



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

*Sixty-sixth Monthly Environmental Monitoring &
Audit (EM&A) Report*

14 May 2019

Environmental Resources Management
2507, 25/F One Harbourfront
18 Tak Fung Street
Hung Hom, Kowloon
Hong Kong
Telephone 2271 3000
Facsimile 2723 5660

www.erm.com

Ref.: HYDZHMBEEM00_0_7391L.19

14 May 2019

By Fax (2293 6300) and By Post

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

Attention: 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
66th Monthly EM&A Report for April 2019 (EP-354/2009/D)**

Reference is made to the Monthly EM&A Report for April 2019 (ET's ref.: "0212330_66th Monthly EM&A_20190514.doc") certified by the ET Leader and provided to us via e-mail on 14 May 2019.

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

Internal: DY, YH, DF, ENPO Site

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Contract No. HY/2012/08

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

Environmental Resources Management

2507, 25/F One Harbourfront
18 Tak Fung Street
Hung Hom, Kowloon
Hong Kong
Telephone: (852) 2271 3000
Facsimile: (852) 2723 5660
E-mail: post.hk@erm.com
http://www.erm.com

Sixty-sixth Monthly Environmental Monitoring & Audit (EM&A) Report

Document Code: 0212330_66th Monthly EM&A_20190514.doc


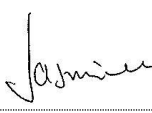


Client: DBJV		Project No: 0212330			
Summary: This document presents the Sixty-sixth Monthly EM&A Report for Tuen Mun – Chek Lap Kok Link Northern Connection Sub-sea Tunnel Section.		Date: 14 May 2019			
		Approved by: 			
		Mr Craig Reid Partner			
		Certified by: 			
		Dr Jasmine Ng ET Leader			
	66 th Monthly EM&A Report	VAR	JN	CAR	14/05/19
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 the Independent Environmental Checker (IEC) and Environmental Project Office (ENPO). Subsequent applications for variation of environmental permits (VEP), *EP-354/2009/B*, *EP-354/2009/C* and *EP-354/2009/D*, were granted on 28 January 2014, 10 December 2014 and 13 March 2015, respectively.

The construction phase of the Contract commenced on 1 November 2013 and will tentatively be completed by the end of 2019. 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 Sixty-sixth Monthly EM&A report presenting the EM&A works carried out during the period from 1 to 30 April 2019 for the *Contract No. HY/2012/08 Northern Connection Sub-sea Tunnel Section* (the “Contract”) in accordance with the Updated EM&A Manual of the TM-CLK Link Contract. As informed by the Contractor, major activities in the reporting period included:

Land-based Works

- Construction of Thermal barrier – TBM tunnel;
- Construction of Walkway Corbel & Cover – TBM Tunnel;
- RC structure – Portion N-A & S-A;
- ELS Removal – Portion S-A;
- D-wall Construction – Portion S-C
- Seawall Inspection and Remedial Works – Portion N-B
-

Marine-based Works

- Seawall Modification Works – Portion S-B

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
Water Quality Monitoring	7 sessions
Impact Dolphin Monitoring	2 sessions
Joint Environmental Site Inspection	4 sessions

Implementation of Marine Mammal Exclusion Zone

Daily marine mammal exclusion zone was in effect during the period of silt curtain installation in open waters under this Contract. No sighting of the Indo-Pacific humpback dolphin *Sousa chinensis* (i.e. Chinese White Dolphin) was recorded in April 2019 during the exclusion zone monitoring.

Summary of Breaches of Action/Limit Levels

Breaches of Action and Limit Levels for Air Quality

No exceedances were recorded in the air quality monitoring of this reporting month.

Breaches of Action and Limit Levels for Water Quality

No exceedances were recorded in the water quality monitoring of this reporting month.

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.

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

As stage 2 of sloping seawall construction has commenced on 15 April 2019, water quality monitoring was resumed in this reporting month.

Upcoming Works for the Next Reporting Month

Works to be undertaken in the next monitoring period of May 2019 include the following:

Land-based Works

- Construction of Thermal barrier – TBM tunnel;
- Bitumen Laying – TBM tunnel
- Construction of Walkway Corbel & Cover – TBM Tunnel;
- RC structure – Portion N-A & S-A;
- E&M Platform Installation – Portion S-A
- ELS Removal – Portion S-A;
- D-wall Construction – Portion S-C
- Seawall Inspection and Remedial Works – Portion N-B
-

Marine-based Works

- Seawall Modification Works – Portion S-B

Future Key Issue

Potential environmental impacts arising from the above upcoming construction activities in the next reporting month of May 2019 are mainly associated with dust, marine water quality, marine ecology and waste management issues.

1.1

BACKGROUND

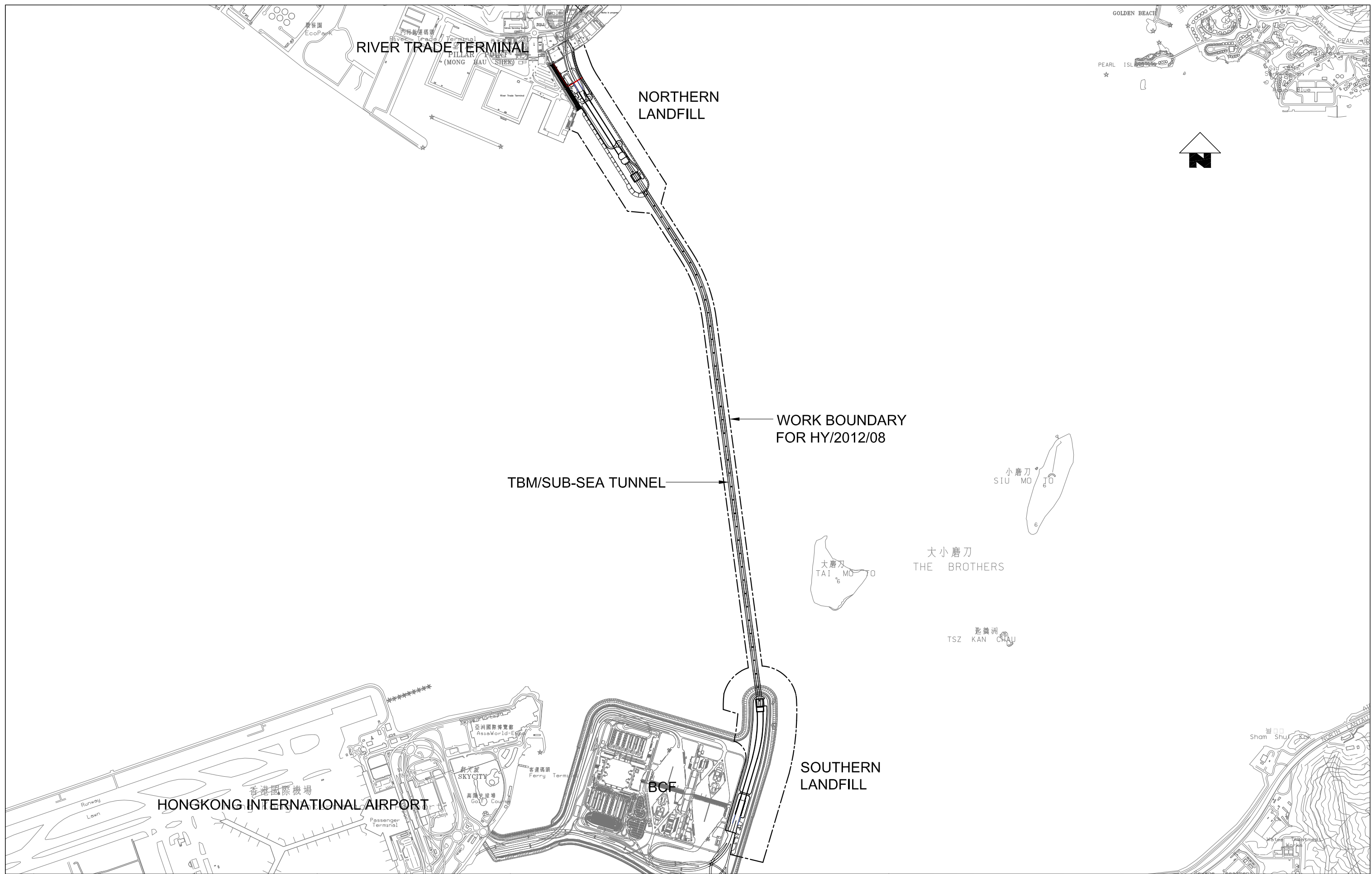
According to the findings of the Northwest New Territories (NWNT) Traffic and Infrastructure Review conducted by the Transport Department, Tuen Mun Road, Ting Kau Bridge, Lantau Link and North Lantau Highway would be operating beyond capacity after 2016. This forecast has been based on the estimated 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 the end of 2019. The impact monitoring phase of the EM&A programme, including air quality, water quality, marine ecological monitoring and environmental site inspections, were commenced on 1 November 2013.



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

Main Contractor


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

Client

 路政署
HIGHWAYS DEPARTMENT

Contractor's Designer

 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 Sixty-sixth Monthly EM&A Report under the *Contract No. HY/2012/08 Tuen Mun – Chek Lap Kok Link – Northern Connection Sub-sea Tunnel Section*. This report presents a summary of the environmental monitoring and audit works in April 2019.

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)	Deputy Environmental Manager	Bryan Lee	2293 7323	2293 7499
		Ashley Au	52950766	
		24-hour hotline	2293 7330	
ET (ERM-HK)	ET Leader	Jasmine Ng	2271 3311	2723 5660

1.4 SUMMARY OF CONSTRUCTION WORKS

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

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

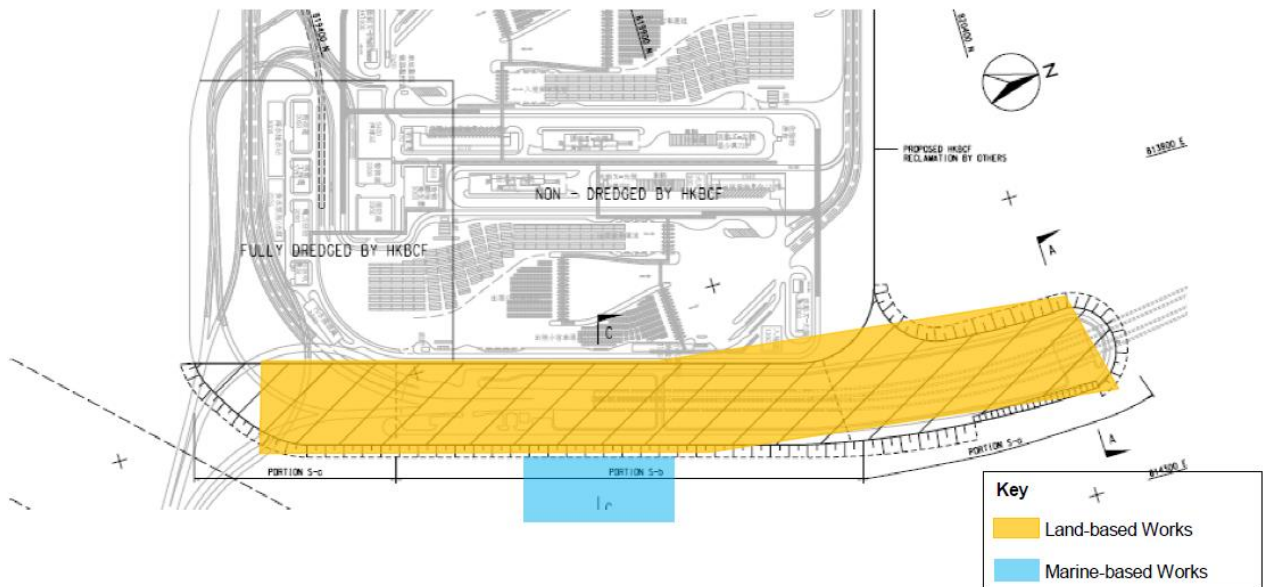
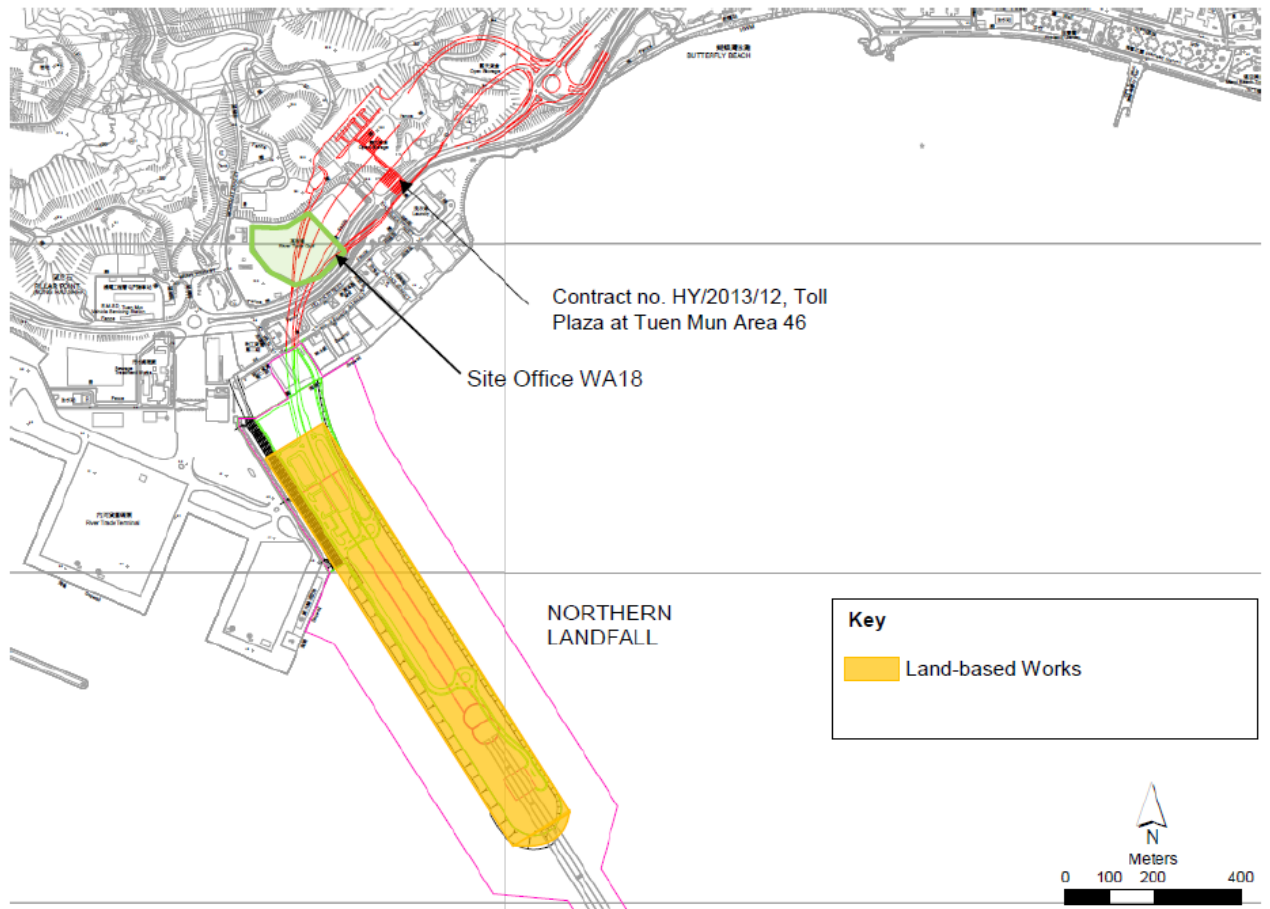
The general layout plan of the site showing the detailed works areas is shown in *Figure 1.2*. The Environmental Sensitive Receivers in the vicinity of the Project are shown in *Figure 1.3*.

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

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

Construction Activities Undertaken
<i>Land-based Works</i>
<ul style="list-style-type: none">• Construction of Thermal barrier - TBM tunnel;• Construction of Walkway Corbel & Cover - TBM Tunnel;• RC structure - Portion N-A & S-A;• ELS Removal - Portion S-A;• D-wall Construction - Portion S-C• Seawall Inspection and Remedial Works - Portion N-B•
<i>Marine-based Works</i>
<ul style="list-style-type: none">• Seawall Modification Works - Portion S-B

Figure 1.2 Locations of Construction Activities – April 2019



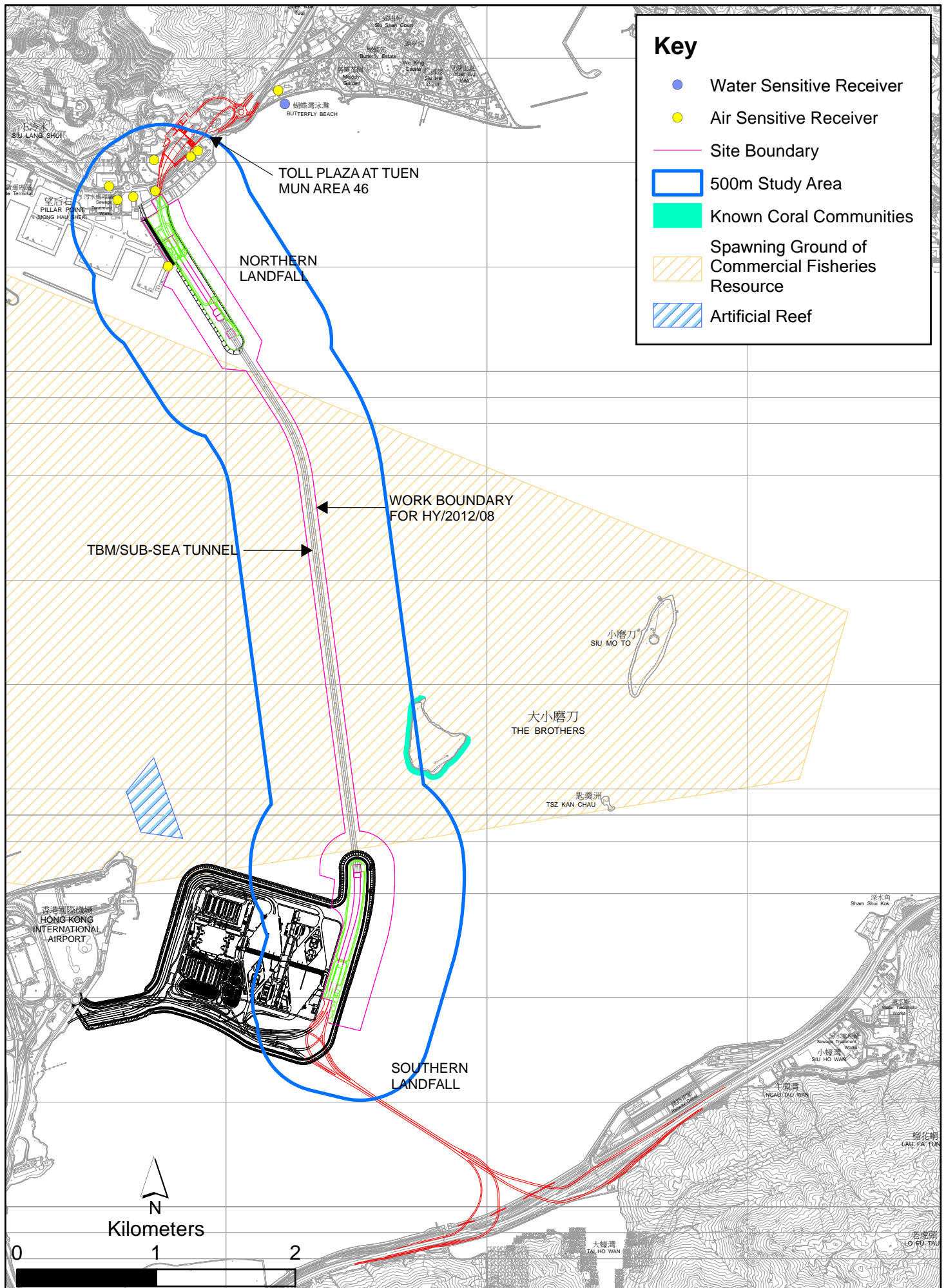


Figure 1.3 Environmental Sensitive Receivers in the vicinity of Contract No. HY/2012/08 Tuen Mun - Chek Lap Kok Link - Northern Connection Sub-Sea Tunnel Section

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 April 2019 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 April 2019	Tuen Mun Fireboat Station	Office	TSP monitoring
ASR5		Pillar Point Fire Station	Office	<ul style="list-style-type: none"> 1-hour Total Suspended Particulates (1-hour TSP, $\mu\text{g}/\text{m}^3$), 3 times in every 6 days 24-hour Total Suspended Particulates (24-hour TSP, $\mu\text{g}/\text{m}^3$), daily for 24-hour in every 6 days
AQMS1		Previous River Trade Golf	Bare ground	Enhanced TSP monitoring (commenced on 24 October 2014)
ASR6		Butterfly Beach Laundry	Office	<ul style="list-style-type: none"> 1-hour Total Suspended Particulates (1-hour TSP, $\mu\text{g}/\text{m}^3$), 3 times in every 3 days
ASR10		Butterfly Beach Park	Recreational uses	<ul style="list-style-type: none"> 24-hour Total Suspended Particulates (24-hour TSP, $\mu\text{g}/\text{m}^3$), daily for 24-hour in every 3 days

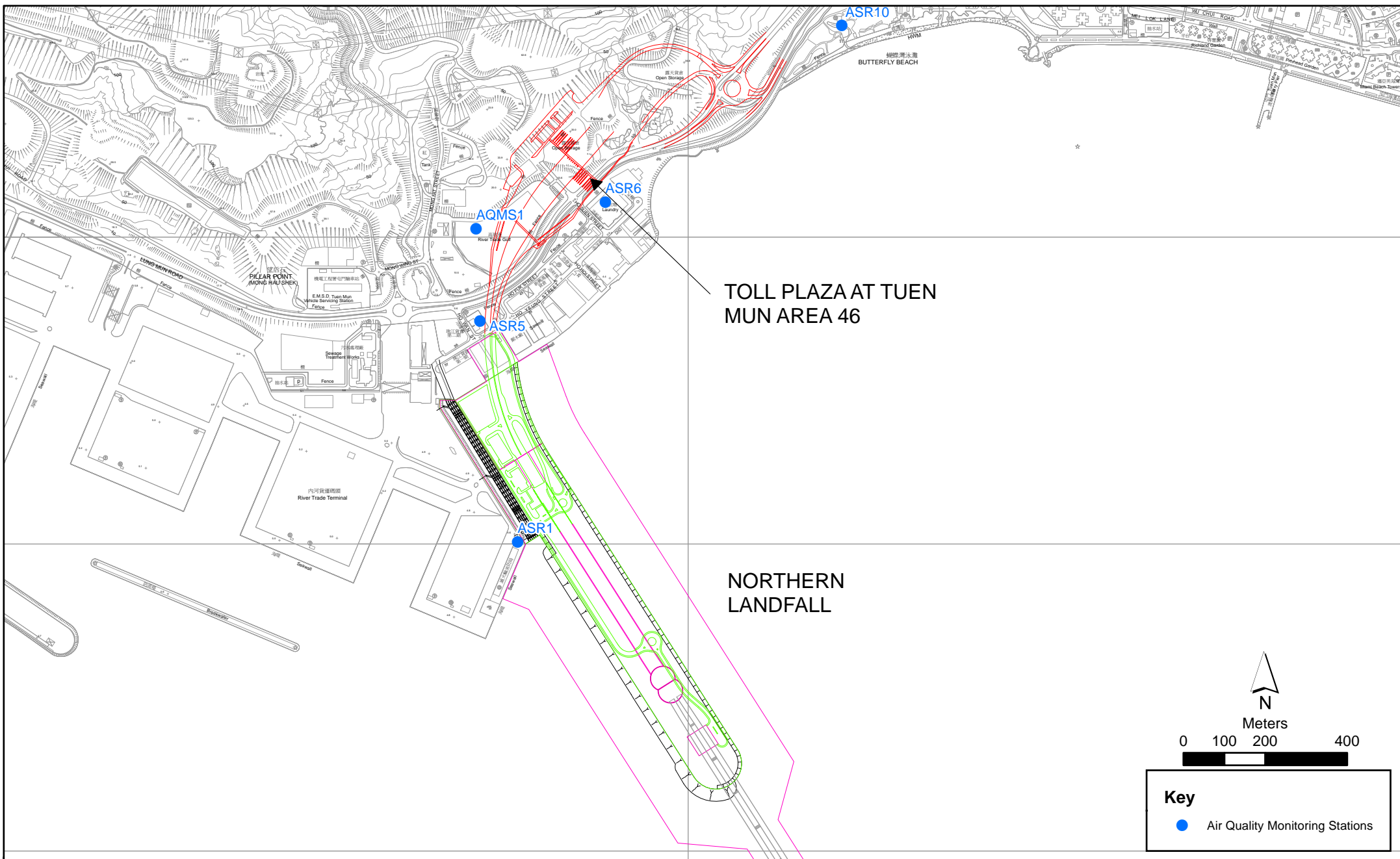


Figure 2.1

Air Quality Monitoring Stations for the Enhanced TSP Monitoring

Table 2.2 Air Quality Monitoring Equipment

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

2.1.2 Action & Limit Levels

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

2.1.3 Monitoring Schedule for the Reporting Month

The schedule for air quality monitoring in April 2019 is provided in *Appendix F*.

2.1.4 Results and Observations

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

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

Station	Average (µg/m³)	Range (µg/m³)	Action Level (µg/m³)	Limit Level (µg/m³)
ASR1	107	19 - 296	331	500
ASR5	109	28 - 281	340	500
AQMS1	77	32 - 211	335	500
ASR6	91	19 - 256	338	500
ASR10	56	24 - 157	337	500

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

Station	Average (µg/m³)	Range (µg/m³)	Action Level (µg/m³)	Limit Level (µg/m³)
ASR1	99	44 - 183	213	260
ASR5	78	45 - 119	238	260
AQMS1	52	28 - 96	213	260
ASR6	62	33 - 115	238	260
ASR10	38	24 - 89	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 this reporting month. No exceedances were recorded in the air quality monitoring of this reporting month.

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

2.2 WATER QUALITY MONITORING

2.2.1 Monitoring Requirements & Equipment

Seawall Modification Works at Portion S-B has commenced on 15 April 2019.

Impact marine water quality monitoring has resumed on 15 April 2019

In accordance with the approved Environmental Review Report dated 21 March 2018 for the Change in Design of Vertical Seawall to Sloping Seawall on Southern Landfall, Updated Impact water quality monitoring programme and water quality monitoring stations IS17, SR7 and IS(Mf)11 specified under the EM&A Manual for HZMB HKBCF project will be adopted. (*Figure 2.2; Table 2.5*).

Results of water quality monitoring were adopted from the published EM&A data of Contract No. HY/2012/07 Tuen Mun-Chek Lap Kok Link – Southern Connection Viaduct Section .

The Action and Limit Levels of the water quality monitoring were adopted from the EM&A Manual for HZMB HKBCF project. The Action and Limit Levels are provided in Appendix D.

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

Station ID	Type	Coordinates		*Parameters, unit	Depth	Frequency
		Easting	Northing			
IS(Mf)11	Impact Station (Close to HKBCF construction site) 8	813562	820716	<ul style="list-style-type: none"> • Temperature(°C) • pH(pH unit) • Turbidity (NTU) • Water depth (m) • Salinity (ppt) 	3 water depths: 1m below sea surface, mid-depth and 1m above sea bed. If the water depth is less than 3m, mid- depth sampling only. If water depth less than 6m, mid-depth may be omitted.	Impact monitoring: 3 days per week, at mid-flood and mid-ebb tides during the construction period of the Contract.
IS17	Impact Station (Close to HKBCF construction site)	814539	820391	<ul style="list-style-type: none"> • DO (mg/L and % of saturation) • SS (mg/L) 		
SR7	Sensitive receivers (Tai Mo Do)	814293	821431			

*Notes:

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

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

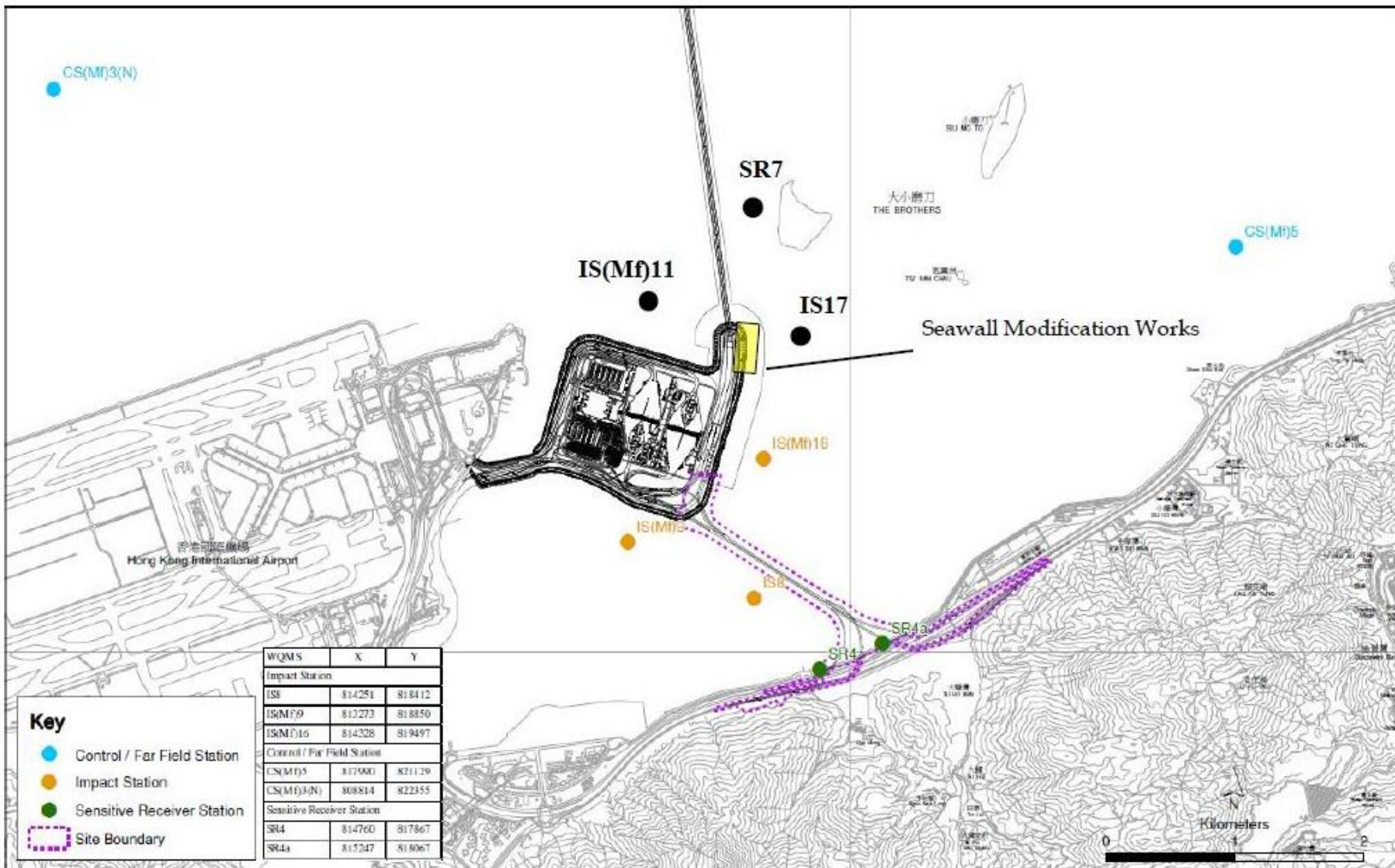


Figure 2.2

Water Quality Monitoring Station

Table 2.6 *Water Quality Monitoring Equipment*

Equipment	Model
Multi-Parameters	YSI ProDss 17E100747
Multi-Parameters	YSI ProDss 16H104234
Multi-Parameters	YSI ProDss 17H105557
Positioning Equipment	Furuno GP-170
Water Depth Detector	Lowrance Mark 5x / Garmin Striker 4

2.2.1 *Action & Limit Levels*

The Action and Limit levels of water quality impact monitoring are shown in *Appendix D*. The Event and Action plan is presented in *Appendix K*.

2.2.2 *Monitoring Schedule for the Reporting Month*

The schedule for water quality monitoring in April 2019 is provided in *Appendix F*.

2.2.3 *Results and Observations*

Impact water quality monitoring was conducted at all designated monitoring stations in the reporting month. Results and graphical presentations of impact water quality monitoring are presented in *Appendix J*.

In this reporting period, a total of seven (7) monitoring events were undertaken in which no exceedances were recorded.

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 2.7 summarises the equipment used for the impact dolphin monitoring.

Table 2.7 *Dolphin Monitoring Equipment*

Equipment	Model
Global Positioning System (GPS)	Garmin 18X-PC Geo One Phottix

Equipment	Model
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 2.3*. The co-ordinates of all transect lines are shown in *Table 2.8* below.

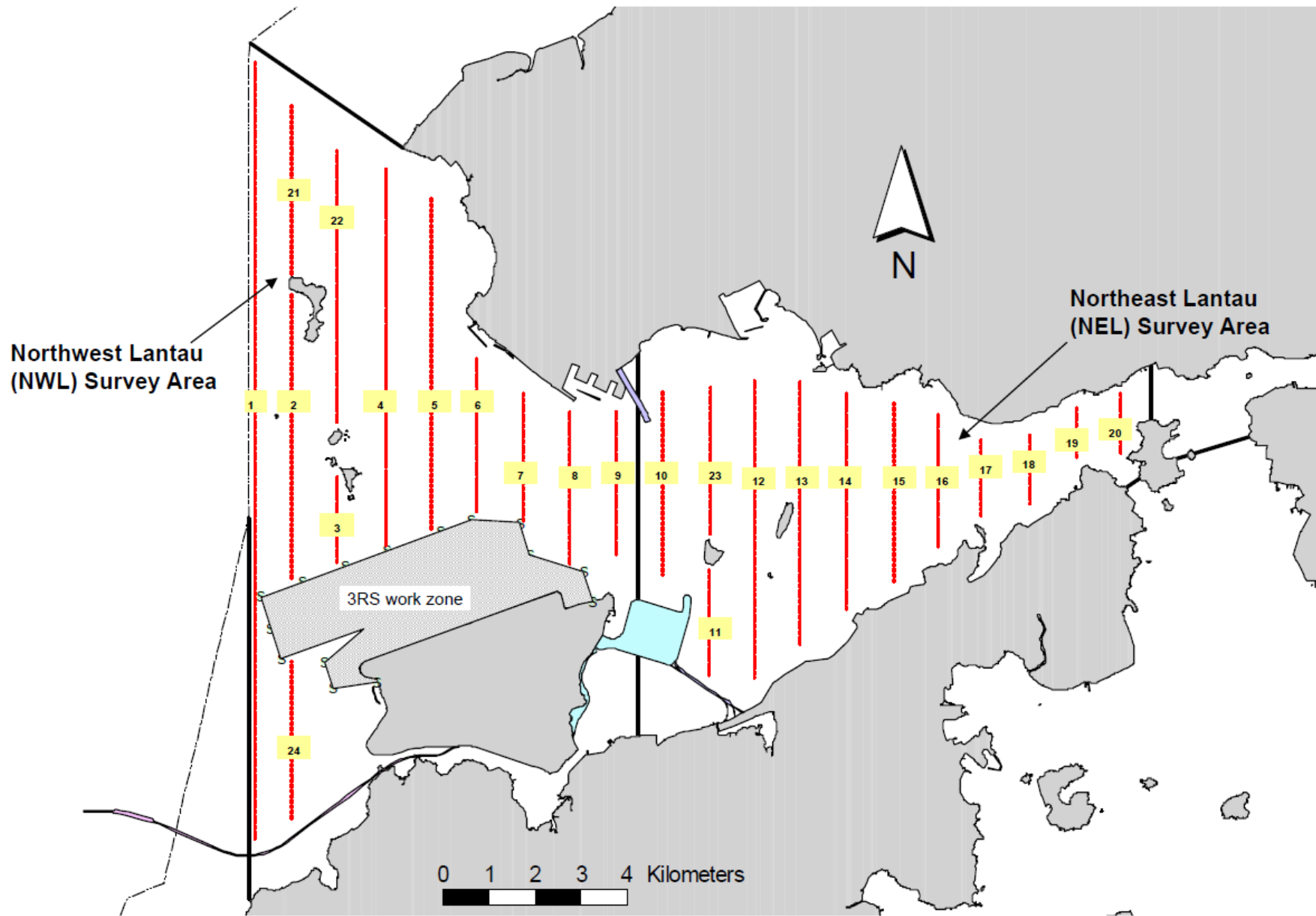


Figure 2.3

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

Table 2.8 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 K*.

2.3.6 *Monitoring Schedule for the Reporting Month*

Dolphin monitoring was carried out on 10, 15, 23 and 25 of April 2019. The dolphin monitoring schedule for the reporting month is shown in *Appendix F*.

2.3.7 *Results & Observations*

A total of 270.94 km of survey effort was collected, with 93.7% of the total survey effort being conducted under favourable weather conditions (i.e. Beaufort Sea State 3 or below with good visibility) in April 2019. Among the two areas, 101.54 km and 169.40 km of survey effort were collected from NEL and NWL survey areas, respectively. The total survey effort conducted on primary and secondary lines were 195.47 km and 75.47 km respectively. The survey efforts are summarized in *Appendix I*.

One group of 2 Chinese White Dolphins sighting was recorded during the two sets of surveys in April 2019. The dolphin sighting was made in NWL, while none was sighted in NEL. The dolphin sighting was made during on-effort search and was made on primary lines. The dolphin groups were not associated with any operating fishing vessel.

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

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 April 2019 with the results present in *Tables 2.9* and *2.10*.

Table 2.9 *Individual Survey Event Encounter Rates*

		Encounter rate (STG) (no. of on-effort dolphin sightings per 100 km of survey effort)	Encounter rate (ANI) (no. of dolphins from all on-effort sightings per 100 km of survey effort)
		Primary Lines Only	Primary Lines Only
NEL	Set 1: April 10 th / 15 th	0.0	0.0
	Set 2: April 23 rd / 25 th	0.0	0.0
NWL	Set 1: April 10 th / 15 th	0.0	0.0
	Set 2: April 23 rd / 25 th	1.6	3.3

Note: Dolphin Encounter Rates are deduced from the Two Sets of Surveys (Two Surveys in Each Set) in April 2019 in Northeast (NEL) and Northwest Lantau (NWL)

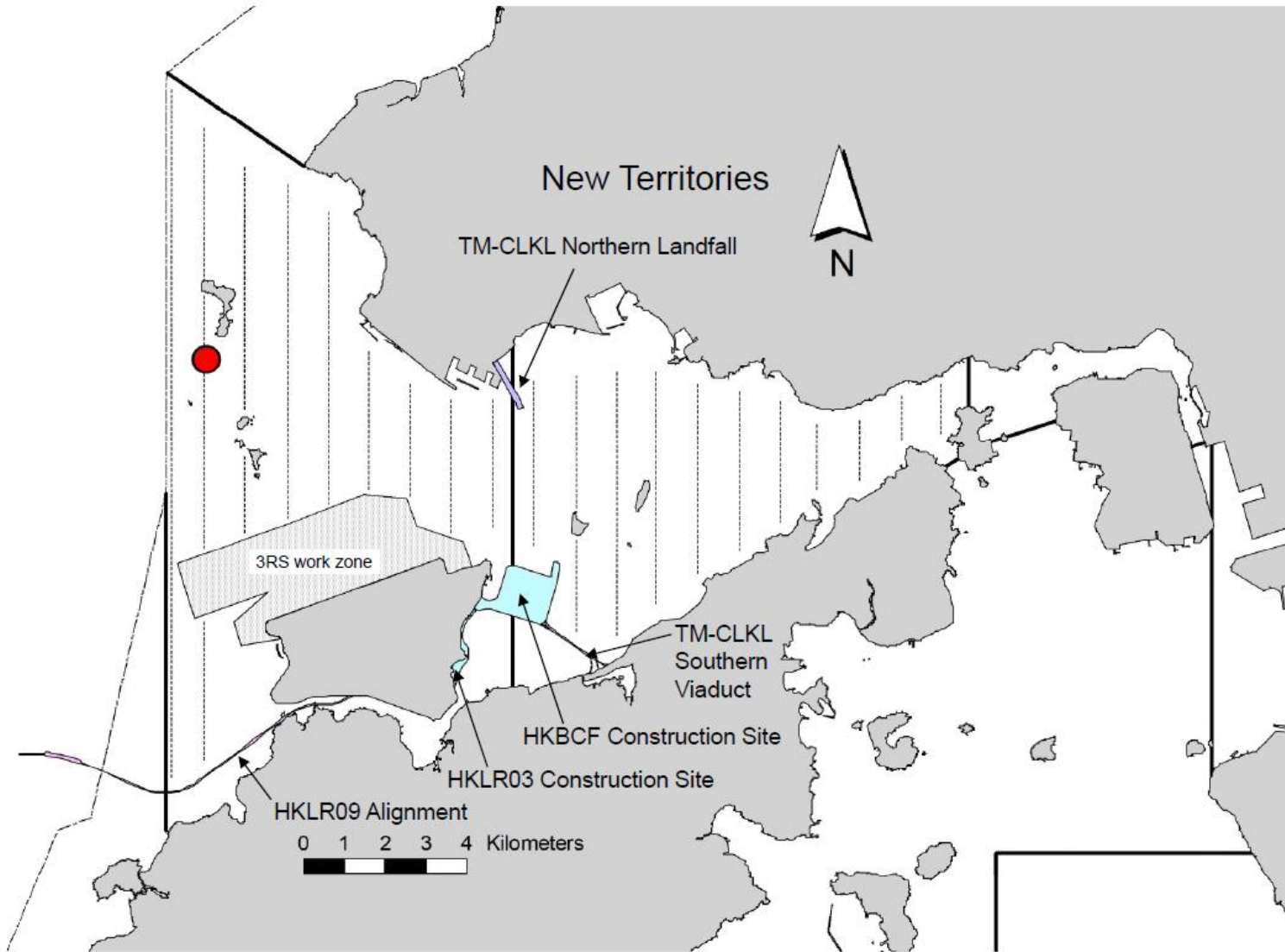


Figure 2.4

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 April 2019)

Table 2.10 Monthly Average Encounter Rates

	Encounter rate (STG) (no. of on-effort dolphin sightings per 100 km of survey effort)		Encounter rate (ANI) (no. of dolphins from all on-effort sightings per 100 km of survey effort)	
	Primary Lines Only	Both Primary and Secondary Lines	Primary Lines Only	Both Primary and Secondary Lines
Northeast Lantau	0.0	0.0	0.0	0.0
Northwest Lantau	0.9	0.7	1.9	1.3

Note: Overall dolphin encounter rates (sightings per 100 km of survey effort) from all four surveys are conducted in April 2019 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 Contract 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

Daily marine mammal exclusion zone was in effect during the period of silt curtain installation in open waters under this Contract. No sighting of the Indo-Pacific humpback dolphin *Sousa chinensis* (i.e. Chinese White Dolphin) was recorded in April 2019 during the exclusion zone monitoring.

2.4 *EM&A SITE INSPECTION*

Site inspections were carried out on a weekly basis to monitor the implementation of proper environmental pollution control and mitigation measures under the Contract. In the reporting month, four (4) site inspections were carried out on 3, 10, 17 and 24 April 2019.

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

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

Inspection Date	Observations	Recommendations/ Remarks
3 April 2019	<p>Works Area – Portion S-A</p> <ul style="list-style-type: none"> Stagnant water and food waste should be cleaned up and better housekeeping should be maintained. <p>Reminder from the SOR</p> <p>Works Area – Portion N-A</p> <ul style="list-style-type: none"> The breaker tip should be wrapped with soundproof mat. Recycle bin should be replaced with green rubbish bin and broken water barriers should be replaced. <p>Works Area – Portion S-B</p> <ul style="list-style-type: none"> The breaker tip should be wrapped with soundproof mat. 	<p>Works Area – Portion S-A</p> <ul style="list-style-type: none"> The Contractor was reminded to clean up the stagnant water and food waste and maintain better housekeeping. <p>Reminder from the SOR</p> <p>Works Area – Portion N-A</p> <ul style="list-style-type: none"> The Contractor was reminded to wrap the breaker tip with soundproof mat. The Contractor was reminded to replace the recycle bin with green rubbish bin and replace the broken water barriers. <p>Works Area – Portion S-B</p> <ul style="list-style-type: none"> The Contractor was reminded to wrap the breaker tip with soundproof mat.
10 April 2019	<p>Works Area – Portion S-B</p> <ul style="list-style-type: none"> The faded NRMM label should be replaced. Food waste should be disposed of and the lifting eyes should be filled with sand. <p>Works Area – Portion S-A</p> <ul style="list-style-type: none"> Drip tray should be provided for the chemicals. <p>Works Area – TBM tunnel</p> <ul style="list-style-type: none"> Drip tray should be provided for the chemicals. 	<p>Works Area – Portion S-B</p> <ul style="list-style-type: none"> The Contractor was reminded to replace the faded NRMM label. The Contractor was reminded to dispose of the food waste and fill the lifting eyes with sand. <p>Works Area – Portion S-A</p> <ul style="list-style-type: none"> The Contractor was reminded to provide drip tray for the chemicals. <p>Works Area – TBM tunnel</p> <ul style="list-style-type: none"> The Contractor was reminded to provide drip tray for the chemicals.
17 April 2019	<p>Works Area – Portion N-A</p> <ul style="list-style-type: none"> The surface channel should remain unobstructed. Drip tray and chemical labels should be provided for the chemicals. <p>Reminder from the SOR</p> <p>Works Area – Portion S-B</p> <ul style="list-style-type: none"> The opening of the water barriers should be capped. 	<p>Works Area – Portion N-A</p> <ul style="list-style-type: none"> The Contractor was reminded to keep the surface channel unobstructed. The Contractor was reminded to provide drip tray and chemical labels for the chemicals. <p>Reminder from the SOR</p> <p>Works Area – Portion S-B</p> <ul style="list-style-type: none"> The Contractor was reminded to cap the opening of the water barriers.
24 April 2019	<p>Works Area – TBM tunnel</p> <ul style="list-style-type: none"> Drip tray should be provided for the chemicals. 	<p>Works Area – TBM tunnel</p> <ul style="list-style-type: none"> The Contractor was reminded to provide drip tray for the chemicals.

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

2.5 WASTE MANAGEMENT STATUS

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

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

Table 2.12 Quantities of Different Waste Generated in the Reporting Month

Month/Year	Inert Construction Waste ^(a) (tonnes)	Inert Construction Waste Re-used (tonnes)	Non-inert Construction Waste ^(b) (tonnes)	Recyclable Materials ^(c) (kg)	Chemical Wastes (kg)	Marine Sediment (m ³)		
						Category L	Category M (M _p & M _f)	Mixed (L+M)
April 2019	130,329	58,956	707	264,790	1,045	12,561	19,851	0

Notes:

- (a) Inert construction wastes include hard rock and large broken concrete, and materials disposed as public fill.
- (b) Non-inert construction wastes include general refuse disposed at landfill.
- (c) Recyclable materials include metals, paper, cardboard, plastics, timber and others.

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

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

2.6 ENVIRONMENTAL LICENSES AND PERMITS

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

Table 2.13 Summary of Environmental Licensing and Permit Status

License/ Permit	License or Permit No.	Date of Issue	Date of Expiry	License/ Permit Holder	Remarks
Environmental Permit	EP-354/2009/D	13 March 2015	Throughout the Contract	HyD	Application for VEP on 3 March 2015 to supersede EP-354/2009/C
Construction Dust Notification	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
Construction Waste Disposal Account	7021715	21 March 2019	14 July 2019	DBJV	Vessel Disposal
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	WT00031435-2018	2 August 2018	31 August 2023	DBJV	Southern Landfall
Marine Dumping Permit	EP/MD/19-063	19 November 2018	18 May 2019	DBJV	Type 1 (Open Sea Disposal)
Marine Dumping Permit	EP/MD/19-109	5 March 2019	4 April 2019	DBJV	Type 1 (Dedicated site) and Type 2 (Confined Marine Disposal)
Marine Dumping Permit	EP/MD/19-121	5 April 2019	4 May 2019	DBJV	Type 1 (Dedicated site) and Type 2 (Confined Marine Disposal)
Construction Noise Permit	GW-RW0406-18	16 October 2018	15 April 2019	DBJV	Urmston Road in front of Pillar Point
Construction Noise Permit	GW-RS0966-18	26 October 2018	14 April 2019	DBJV	Southern Landfall
Construction Noise Permit	GW-RS0224-19	25 March 2019	24 September 2019	DBJV	Southern Landfall
Construction Noise Permit	GW-RW0179-19	27 April 2019	15 October 2019	DBJV	Urmston Road in front of Pillar Point

Notes:

HyD = Highways Department

DBJV = Dragages - Bouygues Joint Venture

VEP = Variation of Environmental Permit

2.7 *IMPLEMENTATION STATUS OF ENVIRONMENTAL MITIGATION MEASURES*

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

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

2.8 *SUMMARY OF EXCEEDANCES OF THE ENVIRONMENTAL QUALITY PERFORMANCE LIMIT*

No exceedances were recorded in the air quality monitoring of this reporting month.

No exceedances were recorded in the water quality monitoring of this reporting month.

Cumulative statistics are provided in *Appendix L*.

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

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

No environmental complaint was received in this reporting period.

No environmental summons was received in this reporting period.

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

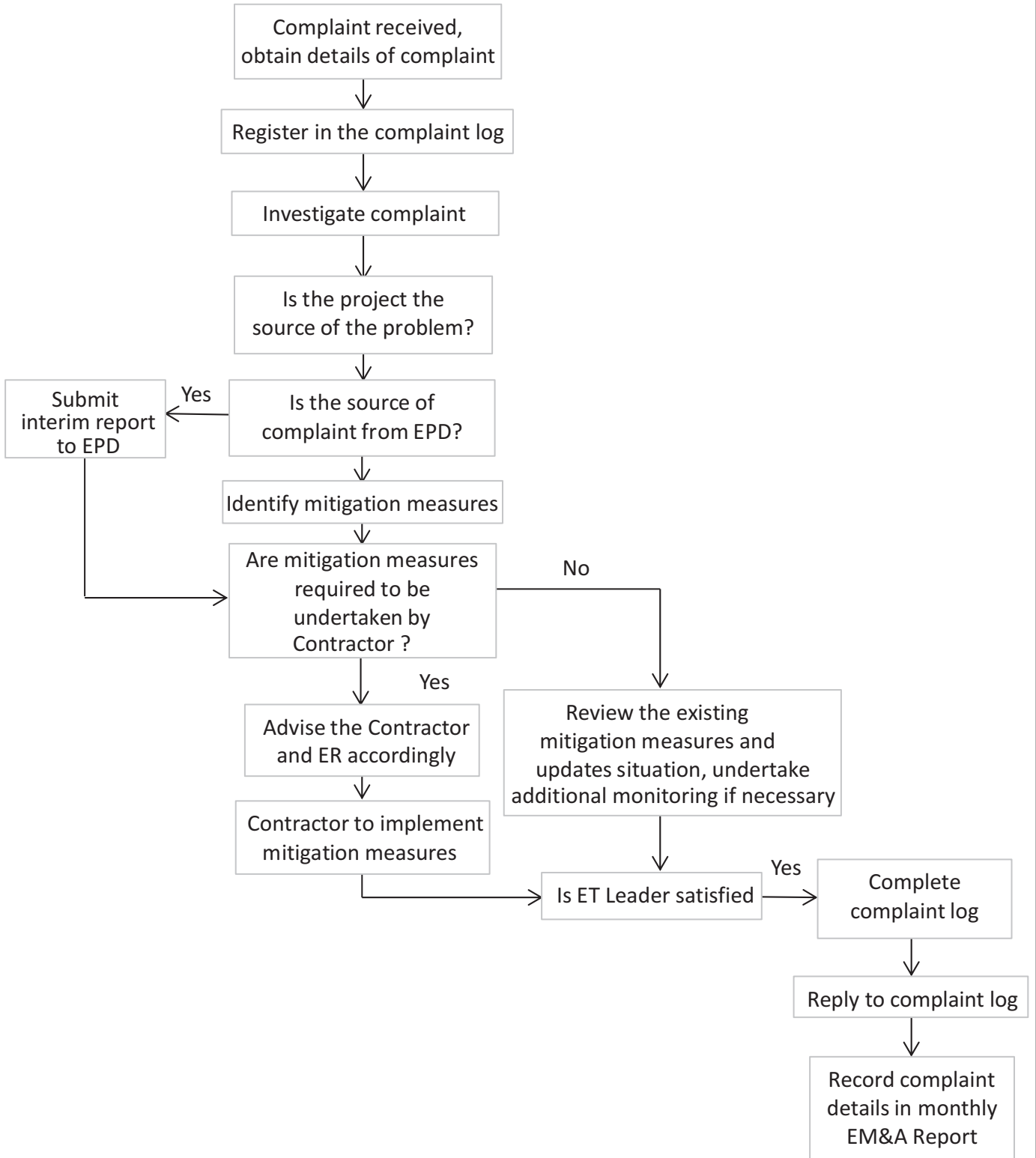


Figure 2.5

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 Contract in May 2019 are summarized in *Table 3.1*.

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

Works to be undertaken
<i>Land-based Works</i>
<ul style="list-style-type: none">• Construction of Thermal barrier – TBM tunnel;• Bitumen Laying – TBM tunnel• Construction of Walkway Corbel & Cover – TBM Tunnel;• RC structure – Portion N-A & S-A;• E&M Platform Installation – Portion S-A• ELS Removal – Portion S-A;• D-wall Construction – Portion S-C• Seawall Inspection and Remedial Works – Portion N-B•
<i>Marine-based Works</i>
<ul style="list-style-type: none">• Seawall Modification Works – Portion S-B

3.2 **KEY ISSUES FOR THE COMING MONTH**

Potential environmental impacts arising from the above upcoming construction activities in the next reporting month of May 2019 are mainly associated with dust, marine water quality, marine ecology and waste management issues.

3.3 **MONITORING SCHEDULE FOR THE COMING MONTH**

The tentative schedule for environmental monitoring in May 2019 is provided in *Appendix F*.

4.1 CONCLUSIONS

This Sixty-sixth Monthly EM&A Report presents the findings of the EM&A activities undertaken during the period from 1 to 30 April 2019, 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), water quality monitoring and dolphin monitoring were carried out in this reporting month.

No exceedances were recorded in the air quality monitoring of this reporting month.

No exceedances were recorded in the water quality monitoring of this reporting month.

One group of 2 Chinese White Dolphins sighting was recorded during the two sets of surveys in April 2019. The dolphin sighting was made in NWL, while none was sighted in NEL. The dolphin sighting was made during on-effort search and was made on primary lines. The dolphin groups were not associated with any operating fishing vessel.

Environmental site inspection was carried out four (4) times in April 2019. 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

TMCLKL Northern Connection Sub-sea Tunnel Section

Contract Key Dates			
[KD-2b] Stage 2b Completion - TSS between CP33 to CP13	0		15-Apr-19*
[KD-10] Section 3A Completion - SVB	0		20-Jul-19*
[KD-10a] Stage 5 Completion - SVB BL2	0		11-May-19*

Portion Handover Dates			
N5 - Handover	0		30-Apr-19*
N11A - Handover	0		15-Feb-19*
N11B - Handover	0		15-Feb-19*
N13Ji, Jii, Ki & Kii - Handover for E&M Contract scope	0		15-Feb-19*
N13B - Handover	0		12-Apr-19*

North Approach Ramp

Portion N12 Section			
NAR - Pumping Test (Bay 3 to 6)	12	23-Aug-18	05-Sep-18
NAR - Excavation & Strut Installation (Bay 3 to 6)	36	06-Sep-18	20-Oct-18
NAR - Bay 3 - Base Slab + Retaining Wall	48	20-Sep-18	17-Nov-18
NAR - Bay 4 - Base Slab + Retaining Wall	72	06-Oct-18	02-Jan-19
NAR - Bay 5 - Base Slab + Retaining Wall	72	22-Oct-18	16-Jan-19

Access Ramp Section			
Pre-bored H-piles - Pile Load Test	36	22-Aug-18	04-Oct-18
Pipe Pile Wall - TAM Grouting	36	22-Aug-18	04-Oct-18
Pump wells	35	05-Oct-18	15-Nov-18
Pump Test	12	16-Nov-18	29-Nov-18
Pipe Pile Wall Section - Excavation Start	0	30-Nov-18	
Excavation to S1 - 7,200 m3	12	30-Nov-18	13-Dec-18
Strut & Waling Installation - S1 - 7 struts	14	07-Dec-18	22-Dec-18
Excavation to S2 - 9,650 m3	16	14-Dec-18	04-Jan-19
Strut & Waling Installation - S2 - 7 struts	15	24-Dec-18	12-Jan-19
Excavation to FEL - 7,600 m3	14	05-Jan-19	21-Jan-19
NAR Pipe Pile Section - Base Slab	48	22-Jan-19	25-Mar-19
NAR Pipe Pile Section - Strut S2 Removal	24	12-Mar-19	09-Apr-19
NAR Pipe Pile Section - Wall up to S1	48	26-Mar-19	27-May-19
NAR Pipe Pile Section - Strut S1 Removal	24	14-May-19	11-Jun-19
NAR Pipe Pile Section - Wall Remaining	48	28-May-19	24-Jul-19

NLS Interface (OAP-NAR-DWG-10442-B)

NLS Cell 3 Dwall removal (down to +2.5mPD) - 90m3	15	14-Dec-18	03-Jan-19
Strut Installation and Excavation down to S2	12	04-Jan-19	17-Jan-19
NLS Cell 3 Dwall removal (down to -3.0mPD) - 188m3	18	18-Jan-19	14-Feb-19
Strut Installation and Excavation down to FWL	12	15-Feb-19	28-Feb-19
NLS Cell 3 Dwall removal (down to -6.0mPD) - 134m3	18	01-Mar-19	21-Mar-19
NLS/NAR Stitch structure - Base Slab & S2 removed	36	19-Mar-19	04-May-19
Resume Tunnel Ramp Access	0	06-May-19	
NLS/NAR Stitch structure - Remaining Wall Structure & Str	48	06-May-19	03-Jul-19
NAR Parapet, Cable Trough	58	25-Jul-19	02-Oct-19*

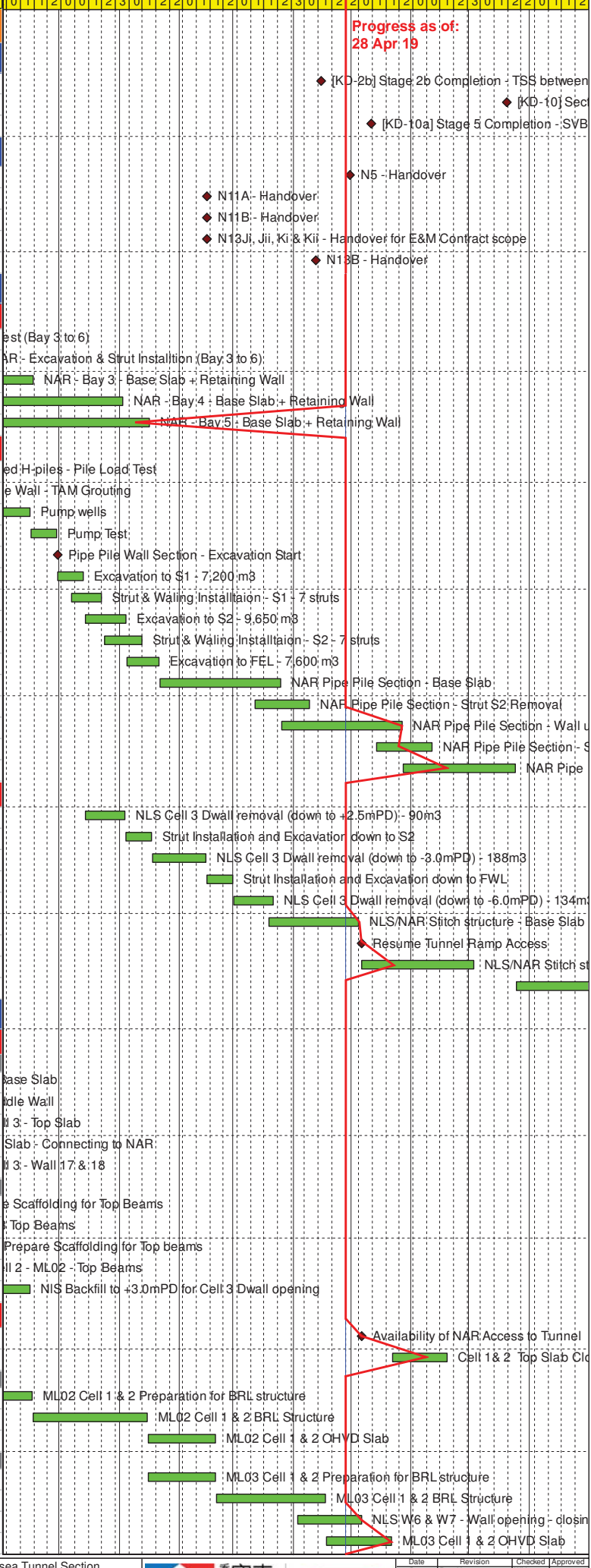
North Launching Shaft

NLS Cell 1-3 Structure for Cell 3 Dwall opening

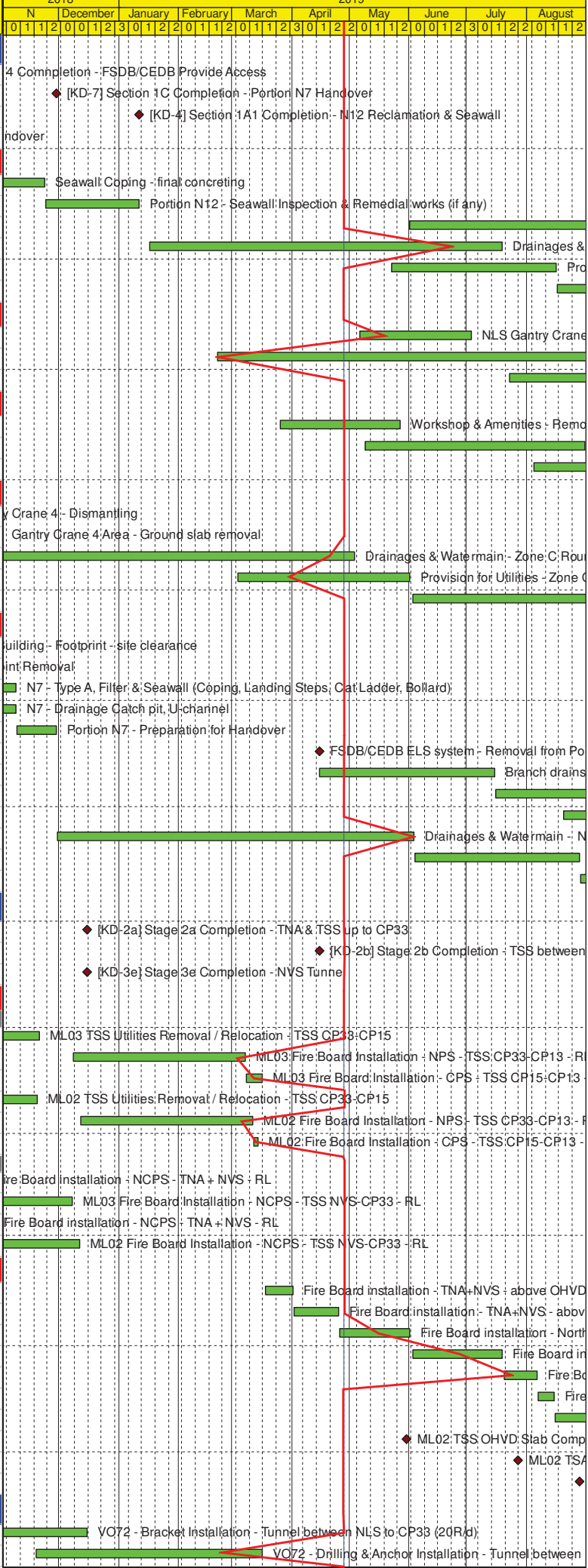
Cell 3			
Cell 3 - Remaining Base Slab	18	07-Aug-18	27-Aug-18
Cell 3 - Middle Wall	24	28-Aug-18	24-Sep-18
Cell 3 - Top Slab	18	26-Sep-18	18-Oct-18
Cell 3 - Base Slab - Connecting to NAR	18	28-Aug-18	17-Sep-18
Cell 3 - Wall 17 & 18	24	18-Sep-18	18-Oct-18
Cell 2			
Cell 2 - ML03 - Prepare Scaffolding for Top Beams	18	01-Aug-18	21-Aug-18
Cell 2 - ML03 Top Beams	24	22-Aug-18	18-Sep-18
Cell 2 - ML02 - Prepare Scaffolding for Top beams	18	22-Aug-18	11-Sep-18
Cell 2 - ML02 - Top Beams	24	19-Sep-18	19-Oct-18
NIS Backfill to +3.0mPD for Cell 3 Dwall opening	24	19-Oct-18	15-Nov-18

NLS Cell 1-3 Remaining Structure

Availability of NAR Access to Tunnel	0		06-May-19
Cell 1 & 2 Top Slab Closing	24	22-May-19	19-Jun-19
ML02			
ML02 Cell 1 & 2 Preparation for BRL structure	24	20-Oct-18	16-Nov-18
ML02 Cell 1 & 2 BRL Structure	48	17-Nov-18	15-Jan-19
ML02 Cell 1 & 2 OHVD Slab	24	16-Jan-19	19-Feb-19
ML03			
ML03 Cell 1 & 2 Preparation for BRL structure	24	16-Jan-19	19-Feb-19
ML03 Cell 1 & 2 BRL Structure	48	20-Feb-19	17-Apr-19
NLS W6 & W7 - Wall opening - closing	24	03-Apr-19	06-May-19
ML03 Cell 1 & 2 OHVD Slab	24	18-Apr-19	21-May-19



Activity Name	Orig Dur	Start	Finish	2018												2019											
				N	0	1	2	0	1	2	3	0	1	2	0	1	2	3	0	1	2	3	0	1	2	3	0
NLF Demobilization & At-grade works																											
[KD-7a] Stage 4 Completion - FSDB/CEDB Provide Access	0		15-Sep-18*	4 Completion - FSDB/CEDB Provide Access																							
[KD-7] Section 1C Completion - Portion N7 Handover	0		29-Nov-18*	◆ [KD-7] Section 1C Completion - Portion N7 Handover																							
[KD-4] Section 1A1 Completion - N12 Reclamation & Seawall	0		11-Jan-19*	◆ [KD-4] Section 1A1 Completion - N12 Reclamation & Seawall																							
Portion N1 Handover	0		15-Sep-18*	Handover:																							
Portion N12 & Portion N6B																											
Seawall Coping - final concreting	48	27-Sep-18	23-Nov-18	Seawall Coping - final concreting																							
Portion N12 - Seawall Inspection & Remedial works (if any)	39	24-Nov-18	11-Jan-19	Portion N12 - Seawall Inspection & Remedial works (if any)																							
CLP Substation - Prepare for CLP Consent for de-energiza	96	01-Jun-19	24-Sep-19																								
Drainages & Watermain - Portion N12 & N6B	144	17-Jan-19	19-Jul-19	Drainages & Watermain - Portion N12 & N6B																							
Provision for Utilities - Portion N12 & N6B	72	23-May-19	16-Aug-19	Provision for Utilities - Portion N12 & N6B																							
Utilities parties coordination & Remaining Civil Provision - I	117	17-Aug-19	07-Jan-20																								
North Launching Shaft																											
NLS Gantry Crane removal	48	06-May-19	03-Jul-19	NLS Gantry Crane removal																							
Drainages & Watermain - NLS	194	21-Feb-19	17-Oct-19	Drainages & Watermain - NLS																							
Provision for Utilities - NLS	96	23-Jul-19	14-Nov-19	Provision for Utilities - NLS																							
Sloping Seawall																											
Workshop & Amenities - Removal	48	26-Mar-19	27-May-19	Workshop & Amenities - Removal																							
Drainages & Watermain - Workshop & Amenities	96	09-May-19	31-Aug-19	Drainages & Watermain - Workshop & Amenities																							
Provision for Utilities - Workshop & Amenities	48	05-Aug-19	30-Sep-19	Provision for Utilities - Workshop & Amenities																							
Precast Segment Yard																											
Gantry Crane 4 - Dismantling	36	28-Aug-18	10-Oct-18	Gantry Crane 4 - Dismantling																							
Gantry Crane 4 Area - Ground slab removal	17	11-Oct-18	31-Oct-18	Gantry Crane 4 Area - Ground slab removal																							
Drainages & Watermain - Zone C Roundabout	144	01-Nov-18	03-May-19	Drainages & Watermain - Zone C Roundabout																							
Provision for Utilities - Zone C Roundabout	72	04-Mar-19	01-Jun-19	Provision for Utilities - Zone C Roundabout																							
Utilities parties coordination & Remaining Civil Provision - Z	180	03-Jun-19	07-Jan-20																								
NVS & STP (Portion N7 Interface)																											
FSD / C&ED Building - Footprint - site clearance	29	14-Aug-18	15-Sep-18	Building - Footprint - site clearance																							
STP Barging Point Removal	24	14-Aug-18	10-Sep-18	Int Removal																							
N7 - Type A, Filter & Seawall (Coping, Landing Steps, Cat L	48	11-Sep-18	08-Nov-18	N7 - Type A, Filter & Seawall (Coping, Landing Steps, Cat Ladder, Bollard)																							
N7 - Drainage Catch pit, U-channel	36	26-Sep-18	08-Nov-18	N7 - Drainage Catch pit, U-channel																							
Portion N7 - Preparation for Handover	18	09-Nov-18	29-Nov-18	Portion N7 - Preparation for Handover																							
FSDB/CEDB ELS system - Removal from Portion X (by C4)	0	15-Apr-19*		◆ FSDB/CEDB ELS system - Removal from Portion X (by C4)																							
Branch drains & Watermain Terminal Manholes - FSDB/CE	72	15-Apr-19	15-Jul-19	Branch drains & Watermain Terminal Manholes - FSDB/CE																							
FSDB/CEDB Terminal Manholes	48	16-Jul-19	09-Sep-19	FSDB/CEDB Terminal Manholes																							
Provision for Utilities - Portion N7 Interface	36	20-Aug-19	02-Oct-19	Provision for Utilities - Portion N7 Interface																							
Drainages & Watermain - NVS / STP	144	30-Nov-18	03-Jun-19	Drainages & Watermain - NVS / STP																							
Provision for Utilities - NVS / STP	72	04-Jun-19	28-Aug-19	Provision for Utilities - NVS / STP																							
Utilities parties coordination & Remaining Civil Provision - I	107	29-Aug-19	07-Jan-20																								
Tunnel - Thermal Barrier																											
[KD-2a] Stage 2a Completion - TNA & TSS up to CP33	0		15-Dec-18*	◆ [KD-2a] Stage 2a Completion - TNA & TSS up to CP33																							
[KD-2b] Stage 2b Completion - TSS between CP33 to CP13	0		15-Apr-19*	◆ [KD-2b] Stage 2b Completion - TSS between CP33 to CP13																							
[KD-3e] Stage 3e Completion - NVS Tunnel	0		15-Dec-18*	◆ [KD-3e] Stage 3e Completion - NVS Tunnel																							
Fire board Installation below OHVD																											
Fire Board between CP33 and CP13																											
ML03 TSS Utilities Removal / Relocation - TSS CP33-CP15	48	22-Sep-18	20-Nov-18	ML03 TSS Utilities Removal / Relocation - TSS CP33-CP15																							
ML03 Fire Board Installation - NPS - TSS CP33-CP13 - RL	68	08-Dec-18	07-Mar-19	ML03 Fire Board Installation - NPS - TSS CP33-CP13 - RL																							
ML03 Fire Board Installation - CPS - TSS CP15-CP13 - RL	8	08-Mar-19	16-Mar-19	ML03 Fire Board Installation - CPS - TSS CP15-CP13 - RL																							
ML02 TSS Utilities Removal / Relocation - TSS CP33-CP15	48	21-Sep-18	19-Nov-18	ML02 TSS Utilities Removal / Relocation - TSS CP33-CP15																							
ML02 Fire Board Installation - NPS - TSS CP33-CP13 - RL	68	12-Dec-18	11-Mar-19	ML02 Fire Board Installation - NPS - TSS CP33-CP13 - RL																							
ML02 Fire Board Installation - CPS - TSS CP15-CP13 - RL	3	12-Mar-19	14-Mar-19	ML02 Fire Board Installation - CPS - TSS CP15-CP13 - RL																							
Fire board between NLS and CP33																											
ML03 Fire Board installation - NCPS - TNA + NVS - RL	33	25-Aug-18	04-Oct-18	ML03 Fire Board installation - NCPS - TNA + NVS - RL																							
ML03 Fire Board Installation - NCPS - TSS NVS-CP33 - RL	54	05-Oct-18	07-Dec-18	ML03 Fire Board Installation - NCPS - TSS NVS-CP33 - RL																							
ML02 Fire Board installation - NCPS - TNA + NVS - RL	24	08-Sep-18	08-Oct-18	ML02 Fire Board installation - NCPS - TNA + NVS - RL																							
ML02 Fire Board Installation - NCPS - TSS NVS-CP33 - RL	54	09-Oct-18	11-Dec-18	ML02 Fire Board Installation - NCPS - TSS NVS-CP33 - RL																							
Fire board Installation above OHVD																											
Fire Board installation - TNA+NVS - above OHVD Slab - ML	13	18-Mar-19	01-Apr-19	Fire Board installation - TNA+NVS - above OHVD Slab - ML																							
Fire Board installation - TNA+NVS - above OHVD Slab - ML	17	02-Apr-19	25-Apr-19	Fire Board installation - TNA+NVS - above OHVD Slab - ML																							
Fire Board installation - North TSS - above OHVD Slab	30	26-Apr-19	01-Jun-19	Fire Board installation - North TSS - above OHVD Slab																							
Fire Board installation - South TSS - above OHVD Slab	39	03-Jun-19	19-Jul-19	Fire Board installation - South TSS - above OHVD Slab																							
Fire Board installation - ML02 TSS CP13 to SVS	15	20-Jul-19	06-Aug-19	Fire Board installation - ML02 TSS CP13 to SVS																							
Fire Board installation - ML02 TSA	8	07-Aug-19	15-Aug-19	Fire Board installation - ML02 TSA																							
Fire Board installation - ML03 TSS CP13 to SVS	16	16-Aug-19	03-Sep-19	Fire Board installation - ML03 TSS CP13 to SVS																							
ML02 TSS OHVD Slab Completion	0		30-May-19	◆ ML02 TSS OHVD Slab Completion																							
ML02 TSA OHVD Slab Completion	0		27-Jul-19	◆ ML02 TSA OHVD Slab Completion																							
ML03 TSS OHVD Slab Completion	0		28-Aug-19	◆ ML03 TSS OHVD Slab Completion																							
Tunnel - Anchor / E&M Bracket (VO72)																											
VO72 - Bracket Installation - Tunnel between NLS to CP33 (20R/d)	115	01-Aug-18	15-Dec-18	VO72 - Bracket Installation - Tunnel between NLS to CP33 (20R/d)																							
VO72 - Drilling & Anchor Installation - Tunnel between CP33	93	19-Nov-18	16-Mar-19	VO72 - Drilling & Anchor Installation - Tunnel between CP33																							

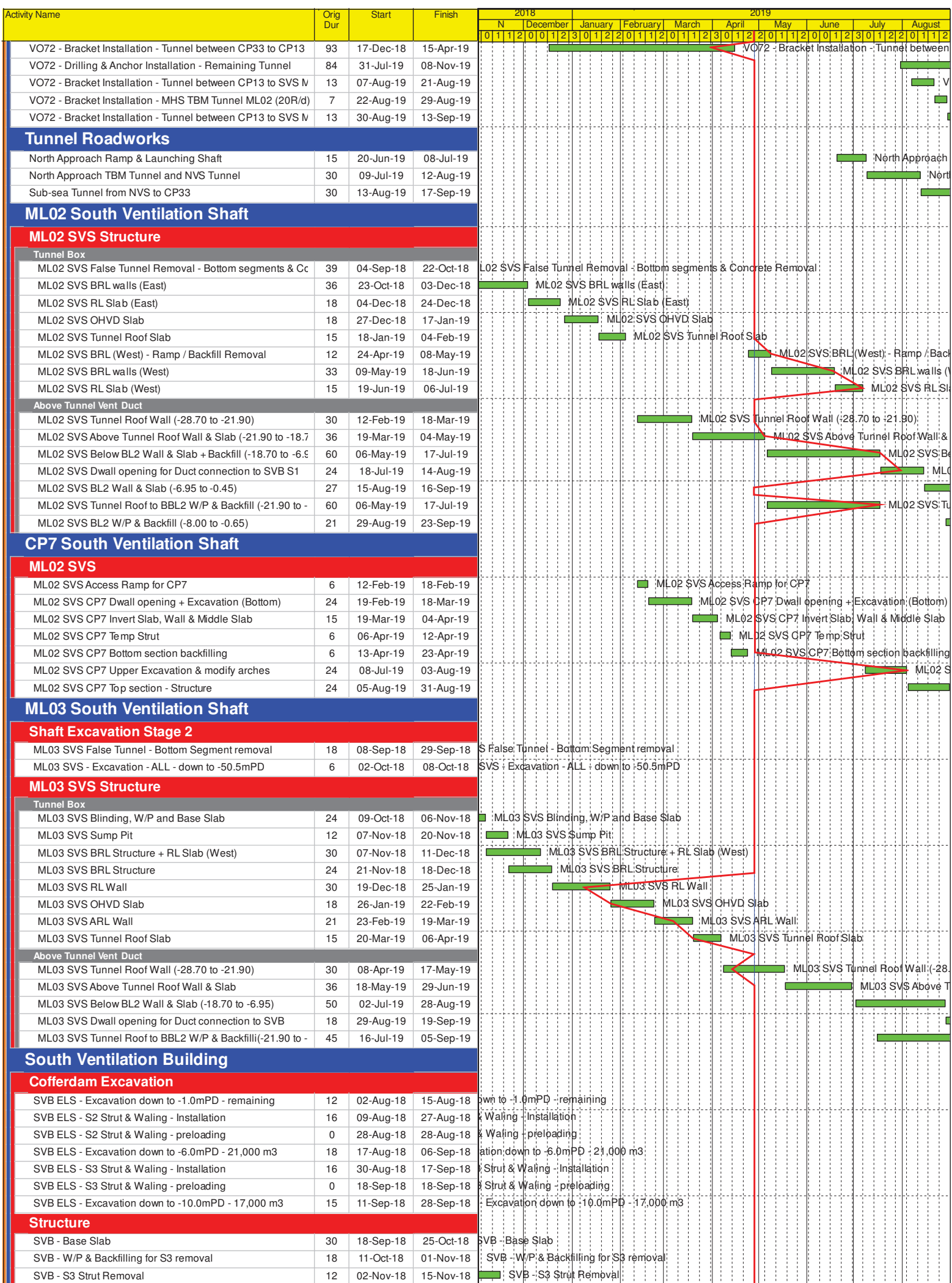


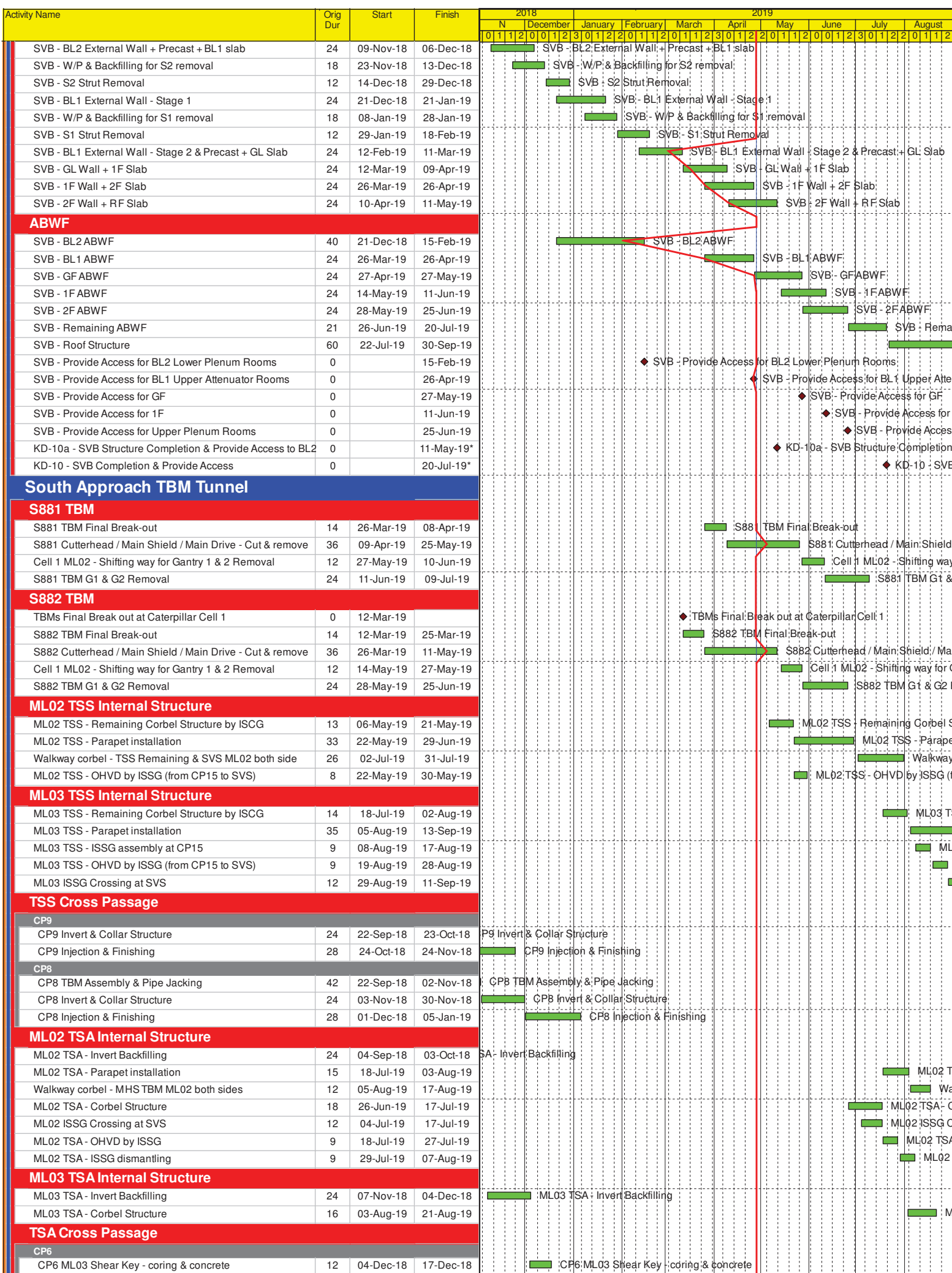
Page 2 of 6

◆ Planned Milestone
 Planned Bar

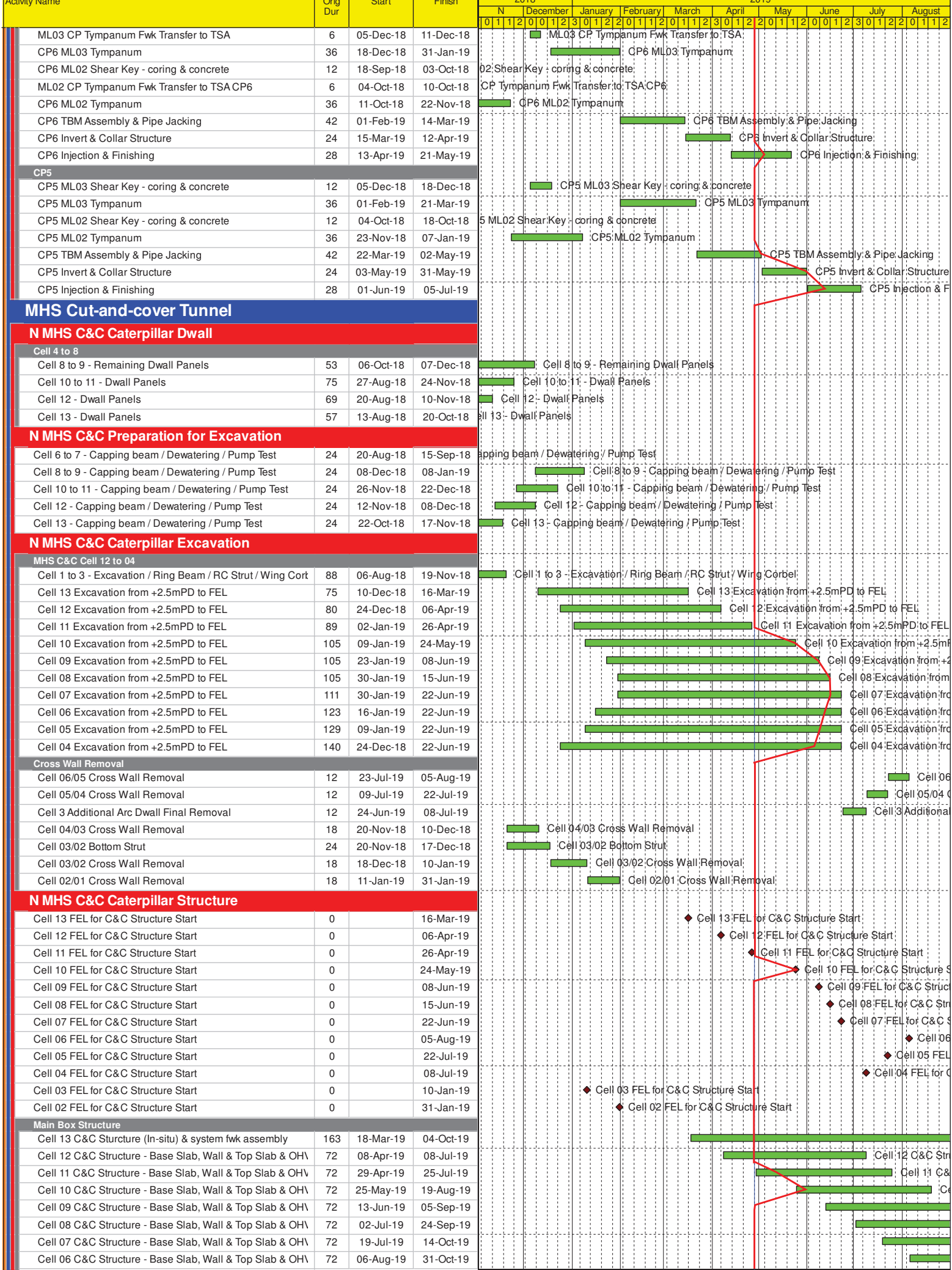
Dragages - Bouygues Joint Venture 寶嘉 - 布依格聯合

Date	Revision	Checked	Approved
22-Dec-17	Rev. H	WYu	
05-Feb-18	Rev. I AC	WYu	
07-Mar-18	Rev. I	WYu	
16-Jul-18	Rev. J	WYu	





Date	Revision	Checked	Approved
22-Dec-17	Rev. H	WYu	
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07-Mar-18	Rev. I	WYu	
16-Jul-18	Rev. J	WYu	



Page 5 of 6	<ul style="list-style-type: none"> ◆ Planned Milestone ■ Planned Bar
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TMCLK - Northern Connection Sub-sea Tunnel Section

Detailed Works Programme Rev. J

Three Months Rolling Programme Progress as of 28 Apr 2019

Dragages - Bouygues Joint Venture 寶嘉 - 布依格聯營

Date	Revision	Checked	Approved
22-Dec-17	Rev. H	WYu	
05-Feb-18	Rev. I AC	WYu	
07-Mar-18	Rev. I	WYu	
16-Jul-18	Rev. J	WYu	

Activity Name	Orig Dur	Start	Finish	2018												2019																			
				N			December			January			February			March			April			May			June			July			August				
				0	1	2	0	1	2	3	0	1	2	2	0	1	2	0	1	2	3	0	1	2	2	0	1	2	0	1	2	3	0	1	2
Cell 05 C&C Structure - Base Slab, Wall & Top Slab & OH\	78	03-Aug-19	05-Nov-19	[Gantt Bar]																															
Cell 04 C&C Structure - Base Slab, Wall & Top Slab & OH\	78	13-Jul-19	15-Oct-19	[Gantt Bar]																															
Cell 03 C&C Structure - Base Slab, Wall & Top Slab & OH\	78	02-Apr-19	10-Jul-19	[Gantt Bar]																															
Cell 02 C&C Structure - Base Slab, Wall & Top Slab & OH\	78	12-Mar-19	18-Jun-19	[Gantt Bar]																															
Cell 01 - Base Slab & Tympanum for TBM B/O	87	20-Nov-18	11-Mar-19	[Gantt Bar]																															
Cell 01 C&C Structure - Wall Structure	30	26-Jun-19	31-Jul-19	[Gantt Bar]																															
Cell 01 C&C Structure - Top Slab and OHVD Slab	36	10-Aug-19	21-Sep-19	[Gantt Bar]																															
MHS Approach Ramp																																			
MHS Ramp Dwall, Treatment & King Post																																			
SAR Open Cut - Dewatering Well - along Dwall	15	13-Aug-18	29-Aug-18	[Gantt Bar]																															
SAR Open Cut - Pump Test	12	30-Aug-18	12-Sep-18	[Gantt Bar]																															
SAR Open Cut ELS - King Post Installation	18	06-Aug-18	25-Aug-18	[Gantt Bar]																															
MHS Approach Ramp Excavation																																			
SAR Open Cut Excavation - Above +2.5mPD	12	30-Aug-18	12-Sep-18	[Gantt Bar]																															
SAR Open Cut Excavation - strut free section	36	13-Sep-18	27-Oct-18	[Gantt Bar]																															
SAR Open Cut Excavation - 1 strut section	36	13-Oct-18	24-Nov-18	[Gantt Bar]																															
SAR Open Cut Excavation - 3 strut section	36	05-Nov-18	15-Dec-18	[Gantt Bar]																															
MHS Caterpillar Cell 15/14 - Capping Beam / Pump test lead	24	02-Oct-18	30-Oct-18	[Gantt Bar]																															
MHS Caterpillar Cell 15 Excavation	57	19-Nov-18	26-Jan-19	[Gantt Bar]																															
MHS Caterpillar Cell 14 Excavation	75	10-Dec-18	16-Mar-19	[Gantt Bar]																															
MHS Approach Ramp Structure																																			
SAR Structure - Base Slab - strut free section	60	13-Sep-18	24-Nov-18	[Gantt Bar]																															
SAR Structure - Retaining Wall - strut free section	66	13-Oct-18	02-Jan-19	[Gantt Bar]																															
SAR Structure - Base Slab - strut section	51	12-Nov-18	12-Jan-19	[Gantt Bar]																															
SAR Structure - Retaining Wall - strut section	92	10-Dec-18	06-Apr-19	[Gantt Bar]																															
SAR Structure - Base Slab - Cell 15	36	28-Jan-19	16-Mar-19	[Gantt Bar]																															
SAR Structure - Retaining Wall - Cell 15	66	04-Mar-19	25-May-19	[Gantt Bar]																															
SAR Structure - Base Slab - Cell 14	24	18-Mar-19	15-Apr-19	[Gantt Bar]																															
SAR Structure - Retaining Wall - Cell 14	78	16-Apr-19	23-Jul-19	[Gantt Bar]																															
SAR Structure - Mass Concrete	60	10-Jul-19	18-Sep-19	[Gantt Bar]																															
SAR Structure - Parapet & Walkway	45	21-Aug-19	15-Oct-19	[Gantt Bar]																															
VO73 SCB Foundation & Substructure																																			
Foundation																																			
SCB Foundation - Barrettes - outside SAR cofferdam	24	13-Aug-18	08-Sep-18	[Gantt Bar]																															
SCB Foundation - Verification Coring - within SAR cofferdam	27	13-Aug-18	12-Sep-18	[Gantt Bar]																															
SCB Foundation - Verification Coring - outside SAR cofferdam	27	10-Sep-18	12-Oct-18	[Gantt Bar]																															
SAR ELS Backfilling - SCB Pile Cap Location	8	03-Jan-19	11-Jan-19	[Gantt Bar]																															
SCB Pile Cap Structure	24	12-Jan-19	15-Feb-19	[Gantt Bar]																															
SAR ELS Backfilling - Portion N13K,J	14	24-Jan-19	15-Feb-19	[Gantt Bar]																															
Portion N11A,B, N13K,J - Handover	0		15-Feb-19	[Gantt Bar]																															
Southern Landfall - Surface																																			
HKBCF Seawall Modification (schedule TBC)																																			
HKBCF Vertical Seawall - place Rock underlayer bottom	9	01-Aug-18*	10-Aug-18	[Gantt Bar]																															
Pause Period (to be verified on site)	90	11-Aug-18	08-Nov-18	[Gantt Bar]																															
HKBCF Vertical Seawall - place Rock Grade 400	15	09-Nov-18	26-Nov-18	[Gantt Bar]																															
Pause Period (to be verified on site)	90	27-Nov-18	24-Feb-19	[Gantt Bar]																															
HKBCF Vertical Seawall - place Rock underlayer upper	9	25-Feb-19	06-Mar-19	[Gantt Bar]																															
HKBCF Vertical Seawall - place Armour Rock	31	07-Mar-19	12-Apr-19	[Gantt Bar]																															
UU / At-grade works																																			
Demobilization of Dwall site setup	78	08-Dec-18	19-Mar-19	[Gantt Bar]																															
Drainage & Watermain - SLF	216	20-Mar-19	09-Dec-19	[Gantt Bar]																															

Appendix C

Environmental Mitigation
and Enhancement Measure
Implementation Schedules

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

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

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

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

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

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

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

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status *
						D	C	O	
6.1	-	a maximum of 30% public fill to be used for reclamation filling below +2.5mPD for TM-CLKL southern landfall	TM-CLKL southern landfall reclamation filling	Contractor	TM-EIAO		Y		N/A
6.1	-	a maximum of 100% public fill to be used for reclamation filling below +2.5mPD for TM-CLKL northern landfall	TM-CLKL northern landfall reclamation filling	Contractor	TM-EIAO		Y		✓
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		✓

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

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status *
						D	C	O	
		- 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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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	
					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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*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	
					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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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	-	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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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	-	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		✓
Water Quality Monitoring									
6.1	Section 5	Water quality monitoring shall be undertaken for suspended solids, turbidity, and dissolved oxygen. Nutrients and metal parameters shall also be measured for Mf sediment operations (only HKBCF and HKLR required handling of Mf sediment) during baseline, backfilling and post construction period. One year operation phase water quality monitoring at designated stations.	Designated monitoring stations as defined in EM&A Manual, Section 5/ Before, through-out marine construction period, post construction and monthly operational phase water quality monitoring for a year.	Contractor	EM&A Manual		Y	Y	✓
ECOLOGY									
8.14	6.3	Specification for and implement pre, during and post construction dolphin abundance monitoring.	All Areas/Detailed Design/ during construction works/post construction	Design Consultant/ Contractor	TMEIA	Y	Y	Y	✓
8.14	6.3,6.5	Specification and implementation of 250m dolphin exclusion zone.	All dredging and reclamation areas/Detailed Design/ during all reclamation and dredging works	Design Consultant/ Contractor	TMEIA	Y	Y		✓

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

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status *
						D	C	O	
8.15	6.3, 6.5	Specification and deployment of an artificial reef of an area of 3,600m ² in an area where fishing activities are prohibited.	Area of prohibited fishing activities/Detailed Design/towards end of construction period	TM-CLKL/ HKBCF Design Consultant/TM-CLKL/ HKBCF Contractor	TMEIA	Y		Y	N/A. To be implemented by AFCD.
8.14	6.3, 6.5	Specification and implementation of marine vessel control specifications	All areas/Detailed Design/during construction works	Design Consultant/ Contractor	TMEIA	Y	Y		✓
8.14	6.3, 6.5	Design and implementation of acoustic decoupling methods for dredging and reclamation works	All areas/ Detailed Design/during dredging and reclamation works	Design Consultant/ Contractor	TMEIA	Y	Y		✓
8.15	6.3, 6.4	Pre-construction phase survey and coral translocation	Detailed Design/Prior to construction	Design Consultant/ Contractor	TMEIA	Y	Y		✓
8.15	6.5	Audit coral translocation success	Post translocation	Contractor	TMEIA		Y		✓
7.13	6.5	The loss of habitat shall be supplemented by enhancement planting in accordance with the landscape mitigation schedule.	All areas / As soon as accessible	Contractor	TMEIA		Y		N/A
7.13	6.5	Spoil heaps shall be covered at all times.	All areas / Throughout construction period	Contractor	TMEIA		Y		✓
7.13	6.5	Avoid damage and disturbance to the remaining and surrounding natural habitat	All areas / Throughout construction period	Contractor	TMEIA		Y		✓
7.13	6.5	Placement of equipment in designated areas within the existing disturbed land	All areas / Throughout construction period	Contractor	TMEIA		Y		✓
7.13	6.5	Disturbed areas to be reinstated immediately after completion of the works.	All areas / Throughout construction period	Contractor	TMEIA		Y		✓
7.13	6.5	Construction activities should be restricted to the proposed works boundary.	All areas / Throughout construction period	Contractor	TMEIA		Y		✓
LANDSCAPE AND VISUAL									
10.9	7.6	The colour and shape of the toll control buildings, ventilation building and administration building shall adopt a design which could blend it into the vicinity elements, and the details will be developed in detailed design stage (DM2)	All areas/detailed design	Design Consultant	TMEIA	Y			N/A

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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	
10.9	7.6	Aesthetic design of the viaduct, retaining wall and other structures will be developed under ACABAS submission (DM5)	All areas/detailed design	Design Consultant	TMEIA	Y			N/A
10.9	7.6	Screening of construction works by hoardings around works area in visually unobtrusive colours, to screen works (CM5)	All areas/detailed design/ during construction/post construction	Design Consultant/ Contractor	TMEIA	Y	Y		✓
10.9	7.6	Control night-time lighting and glare by hooding all lights (CM6)	All areas/detailed design/ during construction	Design Consultant/ Contractor	TMEIA	Y	Y		N/A
10.9	7.6	Ensure no run-off into water body adjacent to the Project Area (CM7)	All areas/detailed design/ during construction	Design Consultant/ Contractor	TMEIA	Y	Y		✓
10.9	7.6	Avoidance of excessive height and bulk of buildings and structures (CM8)	All areas/detailed design/ during construction	Design Consultant/ Contractor	TMEIA	Y	Y		✓
10.9	7.6	Aesthetically pleasing design (visually unobtrusive and non-reflective) as regard to the form, material and finishes shall be incorporated to all buildings, engineering structures and associated infrastructure facilities (OM5)	All areas/detailed design/ during construction / during operation	Design Consultant/ Contractor	TMEIA	Y	Y	Y	N/A
10.9	7.6	Avoidance of excessive height and bulk of buildings and structures (OM6)	All areas/detailed design/ during construction / during operation	Design Consultant/ Contractor	TMEIA	Y	Y	Y	N/A
WASTE									
12.6		The Contractor shall identify a coordinator for the management of waste.	Contract mobilisation	Contractor	TMEIA		Y		✓
12.6		The Contractor shall prepare and implement a Waste Management Plan which specifies procedures such as a ticketing system, to facilitate tracking of loads and to ensure that illegal disposal of wastes does not occur, and protocols for the maintenance of records of the quantities of wastes generated, recycled and disposed. A recording system for the amount of waste generated, recycled and disposed (locations) should be established.	Contract mobilisation	Contractor	TMEIA, Works Branch Technical Circular No. 5/99 for the Trip-ticket System for Disposal of Construction and Demolition Material		Y		✓
12.6		The Contractor shall apply for and obtain the appropriate licenses for the disposal of public fill, chemical waste and effluent discharges.	Contract mobilisation	Contractor	TMEIA, Land (Miscellaneous		Y		✓

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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	
					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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EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status *
						D	C	O	
12.6	8.1	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: f suitable for the substance to be held, resistant to corrosion, maintained in good conditions and securely closed;	All areas / throughout construction period	Contractor	TMEIA		Y		<>

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						D	C	O	
		<p><i>f</i> Having a capacity of <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><i>f</i> Clearly labelled and used solely for the storage of chemical wastes;</p> <p><i>f</i> Enclosed with at least 3 sides;</p> <p><i>f</i> Impermeable floor and bund with capacity to accommodate 110% of the volume of the largest container or 20% by volume of the chemical waste stored in the area, whichever is greatest;</p> <p><i>f</i> Adequate ventilation;</p> <p><i>f</i> Sufficiently covered to prevent rainfall entering (water collected within the bund must be tested and disposed of as chemical waste, if necessary); and</p> <p><i>f</i> 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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EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status *
						D	C	O	
12.6	8.1	General refuse arising on-site should be stored in enclosed bins or compaction units separately from C&D and chemical wastes. Sufficient dustbins shall be provided for storage of waste as required under the Public Cleansing and Prevention of Nuisances By-laws. In addition, general refuse shall be cleared daily and shall be disposed of to the nearest licensed landfill or refuse transfer station. Burning of refuse on construction sites is prohibited.	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	All waste containers shall be in a secure area on hardstanding;	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	Training shall be provided to workers about the concepts of site cleanliness and appropriate waste management procedure, including waste reduction, reuse and recycling.	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	Office wastes can be reduced by recycling of paper if such volume is sufficiently large to warrant collection. Participation in a local collection scheme by the Contractor should be advocated. Waste separation facilities for paper, aluminium cans, plastic bottles, etc should be provided on-site.	Site Offices/ throughout construction period	Contractor	TMEIA		Y		✓
12.6	Section 8	EM&A of waste handling, storage, transportation, disposal procedures and documentation through the site audit programme shall be undertaken.	All areas / throughout construction period	Contractor	EM&A Manual		Y		✓
CULTURAL HERITAGE									
11.8	Section 9	EM&A in the form of audit of the mitigation measures	All areas / throughout construction period	Highways Department	EIAO-TM		Y		N/A

*** Remarks:**

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

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Appendix D

Summary of Action and Limit Levels

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

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

Table D2 *Action and Limit Levels for Water Quality*

Parameter	Action Level#	Limit Level#
DO in mg/L ^(a)	<u>Surface and Middle</u> 5.0 mg/L	<u>Surface and Middle</u> 4.2 mg/L
	<u>Bottom</u> 4.7 mg/L	<u>Bottom</u> 3.6 mg/L
Turbidity in NTU (Depth-averaged ^{(b), (c)})	120% of upstream control station at the same tide of the same day and 95%-ile of baseline data, i.e., 27.5 NTU	130% of upstream control station at the same tide of the same day and 99%-ile of baseline data, i.e., 47.0 NTU
SS in mg/L (Depth-averaged ^{(b), (c)})	120% of upstream control station at the same tide of the same day and 95%-ile of baseline data, i.e., 23.5 mg/L	130% of upstream control station at the same tide of the same day and 10mg/L for WSD Seawater Intakes at Tuen Mun and 99%-ile of baseline data, i.e., 34.4 mg/L

Notes:

Baseline data: data from HKZMB Baseline Water Quality Monitoring between 6 and 31 October 2011.

- (a) For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
- (b) "Depth-averaged" is calculated by taking the arithmetic means of reading of all three depths
- (c) For turbidity and SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.
- (d) All figures given in the table are used for reference only, and EPD may amend the figures whenever it is considered as necessary
- (e) The 1%-ile of baseline data for surface and middle DO is 4.2 mg/L, whilst for bottom DO is 3.6 mg/L.
- (f) The AL/LL for WQM stations, IS(Mf)11, IS17 and SR7, are adopted from HZMB HKBCF project.

Table D3 *Action and Limit Levels for Impact Dolphin Monitoring*

	North Lantau Social Cluster	
	NEL	NWL
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 D4 *Derived Value of Action Level (AL) and Limit Level (LL)*

	North Lantau Social Cluster	
	NEL	NWL
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
and Water Quality
Monitoring

High-Volume TSP Sampler
5-Point Calibration Record

Location : ASR 5
 Calibrated by : P.F. Yeung
 Date : 09/02/2019

Sampler

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

Calibration Orifice and Standard Calibration Relationship

Serial Number : 2454
 Service Date : 19 Mar 2018
 Slope (m) : 2.05242
 Intercept (b) : -0.01383
 Correlation Coefficient(r) : 0.99994

Standard Condition

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

Calibration Condition

Pa (hpa) : 1017
 Ta(K) : 293

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	12.4	3.558	1.740	54	54.57
2	13 holes	9.5	3.115	1.524	48	48.50
3	10 holes	7.0	2.673	1.309	42	42.44
4	7 holes	4.4	2.120	1.039	35	35.37
5	5 holes	3.2	1.808	0.887	28	28.29

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

Sampler Calibration Relationship (Linear Regression)

Slope(m): 29.808

Intercept(b): 3.076

Correlation Coefficient(r): 0.9959

Checked by: Magnum Fan

Date: 11/02/2019

High-Volume TSP Sampler
5-Point Calibration Record

Location : ASR10
 Calibrated by : P.F. Yeung
 Date : 09/02/2019

Sampler

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

Calibration Orifice and Standard Calibration Relationship

Serial Number : 2454
 Service Date : 19 Mar 2018
 Slope (m) : 2.05242
 Intercept (b) : -0.01383
 Correlation Coefficient(r) : 0.99994

Standard Condition

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

Calibration Condition

Pa (hpa) : 1017
 Ta(K) : 293

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	10.2	3.227	1.579	53	53.56
2	13 holes	8.0	2.858	1.399	48	48.50
3	10 holes	6.0	2.475	1.213	43	43.45
4	7 holes	4.0	2.021	0.991	35	35.37
5	5 holes	2.4	1.565	0.769	28	28.29

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): 31.840 Intercept(b): 4.355 Correlation Coefficient(r): 0.9985

Checked by: Magnum Fan

Date: 11/02/2019

High-Volume TSP Sampler
5-Point Calibration Record

Location : AQMS1
 Calibrated by : P.F. Yeung
 Date : 09/02/2019

Sampler

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

Calibration Orifice and Standard Calibration Relationship

Serial Number : 2454
 Service Date : 19 Mar 2018
 Slope (m) : 2.05242
 Intercept (b) : -0.01383
 Correlation Coefficient(r) : 0.99994

Standard Condition

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

Calibration Condition

Pa (hpa) : 1017
 Ta(K) : 293

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	12.6	3.587	1.754	52	52.55
2	13 holes	9.4	3.098	1.516	48	48.50
3	10 holes	7.2	2.711	1.328	42	42.44
4	7 holes	4.8	2.214	1.085	37	37.39
5	5 holes	2.6	1.629	0.801	30	30.31

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): 23.734 Intercept(b): 11.458 Correlation Coefficient(r): 0.9972

Checked by: Magnum Fan

Date: 11/02/2019

High-Volume TSP Sampler
5-Point Calibration Record

Location : ASR 1
 Calibrated by : P.F.Yeung
 Date : 09/02/2019

Sampler

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

Calibration Orifice and Standard Calibration Relationship

Serial Number : 2454
 Service Date : 19 Mar 2018
 Slope (m) : 2.05242
 Intercept (b) : -0.01383
 Correlation Coefficient(r) : 0.99994

Standard Condition

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

Calibration Condition

Pa (hpa) : 1017
 Ta(K) : 293

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	12.0	3.500	1.712	56	56.59
2	13 holes	9.2	3.065	1.500	51	51.53
3	10 holes	7.4	2.749	1.346	46	46.48
4	7 holes	4.5	2.144	1.051	40	40.42
5	5 holes	2.8	1.691	0.831	32	32.34

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): 26.872 Intercept(b): 10.861 Correlation Coefficient(r): 0.9959

Checked by: Magnum Fan

Date: 11/02/2019

High-Volume TSP Sampler
5-Point Calibration Record

Location : ASR 6
 Calibrated by : P.F. Yeung
 Date : 09/02/2019

Sampler

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

Calibration Orifice and Standard Calibration Relationship

Serial Number : 2454
 Service Date : 19 Mar 2018
 Slope (m) : 2.05242
 Intercept (b) : -0.01383
 Correlation Coefficient(r) : 0.99994

Standard Condition

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

Calibration Condition

Pa (hpa) : 1017
 Ta(K) : 293

Resistance Plate	dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1 18 holes	12.8	3.615	1.768	60	60.63
2 13 holes	10.0	3.195	1.564	53	53.56
3 10 holes	7.6	2.786	1.364	45	45.47
4 7 holes	4.4	2.120	1.039	38	38.40
5 5 holes	3.0	1.750	0.859	30	30.31

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

Sampler Calibration Relationship (Linear Regression)

Slope(m): 32.063 Intercept(b): 3.385 Correlation Coefficient(r): 0.9991

Checked by: Magnum Fan

Date: 11/02/2019

High-Volume TSP Sampler
5-Point Calibration Record

Location : ASR 5
 Calibrated by : P.F. Yeung
 Date : 08/04/2019

Sampler

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

Calibration Orifice and Standard Calibration Relationship

Serial Number : 2454
 Service Date : 25 February 2019
 Slope (m) : 2.07076
 Intercept (b) : -0.02917
 Correlation Coefficient(r) : 1.00000

Standard Condition

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

Calibration Condition

Pa (hpa) : 1011
 Ta(K) : 300

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	11.2	3.332	1.630	54	53.77
2	13 holes	9.6	3.085	1.510	48	47.791
3	10 holes	6.9	2.615	1.281	42	41.82
4	7 holes	4.5	2.112	1.036	35	34.85
5	5 holes	2.8	1.666	0.819	28	27.88

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): 30.603

Intercept(b): 2.811

Correlation Coefficient(r): 0.9967

Checked by: Magnum Fan

Date: 11/04/2019

High-Volume TSP Sampler
5-Point Calibration Record

Location : ASR10
 Calibrated by : P.F. Yeung
 Date : 08/04/2019

Sampler

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

Calibration Orifice and Standard Calibration Relationship

Serial Number : 2454
 Service Date : 25 February 2019
 Slope (m) : 2.07076
 Intercept (b) : -0.02917
 Correlation Coefficient(r) : 1.00000

Standard Condition

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

Calibration Condition

Pa (hpa) : 1011
 Ta(K) : 300

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	11.0	3.302	1.616	59	58.74
2	13 holes	9.3	3.036	1.486	53	52.77
3	10 holes	6.7	2.577	1.262	46	45.80
4	7 holes	4.3	2.065	1.013	38	37.84
5	5 holes	2.9	1.696	0.833	30	29.87

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): 35.465 Intercept(b): 0.958 Correlation Coefficient(r): 0.9978

Checked by: Magnum Fan

Date: 11/04/2019

High-Volume TSP Sampler
5-Point Calibration Record

Location : AQMS1
 Calibrated by : P.F.Yeung
 Date : 08/04/2019

Sampler

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

Calibration Orifice and Standard Calibration Relationship

Serial Number : 2454
 Service Date : 25 February 2019
 Slope (m) : 2.07076
 Intercept (b) : -0.02917
 Correlation Coefficient(r) : 1.00000

Standard Condition

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

Calibration Condition

Pa (hpa) : 1011
 Ta(K) : 300

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	12.0	3.449	1.680	50	49.78
2	13 holes	9.6	3.085	1.504	45	44.81
3	10 holes	7.4	2.709	1.322	40	39.83
4	7 holes	4.3	2.065	1.011	34	33.85
5	5 holes	2.8	1.666	0.819	28	27.88

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): 24.547 Intercept(b): 8.126 Correlation Coefficient(r): 0.9971

Checked by: Magnum Fan

Date: 11/04/2019

High-Volume TSP Sampler
5-Point Calibration Record

Location : ASR 1
 Calibrated by : P.F.Yeung
 Date : 08/04/2019

Sampler

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

Calibration Orifice and Standard Calibration Relationship

Serial Number : 2454
 Service Date : 25 February 2019
 Slope (m) : 2.07076
 Intercept (b) : -0.02917
 Correlation Coefficient(r) : 1.00000

Standard Condition

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

Calibration Condition

Pa (hpa) : 1011
 Ta(K) : 300

Resistance Plate	dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1 18 holes	10.0	3.149	1.541	54	53.77
2 13 holes	8.5	2.903	1.421	48	47.79
3 10 holes	6.5	2.538	1.244	42	41.82
4 7 holes	4.0	1.991	0.977	34	33.85
5 5 holes	2.9	1.696	0.833	28	27.88

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): 34.999 Intercept(b): -1.084 Correlation Coefficient(r): 0.9971

Checked by: Magnum Fan

Date: 11/04/2019

High-Volume TSP Sampler
5-Point Calibration Record

Location : ASR 6
 Calibrated by : P.F. Yeung
 Date : 08/04/2019

Sampler

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

Calibration Orifice and Standard Calibration Relationship

Serial Number : 2454
 Service Date : 25 February 2019
 Slope (m) : 2.07076
 Intercept (b) : -0.02917
 Correlation Coefficient(r) : 1.00000

Standard Condition

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

Calibration Condition

Pa (hpa) : 1011
 Ta(K) : 300

Resistance Plate	dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1 18 holes	11.7	3.406	1.666	59	58.74
2 13 holes	9.3	3.036	1.486	53	52.77
3 10 holes	7.4	2.709	1.326	45	44.81
4 7 holes	4.6	2.135	1.047	38	37.84
5 5 holes	3.0	1.725	0.847	30	29.87

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): 34.722 Intercept(b): 0.549 Correlation Coefficient(r): 0.9956

Checked by: Magnum Fan

Date: 11/04/2019



Certificate of Calibration

Calibration Certification Information			
Cal. Date: March 19, 2018	Rootsmeter S/N: 438320	Ta: 294	°K
Operator: Jim Tisch		Pa: 746.8	mm Hg
Calibration Model #: TE-5025A	Calibrator S/N: 2454		

Run	Vol. Init (m3)	Vol. Final (m3)	ΔVol. (m3)	ΔTime (min)	ΔP (mm Hg)	ΔH (in H2O)
1	1	2	1	1.4300	3.2	2.00
2	3	4	1	1.0040	6.4	4.00
3	5	6	1	0.9030	7.9	5.00
4	7	8	1	0.8590	8.7	5.50
5	9	10	1	0.7080	12.8	8.00

Data Tabulation					
Vstd (m3)	Qstd (x-axis)	$\sqrt{\Delta H \left(\frac{Pa}{Pstd} \right) \left(\frac{Tstd}{Ta} \right)}$ (y-axis)	Va	Qa (x-axis)	$\sqrt{\Delta H \left(\frac{Ta}{Pa} \right)}$ (y-axis)
0.9917	0.6935	1.4113	0.9957	0.6963	0.8874
0.9874	0.9835	1.9959	0.9914	0.9875	1.2549
0.9854	1.0913	2.2315	0.9894	1.0957	1.4030
0.9843	1.1459	2.3405	0.9883	1.1506	1.4715
0.9789	1.3826	2.8227	0.9829	1.3882	1.7747
QSTD	m=	2.05242	QA	m=	1.28519
	b=	-0.01383		b=	-0.00869
	r=	0.99994		r=	0.99994

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

Standard Conditions	
Tstd:	298.15 °K
Pstd:	760 mm Hg
Key	
ΔH:	calibrator manometer reading (in H2O)
ΔP:	rootsmeter manometer reading (mm Hg)
Ta:	actual absolute temperature (°K)
Pa:	actual barometric pressure (mm Hg)
b:	intercept
m:	slope

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



RECALIBRATION

DUE DATE:

February 25, 2020

Certificate of Calibration

Calibration Certification Information			
Cal. Date:	February 25, 2019	Rootsmeter S/N:	438320
Operator:	Jim Tisch	Ta:	294 °K
Calibration Model #:	TE-5025A	Pa:	762.0 mm Hg
		Calibrator S/N:	2454

Run	Vol. Init (m3)	Vol. Final (m3)	ΔVol. (m3)	ΔTime (min)	ΔP (mm Hg)	ΔH (in H2O)
1	1	2	1	1.4400	3.2	2.00
2	3	4	1	1.0200	6.4	4.00
3	5	6	1	0.9120	7.9	5.00
4	7	8	1	0.8700	8.8	5.50
5	9	10	1	0.7180	12.8	8.00

Data Tabulation					
Vstd (m3)	Qstd (x-axis)	$\sqrt{\Delta H \left(\frac{Pa}{Pstd} \right) \left(\frac{Tstd}{Ta} \right)}$ (y-axis)	Va	Qa (x-axis)	$\sqrt{\Delta H \left(\frac{Ta}{Pa} \right)}$ (y-axis)
1.0120	0.7028	1.4257	0.9958	0.6915	0.8784
1.0077	0.9880	2.0162	0.9916	0.9722	1.2423
1.0057	1.1028	2.2542	0.9896	1.0851	1.3889
1.0045	1.1546	2.3642	0.9885	1.1362	1.4567
0.9992	1.3916	2.8513	0.9832	1.3694	1.7569
QSTD	m= 2.07076		QA	m= 1.29667	
	b= -0.02917			b= -0.01797	
	r= 1.00000			r= 1.00000	

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

Standard Conditions	
Tstd:	298.15 °K
Pstd:	760 mm Hg
Key	
ΔH: calibrator manometer reading (in H2O)	
ΔP: rootsmeter manometer reading (mm Hg)	
Ta: actual absolute temperature (°K)	
Pa: actual barometric pressure (mm Hg)	
b: intercept	
m: slope	

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



輝創工程有限公司

Sun Creation Engineering Limited
Calibration & Testing Laboratory

Certificate of Calibration 校正證書

Certificate No. : C184960
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC18-1761) Date of Receipt / 收件日期 : 23 August 2018
Description / 儀器名稱 : Anemometer
Manufacturer / 製造商 : Lutron
Model No. / 型號 : AM-4201
Serial No. / 編號 : AF.27513
Supplied By / 委託者 : Envirotech Services Co.
Room 113, 1/F, My Loft, 9 Hoi Wing Road, Tuen Mun,
New Territories, Hong Kong

TEST CONDITIONS / 測試條件

Temperature / 溫度 : $(23 \pm 2)^{\circ}\text{C}$ Relative Humidity / 相對濕度 : $(50 \pm 25)\%$
Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範


Calibration check

DATE OF TEST / 測試日期 : 5 September 2018

TEST RESULTS / 測試結果

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

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

Tested By : 
測試 : _____
T L Shek
Assistant Engineer

Certified By : 
核證 : _____
H C Chan
Engineer

Date of Issue : 6 September 2018
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所書面批准。

Sun Creation Engineering Limited – Calibration & Testing Laboratory

c/o 4/F, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong

輝創工程有限公司 — 校正及檢測實驗室

c/o 香港新界屯門興安里一號四樓

Tel/電話: (852) 2927 2606

Fax/傳真: (852) 2744 8986

E-mail/電郵: callab@suncreation.com

Website/網址: www.suncreation.com



輝創工程有限公司

Sun Creation Engineering Limited

Calibration & Testing Laboratory

Certificate of Calibration 校正證書

Certificate No. : C184960

證書編號

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

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

4. Test procedure : MA130N.

5. Results :

Air Velocity

Applied Value (m/s)	UUT Reading (m/s)	Measured Correction		
		Value (m/s)	Measurement Uncertainty	
			Expanded Uncertainty (m/s)	Coverage Factor
2.0	1.7	+0.3	0.2	2.0
4.0	3.8	+0.2	0.3	2.0
6.0	5.8	+0.2	0.3	2.0
8.0	7.9	+0.1	0.3	2.0
10.0	10.0	0.0	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。局部複印本證書需先獲本實驗室所書面批准。

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c/o 4/F, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong

輝創工程有限公司 - 校正及檢測實驗室

c/o 香港新界屯門興安里一號四樓

Tel/電話: (852) 2927 2606

Fax/傳真: (852) 2744 8986

E-mail/電郵: callab@suncreation.com

Website/網址: www.suncreation.com

ENVIROTECH SERVICES CO.

Calibration Report of Wind Meter

Date of Calibration : 19 February 2019

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)
1.5	1.3
2.6	2.9
3.3	3.5

Wind Direction Test

Davis (o)	Marine Compass (o)
271	270
0	0
91	90
180	180

Calibrated by: *Ho*
Yeung Ping Fai
(Technical Officer)

Checked by : *Fat*
Ho Kam Fat
(Senior Technical Officer)



專業化驗有限公司
QUALITY PRO TEST-CONSULT LIMITED

Unit 10, 14/F, Wah Wai Centre, 38-40 Au Pui Wan St., Fotan, Hong Kong
 Email: info@qualityprotest.com; Website: www.qualityprotest.com
 Tel: (852) 3956 8717; Fax: (852) 3956 3928

REPORT OF EQUIPMENT PERFORMANCE CHECK/ CALIBRATION

Report No. : AI010202
 Date of Issue : 24 January, 2019
 Page No. : 1 of 2

PART A – CUSTOMER INFORMATION

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

PART B – DESCRIPTION

Name of Equipment : YSI ProDSS (Multi-Parameters)
 Manufacturer : YSI (a xylem brand)
 Serial Number : 16H104234
 Date of Received : Jan 23, 2019
 Date of Calibration : Jan 23, 2019
 Date of Next Calibration^(a) : Apr 23, 2019

PART C – REFERENCE METHODS/ DOCUMENTS FOR THE CALIBRATION

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

PART D – CALIBRATION RESULTS^(b,c)

(1) pH at 25°C

Target (pH unit)	Displayed Reading ^(d) (pH Unit)	Tolerance ^(e) (pH Unit)	Results
4.00	3.97	-0.03	Satisfactory
7.42	7.42	0.00	Satisfactory
10.01	10.04	0.03	Satisfactory

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

(2) Temperature

Reading of Ref. thermometer (°C)	Displayed Reading (°C)	Tolerance (°C)	Results
10.0	9.9	-0.1	Satisfactory
19.0	18.8	-0.2	Satisfactory
44.0	44.2	0.2	Satisfactory


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

~ CONTINUED ON NEXT PAGE ~

Remark(s): -

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

APPROVED SIGNATORY: _____


 LAM Ho-ye, Emma
 Assistant Laboratory Manager



REPORT OF EQUIPMENT PERFORMANCE CHECK/ CALIBRATION

Report No. : AI010202
Date of Issue : 24 January, 2019
Page No. : 2 of 2

PART D – CALIBRATION RESULTS (Cont'd)

(3) Dissolved Oxygen

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)	Results
0.00	0.00	0.00	Satisfactory
4.70	4.55	-0.15	Satisfactory
6.84	6.84	0.00	Satisfactory
9.08	9.08	0.00	Satisfactory

Tolerance limit of dissolved oxygen should be less than ± 0.20 (mg/L)

(4) Conductivity at 25°C

Conc. of KCl (M)	Expected Reading ($\mu\text{S}/\text{cm}$)	Displayed Reading ($\mu\text{S}/\text{cm}$)	Tolerance (%)	Results
0.001	146.9	160.1	9.0	Satisfactory
0.01	1412	1388	-1.7	Satisfactory
0.1	12890	12746	-1.1	Satisfactory
0.5	58670	57244	-2.4	Satisfactory
1.0	111900	110348	-1.4	Satisfactory

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

(5) Salinity

Expected Reading (g/L)	Displayed Reading (g/L)	Tolerance (%)	Results
10	9.96	-0.4	Satisfactory
20	20.00	0.0	Satisfactory
30	30.21	0.7	Satisfactory

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

(6) Turbidity

Expected Reading (NTU)	Displayed Reading ^(f) (NTU)	Tolerance ^(g) (%)	Results
0	0.00	--	--
10	10.00	0.0	Satisfactory
20	20.00	0.0	Satisfactory
100	97.40	-2.6	Satisfactory
800	780.90	-2.4	Satisfactory

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

~ END OF REPORT ~

Remark(s): -

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

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



專業化驗有限公司

QUALITY PRO TEST-CONSULT LIMITED

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

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

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

REPORT OF EQUIPMENT PERFORMANCE CHECK/ CALIBRATION

Report No. : AI050004
Date of Issue : 02 May, 2019
Page No. : 1 of 2

PART A – CUSTOMER INFORMATION

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

PART B – DESCRIPTION

Name of Equipment : YSI ProDSS (Multi-Parameters)
Manufacturer : YSI (a xylem brand)
Serial Number : 16H104234
Date of Received : Apr 30, 2019
Date of Calibration : Apr 30, 2019
Date of Next Calibration^(a) : Jul 30, 2019

PART C – REFERENCE METHODS/ DOCUMENTS FOR THE CALIBRATION

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

PART D – CALIBRATION RESULTS^(b,c)

(1) pH at 25°C

Target (pH unit)	Displayed Reading ^(d) (pH Unit)	Tolerance ^(e) (pH Unit)	Results
4.00	4.02	0.02	Satisfactory
7.42	7.42	0.00	Satisfactory
10.01	10.00	-0.01	Satisfactory

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

(2) Temperature

Reading of Ref. thermometer (°C)	Displayed Reading (°C)	Tolerance (°C)	Results
14.5	14.6	0.1	Satisfactory
25.0	25.1	0.1	Satisfactory
62.0	62.1	0.1	Satisfactory

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

~ CONTINUED ON NEXT PAGE ~

Remark(s): -

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- ^(c) The performance of the equipment stated in this report is checked with independent reference material and results compared against a calibrated secondary source.
- ^(d) "Displayed Reading" denotes the figure shown on item under calibration/ checking regardless of equipment precision or significant figures.
- ^(e) The "Tolerance Limit" mentioned is referenced to YSI product specifications.

APPROVED SIGNATORY:

LAM Ho-ye, Emma
Assistant Laboratory Manager



專業化驗有限公司

QUALITY PRO TEST-CONSULT LIMITED

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

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

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

REPORT OF EQUIPMENT PERFORMANCE CHECK/ CALIBRATION

Report No. : AI050004
Date of Issue : 02 May, 2019
Page No. : 2 of 2

PART D – CALIBRATION RESULTS (Cont'd)

(3) Dissolved Oxygen

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)	Results
0.02	0.29	0.27	Satisfactory
2.74	2.33	-0.41	Satisfactory
5.37	5.03	-0.34	Satisfactory
8.14	8.41	0.27	Satisfactory

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

(4) Conductivity at 25°C

Conc. of KCl (M)	Expected Reading ($\mu\text{S/cm}$)	Displayed Reading ($\mu\text{S/cm}$)	Tolerance (%)	Results
0.001	146.9	140.2	-4.6	Satisfactory
0.01	1412	1437	1.8	Satisfactory
0.1	12890	12789	-0.8	Satisfactory
0.5	58670	58362	-0.5	Satisfactory
1.0	111900	111714	-0.2	Satisfactory

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

(5) Salinity

Expected Reading (g/L)	Displayed Reading (g/L)	Tolerance (%)	Results
10	9.96	-0.4	Satisfactory
20	19.84	-0.8	Satisfactory
30	30.00	0.0	Satisfactory

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

(6) Turbidity

Expected Reading (NTU)	Displayed Reading ^(f) (NTU)	Tolerance ^(g) (%)	Results
0	0.00	--	--
10	10.10	1.0	Satisfactory
20	19.88	-0.6	Satisfactory
100	99.04	-1.0	Satisfactory
800	778.05	-2.7	Satisfactory

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

~ END OF REPORT ~

Remark(s): -

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專業化驗有限公司

QUALITY PRO TEST-CONSULT LIMITED

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

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

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

REPORT OF EQUIPMENT PERFORMANCE CHECK/ CALIBRATION

Report No. : AI030103
Date of Issue : 01 April, 2019
Page No. : 1 of 2

PART A – CUSTOMER INFORMATION

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

PART B – DESCRIPTION

Name of Equipment : YSI ProDSS (Multi-Parameters)
Manufacturer : YSI (a xylem brand)
Serial Number : 17E100747
Date of Received : Mar 27, 2019
Date of Calibration : Mar 27, 2019
Date of Next Calibration^(a) : Jun 27, 2019

PART C – REFERENCE METHODS/ DOCUMENTS FOR THE CALIBRATION

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

PART D – CALIBRATION RESULTS^(b,c)

(1) pH at 25°C

Target (pH unit)	Displayed Reading ^(d) (pH Unit)	Tolerance ^(e) (pH Unit)	Results
4.00	3.97	-0.03	Satisfactory
7.42	7.41	-0.01	Satisfactory
10.01	10.01	0.00	Satisfactory

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

(2) Temperature

Reading of Ref. thermometer (°C)	Displayed Reading (°C)	Tolerance (°C)	Results
19.5	19.7	0.2	Satisfactory
41.0	41.9	0.9	Satisfactory
65.0	66.3	1.3	Satisfactory

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

~ CONTINUED ON NEXT PAGE ~

Remark(s): -

- ^(a) The "Date of Next Calibration" is recommended according to best practice principals as practiced by QPT or quoted from relevant international standards.
^(b) The results relate only to the calibrated equipment as received
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^(d) "Displayed Reading" denotes the figure shown on item under calibration/ checking regardless of equipment precision or significant figures.
^(e) The "Tolerance Limit" mentioned is referenced to YSI product specifications.

APPROVED SIGNATORY:

LAM Ho-ye, Emma
Assistant Laboratory Manager



專業化驗有限公司

QUALITY PRO TEST-CONSULT LIMITED

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

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

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

REPORT OF EQUIPMENT PERFORMANCE CHECK/ CALIBRATION

Report No. : AI030103
Date of Issue : 01 April, 2019
Page No. : 2 of 2

PART D – CALIBRATION RESULTS (Cont'd)

(3) Dissolved Oxygen

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)	Results
1.76	1.68	-0.08	Satisfactory
4.51	4.32	-0.19	Satisfactory
6.26	6.31	0.05	Satisfactory
8.39	8.44	0.05	Satisfactory

Tolerance limit of dissolved oxygen should be less than ± 0.20 (mg/L)

(4) Conductivity at 25°C

Conc. of KCl (M)	Expected Reading ($\mu\text{S/cm}$)	Displayed Reading ($\mu\text{S/cm}$)	Tolerance (%)	Results
0.001	146.9	140.0	-4.7	Satisfactory
0.01	1412	1404	-0.6	Satisfactory
0.1	12890	12825	-0.5	Satisfactory
0.5	58670	58940	0.5	Satisfactory
1.0	111900	111734	-0.1	Satisfactory

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

(5) Salinity

Expected Reading (g/L)	Displayed Reading (g/L)	Tolerance (%)	Results
10	10.99	9.9	Satisfactory
20	20.82	4.1	Satisfactory
30	30.18	0.6	Satisfactory

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

(6) Turbidity

Expected Reading (NTU)	Displayed Reading ^(f) (NTU)	Tolerance ^(g) (%)	Results
0	0.00	--	--
10	10.00	0.0	Satisfactory
20	20.00	0.0	Satisfactory
100	101.77	1.8	Satisfactory
800	810.42	1.3	Satisfactory

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

~ END OF REPORT ~

Remark(s): -

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



專業化驗有限公司
QUALITY PRO TEST-CONSULT LIMITED

Unit 10, 14/F, Wah Wai Centre, 38-40 Au Pui Wan St., Fotan, Hong Kong
 Email: info@qualityprotest.com; Website: www.qualityprotest.com
 Tel: (852) 3956 8717; Fax: (852) 3956 3928

REPORT OF EQUIPMENT PERFORMANCE CHECK/ CALIBRATION

Report No. : AI010203
 Date of Issue : 24 January, 2019
 Page No. : 1 of 2

PART A – CUSTOMER INFORMATION

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

PART B – DESCRIPTION

Name of Equipment : YSI ProDSS (Multi-Parameters)
 Manufacturer : YSI (a xylem brand)
 Serial Number : 17H105557
 Date of Received : Jan 23, 2019
 Date of Calibration : Jan 23, 2019
 Date of Next Calibration^(a) : Apr 23, 2019

PART C – REFERENCE METHODS/ DOCUMENTS FOR THE CALIBRATION

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

PART D – CALIBRATION RESULTS^(b,c)

(1) pH at 25°C

Target (pH unit)	Displayed Reading ^(d) (pH Unit)	Tolerance ^(e) (pH Unit)	Results
4.00	4.01	0.01	Satisfactory
7.42	7.42	0.00	Satisfactory
10.01	10.03	0.02	Satisfactory

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

(2) Temperature

Reading of Ref. thermometer (°C)	Displayed Reading (°C)	Tolerance (°C)	Results
10.0	9.9	-0.1	Satisfactory
19.0	19.1	0.1	Satisfactory
44.0	44.2	0.2	Satisfactory


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

~ CONTINUED ON NEXT PAGE ~

Remark(s): -

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- ^(d) "Displayed Reading" denotes the figure shown on item under calibration/ checking regardless of equipment precision or significant figures.
- ^(e) The "Tolerance Limit" mentioned is referenced to YSI product specifications.

APPROVED SIGNATORY:


 LAM Ho-ye, Emma
 Assistant Laboratory Manager



REPORT OF EQUIPMENT PERFORMANCE CHECK/ CALIBRATION

Report No. : AI010203
Date of Issue : 24 January, 2019
Page No. : 2 of 2

PART D – CALIBRATION RESULTS (Cont'd)

(3) Dissolved Oxygen

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)	Results
0.00	0.00	0.00	Satisfactory
4.70	4.54	-0.16	Satisfactory
6.84	6.98	0.14	Satisfactory
9.08	9.08	0.00	Satisfactory

Tolerance limit of dissolved oxygen should be less than ± 0.20 (mg/L)

(4) Conductivity at 25°C

Conc. of KCl (M)	Expected Reading ($\mu\text{S/cm}$)	Displayed Reading ($\mu\text{S/cm}$)	Tolerance (%)	Results
0.001	146.9	158.8	8.1	Satisfactory
0.01	1412	1374	-2.7	Satisfactory
0.1	12890	12735	-1.2	Satisfactory
0.5	58670	57949	-1.2	Satisfactory
1.0	111900	110477	-1.3	Satisfactory

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

(5) Salinity

Expected Reading (g/L)	Displayed Reading (g/L)	Tolerance (%)	Results
10	9.91	-0.9	Satisfactory
20	20.00	0.0	Satisfactory
30	30.28	0.9	Satisfactory

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

(6) Turbidity

Expected Reading (NTU)	Displayed Reading ^(f) (NTU)	Tolerance ^(g) (%)	Results
0	0.00	--	--
10	10.00	0.0	Satisfactory
20	20.00	0.0	Satisfactory
100	98.20	-1.8	Satisfactory
800	783.00	-2.1	Satisfactory

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

~ END OF REPORT ~

Remark(s): -

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



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QUALITY PRO TEST-CONSULT LIMITED

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

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

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

REPORT OF EQUIPMENT PERFORMANCE CHECK/ CALIBRATION

Report No. : AI050005
Date of Issue : 02 May, 2019
Page No. : 1 of 2

PART A – CUSTOMER INFORMATION

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

PART B – DESCRIPTION

Name of Equipment : YSI ProDSS (Multi-Parameters)
Manufacturer : YSI (a xylem brand)
Serial Number : 17H105557
Date of Received : Apr 30, 2019
Date of Calibration : Apr 30, 2019
Date of Next Calibration^(a) : Jul 30, 2019

PART C – REFERENCE METHODS/ DOCUMENTS FOR THE CALIBRATION

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

PART D – CALIBRATION RESULTS^(b,c)

(1) pH at 25°C

Target (pH unit)	Displayed Reading ^(d) (pH Unit)	Tolerance ^(e) (pH Unit)	Results
4.00	4.01	0.01	Satisfactory
7.42	7.42	0.00	Satisfactory
10.01	10.01	0.00	Satisfactory

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

(2) Temperature

Reading of Ref. thermometer (°C)	Displayed Reading (°C)	Tolerance (°C)	Results
14.5	14.8	0.3	Satisfactory
25.0	25.1	0.1	Satisfactory
62.0	62.0	0.0	Satisfactory

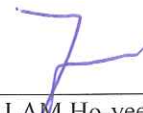
Tolerance limit of temperature should be less than ±2.0 (°C)

~ CONTINUED ON NEXT PAGE ~

Remark(s): -

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

APPROVED SIGNATORY:


LAM Ho-ye, Emma
Assistant Laboratory Manager



專業化驗有限公司

QUALITY PRO TEST-CONSULT LIMITED

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

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

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

REPORT OF EQUIPMENT PERFORMANCE CHECK/ CALIBRATION

Report No. : AI050005
Date of Issue : 02 May, 2019
Page No. : 2 of 2

PART D – CALIBRATION RESULTS (Cont'd)

(3) Dissolved Oxygen

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)	Results
0.02	0.28	0.26	Satisfactory
2.74	2.35	-0.39	Satisfactory
5.37	5.19	-0.18	Satisfactory
8.14	8.44	0.30	Satisfactory

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

(4) Conductivity at 25°C

Conc. of KCl (M)	Expected Reading ($\mu\text{S}/\text{cm}$)	Displayed Reading ($\mu\text{S}/\text{cm}$)	Tolerance (%)	Results
0.001	146.9	156.3	6.4	Satisfactory
0.01	1412	1388	-1.7	Satisfactory
0.1	12890	12767	-1.0	Satisfactory
0.5	58670	58538	-0.2	Satisfactory
1.0	111900	111855	0.0	Satisfactory

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

(5) Salinity

Expected Reading (g/L)	Displayed Reading (g/L)	Tolerance (%)	Results
10	9.95	-0.5	Satisfactory
20	19.93	-0.4	Satisfactory
30	30.33	1.1	Satisfactory

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

(6) Turbidity

Expected Reading (NTU)	Displayed Reading ^(f) (NTU)	Tolerance ^(g) (%)	Results
0	0.02	--	--
10	10.01	0.1	Satisfactory
20	19.78	-1.1	Satisfactory
100	99.29	-0.7	Satisfactory
800	784.87	-1.9	Satisfactory

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

~ END OF REPORT ~

Remark(s): -

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

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

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 - April 2019**

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

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1-Apr	2-Apr	3-Apr	4-Apr	5-Apr Public Holiday	6-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	
7-Apr	8-Apr	9-Apr	10-Apr	11-Apr	12-Apr	13-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		
14-Apr	15-Apr	16-Apr	17-Apr	18-Apr	19-Apr Public Holiday	20-Apr Public Holiday
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
21-Apr	22-Apr Public Holiday	23-Apr	24-Apr	25-Apr	26-Apr	27-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	
28-Apr	29-Apr	30-Apr				
	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 - May 2019**

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

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

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

**HY/2012/08 - Tuen Mun - Chek Lap Kok Link - Northern Landfall
Impact Marine Water Quality Monitoring (WQM) Schedule (April 2019)**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1/Apr	2/Apr	3/Apr	4/Apr	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
	ebb tide 8:34 - 12:04 flood tide 13:37 - 17:07		ebb tide 10:02 - 13:32 flood tide 15:45 - 19:15		ebb tide 11:15 - 14:45 flood tide 17:33 - 21:03	
21/Apr	22/Apr	23/Apr	24/Apr	25/Apr	26/Apr	27/Apr
	ebb tide 13:11 - 16:41 flood tide 6:36 - 10:06		ebb tide 14:36 - 17:00 flood tide 7:37 - 11:07		ebb tide 16:21 - 19:51 flood tide 5:00 - 7:18	
28/Apr	29/Apr	30/Apr				
	ebb tide 8:48 - 12:18 flood tide 13:27 - 16:57					

**HY/2012/08 - Tuen Mun - Chek Lap Kok Link - Northern Landfall
Impact Marine Water Quality Monitoring (WQM) Schedule (May 2019)**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1/May	2/May	3/May	4/May
			ebb tide 9:48 - 13:18 flood tide 15:19 - 18:49		ebb tide 10:41 - 14:11 flood tide 16:45 - 20:15	
5/May	6/May	7/May	8/May	9/May	10/May	11/May
	ebb tide 12:10 - 15:40 flood tide 5:34 - 9:04		ebb tide 13:27 - 16:57 flood tide 6:34 - 10:04		ebb tide 15:04 - 18:34 flood tide 7:47 - 11:17	
12/May	13/May	14/May	15/May	16/May	17/May	18/May
	ebb tide 7:10 - 10:40 flood tide 12:05 - 15:35		ebb tide 8:58 - 12:28 flood tide 14:41 - 18:11		ebb tide 10:17 - 13:47 flood tide 16:40 - 20:10	
19/May	20/May	21/May	22/May	23/May	24/May	25/May
	ebb tide 12:13 - 15:43 flood tide 5:29 - 8:59		ebb tide 13:32 - 17:02 flood tide 6:33 - 10:03		ebb tide 14:55 - 18:25 flood tide 7:40 - 11:10	
26/May	27/May	28/May	29/May	30/May	31/May	
	ebb tide 6:54 - 10:12 flood tide 11:05 - 14:35		ebb tide 8:34 - 12:04 flood tide 13:49 - 17:19		ebb tide 9:39 - 13:09 flood tide 15:42 - 19:12	

**HY/2012/08 - Tuen Mun - Chek Lap Kok Link
Northern Connection Sub-sea Tunnel Section
Impact Dolphin Monitoring Survey Monitoring Schedule - April 2019**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1-Apr	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
			Impact Dolphin Monitoring			
14-Apr	15-Apr	16-Apr	17-Apr	18-Apr	Public Holiday 19-Apr	Public Holiday 20-Apr
	Impact Dolphin Monitoring					
21-Apr	Public Holiday 22-Apr	23-Apr	24-Apr	25-Apr	26-Apr	27-Apr
		Impact Dolphin Monitoring		Impact Dolphin Monitoring		
28-Apr	29-Apr	30-Apr				

**HY/2012/08 - Tuen Mun - Chek Lap Kok Link
Northern Connection Sub-sea Tunnel Section
Tentative Impact Dolphin Monitoring Survey Monitoring Schedule - May 2019**

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

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

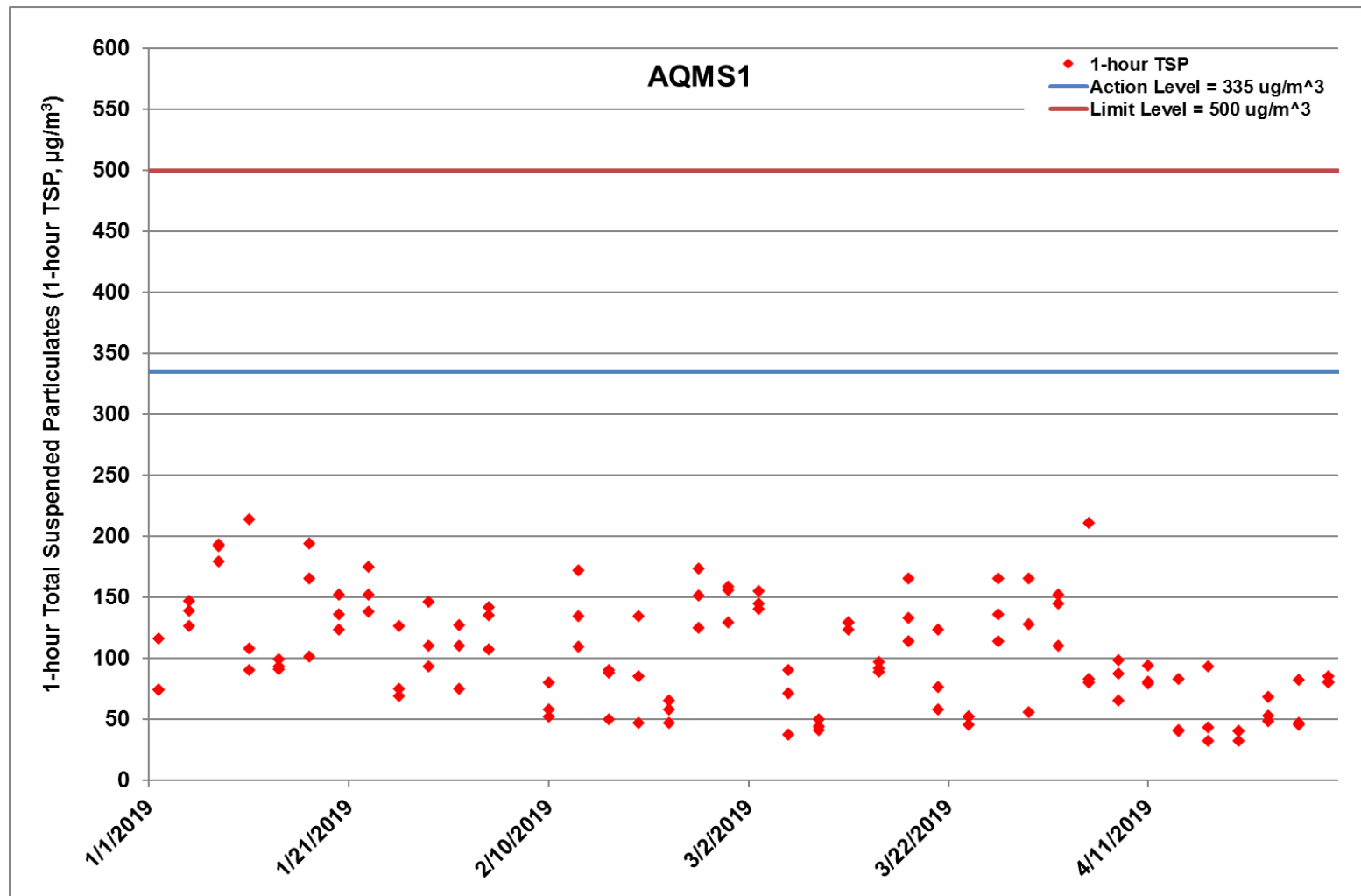


Figure G.1 Impact Monitoring - 1-hour Total Suspended Particulates ($\mu\text{g}/\text{m}^3$) at AQMS1 between 1 January 2019 and 30 April 2019 during impact monitoring period. The weather conditions during the monitoring period varied from sunny to cloudy. Major land-based construction activities included: RC structure, D-wall Construction, TBM Tunnel Works (1/1/2019 - 30/4/2019)

Ref: 0212330_Impact AQM graphs_April 2019_REV a.xlsx



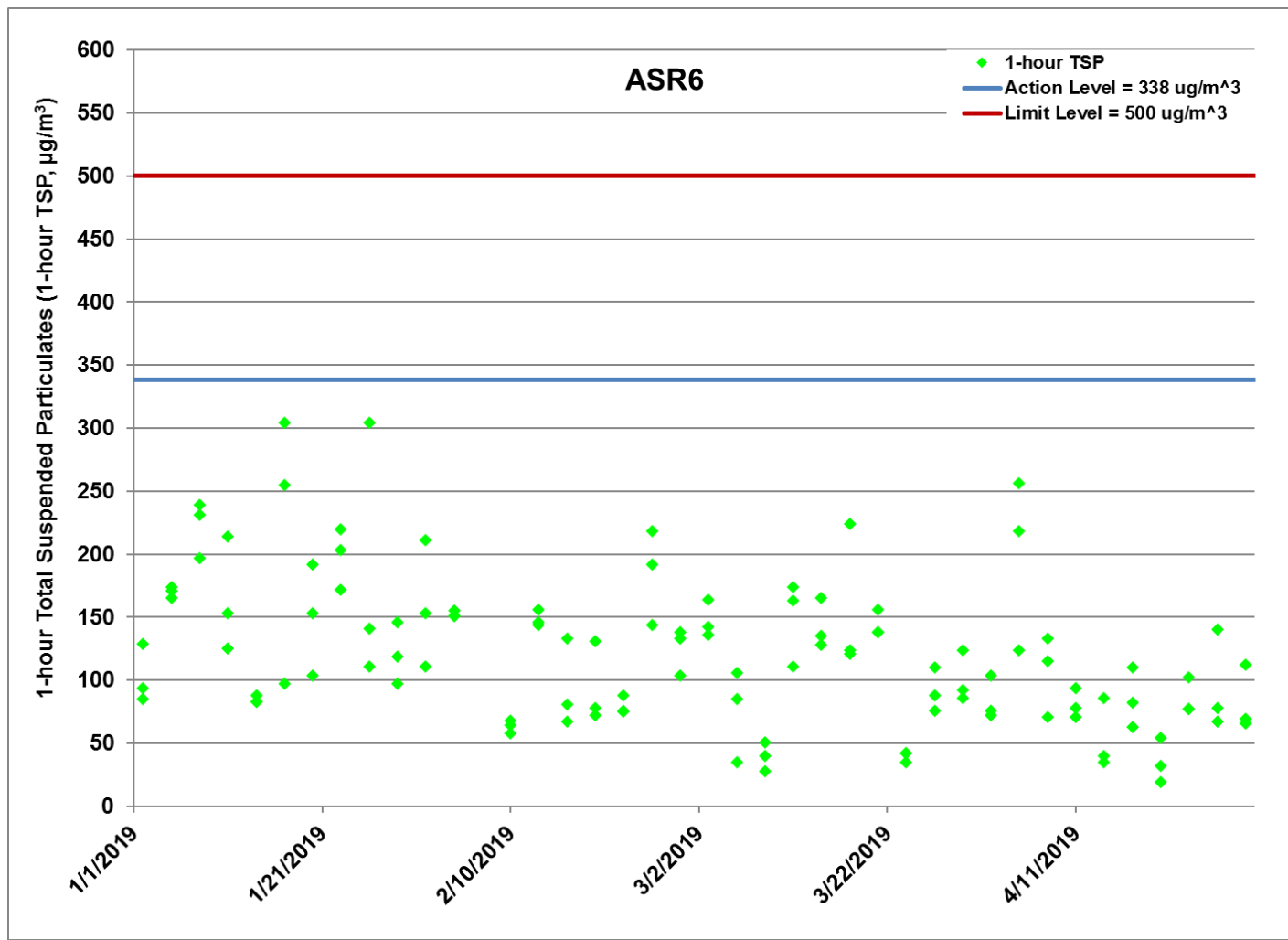


Figure G.2 Impact Monitoring - 1-hour Total Suspended Particulates ($\mu\text{g}/\text{m}^3$) at ASR6 between 1 January 2019 and 30 April 2019 during impact monitoring period. The weather conditions during the monitoring period varied from sunny to cloudy. Major land-based construction activities included: RC structure, D-wall Construction, TBM Tunnel Works (1/1/2019 - 30/4/2019)

Ref: 0212330_Impact AQM graphs_April 2019_REV a.xlsx



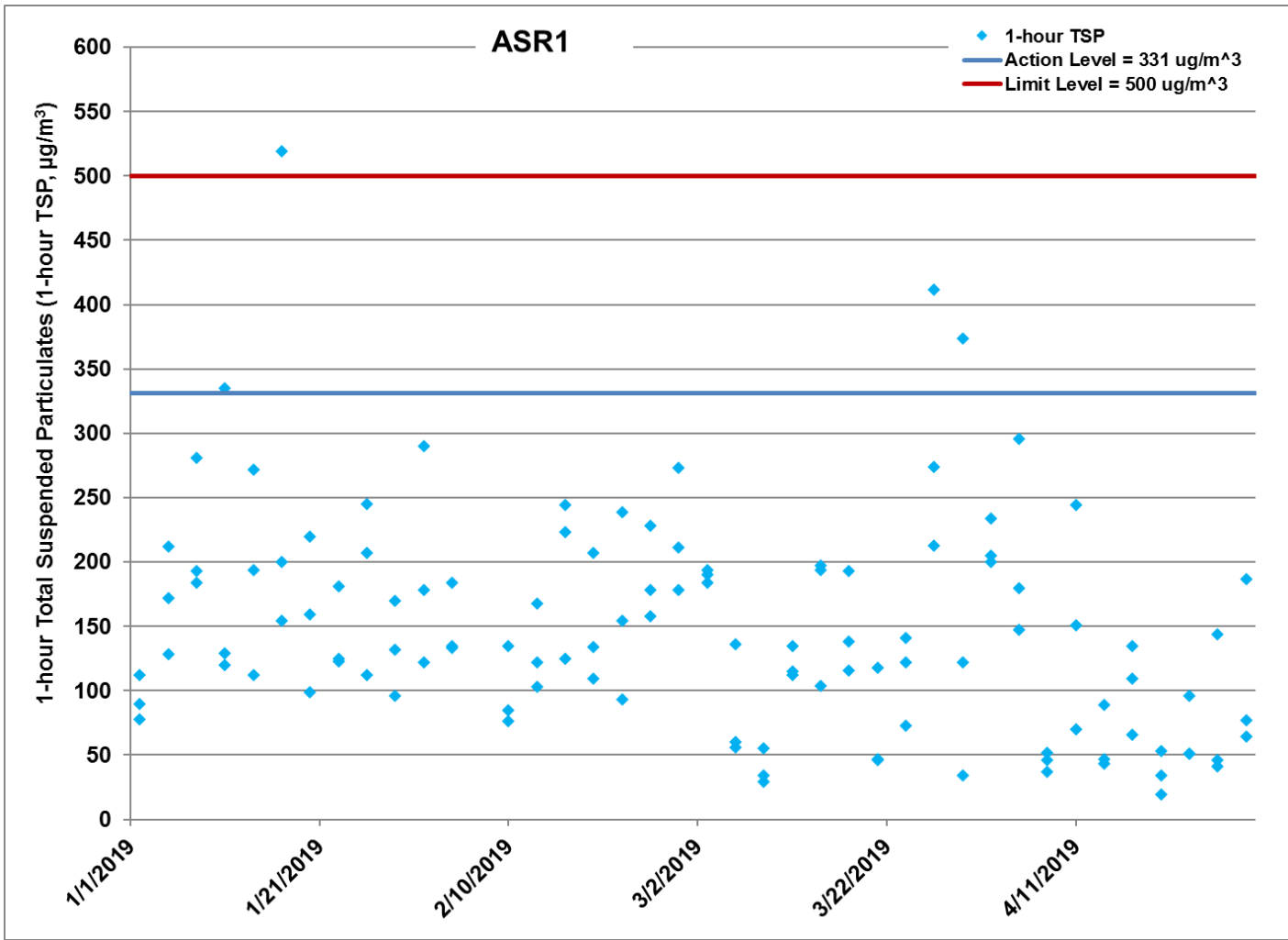


Figure G.3 Impact Monitoring - 1-hour Total Suspended Particulates ($\mu\text{g}/\text{m}^3$) at ASR1 between 1 January 2019 and 30 April 2019 during impact monitoring period. The weather conditions during the monitoring period varied from sunny to cloudy. Major land-based construction activities included: RC structure, D-wall Construction, TBM Tunnel Works (1/1/2019 - 30/4/2019)

Ref: 0212330_Impact AQM graphs_April 2019_REV a.xlsx



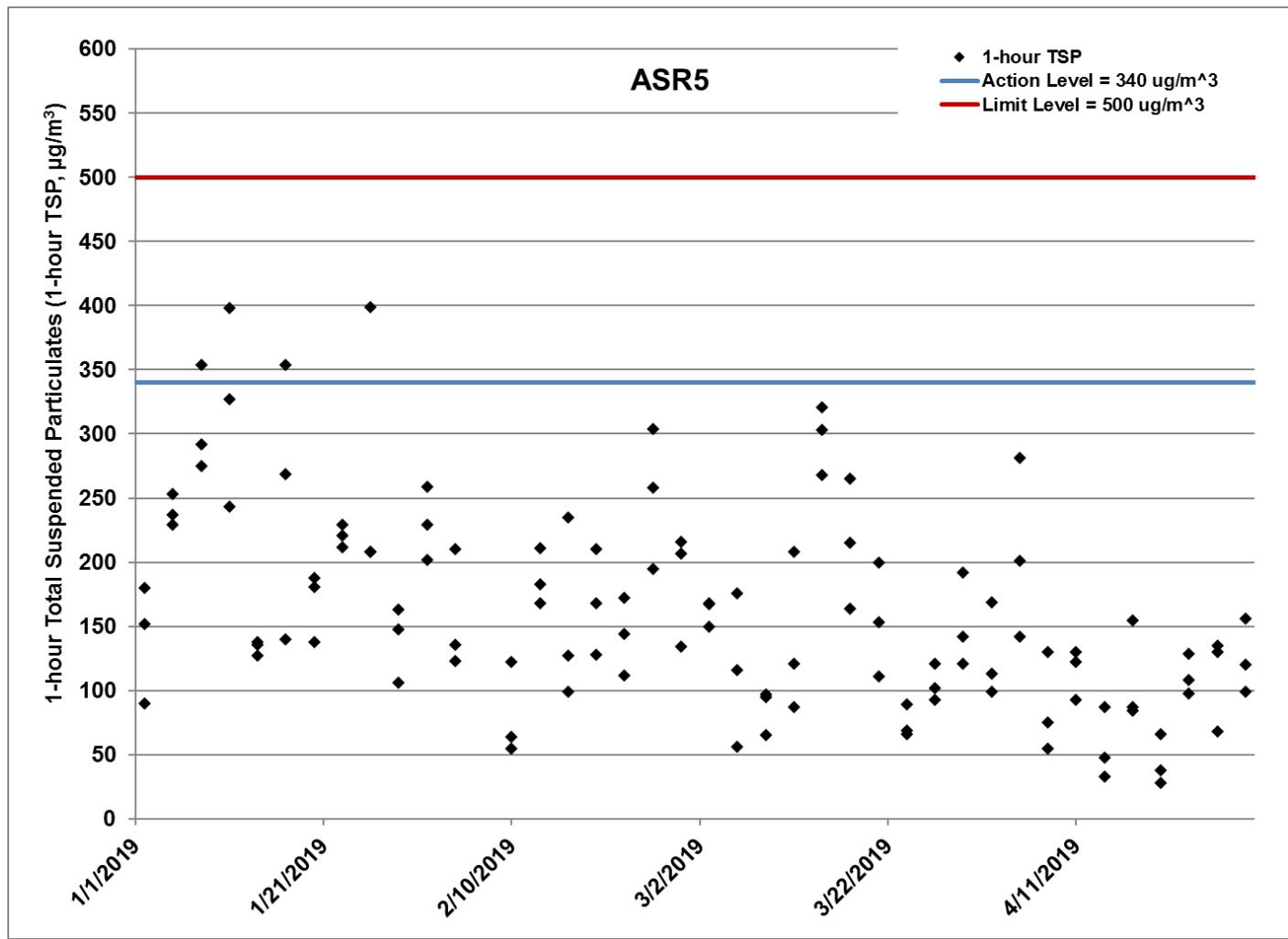


Figure G.4 Impact Monitoring - 1-hour Total Suspended Particulates ($\mu\text{g}/\text{m}^3$) at ASR5 between 1 January 2019 and 30 April 2019 during impact monitoring period. The weather conditions during the monitoring period varied from sunny to cloudy. Major land-based construction activities included: RC structure, D-wall Construction, TBM Tunnel Works (1/1/2019 - 30/4/2019)

Ref: 0212330_Impact AQM graphs_April 2019_REV a.xlsx



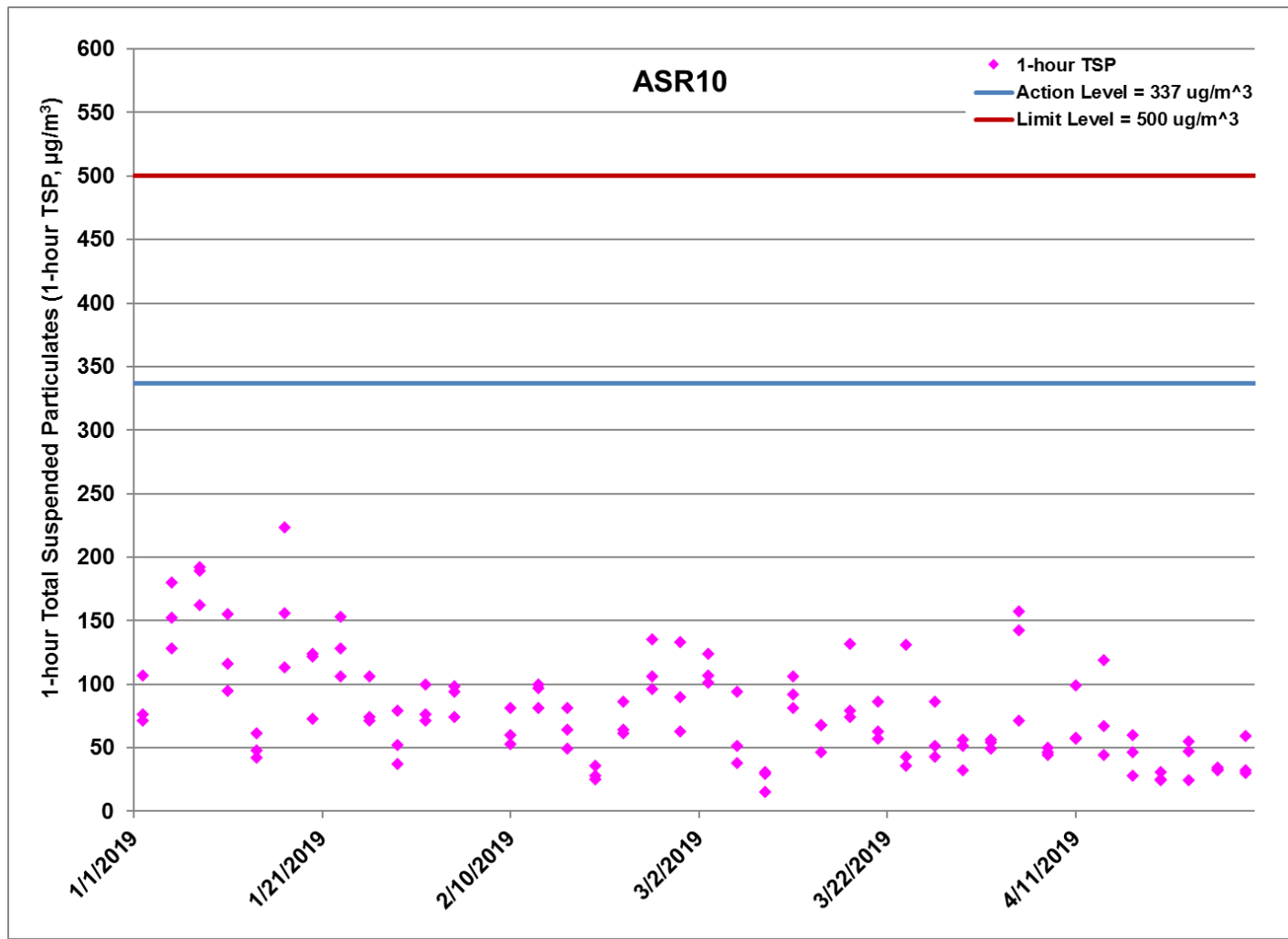


Figure G.5 Impact Monitoring - 1-hour Total Suspended Particulates ($\mu\text{g}/\text{m}^3$) at ASR10 between 1 January 2019 and 30 April 2019 during impact monitoring period. The weather conditions during the monitoring period varied from sunny to cloudy. Major land-based construction activities included: RC structure, D-wall Construction, TBM Tunnel Works (1/1/2019 - 30/4/2019)

Ref: 0212330_Impact AQM graphs_April 2019_REV a.xlsx



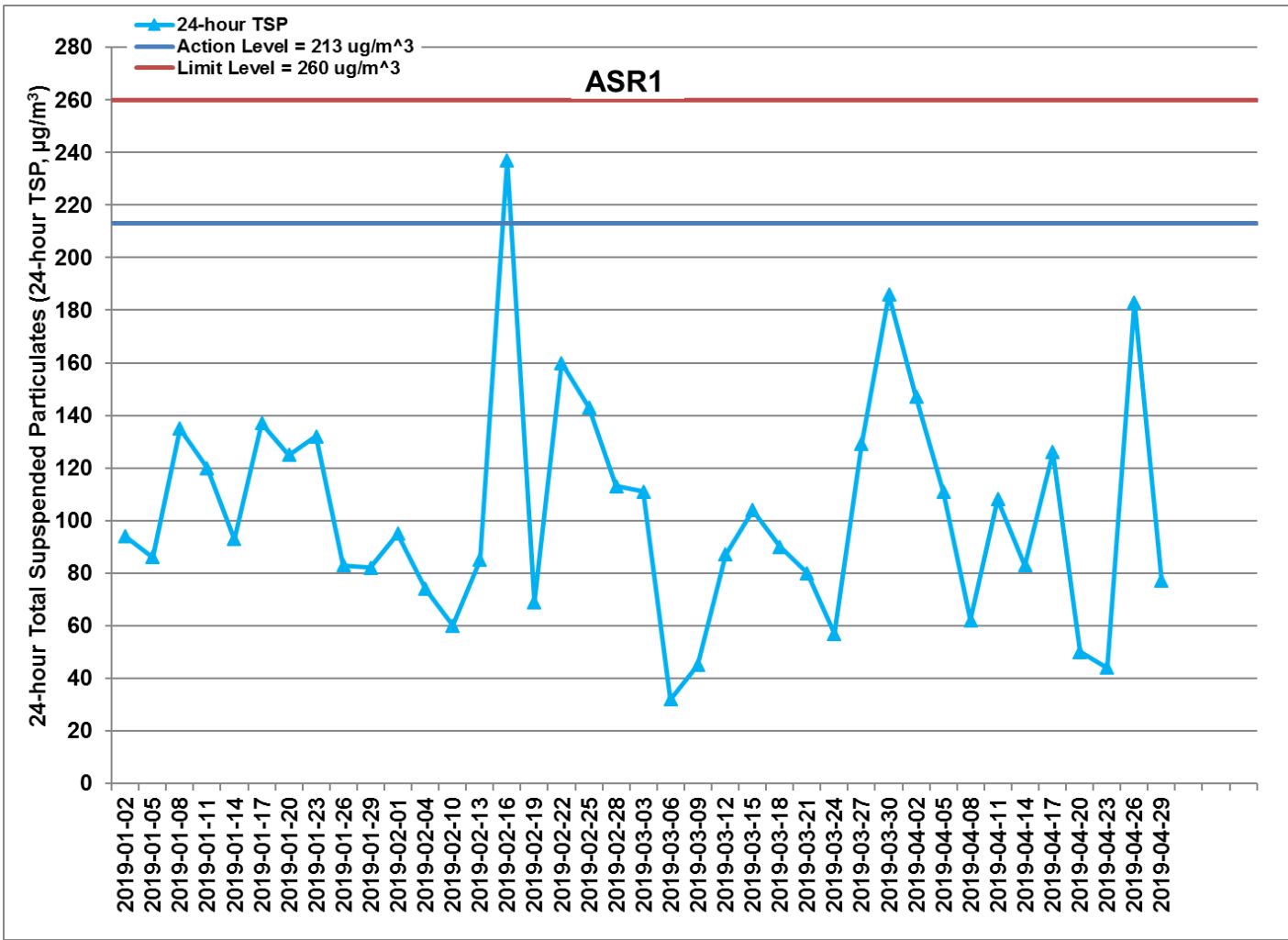


Figure G.6 Impact Monitoring - 24-hour Total Suspended Particulates ($\mu\text{g}/\text{m}^3$) at ASR1 between 1 January 2019 and 30 April 2019 during impact monitoring period. The weather conditions during the monitoring period varied from sunny to cloudy. Major land-based construction activities included: RC structure, D-wall Construction, TBM Tunnel Works (1/1/2019 - 30/4/2019)

Ref: 0212330_Impact AQM graphs_April 2019_REV a.xlsx



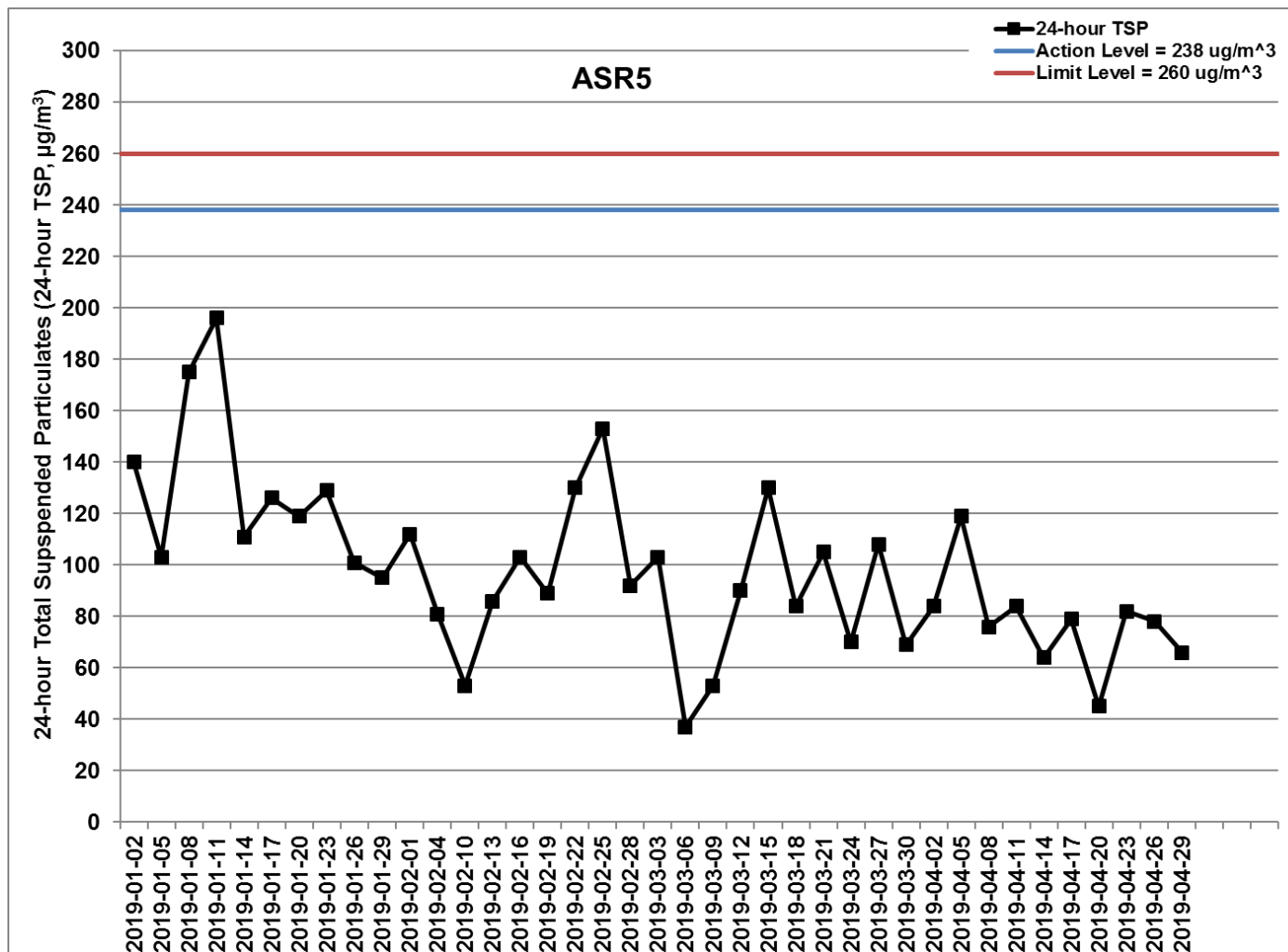


Figure G.7 Impact Monitoring - 24-hour Total Suspended Particulates ($\mu\text{g}/\text{m}^3$) at ASR5 between 1 January 2019 and 30 April 2019 during impact monitoring period. The weather conditions during the monitoring period varied from sunny to cloudy. Major land-based construction activities included: RC structure, D-wall Construction, TBM Tunnel Works (1/1/2019 - 30/4/2019)

Ref: 0212330_Impact AQM graphs_April 2019_REV a.xlsx



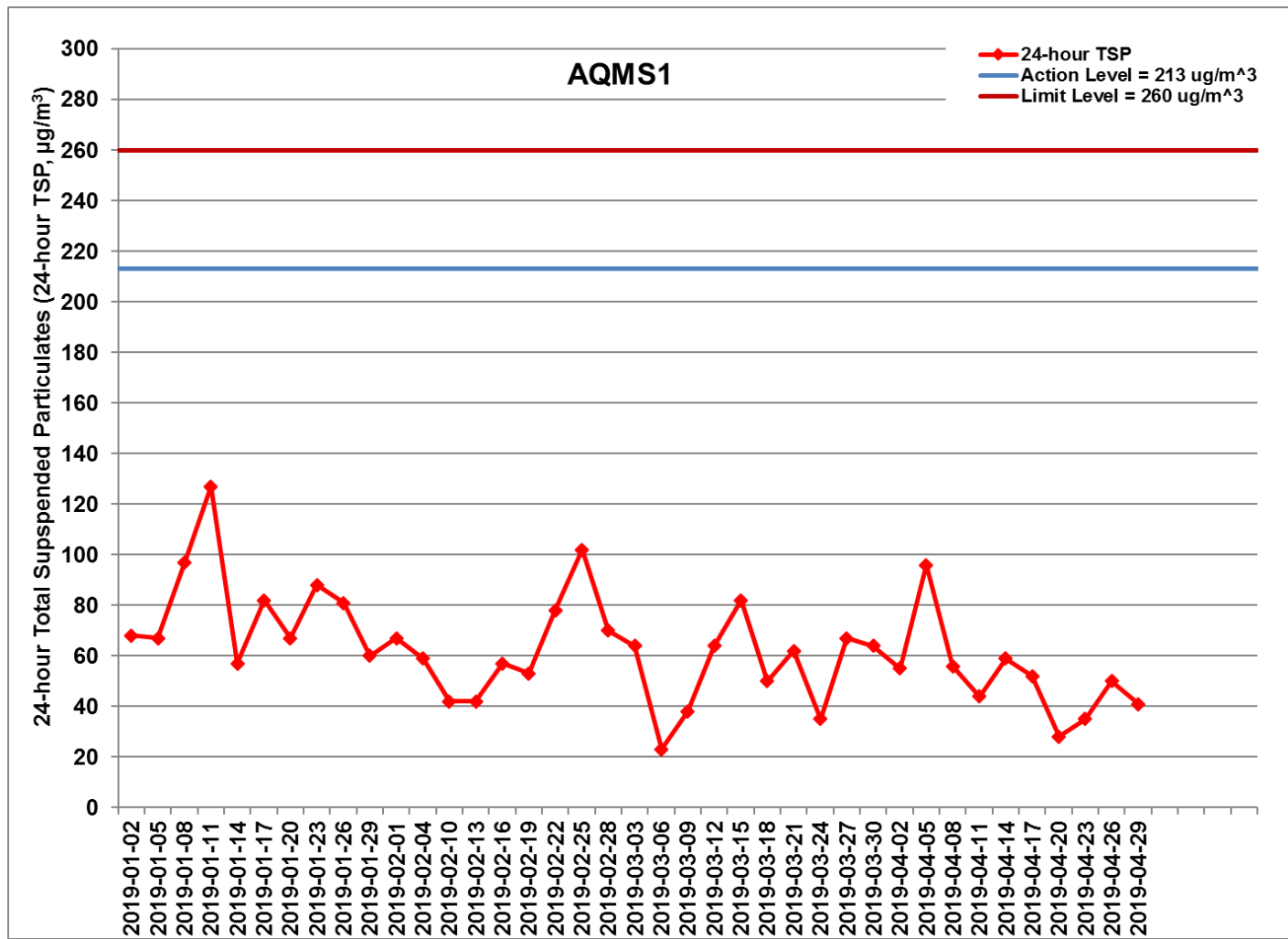


Figure G.8 Impact Monitoring - 24-hour Total Suspended Particulates ($\mu\text{g}/\text{m}^3$) at AQMS1 between 1 January 2019 and 30 April 2019 during impact monitoring period. The weather conditions during the monitoring period varied from sunny to cloudy. Major land-based construction activities included: RC structure, D-wall Construction, TBM Tunnel Works (1/1/2019 - 30/4/2019)

Ref: 0212330_Impact AQM graphs_April 2019_REV a.xlsx



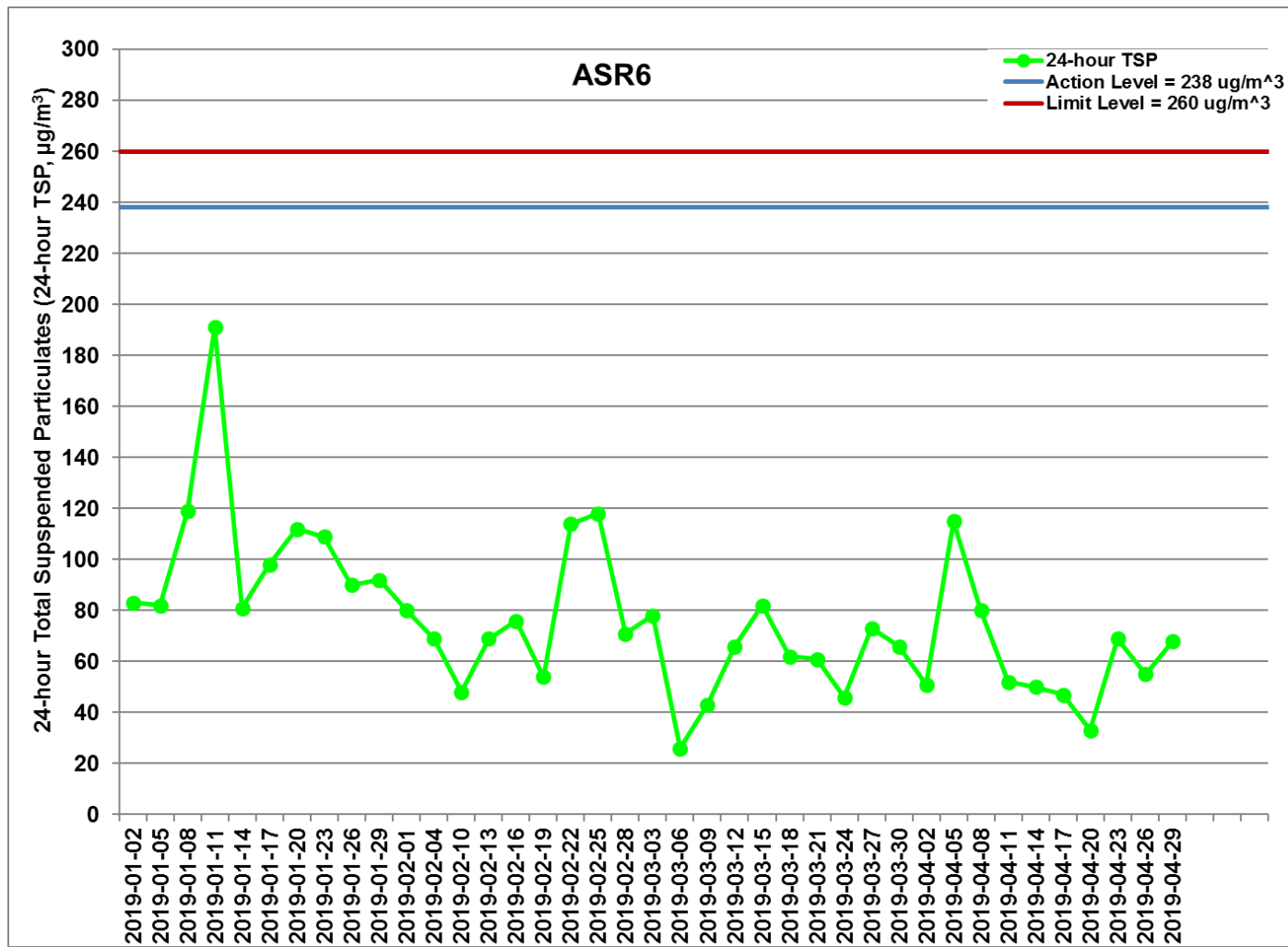


Figure G.9 Impact Monitoring - 24-hour Total Suspended Particulates ($\mu\text{g}/\text{m}^3$) at ASR6 between 1 January 2019 and 30 April 2019 during impact monitoring period. The weather conditions during the monitoring period varied from sunny to cloudy. Major land-based construction activities included: RC structure, D-wall Construction, TBM Tunnel Works (1/1/2019 - 30/4/2019)

Ref: 0212330_Impact AQM graphs_April 2019_REV a.xlsx



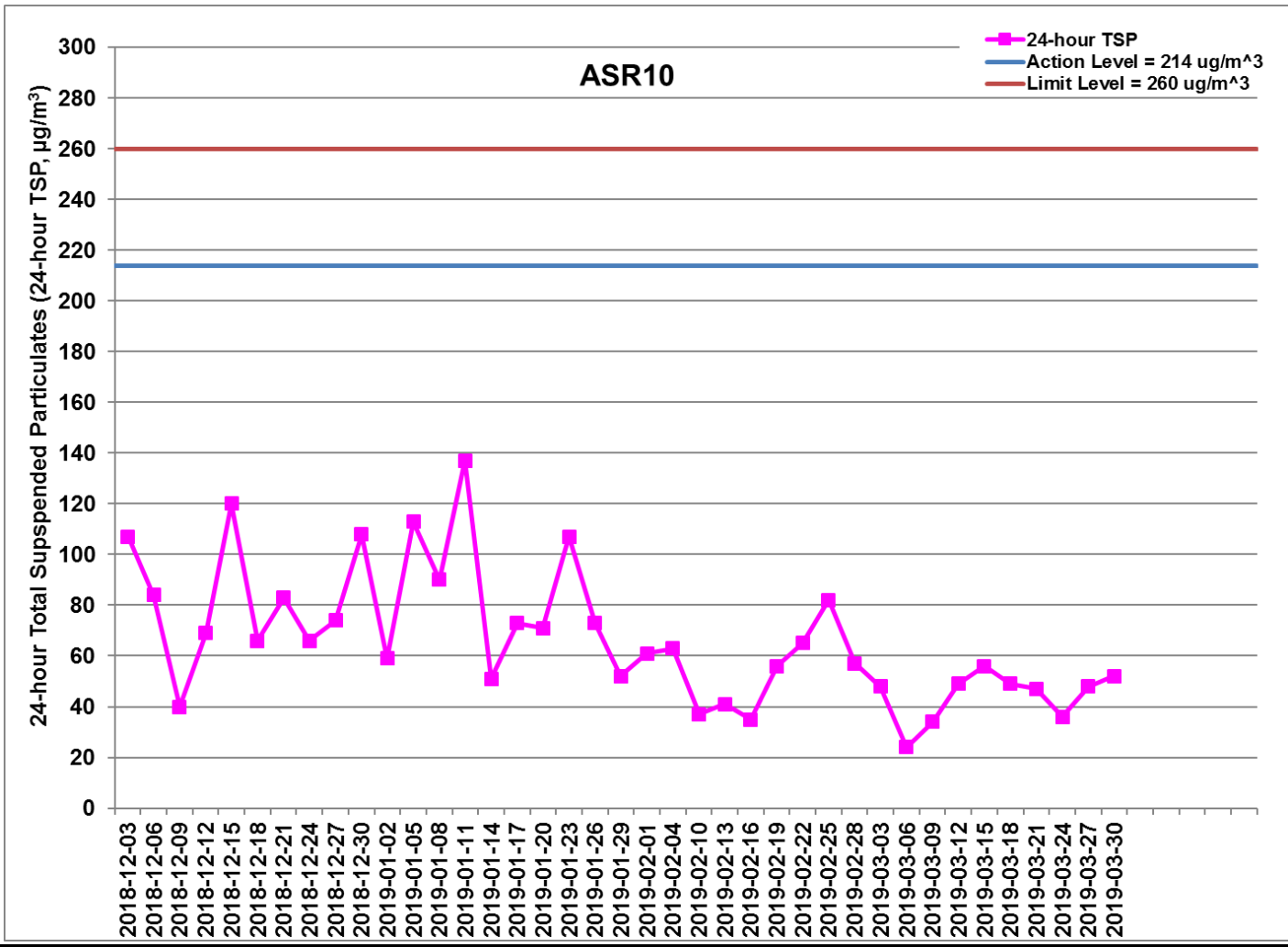


Figure G.10 Impact Monitoring - 24-hour Total Suspended Particulates ($\mu\text{g}/\text{m}^3$) at ASR10 between 1 January 2019 and 30 April 2019 during impact monitoring period. The weather conditions during the monitoring period varied from sunny to cloudy. Major land-based construction activities included: RC structure, D-wall Construction, TBM Tunnel Works (1/1/2019 - 30/4/2019)

Ref: 0212330_Impact AQM graphs_April 2019_REV a.xlsx



Project	Works	Date	Station	Weather	Start time	Parameters	Results	units
TMCLKL	HY/2012/08	2019-04-02	AQMS1	Sunny	13:48	1-hour TSP	152	ug/m3
TMCLKL	HY/2012/08	2019-04-02	AQMS1	Sunny	14:50	1-hour TSP	145	ug/m3
TMCLKL	HY/2012/08	2019-04-02	AQMS1	Sunny	15:52	1-hour TSP	110	ug/m3
TMCLKL	HY/2012/08	2019-04-02	ASR1	Sunny	13:37	1-hour TSP	234	ug/m3
TMCLKL	HY/2012/08	2019-04-02	ASR1	Sunny	14:39	1-hour TSP	205	ug/m3
TMCLKL	HY/2012/08	2019-04-02	ASR1	Sunny	15:41	1-hour TSP	200	ug/m3
TMCLKL	HY/2012/08	2019-04-02	ASR10	Sunny	13:03	1-hour TSP	56	ug/m3
TMCLKL	HY/2012/08	2019-04-02	ASR10	Sunny	14:05	1-hour TSP	49	ug/m3
TMCLKL	HY/2012/08	2019-04-02	ASR10	Sunny	15:07	1-hour TSP	54	ug/m3
TMCLKL	HY/2012/08	2019-04-02	ASR5	Sunny	13:25	1-hour TSP	169	ug/m3
TMCLKL	HY/2012/08	2019-04-02	ASR5	Sunny	14:27	1-hour TSP	113	ug/m3
TMCLKL	HY/2012/08	2019-04-02	ASR5	Sunny	15:29	1-hour TSP	99	ug/m3
TMCLKL	HY/2012/08	2019-04-02	ASR6	Sunny	13:13	1-hour TSP	76	ug/m3
TMCLKL	HY/2012/08	2019-04-02	ASR6	Sunny	14:15	1-hour TSP	72	ug/m3
TMCLKL	HY/2012/08	2019-04-02	ASR6	Sunny	15:17	1-hour TSP	104	ug/m3
TMCLKL	HY/2012/08	2019-04-05	AQMS1	Sunny	08:56	1-hour TSP	211	ug/m3
TMCLKL	HY/2012/08	2019-04-05	AQMS1	Sunny	09:58	1-hour TSP	83	ug/m3
TMCLKL	HY/2012/08	2019-04-05	AQMS1	Sunny	11:00	1-hour TSP	80	ug/m3
TMCLKL	HY/2012/08	2019-04-05	ASR1	Sunny	08:44	1-hour TSP	296	ug/m3
TMCLKL	HY/2012/08	2019-04-05	ASR1	Sunny	09:46	1-hour TSP	180	ug/m3
TMCLKL	HY/2012/08	2019-04-05	ASR1	Sunny	10:48	1-hour TSP	147	ug/m3
TMCLKL	HY/2012/08	2019-04-05	ASR10	Sunny	08:11	1-hour TSP	157	ug/m3
TMCLKL	HY/2012/08	2019-04-05	ASR10	Sunny	09:13	1-hour TSP	142	ug/m3
TMCLKL	HY/2012/08	2019-04-05	ASR10	Sunny	10:15	1-hour TSP	71	ug/m3
TMCLKL	HY/2012/08	2019-04-05	ASR5	Sunny	08:33	1-hour TSP	281	ug/m3
TMCLKL	HY/2012/08	2019-04-05	ASR5	Sunny	09:35	1-hour TSP	201	ug/m3
TMCLKL	HY/2012/08	2019-04-05	ASR5	Sunny	10:37	1-hour TSP	142	ug/m3
TMCLKL	HY/2012/08	2019-04-05	ASR6	Sunny	08:22	1-hour TSP	256	ug/m3
TMCLKL	HY/2012/08	2019-04-05	ASR6	Sunny	09:24	1-hour TSP	218	ug/m3
TMCLKL	HY/2012/08	2019-04-05	ASR6	Sunny	10:26	1-hour TSP	124	ug/m3

Project	Works	Date	Station	Weather	Start time	Parameters	Results	units
TMCLKL	HY/2012/08	2019-04-08	AQMS1	Sunny	13:00	1-hour TSP	98	ug/m3
TMCLKL	HY/2012/08	2019-04-08	AQMS1	Sunny	14:39	1-hour TSP	65	ug/m3
TMCLKL	HY/2012/08	2019-04-08	AQMS1	Sunny	15:41	1-hour TSP	87	ug/m3
TMCLKL	HY/2012/08	2019-04-08	ASR1	Sunny	14:28	1-hour TSP	37	ug/m3
TMCLKL	HY/2012/08	2019-04-08	ASR1	Sunny	15:34	1-hour TSP	46	ug/m3
TMCLKL	HY/2012/08	2019-04-08	ASR1	Sunny	16:36	1-hour TSP	52	ug/m3
TMCLKL	HY/2012/08	2019-04-08	ASR10	Sunny	13:20	1-hour TSP	46	ug/m3
TMCLKL	HY/2012/08	2019-04-08	ASR10	Sunny	14:50	1-hour TSP	50	ug/m3
TMCLKL	HY/2012/08	2019-04-08	ASR10	Sunny	15:52	1-hour TSP	44	ug/m3
TMCLKL	HY/2012/08	2019-04-08	ASR5	Sunny	14:06	1-hour TSP	55	ug/m3
TMCLKL	HY/2012/08	2019-04-08	ASR5	Sunny	15:10	1-hour TSP	130	ug/m3
TMCLKL	HY/2012/08	2019-04-08	ASR5	Sunny	16:12	1-hour TSP	75	ug/m3
TMCLKL	HY/2012/08	2019-04-08	ASR6	Sunny	13:45	1-hour TSP	71	ug/m3
TMCLKL	HY/2012/08	2019-04-08	ASR6	Sunny	15:00	1-hour TSP	133	ug/m3
TMCLKL	HY/2012/08	2019-04-08	ASR6	Sunny	16:02	1-hour TSP	115	ug/m3
TMCLKL	HY/2012/08	2019-04-11	AQMS1	Sunny	14:06	1-hour TSP	79	ug/m3
TMCLKL	HY/2012/08	2019-04-11	AQMS1	Sunny	15:08	1-hour TSP	94	ug/m3
TMCLKL	HY/2012/08	2019-04-11	AQMS1	Sunny	16:10	1-hour TSP	81	ug/m3
TMCLKL	HY/2012/08	2019-04-11	ASR1	Sunny	13:55	1-hour TSP	70	ug/m3
TMCLKL	HY/2012/08	2019-04-11	ASR1	Sunny	14:57	1-hour TSP	151	ug/m3
TMCLKL	HY/2012/08	2019-04-11	ASR1	Sunny	15:59	1-hour TSP	244	ug/m3
TMCLKL	HY/2012/08	2019-04-11	ASR10	Sunny	13:20	1-hour TSP	58	ug/m3
TMCLKL	HY/2012/08	2019-04-11	ASR10	Sunny	14:22	1-hour TSP	99	ug/m3
TMCLKL	HY/2012/08	2019-04-11	ASR10	Sunny	15:24	1-hour TSP	57	ug/m3
TMCLKL	HY/2012/08	2019-04-11	ASR5	Sunny	13:43	1-hour TSP	93	ug/m3
TMCLKL	HY/2012/08	2019-04-11	ASR5	Sunny	14:45	1-hour TSP	130	ug/m3
TMCLKL	HY/2012/08	2019-04-11	ASR5	Sunny	15:47	1-hour TSP	122	ug/m3
TMCLKL	HY/2012/08	2019-04-11	ASR6	Sunny	13:32	1-hour TSP	94	ug/m3
TMCLKL	HY/2012/08	2019-04-11	ASR6	Sunny	14:34	1-hour TSP	78	ug/m3
TMCLKL	HY/2012/08	2019-04-11	ASR6	Sunny	15:36	1-hour TSP	71	ug/m3

Project	Works	Date	Station	Weather	Start time	Parameters	Results	units
TMCLKL	HY/2012/08	2019-04-14	AQMS1	Cloudy	14:45	1-hour TSP	83	ug/m3
TMCLKL	HY/2012/08	2019-04-14	AQMS1	Cloudy	15:47	1-hour TSP	40	ug/m3
TMCLKL	HY/2012/08	2019-04-14	AQMS1	Cloudy	16:49	1-hour TSP	41	ug/m3
TMCLKL	HY/2012/08	2019-04-14	ASR1	Cloudy	14:33	1-hour TSP	89	ug/m3
TMCLKL	HY/2012/08	2019-04-14	ASR1	Cloudy	15:35	1-hour TSP	43	ug/m3
TMCLKL	HY/2012/08	2019-04-14	ASR1	Cloudy	16:37	1-hour TSP	47	ug/m3
TMCLKL	HY/2012/08	2019-04-14	ASR10	Cloudy	14:02	1-hour TSP	119	ug/m3
TMCLKL	HY/2012/08	2019-04-14	ASR10	Cloudy	15:04	1-hour TSP	67	ug/m3
TMCLKL	HY/2012/08	2019-04-14	ASR10	Cloudy	16:06	1-hour TSP	44	ug/m3
TMCLKL	HY/2012/08	2019-04-14	ASR5	Cloudy	14:22	1-hour TSP	87	ug/m3
TMCLKL	HY/2012/08	2019-04-14	ASR5	Cloudy	15:24	1-hour TSP	48	ug/m3
TMCLKL	HY/2012/08	2019-04-14	ASR5	Cloudy	16:26	1-hour TSP	33	ug/m3
TMCLKL	HY/2012/08	2019-04-14	ASR6	Cloudy	14:12	1-hour TSP	86	ug/m3
TMCLKL	HY/2012/08	2019-04-14	ASR6	Cloudy	15:14	1-hour TSP	40	ug/m3
TMCLKL	HY/2012/08	2019-04-14	ASR6	Cloudy	16:16	1-hour TSP	35	ug/m3
TMCLKL	HY/2012/08	2019-04-17	AQMS1	Sunny	14:07	1-hour TSP	93	ug/m3
TMCLKL	HY/2012/08	2019-04-17	AQMS1	Sunny	15:09	1-hour TSP	43	ug/m3
TMCLKL	HY/2012/08	2019-04-17	AQMS1	Sunny	16:11	1-hour TSP	32	ug/m3
TMCLKL	HY/2012/08	2019-04-17	ASR1	Sunny	13:56	1-hour TSP	109	ug/m3
TMCLKL	HY/2012/08	2019-04-17	ASR1	Sunny	14:58	1-hour TSP	66	ug/m3
TMCLKL	HY/2012/08	2019-04-17	ASR1	Sunny	16:00	1-hour TSP	135	ug/m3
TMCLKL	HY/2012/08	2019-04-17	ASR10	Sunny	13:22	1-hour TSP	60	ug/m3
TMCLKL	HY/2012/08	2019-04-17	ASR10	Sunny	14:24	1-hour TSP	46	ug/m3
TMCLKL	HY/2012/08	2019-04-17	ASR10	Sunny	15:26	1-hour TSP	28	ug/m3
TMCLKL	HY/2012/08	2019-04-17	ASR5	Sunny	13:44	1-hour TSP	155	ug/m3
TMCLKL	HY/2012/08	2019-04-17	ASR5	Sunny	14:46	1-hour TSP	87	ug/m3
TMCLKL	HY/2012/08	2019-04-17	ASR5	Sunny	15:48	1-hour TSP	84	ug/m3
TMCLKL	HY/2012/08	2019-04-17	ASR6	Sunny	13:33	1-hour TSP	110	ug/m3
TMCLKL	HY/2012/08	2019-04-17	ASR6	Sunny	14:35	1-hour TSP	82	ug/m3
TMCLKL	HY/2012/08	2019-04-17	ASR6	Sunny	15:37	1-hour TSP	63	ug/m3

Project	Works	Date	Station	Weather	Start time	Parameters	Results	units
TMCLKL	HY/2012/08	2019-04-20	AQMS1	Rainy	08:54	1-hour TSP	40	ug/m3
TMCLKL	HY/2012/08	2019-04-20	AQMS1	Rainy	09:56	1-hour TSP	40	ug/m3
TMCLKL	HY/2012/08	2019-04-20	AQMS1	Rainy	10:58	1-hour TSP	32	ug/m3
TMCLKL	HY/2012/08	2019-04-20	ASR1	Rainy	08:42	1-hour TSP	34	ug/m3
TMCLKL	HY/2012/08	2019-04-20	ASR1	Rainy	09:44	1-hour TSP	53	ug/m3
TMCLKL	HY/2012/08	2019-04-20	ASR1	Rainy	10:46	1-hour TSP	19	ug/m3
TMCLKL	HY/2012/08	2019-04-20	ASR10	Rainy	08:06	1-hour TSP	31	ug/m3
TMCLKL	HY/2012/08	2019-04-20	ASR10	Rainy	09:08	1-hour TSP	24	ug/m3
TMCLKL	HY/2012/08	2019-04-20	ASR10	Rainy	10:10	1-hour TSP	25	ug/m3
TMCLKL	HY/2012/08	2019-04-20	ASR5	Rainy	08:29	1-hour TSP	38	ug/m3
TMCLKL	HY/2012/08	2019-04-20	ASR5	Rainy	09:31	1-hour TSP	28	ug/m3
TMCLKL	HY/2012/08	2019-04-20	ASR5	Rainy	10:33	1-hour TSP	66	ug/m3
TMCLKL	HY/2012/08	2019-04-20	ASR6	Rainy	08:17	1-hour TSP	54	ug/m3
TMCLKL	HY/2012/08	2019-04-20	ASR6	Rainy	09:19	1-hour TSP	19	ug/m3
TMCLKL	HY/2012/08	2019-04-20	ASR6	Rainy	12:21	1-hour TSP	32	ug/m3
TMCLKL	HY/2012/08	2019-04-23	AQMS1	Sunny	14:30	1-hour TSP	48	ug/m3
TMCLKL	HY/2012/08	2019-04-23	AQMS1	Sunny	15:32	1-hour TSP	53	ug/m3
TMCLKL	HY/2012/08	2019-04-23	AQMS1	Sunny	16:34	1-hour TSP	68	ug/m3
TMCLKL	HY/2012/08	2019-04-23	ASR1	Sunny	14:18	1-hour TSP	96	ug/m3
TMCLKL	HY/2012/08	2019-04-23	ASR1	Sunny	15:20	1-hour TSP	51	ug/m3
TMCLKL	HY/2012/08	2019-04-23	ASR1	Sunny	16:22	1-hour TSP	51	ug/m3
TMCLKL	HY/2012/08	2019-04-23	ASR10	Sunny	13:45	1-hour TSP	47	ug/m3
TMCLKL	HY/2012/08	2019-04-23	ASR10	Sunny	14:47	1-hour TSP	24	ug/m3
TMCLKL	HY/2012/08	2019-04-23	ASR10	Sunny	15:49	1-hour TSP	55	ug/m3
TMCLKL	HY/2012/08	2019-04-23	ASR5	Sunny	14:07	1-hour TSP	98	ug/m3
TMCLKL	HY/2012/08	2019-04-23	ASR5	Sunny	15:09	1-hour TSP	108	ug/m3
TMCLKL	HY/2012/08	2019-04-23	ASR5	Sunny	16:11	1-hour TSP	129	ug/m3
TMCLKL	HY/2012/08	2019-04-23	ASR6	Sunny	13:55	1-hour TSP	77	ug/m3
TMCLKL	HY/2012/08	2019-04-23	ASR6	Sunny	14:57	1-hour TSP	77	ug/m3
TMCLKL	HY/2012/08	2019-04-23	ASR6	Sunny	15:59	1-hour TSP	102	ug/m3

Project	Works	Date	Station	Weather	Start time	Parameters	Results	units
TMCLKL	HY/2012/08	2019-04-26	AQMS1	Sunny	09:10	1-hour TSP	82	ug/m3
TMCLKL	HY/2012/08	2019-04-26	AQMS1	Sunny	10:12	1-hour TSP	45	ug/m3
TMCLKL	HY/2012/08	2019-04-26	AQMS1	Sunny	11:14	1-hour TSP	47	ug/m3
TMCLKL	HY/2012/08	2019-04-26	ASR1	Sunny	08:59	1-hour TSP	144	ug/m3
TMCLKL	HY/2012/08	2019-04-26	ASR1	Sunny	10:01	1-hour TSP	46	ug/m3
TMCLKL	HY/2012/08	2019-04-26	ASR1	Sunny	11:03	1-hour TSP	41	ug/m3
TMCLKL	HY/2012/08	2019-04-26	ASR10	Sunny	08:25	1-hour TSP	32	ug/m3
TMCLKL	HY/2012/08	2019-04-26	ASR10	Sunny	09:27	1-hour TSP	33	ug/m3
TMCLKL	HY/2012/08	2019-04-26	ASR10	Sunny	10:29	1-hour TSP	34	ug/m3
TMCLKL	HY/2012/08	2019-04-26	ASR5	Sunny	09:48	1-hour TSP	135	ug/m3
TMCLKL	HY/2012/08	2019-04-26	ASR5	Sunny	09:50	1-hour TSP	130	ug/m3
TMCLKL	HY/2012/08	2019-04-26	ASR5	Sunny	10:52	1-hour TSP	68	ug/m3
TMCLKL	HY/2012/08	2019-04-26	ASR6	Sunny	08:36	1-hour TSP	67	ug/m3
TMCLKL	HY/2012/08	2019-04-26	ASR6	Sunny	09:38	1-hour TSP	140	ug/m3
TMCLKL	HY/2012/08	2019-04-26	ASR6	Sunny	10:40	1-hour TSP	78	ug/m3
TMCLKL	HY/2012/08	2019-04-29	AQMS1	Sunny	13:44	1-hour TSP	81	ug/m3
TMCLKL	HY/2012/08	2019-04-29	AQMS1	Sunny	14:46	1-hour TSP	80	ug/m3
TMCLKL	HY/2012/08	2019-04-29	AQMS1	Sunny	15:48	1-hour TSP	85	ug/m3
TMCLKL	HY/2012/08	2019-04-29	ASR1	Sunny	13:33	1-hour TSP	187	ug/m3
TMCLKL	HY/2012/08	2019-04-29	ASR1	Sunny	14:35	1-hour TSP	64	ug/m3
TMCLKL	HY/2012/08	2019-04-29	ASR1	Sunny	15:37	1-hour TSP	77	ug/m3
TMCLKL	HY/2012/08	2019-04-29	ASR10	Sunny	13:00	1-hour TSP	59	ug/m3
TMCLKL	HY/2012/08	2019-04-29	ASR10	Sunny	14:02	1-hour TSP	30	ug/m3
TMCLKL	HY/2012/08	2019-04-29	ASR10	Sunny	15:04	1-hour TSP	32	ug/m3
TMCLKL	HY/2012/08	2019-04-29	ASR5	Sunny	13:20	1-hour TSP	156	ug/m3
TMCLKL	HY/2012/08	2019-04-29	ASR5	Sunny	14:22	1-hour TSP	99	ug/m3
TMCLKL	HY/2012/08	2019-04-29	ASR5	Sunny	15:24	1-hour TSP	120	ug/m3
TMCLKL	HY/2012/08	2019-04-29	ASR6	Sunny	13:10	1-hour TSP	112	ug/m3
TMCLKL	HY/2012/08	2019-04-29	ASR6	Sunny	14:12	1-hour TSP	66	ug/m3
TMCLKL	HY/2012/08	2019-04-29	ASR6	Sunny	15:14	1-hour TSP	69	ug/m3

Project	Works	Date	Station	Weather	Start time	Parameters	Results	units
TMCLKL	HY/2012/08	2019-04-02	AQMS1	Sunny	16:54	24-hour TSP	55	ug/m3
TMCLKL	HY/2012/08	2019-04-02	ASR1	Sunny	16:43	24-hour TSP	147	ug/m3
TMCLKL	HY/2012/08	2019-04-02	ASR10	Sunny	16:09	24-hour TSP	36	ug/m3
TMCLKL	HY/2012/08	2019-04-02	ASR5	Sunny	16:31	24-hour TSP	84	ug/m3
TMCLKL	HY/2012/08	2019-04-02	ASR6	Sunny	16:19	24-hour TSP	51	ug/m3
TMCLKL	HY/2012/08	2019-04-05	AQMS1	Sunny	12:02	24-hour TSP	96	ug/m3
TMCLKL	HY/2012/08	2019-04-05	ASR1	Sunny	11:50	24-hour TSP	111	ug/m3
TMCLKL	HY/2012/08	2019-04-05	ASR10	Sunny	11:17	24-hour TSP	89	ug/m3
TMCLKL	HY/2012/08	2019-04-05	ASR5	Sunny	11:39	24-hour TSP	119	ug/m3
TMCLKL	HY/2012/08	2019-04-05	ASR6	Sunny	11:28	24-hour TSP	115	ug/m3
TMCLKL	HY/2012/08	2019-04-08	AQMS1	Sunny	16:43	24-hour TSP	56	ug/m3
TMCLKL	HY/2012/08	2019-04-08	ASR1	Sunny	17:38	24-hour TSP	62	ug/m3
TMCLKL	HY/2012/08	2019-04-08	ASR10	Sunny	16:54	24-hour TSP	25	ug/m3
TMCLKL	HY/2012/08	2019-04-08	ASR5	Sunny	17:14	24-hour TSP	76	ug/m3
TMCLKL	HY/2012/08	2019-04-08	ASR6	Sunny	17:04	24-hour TSP	80	ug/m3
TMCLKL	HY/2012/08	2019-04-11	AQMS1	Sunny	17:12	24-hour TSP	44	ug/m3
TMCLKL	HY/2012/08	2019-04-11	ASR1	Sunny	17:01	24-hour TSP	108	ug/m3
TMCLKL	HY/2012/08	2019-04-11	ASR10	Sunny	16:26	24-hour TSP	30	ug/m3
TMCLKL	HY/2012/08	2019-04-11	ASR5	Sunny	16:49	24-hour TSP	84	ug/m3
TMCLKL	HY/2012/08	2019-04-11	ASR6	Sunny	16:38	24-hour TSP	52	ug/m3
TMCLKL	HY/2012/08	2019-04-14	AQMS1	Cloudy	17:51	24-hour TSP	59	ug/m3
TMCLKL	HY/2012/08	2019-04-14	ASR1	Cloudy	17:39	24-hour TSP	83	ug/m3
TMCLKL	HY/2012/08	2019-04-14	ASR10	Cloudy	17:08	24-hour TSP	39	ug/m3
TMCLKL	HY/2012/08	2019-04-14	ASR5	Cloudy	17:28	24-hour TSP	64	ug/m3
TMCLKL	HY/2012/08	2019-04-14	ASR6	Cloudy	17:18	24-hour TSP	50	ug/m3
TMCLKL	HY/2012/08	2019-04-17	AQMS1	Sunny	17:13	24-hour TSP	52	ug/m3
TMCLKL	HY/2012/08	2019-04-17	ASR1	Sunny	17:02	24-hour TSP	126	ug/m3
TMCLKL	HY/2012/08	2019-04-17	ASR10	Sunny	16:28	24-hour TSP	36	ug/m3
TMCLKL	HY/2012/08	2019-04-17	ASR5	Sunny	16:50	24-hour TSP	79	ug/m3
TMCLKL	HY/2012/08	2019-04-17	ASR6	Sunny	16:39	24-hour TSP	47	ug/m3

Project	Works	Date	Station	Weather	Start time	Parameters	Results	units
TMCLKL	HY/2012/08	2019-04-20	AQMS1	Rainy	12:00	24-hour TSP	28	ug/m3
TMCLKL	HY/2012/08	2019-04-20	ASR1	Rainy	11:48	24-hour TSP	50	ug/m3
TMCLKL	HY/2012/08	2019-04-20	ASR10	Rainy	11:12	24-hour TSP	24	ug/m3
TMCLKL	HY/2012/08	2019-04-20	ASR5	Rainy	11:35	24-hour TSP	45	ug/m3
TMCLKL	HY/2012/08	2019-04-20	ASR6	Rainy	11:23	24-hour TSP	33	ug/m3
TMCLKL	HY/2012/08	2019-04-23	AQMS1	Sunny	17:36	24-hour TSP	35	ug/m3
TMCLKL	HY/2012/08	2019-04-23	ASR1	Sunny	17:24	24-hour TSP	44	ug/m3
TMCLKL	HY/2012/08	2019-04-23	ASR10	Sunny	16:51	24-hour TSP	34	ug/m3
TMCLKL	HY/2012/08	2019-04-23	ASR5	Sunny	17:13	24-hour TSP	82	ug/m3
TMCLKL	HY/2012/08	2019-04-23	ASR6	Sunny	17:01	24-hour TSP	69	ug/m3
TMCLKL	HY/2012/08	2019-04-26	AQMS1	Sunny	12:16	24-hour TSP	50	ug/m3
TMCLKL	HY/2012/08	2019-04-26	ASR1	Sunny	12:05	24-hour TSP	183	ug/m3
TMCLKL	HY/2012/08	2019-04-26	ASR10	Sunny	11:31	24-hour TSP	32	ug/m3
TMCLKL	HY/2012/08	2019-04-26	ASR5	Sunny	11:54	24-hour TSP	78	ug/m3
TMCLKL	HY/2012/08	2019-04-26	ASR6	Sunny	11:42	24-hour TSP	55	ug/m3
TMCLKL	HY/2012/08	2019-04-29	AQMS1	Sunny	16:50	24-hour TSP	41	ug/m3
TMCLKL	HY/2012/08	2019-04-29	ASR1	Sunny	16:39	24-hour TSP	77	ug/m3
TMCLKL	HY/2012/08	2019-04-29	ASR10	Sunny	16:06	24-hour TSP	37	ug/m3
TMCLKL	HY/2012/08	2019-04-29	ASR5	Sunny	16:26	24-hour TSP	66	ug/m3
TMCLKL	HY/2012/08	2019-04-29	ASR6	Sunny	16:16	24-hour TSP	68	ug/m3

Appendix H

Meteorological Data

Meteorological Data for Impact Monitoring in the reporting period

Date (yy-mm-dd)	Time (24hrs)	Average of Wind Speed (m/s)	Average of Wind Direction(degree)
19/04/02	0:00	3.1	309
19/04/02	1:00	3.1	307
19/04/02	2:00	2.7	307
19/04/02	3:00	2.7	311
19/04/02	4:00	2.7	323
19/04/02	5:00	2.2	320
19/04/02	6:00	2.7	311
19/04/02	7:00	2.2	307
19/04/02	8:00	2.2	314
19/04/02	9:00	2.2	313
19/04/02	10:00	2.2	142
19/04/02	11:00	2.2	79
19/04/02	12:00	1.8	320
19/04/02	13:00	1.8	316
19/04/02	14:00	1.8	75
19/04/02	15:00	1.8	39
19/04/02	16:00	1.8	54
19/04/02	17:00	1.3	308
19/04/02	18:00	1.8	35
19/04/02	19:00	2.2	92
19/04/02	20:00	2.2	72
19/04/02	21:00	1.3	305
19/04/02	22:00	0.9	314
19/04/02	23:00	0.9	326
19/04/03	0:00	0.4	285
19/04/03	1:00	0.9	316
19/04/03	2:00	0.9	319
19/04/03	3:00	0.9	304
19/04/03	4:00	1.3	317
19/04/03	5:00	0.9	304
19/04/03	6:00	0.9	169
19/04/03	7:00	1.3	312
19/04/03	8:00	1.3	101
19/04/03	9:00	2.2	67
19/04/03	10:00	3.1	77
19/04/03	11:00	1.8	45
19/04/03	12:00	2.7	60
19/04/03	13:00	2.2	77
19/04/03	14:00	1.8	48
19/04/03	15:00	1.8	313
19/04/03	16:00	1.3	323
19/04/03	17:00	0.9	324
19/04/03	18:00	0.4	277
19/04/03	19:00	1.3	304
19/04/03	20:00	2.2	315
19/04/03	21:00	1.8	307
19/04/03	22:00	1.8	307
19/04/03	23:00	1.3	320
19/04/05	0:00	0.9	149
19/04/05	1:00	0.4	163
19/04/05	2:00	0.4	307
19/04/05	3:00	0.4	340
19/04/05	4:00	0.4	33
19/04/05	5:00	0.4	49
19/04/05	6:00	0	-

Meteorological Data for Impact Monitoring in the reporting period

Date (yy-mm-dd)	Time (24hrs)	Average of Wind Speed (m/s)	Average of Wind Direction(degree)
19/04/05	7:00	0	-
19/04/05	8:00	0	-
19/04/05	9:00	0.4	25
19/04/05	10:00	0.9	286
19/04/05	11:00	0.9	295
19/04/05	12:00	0.9	303
19/04/05	13:00	1.3	326
19/04/05	14:00	1.3	328
19/04/05	15:00	1.3	325
19/04/05	16:00	0.9	290
19/04/05	17:00	0.9	296
19/04/05	18:00	0.4	288
19/04/05	19:00	0.4	168
19/04/05	20:00	0.4	160
19/04/05	21:00	0	-
19/04/05	22:00	0	-
19/04/05	23:00	0	-
19/04/06	0:00	0	-
19/04/06	1:00	0	-
19/04/06	2:00	0	-
19/04/06	3:00	0	-
19/04/06	4:00	0	-
19/04/06	5:00	0	-
19/04/06	6:00	0	-
19/04/06	7:00	0	-
19/04/06	8:00	0.4	65
19/04/06	9:00	0.9	74
19/04/06	10:00	0.9	19
19/04/06	11:00	0.9	13
19/04/06	12:00	1.3	54
19/04/06	13:00	1.8	47
19/04/06	14:00	1.3	46
19/04/06	15:00	1.3	53
19/04/06	16:00	1.3	53
19/04/06	17:00	1.3	47
19/04/06	18:00	0.9	11
19/04/06	19:00	0.4	41
19/04/06	20:00	0.4	44
19/04/06	21:00	0.9	303
19/04/06	22:00	0.4	5
19/04/06	23:00	0.4	67
19/04/08	0:00	0	-
19/04/08	1:00	0.4	331
19/04/08	2:00	0.4	39
19/04/08	3:00	0	-
19/04/08	4:00	0	-
19/04/08	5:00	0	-
19/04/08	6:00	0	-
19/04/08	7:00	0	-
19/04/08	8:00	0.4	314
19/04/08	9:00	0.9	64
19/04/08	10:00	0.9	35
19/04/08	11:00	0.9	322
19/04/08	12:00	0.9	54
19/04/08	13:00	1.3	35

Meteorological Data for Impact Monitoring in the reporting period

Date (yy-mm-dd)	Time (24hrs)	Average of Wind Speed (m/s)	Average of Wind Direction(degree)
19/04/08	14:00	1.3	5
19/04/08	15:00	1.3	157
19/04/08	16:00	1.3	163
19/04/08	17:00	1.3	146
19/04/08	18:00	1.3	155
19/04/08	19:00	1.3	156
19/04/08	20:00	1.3	23
19/04/08	21:00	1.3	334
19/04/08	22:00	0.9	339
19/04/08	23:00	0.9	336
19/04/09	0:00	0.9	309
19/04/09	1:00	0.4	303
19/04/09	2:00	0.4	7
19/04/09	3:00	0.4	325
19/04/09	4:00	0.9	40
19/04/09	5:00	0.4	14
19/04/09	6:00	0.4	343
19/04/09	7:00	0.4	300
19/04/09	8:00	0.4	358
19/04/09	9:00	0.9	150
19/04/09	10:00	0.9	146
19/04/09	11:00	0.9	145
19/04/09	12:00	0.9	315
19/04/09	13:00	0.9	168
19/04/09	14:00	0.9	124
19/04/09	15:00	1.3	162
19/04/09	16:00	1.3	162
19/04/09	17:00	0.9	147
19/04/09	18:00	0.9	146
19/04/09	19:00	0.9	155
19/04/09	20:00	0.9	167
19/04/09	21:00	0.4	152
19/04/09	22:00	0.4	167
19/04/09	23:00	0.4	179
19/04/11	0:00	0.4	312
19/04/11	1:00	0.4	64
19/04/11	2:00	0.4	182
19/04/11	3:00	0.9	166
19/04/11	4:00	0.4	216
19/04/11	5:00	0.9	47
19/04/11	6:00	0.9	164
19/04/11	7:00	0.9	33
19/04/11	8:00	0.9	40
19/04/11	9:00	0.9	151
19/04/11	10:00	1.3	163
19/04/11	11:00	1.3	160
19/04/11	12:00	1.3	164
19/04/11	13:00	0.9	146
19/04/11	14:00	0.4	165
19/04/11	15:00	0.9	317
19/04/11	16:00	0.9	167
19/04/11	17:00	0.9	159
19/04/11	18:00	0.4	36
19/04/11	19:00	0.4	131
19/04/11	20:00	0.4	317

Meteorological Data for Impact Monitoring in the reporting period

Date (yy-mm-dd)	Time (24hrs)	Average of Wind Speed (m/s)	Average of Wind Direction(degree)
19/04/11	21:00	0.4	145
19/04/11	22:00	0.9	36
19/04/11	23:00	0.4	157
19/04/12	0:00	0.9	39
19/04/12	1:00	0.4	283
19/04/12	2:00	0.4	91
19/04/12	3:00	0.4	43
19/04/12	4:00	1.8	59
19/04/12	5:00	1.8	323
19/04/12	6:00	2.2	316
19/04/12	7:00	2.2	314
19/04/12	8:00	2.2	313
19/04/12	9:00	1.8	127
19/04/12	10:00	1.8	306
19/04/12	11:00	1.8	326
19/04/12	12:00	1.8	2
19/04/12	13:00	1.8	325
19/04/12	14:00	1.3	146
19/04/12	15:00	2.2	312
19/04/12	16:00	3.1	317
19/04/12	17:00	2.7	93
19/04/12	18:00	2.7	311
19/04/12	19:00	2.7	325
19/04/12	20:00	2.7	318
19/04/12	21:00	2.7	91
19/04/12	22:00	3.1	129
19/04/12	23:00	3.1	325
19/04/14	0:00	1.8	312
19/04/14	1:00	1.8	307
19/04/14	2:00	2.2	317
19/04/14	3:00	2.7	306
19/04/14	4:00	1.3	329
19/04/14	5:00	1.8	155
19/04/14	6:00	1.8	317
19/04/14	7:00	1.8	313
19/04/14	8:00	1.3	2
19/04/14	9:00	1.3	321
19/04/14	10:00	1.8	303
19/04/14	11:00	2.7	77
19/04/14	12:00	1.3	57
19/04/14	13:00	1.3	75
19/04/14	14:00	0.9	332
19/04/14	15:00	1.8	307
19/04/14	16:00	2.2	323
19/04/14	17:00	0.9	281
19/04/14	18:00	0.9	303
19/04/14	19:00	0.4	330
19/04/14	20:00	0.9	149
19/04/14	21:00	2.7	309
19/04/14	22:00	1.8	286
19/04/14	23:00	1.3	130
19/04/15	0:00	1.8	79
19/04/15	1:00	0	-
19/04/15	2:00	0.4	58
19/04/15	3:00	0.4	356

Meteorological Data for Impact Monitoring in the reporting period			
Date (yy-mm-dd)	Time (24hrs)	Average of Wind Speed (m/s)	Average of Wind Direction(degree)
19/04/15	4:00	0.4	319
19/04/15	5:00	1.3	161
19/04/15	6:00	1.3	315
19/04/15	7:00	1.8	303
19/04/15	8:00	2.2	312
19/04/15	9:00	2.7	313
19/04/15	10:00	2.7	308
19/04/15	11:00	3.1	316
19/04/15	12:00	3.1	4
19/04/15	13:00	3.1	312
19/04/15	14:00	3.1	306
19/04/15	15:00	3.1	325
19/04/15	16:00	2.7	324
19/04/15	17:00	2.2	321
19/04/15	18:00	1.8	310
19/04/15	19:00	2.2	315
19/04/15	20:00	2.7	309
19/04/15	21:00	2.7	317
19/04/15	22:00	2.7	326
19/04/15	23:00	2.7	308
19/04/17	0:00	0	-
19/04/17	1:00	0	-
19/04/17	2:00	0	-
19/04/17	3:00	0	-
19/04/17	4:00	0	-
19/04/17	5:00	0	-
19/04/17	6:00	0	-
19/04/17	7:00	0	-
19/04/17	8:00	0.4	71
19/04/17	9:00	0.9	38
19/04/17	10:00	1.3	54
19/04/17	11:00	0.9	28
19/04/17	12:00	0.9	29
19/04/17	13:00	0.9	319
19/04/17	14:00	1.3	317
19/04/17	15:00	0.9	307
19/04/17	16:00	1.8	43
19/04/17	17:00	1.3	54
19/04/17	18:00	0.9	36
19/04/17	19:00	0.4	9
19/04/17	20:00	0.4	159
19/04/17	21:00	0	-
19/04/17	22:00	0	-
19/04/17	23:00	0	-
19/04/18	0:00	0	-
19/04/18	1:00	0.4	176
19/04/18	2:00	0.9	303
19/04/18	3:00	1.3	305
19/04/18	4:00	0.9	314
19/04/18	5:00	1.8	314
19/04/18	6:00	2.7	309
19/04/18	7:00	3.1	304
19/04/18	8:00	1.8	3
19/04/18	9:00	1.8	342
19/04/18	10:00	1.8	12
19/04/18	11:00	1.8	318

Meteorological Data for Impact Monitoring in the reporting period

Date (yy-mm-dd)	Time (24hrs)	Average of Wind Speed (m/s)	Average of Wind Direction(degree)
19/04/18	12:00	1.8	21
19/04/18	13:00	1.3	323
19/04/18	14:00	1.8	311
19/04/18	15:00	2.2	85
19/04/18	16:00	2.2	318
19/04/18	17:00	2.2	306
19/04/18	18:00	2.2	317
19/04/18	19:00	2.2	316
19/04/18	20:00	1.8	316
19/04/18	21:00	1.3	323
19/04/18	22:00	0.9	154
19/04/18	23:00	0	-
19/04/20	0:00	1.3	57
19/04/20	1:00	1.8	94
19/04/20	2:00	2.2	83
19/04/20	3:00	2.2	325
19/04/20	4:00	3.1	312
19/04/20	5:00	2.2	320
19/04/20	6:00	3.1	322
19/04/20	7:00	1.8	311
19/04/20	8:00	1.3	306
19/04/20	9:00	1.8	309
19/04/20	10:00	2.2	305
19/04/20	11:00	1.3	310
19/04/20	12:00	0.9	357
19/04/20	13:00	1.3	148
19/04/20	14:00	2.7	164
19/04/20	15:00	0.9	161
19/04/20	16:00	0.4	146
19/04/20	17:00	0.9	341
19/04/20	18:00	0.4	157
19/04/20	19:00	0.4	165
19/04/20	20:00	0.4	150
19/04/20	21:00	0.4	68
19/04/20	22:00	0.9	36
19/04/20	23:00	1.3	101
19/04/21	0:00	1.3	326
19/04/21	1:00	0.9	39
19/04/21	2:00	0.9	307
19/04/21	3:00	0.9	133
19/04/21	4:00	0.9	1
19/04/21	5:00	0.9	344
19/04/21	6:00	0.9	140
19/04/21	7:00	1.3	327
19/04/21	8:00	1.3	357
19/04/21	9:00	1.8	352
19/04/21	10:00	1.8	162
19/04/21	11:00	1.8	167
19/04/21	12:00	2.2	153
19/04/21	13:00	1.8	163
19/04/21	14:00	1.8	150
19/04/21	15:00	1.8	158
19/04/21	16:00	2.2	163
19/04/21	17:00	2.2	168
19/04/21	18:00	2.2	163
19/04/21	19:00	2.2	355
19/04/21	20:00	2.7	156

Meteorological Data for Impact Monitoring in the reporting period

Date (yy-mm-dd)	Time (24hrs)	Average of Wind Speed (m/s)	Average of Wind Direction(degree)
19/04/21	21:00	1.8	145
19/04/21	22:00	1.3	48
19/04/21	23:00	0.9	19
19/04/22	0:00	0.9	344
19/04/22	1:00	0.9	11
19/04/22	2:00	0.9	359
19/04/22	3:00	0.9	138
19/04/22	4:00	0.9	4
19/04/22	5:00	0.9	357
19/04/22	6:00	0.9	169
19/04/22	7:00	0.9	357
19/04/22	8:00	0.9	357
19/04/22	9:00	1.3	154
19/04/22	10:00	1.3	145
19/04/22	11:00	1.3	161
19/04/22	12:00	1.3	149
19/04/22	13:00	1.3	312
19/04/22	14:00	1.8	162
19/04/22	15:00	1.8	153
19/04/22	16:00	1.8	160
19/04/22	17:00	1.3	162
19/04/22	18:00	0.9	162
19/04/22	19:00	0.4	321
19/04/22	20:00	0.9	316
19/04/22	21:00	1.3	337
19/04/22	22:00	1.3	332
19/04/22	23:00	0.9	287
19/04/24	0:00	0.9	130
19/04/24	1:00	0.9	357
19/04/24	2:00	0.4	182
19/04/24	3:00	0	-
19/04/24	4:00	0.4	86
19/04/24	5:00	0	-
19/04/24	6:00	0.9	357
19/04/24	7:00	0.9	150
19/04/24	8:00	0.9	148
19/04/24	9:00	1.3	163
19/04/24	10:00	0.9	304
19/04/24	11:00	0.9	281
19/04/24	12:00	0.9	313
19/04/24	13:00	1.3	356
19/04/24	14:00	1.3	352
19/04/24	15:00	0.9	310
19/04/24	16:00	1.3	2
19/04/24	17:00	0.9	168
19/04/24	18:00	1.3	153
19/04/24	19:00	1.3	164
19/04/24	20:00	0.9	163
19/04/24	21:00	0.9	358
19/04/24	22:00	0.9	314
19/04/24	23:00	0.9	330
19/04/26	0:00	0	-
19/04/26	1:00	0	-
19/04/26	2:00	0	-
19/04/26	3:00	0	-
19/04/26	4:00	0.4	67
19/04/26	5:00	0	-

Meteorological Data for Impact Monitoring in the reporting period

Date (yy-mm-dd)	Time (24hrs)	Average of Wind Speed (m/s)	Average of Wind Direction(degree)
19/04/26	6:00	0	-
19/04/26	7:00	0.4	40
19/04/26	8:00	0.9	64
19/04/26	9:00	0.9	69
19/04/26	10:00	0.9	336
19/04/26	11:00	1.3	325
19/04/26	12:00	0.9	13
19/04/26	13:00	1.3	6
19/04/26	14:00	0.9	305
19/04/26	15:00	1.8	34
19/04/26	16:00	0.9	3
19/04/26	17:00	0.9	310
19/04/26	18:00	0.9	354
19/04/26	19:00	1.3	320
19/04/26	20:00	1.3	309
19/04/26	21:00	1.3	303
19/04/26	22:00	1.3	319
19/04/26	23:00	2.2	314
19/04/27	0:00	1.3	322
19/04/27	1:00	1.8	309
19/04/27	2:00	0.9	316
19/04/27	3:00	1.3	303
19/04/27	4:00	1.8	306
19/04/27	5:00	1.8	306
19/04/27	6:00	2.2	326
19/04/27	7:00	2.2	79
19/04/27	8:00	2.7	61
19/04/27	9:00	2.2	321
19/04/27	10:00	2.7	322
19/04/27	11:00	1.8	20
19/04/27	12:00	2.2	322
19/04/27	13:00	2.7	316
19/04/27	14:00	3.1	320
19/04/27	15:00	2.7	323
19/04/27	16:00	1.3	2
19/04/27	17:00	0.9	338
19/04/27	18:00	1.3	305
19/04/27	19:00	0.9	325
19/04/27	20:00	1.8	131
19/04/27	21:00	1.3	132
19/04/27	22:00	1.8	332
19/04/27	23:00	1.8	1
19/04/29	0:00	0.4	35
19/04/29	1:00	1.3	96
19/04/29	2:00	0.9	333
19/04/29	3:00	0.9	54
19/04/29	4:00	0.9	315
19/04/29	5:00	1.3	59
19/04/29	6:00	1.8	60
19/04/29	7:00	1.3	337
19/04/29	8:00	1.8	347
19/04/29	9:00	1.8	327
19/04/29	10:00	1.8	310
19/04/29	11:00	2.7	316
19/04/29	12:00	1.8	306
19/04/29	13:00	1.3	145
19/04/29	14:00	0.9	337

Meteorological Data for Impact Monitoring in the reporting period

Date (yy-mm-dd)	Time (24hrs)	Average of Wind Speed (m/s)	Average of Wind Direction(degree)
19/04/29	15:00	1.3	339
19/04/29	16:00	1.3	307
19/04/29	17:00	2.2	317
19/04/29	18:00	1.8	321
19/04/29	19:00	0.9	165
19/04/29	20:00	0.9	324
19/04/29	21:00	0.9	355
19/04/29	22:00	0.9	357
19/04/29	23:00	0.9	346
19/04/30	0:00	0.9	389
19/04/30	1:00	1.3	340
19/04/30	2:00	0.4	337
19/04/30	3:00	0.9	308
19/04/30	4:00	0.9	12
19/04/30	5:00	0.9	36
19/04/30	6:00	0.4	6
19/04/30	7:00	1.3	24
19/04/30	8:00	1.3	150
19/04/30	9:00	1.8	162
19/04/30	10:00	1.3	154
19/04/30	11:00	1.3	164
19/04/30	12:00	2.2	149
19/04/30	13:00	1.3	180
19/04/30	14:00	0.9	286
19/04/30	15:00	1.3	38
19/04/30	16:00	0.9	345
19/04/30	17:00	0.9	326
19/04/30	18:00	0.4	302
19/04/30	19:00	0.9	328
19/04/30	20:00	0	-
19/04/30	21:00	0	-
19/04/30	22:00	0	-
19/04/30	23:00	0	-

Appendix I

Impact Dolphin Monitoring Survey

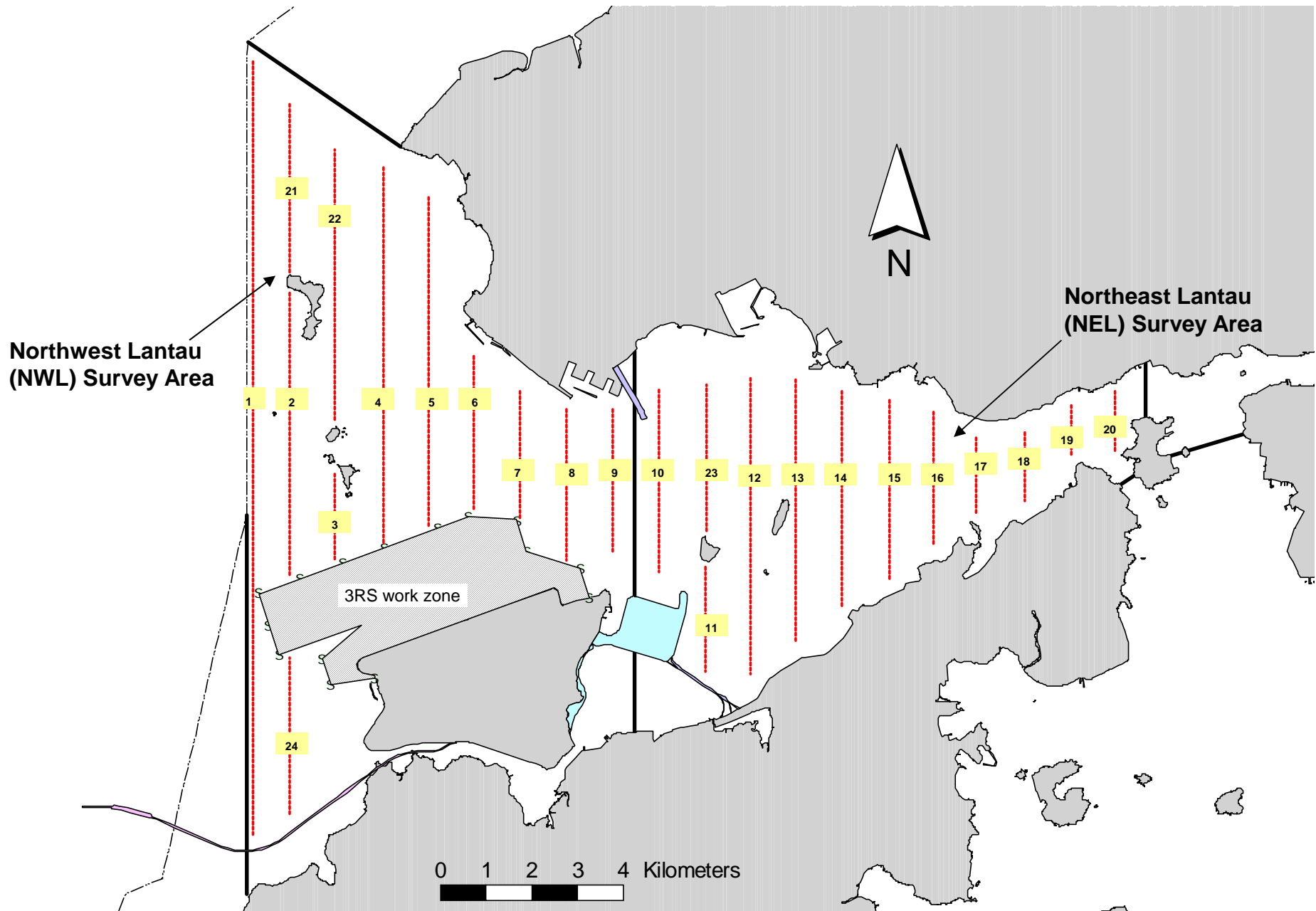


Figure 1. Transect Line Layout in Northwest and Northeast Lantau Survey Areas

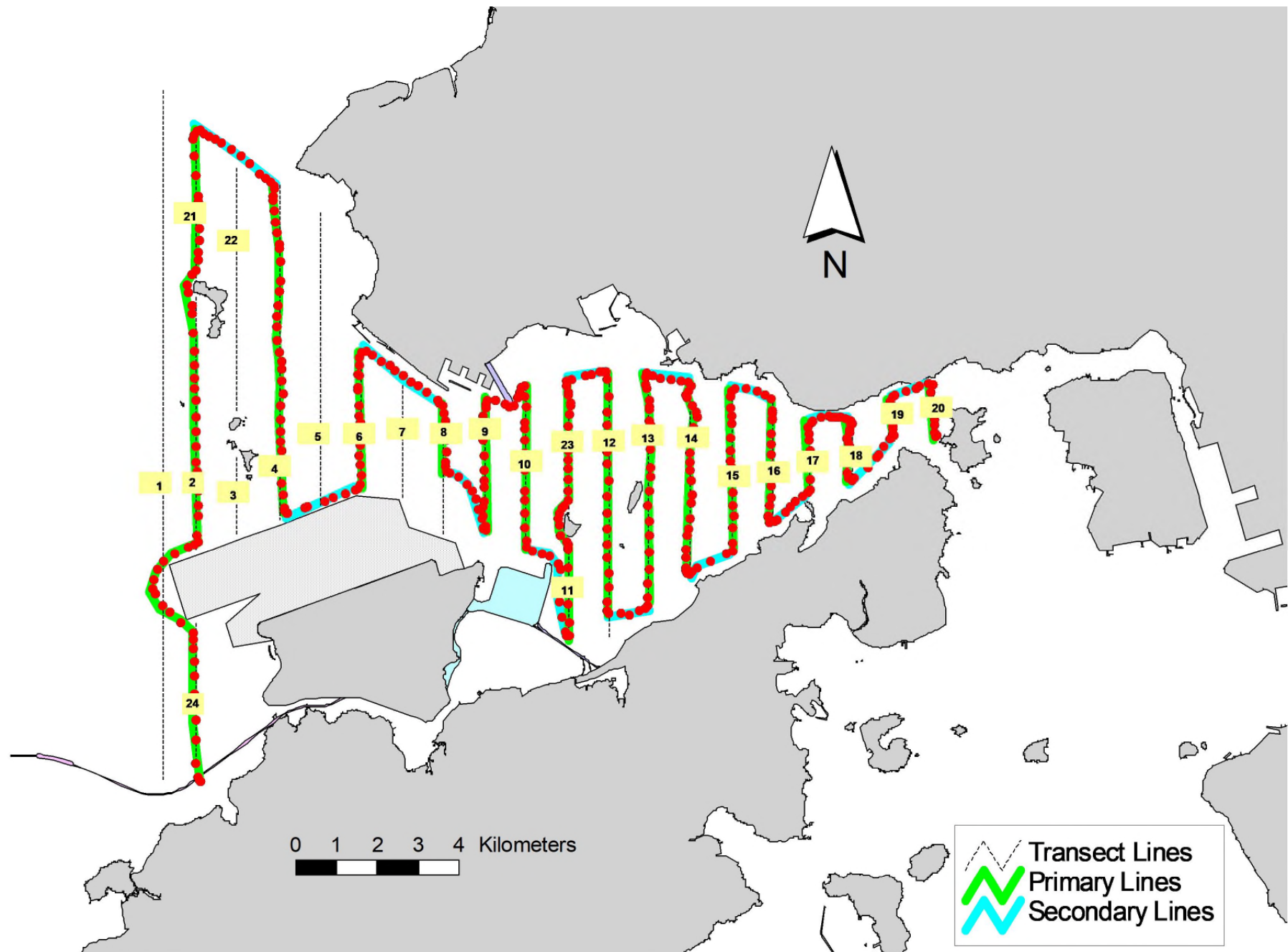


Figure 2. Survey Route on April 10th, 2019 (from HKLR03 project)

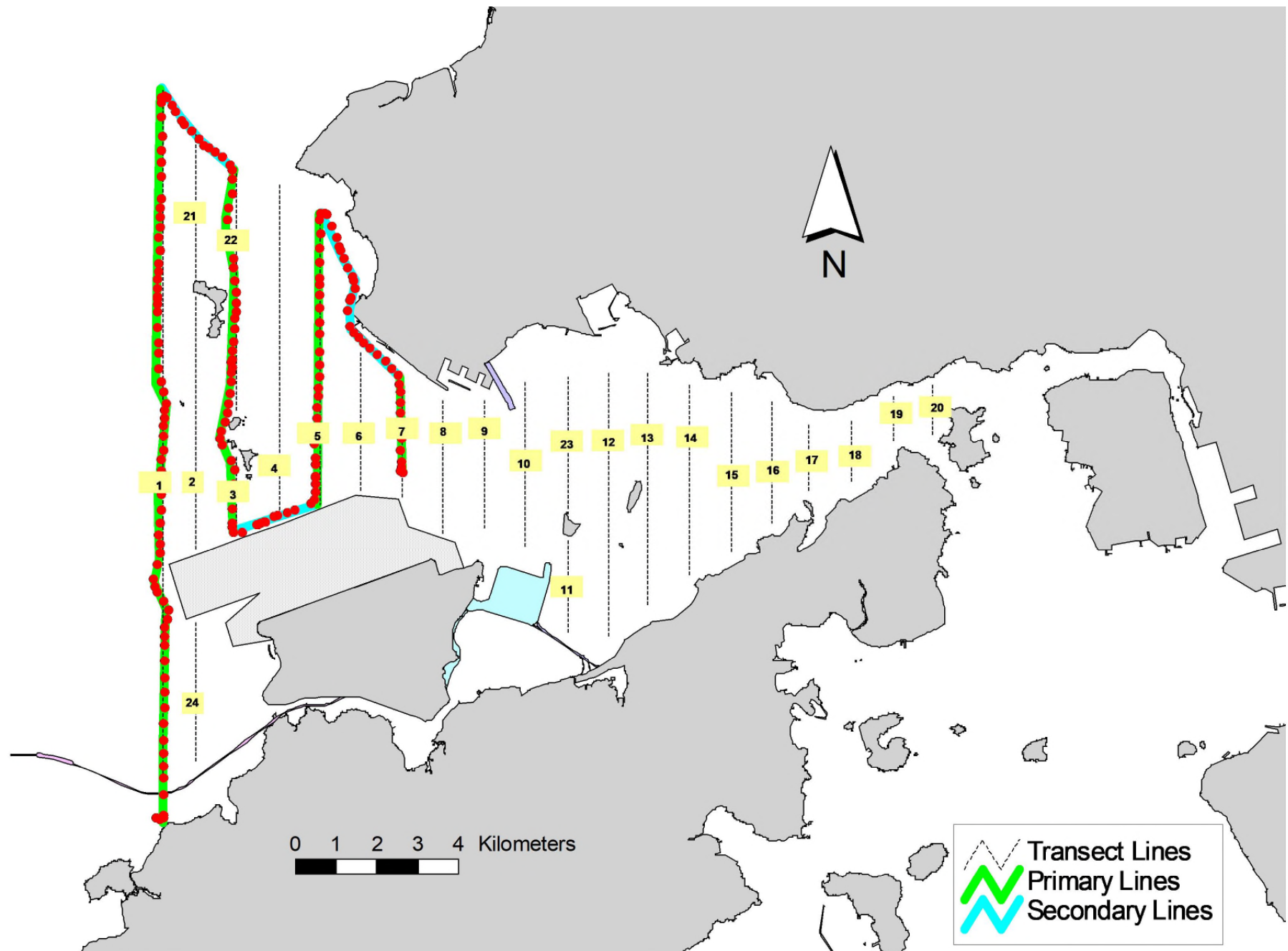


Figure 3. Survey Route on April 15th, 2019 (from HKLR03 project)

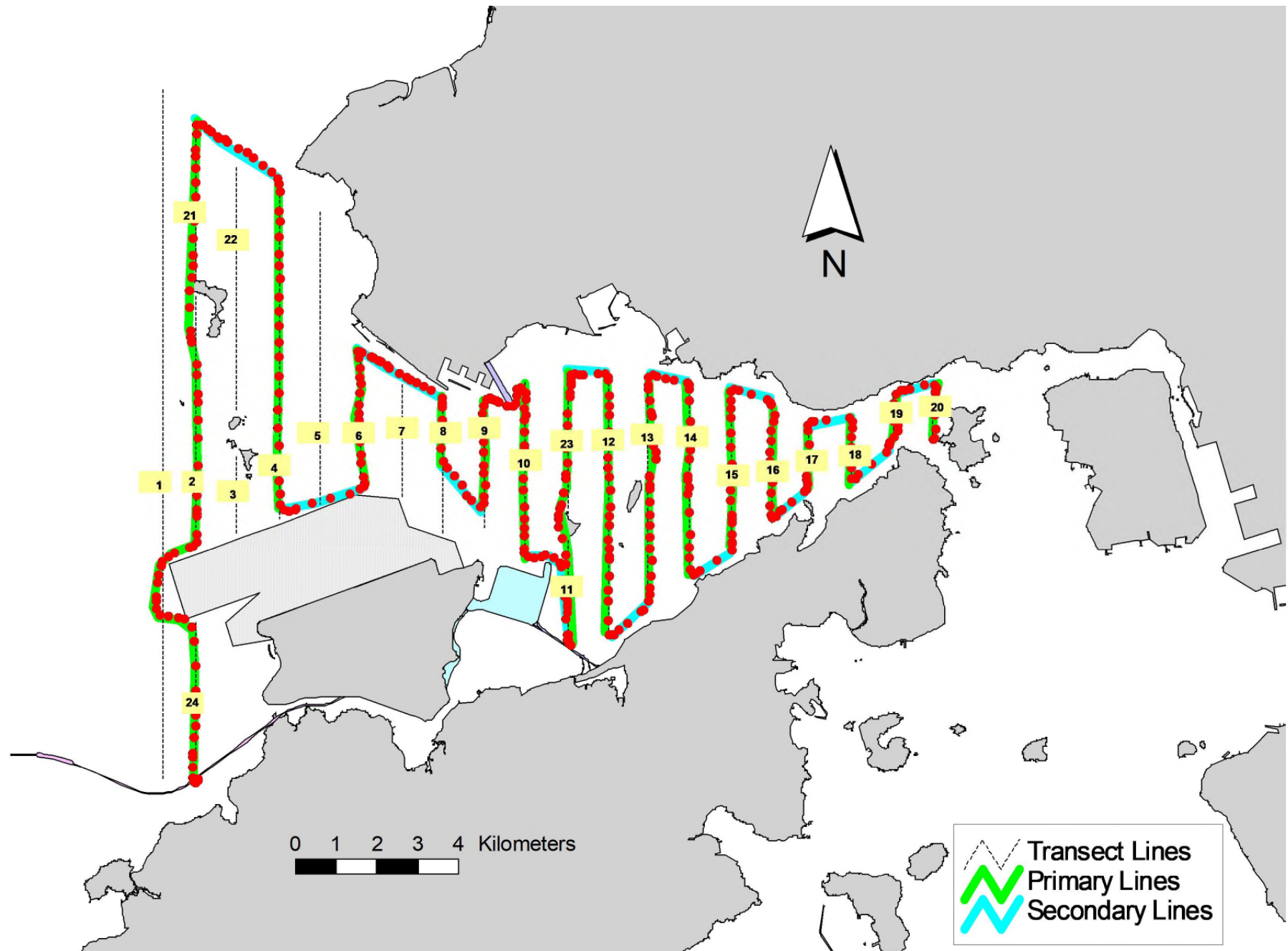


Figure 4. Survey Route on April 23rd, 2019 (from HKLR03 project)

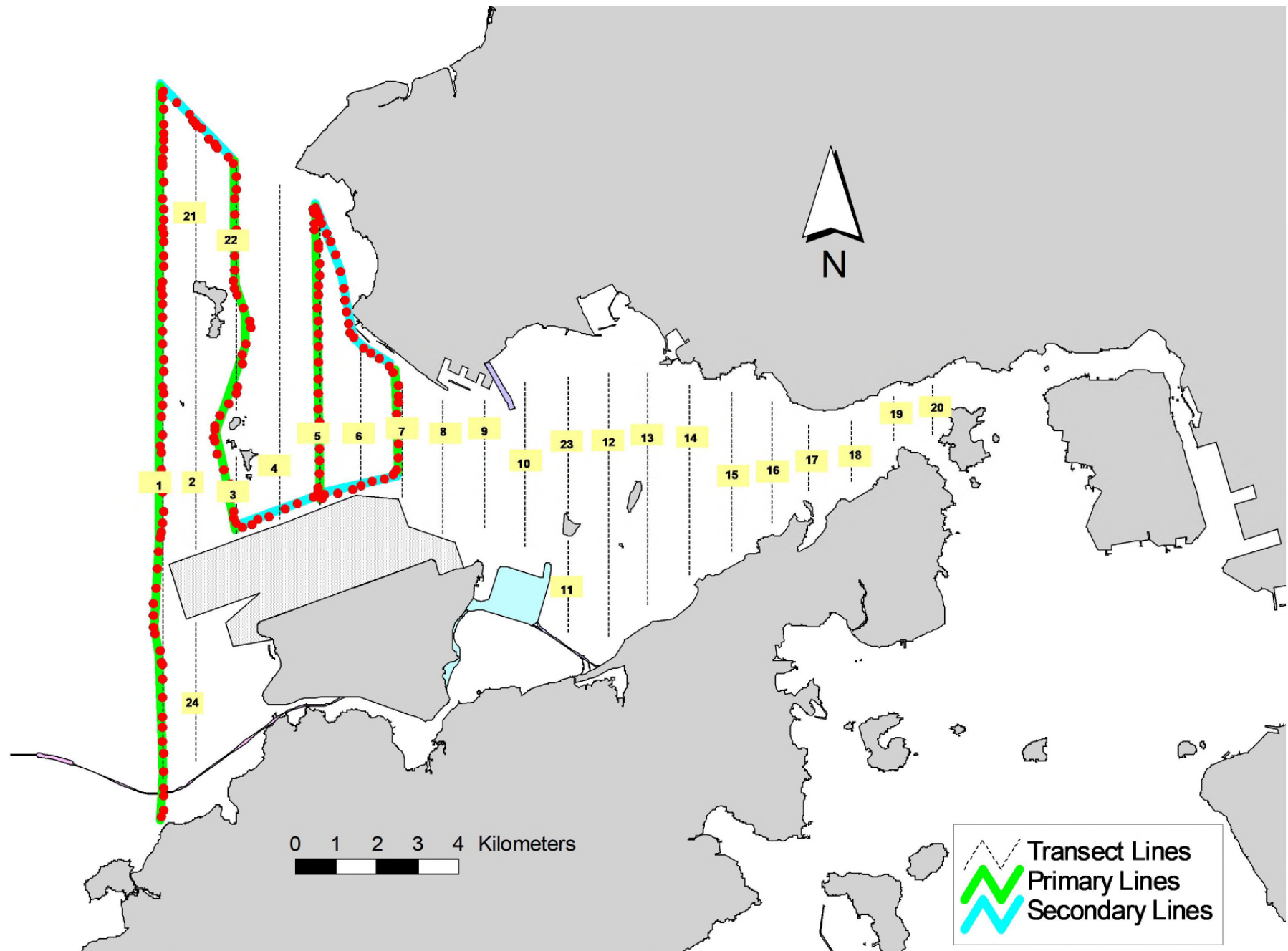


Figure 5. Survey Route on April 25th, 2019 (from HKLR03 project)

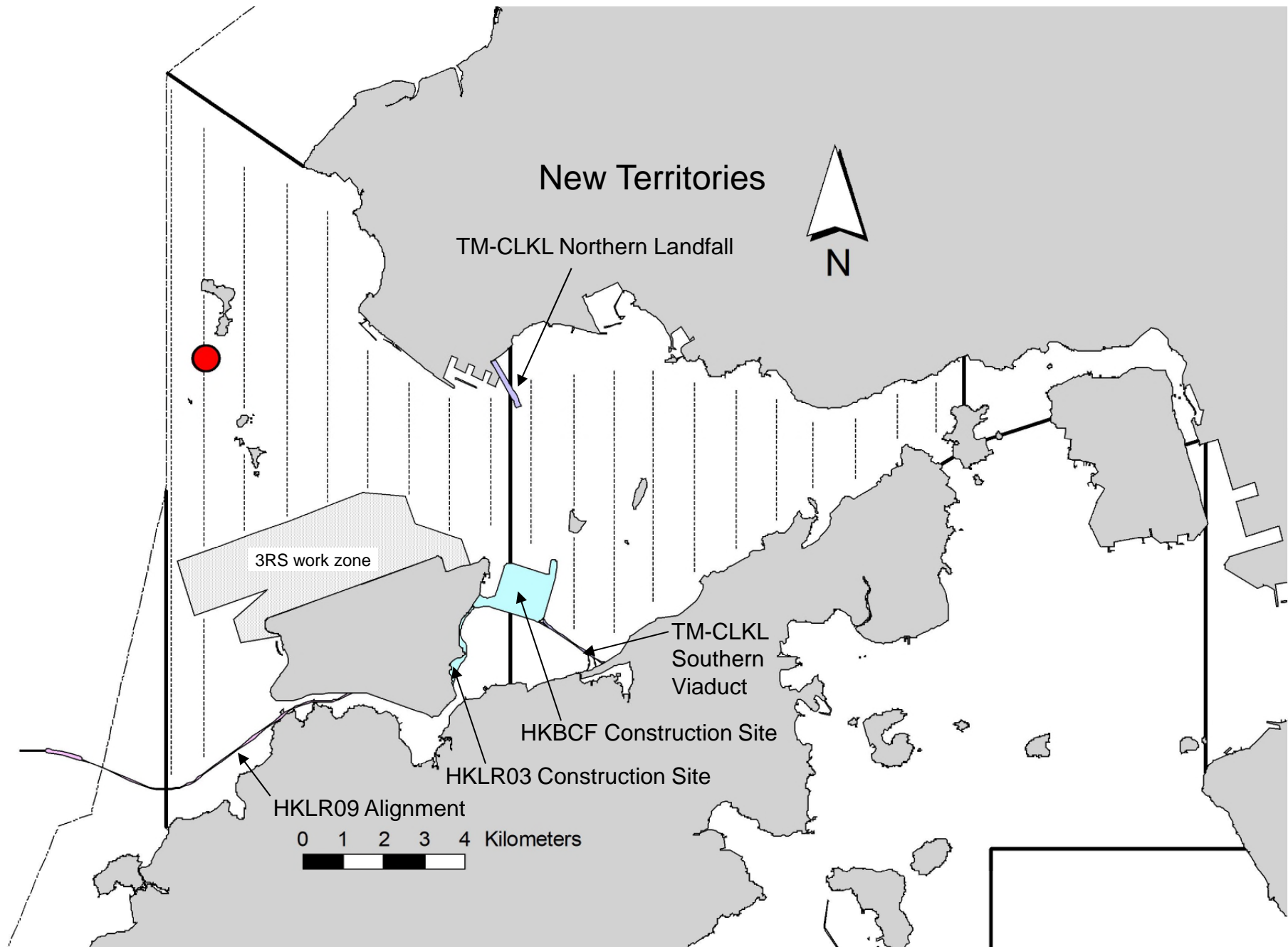


Figure 6. Distribution of Chinese White Dolphin Sightings during April 2019 HKLR03 Monitoring Surveys

Appendix I. HKLR03 Survey Effort Database (April 2019)

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

DATE	AREA	BEAU	EFFORT	SEASON	VESSEL	TYPE	P/S
10-Apr-19	NE LANTAU	1	4.30	SPRING	STANDARD36826	HKLR	P
10-Apr-19	NE LANTAU	2	32.38	SPRING	STANDARD36826	HKLR	P
10-Apr-19	NE LANTAU	2	13.15	SPRING	STANDARD36826	HKLR	S
10-Apr-19	NE LANTAU	3	0.77	SPRING	STANDARD36826	HKLR	S
10-Apr-19	NW LANTAU	2	4.14	SPRING	STANDARD36826	HKLR	P
10-Apr-19	NW LANTAU	3	21.86	SPRING	STANDARD36826	HKLR	P
10-Apr-19	NW LANTAU	4	1.50	SPRING	STANDARD36826	HKLR	P
10-Apr-19	NW LANTAU	2	3.74	SPRING	STANDARD36826	HKLR	S
10-Apr-19	NW LANTAU	3	8.86	SPRING	STANDARD36826	HKLR	S
15-Apr-19	NW LANTAU	2	2.50	SPRING	STANDARD36826	HKLR	P
15-Apr-19	NW LANTAU	3	17.18	SPRING	STANDARD36826	HKLR	P
15-Apr-19	NW LANTAU	4	13.38	SPRING	STANDARD36826	HKLR	P
15-Apr-19	NW LANTAU	2	3.37	SPRING	STANDARD36826	HKLR	S
15-Apr-19	NW LANTAU	3	5.37	SPRING	STANDARD36826	HKLR	S
15-Apr-19	NW LANTAU	4	2.10	SPRING	STANDARD36826	HKLR	S
23-Apr-19	NW LANTAU	2	20.00	SPRING	STANDARD36826	HKLR	P
23-Apr-19	NW LANTAU	3	8.13	SPRING	STANDARD36826	HKLR	P
23-Apr-19	NW LANTAU	2	8.17	SPRING	STANDARD36826	HKLR	S
23-Apr-19	NW LANTAU	3	2.90	SPRING	STANDARD36826	HKLR	S
23-Apr-19	NE LANTAU	2	34.43	SPRING	STANDARD36826	HKLR	P
23-Apr-19	NE LANTAU	3	2.70	SPRING	STANDARD36826	HKLR	P
23-Apr-19	NE LANTAU	2	13.81	SPRING	STANDARD36826	HKLR	S
25-Apr-19	NW LANTAU	2	20.27	SPRING	STANDARD36826	HKLR	P
25-Apr-19	NW LANTAU	3	12.70	SPRING	STANDARD36826	HKLR	P
25-Apr-19	NW LANTAU	2	13.23	SPRING	STANDARD36826	HKLR	S

Appendix II. HKLR03 Chinese White Dolphin Sighting Database (April 2019)

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

DATE	STG #	TIME	HRD SZ	AREA	BEAU	PSD	EFFORT	TYPE	NORTHING	EASTING	SEASON	BOAT ASSOC.	P/S
23-Apr-19	1	1102	2	NW LANTAU	2	58	ON	HKLR	825168	805485	SPRING	NONE	P

Appendix III. Individual dolphins identified during HKLR03 monitoring surveys in (April 2019)

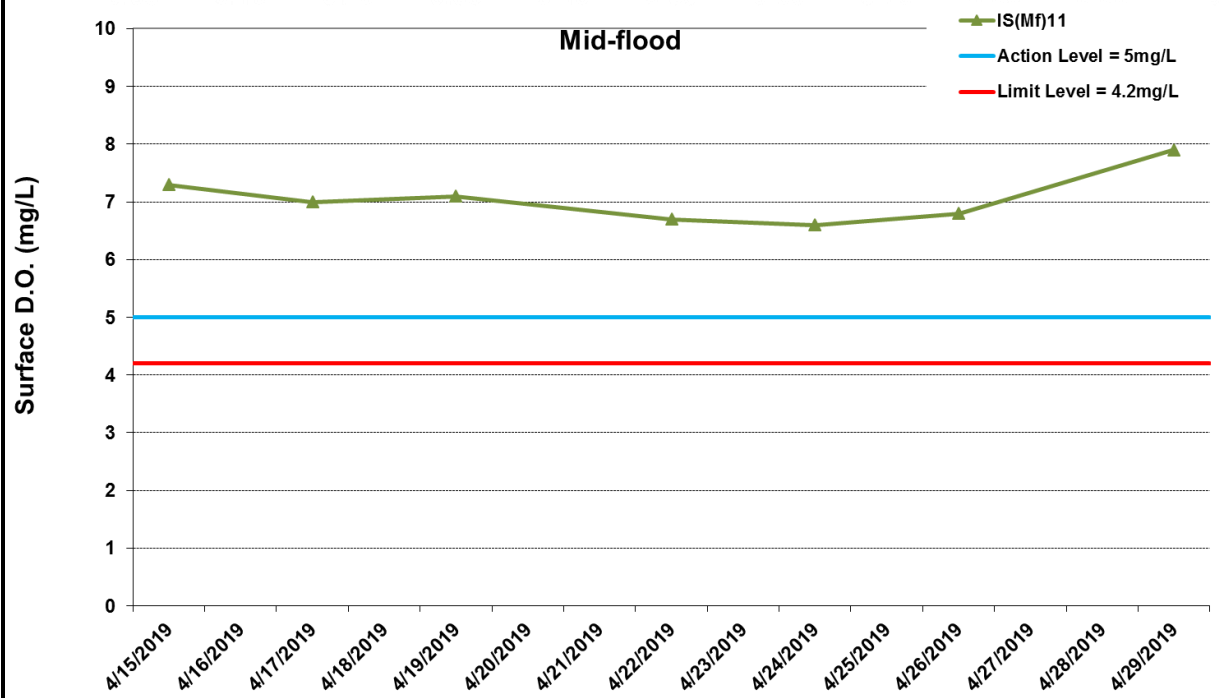
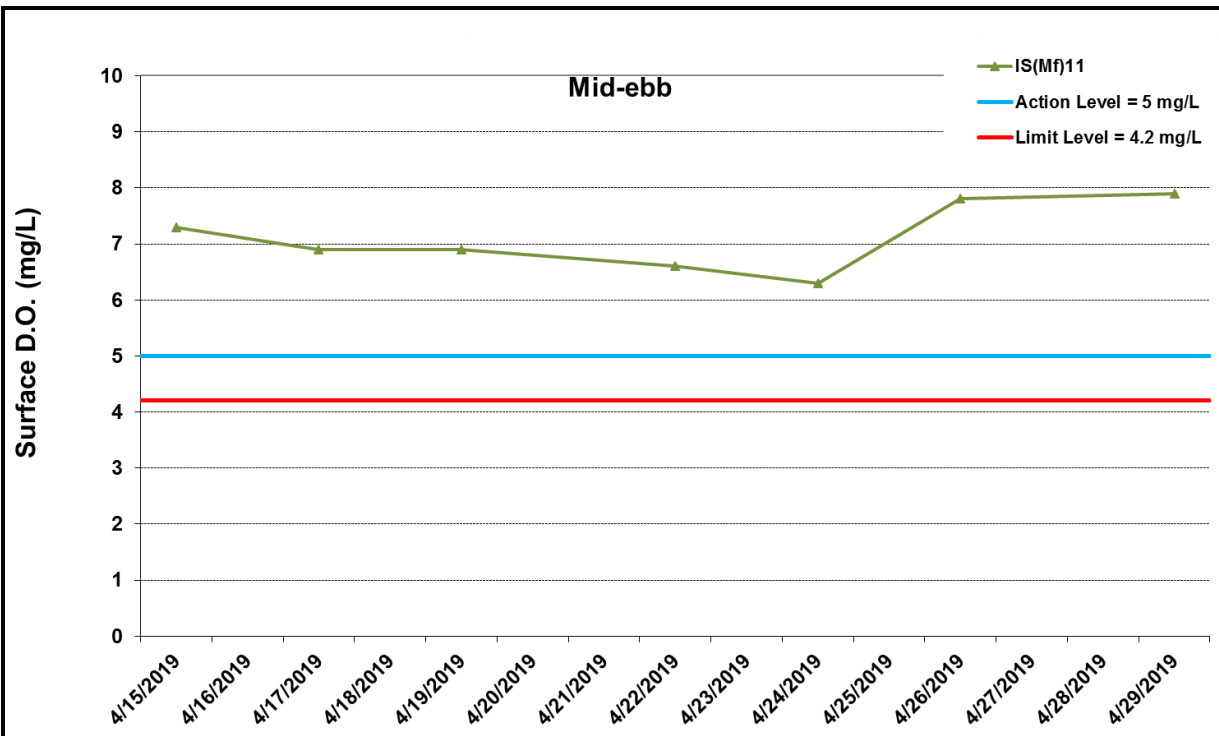
ID#	DATE	STG#	AREA
NL123	23/04/19	1	NW LANTAU
NL182	23/04/19	1	NW LANTAU



Appendix IV. Photographs of Identified Individual Dolphins in April 2019 (HKLR03)

Appendix J

Impact Water Quality Monitoring Results

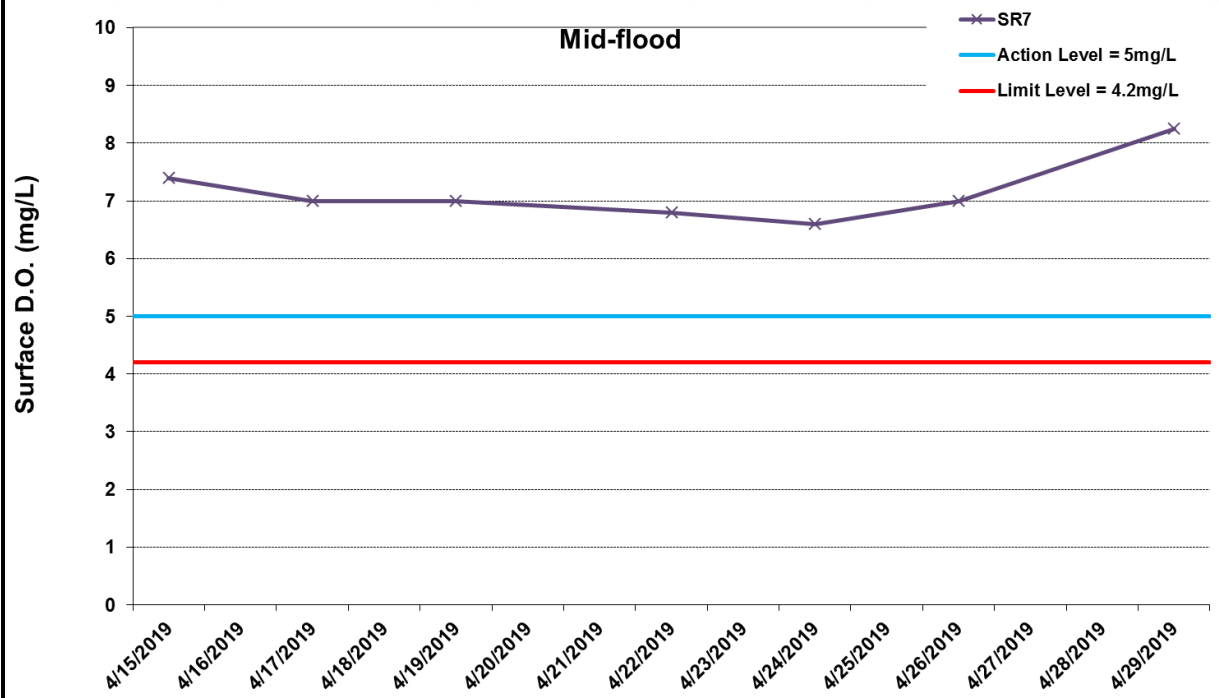
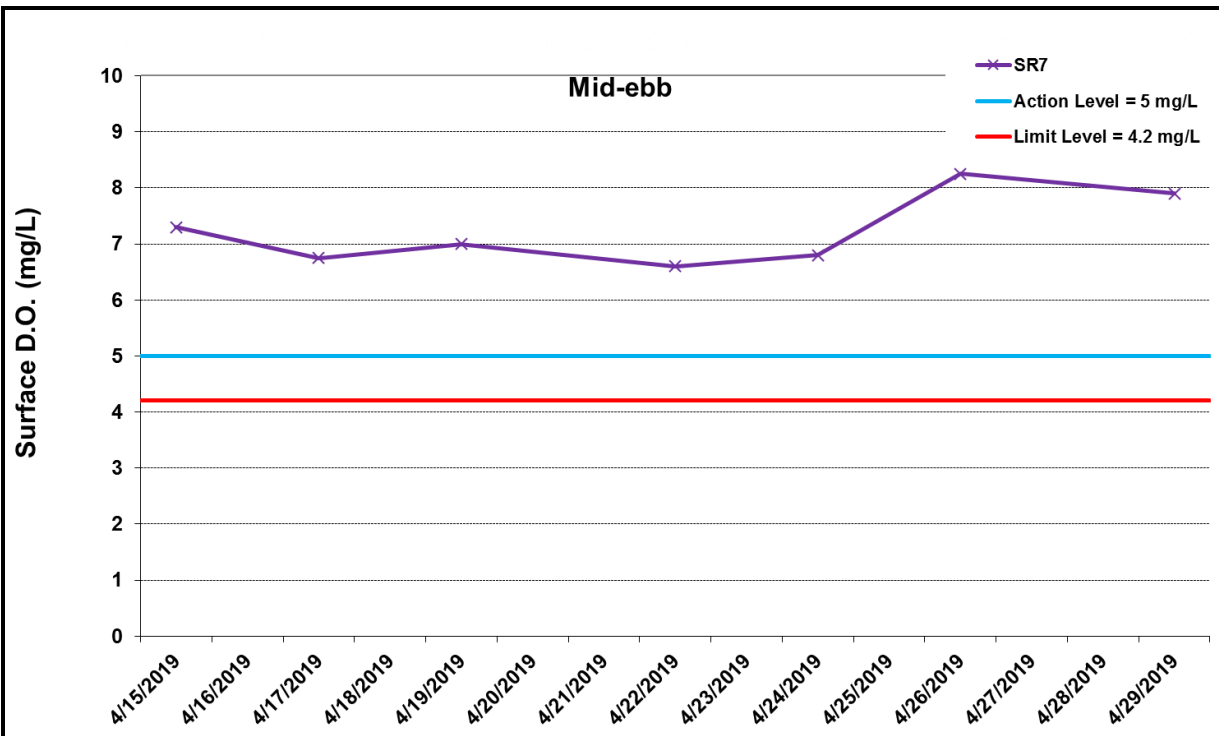


* The AL/LL for WQM stations, IS(Mf)11, IS17 and SR7, are adopted from HZMB HKBCF project.

Figure J1 Impact Monitoring - Mean Level of Dissolved Oxygen (mg/L) in surface waters between 15 April 2019 and 30 April 2019 at IS(Mf)11. The weather conditions during the monitoring period varied mostly from sunny to cloudy. Major marine works included: Seawall Modification works at Southern Landfall (15/4/2019 - 30/4/2019).



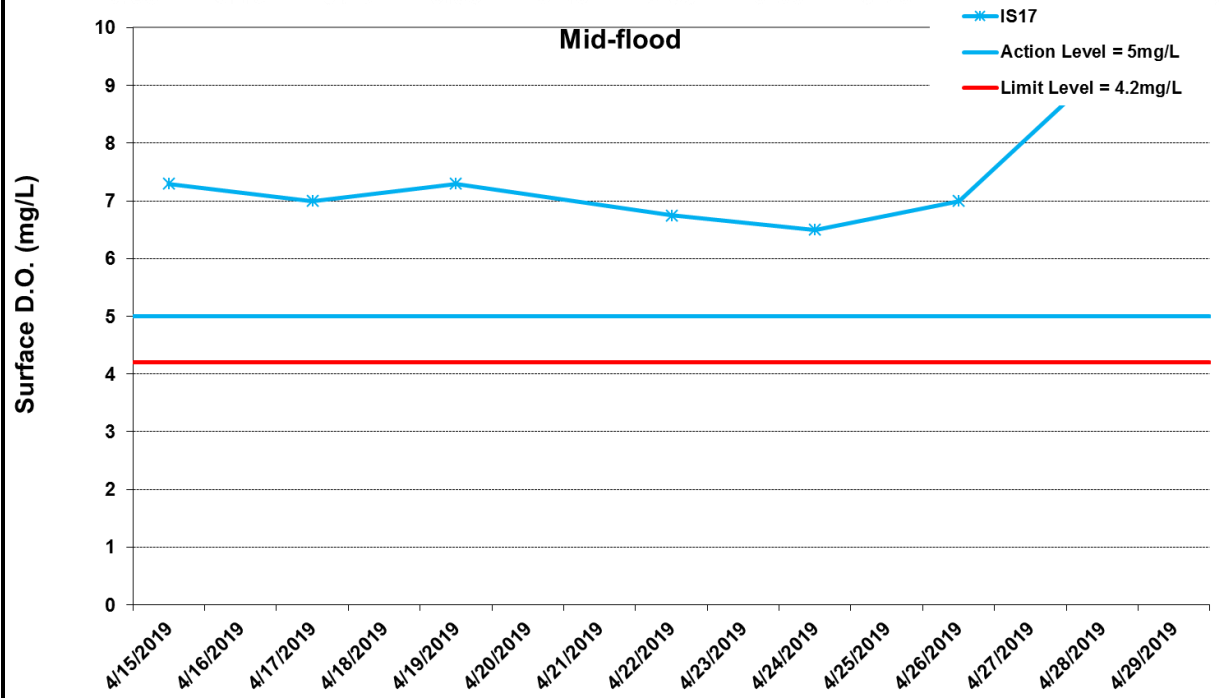
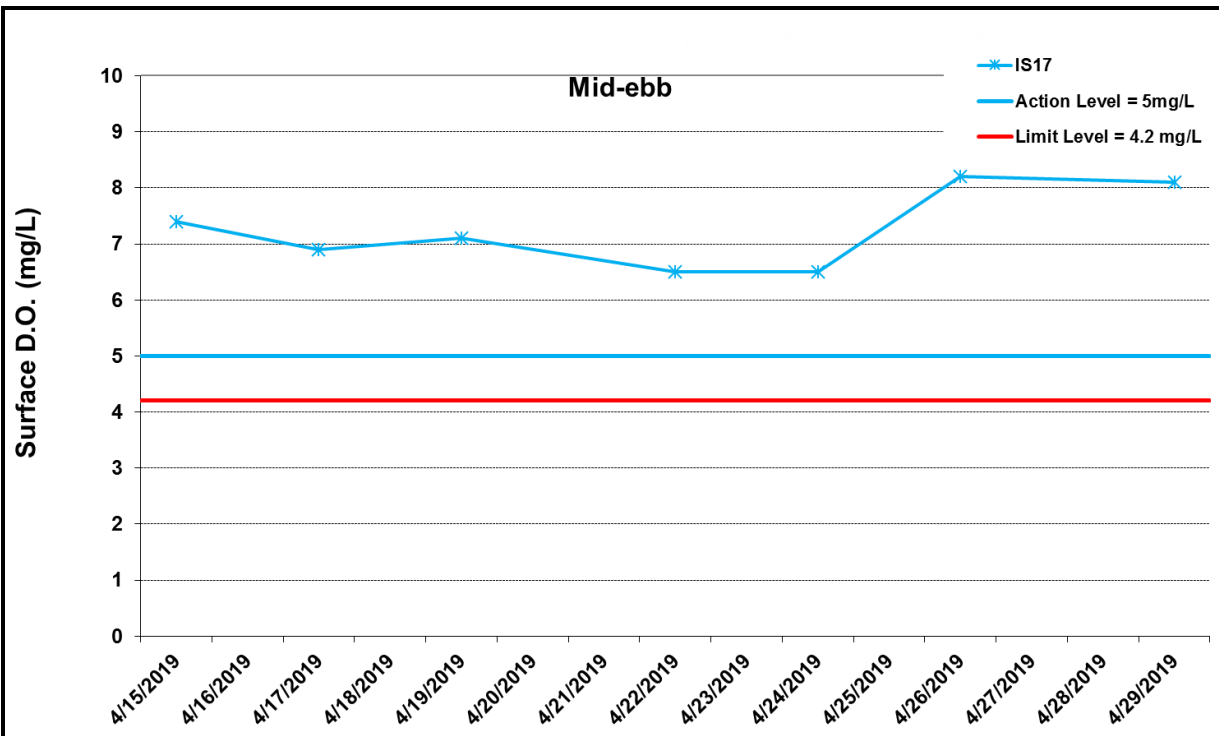
Ref: 0212330_Impact-WQM_April2019_graphs_Rev a.xls



* The AL/LL for WQM stations, IS(Mf)11, IS17 and SR7, are adopted from HZMB HKBCF project.

Figure J2 Impact Monitoring - Mean Level of Dissolved Oxygen (mg/L) in surface waters between 15 April 2019 and 30 April 2019 at SR7. The weather conditions during the monitoring period varied mostly from sunny to cloudy. Major marine works included: Seawall Modification works at Southern Landfall (15/4/2019 - 30/4/2019).



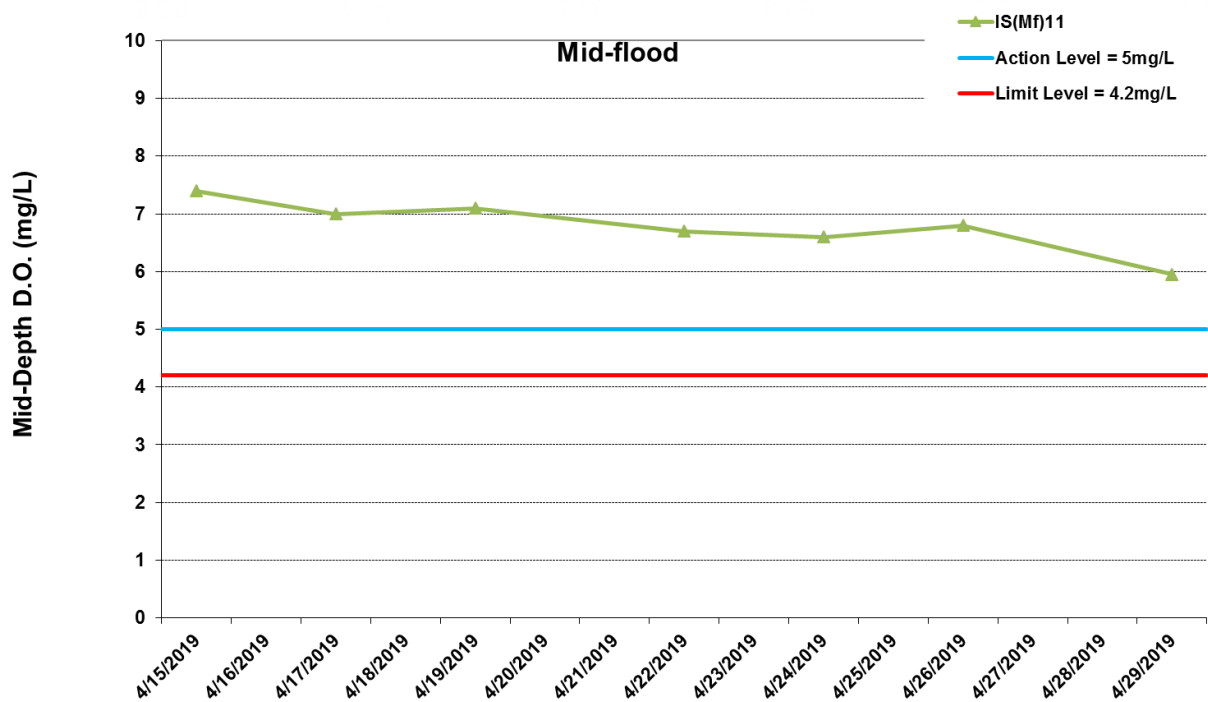
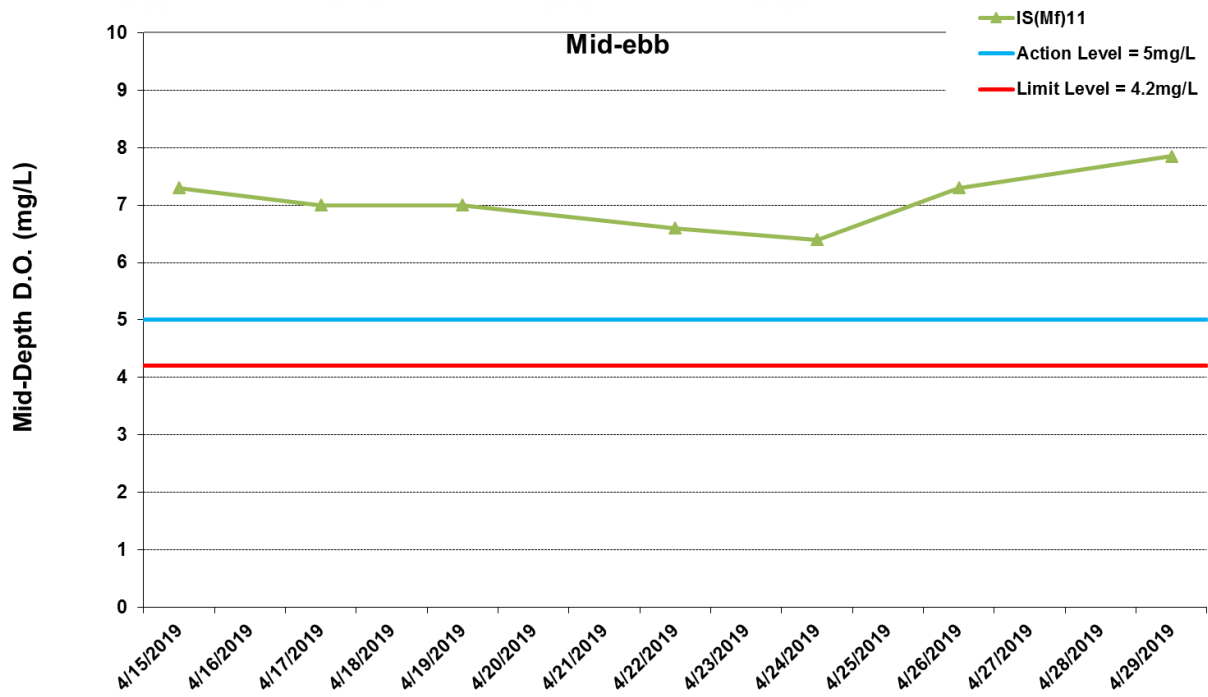


* The AL/LL for WQM stations, IS(Mf)11, IS17 and SR7, are adopted from HZMB HKBCF project.

Figure J3 Impact Monitoring - Mean Level of Dissolved Oxygen (mg/L) in surface waters between 15 April 2019 and 30 April 2019 at IS17. The weather conditions during the monitoring period varied mostly from sunny to cloudy. Major marine works included: Seawall Modification works at Southern Landfall (15/4/2019 - 30/4/2019).



Ref: 0212330_Impact-WQM_April2019_graphs_Rev a.xls

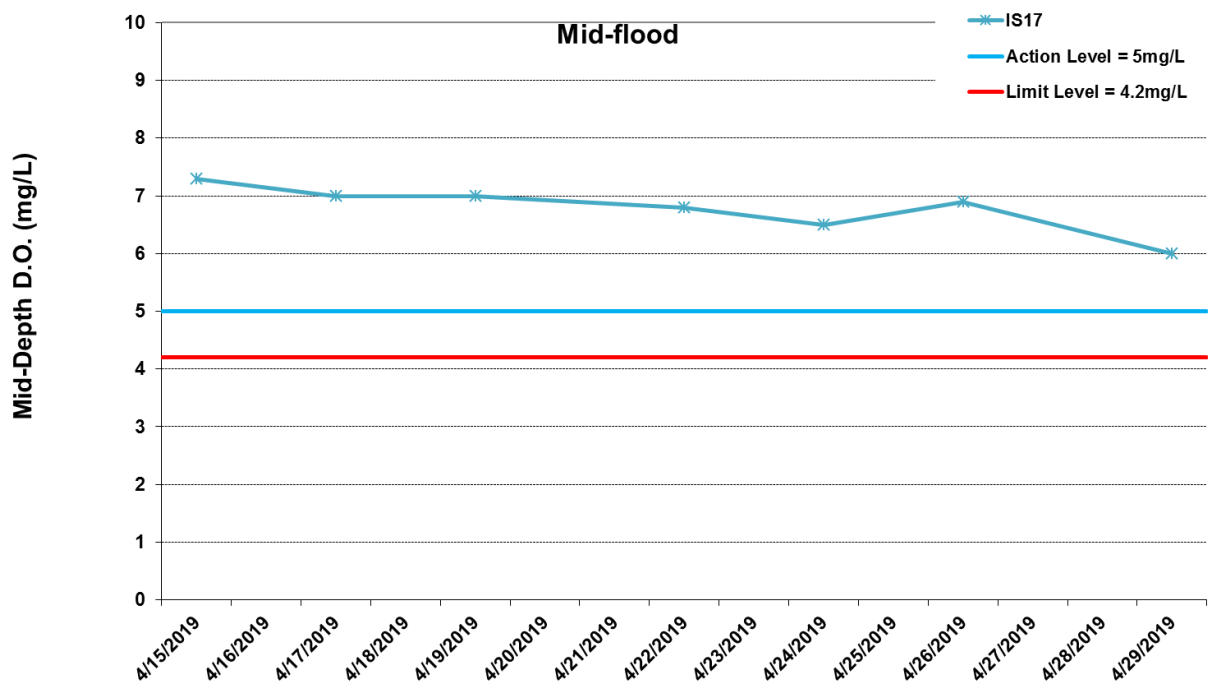
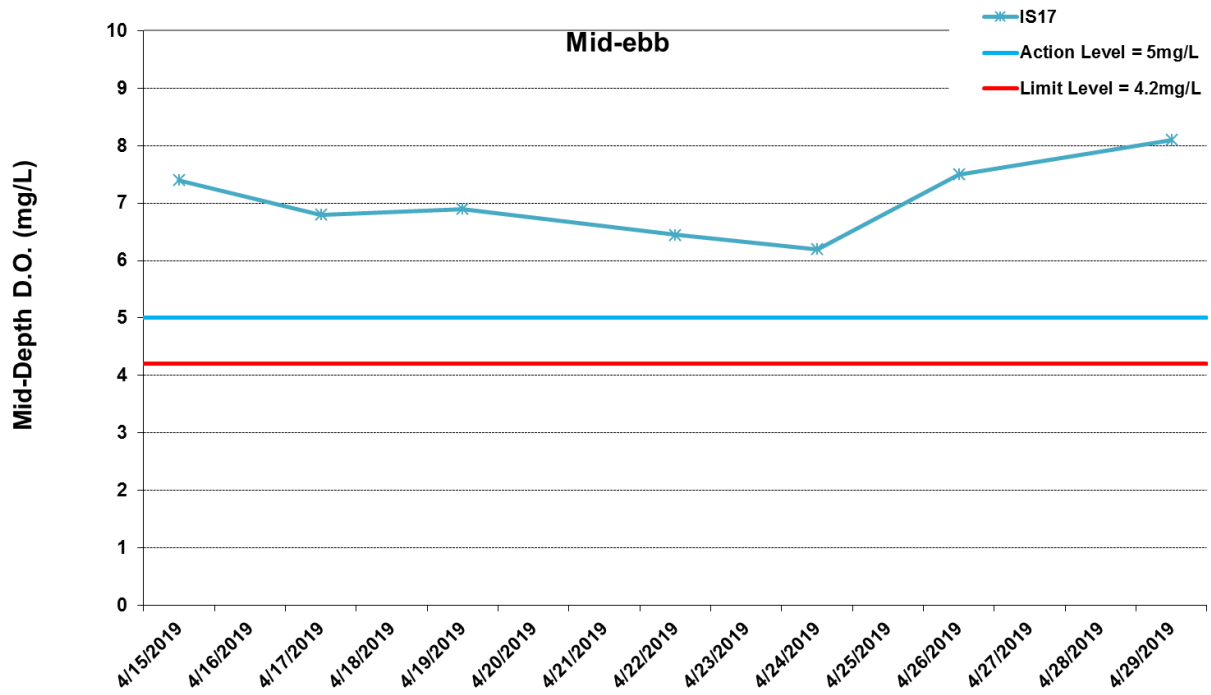


* The AL/LL for WQM stations, IS(Mf)11, IS17 and SR7, are adopted from HZMB HKBCF project.

*No data for Stations SR7 due to shallow water depth (< 6m).

Figure J4 Impact Monitoring - Mean Level of Dissolved Oxygen (mg/L) in mid-depth waters between 15 April 2019 and 30 April 2019 at IS(Mf)11. The weather conditions during the monitoring period varied mostly from sunny to cloudy. Major marine works included: Seawall Modification works at Southern Landfall (15/4/2019 - 30/4/2019).



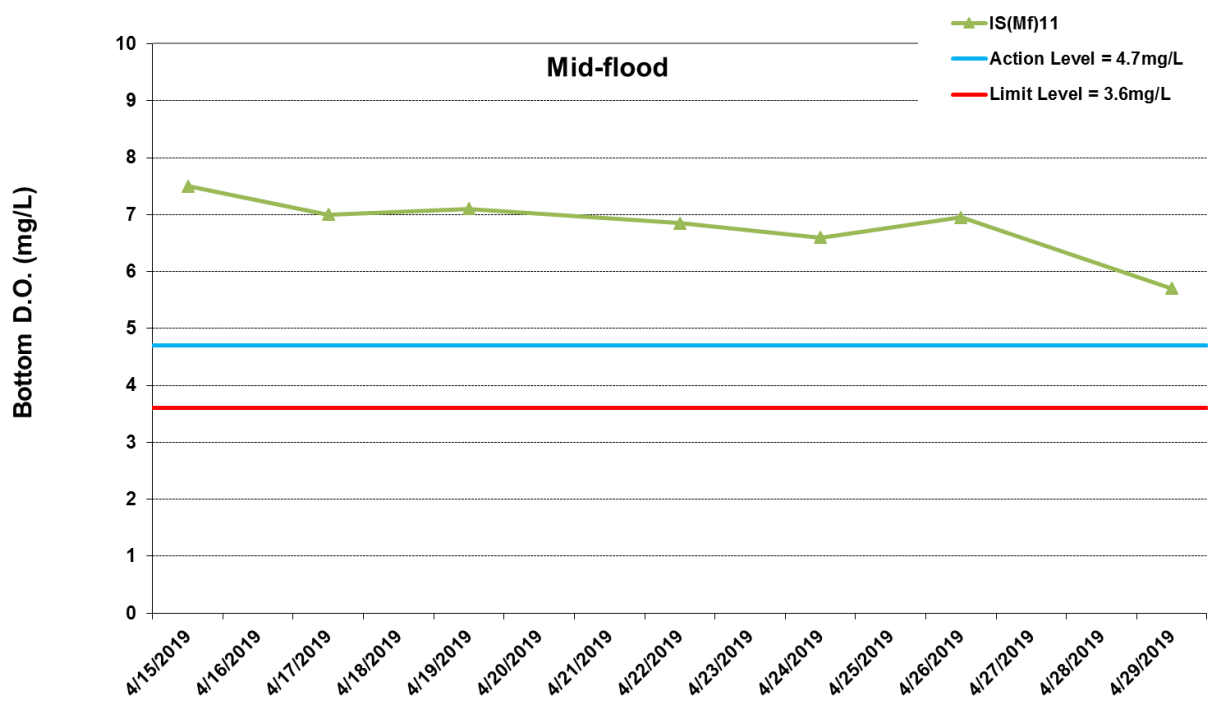
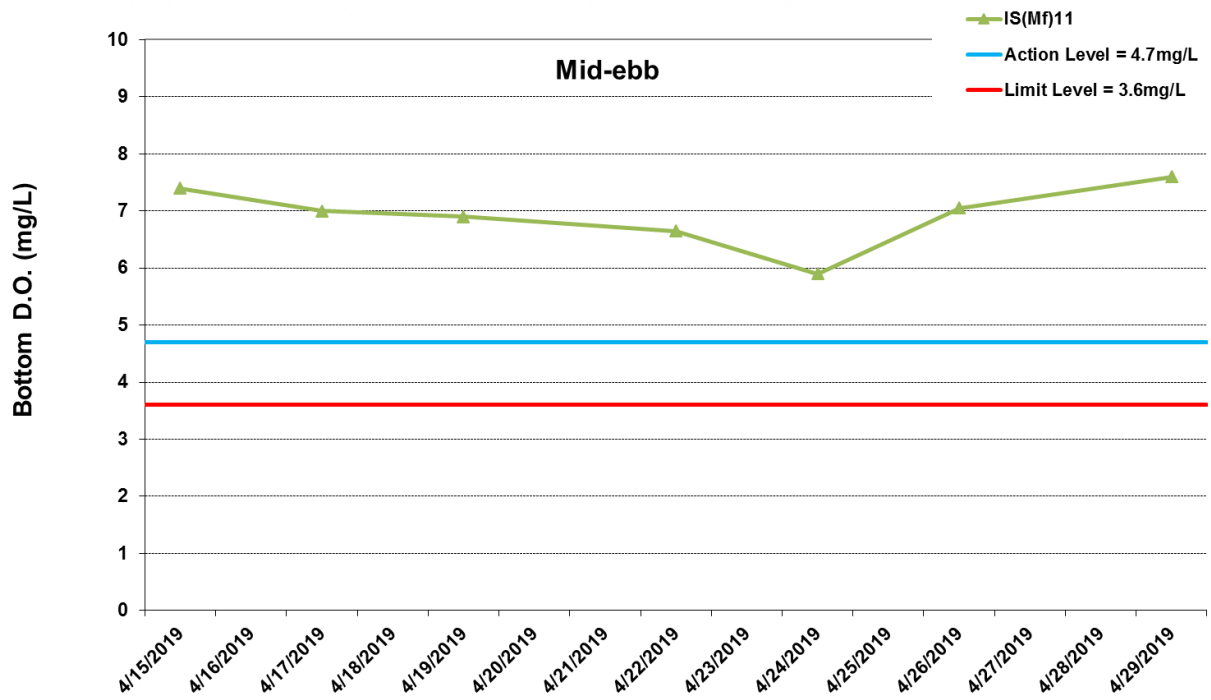


* The AL/LL for WQM stations, IS(Mf)11, IS17 and SR7, are adopted from HZMB HKBCF project.

*No data for Stations SR7 due to shallow water depth (< 6m).

Figure J5 Impact Monitoring - Mean Level of Dissolved Oxygen (mg/L) in mid-depth waters between 15 April 2019 and 30 April 2019 at IS17. The weather conditions during the monitoring period varied mostly from sunny to cloudy. Major marine works included: Seawall Modification works at Southern Landfall (15/4/2019 - 30/4/2019).



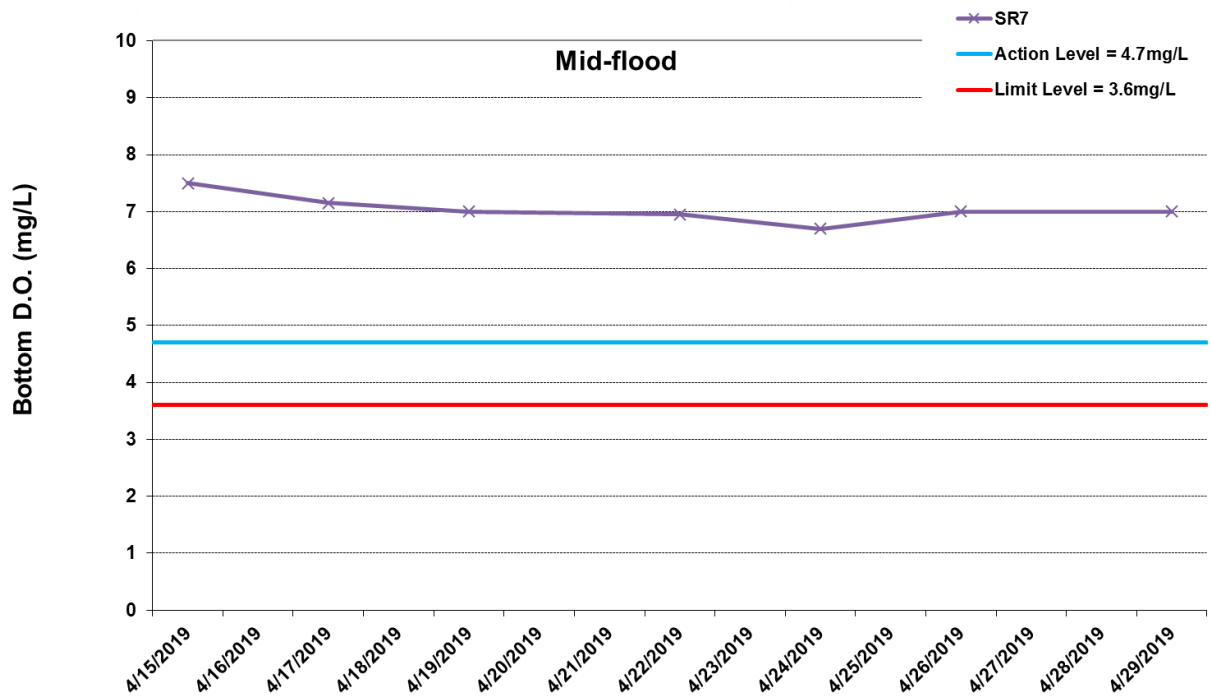
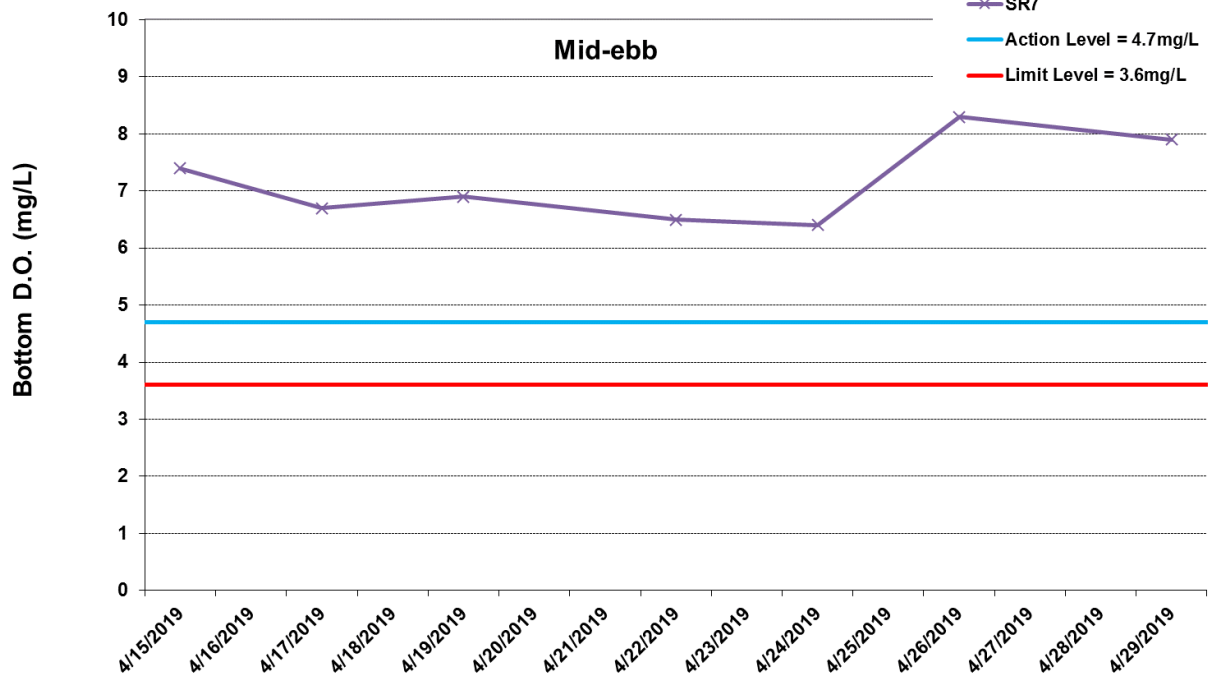


* The AL/LL for WQM stations, IS(Mf)11, IS17 and SR7, are adopted from HZMB HKBCF project.

Figure J6 Impact Monitoring - Mean Level of Dissolved Oxygen (mg/L) in bottom water between 15 April 2019 and 30 April 2019 at IS(Mf)11. The weather conditions during the monitoring period varied mostly from sunny to cloudy. Major marine works included: Seawall Modification works at Southern Landfall (15/4/2019 - 30/4/2019).



Ref: 0212330_Impact-WQM_April2019_graphs_Rev a.xls

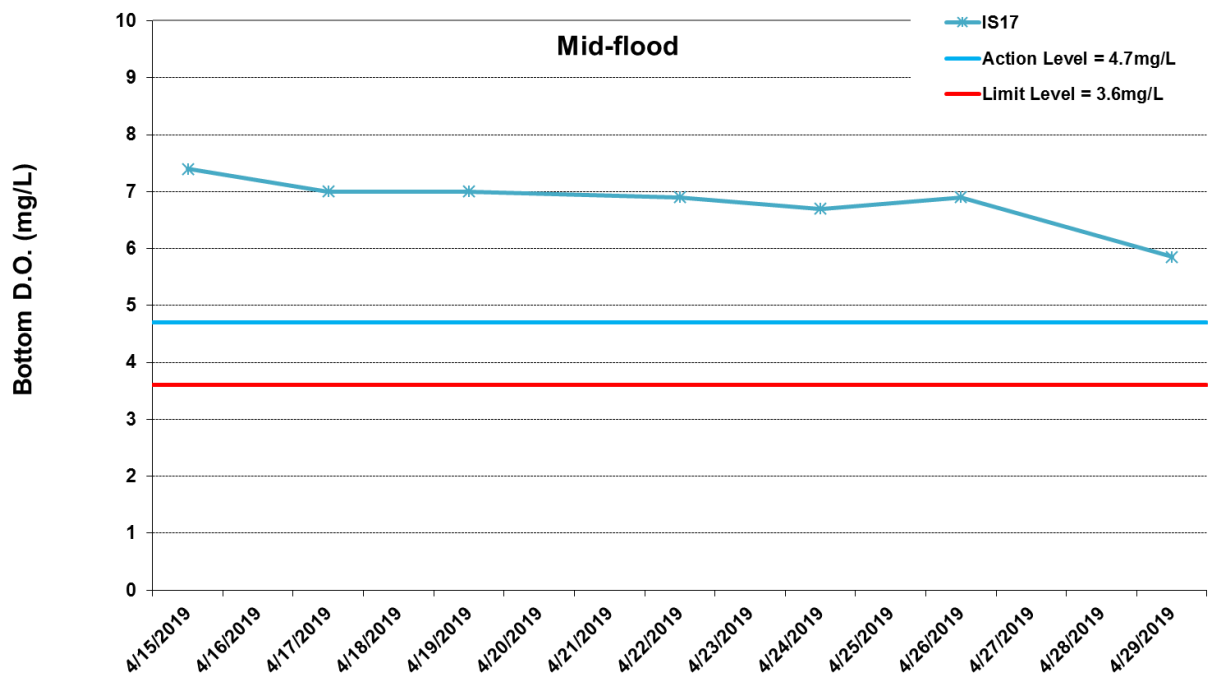
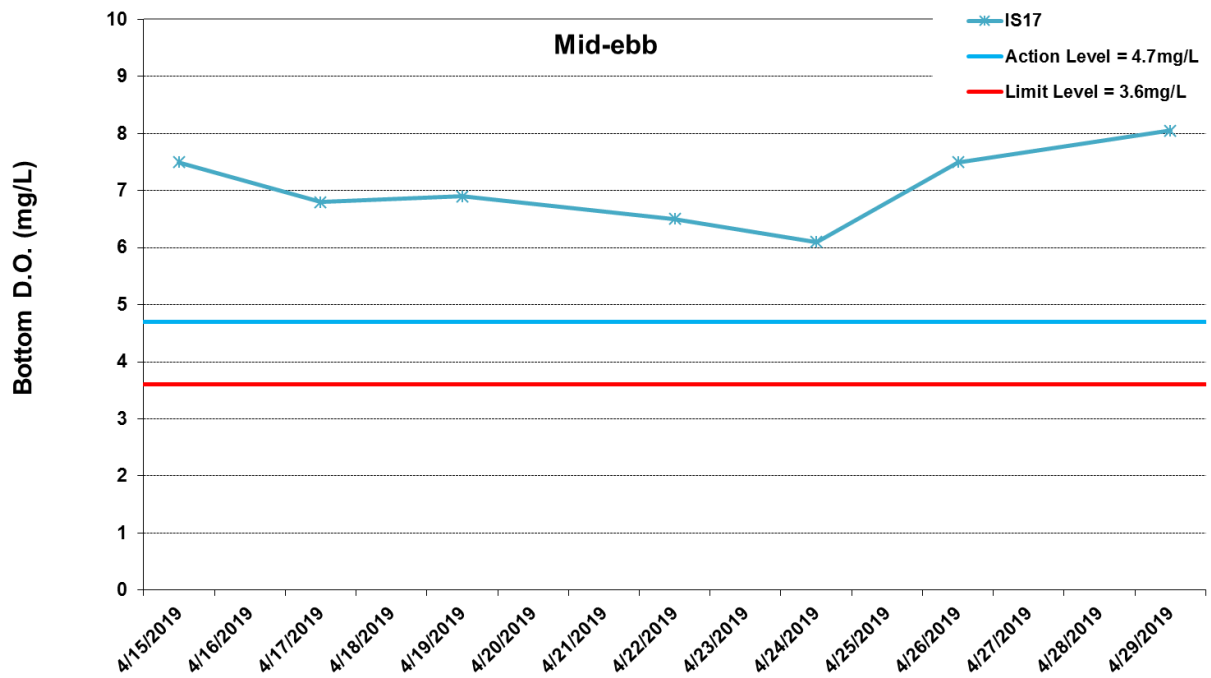


* The AL/LL for WQM stations, IS(Mf)11, IS17 and SR7, are adopted from HZMB HKBCF project.

Figure J7 Impact Monitoring - Mean Level of Dissolved Oxygen (mg/L) in bottom water between 15 April 2019 and 30 April 2019 at SR7. The weather conditions during the monitoring period varied mostly from sunny to cloudy. Major marine works included: Seawall Modification works at Southern Landfall (15/4/2019 - 30/4/2019).



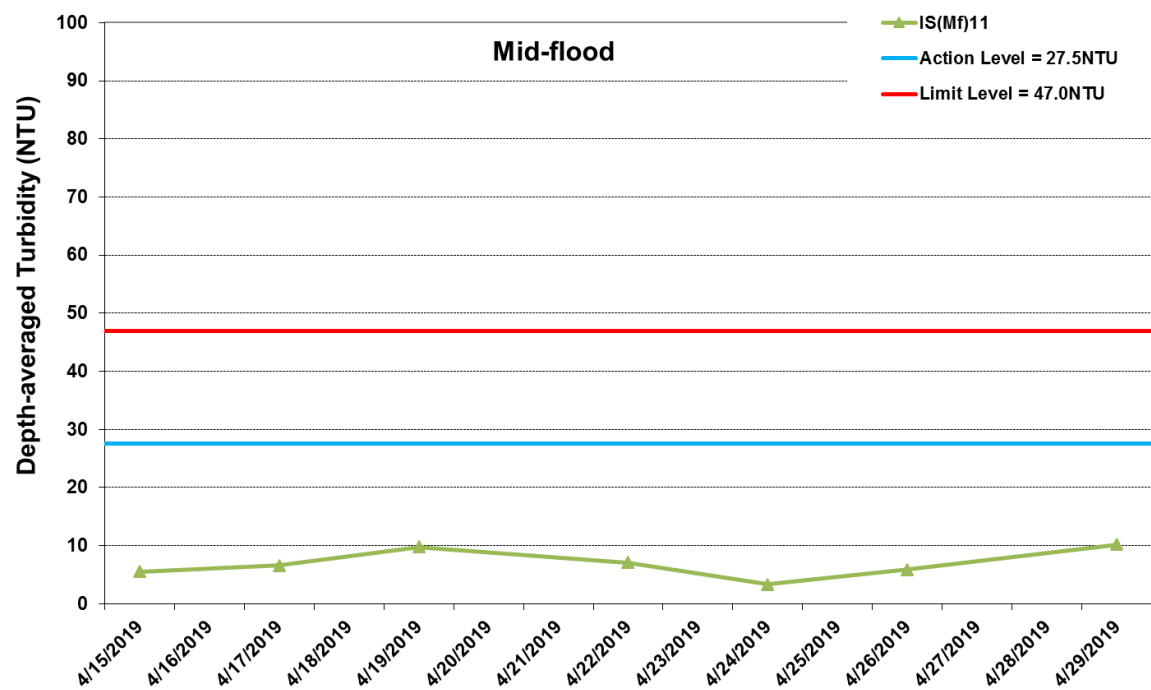
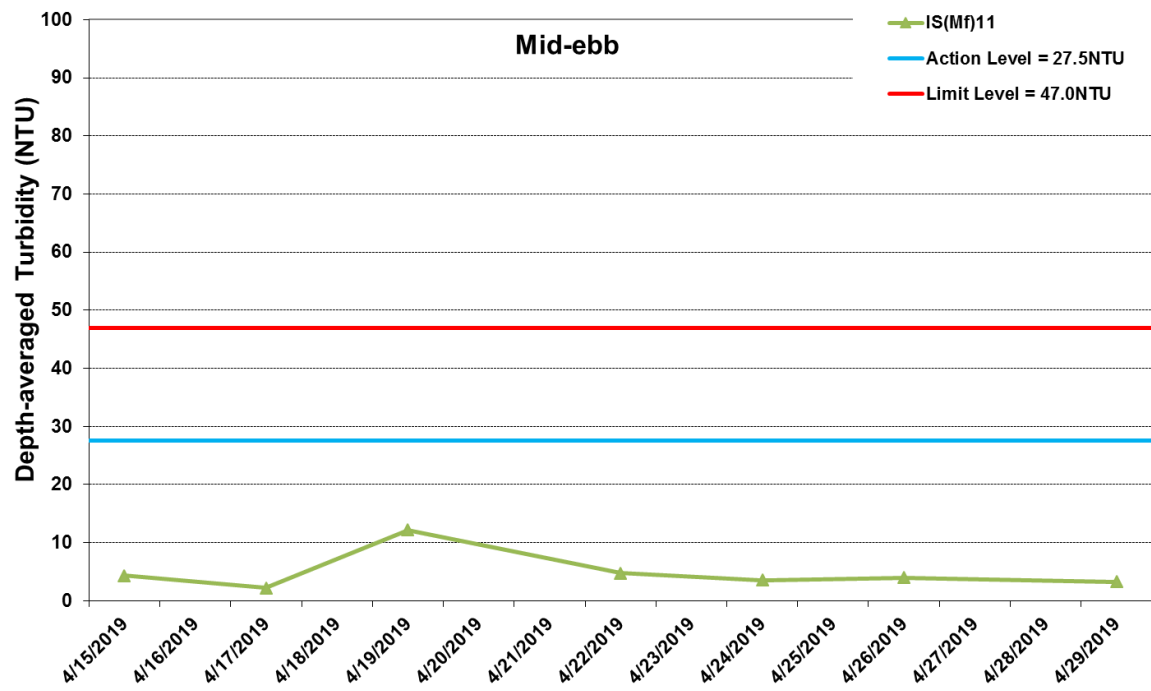
Ref: 0212330_Impact-WQM_April2019_graphs_Rev a.xls



* The AL/LL for WQM stations, IS(Mf)11, IS17 and SR7, are adopted from HZMB HKBCF project.

Figure J8 Impact Monitoring - Mean Level of Dissolved Oxygen (mg/L) in bottom water between 15 April 2019 and 30 April 2019 at IS17. The weather conditions during the monitoring period varied mostly from sunny to cloudy. Major marine works included: Seawall Modification works at Southern Landfall (15/4/2019 - 30/4/2019).

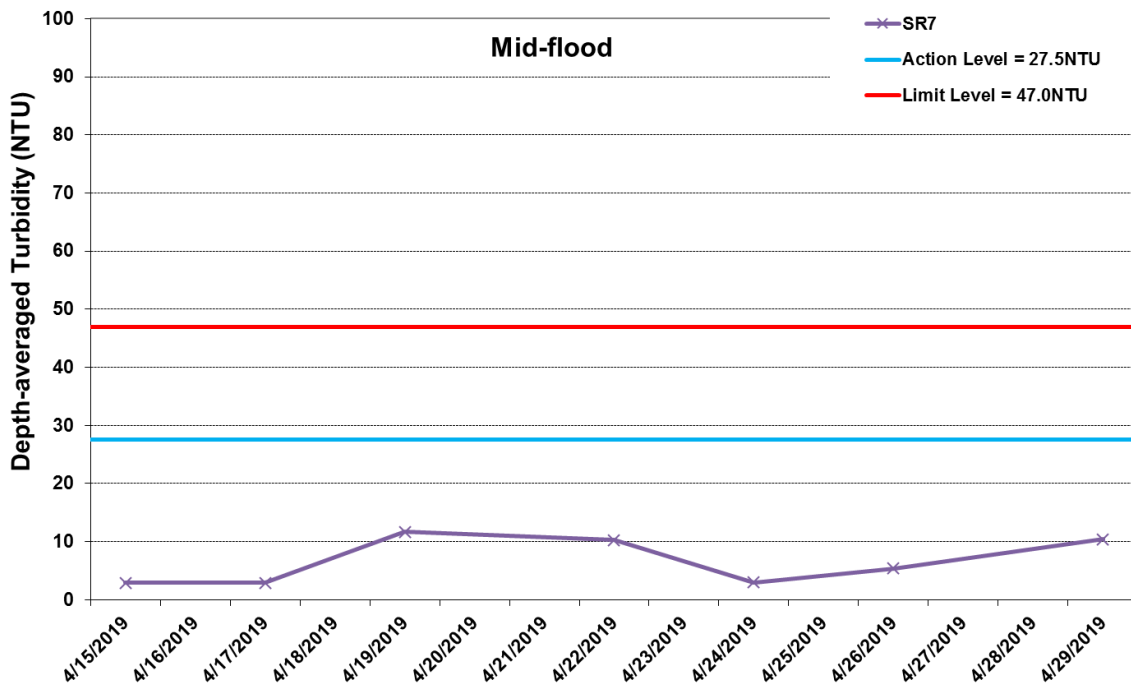
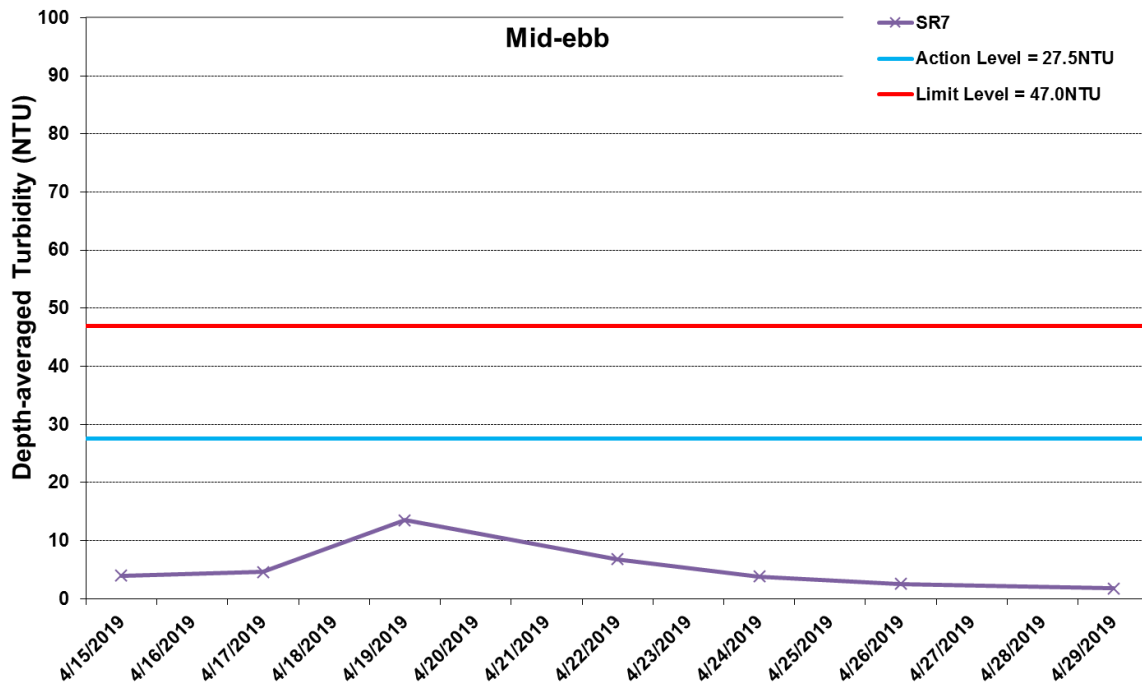




* The AL/LL for WQM stations, IS(Mf)11, IS17 and SR7, are adopted from HZMB HKBCF project.

Figure J9 Impact Monitoring - Mean Depth-averaged Level of Turbidity (NTU) between 15 April 2019 and 30 April 2019 at IS(Mf)11. The weather conditions during the monitoring period varied mostly from sunny to cloudy. Major marine works included: Seawall Modification works at Southern Landfall (15/4/2019 - 30/4/2019).



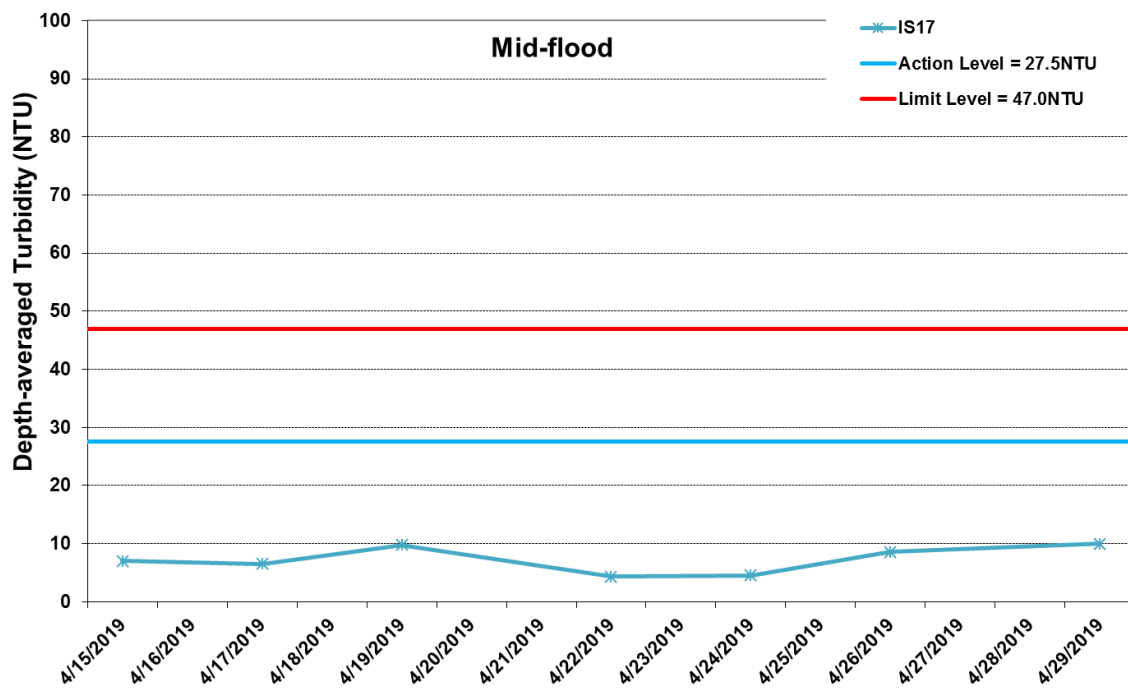
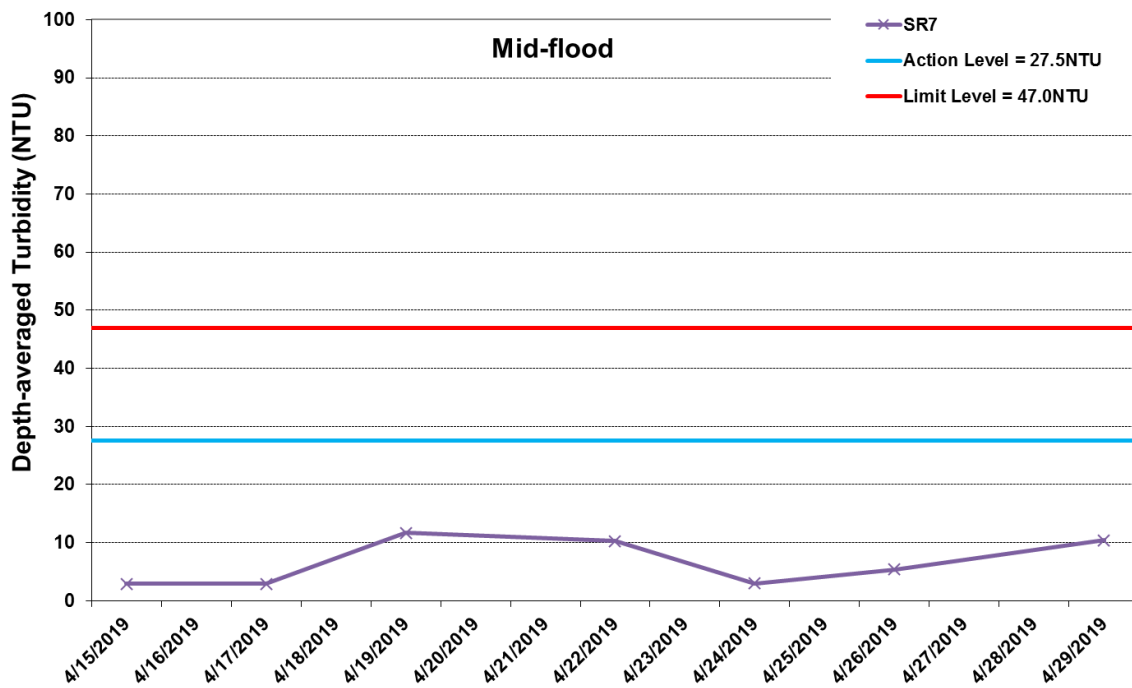


* The AL/LL for WQM stations, IS(Mf)11, IS17 and SR7, are adopted from HZMB HKBCF project.

Figure J10 Impact Monitoring - Mean Depth-averaged Level of Turbidity (NTU) between 15 April 2019 and 30 April 2019 at SR7. The weather conditions during the monitoring period varied mostly from sunny to cloudy. Major marine works included: Seawall Modification works at Southern Landfall (15/4/2019 - 30/4/2019).

Ref: 0212330_Impact-WQM_April2019_graphs_Rev a.xls



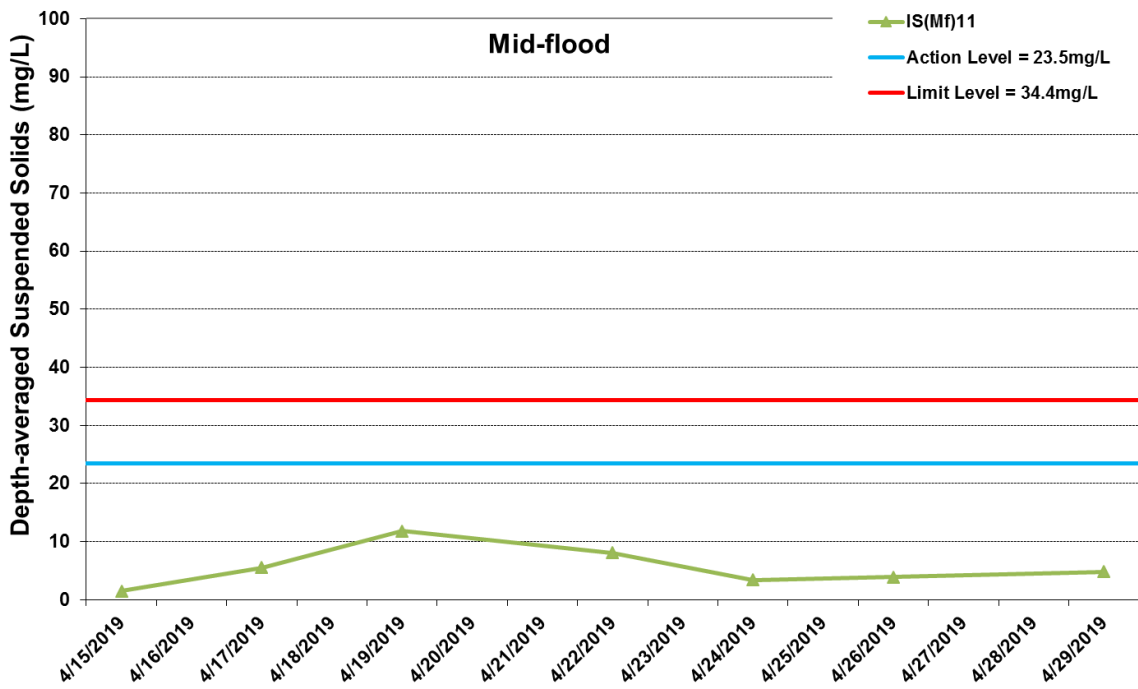
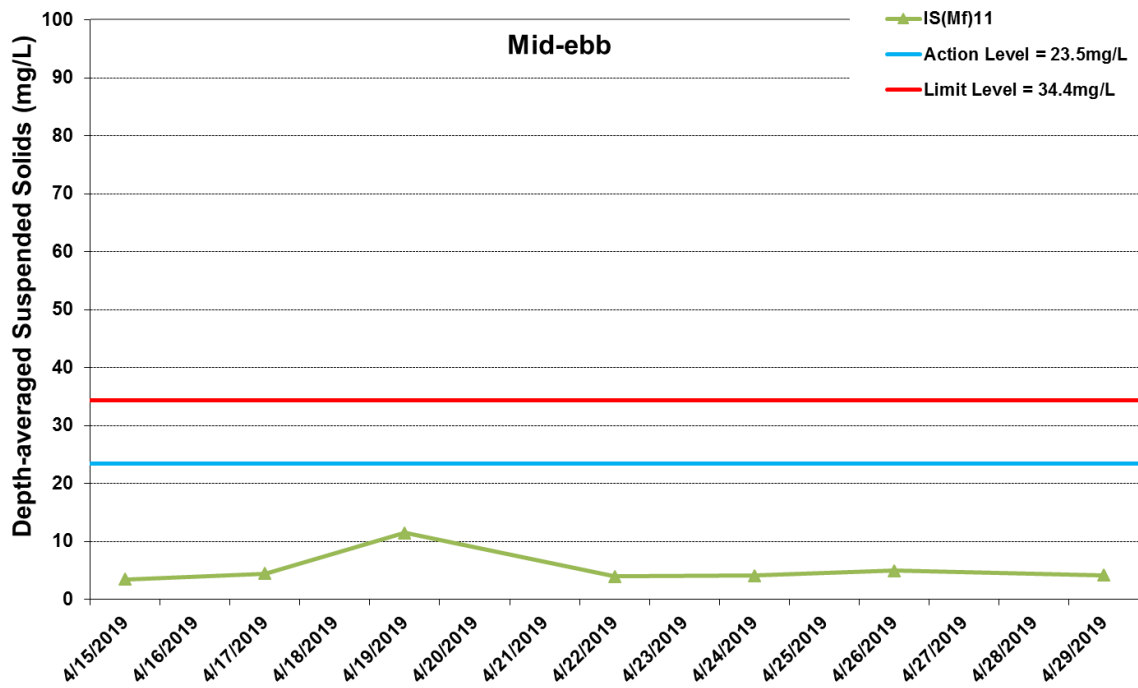


* The AL/LL for WQM stations, IS(Mf)11, IS17 and SR7, are adopted from HZMB HKBCF project.

Figure J11 Impact Monitoring - Mean Depth-averaged Level of Turbidity (NTU) between 15 April 2019 and 30 April 2019 at IS17. The weather conditions during the monitoring period varied mostly from sunny to cloudy. Major marine works included: Seawall Modification works at Southern Landfall (15/4/2019 - 30/4/2019).

Ref: 0212330_Impact-WQM_April2019_graphs_Rev a.xls



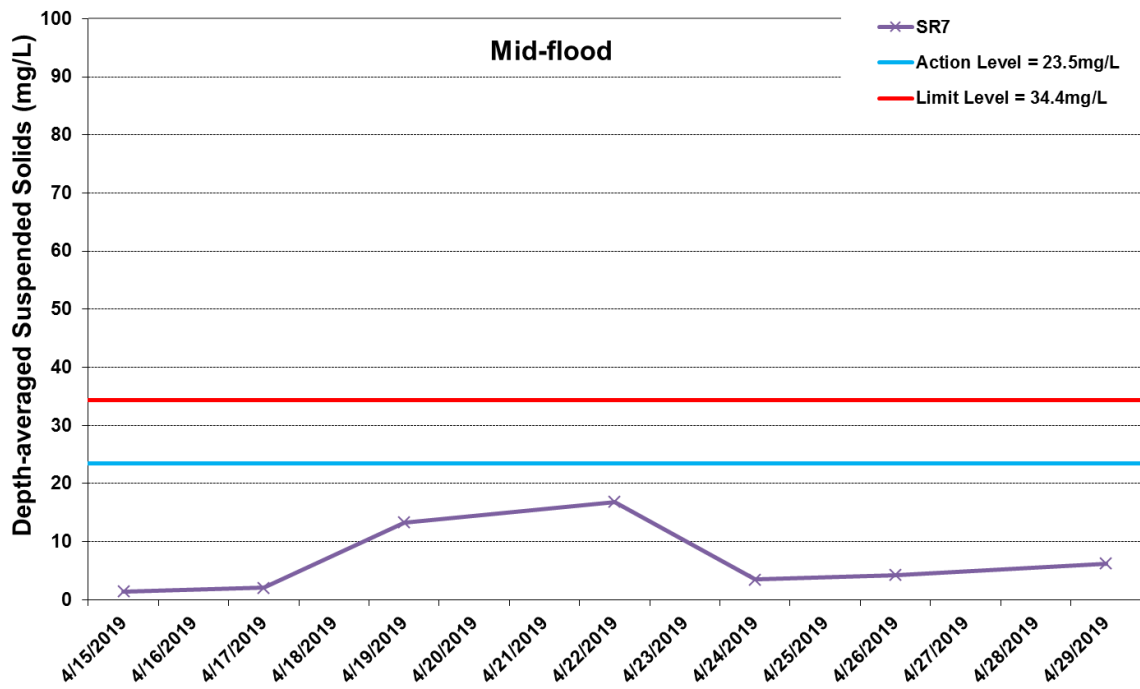
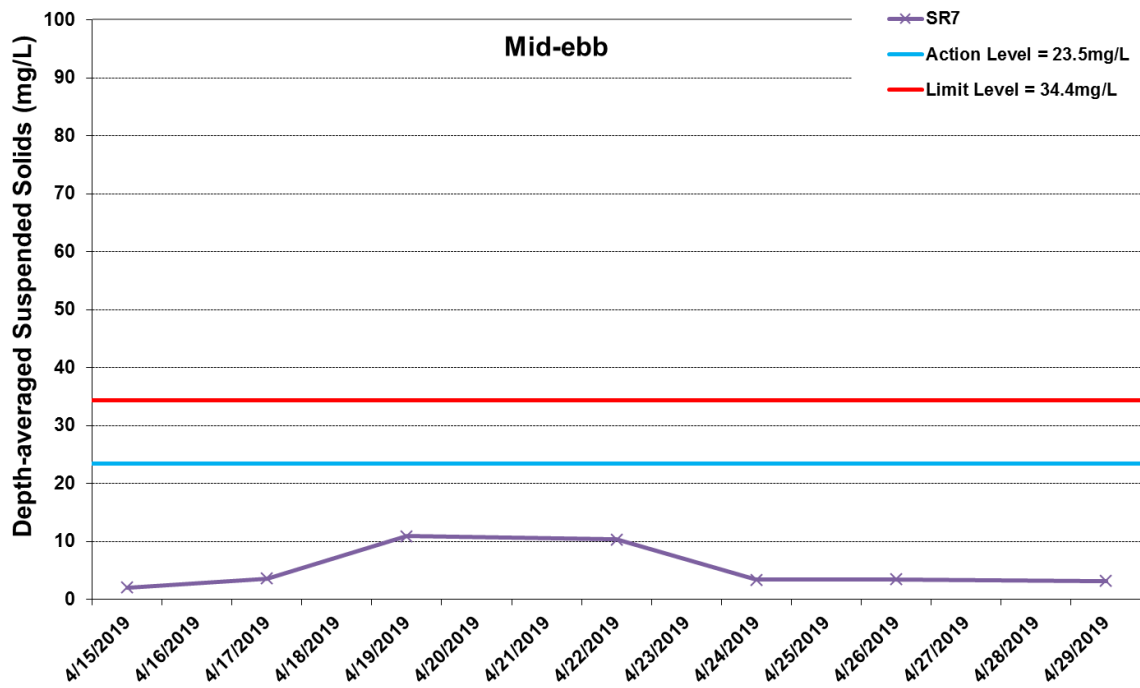


* The AL/LL for WQM stations, IS(Mf)11, IS17 and SR7, are adopted from HZMB HKBCF project.

Figure J12 Impact Monitoring - Mean Depth-averaged Level of Suspended Solids (mg/L) between 15 April 2019 and 30 April 2019 at IS(Mf)11. The weather conditions during the monitoring period varied mostly from sunny to cloudy. Major marine works included: Seawall Modification works at Southern Landfall (15/4/2019 - 30/4/2019).



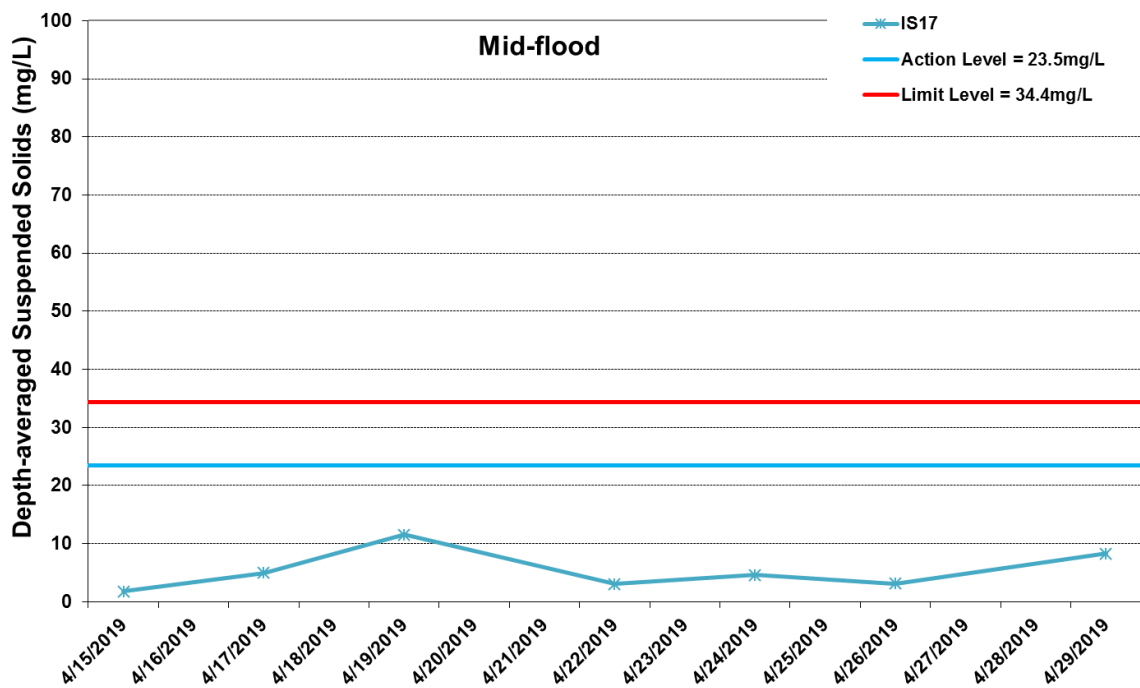
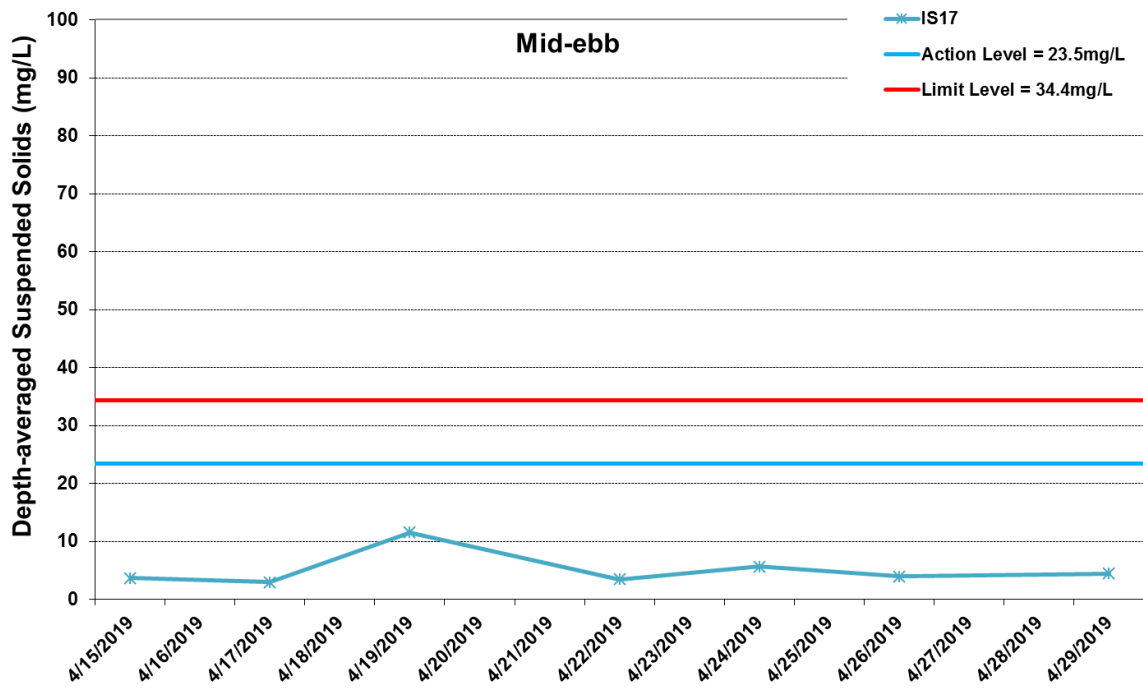
Ref: 0212330_Impact-WQM_April2019_graphs_Rev a.xls



* The AL/LL for WQM stations, IS(Mf)11, IS17 and SR7, are adopted from HZMB HKBCF project.

Figure J13 Impact Monitoring - Mean Depth-averaged Level of Suspended Solids (mg/L) between 15 April 2019 and 30 April 2019 at SR7. The weather conditions during the monitoring period varied mostly from sunny to cloudy. Major marine works included: Seawall Modification works at Southern Landfall (15/4/2019 - 30/4/2019).





* The AL/LL for WQM stations, IS(Mf)11, IS17 and SR7, are adopted from HZMB HKBCF project.

Figure J14 Impact Monitoring - Mean Depth-averaged Level of Suspended Solids (mg/L) between 15 April 2019 and 30 April 2019 at IS17. The weather conditions during the monitoring period varied mostly from sunny to cloudy. Major marine works included: Seawall Modification works at Southern Landfall (15/4/2019 - 30/4/2019).



Project	Works	Date	Tide	Stat	Weather	Sea Condition	Time	Water Depth	Level	Lev_Cod	Replicate	Temp(°C)	pH	Salinity(ppt)	DO(mg/L)	Turbidity(NTU)	SS(mg/L)
TMCLKL	HY/2012/08	2019-04-15	Mid-Ebb	IS(Mf)11	Cloudy	Moderate	11:04	11.3	Surface	1	1	23.4	8.4	22.8	7.3	5.5	3.4
TMCLKL	HY/2012/08	2019-04-15	Mid-Ebb	IS(Mf)11	Cloudy	Moderate	11:04	11.3	Surface	1	2	23.4	8.4	22.8	7.3	5.5	3.9
TMCLKL	HY/2012/08	2019-04-15	Mid-Ebb	IS(Mf)11	Cloudy	Moderate	11:04	11.3	Middle	2	1	23.4	8.4	23.3	7.3	4.2	3
TMCLKL	HY/2012/08	2019-04-15	Mid-Ebb	IS(Mf)11	Cloudy	Moderate	11:04	11.3	Middle	2	2	23.4	8.4	23.3	7.3	4.3	3.4
TMCLKL	HY/2012/08	2019-04-15	Mid-Ebb	IS(Mf)11	Cloudy	Moderate	11:04	11.3	Bottom	3	1	23.3	8.4	23.1	7.4	3.3	3.8
TMCLKL	HY/2012/08	2019-04-15	Mid-Ebb	IS(Mf)11	Cloudy	Moderate	11:04	11.3	Bottom	3	2	23.3	8.4	23.1	7.4	3.3	3.3
TMCLKL	HY/2012/08	2019-04-15	Mid-Ebb	SR7	Cloudy	Moderate	10:04	4.6	Surface	1	1	23.6	8.4	24	7.3	4.5	2.3
TMCLKL	HY/2012/08	2019-04-15	Mid-Ebb	SR7	Cloudy	Moderate	10:04	4.6	Surface	1	2	23.6	8.4	24	7.3	4.8	2.8
TMCLKL	HY/2012/08	2019-04-15	Mid-Ebb	SR7	Cloudy	Moderate	10:04	4.6	Middle	2	1						
TMCLKL	HY/2012/08	2019-04-15	Mid-Ebb	SR7	Cloudy	Moderate	10:04	4.6	Middle	2	2						
TMCLKL	HY/2012/08	2019-04-15	Mid-Ebb	SR7	Cloudy	Moderate	10:04	4.6	Bottom	3	1	23.6	8.4	24.1	7.4	3.3	1.3
TMCLKL	HY/2012/08	2019-04-15	Mid-Ebb	SR7	Cloudy	Moderate	10:04	4.6	Bottom	3	2	23.6	8.4	24.1	7.4	3.3	1.8
TMCLKL	HY/2012/08	2019-04-15	Mid-Ebb	IS17	Cloudy	Moderate	11:12	8.2	Surface	1	1	23.2	8.4	24.3	7.4	7.7	3.4
TMCLKL	HY/2012/08	2019-04-15	Mid-Ebb	IS17	Cloudy	Moderate	11:12	8.2	Surface	1	2	23.2	8.4	24.3	7.4	7.7	3.6
TMCLKL	HY/2012/08	2019-04-15	Mid-Ebb	IS17	Cloudy	Moderate	11:12	8.2	Middle	2	1	23.1	8.4	24.4	7.4	2.7	3.6
TMCLKL	HY/2012/08	2019-04-15	Mid-Ebb	IS17	Cloudy	Moderate	11:12	8.2	Middle	2	2	23.1	8.4	24.4	7.4	2.7	3.8
TMCLKL	HY/2012/08	2019-04-15	Mid-Ebb	IS17	Cloudy	Moderate	11:12	8.2	Bottom	3	1	23.1	8.4	24.5	7.5	2.1	4.1
TMCLKL	HY/2012/08	2019-04-15	Mid-Ebb	IS17	Cloudy	Moderate	11:12	8.2	Bottom	3	2	23.1	8.4	24.5	7.5	2.1	3.7
TMCLKL	HY/2012/08	2019-04-15	Mid-Flood	IS(Mf)11	Rainy	Moderate	14:11	11.5	Surface	1	1	23.7	8.4	25.1	7.3	4.6	1.6
TMCLKL	HY/2012/08	2019-04-15	Mid-Flood	IS(Mf)11	Rainy	Moderate	14:11	11.5	Surface	1	2	23.7	8.4	25.1	7.3	4.6	1.9
TMCLKL	HY/2012/08	2019-04-15	Mid-Flood	IS(Mf)11	Rainy	Moderate	14:11	11.5	Middle	2	1	23.6	8.4	25.2	7.4	3.5	1.3
TMCLKL	HY/2012/08	2019-04-15	Mid-Flood	IS(Mf)11	Rainy	Moderate	14:11	11.5	Middle	2	2	23.6	8.4	25.2	7.4	3.4	1.2
TMCLKL	HY/2012/08	2019-04-15	Mid-Flood	IS(Mf)11	Rainy	Moderate	14:11	11.5	Bottom	3	1	23	8.4	25.7	7.5	8.6	1.4
TMCLKL	HY/2012/08	2019-04-15	Mid-Flood	IS(Mf)11	Rainy	Moderate	14:11	11.5	Bottom	3	2	23	8.4	25.7	7.5	8.3	1.6
TMCLKL	HY/2012/08	2019-04-15	Mid-Flood	SR7	Rainy	Moderate	15:08	4.6	Surface	1	1	23.6	8.4	25.3	7.4	3.2	1.4
TMCLKL	HY/2012/08	2019-04-15	Mid-Flood	SR7	Rainy	Moderate	15:08	4.6	Surface	1	2	23.6	8.4	25.3	7.4	3.1	1.5
TMCLKL	HY/2012/08	2019-04-15	Mid-Flood	SR7	Rainy	Moderate	15:08	4.6	Middle	2	1						
TMCLKL	HY/2012/08	2019-04-15	Mid-Flood	SR7	Rainy	Moderate	15:08	4.6	Middle	2	2						
TMCLKL	HY/2012/08	2019-04-15	Mid-Flood	SR7	Rainy	Moderate	15:08	4.6	Bottom	3	1	23.6	8.4	25.3	7.5	2.6	1.1
TMCLKL	HY/2012/08	2019-04-15	Mid-Flood	SR7	Rainy	Moderate	15:08	4.6	Bottom	3	2	23.6	8.4	25.3	7.5	2.6	1.7
TMCLKL	HY/2012/08	2019-04-15	Mid-Flood	IS17	Cloudy	Moderate	14:06	8.1	Surface	1	1	23.5	8.4	25.5	7.3	7.5	1.3
TMCLKL	HY/2012/08	2019-04-15	Mid-Flood	IS17	Cloudy	Moderate	14:06	8.1	Surface	1	2	23.5	8.4	25.5	7.3	7.5	1.7
TMCLKL	HY/2012/08	2019-04-15	Mid-Flood	IS17	Cloudy	Moderate	14:06	8.1	Middle	2	1	23.5	8.4	25.4	7.3	8	2.1
TMCLKL	HY/2012/08	2019-04-15	Mid-Flood	IS17	Cloudy	Moderate	14:06	8.1	Middle	2	2	23.5	8.4	25.3	7.3	8	2.2
TMCLKL	HY/2012/08	2019-04-15	Mid-Flood	IS17	Cloudy	Moderate	14:06	8.1	Bottom	3	1	23.5	8.4	25.4	7.4	5.3	1.8
TMCLKL	HY/2012/08	2019-04-15	Mid-Flood	IS17	Cloudy	Moderate	14:06	8.1	Bottom	3	2	23.5	8.4	25.4	7.4	5.6	1.4
TMCLKL	HY/2012/08	2019-04-17	Mid-Ebb	IS(Mf)11	Cloudy	Moderate	12:38	11.3	Surface	1	1	24.9	7.9	22.2	6.9	2.2	<0.5
TMCLKL	HY/2012/08	2019-04-17	Mid-Ebb	IS(Mf)11	Cloudy	Moderate	12:38	11.3	Surface	1	2	25	7.9	22.2	6.9	2.1	<0.5
TMCLKL	HY/2012/08	2019-04-17	Mid-Ebb	IS(Mf)11	Cloudy	Moderate	12:38	11.3	Middle	2	1	24.2	7.9	22.9	7	2.5	3.8
TMCLKL	HY/2012/08	2019-04-17	Mid-Ebb	IS(Mf)11	Cloudy	Moderate	12:38	11.3	Middle	2	2	24.4	7.9	22.8	7	2.3	3.2
TMCLKL	HY/2012/08	2019-04-17	Mid-Ebb	IS(Mf)11	Cloudy	Moderate	12:38	11.3	Bottom	3	1	23.9	7.9	23.6	7	2	5.1
TMCLKL	HY/2012/08	2019-04-17	Mid-Ebb	IS(Mf)11	Cloudy	Moderate	12:38	11.3	Bottom	3	2	23.9	7.9	23.6	7	1.9	5.8
TMCLKL	HY/2012/08	2019-04-17	Mid-Ebb	SR7	Cloudy	Moderate	11:37	4.5	Surface	1	1	23.4	8	24.3	6.7	4.5	3
TMCLKL	HY/2012/08	2019-04-17	Mid-Ebb	SR7	Cloudy	Moderate	11:37	4.5	Surface	1	2	23.4	8	24	6.8	4.4	3.2
TMCLKL	HY/2012/08	2019-04-17	Mid-Ebb	SR7	Cloudy	Moderate	11:37	4.5	Middle	2	1						
TMCLKL	HY/2012/08	2019-04-17	Mid-Ebb	SR7	Cloudy	Moderate	11:37	4.5	Middle	2	2						
TMCLKL	HY/2012/08	2019-04-17	Mid-Ebb	SR7	Cloudy	Moderate	11:37	4.5	Bottom	3	1	23.5	8	26.1	6.7	4.8	4.1
TMCLKL	HY/2012/08	2019-04-17	Mid-Ebb	SR7	Cloudy	Moderate	11:37	4.5	Bottom	3	2	23.5	8	26.1	6.7	4.7	4.1
TMCLKL	HY/2012/08	2019-04-17	Mid-Ebb	IS17	Cloudy	Moderate	12:44	9.2	Surface	1	1	24.2	7.9	23.5	6.9	2.3	3.2
TMCLKL	HY/2012/08	2019-04-17	Mid-Ebb	IS17	Cloudy	Moderate	12:44	9.2	Surface	1	2	24.2	7.9	23.5	6.9	2.1	4.1
TMCLKL	HY/2012/08	2019-04-17	Mid-Ebb	IS17	Cloudy	Moderate	12:44	9.2	Middle	2	1	24.4	7.9	23.2	6.8	3.9	2.8
TMCLKL	HY/2012/08	2019-04-17	Mid-Ebb	IS17	Cloudy	Moderate	12:44	9.2	Middle	2	2	24.3	7.9	23.3	6.8	3.9	2.7
TMCLKL	HY/2012/08	2019-04-17	Mid-Ebb	IS17	Cloudy	Moderate	12:44	9.2	Bottom	3	1	24.7	7.9	24.3	6.8	3.7	2.3
TMCLKL	HY/2012/08	2019-04-17	Mid-Ebb	IS17	Cloudy	Moderate	12:44	9.2	Bottom	3	2	24.7	7.9	24.4	6.8	3.7	2.7
TMCLKL	HY/2012/08	2019-04-17	Mid-Flood	IS(Mf)11	Cloudy	Moderate	16:30	11.5	Surface	1	1	24	7.9	23.1	7	12.7	6
TMCLKL	HY/2012/08	2019-04-17	Mid-Flood	IS(Mf)11	Cloudy	Moderate	16:30	11.5	Surface	1	2	24.1	7.9	23.1	7	12.7	5.4
TMCLKL	HY/2012/08	2019-04-17	Mid-Flood	IS(Mf)11	Cloudy	Moderate	16:30	11.5	Middle	2	1	23.9	8	23.8	7	3.4	5.6
TMCLKL	HY/2012/08	2019-04-17	Mid-Flood	IS(Mf)11	Cloudy	Moderate	16:30	11.5	Middle	2	2	23.9	7.9	23.8	7	3.3	6

Project	Works	Date	Tide	Stat	Weather	Sea Condition	Time	Water Depth	Level	Lev_Cod	Replicate	Temp(°C)	pH	Salinity(ppt)	DO(mg/L)	Turbidity(NTU)	SS(mg/L)
TMCLKL	HY/2012/08	2019-04-17	Mid-Flood	IS(Mf)11	Cloudy	Moderate	16:30	11.5	Bottom	3	1	23.9	8	23.9	7	3.7	4.9
TMCLKL	HY/2012/08	2019-04-17	Mid-Flood	IS(Mf)11	Cloudy	Moderate	16:30	11.5	Bottom	3	2	23.9	8	23.9	7	3.7	5.1
TMCLKL	HY/2012/08	2019-04-17	Mid-Flood	SR7	Cloudy	Moderate	17:30	4.7	Surface	1	1	24	8	23	7	3	2.6
TMCLKL	HY/2012/08	2019-04-17	Mid-Flood	SR7	Cloudy	Moderate	17:30	4.7	Surface	1	2	24	8	23	7	2.9	2.6
TMCLKL	HY/2012/08	2019-04-17	Mid-Flood	SR7	Cloudy	Moderate	17:30	4.7	Middle	2	1						
TMCLKL	HY/2012/08	2019-04-17	Mid-Flood	SR7	Cloudy	Moderate	17:30	4.7	Middle	2	2						
TMCLKL	HY/2012/08	2019-04-17	Mid-Flood	SR7	Cloudy	Moderate	17:30	4.7	Bottom	3	1	24.1	8	22.1	7.2	2.8	1.9
TMCLKL	HY/2012/08	2019-04-17	Mid-Flood	SR7	Cloudy	Moderate	17:30	4.7	Bottom	3	2	24.1	8	22.2	7.1	2.9	1.2
TMCLKL	HY/2012/08	2019-04-17	Mid-Flood	IS17	Cloudy	Moderate	16:24	9.3	Surface	1	1	23.7	7.9	24.2	7	7.9	3
TMCLKL	HY/2012/08	2019-04-17	Mid-Flood	IS17	Cloudy	Moderate	16:24	9.3	Surface	1	2	23.7	7.9	24.2	7	7.9	3.6
TMCLKL	HY/2012/08	2019-04-17	Mid-Flood	IS17	Cloudy	Moderate	16:24	9.3	Middle	2	1	23.7	7.9	24.5	7	6.7	5.4
TMCLKL	HY/2012/08	2019-04-17	Mid-Flood	IS17	Cloudy	Moderate	16:24	9.3	Middle	2	2	23.7	7.9	24.5	7	6.7	5.8
TMCLKL	HY/2012/08	2019-04-17	Mid-Flood	IS17	Cloudy	Moderate	16:24	9.3	Bottom	3	1	23.9	8	23.8	7	4.8	6.8
TMCLKL	HY/2012/08	2019-04-17	Mid-Flood	IS17	Cloudy	Moderate	16:24	9.3	Bottom	3	2	23.8	8	23.9	7	5.1	5.2
TMCLKL	HY/2012/08	2019-04-19	Mid-Ebb	IS(Mf)11	Rainy	Moderate	12:29	11.2	Surface	1	1	24.4	8.3	22.7	6.9	10.7	8.2
TMCLKL	HY/2012/08	2019-04-19	Mid-Ebb	IS(Mf)11	Rainy	Moderate	12:29	11.2	Surface	1	2	24.4	8.3	22.7	6.9	10.6	9.1
TMCLKL	HY/2012/08	2019-04-19	Mid-Ebb	IS(Mf)11	Rainy	Moderate	12:29	11.2	Middle	2	1	24.3	8.4	22.6	7	8.3	10.9
TMCLKL	HY/2012/08	2019-04-19	Mid-Ebb	IS(Mf)11	Rainy	Moderate	12:29	11.2	Middle	2	2	24.3	8.4	22.7	7	8.2	11.3
TMCLKL	HY/2012/08	2019-04-19	Mid-Ebb	IS(Mf)11	Rainy	Moderate	12:29	11.2	Bottom	3	1	24.3	8.4	23.5	6.9	17.6	15.1
TMCLKL	HY/2012/08	2019-04-19	Mid-Ebb	IS(Mf)11	Rainy	Moderate	12:29	11.2	Bottom	3	2	24.3	8.4	23.5	6.9	17.6	14.1
TMCLKL	HY/2012/08	2019-04-19	Mid-Ebb	SR7	Rainy	Moderate	12:20	4.3	Surface	1	1	24.5	8.3	21.2	7	17.1	7.2
TMCLKL	HY/2012/08	2019-04-19	Mid-Ebb	SR7	Rainy	Moderate	12:20	4.3	Surface	1	2	24.5	8.3	21.2	7	17	7.2
TMCLKL	HY/2012/08	2019-04-19	Mid-Ebb	SR7	Rainy	Moderate	12:20	4.3	Middle	2	1						
TMCLKL	HY/2012/08	2019-04-19	Mid-Ebb	SR7	Rainy	Moderate	12:20	4.3	Middle	2	2						
TMCLKL	HY/2012/08	2019-04-19	Mid-Ebb	SR7	Rainy	Moderate	12:20	4.3	Bottom	3	1	24.3	8.4	23.9	6.9	10	14.8
TMCLKL	HY/2012/08	2019-04-19	Mid-Ebb	SR7	Rainy	Moderate	12:20	4.3	Bottom	3	2	24.3	8.4	23.9	6.9	10	14.6
TMCLKL	HY/2012/08	2019-04-19	Mid-Ebb	IS17	Rainy	Moderate	13:26	10.2	Surface	1	1	23.6	8.4	23.3	7.1	7.5	11.1
TMCLKL	HY/2012/08	2019-04-19	Mid-Ebb	IS17	Rainy	Moderate	13:26	10.2	Surface	1	2	23.7	8.4	23.3	7.1	7.5	11.9
TMCLKL	HY/2012/08	2019-04-19	Mid-Ebb	IS17	Rainy	Moderate	13:26	10.2	Middle	2	1	23.8	8.4	23.4	6.9	8.8	11.7
TMCLKL	HY/2012/08	2019-04-19	Mid-Ebb	IS17	Rainy	Moderate	13:26	10.2	Middle	2	2	23.8	8.4	23.4	6.9	8.7	11.7
TMCLKL	HY/2012/08	2019-04-19	Mid-Ebb	IS17	Rainy	Moderate	13:26	10.2	Bottom	3	1	23.9	8.4	23.7	6.9	13.8	11.3
TMCLKL	HY/2012/08	2019-04-19	Mid-Ebb	IS17	Rainy	Moderate	13:26	10.2	Bottom	3	2	23.9	8.4	23.7	6.9	13.8	11.6
TMCLKL	HY/2012/08	2019-04-19	Mid-Flood	IS(Mf)11	Rainy	Moderate	19:09	10.8	Surface	1	1	23.5	8.4	22.3	7.1	11.1	10
TMCLKL	HY/2012/08	2019-04-19	Mid-Flood	IS(Mf)11	Rainy	Moderate	19:09	10.8	Surface	1	2	23.5	8.4	22.3	7.1	11.1	9
TMCLKL	HY/2012/08	2019-04-19	Mid-Flood	IS(Mf)11	Rainy	Moderate	19:09	10.8	Middle	2	1	23.5	8.4	22.2	7.1	9.2	11.2
TMCLKL	HY/2012/08	2019-04-19	Mid-Flood	IS(Mf)11	Rainy	Moderate	19:09	10.8	Middle	2	2	23.5	8.4	22.2	7.1	9.1	10.2
TMCLKL	HY/2012/08	2019-04-19	Mid-Flood	IS(Mf)11	Rainy	Moderate	19:09	10.8	Bottom	3	1	23.5	8.4	22.2	7.1	9.1	14.8
TMCLKL	HY/2012/08	2019-04-19	Mid-Flood	IS(Mf)11	Rainy	Moderate	19:09	10.8	Bottom	3	2	23.5	8.4	22.2	7.1	9.1	15.8
TMCLKL	HY/2012/08	2019-04-19	Mid-Flood	SR7	Rainy	Moderate	19:18	4	Surface	1	1	23.6	8.4	22.9	7	9.5	14.4
TMCLKL	HY/2012/08	2019-04-19	Mid-Flood	SR7	Rainy	Moderate	19:18	4	Surface	1	2	23.6	8.4	22.9	7	9.6	13.4
TMCLKL	HY/2012/08	2019-04-19	Mid-Flood	SR7	Rainy	Moderate	19:18	4	Middle	2	1						
TMCLKL	HY/2012/08	2019-04-19	Mid-Flood	SR7	Rainy	Moderate	19:18	4	Middle	2	2						
TMCLKL	HY/2012/08	2019-04-19	Mid-Flood	SR7	Rainy	Moderate	19:18	4	Bottom	3	1	23.6	8.4	23.1	7	13.8	13.1
TMCLKL	HY/2012/08	2019-04-19	Mid-Flood	SR7	Rainy	Moderate	19:18	4	Bottom	3	2	23.6	8.4	23.1	7	13.8	12.2
TMCLKL	HY/2012/08	2019-04-19	Mid-Flood	IS17	Rainy	Moderate	18:13	9.8	Surface	1	1	23.2	8.4	23.3	7.3	13	8.2
TMCLKL	HY/2012/08	2019-04-19	Mid-Flood	IS17	Rainy	Moderate	18:13	9.8	Surface	1	2	23.3	8.4	23.2	7.3	13	8.5
TMCLKL	HY/2012/08	2019-04-19	Mid-Flood	IS17	Rainy	Moderate	18:13	9.8	Middle	2	1	23.5	8.4	23.7	7	9.7	9.5
TMCLKL	HY/2012/08	2019-04-19	Mid-Flood	IS17	Rainy	Moderate	18:13	9.8	Middle	2	2	23.6	8.4	23.6	7	9.7	9.9
TMCLKL	HY/2012/08	2019-04-19	Mid-Flood	IS17	Rainy	Moderate	18:13	9.8	Bottom	3	1	23.4	8.4	22.9	7	6.7	16.6
TMCLKL	HY/2012/08	2019-04-19	Mid-Flood	IS17	Rainy	Moderate	18:13	9.8	Bottom	3	2	23.4	8.4	22.9	7	6.7	16.6
TMCLKL	HY/2012/08	2019-04-22	Mid-Ebb	IS(Mf)11	Fine	Moderate	15:03	11.8	Surface	1	1	25.3	8.1	16.4	6.6	5.3	4.1
TMCLKL	HY/2012/08	2019-04-22	Mid-Ebb	IS(Mf)11	Fine	Moderate	15:03	11.8	Surface	1	2	25.4	8.1	16.3	6.6	5.2	4.2
TMCLKL	HY/2012/08	2019-04-22	Mid-Ebb	IS(Mf)11	Fine	Moderate	15:03	11.8	Middle	2	1	25.1	8.1	16.4	6.6	4.6	2.9
TMCLKL	HY/2012/08	2019-04-22	Mid-Ebb	IS(Mf)11	Fine	Moderate	15:03	11.8	Middle	2	2	25.1	8.1	16.4	6.6	4.4	3.8
TMCLKL	HY/2012/08	2019-04-22	Mid-Ebb	IS(Mf)11	Fine	Moderate	15:03	11.8	Bottom	3	1	25	8.1	16.5	6.7	4.5	4.4
TMCLKL	HY/2012/08	2019-04-22	Mid-Ebb	IS(Mf)11	Fine	Moderate	15:03	11.8	Bottom	3	2	25.1	8.1	16.5	6.6	4.5	4.6
TMCLKL	HY/2012/08	2019-04-22	Mid-Ebb	SR7	Fine	Moderate	15:08	4.5	Surface	1	1	25.2	8.1	16.6	6.6	5.8	6.7
TMCLKL	HY/2012/08	2019-04-22	Mid-Ebb	SR7	Fine	Moderate	15:08	4.5	Surface	1	2	25.2	8.1	16.6	6.6	5.8	5.8

Project	Works	Date	Tide	Stat	Weather	Sea Condition	Time	Water Depth	Level	Lev_Cod	Replicate	Temp(°C)	pH	Salinity(ppt)	DO(mg/L)	Turbidity(NTU)	SS(mg/L)
TMCLKL	HY/2012/08	2019-04-22	Mid-Ebb	SR7	Fine	Moderate	15:08	4.5	Middle	2	1						
TMCLKL	HY/2012/08	2019-04-22	Mid-Ebb	SR7	Fine	Moderate	15:08	4.5	Middle	2	2						
TMCLKL	HY/2012/08	2019-04-22	Mid-Ebb	SR7	Fine	Moderate	15:08	4.5	Bottom	3	1	25.2	8.1	17.4	6.5	7.7	15
TMCLKL	HY/2012/08	2019-04-22	Mid-Ebb	SR7	Fine	Moderate	15:08	4.5	Bottom	3	2	25.1	8.1	17.4	6.5	7.9	14
TMCLKL	HY/2012/08	2019-04-22	Mid-Ebb	IS17	Fine	Moderate	14:02	9.3	Surface	1	1	25.2	8	15.4	6.5	7	3.3
TMCLKL	HY/2012/08	2019-04-22	Mid-Ebb	IS17	Fine	Moderate	14:02	9.3	Surface	1	2	25.2	8	15.4	6.5	7.1	3.9
TMCLKL	HY/2012/08	2019-04-22	Mid-Ebb	IS17	Fine	Moderate	14:02	9.3	Middle	2	1	25.1	8	15.4	6.5	3.8	3.8
TMCLKL	HY/2012/08	2019-04-22	Mid-Ebb	IS17	Fine	Moderate	14:02	9.3	Middle	2	2	25.1	8	15.4	6.4	3.9	2.7
TMCLKL	HY/2012/08	2019-04-22	Mid-Ebb	IS17	Fine	Moderate	14:02	9.3	Bottom	3	1	25.1	8	14.9	6.5	3.7	3.5
TMCLKL	HY/2012/08	2019-04-22	Mid-Ebb	IS17	Fine	Moderate	14:02	9.3	Bottom	3	2	25.1	8	14.9	6.5	3.7	3.6
TMCLKL	HY/2012/08	2019-04-22	Mid-Flood	IS(Mf)11	Cloudy	Moderate	08:18	11.3	Surface	1	1	24.2	8.2	16.9	6.7	5.5	5.8
TMCLKL	HY/2012/08	2019-04-22	Mid-Flood	IS(Mf)11	Cloudy	Moderate	08:18	11.3	Surface	1	2	24.2	8.2	16.9	6.7	5.5	5.9
TMCLKL	HY/2012/08	2019-04-22	Mid-Flood	IS(Mf)11	Cloudy	Moderate	08:18	11.3	Middle	2	1	24.1	8.2	16.9	6.7	5.6	5.5
TMCLKL	HY/2012/08	2019-04-22	Mid-Flood	IS(Mf)11	Cloudy	Moderate	08:18	11.3	Middle	2	2	24.1	8.2	16.9	6.7	5.6	5.2
TMCLKL	HY/2012/08	2019-04-22	Mid-Flood	IS(Mf)11	Cloudy	Moderate	08:18	11.3	Bottom	3	1	24.2	8.2	17.9	6.9	10.1	12.7
TMCLKL	HY/2012/08	2019-04-22	Mid-Flood	IS(Mf)11	Cloudy	Moderate	08:18	11.3	Bottom	3	2	24.2	8.2	17.9	6.8	10.1	13.3
TMCLKL	HY/2012/08	2019-04-22	Mid-Flood	SR7	Cloudy	Moderate	08:12	4.7	Surface	1	1	24.2	8.2	16.3	6.8	5.1	4.5
TMCLKL	HY/2012/08	2019-04-22	Mid-Flood	SR7	Cloudy	Moderate	08:12	4.7	Surface	1	2	24.2	8.2	16.3	6.8	5	5.1
TMCLKL	HY/2012/08	2019-04-22	Mid-Flood	SR7	Cloudy	Moderate	08:12	4.7	Middle	2	1						
TMCLKL	HY/2012/08	2019-04-22	Mid-Flood	SR7	Cloudy	Moderate	08:12	4.7	Middle	2	2						
TMCLKL	HY/2012/08	2019-04-22	Mid-Flood	SR7	Cloudy	Moderate	08:12	4.7	Bottom	3	1	24.2	8.2	18	7	15.4	29.1
TMCLKL	HY/2012/08	2019-04-22	Mid-Flood	SR7	Cloudy	Moderate	08:12	4.7	Bottom	3	2	24.2	8.2	18	6.9	15.5	28.6
TMCLKL	HY/2012/08	2019-04-22	Mid-Flood	IS17	Cloudy	Moderate	09:15	9.4	Surface	1	1	24.7	8.2	16.4	6.8	4.7	2.2
TMCLKL	HY/2012/08	2019-04-22	Mid-Flood	IS17	Cloudy	Moderate	09:15	9.4	Surface	1	2	24.7	8.2	16.4	6.7	4.6	2.8
TMCLKL	HY/2012/08	2019-04-22	Mid-Flood	IS17	Cloudy	Moderate	09:15	9.4	Middle	2	1	24.8	8.3	16.1	6.8	4.3	3.9
TMCLKL	HY/2012/08	2019-04-22	Mid-Flood	IS17	Cloudy	Moderate	09:15	9.4	Middle	2	2	24.8	8.3	16.1	6.8	4.3	2.9
TMCLKL	HY/2012/08	2019-04-22	Mid-Flood	IS17	Cloudy	Moderate	09:15	9.4	Bottom	3	1	24.9	8.3	16.9	6.9	3.9	3.7
TMCLKL	HY/2012/08	2019-04-22	Mid-Flood	IS17	Cloudy	Moderate	09:15	9.4	Bottom	3	2	24.9	8.3	16.9	6.9	4.2	2.8
TMCLKL	HY/2012/08	2019-04-24	Mid-Ebb	IS(Mf)11	Fine	Moderate	15:28	12.6	Surface	1	1	24.8	7.8	15.5	6.3	3.2	2.4
TMCLKL	HY/2012/08	2019-04-24	Mid-Ebb	IS(Mf)11	Fine	Moderate	15:28	12.6	Surface	1	2	24.8	7.8	15.5	6.3	3.2	2.3
TMCLKL	HY/2012/08	2019-04-24	Mid-Ebb	IS(Mf)11	Fine	Moderate	15:28	12.6	Middle	2	1	25	7.8	16	6.4	3.2	4.8
TMCLKL	HY/2012/08	2019-04-24	Mid-Ebb	IS(Mf)11	Fine	Moderate	15:28	12.6	Middle	2	2	25	7.8	16	6.4	3.2	5
TMCLKL	HY/2012/08	2019-04-24	Mid-Ebb	IS(Mf)11	Fine	Moderate	15:28	12.6	Bottom	3	1	23.8	7.8	25.3	5.9	4.2	5.4
TMCLKL	HY/2012/08	2019-04-24	Mid-Ebb	IS(Mf)11	Fine	Moderate	15:28	12.6	Bottom	3	2	23.8	7.8	25.3	5.9	4.2	4.8
TMCLKL	HY/2012/08	2019-04-24	Mid-Ebb	SR7	Fine	Moderate	15:19	5.8	Surface	1	1	25.4	7.8	13.8	6.8	2.4	3.2
TMCLKL	HY/2012/08	2019-04-24	Mid-Ebb	SR7	Fine	Moderate	15:19	5.8	Surface	1	2	25.4	7.8	13.8	6.8	2.4	4.1
TMCLKL	HY/2012/08	2019-04-24	Mid-Ebb	SR7	Fine	Moderate	15:19	5.8	Middle	2	1						
TMCLKL	HY/2012/08	2019-04-24	Mid-Ebb	SR7	Fine	Moderate	15:19	5.8	Middle	2	2						
TMCLKL	HY/2012/08	2019-04-24	Mid-Ebb	SR7	Fine	Moderate	15:19	5.8	Bottom	3	1	24.7	7.8	16.8	6.4	5.3	3.8
TMCLKL	HY/2012/08	2019-04-24	Mid-Ebb	SR7	Fine	Moderate	15:19	5.8	Bottom	3	2	24.7	7.8	16.8	6.4	5.3	2.6
TMCLKL	HY/2012/08	2019-04-24	Mid-Ebb	IS17	Fine	Moderate	15:09	12.1	Surface	1	1	25.1	7.8	15.5	6.5	3.4	4.2
TMCLKL	HY/2012/08	2019-04-24	Mid-Ebb	IS17	Fine	Moderate	15:09	12.1	Surface	1	2	25.1	7.8	15.5	6.5	3.4	5
TMCLKL	HY/2012/08	2019-04-24	Mid-Ebb	IS17	Fine	Moderate	15:09	12.1	Middle	2	1	24.4	7.9	20.8	6.2	5.6	5
TMCLKL	HY/2012/08	2019-04-24	Mid-Ebb	IS17	Fine	Moderate	15:09	12.1	Middle	2	2	24.4	7.9	20.8	6.2	5.6	5.8
TMCLKL	HY/2012/08	2019-04-24	Mid-Ebb	IS17	Fine	Moderate	15:09	12.1	Bottom	3	1	23.7	7.9	26.4	6.1	2.1	7.7
TMCLKL	HY/2012/08	2019-04-24	Mid-Ebb	IS17	Fine	Moderate	15:09	12.1	Bottom	3	2	23.7	7.9	26.4	6.1	2.1	6.4
TMCLKL	HY/2012/08	2019-04-24	Mid-Flood	IS(Mf)11	Fine	Moderate	09:10	11.5	Surface	1	1	25	8.2	15.9	6.6	2.8	3.1
TMCLKL	HY/2012/08	2019-04-24	Mid-Flood	IS(Mf)11	Fine	Moderate	09:10	11.5	Surface	1	2	25	8.2	15.9	6.6	2.8	3.4
TMCLKL	HY/2012/08	2019-04-24	Mid-Flood	IS(Mf)11	Fine	Moderate	09:10	11.5	Middle	2	1	25	8.1	15.4	6.6	3.6	3
TMCLKL	HY/2012/08	2019-04-24	Mid-Flood	IS(Mf)11	Fine	Moderate	09:10	11.5	Middle	2	2	25	8.1	15.4	6.6	3.6	3.6
TMCLKL	HY/2012/08	2019-04-24	Mid-Flood	IS(Mf)11	Fine	Moderate	09:10	11.5	Bottom	3	1	25.1	7.9	16.1	6.6	3.6	3.9
TMCLKL	HY/2012/08	2019-04-24	Mid-Flood	IS(Mf)11	Fine	Moderate	09:10	11.5	Bottom	3	2	25.1	7.9	16.1	6.6	3.6	3.3
TMCLKL	HY/2012/08	2019-04-24	Mid-Flood	SR7	Fine	Moderate	09:05	5.4	Surface	1	1	25	8	13.4	6.6	3.1	3.2
TMCLKL	HY/2012/08	2019-04-24	Mid-Flood	SR7	Fine	Moderate	09:05	5.4	Surface	1	2	25	8	13.4	6.6	3.1	3.5
TMCLKL	HY/2012/08	2019-04-24	Mid-Flood	SR7	Fine	Moderate	09:05	5.4	Middle	2	1						
TMCLKL	HY/2012/08	2019-04-24	Mid-Flood	SR7	Fine	Moderate	09:05	5.4	Middle	2	2						
TMCLKL	HY/2012/08	2019-04-24	Mid-Flood	SR7	Fine	Moderate	09:05	5.4	Bottom	3	1	25	7.8	13.9	6.7	2.8	3.1
TMCLKL	HY/2012/08	2019-04-24	Mid-Flood	SR7	Fine	Moderate	09:05	5.4	Bottom	3	2	25	7.8	13.9	6.7	2.8	4.2

Project	Works	Date	Tide	Stat	Weather	Sea Condition	Time	Water Depth	Level	Lev_Cod	Replicate	Temp(°C)	pH	Salinity(ppt)	DO(mg/L)	Turbidity(NTU)	SS(mg/L)
TMCLKL	HY/2012/08	2019-04-24	Mid-Flood	IS17	Fine	Moderate	10:06	9.4	Surface	1	1	25.3	8.2	16.3	6.5	4.7	3.2
TMCLKL	HY/2012/08	2019-04-24	Mid-Flood	IS17	Fine	Moderate	10:06	9.4	Surface	1	2	25.3	8.2	16.3	6.5	4.7	4.1
TMCLKL	HY/2012/08	2019-04-24	Mid-Flood	IS17	Fine	Moderate	10:06	9.4	Middle	2	1	25.4	8.1	15.8	6.5	4.1	5
TMCLKL	HY/2012/08	2019-04-24	Mid-Flood	IS17	Fine	Moderate	10:06	9.4	Middle	2	2	25.4	8.1	15.8	6.5	4.1	4.6
TMCLKL	HY/2012/08	2019-04-24	Mid-Flood	IS17	Fine	Moderate	10:06	9.4	Bottom	3	1	25.5	7.9	15.8	6.7	4.8	5.6
TMCLKL	HY/2012/08	2019-04-24	Mid-Flood	IS17	Fine	Moderate	10:06	9.4	Bottom	3	2	25.5	7.9	15.8	6.7	4.8	5.2
TMCLKL	HY/2012/08	2019-04-26	Mid-Ebb	IS(Mf)11	Fine	Moderate	17:03	10.9	Surface	1	1	26.5	8	13.8	7.8	3.3	5.3
TMCLKL	HY/2012/08	2019-04-26	Mid-Ebb	IS(Mf)11	Fine	Moderate	17:03	10.9	Surface	1	2	26.7	8	13.8	7.8	3.3	4.7
TMCLKL	HY/2012/08	2019-04-26	Mid-Ebb	IS(Mf)11	Fine	Moderate	17:03	10.9	Middle	2	1	26.3	7.9	15.3	7.3	4.9	3.9
TMCLKL	HY/2012/08	2019-04-26	Mid-Ebb	IS(Mf)11	Fine	Moderate	17:03	10.9	Middle	2	2	26.3	7.9	15.3	7.3	4.8	4.9
TMCLKL	HY/2012/08	2019-04-26	Mid-Ebb	IS(Mf)11	Fine	Moderate	17:03	10.9	Bottom	3	1	26	7.9	16.5	7	3.8	5.5
TMCLKL	HY/2012/08	2019-04-26	Mid-Ebb	IS(Mf)11	Fine	Moderate	17:03	10.9	Bottom	3	2	26.4	8	16.3	7.1	3.7	5.3
TMCLKL	HY/2012/08	2019-04-26	Mid-Ebb	SR7	Fine	Moderate	18:00	5.3	Surface	1	1	27.1	8.1	12.9	8.3	2.6	2.5
TMCLKL	HY/2012/08	2019-04-26	Mid-Ebb	SR7	Fine	Moderate	18:00	5.3	Surface	1	2	27.1	8.1	12.9	8.2	2.5	3.5
TMCLKL	HY/2012/08	2019-04-26	Mid-Ebb	SR7	Fine	Moderate	18:00	5.3	Middle	2	1						
TMCLKL	HY/2012/08	2019-04-26	Mid-Ebb	SR7	Fine	Moderate	18:00	5.3	Middle	2	2						
TMCLKL	HY/2012/08	2019-04-26	Mid-Ebb	SR7	Fine	Moderate	18:00	5.3	Bottom	3	1	27.1	8.1	12.9	8.3	2.6	3.6
TMCLKL	HY/2012/08	2019-04-26	Mid-Ebb	SR7	Fine	Moderate	18:00	5.3	Bottom	3	2	27.1	8.1	12.9	8.3	2.5	4.2
TMCLKL	HY/2012/08	2019-04-26	Mid-Ebb	IS17	Fine	Moderate	16:55	11.4	Surface	1	1	26.6	8.1	14.5	8.2	3.3	4.6
TMCLKL	HY/2012/08	2019-04-26	Mid-Ebb	IS17	Fine	Moderate	16:55	11.4	Surface	1	2	26.5	8.1	14.5	8.2	3.4	5.4
TMCLKL	HY/2012/08	2019-04-26	Mid-Ebb	IS17	Fine	Moderate	16:55	11.4	Middle	2	1	26.3	8	16.4	7.5	3.1	4.3
TMCLKL	HY/2012/08	2019-04-26	Mid-Ebb	IS17	Fine	Moderate	16:55	11.4	Middle	2	2	26.3	8	16.4	7.5	2.9	4.1
TMCLKL	HY/2012/08	2019-04-26	Mid-Ebb	IS17	Fine	Moderate	16:55	11.4	Bottom	3	1	26.3	8	17.3	7.5	2.9	2.8
TMCLKL	HY/2012/08	2019-04-26	Mid-Ebb	IS17	Fine	Moderate	16:55	11.4	Bottom	3	2	26.4	8	17.2	7.5	2.7	2.7
TMCLKL	HY/2012/08	2019-04-26	Mid-Flood	IS(Mf)11	Cloudy	Moderate	06:31	11.1	Surface	1	1	25.6	7.6	8.5	6.8	6	4.7
TMCLKL	HY/2012/08	2019-04-26	Mid-Flood	IS(Mf)11	Cloudy	Moderate	06:31	11.1	Surface	1	2	25.6	7.6	8.5	6.8	5.9	4.9
TMCLKL	HY/2012/08	2019-04-26	Mid-Flood	IS(Mf)11	Cloudy	Moderate	06:31	11.1	Middle	2	1	25.7	7.7	10.5	6.8	6.5	4.2
TMCLKL	HY/2012/08	2019-04-26	Mid-Flood	IS(Mf)11	Cloudy	Moderate	06:31	11.1	Middle	2	2	25.7	7.7	10.5	6.8	6.6	3.2
TMCLKL	HY/2012/08	2019-04-26	Mid-Flood	IS(Mf)11	Cloudy	Moderate	06:31	11.1	Bottom	3	1	25.9	7.7	10.9	7	5.2	2.9
TMCLKL	HY/2012/08	2019-04-26	Mid-Flood	IS(Mf)11	Cloudy	Moderate	06:31	11.1	Bottom	3	2	25.8	7.7	10.9	6.9	5.2	3.4
TMCLKL	HY/2012/08	2019-04-26	Mid-Flood	SR7	Cloudy	Moderate	05:25	5.2	Surface	1	1	25.6	7.7	8.1	7	5.2	4.2
TMCLKL	HY/2012/08	2019-04-26	Mid-Flood	SR7	Cloudy	Moderate	05:25	5.2	Surface	1	2	25.6	7.7	8.1	7	5.3	3.2
TMCLKL	HY/2012/08	2019-04-26	Mid-Flood	SR7	Cloudy	Moderate	05:25	5.2	Middle	2	1						
TMCLKL	HY/2012/08	2019-04-26	Mid-Flood	SR7	Cloudy	Moderate	05:25	5.2	Middle	2	2						
TMCLKL	HY/2012/08	2019-04-26	Mid-Flood	SR7	Cloudy	Moderate	05:25	5.2	Bottom	3	1	25.6	7.7	10.2	7	5.5	4.9
TMCLKL	HY/2012/08	2019-04-26	Mid-Flood	SR7	Cloudy	Moderate	05:25	5.2	Bottom	3	2	25.6	7.7	10.2	7	5.4	4.7
TMCLKL	HY/2012/08	2019-04-26	Mid-Flood	IS17	Cloudy	Moderate	06:38	11.2	Surface	1	1	25.7	7.8	11.7	7	8.3	3.8
TMCLKL	HY/2012/08	2019-04-26	Mid-Flood	IS17	Cloudy	Moderate	06:38	11.2	Surface	1	2	25.7	7.8	11.7	7	8.2	2.8
TMCLKL	HY/2012/08	2019-04-26	Mid-Flood	IS17	Cloudy	Moderate	06:38	11.2	Middle	2	1	25.7	7.8	14.5	6.9	13	3.4
TMCLKL	HY/2012/08	2019-04-26	Mid-Flood	IS17	Cloudy	Moderate	06:38	11.2	Middle	2	2	25.7	7.8	14.5	6.9	13.2	2.4
TMCLKL	HY/2012/08	2019-04-26	Mid-Flood	IS17	Cloudy	Moderate	06:38	11.2	Bottom	3	1	25.7	7.7	15.3	6.9	4.3	2.6
TMCLKL	HY/2012/08	2019-04-26	Mid-Flood	IS17	Cloudy	Moderate	06:38	11.2	Bottom	3	2	25.6	7.7	15.4	6.9	4.3	3.6
TMCLKL	HY/2012/08	2019-04-29	Mid-Ebb	IS(Mf)11	Cloudy	Moderate	10:07	11.3	Surface	1	1	25.2	8	12	7.9	3.2	4.6
TMCLKL	HY/2012/08	2019-04-29	Mid-Ebb	IS(Mf)11	Cloudy	Moderate	10:07	11.3	Surface	1	2	25.2	8	12	7.9	3.4	3.7
TMCLKL	HY/2012/08	2019-04-29	Mid-Ebb	IS(Mf)11	Cloudy	Moderate	10:07	11.3	Middle	2	1	25.1	8.1	12.6	7.8	3.5	3.6
TMCLKL	HY/2012/08	2019-04-29	Mid-Ebb	IS(Mf)11	Cloudy	Moderate	10:07	11.3	Middle	2	2	25.2	8.1	12.6	7.9	3.5	4.4
TMCLKL	HY/2012/08	2019-04-29	Mid-Ebb	IS(Mf)11	Cloudy	Moderate	10:07	11.3	Bottom	3	1	24.9	8	16.2	7.6	3.1	4.8
TMCLKL	HY/2012/08	2019-04-29	Mid-Ebb	IS(Mf)11	Cloudy	Moderate	10:07	11.3	Bottom	3	2	24.9	8	16.2	7.6	3	4
TMCLKL	HY/2012/08	2019-04-29	Mid-Ebb	SR7	Cloudy	Moderate	10:02	4.6	Surface	1	1	25.1	8.1	12.4	7.9	1.8	3.8
TMCLKL	HY/2012/08	2019-04-29	Mid-Ebb	SR7	Cloudy	Moderate	10:02	4.6	Surface	1	2	25	8.1	12.4	7.9	1.8	3.1
TMCLKL	HY/2012/08	2019-04-29	Mid-Ebb	SR7	Cloudy	Moderate	10:02	4.6	Middle	2	1						
TMCLKL	HY/2012/08	2019-04-29	Mid-Ebb	SR7	Cloudy	Moderate	10:02	4.6	Middle	2	2						
TMCLKL	HY/2012/08	2019-04-29	Mid-Ebb	SR7	Cloudy	Moderate	10:02	4.6	Bottom	3	1	25.2	8.1	12.7	7.9	1.8	3.4
TMCLKL	HY/2012/08	2019-04-29	Mid-Ebb	SR7	Cloudy	Moderate	10:02	4.6	Bottom	3	2	25.2	8.1	12.7	7.9	1.8	2.5
TMCLKL	HY/2012/08	2019-04-29	Mid-Ebb	IS17	Cloudy	Moderate	10:59	11	Surface	1	1	25.2	8.1	17.3	8.1	3.2	4.7
TMCLKL	HY/2012/08	2019-04-29	Mid-Ebb	IS17	Cloudy	Moderate	10:59	11	Surface	1	2	25.2	8.1	17.3	8.1	3.3	3.6
TMCLKL	HY/2012/08	2019-04-29	Mid-Ebb	IS17	Cloudy	Moderate	10:59	11	Middle	2	1	25.4	8.1	17.5	8.1	2.9	5.1
TMCLKL	HY/2012/08	2019-04-29	Mid-Ebb	IS17	Cloudy	Moderate	10:59	11	Middle	2	2	25.3	8.1	17.5	8.1	2.9	4.3

Project	Works	Date	Tide	Stat	Weather	Sea Condition	Time	Water Depth	Level	Lev_Cod	Replicate	Temp(°C)	pH	Salinity(ppt)	DO(mg/L)	Turbidity(NTU)	SS(mg/L)
TMCLKL	HY/2012/08	2019-04-29	Mid-Ebb	IS17	Cloudy	Moderate	10:59	11	Bottom	3	1	25.6	8.1	16.9	8	3.1	5
TMCLKL	HY/2012/08	2019-04-29	Mid-Ebb	IS17	Cloudy	Moderate	10:59	11	Bottom	3	2	25.4	8.1	16.9	8.1	2.3	4
TMCLKL	HY/2012/08	2019-04-29	Mid-Flood	IS(Mf)11	Cloudy	Moderate	15:03	12.8	Surface	1	1	25.7	8.1	19.6	7.9	9.3	6.5
TMCLKL	HY/2012/08	2019-04-29	Mid-Flood	IS(Mf)11	Cloudy	Moderate	15:03	12.8	Surface	1	2	25.5	8.1	19.6	7.9	9.4	6.6
TMCLKL	HY/2012/08	2019-04-29	Mid-Flood	IS(Mf)11	Cloudy	Moderate	15:03	12.8	Middle	2	1	25	7.9	23	5.9	10	6
TMCLKL	HY/2012/08	2019-04-29	Mid-Flood	IS(Mf)11	Cloudy	Moderate	15:03	12.8	Middle	2	2	25	7.9	23	6	9.6	5
TMCLKL	HY/2012/08	2019-04-29	Mid-Flood	IS(Mf)11	Cloudy	Moderate	15:03	12.8	Bottom	3	1	24.5	7.8	29.1	5.7	11.1	3
TMCLKL	HY/2012/08	2019-04-29	Mid-Flood	IS(Mf)11	Cloudy	Moderate	15:03	12.8	Bottom	3	2	24.5	7.8	28.9	5.7	11.6	2
TMCLKL	HY/2012/08	2019-04-29	Mid-Flood	SR7	Cloudy	Moderate	15:12	4.6	Surface	1	1	26	8.2	18.5	8.3	9.9	6.4
TMCLKL	HY/2012/08	2019-04-29	Mid-Flood	SR7	Cloudy	Moderate	15:12	4.6	Surface	1	2	25.9	8.2	18.6	8.2	10.4	6.9
TMCLKL	HY/2012/08	2019-04-29	Mid-Flood	SR7	Cloudy	Moderate	15:12	4.6	Middle	2	1						
TMCLKL	HY/2012/08	2019-04-29	Mid-Flood	SR7	Cloudy	Moderate	15:12	4.6	Middle	2	2						
TMCLKL	HY/2012/08	2019-04-29	Mid-Flood	SR7	Cloudy	Moderate	15:12	4.6	Bottom	3	1	25.2	7.9	20.4	7	10.7	5.3
TMCLKL	HY/2012/08	2019-04-29	Mid-Flood	SR7	Cloudy	Moderate	15:12	4.6	Bottom	3	2	25.3	7.9	20.4	7	10.6	6.3
TMCLKL	HY/2012/08	2019-04-29	Mid-Flood	IS17	Cloudy	Moderate	14:06	11	Surface	1	1	26.4	8.4	17.3	10.4	10.2	8.9
TMCLKL	HY/2012/08	2019-04-29	Mid-Flood	IS17	Cloudy	Moderate	14:06	11	Surface	1	2	26.2	8.3	17.3	10.5	9.8	9.8
TMCLKL	HY/2012/08	2019-04-29	Mid-Flood	IS17	Cloudy	Moderate	14:06	11	Middle	2	1	25	7.9	22.3	6	10	6.5
TMCLKL	HY/2012/08	2019-04-29	Mid-Flood	IS17	Cloudy	Moderate	14:06	11	Middle	2	2	25	7.9	22.5	6	9.6	7.5
TMCLKL	HY/2012/08	2019-04-29	Mid-Flood	IS17	Cloudy	Moderate	14:06	11	Bottom	3	1	24.6	7.8	28	5.9	10.2	8.1
TMCLKL	HY/2012/08	2019-04-29	Mid-Flood	IS17	Cloudy	Moderate	14:06	11	Bottom	3	2	25	7.9	27.5	5.8	9.9	8.8

Appendix K

Event and Action Plan

Event and Action Plan for Impact Air Monitoring

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

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

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

Event & Action Plan for Impact Water Quality Monitoring

Event	ET Leader	IEC	SOR	Contractor
Action level being exceeded by one sampling day	<ol style="list-style-type: none"> Repeat <i>in situ</i> measurement on next day of exceedance to confirm findings; Identify source(s) of impact; Inform IEC, contractor and SOR; Check monitoring data, all plant, equipment and Contractor's working methods. 	<ol style="list-style-type: none"> Check monitoring data submitted by ET and Contractor's working methods. 	<ol style="list-style-type: none"> Confirm receipt of notification of non-compliance in writing; Notify Contractor. 	<ol style="list-style-type: none"> Inform the SOR and confirm notification of the non-compliance in writing; Rectify unacceptable practice; Amend working methods if appropriate.
Action level being exceeded by two or more consecutive sampling days	<ol style="list-style-type: none"> Repeat measurement on next day of exceedance to confirm findings; Identify source(s) of impact; Inform IEC, Contractor, SOR and EPD; Check monitoring data, all plant, equipment and Contractor's working methods; Discuss mitigation measures with IEC, SOR and Contractor; Ensure mitigation measures are implemented; Increase the monitoring frequency to daily until no exceedance of Action level; 	<ol style="list-style-type: none"> Check monitoring data submitted by ET and Contractor's working method; Discuss with ET and Contractor on possible remedial actions; Review the proposed mitigation measures submitted by Contractor and advise the SOR accordingly; Supervise the implementation of mitigation measures. 	<ol style="list-style-type: none"> Discuss with IEC on the proposed mitigation measures; Ensure mitigation measures are properly implemented; Assess the effectiveness of the implemented mitigation measures. 	<ol style="list-style-type: none"> Inform the Supervising Officer and confirm notification of the non-compliance in writing; Rectify unacceptable practice; Check all plant and equipment and consider changes of working methods; Submit proposal of additional mitigation measures to SOR within 3 working days of notification and discuss with ET, IEC and SOR; Implement the agreed mitigation measures.
Limit level being exceeded by one sampling day	<ol style="list-style-type: none"> Repeat measurement on next day of exceedance to confirm findings; 	<ol style="list-style-type: none"> Check monitoring data submitted by ET and 	<ol style="list-style-type: none"> Confirm receipt of notification of failure in 	<ol style="list-style-type: none"> Inform the SOR and confirm notification of the

Event	ET Leader	IEC	SOR	Contractor
	<ol style="list-style-type: none"> 2. Identify source(s) of impact; 3. Inform IEC, Contractor, SOR and EPD; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC, SOR and Contractor; 	<ol style="list-style-type: none"> Contractor's working method; 2. Discuss with ET and Contractor on possible remedial actions; 3. Review the proposed mitigation measures submitted by Contractor and advise the SOR accordingly. 	<ol style="list-style-type: none"> writing; 2. Discuss with IEC, ET and Contractor on the proposed mitigation measures; 3. Request Contractor to review the working methods. 	<ol style="list-style-type: none"> non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment and consider changes of working methods; 4. Submit proposal of mitigation measures to SOR within 3 working days of notification and discuss with ET, IEC and SOR.
Limit level being exceeded by two or more consecutive sampling days	<ol style="list-style-type: none"> 1. Repeat measurement on next day of exceedance to confirm findings; 2. Identify source(s) of impact; 3. Inform IEC, contractor, SOR and EPD; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC, SOR and Contractor; 6. Ensure mitigation measures are implemented; 7. Increase the monitoring frequency to daily until no exceedance of Limit level for two consecutive days; 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET and Contractor's working method; 2. Discuss with ET and Contractor on possible remedial actions; 3. Review the Contractor's mitigation measures whenever necessary to assure their effectiveness and advise the SOR accordingly; 4. Supervise the implementation of mitigation measures. 	<ol style="list-style-type: none"> 1. Discuss with IEC, ET and Contractor on the proposed mitigation measures; 2. Request Contractor to critically review the working methods; 3. Make agreement on the mitigation measures to be implemented; 4. Ensure mitigation measures are properly implemented; 5. Consider and instruct, if necessary, the Contractor to slow down or to stop all or part of the construction activities until no exceedance of Limit level. 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance; 2. Submit proposal of mitigation measures to SOR within 3 working days of notification and discuss with ET, IEC and SOR; 3. Implement the agreed mitigation measures; 4. Resubmit proposals of mitigation measures if problem still not under control; 5. As directed by the Supervising Officer, to slow down or to stop all or part of the construction activities until no exceedance of Limit level.

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

EVENT	ACTION			
	ET	IEC	SOR	Contractor
	<ol style="list-style-type: none"> 3. Identify source(s) of impact; 4. Inform the IEC, SOR and Contractor of findings; 5. Check monitoring data; 6. Repeat review to ensure all the dolphin protective measures are fully and properly implemented and advise on additional measures if necessary. 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. 	<p>Contractor the necessity of additional dolphin monitoring and any other potential mitigation measures.</p> <ol style="list-style-type: none"> 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. 5. Supervise / Audit the implementation of additional monitoring and/or any other mitigation measures and advise SOR the results and findings accordingly. 	<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"> 3. Supervise the implementation of additional monitoring and/or any other mitigation measures. 	<p>potential mitigation measures.</p> <ol style="list-style-type: none"> 3. Jointly submit with ET to IEC a proposal of additional dolphin monitoring and/or any other mitigation measures when necessary. 4. Implement the agreed additional dolphin monitoring and/or any other mitigation measures.

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

Appendix L

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

Table L1 *Cumulative Statistics on Exceedances*

Parameters	Level of Exceedance	Total No. recorded in this reporting month	Total No. recorded since Contract commencement
1-hr TSP	Action	0	89
	Limit	0	6
24-hr TSP	Action	0	9
	Limit	0	4
Water Quality	Action	0	20
	Limit	0	1
Impact Dolphin Monitoring	Action	0	11
	Limit	0	14

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

Reporting Period	Cumulative Statistics		
	Complaints	Notifications of Summons	Successful Prosecutions
This Reporting Month (April 2019)	0	0	0
Total No. received since Contract commencement	16	1	0

Appendix M

Waste Flow Table

Monthly Summary Waste Flow Table

Name of Department: HyD

Contract No. / Works Order No.: HY/2012/08

Monthly Summary Waste Flow Table for April 2019 [to be submitted not later than the 15th day of each month following reporting month] (All quantities shall be rounded off to 3 decimal places.)

Month	Monthly Break-down of <u>Inert</u> Construction & Demolition Materials (i.e. Public Fill Materials)				
	(a)=(b)+(c)+(d)+(e) Total Quantity Generated	(b) Hard Rock and Large Broken Concrete	(c) Reused in the Contract	(d) Reused in other Projects	(e) Disposed of as Public Fill
	(in '000 ton)	(in '000 ton)	(in '000 ton)	(in '000 ton)	(in '000 ton)
Sub-total	2224.407	0.000	76.754	585.369	1562.284
Jan-2019	299.831	0.000	53.419	215.427	30.985
Feb-2019	133.335	0.000	46.021	67.707	19.607
Mar-2019	129.158	0.000	50.455	20.964	57.739
Apr-2019	130.329	0.000	58.956	0.000	71.373
May-2019					
Jun-2019					
Half Year Sub-total	692.653	0.000	208.851	304.098	179.704
Jul-2019					
Aug-2019					
Sep-2019					
Oct-2019					
Nov-2019					
Dec-2019					
Project Total Quantities	2917.060	0.000	285.605	889.467	1741.988

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	6763.82	6763.82	7.74	7.74	8.70	8.70	60.35	60.35	13.989
Jan-2019	394.55	394.55	0.00	0.00	0.00	0.00	0.00	0.00	0.538
Feb-2019	103.72	103.72	0.62	0.62	0.00	0.00	1.672	1.672	0.578
Mar-2019	88.20	88.20	0.46	0.46	0.00	0.00	0.00	0.00	0.692
Apr-2019	260.89	260.89	0.00	0.00	3.90	3.90	1.045	1.045	0.707
May-2019									
Jun-2019									
Half Year Sub-total	847.36	847.36	1.08	1.08	3.90	3.90	2.717	2.717	2.036
Jul-2019									
Aug-2019									
Sep-2019									
Oct-2019									
Nov-2019									
Dec-2019									
Project Total Quantities	7611.18	7611.18	8.82	8.82	12.60	12.60	63.067	63.067	16.025

Forecast of Total Quantities of Construction and Demolition Materials to be Generated from the Contract*				
Total Quantity Generated	Hard Rock and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed of as Public Fill
(in '000 ton)	(in '000 ton)	(in '000 ton)	(in '000 ton)	(in '000 ton)
3200.000	0.000	300.000	1000.000	2000.000

Forecast of Total Quantities of Construction and Demolition Materials to be Generated from the Contract*				
Metals	Paper/ cardboard packaging	Plastics (see Note 3)	Chemical Waste	General Refuse disposed of at Landfill
(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000 ton)
8000.00	10.00	15.00	65.00	20.000

- Notes:
- (1) The performance targets are given in the **ER Appendix 8J Clause 14** and the EM & A Manual(s).
 - (2) The waste flow table shall also include C&D materials to be imported for use at the Site.
 - (3) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material.
 - (4) The Contractor shall also submit the latest forecast of the total amount of C&D materials expected to be generated from the Works, together with a breakdown of the nature where the amount of C&D materials expected to be generated from the Works is equal to or exceeding 50,000 m³. (**ER Part 8 Clause 8.8.5 (d) (ii)** refers).