)</b>	<p>The exceedance is unlikely to be due to the Project, in view of the following:</p> <ul style="list-style-type: none"> <li>According to the construction information provided by the Contractor, the majority of ground construction works on 20 March 2018 were box culvert extension at Works Area Portion N-A and Construction of Ventilation Building at Portions N-C. During the period of the land-based construction works, the Contractor has implemented the required mitigation measures as per the EP, approved EIA and Updated EM&amp;A Manual (e.g. water spraying on exposed soil within the Project site and associated works areas; exposed soil covered by tarpaulin sheets).</li> <li>The exceedances are unlikely to be due to the project as dust suppression measures were implemented properly on site. Water spraying was applied on site to prevent dust.</li> </ul> <p>Based on the above, the exceedances are unlikely to be due to the project.</p>	

<b>Actions Taken/ To Be Taken</b>	<p>Follow up site inspection was carried out on 5 April 2018. Box culvert extension was carried out at Works Area Portion N-A and Construction of Ventilation Building was carried out at Portion N-C. Water spraying was applied to prevent dust. Photo record is provided in Annex A. Photos taken during AQM were also provided. No significant dust impact was observed at ASR1. Dust suppression measures were properly implemented during the site inspections. Based on the above, no additional action is required.</p> <p>The Contractor has been reminded to implement the required mitigation measures as per the EP, approved EIA and Updated EM&amp;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 Project site) throughout the construction period. The Contractor was also reminded to ensure all dust mitigation measures are provided at Portion N-A and Portion N-C, where the construction works are carried out.</p>
<b>Remarks</b>	<p>The monitoring results and the locations of air quality monitoring stations are attached.</p>



## Annex A Photos taken during site inspection

\*Note: Photos taken on 5/4/2018



Water spraying was applied frequently on site.  
(Works Area Portion N-A)



Water spraying was applied frequently on site.  
(Works Area Portion N-C)





**Annex A      Photos taken during site inspection**

\*Note: Photos taken on 5/4/2018



Water spraying was applied frequently on site.  
(Works Area Portion N-C)



Water spraying was applied frequently on site.  
(Works Area Portion N-C)



**Annex A      Photos taken during AQM**

\*Note: Photos taken on 20/3/2018



ASR1

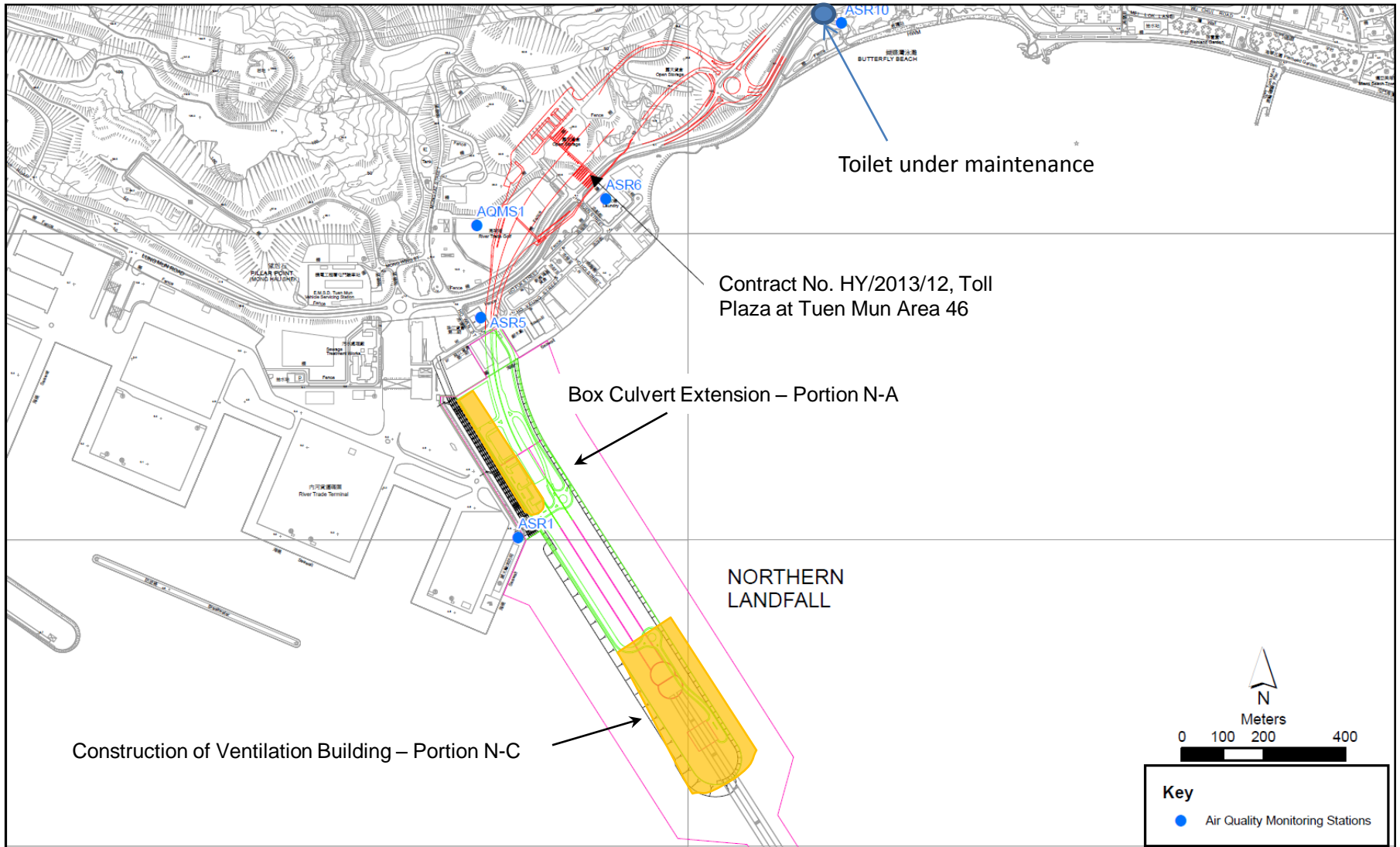


Figure 1

Indicative Construction Works Area on 20 March 2018

TMCLKL	HY/2012/08	20/3/2018	AQMS1	Sunny	14:00	1-hour TSP	85	ug/m3
TMCLKL	HY/2012/08	20/3/2018	AQMS1	Sunny	15:02	1-hour TSP	52	ug/m3
TMCLKL	HY/2012/08	20/3/2018	AQMS1	Sunny	16:04	1-hour TSP	51	ug/m3
TMCLKL	HY/2012/08	20/3/2018	ASR1	Sunny	13:48	1-hour TSP	210	ug/m3
TMCLKL	HY/2012/08	20/3/2018	ASR1	Sunny	14:50	1-hour TSP	233	ug/m3
TMCLKL	HY/2012/08	20/3/2018	ASR1	Sunny	15:52	1-hour TSP	446	ug/m3
TMCLKL	HY/2012/08	20/3/2018	ASR10	Sunny	13:16	1-hour TSP	69	ug/m3
TMCLKL	HY/2012/08	20/3/2018	ASR10	Sunny	14:18	1-hour TSP	44	ug/m3
TMCLKL	HY/2012/08	20/3/2018	ASR10	Sunny	15:20	1-hour TSP	48	ug/m3
TMCLKL	HY/2012/08	20/3/2018	ASR5	Sunny	13:37	1-hour TSP	234	ug/m3
TMCLKL	HY/2012/08	20/3/2018	ASR5	Sunny	14:39	1-hour TSP	180	ug/m3
TMCLKL	HY/2012/08	20/3/2018	ASR5	Sunny	15:41	1-hour TSP	250	ug/m3
TMCLKL	HY/2012/08	20/3/2018	ASR6	Sunny	13:27	1-hour TSP	169	ug/m3
TMCLKL	HY/2012/08	20/3/2018	ASR6	Sunny	14:29	1-hour TSP	201	ug/m3
TMCLKL	HY/2012/08	20/3/2018	ASR6	Sunny	15:31	1-hour TSP	163	ug/m3
TMCLKL	HY/2012/08	20/3/2018	AQMS1	Sunny	17:06	24-hour TSP	53	ug/m3
TMCLKL	HY/2012/08	20/3/2018	ASR1	Sunny	16:54	24-hour TSP	123	ug/m3
TMCLKL	HY/2012/08	20/3/2018	ASR10	Sunny	16:22	24-hour TSP	42	ug/m3
TMCLKL	HY/2012/08	20/3/2018	ASR5	Sunny	16:43	24-hour TSP	90	ug/m3
TMCLKL	HY/2012/08	20/3/2018	ASR6	Sunny	16:33	24-hour TSP	82	ug/m3

<b>Meteorological Data for Impact Monitoring in the reporting period</b>			
<b>Date (yy-mm-dd)</b>	<b>Time (24hrs)</b>	<b>Average of Wind Speed (m/s)</b>	<b>Average of Wind Direction(degree)</b>
18/03/20	0:00	0	-
18/03/20	1:00	0.4	194
18/03/20	2:00	1.3	312
18/03/20	3:00	1.3	311
18/03/20	4:00	2.2	310
18/03/20	5:00	1.8	284
18/03/20	6:00	0.9	277
18/03/20	7:00	2.2	294
18/03/20	8:00	1.8	291
18/03/20	9:00	1.3	274
18/03/20	10:00	1.8	349
18/03/20	11:00	2.7	351
18/03/20	12:00	2.7	339
18/03/20	13:00	3.1	345
18/03/20	14:00	3.1	351
18/03/20	15:00	3.6	339
18/03/20	16:00	3.6	350
18/03/20	17:00	2.7	354
18/03/20	18:00	1.3	352
18/03/20	19:00	1.3	305
18/03/20	20:00	1.3	314
18/03/20	21:00	1.3	311
18/03/20	22:00	1.3	352
18/03/20	23:00	0.9	350

Appendix L

## 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 March 2018 [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	1221.977	0.000	0.000	0.000	1221.977
Jan-2018	7.165	0.000	0.000	0.000	7.165
Feb-2018	1.762	0.000	0.000	0.000	1.762
Mar-2018	66.457	0.000	0.000	62.274	4.183
Apr-2018					
May-2018					
Jun-2018					
Half Year Sub-total					
Jul-2018					
Aug-2018					
Sep-2018					
Oct-2018					
Nov-2018					
Dec-2018					
Project Total Quantities	1297.361	0.000	0.000	62.274	1235.087

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	619.380	619.380	4.150	4.150	6.870	6.870	33.150	33.150	8.259
Jan-2018	241.500	241.500	0.200	0.200	0.000	0.000	2.800	2.800	0.272
Feb-2018	256.940	256.940	0.200	0.200	0.000	0.000	0.000	0.000	0.258
Mar-2018	229.360	229.360	0.000	0.000	0.000	0.000	2.000	2.000	0.459
Apr-2018									
May-2018									
Jun-2018									
Half Year Sub-total									
Jul-2018									
Aug-2018									
Sep-2018									
Oct-2018									
Nov-2018									
Dec-2018									
Project Total Quantities	1347.180	1347.180	4.350	4.350	6.870	6.870	37.950	37.950	9.248



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)
2.000	0.000	0.000	0.000	2.000

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)
50.000	0.000	0.000	0.000	0.200

- 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).