

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

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

13 January 2016

Environmental Resources Management
16/F, Berkshire House
25 Westlands Road
Quarry Bay, Hong Kong
Telephone 2271 3000
Facsimile 2723 5660

www.erm.com

Ref.: HYDHZMBEEM00_0_3753L.16

14 January 2016

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

By Fax (2293 6300) and By Post

Attention: Messrs. Edwin Ching / Andy Westmoreland

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**

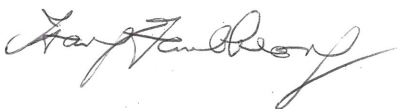
**Contract No. HY/2012/08 TM-CLKL Northern Connection Sub-sea
Tunnel Section
Monthly EM&A Report for December 2015 (EP-354/2009/D)**

Reference is made to the Monthly Environmental Monitoring and Audit (EM&A) Report (Dec. 2015) (ET's ref.: "0212330_26th Monthly EM&A_20160113.doc" dated 13 Jan. 2016) certified by the ET Leader and provided to us via e-mail on 13 Jan. 2016.

We are pleased to inform you that we have no adverse comments on the captioned monthly EM&A report. We write to verify the captioned submission in accordance with Condition 4.4 of EP-354/2009/D.

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

Yours sincerely,



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

c.c. HyD – Mr. Stephen Chan (By Fax: 3188 6614)
HyD – Mr. Matthew Fung (By Fax: 3188 6614)
AECOM – Mr. Conrad Ng (By Fax: 3922 9797)
ERM – Mr. Jovy Tam (By Fax: 2723 5660)
Dragages – Bouygues JV - Mr. C. F. Kwong (By Fax: 2293 7499)

Internal: DY, YH, LP, CL, ENPO Site

Q:\Projects\HYDHZMBEEM00\02_Proj_Mgt\02_Corr\HYDHZMBEEM00_0_3753L.16.docx

Contract No. HY/2012/08

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

Environmental Resources Management

16/F, Berkshire House
25 Westlands Road
Quarry Bay, Hong Kong
Telephone: (852) 2271 3000
Facsimile: (852) 2723 5660
E-mail: post.hk@erm.com
http://www.erm.com

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

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Client: DBJV		Project No: 0212330			
Summary: This document presents the Twenty-sixth Monthly EM&A Report for Tuen Mun – Chek Lap Kok Link Northern Connection Sub-sea Tunnel Section.		Date: 13 January 2016			
		Approved by: 			
		Mr Craig Reid Partner			
		Certified by: 			
		Mr Jovy Tam ET Leader			
	26 th Monthly EM&A Report	VAR	JT	CAR	13/01/16
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 Environ 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 Project commenced on 1 November 2013 and will tentatively be completed by the end of 2018. The impact monitoring of the EM&A programme, including air quality, water quality, marine ecological monitoring and environmental site inspections, were commenced on 1 November 2013.

This is the Twenty-sixth Monthly EM&A report presenting the EM&A works carried out during the period from 1 to 31 December 2015 for the *Contract No. HY/2012/08 Northern Connection Sub-sea Tunnel Section* (the “Project”) in accordance with the Updated EM&A Manual of the TM-CLK Link Project. As informed by the Contractor, major activities in the reporting period included:

Land-based Works

- Box Culvert Extension at Works Area – Portion N-A;
- Construction of capping beam and base slab for Ventilation Shaft at Works Area – Portion N-C; and
- TBM Tunnel Works at Works Area – Portion N-C.

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

24-hour TSP Monitoring	11 sessions
1-hour TSP Monitoring	11 sessions
Impact Dolphin Monitoring	2 sessions
Joint Environmental Site Inspection	5 sessions

Implementation of Marine Mammal Exclusion Zone

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

Summary of Breaches of Action/Limit Levels

Breaches of Action and Limit Levels for Air Quality

No Action Level or Limit Level of air quality exceedances were recorded in the air quality monitoring of this reporting month.

Environmental Complaints, Non-compliance & Summons

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

No environmental complaint was received in this reporting period.

No environmental summons was received in this reporting period.

Reporting Change

There was no reporting change required in the reporting period.

Upcoming Works for the Next Reporting Month

Works to be undertaken in the next monitoring period of January 2016 include the following:

Land-based Works

- Box Culvert Extension at Works Area – Portion N-A;
- Construction of capping beam and base slab for Ventilation Shaft at Works Area – Portion N-C;
- Site preparation for Ventilation Shaft at Works Area – Portion S-C;
- TBM Tunnel Works at Works Area – Portion N-C; and
- Excavation of Sub-sea Tunnel.

Future Key Issues

Potential environmental impacts arising from the above upcoming construction activities in the next reporting month of January 2016 are expected to be mainly associated with dust, marine ecology and waste management.

1.1

BACKGROUND

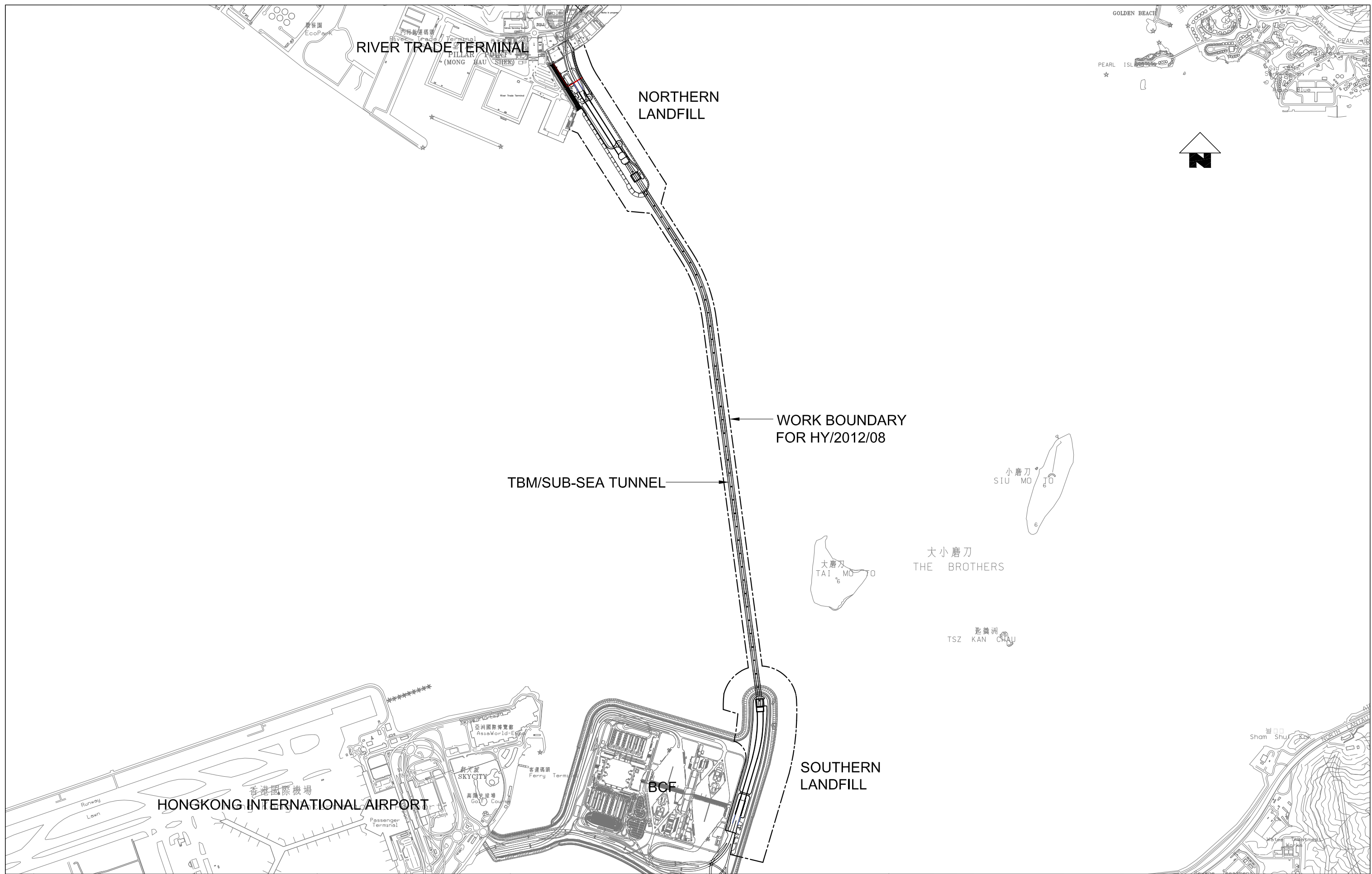
According to the findings of the Northwest New Territories (NWNT) Traffic and Infrastructure Review conducted by the Transport Department, Tuen Mun Road, Ting Kau Bridge, Lantau Link and North Lantau Highway would be operating beyond capacity after 2016. This forecast has been based on the estimated 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-354/2009A) 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 Environ Hong Kong Ltd. was employed by HyD as the Independent Environmental Checker (IEC) and Environmental Project Office (ENPO).

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

The construction phase of the Contract commenced on 1 November 2013 and will tentatively be completed by 2018. The impact monitoring phase of the EM&A programme, including air quality, water quality, marine ecological monitoring and environmental site inspections, were commenced on 1 November 2013.



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

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



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 Twenty-sixth Monthly EM&A Report under the *Contract No. HY/2012/08 Tuen Mun – Chek Lap Kok Link – Northern Connection Sub-sea Tunnel Section*. This report presents a summary of the environmental monitoring and audit works in December 2015.

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 16/HZMB	Kenneth Lee	2762 4996	3188 6614
SOR (AECOM Asia Company Limited)	Chief Resident Engineer	Edwin Ching	2293 6388	2293 6300
		Andrew Westmoreland	2293 6360	2293 6300
ENPO / IEC (Ramboll Environ Hong Kong Ltd.)	ENPO Leader	Y.H. Hui	3547 2133	3465 2899
	IEC	Dr. F.C. Tsang	3547 2134	3465 2899
Contractor (Dragages – Bouygues Joint Venture)	Environmental Manager	C.F. Kwong	2293 7322	2293 7499
	Environmental Officer	Bryan Lee	2293 7323	2293 7499
	24-hour complaint hotline	Rachel Lam	2293 7330	
ET (ERM-HK)	ET Leader	Jovy Tam	2271 3113	2723 5660

1.4 SUMMARY OF CONSTRUCTION WORKS

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

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

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

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

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

Construction Activities Undertaken
<i>Land-based Works</i>
<ul style="list-style-type: none"> • Box Culvert Extension at Works Area - Portion N-A; • Construction of capping beam and base slab for Ventilation Shaft at Works Area - Portion N-C; and • TBM Tunnel Works at Works Area - Portion N-C.

Figure 1.2 *Locations of Construction Activities - December 2015*



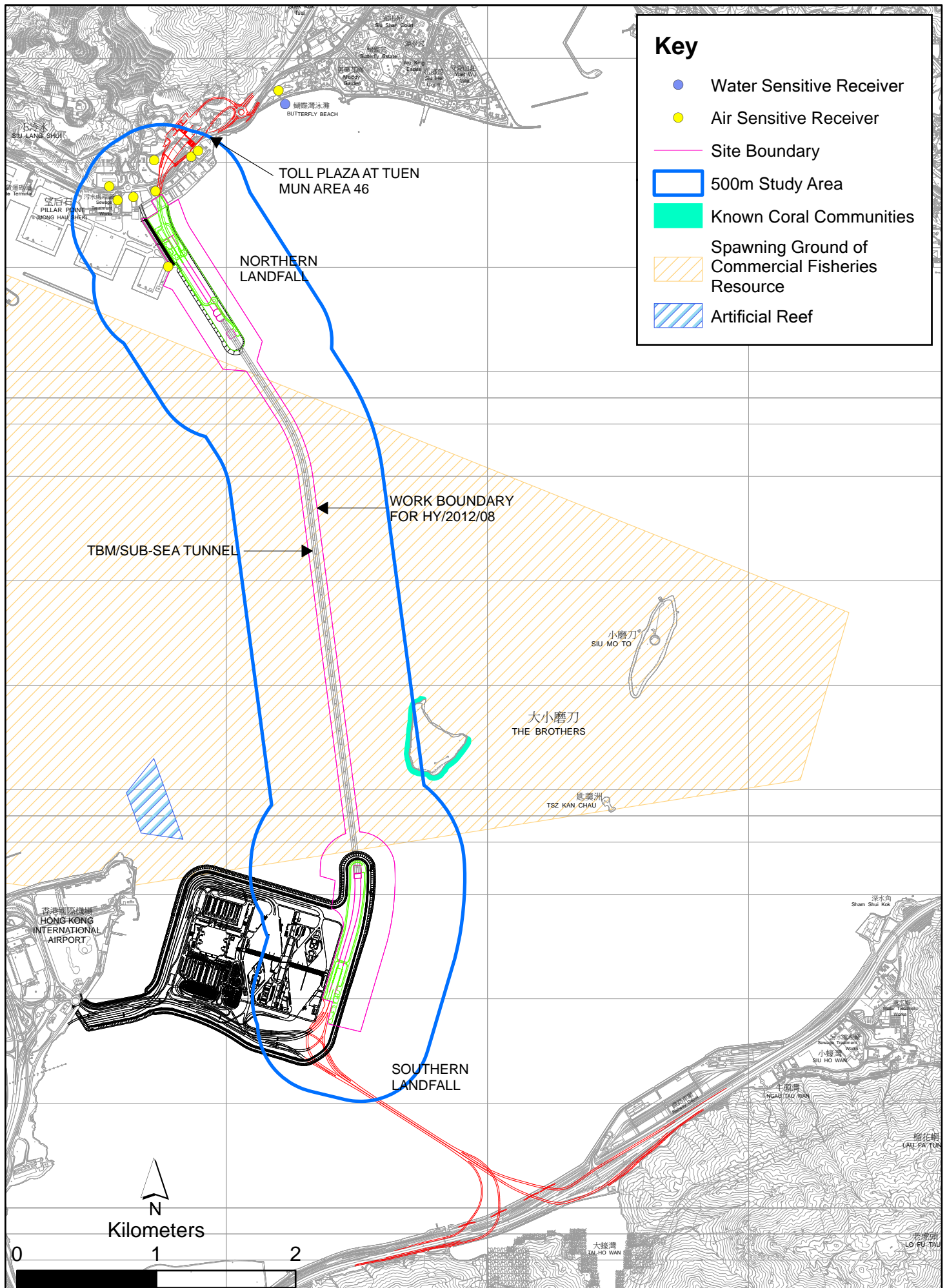


Figure 1.3 Environmental Sensitive Receivers in the vicinity of Contract No. HY/2012/08 Tuen Mun - Chek Lap Kok Link - Northern Connection Sub-Sea Tunnel Section

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Date: 15/4/2014

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 1, 4, 7, 10, 13, 16, 19, 22, 25, 28 and 31 December 2015 at the five (5) air quality monitoring stations in accordance with the requirements stipulated in the Updated EM&A Manual (*Figure 2.1; Table 2.1*). Wind meter was installed at the rooftop of ASR5 for logging wind speed and wind direction. Details of the equipment deployed are provided in *Table 2.2*. Copies of the calibration certificates for the equipment are presented in *Appendix E*.

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

Monitoring Station	Monitoring Dates	Location	Description	Parameters & Frequency
ASR1	1, 4, 7, 10, 13, 16, 19, 22, 25, 28 and 31 December 2015	Tuen Mun Fireboat Station	Office	TSP monitoring <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
ASR5		Pillar Point Fire Station	Office	<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 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

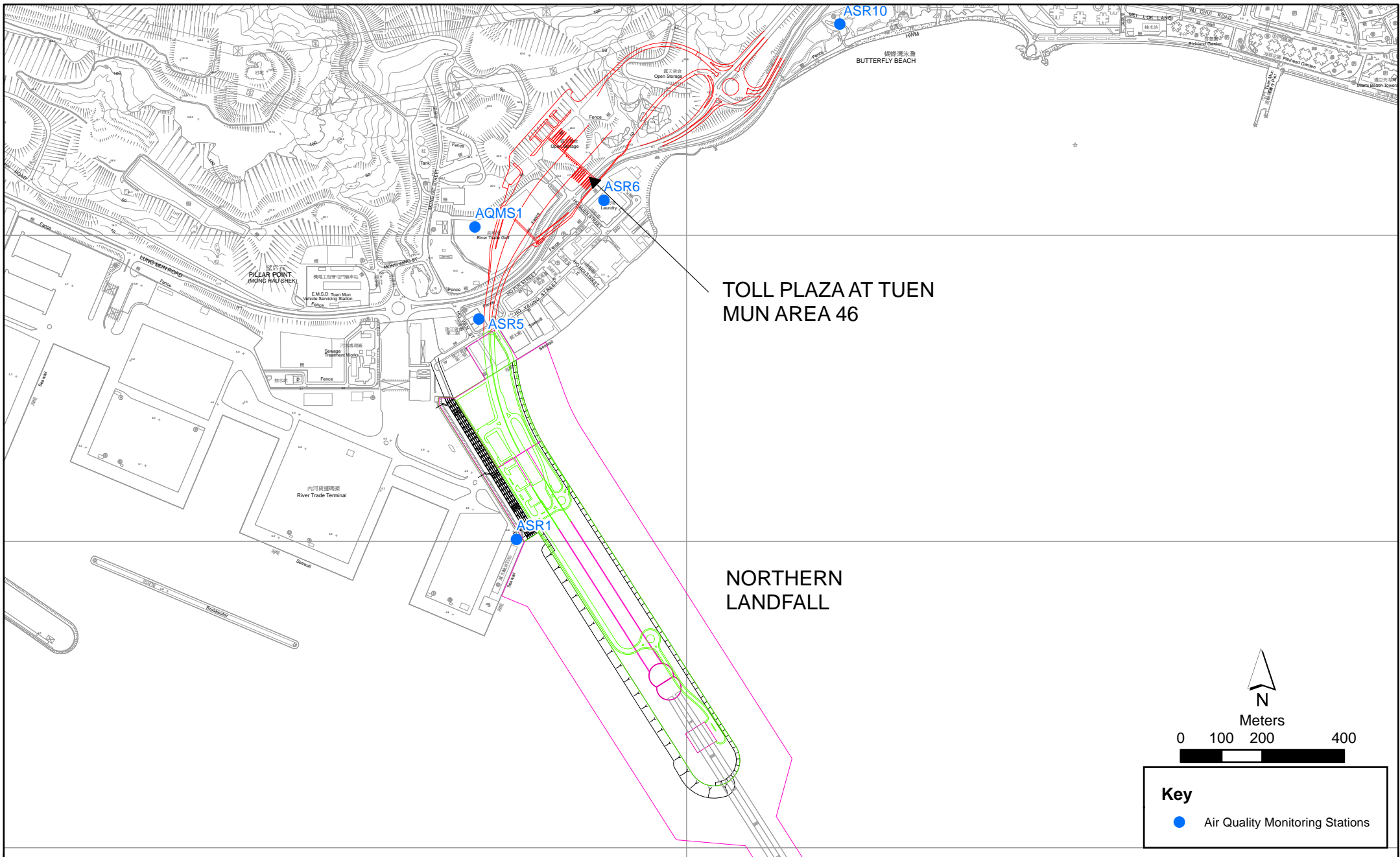


Figure 2.1

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: Weather Wizard III (S/N: WE90911A30)
Wind Anemometer for calibration	Lutron (Model No. AM-4201)

2.1.2 *Action & Limit Levels*

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

2.1.3 *Monitoring Schedule for the Reporting Month*

The schedule for air quality monitoring in December 2015 is provided in *Appendix F*.

2.1.4 *Results and Observations*

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

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

Station	Average ($\mu\text{g}/\text{m}^3$)	Range ($\mu\text{g}/\text{m}^3$)	Action Level ($\mu\text{g}/\text{m}^3$)	Limit Level ($\mu\text{g}/\text{m}^3$)
ASR1	141	63 – 231	331	500
ASR5	170	108 – 242	340	500
AQMS1	114	65 – 175	335	500
ASR6	126	69 – 193	338	500
ASR10	95	54 – 189	337	500

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

Station	Average ($\mu\text{g}/\text{m}^3$)	Range ($\mu\text{g}/\text{m}^3$)	Action Level ($\mu\text{g}/\text{m}^3$)	Limit Level ($\mu\text{g}/\text{m}^3$)
ASR1	93	64 – 114	213	260
ASR5	107	89 – 133	238	260
AQMS1	79	58 – 112	213	260
ASR6	82	63 – 141	238	260
ASR10	62	49 – 80	214	260

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

A total of 11 monitoring events were undertaken in which no Action or Limit Level exceedances of 1-hr TSP were recorded in this reporting month. No Action or Limit Level exceedances for 24-hr TSP were record.

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

2.2 WATER QUALITY MONITORING

As informed by the Contractor, Phase I Reclamation works for the Northern Landfall was substantially completed in December 2014, a proposal letter was sent to EPD on 21 May 2015 to seek approval for the temporary suspension of Water Quality Monitoring. Subsequently, a letter from EPD on 5 June 2015 stated that they have no strong objection to the temporary suspension of the water quality monitoring. Water Quality Monitoring was suspended from 6 June 2015 effectively and will resume when Phase II Reclamation commences in the fourth quarter of 2016 tentatively.

2.3 DOLPHIN MONITORING

2.3.1 Monitoring Requirements

Impact dolphin monitoring is required to be conducted by a qualified dolphin specialist team to evaluate whether there have been any effects on the dolphins. In order to fulfil the EM&A requirements and make good use of available resources, the on-going impact line transect dolphin monitoring data collected by HyD's *Contract No. HY/2011/03 Hong Kong-Zhuhai-Macao Bridge. Hong Kong Link Road - Section between Scenic Hill and Hong Kong Boundary Crossing Facilities* on the monthly basis is adopted to avoid duplicates of survey effort.

2.3.2 Monitoring Equipment

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

Table 2.5 Dolphin Monitoring Equipment

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

2.3.3 *Monitoring Parameter, Frequencies & Duration*

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

2.3.4 *Monitoring Location*

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

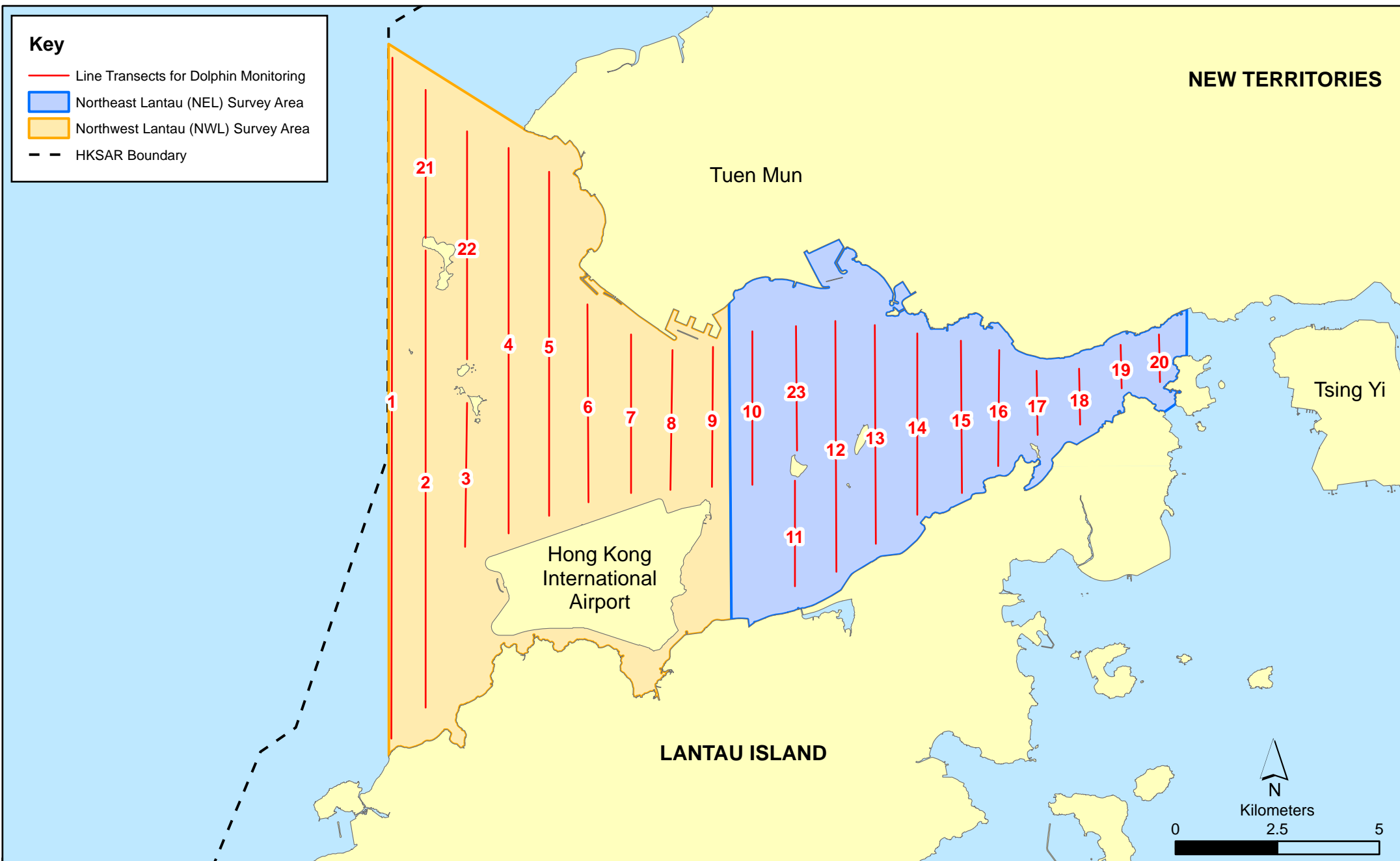


Figure 2.2

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

Table 2.6 Impact Dolphin Monitoring Line Transect Co-ordinates

Line No.		Easting	Northing	Line No.		Easting	Northing
1	Start Point	804671	815456	13	Start Point	816506	819480
1	End Point	804671	831404	13	End Point	816506	824859
2	Start Point	805475	815913	14	Start Point	817537	820220
2	End Point	805477	826654	14	End Point	817537	824613
3	Start Point	806464	819435	15	Start Point	818568	820735
3	End Point	806464	822911	15	End Point	818568	824433
4	Start Point	807518	819771	16	Start Point	819532	821420
4	End Point	807518	829230	16	End Point	819532	824209
5	Start Point	808504	820220	17	Start Point	820451	822125
5	End Point	808504	828602	17	End Point	820451	823671
6	Start Point	809490	820466	18	Start Point	821504	822371
6	End Point	809490	825352	18	End Point	821504	823761
7	Start Point	810499	820880	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	820872	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				
12	End Point	815542	824882				

2.3.5 Action & Limit Levels

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

2.3.6 *Monitoring Schedule for the Reporting Month*

Dolphin monitoring was carried out on 2, 7, 9 and 15 of December 2015. The dolphin monitoring schedule for the reporting month is shown in *Appendix F*.

2.3.7 *Results & Observations*

A total of 301.52 km of survey effort was collected, with 88.2% of the total survey effort being conducted under favourable weather conditions (ie Beaufort Sea State 3 or below with good visibility) in December 2015. Amongst the two areas, 114.10 km and 187.42 km of survey effort were collected from NEL and NWL survey areas, respectively. The total survey effort conducted on primary and secondary lines were 218.08 km and 83.44 km, respectively. The survey efforts are summarized in *Appendix I*.

A total of 7 groups of twenty-eight Chinese White Dolphin sightings were recorded during the two sets of surveys in December 2015. All seven sightings were made in NWL during the survey in December 2015. Five of the seven sightings were made on primary lines during on-effort search. None of the dolphin groups was associated with operating fishing vessels.

None of the sightings was made in the proximity of the TM-CLKL alignment (including both northern landfall section and southern connection viaduct section) and HKLR09 alignment, as well as the HKBCF/HKLR03 reclamation sites. The distribution of dolphin sightings during the reporting month is shown in *Figure 2.3*.

Encounter rates of Chinese White Dolphins are deduced from the survey effort and on-effort sighting data made under favourable conditions (Beaufort 3 or below with good visibility) in December 2015 with the results present in *Tables 2.7 and 2.8*.

Table 2.7 *Individual Survey Event Encounter Rates*

		Encounter rate (STG) (no. of on-effort dolphin sightings per 100 km of survey effort)	Encounter rate (ANI) (no. of dolphins from all on-effort sightings per 100 km of survey effort)
		Primary Lines Only	Primary Lines Only
NEL	Set 1: December 2nd / 7th	0.0	0.0
	Set 2: December 9th / 15th	0.0	0.0
NWL	Set 1: December 2nd / 7th	4.1	17.8
	Set 2: December 9th / 15th	4.8	11.9

Note: Dolphin Encounter Rates are deduced from the Two Sets of Surveys (Two Surveys in Each Set) in December 2015 in Northeast (NEL) and Northwest Lantau (NWL)

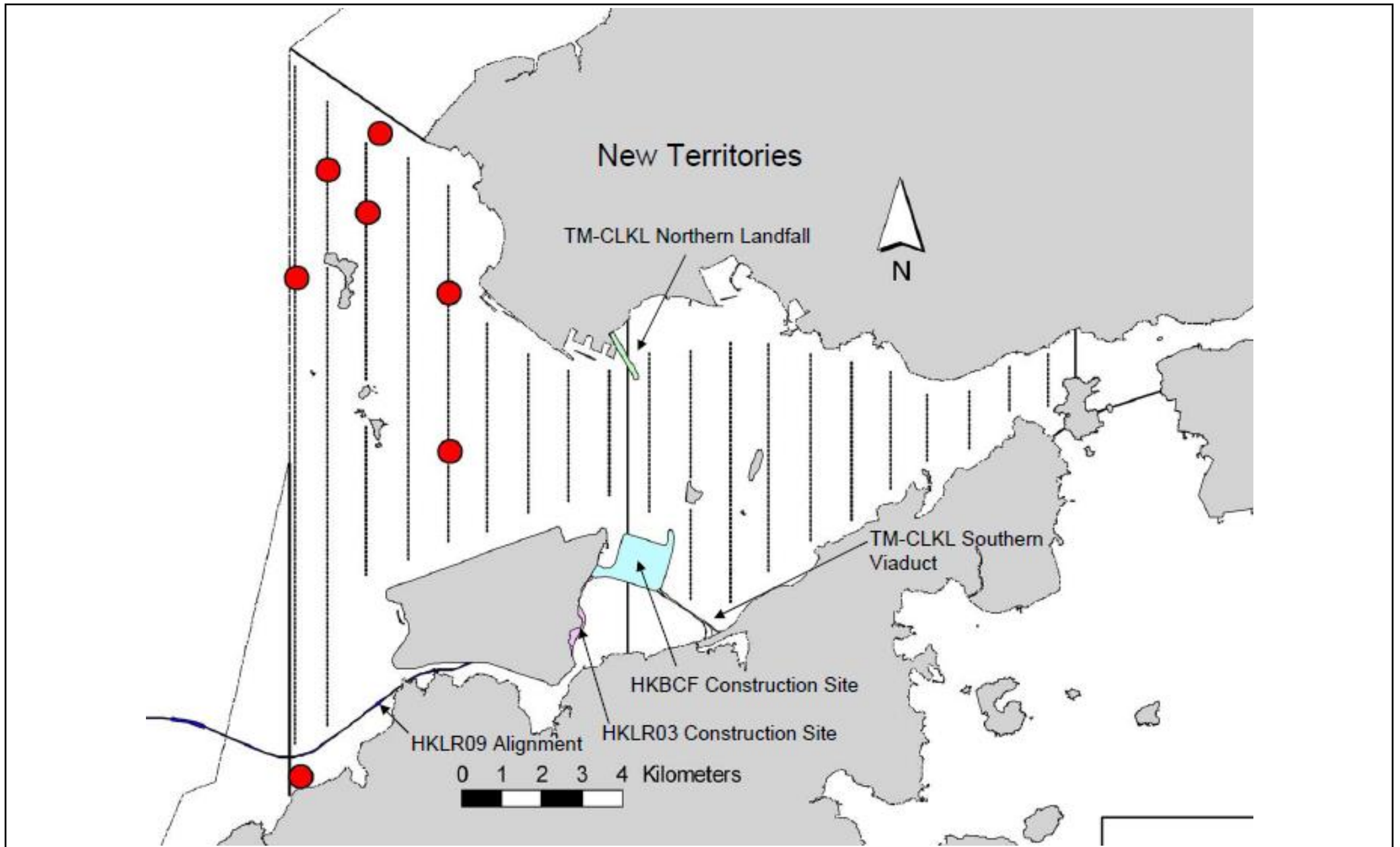


Figure 2.3

HY/2012/08 TM-CLKL Northern Connection Sub-sea Tunnel Section
 The distribution of dolphin sightings during the reporting period
 (Source: Adopted from HKLR03 Monitoring Survey in December 2015)

Table 2.8 *Monthly Average Encounter Rates*

	Encounter rate (STG) (no. of on-effort dolphin sightings per 100 km of survey effort)		Encounter rate (ANI) (no. of dolphins from all on-effort sightings per 100 km of survey effort)	
	Primary Lines Only	Both Primary and Secondary Lines	Primary Lines Only	Both Primary and Secondary Lines
Northeast Lantau	0.0	0.0	0.0	0.0
Northwest Lantau	4.4	3.3	15.7	11.9

Note: Overall dolphin encounter rates (sightings per 100 km of survey effort) from all four surveys are conducted in December 2015 on primary lines only as well as both primary lines and secondary lines in Northeast and Northwest Lantau.

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

2.3.8 *Implementation of Marine Mammal Exclusion Zone*

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

2.4 EM&A SITE INSPECTION

Site inspections were carried out on a weekly basis to monitor the implementation of proper environmental pollution control and mitigation measures under the Contract. In the reporting month, five (5) site inspections were carried out on 2, 9, 16, 23 and 30 December 2015.

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

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

Inspection Date	Observations	Recommendations/ Remarks
2 December 2015	Works Area - Portion N-C <ul style="list-style-type: none"> Accumulated general refuse should be cleared. Chemical labels and drip trays should be provided to the chemical containers. 	Works Area - Portion N-C <ul style="list-style-type: none"> The Contractor was reminded to clear the accumulated general refuse. The Contractor was reminded to provide chemical labels and drip trays to the chemical containers.
9 December 2015	Works Area - Portion N-B <ul style="list-style-type: none"> Drip tray should be provided to the chemical containers. 	Works Area - Portion N-B <ul style="list-style-type: none"> The Contractor was reminded to provide drip tray to the chemical containers.
16 December 2015	Works Area - Portion N-A <ul style="list-style-type: none"> Water spraying should be applied more frequently during dry condition. The chemical container should be fully bunded. 	Works Area - Portion N-A <ul style="list-style-type: none"> The Contractor was reminded to apply water spraying more frequently during dry condition. The Contractor was reminded to repair the bunding of the chemical container.
23 December 2015	Works Area - Portion N-A <ul style="list-style-type: none"> Water spraying should be applied more frequently during dry condition. Oil near the gantry crane should be cleaned. 	Works Area - Portion N-C <ul style="list-style-type: none"> The Contractor was reminded to apply water spraying more frequently during dry condition. The Contractor was reminded to clean the oil near the gantry crane and maintain better housekeeping.
30 December 2015	Works Area - Portion N-A <ul style="list-style-type: none"> Drip tray should be maintained in good condition. 	Works Area - Portion N-A <ul style="list-style-type: none"> The Contractor was reminded to clear the water inside the drip tray.

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

2.5 WASTE MANAGEMENT STATUS

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

Wastes generated during this reporting period include mainly construction wastes (inert and non-inert) and recyclable materials. Reference has been

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

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

Month/Year	Inert Construction Waste ^(a) (tonnes)	Imported Fill (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)
December 2015	38,600	0	0	141	700	0	0	0

Notes:

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

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

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

2.6 ENVIRONMENTAL LICENSES AND PERMITS

The status of environmental licensing and permit is summarized in *Table 2.11* below.

Table 2.11 Summary of Environmental Licensing and Permit Status

License/ Permit	License or Permit No.	Date of Issue	Date of Expiry	License/ Permit Holder	Remarks
Environmental Permit	EP-354/2009/D	13 March 2015	Throughout the Contract	HyD	Application for VEP on 3 March 2015 to supersede EP-354/2009/C
Construction Dust Notification	363510	19 August 2013	Throughout the Contract	DBJV	-
Chemical Waste Registration	5213-422-D2516-01	10 September 2013	Throughout the Contract	DBJV	-
Construction Waste Disposal Account	7018108	28 August 2013	Throughout the Contract	DBJV	Waste disposal in Contract No. HY/2012/08
Waste Water Discharge License	WT00017707-2013	18 November 2013	30 November 2018	DBJV	For site WA18
Waste Water Discharge License	WT00019248-2014	5 June 2014	30 June 2019	DBJV	For site Portion N6 and Reclamation Area E
Construction Noise Permit	GW-RW0350-15	14 July 2015	13 December 2015	DBJV	For site WA23
Construction Noise Permit	GW-RW0638-15	14 December 2015	13 June 2016	DBJV	For site WA23
Construction Noise Permit	GW-RW0474-15	29 September 2015	28 March 2016	DBJV	For Portion N6
Construction Noise Permit	GW-RW0512-15	20 October 2015	19 January 2016	DBJV	For Slurry Treatment Plant and TBM Tunnel Works at Northern Landfall

Notes:

HyD = Highways Department

DBJV = Dragages - Bouygues Joint Venture

VEP = Variation of Environmental Permit

2.7 *IMPLEMENTATION STATUS OF ENVIRONMENTAL MITIGATION MEASURES*

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

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

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

No Action Level or Limit Level exceedances were recorded in the air quality monitoring of this reporting month.

Cumulative statistics are provided in *Appendix K*.

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

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

No environmental complaint was received in the reporting period.

No notification of summons and prosecution were received in the reporting period.

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

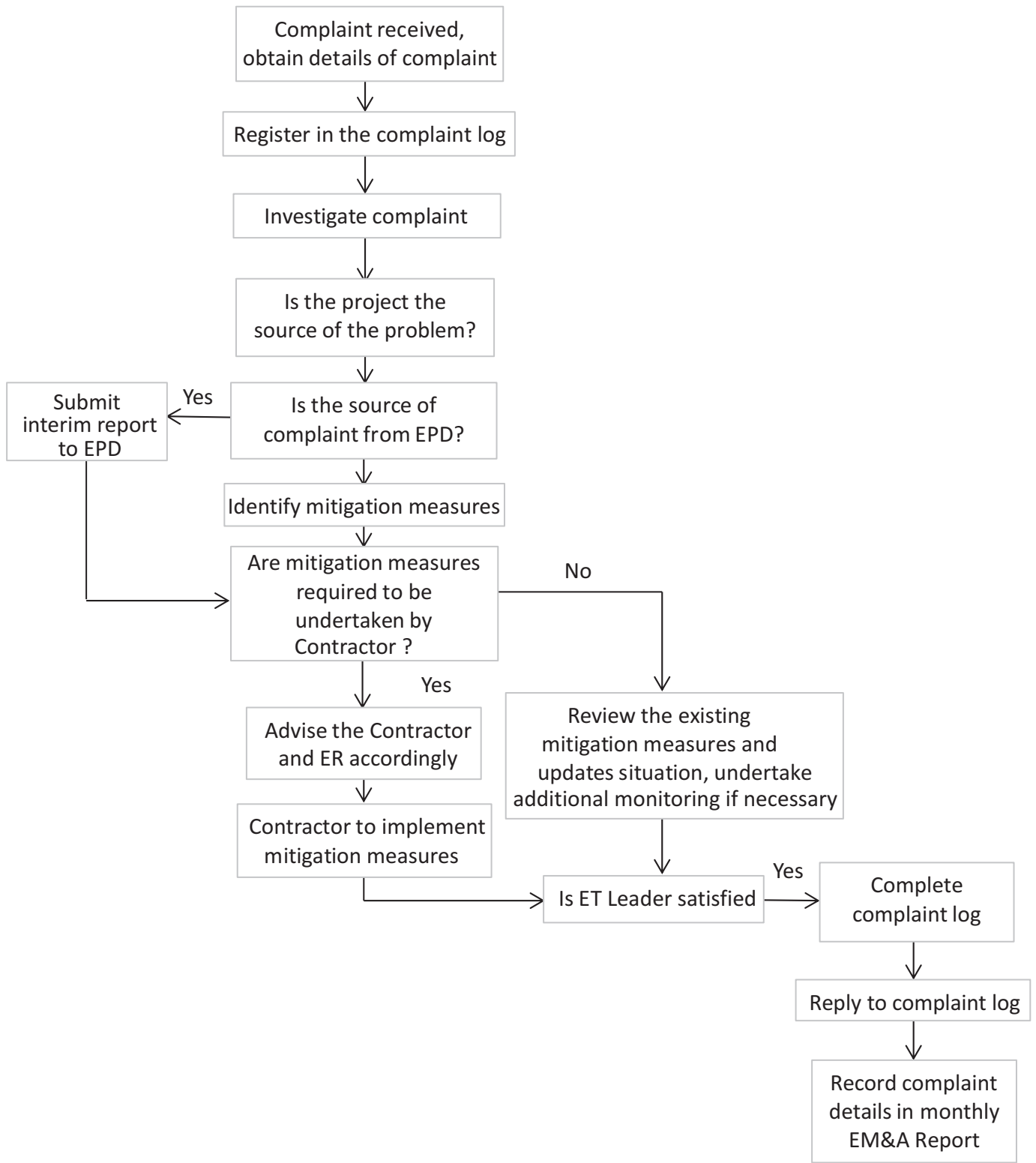


Figure 2.4

Environmental Complaint Handling Procedure

3 FUTURE KEY ISSUES

3.1 CONSTRUCTION ACTIVITIES FOR THE COMING MONTH

As informed by the Contractor, the major works for the Project in January 2016 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">• Box Culvert Extension at Works Area – Portion N-A;• Construction of capping beam and base slab for Ventilation Shaft at Works Area – Portion N-C;• Site preparation for Ventilation Shaft at Works Area – Portion S-C;• TBM Tunnel Works at Works Area – Portion N-C; and• Excavation of Sub-sea Tunnel.

3.2 KEY ISSUES FOR THE COMING MONTH

Potential environmental impacts arising from the above upcoming construction activities in the next reporting month of January 2016 are mainly associated with dust, marine ecology and waste management issues.

3.3 MONITORING SCHEDULE FOR THE COMING MONTH

The tentative schedule for environmental monitoring in January 2016 is provided in *Appendix F*.

4.1

CONCLUSIONS

This Twenty-sixth Monthly EM&A Report presents the findings of the EM&A activities undertaken during the period from 1 to 31 December 2015, in accordance with the Updated EM&A Manual and the requirements of EP-354/2009/D.

Air quality (including 1-hour TSP and 24-hour TSP) and dolphin monitoring were carried out in this reporting month. No Action Level or Limit Level exceedances were recorded in the air quality monitoring of this reporting month.

A total of seven (7) groups of twenty-eight (28) Chinese White Dolphin sightings were recorded during the two sets of surveys in December 2015. All seven sightings were made in NWL during the survey in December 2015. Five of the seven sightings were made on primary lines during on-effort search. None of the dolphin groups was associated with operating fishing vessels. No unacceptable impact from the construction activities of the TM-CLKL Northern Connection Sub-sea Tunnel Section on Chinese White Dolphins was noticeable from general observations during the dolphin monitoring in this reporting month.

Environmental site inspection was carried out five (5) times in December 2015. Recommendations on 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.

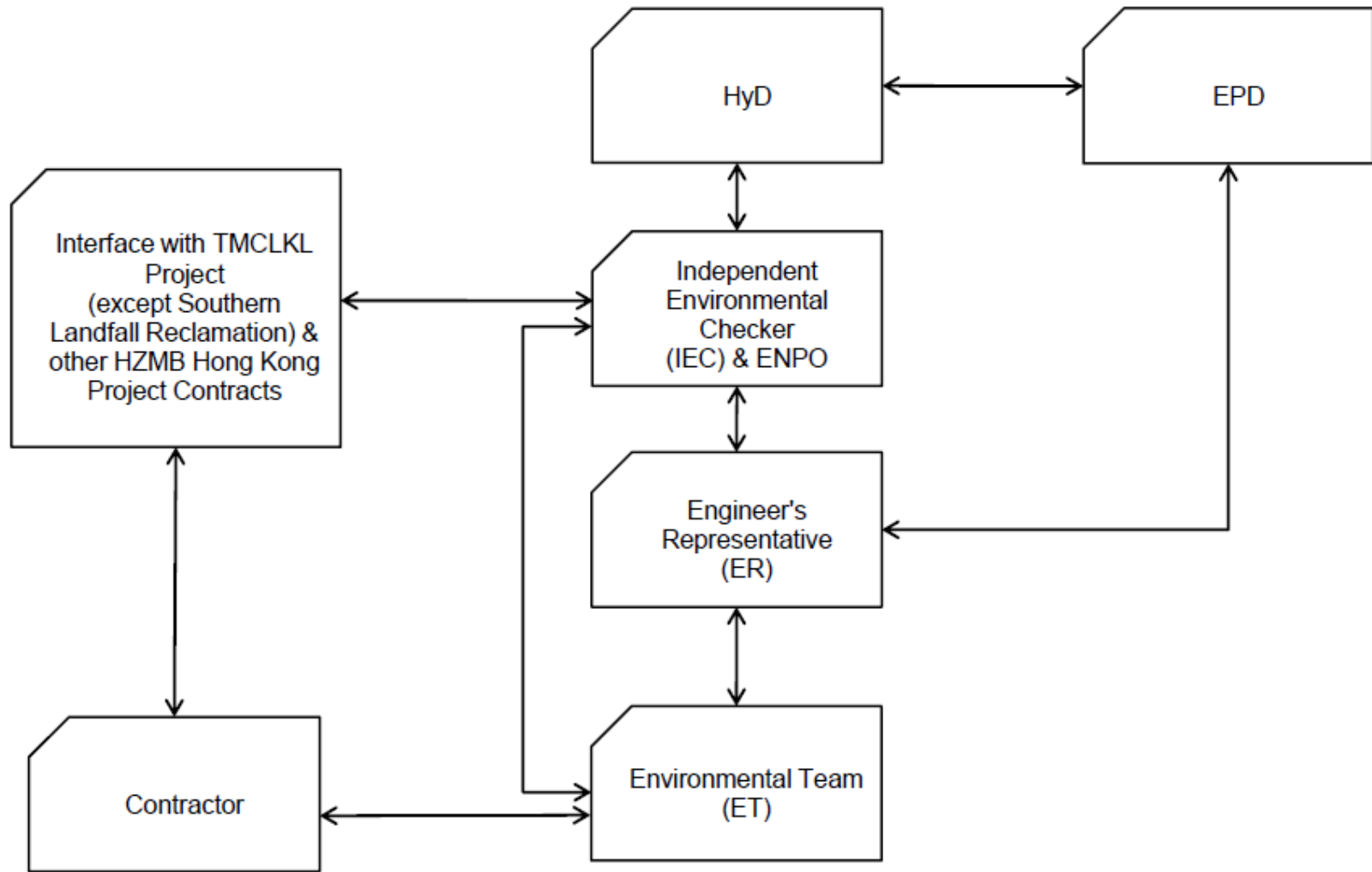
No environmental complaint was received during the reporting period.

No summons/ prosecution was received during the 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

Activity Name	Orig Dur	DWP Start	DWP Finish	2015			2016				
				Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
TMCLK - Northern Connection Sub-Sea Tunnel Section											
Contract Dates											
Commencement and Completion Dates											
KD06 - Completion of Section 1B - Portion N8	0		03-Dec-15			◆ KD06 - Completion of Section 1B - Portion N8					
Site Possession Date											
Portions: X1,(N10,11,13 & 14) - Sth Landfall	0	06-Aug-15				◆ 3 & 14) - Sth Landfall					
Handover Date											
Portions: N8A, N8B(above +3), N8C	0		03-Dec-15			◆ Portions: N8A, N8B(above +3), N8C					
General Submissions											
Environmental											
Environmental Permit Submissions											
Supplementary WMP of C&C Tunnel at Sth.Landfall											
Supplementary WMP of C&C Tunnel at Sth.Landfall	0		28-Jun-14								
Sediment Quality Report/Dumping Permit											
Southern Landfall											
Southern landfall - Commencement of Shaft & C&C Tunnel Dwall	0	03-Oct-15				◆ Southern landfall - Commencement of Shaft & C&C Tunnel Dwall					
Southern Landfall - Commencement of Retrieval Shaft Excavation	0	30-Jan-16					◆ Southern Landfall - Commencement of Retrieval Shaft Excavation				
Southern Landfall - Commencement of C&C Tunnel Excavation	0	03-Mar-16						◆ Southern Landfall - Commencement of C&C Tunnel Excavation			
Sediment Sampling & Testing Plan (SSTP) - if required											
Complete SSTP and Obtain EPD's approval	24	17-Feb-15	23-Mar-15								
Sediment Quality Report (SQR) - if required											
Advance Ground Investigation works for Sediment sampling	24	24-Mar-15	24-Apr-15								
Sediment Sample Testing & Report preparation	120	25-Apr-15	16-Sep-15								
Update SQR - Submission & EPD Approval	48	17-Sep-15	14-Nov-15								
Dumping Permit for Load Dumping (Loading Permit) - if required											
Finalize the application document and submit to EPD - for Dwall	24	20-Jan-15	16-Feb-15								
Notify the results and issue Loading Permit for Local & Cross Boundary Crossing - for Dwall	24	17-Feb-15	23-Mar-15								
Submit draft application document for Loading Permit to EPD for comment - for Excavation	96	23-Jul-15	14-Nov-15								
Finalize the application document and submit to EPD - for Excavation	24	16-Nov-15	12-Dec-15								
Notify the results and issue Loading Permit for Local & Cross Boundary Crossing - for Excavation	24	14-Dec-15	13-Jan-16								
Dumping at Sea Ordinance (DASO)											
Submit application for local dumping	24	16-Nov-15	12-Dec-15								
Approval for Dumping at Sea Ordinance	24	14-Dec-15	13-Jan-16								
Cross Boundary Dumping Permit											
Apply for Cross Boundary Dumping Permit	24	14-Jan-16	17-Feb-16								
Cross Boundary Dumping Approval	24	18-Feb-16	16-Mar-16								
Issuance of PRC Permit for Cat L, Mp	0		16-Mar-16								◆ Issuance of PRC Permit for Cat
General Design Submissions											
(G6) IFA for Tunnel GBP											
SO's Review	35	29-Apr-14	02-Jun-14								
SO Approval with Condition Received	0		03-Jun-14								
PAYMENT MILESTONE											
Design and Design Checking of the Works											
MS 2.12 Approve DDA for ground treatment at Southern Landfall by the Supervising Officer	0		31-Aug-15								
MS 2.20.3 Approve DDA for Cross Passages by the Supervising Officer by the Supervising Officer	0		31-Mar-15								
MS 2.23 Submit DDA for Cut-and-cover Tunnel and Cross Passages at Southern Landfall	0		31-Jan-15								
MS 2.24 Approve DDA for Cut-and-cover Tunnel and Cross Passages at Southern Landfall by the Supervising Officer	0		30-Apr-15								
MS 2.32 Approve DDA for Approach Ramp Structures to Cut-and-cover Tunnels by the Supervising Officer	0		30-Apr-15								
MS 2.44 Approve DDA for South Ventilation Building by the Supervising Officer	0		30-Jun-15								
MS 2.48 Approve DDA for North Ventilation Building by the Supervising Officer	0		31-Jan-15								
MS 2.51 Submit DDA for Facilities Provision for TCSS	0		29-Nov-14								
MS 2.52 Approve DDA for Facilities Provision for TCSS by the Supervising Officer	0		28-Feb-15								
MS 2.56 Approve DDA for Drainage, Sewerage, Waterworks and Utilities at Southern Landfall by the Supervising Officer	0		30-Apr-15								
MS 2.60 Approve DDA for Drainage, Sewerage, Waterworks and Utilities at Northern Landfall by the Supervising Officer	0		31-Dec-14								
MS 2.69 Submit draft Operation and Maintenance Manual for all Tunnels and Cross Passages	0		29-Feb-16								◆ MS 2.69 Submit draft Operation and Maint
MS 2.71 Submit draft Operation and Maintenance Manual for all works except Tunnels and Cross Passages	0		29-Feb-16								◆ MS 2.71 Submit draft Operation and Maint
Tunnel Boring Machine (TBM) and Back-up Equipment for TBM Tunnel											
MS 3.1.8 Delivery to Site of cutter head of TBM for Northbound Tunnel	0		30-Sep-15								◆ MS 3.1.8 Delivery to Site of cutter head of TBM for Northbound Tunnel
MS 3.1.9 Delivery to Site of remaining parts of TBM and back-up equipment for Northbound Tunnel	0		31-Dec-15								◆ MS 3.1.9 Delivery to Site of remaining parts of TBM and back-up equipmen
MS 3.1.10 Complete site assembly, testing and commissioning of TBM for Northbound Tunnel	0		30-Nov-15								◆ MS 3.1.10 Complete site assembly, testing and commissioning of TBM for Northbound Tun
MS 3.1.25 Complete the whole of the activities under this Cost Centre Part to the satisfaction of the Supervising Office	0		31-Dec-15								◆ MS 3.1.25 Complete the whole of the activities under this Cost Centre Part
TBM Tunnel											
MS 3.3.4 Complete walls of retrieval shaft	0		30-Jan-16								◆ MS 3.3.4 Complete walls of retrieval shaft
MS 3.3.7 Completion of excavation, support and permanent lining for 1% of the total length (measured on plan) of the Nor	0		31-Dec-15								◆ MS 3.3.7 Completion of excavation, support and permanent lining for 1% of
MS 3.3.8 Completion of excavation, support and permanent lining for 2% of the total length (measured on plan) of the Nor	0		31-Dec-15								◆ MS 3.3.8 Completion of excavation, support and permanent lining for 2% of
MS 3.3.9 Completion of excavation, support and permanent lining for 3% of the total length (measured on plan) of the Nor	0		31-Dec-15								◆ MS 3.3.9 Completion of excavation, support and permanent lining for 3% of
MS 3.3.10 Completion of excavation, support and permanent lining for 4% of the total length (measured on plan) of the No	0		30-Jan-16								◆ MS 3.3.10 Completion of excavation, support and permane
MS 3.3.11 Completion of excavation, support and permanent lining for 5% of the total length (measured on plan) of the No	0		30-Jan-16								◆ MS 3.3.11 Completion of excavation, support and permane

■ Planned Bar
■ Planned Bar - Critical
◆ Planned Milestone
■ Progress bar
◆ Progress Milestone



Date	Revision	Checked	Approved
12-Feb-14	TMCLKD/B/GEN/PRG/08507	WYu	SP
08-Apr-14	TMCLKD/B/GEN/PRG/08507 Rev.B	SP	WYu
28-Aug-14	TMCLKD/B/GEN/PRG/08507 Rev.C	CLa	WYu
10-Jan-15	TMCLKD/B/GEN/PRG/08507 Rev.F	WYu	

Activity Name	Orig Dur	DWP Start	DWP Finish	2015			2016					
				Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	
Preparation & pour blinding concrete base of box culvert outfall	8	10-Oct-15	19-Oct-15	Preparation & pour blinding concrete base of box culvert outfall								
Install precast culvert element by barge (5 nos.)	21	20-Oct-15	13-Nov-15	Install precast culvert element by barge (5 nos.)								
Concreting in-situ Top Slab and stich joint	12	14-Nov-15	27-Nov-15	Concreting in-situ Top Slab and stich joint								
Removal of temporary bulk head	18	28-Nov-15	18-Dec-15	Removal of temporary bulk head								
CH000-150 Land Section												
ELS & Structure												
Pile A43/A41 CJ to Pile A41/A39 CJ												
ELS												
Installation of strut S1	5	08-May-15	13-May-15	Installation of strut S1								
Excavation to FEL	5	14-May-15	19-May-15	Excavation to FEL								
Box Culvert Structure												
Pile cap construction	10	27-May-15	06-Jun-15	Pile cap construction								
Base slab construction including kicker	6	19-Jun-15	26-Jun-15	Base slab construction including kicker								
Removal of strut S1	4	27-Jun-15	02-Jul-15	Removal of strut S1								
System formworks delivery & setup	14	03-Jul-15	18-Jul-15	System formworks delivery & setup								
Walls & top slab construction	6	20-Jul-15	25-Jul-15	Walls & top slab construction								
Removal of strut S2 & Backfilling up to required level	6	03-Aug-15	08-Aug-15	Removal of strut S2 & Backfilling up to required level								
Pile A45/A43 CJ to Pile A43/A41 CJ												
ELS												
Installation of strut S1	5	14-May-15	19-May-15	Installation of strut S1								
Excavation to FEL	5	20-May-15	26-May-15	Excavation to FEL								
Box Culvert Structure												
Pile cap construction	10	08-Jun-15	18-Jun-15	Pile cap construction								
Base slab construction including kicker	6	27-Jun-15	04-Jul-15	Base slab construction including kicker								
Removal of strut S1	4	06-Jul-15	09-Jul-15	Removal of strut S1								
Walls & top slab construction	6	27-Jul-15	01-Aug-15	Walls & top slab construction								
Pile A47/A45 CJ to Pile A45/A43 CJ												
ELS												
Excavation to 0.5m below strut S1	5	14-May-15	19-May-15	Excavation to 0.5m below strut S1								
Installation of strut S1	5	20-May-15	26-May-15	Installation of strut S1								
Excavation to FEL	5	27-May-15	01-Jun-15	Excavation to FEL								
Box Culvert Structure												
Pile cap construction	10	19-Jun-15	02-Jul-15	Pile cap construction								
Base slab construction including kicker	6	06-Jul-15	11-Jul-15	Base slab construction including kicker								
Removal of strut S1	4	13-Jul-15	16-Jul-15	Removal of strut S1								
Walls & top slab construction	6	03-Aug-15	08-Aug-15	Walls & top slab construction								
Pile A49/A47 CJ to Pile A47/A45 CJ												
ELS												
Excavation to 0.5m below strut S1	5	20-May-15	26-May-15	Excavation to 0.5m below strut S1								
Installation of strut S1	5	27-May-15	01-Jun-15	Installation of strut S1								
Excavation to FEL	5	02-Jun-15	06-Jun-15	Excavation to FEL								
Box Culvert Structure												
Pile cap construction	10	03-Jul-15	14-Jul-15	Pile cap construction								
Base slab construction including kicker	6	15-Jul-15	21-Jul-15	Base slab construction including kicker								
Removal of strut S1	4	22-Jul-15	25-Jul-15	Removal of strut S1								
Pile A52/A49 CJ to Pile A49/A47 CJ												
ELS												
Excavation to 0.5m below strut S1	5	27-May-15	01-Jun-15	Excavation to 0.5m below strut S1								
Installation of strut S1	5	02-Jun-15	06-Jun-15	Installation of strut S1								
Excavation to FEL	5	08-Jun-15	12-Jun-15	Excavation to FEL								
Box Culvert Structure												
Pile cap construction	10	22-Jul-15	01-Aug-15	Pile cap construction								
Base slab construction including kicker	6	03-Aug-15	08-Aug-15	Base slab construction including kicker								
Preparation for Temp Access Road for N8 handvoer	24	07-Sep-15	06-Oct-15	Preparation for Temp Access Road for N8 handvoer								
Ch150-250 Marine Section												
Foundation												
H-beam installation & Concreting - 16 nos (P105 - P120)	40	21-May-15	09-Jul-15	H-beam installation & Concreting - 16 nos (P105 - P120)								
Preboring - 20 nos (P65 - P84) - Rig 3	50	07-Jul-15	02-Sep-15	Preboring - 20 nos (P65 - P84) - Rig 3								
H-beam installation & Concreting - 20 nos (P65 - P84)	50	10-Jul-15	05-Sep-15	H-beam installation & Concreting - 20 nos (P65 - P84)								
Preboring - 20 nos (P85 - P104) - Rig 1	50	07-Jul-15	02-Sep-15	Preboring - 20 nos (P85 - P104) - Rig 1								
H-beam installation & Concreting - 20 nos (P85 - P104)	50	10-Jul-15	05-Sep-15	H-beam installation & Concreting - 20 nos (P85 - P104)								
ELS & Structure												
Cofferdam closing of Ch100-250	28	01-Jun-15	04-Jul-15	Cofferdam closing of Ch100-250								
Dewatering well installation Ch180-250	12	19-Jun-15	04-Jul-15	Dewatering well installation Ch180-250								
Dewatering well installation Ch100-180	12	06-Jul-15	18-Jul-15	Dewatering well installation Ch100-180								
1st Pumping test	18	20-Jul-15	08-Aug-15	1st Pumping test								
Toe grouting Ch100-250	95	07-Sep-15	31-Dec-15	Toe grouting Ch100-250								
2nd Pumping test Ch100-250	29	02-Jan-16	04-Feb-16	2nd Pumping test Ch100-250								
Pile A41/A39 CJ to Pile A39/A37 CJ												

- Planned Bar
- Planned Bar - Critical
- ◆ Planned Milestone
- Progress bar
- ◆ Progress Milestone



Date	Revision	Checked	Approved
12-Feb-14	TMCLKD/BGEN/PRG08507	WYu	SP
08-Apr-14	TMCLKD/BGEN/PRG08507 Rev.B	SP	WYu
28-Aug-14	TMCLKD/BGEN/PRG08507 Rev.C	CLa	WYu
10-Jun-15	TMCLKD/BGEN/PRG08507 Rev.F	WYu	

Activity Name	Orig Dur	DWPF Start	DWPF Finish	2015			2016						
				Oct	Nov	Dec	Jan	Feb	Mar	Apr	May		
ELS													
Excavation to 0.5m below strut S2	4	05-Feb-16	16-Feb-16										
Installation of strut S2	6	17-Feb-16	23-Feb-16										
Excavation to 0.5m below strut S1	5	24-Feb-16	29-Feb-16										
Installation of strut S1	5	01-Mar-16	05-Mar-16										
Excavation to FEL	5	07-Mar-16	11-Mar-16										
Box Culvert Structure													
Pile cap construction	10	18-Mar-16	01-Apr-16										
Pile A39/A37 CJ to Pile A37/A35 CJ													
ELS													
Excavation to 0.5m below strut S2	4	17-Feb-16	20-Feb-16										
Installation of strut S2	6	22-Feb-16	27-Feb-16										
Excavation to 0.5m below strut S1	5	01-Mar-16	05-Mar-16										
Installation of strut S1	5	07-Mar-16	11-Mar-16										
Excavation to FEL	5	12-Mar-16	17-Mar-16										
Pile A37/A35 CJ to Pile A35/A33 CJ													
ELS													
Excavation to 0.5m below strut S2	4	22-Feb-16	25-Feb-16										
Installation of strut S2	6	26-Feb-16	03-Mar-16										
Excavation to 0.5m below strut S1	5	07-Mar-16	11-Mar-16										
Installation of strut S1	5	12-Mar-16	17-Mar-16										
Excavation to FEL	5	18-Mar-16	23-Mar-16										
Pile A35/A33 CJ to Pile A33/P117 CJ													
ELS													
Excavation to 0.5m below strut S2	4	26-Feb-16	01-Mar-16										
Installation of strut S2	6	02-Mar-16	08-Mar-16										
Excavation to 0.5m below strut S1	5	12-Mar-16	17-Mar-16										
Installation of strut S1	5	18-Mar-16	23-Mar-16										
Pile A33/P117 CJ to Pile P113/P109 CJ													
ELS													
Excavation to 0.5m below strut S1	9	09-Mar-16	18-Mar-16										
Installation of strut S1	5	19-Mar-16	24-Mar-16										
Pile P113/P109 CJ to Pile P105/P101 CJ													
ELS													
Excavation to 0.5m below strut S1	9	17-Mar-16	30-Mar-16										
Ch250-380 Marine Section													
Installation of Dewatering & Observation Well Ch 250-380	23	04-Nov-15	30-Nov-15										
1st Pumping Test & Analysis	17	01-Dec-15	19-Dec-15										
Toe Grouting	106	21-Dec-15	07-May-16										
Ch250-320 Prebored H-piles													
Preboring - 16 nos (P49 - P64) - Rig 1	40	03-Sep-15	22-Oct-15										
H-beam installation & Concreting - 16 nos (P49 - P64)	40	07-Sep-15	26-Oct-15										
Rig 1 Demobilization	0	23-Oct-15											
Preboring - 20 nos (P29 - P48) - Rig 3	50	03-Sep-15	03-Nov-15										
H-beam installation & Concreting - 20 nos (P29 - P48)	50	07-Sep-15	06-Nov-15										
Rig 2 Demobilization	0	04-Nov-15											
Ch320-360 Prebored H-piles													
Current Steel Bridge location available	0		02-Sep-15										
Pre-drilling - 3 nos	9	03-Sep-15	12-Sep-15										
Preboring - 14 nos (C13-C28) - Rig 2	35	14-Sep-15	27-Oct-15										
H-beam installation & Concreting - 14 nos (C13-C28)	35	17-Sep-15	30-Oct-15										
Preboring - 6 piles (P9-12, P15-16) - Rig 2	18	28-Oct-15	17-Nov-15										
H-beam Installation & Concreting - 6 piles (P9-12, P15-16)	18	31-Oct-15	20-Nov-15										
Ch360-380 Prebored H-piles													
Steel Bridge Landing Platform Construction	18	03-Jul-15	23-Jul-15										
Ch380-399 Connection Section													
Foundation & ELS													
Stage 1													
Preboring - 9 nos (C1-7,C9-10) - Rig 2	27	30-May-15	02-Jul-15										
H-beam installation & Concreting - 9 nos (C1-7,C9-10)	29	03-Jun-15	08-Jul-15										
Preboring & sheet piling (west row south 50%) - Rig 2	24	10-Aug-15	05-Sep-15										
Stage 2													
2015/16 Dry Season	0	01-Nov-15											
Install concrete blocks to support working platform	6	02-Nov-15	07-Nov-15										
2nd Relocation of working platform	6	09-Nov-15	14-Nov-15										
Preboring - 4 nos (C13-C16) - Rig 2	12	16-Nov-15	28-Nov-15										
H-beam installation & Concreting - 4 nos (C13-C16)	12	19-Nov-15	02-Dec-15										
Preboring for sheet piling (middle row north 50%) - Rig 2	18	03-Dec-15	23-Dec-15										
Preboring for sheet piling (west row north 50%) - Rig 2	24	24-Dec-15	23-Jan-16										

- Planned Bar
- Planned Bar - Critical
- ◆ Planned Milestone
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Activity Name	Orig Dur	DWP Start	DWP Finish	2015			2016					
				Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	
3rd Submission to GEO	0		27-Oct-14									
3rd GEO Review	28	28-Oct-14	24-Nov-14									
Construction												
Northern Landfall Surface Setup for TBM operation												
Gantry Setup at North Ventilation Shaft	48	08-Oct-15	04-Dec-15									
Gantry Removal at North Ventilation Shaft	24	02-Jan-16	29-Jan-16									
North Approach TBM Tunnel - NB ID15.60m - S880												
NB - North TBM Tunnel - Transition with Saturation (Ch6840 to 6708 - 132m)	75	08-Sep-15	22-Nov-15									
NB - North TBM Tunnel - Transition with Saturation (Ch6708 to 6688 - 20m)	6	22-Nov-15	28-Nov-15									
NB - North TBM Tunnel - Transition with Saturation (Ch6688 to 6640 - 48m)	14	28-Nov-15	12-Dec-15									
NB - North TBM Tunnel - CDG+Boulder with Saturation (Ch6640 to 6600 - 40m)	8	12-Dec-15	20-Dec-15									
NB - North TBM Tunnel - CDG with Saturation (Ch6600 to 6560 - 40m)	5	20-Dec-15	25-Dec-15									
NB - North TBM Tunnel - Thrust Frame Removal	12	19-Aug-15	02-Sep-15									
North Approach TBM Tunnel - SB ID12.40m - S882												
SB - North TBM Tunnel - Back-up Gnatry G3 & G4 Assembly	17	29-Jul-15	16-Aug-15									
SB - North TBM Tunnel - CDG with Trimix (Ch7021 to 6891 - 130m)	12	12-Sep-15	24-Sep-15									
SB - North TBM Tunnel - CDG+Boulder with Saturation (Ch6891 to 6861 - 30m)	9	24-Sep-15	03-Oct-15									
SB - North TBM Tunnel - Transition with Saturation (Ch6861 to 6729 - 132m)	63	03-Oct-15	05-Dec-15									
SB - North TBM Tunnel - Transition with Saturation (Ch6729 to 6709 - 20m)	5	05-Dec-15	10-Dec-15									
SB - North TBM Tunnel - Thrust Frame Removal	12	24-Sep-15	10-Oct-15									
SB - North TBM Tunnel - Transition with Saturation (Ch6709 to 6661 - 48m)	11	10-Dec-15	21-Dec-15									
SB - North TBM Tunnel - Transition with Saturation (Ch6661 to 6621 - 40m)	8	21-Dec-15	29-Dec-15									
SB - North TBM Tunnel - Transition with Saturation (Ch6621 to 6581 - 40m)	5	29-Dec-15	03-Jan-16									
North Approach Tunnel Internal Structure - NB												
NB - North TBM Tunnel - Invert Backfilling (Ch7175 to 6870 - 305m) Stage 1	87	10-Sep-15	06-Dec-15									
NB - North TBM Tunnel - Invert Backfilling (Ch6870 to 6688 - 182m) Stage 1	77	06-Dec-15	24-Feb-16									
NB - North TBM Tunnel - Invert Backfilling (Ch6688 to 6560 - 128m) Stage 1	54	01-Apr-16	26-May-16									
NB - North TBM Tunnel - Preparation for Invert Gallery Installation	14	10-Sep-15	24-Sep-15									
NB - North TBM Tunnel - Invert Precast Gallery Installation (Ch7205 to 6870 - 335m)	96	24-Sep-15	29-Dec-15									
NB - North TBM Tunnel - Invert Precast Gallery Installation (Ch6870 to 6688 - 182m)	77	29-Dec-15	18-Mar-16									
NB - North TBM Tunnel - Invert Backfilling (Ch7205 to 7175 - 30m) Stage 2	9	15-Oct-15	24-Oct-15									
NB - North TBM Tunnel - Invert Backfilling (Ch7175 to 7125 - 50m) Stage 2	15	24-Oct-15	08-Nov-15									
NB - North TBM Tunnel - Invert Backfilling (Ch7125 to 7075 - 50m) Stage 2	15	08-Nov-15	23-Nov-15									
NB - North TBM Tunnel - Invert Backfilling (Ch7075 to 7025 - 50m) Stage 2	15	23-Nov-15	08-Dec-15									
NB - North TBM Tunnel - Invert Backfilling (Ch7025 to 6975 - 50m) Stage 2	14	08-Dec-15	22-Dec-15									
NB - North TBM Tunnel - Invert Backfilling (Ch6975 to 6925 - 50m) Stage 2	14	22-Dec-15	05-Jan-16									
NB - North TBM Tunnel - Invert Backfilling (Ch6925 to 6870 - 55m) Stage 2	14	05-Jan-16	19-Jan-16									
NB - North TBM Tunnel - Invert Backfilling (Ch6870 to 6688 - 182m) Stage 2	77	19-Jan-16	11-Apr-16									
CP53 - Excavation & Lining completion	0		16-Mar-16									
North Approach Tunnel Internal Structure - SB												
SB - North TBM Tunnel - Invert Backfilling (Ch7205 to 7175 - 30m)	8	10-Oct-15	18-Oct-15									
SB - North TBM Tunnel - Invert Backfilling (Ch7175 to 7125 - 50m)	13	18-Oct-15	31-Oct-15									
SB - North TBM Tunnel - Invert Backfilling (Ch7125 to 7075 - 50m)	13	31-Oct-15	13-Nov-15									
SB - North TBM Tunnel - Invert Backfilling (Ch7075 to 7025 - 50m)	13	13-Nov-15	26-Nov-15									
SB - North TBM Tunnel - Invert Backfilling (Ch7025 to 6975 - 50m)	12	26-Nov-15	08-Dec-15									
SB - North TBM Tunnel - Invert Backfilling (Ch6975 to 6925 - 50m)	12	08-Dec-15	20-Dec-15									
SB - North TBM Tunnel - Invert Backfilling (Ch6925 to 6870 - 55m)	12	20-Dec-15	01-Jan-16									
SB - North TBM Tunnel - Invert Backfilling (Ch6870 to 6688 - 182m)	77	01-Jan-16	21-Mar-16									
SB - North TBM Tunnel - Invert Backfilling (Ch6688 to 6560 - 182m)	54	21-Mar-16	18-May-16									
North Approach Cross Passage												
CP55 - Traditional Method												
CP55 Platform Available from ML03 North Approach Tunnel Backfilling	0	24-Oct-15										
CP55 Platform Available from ML02 North Approach Tunnel Backfilling	0	31-Oct-15										
CP54 - Traditional Method												
CP54 Platform Available from ML03 North Approach Tunnel Backfilling	0	08-Dec-15										
CP54 Platform Available from ML02 North Approach Tunnel Backfilling	0	26-Nov-15										
CP53 - Pipe Jacking Method												
CP53 Platform Available from ML03 North Approach Tunnel Backfilling	0	05-Jan-16										
CP53 Platform Available from ML02 North Approach Tunnel Backfilling	0	21-Dec-15										
CP - Pipe Jacking TBM - Delivery, Assembly & Setup	23	05-Jan-16	01-Feb-16									
CP - Pipe Jacking Method - Break-in, Excavation & Lining Installation	9	01-Feb-16	10-Feb-16									
CP - Pipe Jacking Method - Break out & Pipe Jacking TBM Removal	10	10-Feb-16	20-Feb-16									
CP - Waterproofing, Finishing	21	20-Feb-16	16-Mar-16									
CP52 - Pipe Jacking Method												
CP52 Platform Available from ML03 North Approach Tunnel Backfilling	0	30-Jan-16										
CP52 Platform Available from ML02 North Approach Tunnel Backfilling	0	12-Jan-16										

Planned Bar
 Planned Bar - Critical
 Planned Milestone
 Progress bar
 Progress Milestone



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Activity Name	Orig Dur	DWPF Start	DWPF Finish	2015			2016					
				Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	
CP - Pipe Jacking TBM - Delivery, Assembly & Setup	23	01-Feb-16	05-Mar-16									
CP - Pipe Jacking Method - Break-in, Excavation & Lining Installation	9	05-Mar-16	14-Mar-16									
CP - Pipe Jacking Method - Break out & Pipe Jacking TBM Removal	10	14-Mar-16	24-Mar-16									
CP51 - Traditional Method												
CP51 Platform Available from ML02 North Approach Tunnel Backfilling	0	10-Mar-16										
CP50 - Pipe Jacking Method												
CP50 Platform Available from ML02 North Approach Tunnel Backfilling	0	09-Apr-16										
North Ventilation Building												
Design Submission												
(A10) ACABAS Submissions												
ACABAS Approval	28	16-Mar-14	12-Apr-14									
(A11) Submissions to Design Advisory Panel of ArchSD												
ArchSD's comment	30	10-Jun-14	09-Jul-14									
(I1) DDA for North Vent.Bldgs. GBP & Arch.Submission												
Designer to Reply RiC + Update Submission	21	28-Jul-14	20-Aug-14									
Submit Updated DDA to SO/ ICE/ IPs	0	21-Aug-14										
ICE Approval & Issue Check Cert	12	21-Aug-14	03-Sep-14									
Submit ICE Check Cert to SO	6	04-Sep-14	11-Sep-14									
IPs Review	28	21-Aug-14	17-Sep-14									
IPs No Objection Received	0		17-Sep-14									
SO's Review	35	21-Aug-14	24-Sep-14									
SO Approval with Condition Received	0		24-Sep-14									
(I1) DDA for North & South Vent.Bldg. ABWF works												
Preparation of DDANorth & South ABWF	18	25-Sep-14	17-Oct-14									
Review & Comment by JV	24	18-Oct-14	14-Nov-14									
Designer prepare DDA	15	15-Nov-14	02-Dec-14									
(I2) DDA for North Vent.Bldgs.Structural Design incl.Vent.Connections												
IPs/ SO's Advance Comments/ ICE Comments	28	01-Nov-14	28-Nov-14									
Comments Received	0		28-Nov-14									
Designer to Reply RiC + Update Submission	21	29-Nov-14	23-Dec-14									
Submit Updated DDA to SO/ ICE/ IPs	0	24-Dec-14										
ICE Approval & Issue Check Cert	12	24-Dec-14	09-Jan-15									
Submit ICE Check Cert to SO	6	10-Jan-15	16-Jan-15									
IPs Review	28	24-Dec-14	20-Jan-15									
IPs No Objection Received	0		20-Jan-15									
SO's Review	35	24-Dec-14	27-Jan-15									
SO Approval with Condition Received	0		27-Jan-15									
(I3) DDA for North & South Vent.Bldgs. Service and E&M Provision												
Preparation of DDANth VB Service and E&MS Provision	18	12-Sep-14	04-Oct-14									
Review & Comment by JV	24	06-Oct-14	01-Nov-14									
Designer prepare DDA	15	03-Nov-14	19-Nov-14									
Formal Submission of DDA to ICE/ IPs	0		19-Nov-14									
Advanced Submission to SO	0		19-Nov-14									
IPs/ SO's Advance Comments/ ICE Comments	28	20-Nov-14	17-Dec-14									
Comments Received	0		17-Dec-14									
Designer to Reply RiC + Update Submission	21	18-Dec-14	14-Jan-15									
Submit Updated DDA to SO/ ICE/ IPs	0	15-Jan-15										
ICE Approval & Issue Check Cert	12	15-Jan-15	28-Jan-15									
Submit ICE Check Cert to SO	6	29-Jan-15	04-Feb-15									
IPs Review	28	15-Jan-15	11-Feb-15									
IPs No Objection Received	0		11-Feb-15									
SO's Review	35	15-Jan-15	18-Feb-15									
SO Approval with Condition Received	0		18-Feb-15									
(J2) Tower Crane Foundation for Ventilation Building												
ICE Approval & Issue Check Cert	12	17-Sep-15	02-Oct-15									
Submit ICE Check Cert to SO	6	03-Oct-15	09-Oct-15									
IPs Review	28	17-Sep-15	14-Oct-15									
IPs No Objection Received	0		14-Oct-15									
SO's Review	35	17-Sep-15	21-Oct-15									
SO Approval with Condition Received	0		22-Oct-15									
(C3) DDA for North Vent Shaft & Duct Permanent Structure												
Review & Comment by JV	18	28-Aug-14	18-Sep-14									
Designer prepare DDA	10	19-Sep-14	30-Sep-14									
Formal Submission of DDA to ICE/ IPs	0		30-Sep-14									
Advanced Submission to SO	0		30-Sep-14									
IPs/ SO's Advance Comments/ ICE Comments	28	01-Oct-14	28-Oct-14									
Comments Received	0		28-Oct-14									

- Planned Bar
- Planned Bar - Critical
- ◆ Planned Milestone
- Progress bar
- ◆ Progress Milestone



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10-Jun-15	TMCLKDBJGEN.PRG.08507 Rev.F	WYu	

Activity Name	Orig Dur	DWP Start	DWP Finish	2015			2016							
				Oct	Nov	Dec	Jan	Feb	Mar	Apr	May			
Designer to Reply RIC + Update Submission	21	29-Oct-14	21-Nov-14											
Submit Updated DDA to SO/ ICE/ IPs	0	22-Nov-14												
ICE Approval & Issue Check Cert	12	22-Nov-14	05-Dec-14											
Submit ICE Check Cert to SO	6	06-Dec-14	12-Dec-14											
IPs Review	28	22-Nov-14	19-Dec-14											
IPs No Objection Received	0		19-Dec-14											
SO's Review	35	22-Nov-14	26-Dec-14											
SO Approval with Condition Received	0		27-Dec-14											
(D9) DDA Temporary support and dewatering measures for Vent Duct ELS design for Northern Landfall														
SO's Review	35	19-Aug-15	22-Sep-15											
SO Approval with Condition Received	0		22-Sep-15											
ETWB TCW No 15/2005 - ELS design of ventilation duct and its connections with building and tunnel														
1st Submission GEO Review	28	02-Sep-15	29-Sep-15											
Received GEO Comment	0		29-Sep-15											
Prepare Response to Comment	12	30-Sep-15	14-Oct-15											
2nd Submission to GEO	0		14-Oct-15											
2nd GEO Review	28	15-Oct-15	11-Nov-15											
North Surface Roadworks, Utility & Drainage works														
Design Submission														
(A20) DDA for Traffic Sign, Road Marking, Street Furnitures, Sign Gantry & etc														
SO's Review	35	11-Dec-14	14-Jan-15											
SO Approval with Condition Received	0		14-Jan-15											
(C2) DDA for Sewerage, Drainage, Waterworks & Utility works for North Landfall														
IPs Review	28	08-Nov-14	05-Dec-14											
IPs No Objection Received	0		05-Dec-14											
SO's Review	35	08-Nov-14	12-Dec-14											
SO Approval with Condition Received	0		12-Dec-14											
Sub-sea Tunnel														
Sub-sea TBM Tunnelling														
Major Procurement														
S881 -														
S881 - 13.6m dia - TBM - Manufacturing - Cutterhead	257	18-Jul-14	03-Jun-15											
S881 - 13.6m dia - TBM - Workshop Assembly	70	02-Feb-15	06-May-15											
S881 - 13.6m dia - TBM - Workshop Acceptance Test	0		06-May-15											
S881 - 13.6m dia - TBM - Disassembly and Packing for Transport	16	07-May-15	26-May-15											
S881 - 13.6m dia - TBM - Delivery	20	27-May-15	15-Jun-15											
S881 - 13.6m dia - TBM - Arrival to site	0		15-Jun-15											
Precast Segment ID12.40 - Production for Sub-sea TBM Tunnel														
ID12.40 TBM Segment Ring Fabrication - 12 rings per day	300	22-Nov-14	19-Dec-15											
Design Submission														
(B6) Risk Assessment of Submarine Cable - Tunnelling Works														
CLP Review (4 weeks)	28	17-Mar-15	13-Apr-15											
CLP Comment Received	0		13-Apr-15											
SO's Condition Approval	35	12-Mar-15	15-Apr-15											
(G1) DDA for TBM Tunnel Lining Structural Design - Sub-sea tunnel														
Sub-sea TBM Tunnel Segment - Fabrication	265	06-Oct-14	29-Aug-15											
(G3) DDA for TBM Tunnel Internal Structures (Sub-sea)														
Sub-sea Tunnel - Precast Gallery Fabrication	244	22-Jan-15	21-Nov-15											
Construction														
Sub-sea TBM Tunnel - NB ID12.2m - S881														
NB TBM Change diameter at North Ventilation Shaft	87	30-Dec-15	01-Apr-16											
Sub-sea TBM Tunnel - SB ID12.2m - S882														
SB - S882 TBM Crossing within NVS Steel bell	7	03-Jan-16	10-Jan-16											
SB - Sub-sea TBM Tunnel - Transition with Saturation (Ch6543 to 6521 - 22m)	5	10-Jan-16	15-Jan-16											
SB - Sub-sea TBM Tunnel - Transition with Saturation (Ch6521 to 6451 - 70m)	15	15-Jan-16	30-Jan-16											
SB - Sub-sea TBM Tunnel - Transition with Saturation (Ch6451 to 6371 - 80m)	17	30-Jan-16	19-Feb-16											
SB - Sub-sea TBM Tunnel - Transition with Saturation (Ch6371 to 6321 - 50m)	10	19-Feb-16	29-Feb-16											
SB - Sub-sea TBM Tunnel - CDG+Boulder with Saturation (Ch6321 to 6281 - 40m)	5	29-Feb-16	05-Mar-16											
SB - Sub-sea TBM Tunnel - Steel Bell dismantling & Reconnect for NVS supply	27	05-Mar-16	04-Apr-16											
Sub-sea TBM Tunnel - SB - Precast Invert Gallery														
SB - ISIG Assembly for Sub-sea TBM Tunnel	7	15-Jan-16	22-Jan-16											
Sub-sea Tunnel Cross Passage & Internal Structure														
Design Submission														
(G4) DDA for Cross Passage - Permanent works - incl. Geotechnical Assessment - Sub-sea tunnel														
Review & Comment by JV	6	01-Dec-14	06-Dec-14											
Designer prepare DDA	12	08-Dec-14	20-Dec-14											
Formal Submission of DDA to ICE/ IPs	0		20-Dec-14											
Advanced Submission to SO	0		20-Dec-14											
IPs/ SO's Advance Comments/ ICE Comments	28	21-Dec-14	17-Jan-15											



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Activity Name	Orig Dur	DWP Start	DWP Finish	2015			2016					
				Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	
Comments Received	0		17-Jan-15									
Designer to Reply RiC + Update Submission	21	19-Jan-15	11-Feb-15									
Submit Updated DDA to SO/ ICE/ IPs	0	12-Feb-15										
ICE Approval & Issue Check Cert	12	12-Feb-15	04-Mar-15									
IPs Review	28	12-Feb-15	11-Mar-15									
SO's Review	35	12-Feb-15	18-Mar-15									
ETWB TCW No 15/2005 - Cross Passage Ground Treatment for Sub-sea TBM Tunnel												
1st Submission to GEO - ETWB TCW No 15/2005 - Cross Passage Ground Treatment for Sub-sea TBM Tunnel	0		13-Jul-15									
1st Submission GEO Review	28	14-Jul-15	10-Aug-15									
Received GEO Comment	0		10-Aug-15									
Prepare Response to Comment	12	11-Aug-15	24-Aug-15									
2nd Submission to GEO	0		24-Aug-15									
2nd GEO Review	28	25-Aug-15	21-Sep-15									
Received 2nd GEO Comment	0		21-Sep-15									
Prepare Respond to 2nd Comment	12	22-Sep-15	07-Oct-15									
3rd Submission to GEO	0		07-Oct-15									
3rd GEO Review	28	08-Oct-15	04-Nov-15									
Southern Landfall												
South Cut & Cover Tunnel												
Design Submission												
(E2) DDA for South C&C Box & Approach Ramp												
Review & Comment by JV	18	09-Dec-14	31-Dec-14									
Designer prepare DDA	10	02-Jan-15	13-Jan-15									
Formal Submission of DDA to ICE/ IPs	0		13-Jan-15									
Advanced Submission to SO	0		13-Jan-15									
IPs/ SO's Advance Comments/ ICE Comments	28	14-Jan-15	10-Feb-15									
Comments Received	0		10-Feb-15									
Designer to Reply RiC + Update Submission	21	11-Feb-15	13-Mar-15									
Submit Updated DDA to SO/ ICE/ IPs	0	14-Mar-15										
ICE Approval & Issue Check Cert	18	14-Mar-15	08-Apr-15									
IPs Review	28	14-Mar-15	10-Apr-15									
SO's Review	35	14-Mar-15	17-Apr-15									
(F3) AIP Temp.Support for South.C&C, Portal & ELS												
IPs Review	28	10-Jan-15	06-Feb-15									
IPs No Objection Received	0		06-Feb-15									
SO's Review	35	10-Jan-15	13-Feb-15									
SO Approval with Condition Received	0		13-Feb-15									
(F3) DDA Temp.Support for South.C&C, Portal & ELS												
Preparation of DDASouth C&C ELS	18	01-Apr-15	25-Apr-15									
Review & Comment by JV	18	27-Apr-15	18-May-15									
Designer prepare DDA	10	19-May-15	30-May-15									
Formal Submission of DDA to ICE/ IPs	0		30-May-15									
Advanced Submission to SO	0		30-May-15									
IPs/ SO's Advance Comments/ ICE Comments	28	31-May-15	27-Jun-15									
Comments Received	0		27-Jun-15									
Designer to Reply RiC + Update Submission	21	29-Jun-15	23-Jul-15									
Submit Updated DDA to SO/ ICE/ IPs	0	24-Jul-15										
ICE Approval & Issue Check Cert	12	24-Jul-15	06-Aug-15									
Submit ICE Check Cert to SO	6	07-Aug-15	13-Aug-15									
IPs Review	28	24-Jul-15	20-Aug-15									
IPs No Objection Received	0		20-Aug-15									
SO's Review	35	24-Jul-15	27-Aug-15									
SO Approval with Condition Received	0		27-Aug-15									
Method Statement Submission												
Method Statement of Construction Methodology of C&C Tunnels												
Preparation Method Statement for C&C Tunnels	25	28-Mar-15	30-Apr-15									
Submit Method Statement to SO	0		30-Apr-15									
SO Reviews & Comments	28	01-May-15	28-May-15									
Re-submission	18	29-May-15	18-Jun-15									
SO's Review	28	19-Jun-15	16-Jul-15									
Construction												
South C&C Tunnel - Diaphragm Wall	120	03-Oct-15	02-Mar-16									
C&C Tunnel - 1st 85m - Excavation by ramp	23	03-Mar-16	01-Apr-16									
South Retrieval Shaft												
Design Submission												
(A5) Ground Investigation Report - Phase 3 - Southern Landfall												
Prepare Re-submission	10	23-Jun-15	04-Jul-15									

- Planned Bar
- Planned Bar - Critical
- ◆ Planned Milestone
- Progress bar
- ◆ Progress Milestone



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28-Aug-14	TMCLKDBJGEN.PRG.08507 Rev.C	CLa	WYu
10-Jun-15	TMCLKDBJGEN.PRG.08507 Rev.F	WYu	

Activity Name	Orig Dur	DWPF Start	DWPF Finish	2015			2016					
				Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	
*2nd Submission	0		04-Jul-15									
SO's Condition Approval	35	05-Jul-15	08-Aug-15									
(B5) AIP Construction Risk Assessment - Impact on South Landfall												
SO's Condition Approval	35	27-Jan-15	02-Mar-15									
(B5) DDA Construction Risk Assessment - Impact on South Landfall												
Preparation of Construction Risk Assessment - Impact on South Landfall	36	03-Mar-15	17-Apr-15									
1st Submission	0		17-Apr-15									
SO's Comments for 1st Submission	35	18-Apr-15	22-May-15									
Prepare Re-submission	10	23-May-15	04-Jun-15									
2nd Submission	0		04-Jun-15									
ICE Cert. Issue	6	05-Jun-15	11-Jun-15									
SO's Condition Approval	35	05-Jun-15	09-Jul-15									
(F1) AIP Temp.works - Retrieval Shaft on Southern Landfall inc. break-out												
SO Review (35 Days)	35	17-Dec-14	20-Jan-15									
SO Approval with Condition Received	0		20-Jan-15									
(F1) DDA Temp.works - Retrieval Shaft on Southern Landfall inc. break-out												
Preparation of DDA Temp Support for Sth Retrieval Shaft	18	01-Apr-15	25-Apr-15									
Review & Comment by JV	18	27-Apr-15	18-May-15									
Designer prepare DDA	6	19-May-15	26-May-15									
Formal Submission of DDA to ICE/ IPs	0		26-May-15									
Advanced Submission to SO	0		26-May-15									
IPs/ SO's Advance Comments/ ICE Comments	28	27-May-15	23-Jun-15									
Comments Received	0		23-Jun-15									
Designer to Reply RTC + Update Submission	21	24-Jun-15	18-Jul-15									
Submit Updated DDA to SO/ ICE/ IPs	0	20-Jul-15										
ICE Approval & Issue Check Cert	12	20-Jul-15	01-Aug-15									
Submit ICE Check Cert to SO	6	03-Aug-15	08-Aug-15									
IPs Review	28	20-Jul-15	16-Aug-15									
IPs No Objection Received	0		16-Aug-15									
SO's Review	35	20-Jul-15	23-Aug-15									
SO Approval with Condition Received	0		24-Aug-15									
(F2) AIP Temp works of Ground Treatment for TBMs passing under Southern Landfall												
Review & Comment by JV	18	23-Sep-14	15-Oct-14									
Designer Prepare AIP	12	16-Oct-14	29-Oct-14									
Formal Submission of AIP to ICE/ IPs	0		29-Oct-14									
Advanced Submission of AIP to SO	0		29-Oct-14									
Review & Comment by SO/ ICE/ IPs	28	30-Oct-14	26-Nov-14									
Advance Comments from SO/ Comments from ICE/ IPs Received	0		26-Nov-14									
Designer to Prepare RTC & Updated AIP	18	27-Nov-14	17-Dec-14									
Submission of AIP to SO/ ICE together with Reply To Comment (RTC)	0		17-Dec-14									
Reply to IPs Comments in RTC	0		17-Dec-14									
ICE Approval & Issue of Design Check Cert.	18	18-Dec-14	10-Jan-15									
Check Cert to SO	0		10-Jan-15									
No Objection or Further Minor Comments from IPs Received	0		10-Jan-15									
SO Review (35 Days)	35	19-Dec-14	22-Jan-15									
SO Approval with Condition Received	0		22-Jan-15									
(F2) DDA Temp works of Ground Treatment for TBMs passing under Southern Landfall												
Review & Comment by JV	18	27-Apr-15	18-May-15									
Designer prepare DDA	6	19-May-15	26-May-15									
Formal Submission of DDA to ICE/ IPs	0		26-May-15									
Advanced Submission to SO	0		26-May-15									
IPs/ SO's Advance Comments/ ICE Comments	28	27-May-15	23-Jun-15									
Comments Received	0		23-Jun-15									
Designer to Reply RTC + Update Submission	21	24-Jun-15	18-Jul-15									
Submit Updated DDA to SO/ ICE/ IPs	0	20-Jul-15										
ICE Approval & Issue Check Cert	12	20-Jul-15	01-Aug-15									
Submit ICE Check Cert to SO	6	03-Aug-15	08-Aug-15									
IPs Review	28	20-Jul-15	16-Aug-15									
IPs No Objection Received	0		16-Aug-15									
SO's Review	35	20-Jul-15	23-Aug-15									
SO Approval with Condition Received	0		24-Aug-15									
(F4) Gantry Crane Support/Foundations in Southern Landfall												
Preparation of IFA Gantry Crane / Foundation	18	27-Jul-15	15-Aug-15									
Review & Comment by JV	18	17-Aug-15	05-Sep-15									
Designer prepare IFA	10	07-Sep-15	17-Sep-15									

- Planned Bar
- Planned Bar - Critical
- Planned Milestone
- Progress bar
- Progress Milestone



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10-Jun-15	TMCLKDBJGEN.PRG.08507 Rev.F	WYu	

Activity Name	Orig Dur	DWP Start	DWP Finish	2015			2016							
				Oct	Nov	Dec	Jan	Feb	Mar	Apr	May			
Formal Submission of IFA to ICE/ IPs	0		17-Sep-15											
Advanced Submission to SO	0		17-Sep-15											
IPs/ SO's Advance Comments/ ICE Comments	28	18-Sep-15	15-Oct-15											
Comments Received	0		15-Oct-15											
Designer to Reply RfC + Update Submission	21	16-Oct-15	10-Nov-15											
Submit Updated IFA to SO/ ICE/ IPs	0	11-Nov-15												
ICE Approval & Issue Check Cert	12	11-Nov-15	24-Nov-15											
IPs Review	28	11-Nov-15	08-Dec-15											
IPs No Objection Received	0		08-Dec-15											
SO's Review	35	11-Nov-15	15-Dec-15											
SO Approval with Condition Received	0		15-Dec-15											
Method Statement Submission														
Method Statement of Construction Methodology of Retrieval Shaft														
Preparation Method Statement for Retrieval Shaft	25	24-Aug-15	21-Sep-15											
Submit Method Statement to SO	0		21-Sep-15											
SO Reviews & Comments	28	22-Sep-15	19-Oct-15											
Re-submission	18	20-Oct-15	10-Nov-15											
SO's Review	28	11-Nov-15	08-Dec-15											
SO's Approval	0		08-Dec-15											
Construction														
South Landfall GI Works/DW Setting Up	48	06-Aug-15	02-Oct-15											
South Retrieval Shaft - Diaphragm Wall	98	03-Oct-15	29-Jan-16											
Retrieval Shaft - Excavation - Soft by ramp	3	30-Jan-16	02-Feb-16											
Retrieval Shaft - Excavation - Soft by vertical mean (Fill material)	52	03-Feb-16	14-Apr-16											
South Approach Ramp														
Construction														
Approach Ramp (CH1580-1850) - Pipe Pile/Sheet Piles Wall	126	03-Oct-15	09-Mar-16											
Approach Ramp (CH1580-1850) - Tension Piles	103	03-Oct-15	04-Feb-16											
Approach Ramp (CH1580-1850) - Pile Test	24	05-Feb-16	10-Mar-16											
South Ventilation Building														
Design Submission														
(I1) DDA for South Vent.Bldg. GBP & Arch.Submission														
Designer to Reply RfC + Update Submission	21	27-Nov-14	20-Dec-14											
Submit Updated DDA to SO/ ICE/ IPs	0	22-Dec-14												
ICE Approval & Issue Check Cert	18	22-Dec-14	14-Jan-15											
Submit ICE Check Cert to SO	6	15-Jan-15	21-Jan-15											
IPs Review	28	22-Dec-14	18-Jan-15											
IPs No Objection Received	0		18-Jan-15											
SO's Review	35	22-Dec-14	25-Jan-15											
SO Approval with Condition Received	0		26-Jan-15											
(I2) DDA for South Vent.Bldg. Foundation Design														
Review & Comment by JV	18	27-Apr-15	18-May-15											
Designer prepare DDA	10	19-May-15	30-May-15											
Formal Submission of DDA to ICE/ IPs	0		30-May-15											
Advanced Submission to SO	0		30-May-15											
IPs/ SO's Advance Comments/ ICE Comments	28	31-May-15	27-Jun-15											
Comments Received	0		27-Jun-15											
Designer to Reply RfC + Update Submission	21	29-Jun-15	23-Jul-15											
Submit Updated DDA to SO/ ICE/ IPs	0	24-Jul-15												
ICE Approval & Issue Check Cert	18	24-Jul-15	13-Aug-15											
IPs Review	28	24-Jul-15	20-Aug-15											
SO's Review	35	24-Jul-15	27-Aug-15											
(I2) DDA for South Vent.Bldg.Structural Design incl.Vent.Connections														
Review & Comment by JV	18	18-Feb-15	17-Mar-15											
Designer prepare DDA	10	18-Mar-15	28-Mar-15											
Formal Submission of DDA to ICE/ IPs	0		28-Mar-15											
Advanced Submission to SO	0		28-Mar-15											
IPs/ SO's Advance Comments/ ICE Comments	28	29-Mar-15	25-Apr-15											
Comments Received	0		25-Apr-15											
Designer to Reply RfC + Update Submission	21	27-Apr-15	21-May-15											
(J1) DDA Temp.works for Construction of Sth.Vent.Bldg.														
Designer to Reply RfC + Update Submission	21	24-Aug-15	16-Sep-15											
Submit Updated DDA to SO/ ICE/ IPs	0	17-Sep-15												
ICE Approval & Issue Check Cert	12	17-Sep-15	02-Oct-15											
Submit ICE Check Cert to SO	6	03-Oct-15	09-Oct-15											
IPs Review	28	17-Sep-15	14-Oct-15											

■ Planned Bar
■ Planned Bar - Critical
◆ Planned Milestone
■ Progress bar
◆ Progress Milestone



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28-Aug-14	TMCLKD/BGEN/PRG08507 Rev.C	CLa	WYu
10-Jun-15	TMCLKD/BGEN/PRG08507 Rev.F	WYu	

Activity Name	Orig Dur	DWPF Start	DWPF Finish	2015			2016					
				Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	
IPs No Objection Received	0		14-Oct-15			◆						
SO's Review	35	17-Sep-15	21-Oct-15									
SO Approval with Condition Received	0		22-Oct-15			◆						
Construction												
Mobilization & Setting Up Piling Rigs	64	06-Aug-15	22-Oct-15									
S - Piling (Socket H-piles)	132	23-Oct-15	08-Apr-16									
S - Sheet Piling	48	23-Oct-15	17-Dec-15									
South Surface Roadworks, Utility & Drainage works												
Design Submission												
(E1) AIP - Southern Landfall Seawall Modification												
Review & Comment by SO/ ICE/ IPs	28	13-Jan-17	09-Feb-17									
Advance Comments from SO/ Comments from ICE/ IPs Received	0		09-Feb-17									
Designer to Prepare Rtc & Updated AIP	18	10-Feb-17	02-Mar-17									
Submission of AIP to SO/ ICE together with Reply To Comment (RTC)	0		02-Mar-17									
Reply to IPs Comments in RTC	0		02-Mar-17									
ICE Approval & Issue of Design Check Cert.	18	03-Mar-17	23-Mar-17									
Check Cert to SO	0		23-Mar-17									
No Objection or Further Minor Comments from IPs Received	0		23-Mar-17									
SO Review (35 Days)	35	03-Mar-17	06-Apr-17									
SO Approval with Condition Received	0		06-Apr-17									
(E1) DDA - Southern Landfall Seawall Modification												
Preparation of DDA Modification of Seawall at Sth Landfall	18	07-Apr-17	02-May-17									
Review & Comment by JV	18	04-May-17	24-May-17									
Designer prepare DDA	10	25-May-17	06-Jun-17									
Formal Submission of DDA to ICE/ IPs	0		06-Jun-17									
Advanced Submission to SO	0		06-Jun-17									
IPs/ SO's Advance Comments/ ICE Comments	28	07-Jun-17	04-Jul-17									
(E3) DDA for Sewerage, Drainage, Waterworks & Utility works for South Landfall												
Designer to Reply RTC + Update Submission	21	02-Feb-15	04-Mar-15									
Submit Updated DDA to SO/ ICE/ IPs	0		05-Mar-15									
ICE Approval & Issue Check Cert	12	05-Mar-15	18-Mar-15									
Submit ICE Check Cert to SO	6	19-Mar-15	25-Mar-15									
IPs Review	28	05-Mar-15	01-Apr-15									
IPs No Objection Received	0		01-Apr-15									
SO's Review	35	05-Mar-15	08-Apr-15									
SO Approval with Condition Received	0		08-Apr-15									
Method Statement Submission												
Method Statement of Ground Treatment for TBMs Passing under Southern Landfall Seawall												
Preparation Method Statement for Ground Improvement in South Landfall	9	20-Jul-15	29-Jul-15									
Submit Method Statement to SO	0		29-Jul-15									
SO Reviews & Comments	28	30-Jul-15	26-Aug-15									
Re-submission	6	27-Aug-15	02-Sep-15									
SO's Review	28	03-Sep-15	30-Sep-15									
SO's Approval	0		30-Sep-15									
Construction												
Temporary Platform for Ground Treatment for TBM passing under Southern Seawall	48	06-Aug-15	02-Oct-15									
Grouting Treatment for TBM passing under Southern Seawall	339	03-Oct-15	25-Nov-16									
Testing & Commissioning/Inspection & Handover												
Final Inspection & Handover												
Design Submission												
(A12) Maintenance Matrix												
Preparation of Maintenance Matrix	35	24-Dec-15	05-Feb-16									
1st Submission	0		05-Feb-16									
SO's Comments for 1st Submission	35	06-Feb-16	11-Mar-16									
Prepare Re-submission	18	12-Mar-16	06-Apr-16									
(A13) Operation & Maintenance Manual												
Preparation of Operation and Maintenance Manual	48	24-Dec-15	27-Feb-16									
1st Submission	0		27-Feb-16									
SO's Comments for 1st Submission	35	28-Feb-16	02-Apr-16									
(A14) As-built & As-fabricated Drawings												
Preparation of As-built and As-fabricated Drawings	48	24-Dec-15	27-Feb-16									
1st Submission	0		27-Feb-16									
SO's Comments for 1st Submission	35	28-Feb-16	02-Apr-16									
(A15) Health & Safety File incl. As-built Dwgs & Records, Maintenance Schedules, O&M Manual												
Preparation of Health and Safety File including as-built drawings and records, maintenance schedules, operation and mai	48	24-Dec-15	27-Feb-16									
1st Submission	0		27-Feb-16									
SO's Comments for 1st Submission	35	28-Feb-16	02-Apr-16									

- Planned Bar
- Planned Bar - Critical
- ◆ Planned Milestone
- Progress bar
- ◆ Progress Milestone



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10-Jun-15	TMCLKDBJGEN.PRG.08507 Rev.F	WYu	

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		✓

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

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

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status *
						D	C	O	
6.1	-	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		✓

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

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Tuen Mun – Chek Lap Kok Link
Northern Connection Sub-sea Tunnel Section
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						D	C	O	
6.1 Figure 6.2b Appendix D6b	Annex A	For other parts of the reclamation works construction of seawalls to be advanced by at least 200m before the main reclamation dredging and filling can commence. It should be noted that the protection by advanced seawall is a dynamic process depending on the progress of the construction activities and the stage when such protection could be realised is illustrated in Figure 6.2b and detailed in Appendices D6b. The part of the works where such measures can be undertaken for the majority of the time includes the following locations: - TM-CLKL northern reclamation; - Reclamation filling for Portion D of HKBCF; Reclamation filling for FSD berth of HKBCF; and - Reclamation dredging and filling for Portion 1 of HKLR;	TM-CLKL northern landfall, Portion D of HKBCF and HKLR	Contractor	TM-EIAO		Y		✓
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		✓

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

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						D	C	O	
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 conditions.		Y		✓
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		✓

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						D	C	O	
<i>Land Works</i>									
6.1	-	Wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.1	-	Sewage effluent and discharges from on- site kitchen facilities shall be directed to Government sewer in accordance with the requirements of the WPCO or collected for disposal offsite. The use of soakaways shall be avoided.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.1	-	Storm drainage shall be directed to storm drains via adequately designed sand/silt removal facilities such as sand traps, silt traps and sediment basins. Channels, earth bunds or sand bag barriers should be provided on site to properly direct stormwater to such silt removal facilities. Catchpits and perimeter channels should be constructed in advance of site formation works and earthworks.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.1	-	Silt removal facilities, channels and manholes shall be maintained and any deposited silt and grit shall be removed regularly, including specifically at the onset of and after each rainstorm.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.1	-	Temporary access roads should be surfaced with crushed stone or gravel.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.1	-	Rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.1	-	Measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.1	-	Open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓

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						D	C	O	
6.1	5.8	Manholes (including any newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris from getting into the drainage system, and to prevent storm run-off from getting into foul sewers.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.1	-	Discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.1	-	All vehicles and plant should be cleaned before they leave the construction site to ensure that no earth, mud or debris is deposited by them on roads. A wheel washing bay should be provided at every site exit.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.1	-	Wheel wash overflow shall be directed to silt removal facilities before being discharged to the storm drain.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.1	-	Section of construction road between the wheel washing bay and the public road should be surfaced with crushed stone or coarse gravel.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.1	-	Wastewater generated from concreting, plastering, internal decoration, cleaning work and other similar activities, shall be screened to remove large objects.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.1	-	Vehicle and plant servicing areas, vehicle wash bays and lubrication facilities shall be located under roofed areas. The drainage in these covered areas shall be connected to foul sewers via a petrol interceptor in accordance with the requirements of the WPCO or collected for off site disposal.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		N/A
6.1	-	The Contractor shall prepare an oil / chemical cleanup plan and ensure that leakages or spillages are contained and cleaned up immediately.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		<>
6.1	-	Waste oil should be collected and stored for recycling or disposal, in accordance with the Waste Disposal Ordinance.	All areas/ throughout construction period	Contractor	TM-EIAO Waste Disposal Ordinance		Y		✓

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						D	C	O	
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		✓

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						D	C	O	
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		✓
<i>Water Quality Monitoring</i>									
6.1	Section 5	Water quality monitoring shall be undertaken for suspended solids, turbidity, and dissolved oxygen. Nutrients and metal parameters shall also be measured for Mf sediment operations (only HKBCF and HKLR required handling of Mf sediment) during baseline, backfilling and post construction period. One year operation phase water quality monitoring at designated stations.	Designated monitoring stations as defined in EM&A Manual, Section 5/ Before, through-out marine construction period, post construction and monthly operational phase water quality monitoring for a year.	Contractor	EM&A Manual		Y	Y	✓
ECOLOGY									
8.14	6.3	Specification for and implement pre, during and post construction dolphin abundance monitoring.	All Areas/Detailed Design/ during construction works/post construction	Design Consultant/ Contractor	TMEIA	Y	Y	Y	✓
8.14	6.3,6.5	Specification and implementation of 250m dolphin exclusion zone.	All dredging and reclamation areas/Detailed Design/ during all reclamation and dredging works	Design Consultant/ Contractor	TMEIA	Y	Y		✓
8.15	6.3, 6.5	Specification and deployment of an artificial reef of an area of 3,600m 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		✓

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

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						D	C	O	
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		✓

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						D	C	O	
12.6		The Contractor shall apply for and obtain the appropriate licenses for the disposal of public fill, chemical waste and effluent discharges.	Contract mobilisation	Contractor	TMEIA, Land (Miscellaneous Provisions) Ordinance (Cap 28); Waste Disposal Ordinance (Cap 354); Dumping at Sea Ordinance (Cap 466); Water Pollution Control Ordinance.		Y		✓
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		✓

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						D	C	O	
12.6	8.1	Stockpiled material shall be covered by tarpaulin and /or watered as appropriate to prevent windblown dust/ surface run off.	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	Excavated material in trucks shall be covered by tarpaulins to reduce the potential for spillage and dust generation.	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	Wheel washing facilities shall be used by all trucks leaving the site to prevent transfer of mud onto public roads.	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	Dredged marine mud shall be disposed of in a gazetted marine disposal ground under the requirements of the Dumping at Seas Ordinance.	Reclamation areas / throughout dredging works	Contractor	TMEIA		Y		✓
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		✓

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						D	C	O	
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: <i>f</i> suitable for the substance to be held, resistant to corrosion, maintained in good conditions and securely closed; <i>f</i> Having a capacity of <450L unless the specifications have been approved by the EPD; and <i>f</i> Displaying a label in English and Chinese according to the instructions prescribed in Schedule 2 of the Regulations. <i>f</i> Clearly labelled and used solely for the storage of chemical wastes; <i>f</i> Enclosed with at least 3 sides; <i>f</i> Impermeable floor and bund with capacity to accommodate 110% of the volume of the largest container or 20% by volume of the chemical waste stored in the area, whichever is greatest; <i>f</i> Adequate ventilation; <i>f</i> Sufficiently covered to prevent rainfall entering (water collected within the bund must be tested and disposed of as chemical waste, if necessary); and <i>f</i> Incompatible materials are adequately separated.	All areas / throughout construction period	Contractor	TMEIA		Y		<>
12.6	8.1	Waste oils, chemicals or solvents shall not be disposed of to drain,	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	Adequate numbers of portable toilets should be provided for on-site workers. Portable toilets should be maintained in reasonable states, which will not deter the workers from utilising them.	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	Night soil should be regularly collected by licensed collectors.	All areas / throughout construction period	Contractor	TMEIA		Y		N/A

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						D	C	O	
12.6	8.1	General refuse arising on-site should be stored in enclosed bins or compaction units separately from C&D and chemical wastes. Sufficient dustbins shall be provided for storage of waste as required under the Public Cleansing and Prevention of Nuisances By-laws. In addition, general refuse shall be cleared daily and shall be disposed of to the nearest licensed landfill or refuse transfer station. Burning of refuse on construction sites is prohibited.	All areas / throughout construction period	Contractor	TMEIA		Y		<>
12.6	8.1	All waste containers shall be in a secure area on hardstanding;	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	Training shall be provided to workers about the concepts of site cleanliness and appropriate waste management procedure, including waste reduction, reuse and recycling.	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	Office wastes can be reduced by recycling of paper if such volume is sufficiently large to warrant collection. Participation in a local collection scheme by the Contractor should be advocated. Waste separation facilities for paper, aluminium cans, plastic bottles, etc should be provided on-site.	Site Offices/ throughout construction period	Contractor	TMEIA		Y		✓
12.6	Section 8	EM&A of waste handling, storage, transportation, disposal procedures and documentation through the site audit programme shall be undertaken.	All areas / throughout construction period	Contractor	EM&A Manual		Y		✓
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 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 D3 *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 Quality
Monitoring

High-Volume TSP Sampler
5-Point Calibration Record

Location : ASR 5
 Calibrated by : P.F.Yeung
 Date : 10/10/2015

Sampler

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

Calibration Orifice and Standard Calibration Relationship

Serial Number : 2454
 Service Date : 24 Mar 2015
 Slope (m) : 2.09532
 Intercept (b) : -0.03812
 Correlation Coefficient(r) : 0.99994

Standard Condition

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

Calibration Condition

Pa (hpa) : 1014
 Ta(K) : 299

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	11.8	3.431	1.656	55	54.94
2	13 holes	9.4	3.062	1.480	50	49.94
3	10 holes	7.0	2.643	1.279	44	43.95
4	7 holes	4.8	2.188	1.063	36	35.96
5	5 holes	2.8	1.671	0.816	28	27.97

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): 32.462 Intercept(b): 1.692 Correlation Coefficient(r): 0.9990

Checked by: Magnum Fan

Date: 16/10/2015

High-Volume TSP Sampler
5-Point Calibration Record

Location : ASR10
 Calibrated by : P.F.Yeung
 Date : 10/10/2015

Sampler

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

Calibration Orifice and Standard Calibration Relationship

Serial Number : 2454
 Service Date : 24 Mar 2015
 Slope (m) : 2.09532
 Intercept (b) : -0.03812
 Correlation Coefficient(r) : 0.99994

Standard Condition

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

Calibration Condition

Pa (hpa) : 1014
 Ta(K) : 299

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	11.6	3.402	1.642	57	56.93
2	13 holes	9.8	3.127	1.510	52	51.94
3	10 holes	7.6	2.754	1.332	46	45.95
4	7 holes	4.8	2.188	1.063	38	37.96
5	5 holes	2.93	1.710	0.834	30	29.96

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): 32.799 Intercept(b): 2.688 Correlation Coefficient(r): 0.9993

Checked by: Magnum Fan

Date: 16/10/15

High-Volume TSP Sampler
5-Point Calibration Record

Location : AQMS1
 Calibrated by : P.F.Yeung
 Date : 10/10/2015

Sampler

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

Calibration Office and Standard Calibration Relationship

Serial Number : 2454
 Service Date : 24 Mar 2015
 Slope (m) : 2.09532
 Intercept (b) : -0.03812
 Correlation Coefficient(r) : 0.99994

Standard Condition

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

Calibration Condition

Pa (hpa) : 1014
 Ta(K) : 299

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	11.6	3.402	1.642	53	52.94
2	13 holes	9.2	3.030	1.464	47	46.94
3	10 holes	6.6	2.566	1.243	40	39.95
4	7 holes	4.2	2.047	0.995	32	31.96
5	5 holes	2.9	1.701	0.830	26	25.97

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): 32.903 Intercept(b): -1.074 Correlation Coefficient(r): 0.9998

Checked by: Magnum Fan

Date: 16/10/2015

High-Volume TSP Sampler
5-Point Calibration Record

Location : ASR 1
 Calibrated by : P.F.Yeung
 Date : 10/10/2015

Sampler

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

Calibration Office and Standard Calibration Relationship

Serial Number : 2454
 Service Date : 24 Mar 2015
 Slope (m) : 2.09532
 Intercept (b) : -0.03812
 Correlation Coefficient(r) : 0.99994

Standard Condition

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

Calibration Condition

Pa (hpa) : 1014
 Ta(K) : 299

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	11.8	3.431	1.656	55	54.94
2	13 holes	9.4	3.062	1.480	50	49.94
3	10 holes	7.0	2.643	1.279	44	43.95
4	7 holes	4.8	2.188	1.063	36	35.96
5	5 holes	2.8	1.671	0.816	28	27.97

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): 32.462 Intercept(b): 1.692 Correlation Coefficient(r): 0.9990

Checked by: Magnum Fan

Date: 16/10/2015

High-Volume TSP Sampler
5-Point Calibration Record

Location : ASR 6
 Calibrated by : P.F.Yeung
 Date : 10/10/2015

Sampler

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

Calibration Office and Standard Calibration Relationship

Serial Number : 2454
 Service Date : 24 Mar 2015
 Slope (m) : 2.09532
 Intercept (b) : -0.03812
 Correlation Coefficient(r) : 0.99994

Standard Condition

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

Calibration Condition

Pa (hpa) : 1014
 Ta(K) : 299

Resistance Plate	dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1 18 holes	12.0	3.460	1.669	54	53.94
2 13 holes	9.8	3.127	1.510	48	47.94
3 10 holes	7.1	2.661	1.288	41	40.95
4 7 holes	4.5	2.119	1.029	33	32.96
5 5 holes	2.8	1.671	0.816	26	25.97

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): 32.335 Intercept(b): -0.477 Correlation Coefficient(r): 0.9995

Checked by: Magnum Fan

Date: 16/10/2015

High-Volume TSP Sampler
5-Point Calibration Record

Location : ASR 5
 Calibrated by : P.F.Yeung
 Date : 10/12/2015

Sampler

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

Calibration Orifice and Standard Calibration Relationship

Serial Number : 2454
 Service Date : 14 Mar 2015
 Slope (m) : 2.09532
 Intercept (b) : -0.03812
 Correlation Coefficient(r) : 0.99994

Standard Condition

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

Calibration Condition

Pa (hpa) : 1016
 Ta(K) : 293

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	11.8	3.469	1.674	56	56.56
2	13 holes	9.7	3.146	1.519	51	51.51
3	10 holes	7.2	2.710	1.312	44	44.44
4	7 holes	4.8	2.213	1.074	37	37.37
5	5 holes	2.8	1.690	0.825	28	28.28

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

Sampler Calibration Relationship (Linear Regression)

Slope(m): 32.998 Intercept(b): 1.367 Correlation Coefficient(r): 0.9995

Checked by: Magnum Fan

Date: 15/12/2015

High-Volume TSP Sampler
5-Point Calibration Record

Location : ASR10
 Calibrated by : P.F.Yeung
 Date : 10/12/2015

Sampler

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

Calibration Orifice and Standard Calibration Relationship

Serial Number : 2454
 Service Date : 14 Mar 2015
 Slope (m) : 2.09532
 Intercept (b) : -0.03812
 Correlation Coefficient(r) : 0.99994

Standard Condition

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

Calibration Condition

Pa (hpa) : 1016
 Ta(K) : 293

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	11.8	3.469	1.674	56	56.56
2	13 holes	9.5	3.113	1.504	50	50.50
3	10 holes	6.8	2.634	1.275	44	44.44
4	7 holes	4.5	2.143	1.041	37	37.37
5	5 holes	2.8	1.690	0.825	30	30.30

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): 30.331 Intercept(b): 5.505 Correlation Coefficient(r): 0.9992

Checked by: Magnum Fan

Date: 15/12/15

High-Volume TSP Sampler
5-Point Calibration Record

Location : AQMS1
 Calibrated by : P.F.Yeung
 Date : 10/12/2015

Sampler

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

Calibration Office and Standard Calibration Relationship

Serial Number : 2454
 Service Date : 14 Mar 2015
 Slope (m) : 2.09532
 Intercept (b) : -0.03812
 Correlation Coefficient(r) : 0.99994

Standard Condition

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

Calibration Condition

Pa (hpa) : 1016
 Ta(K) : 293

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	11.7	3.454	1.667	55	55.55
2	13 holes	9.7	3.146	1.519	50	50.50
3	10 holes	7.2	2.710	1.312	44	44.44
4	7 holes	4.5	2.143	1.041	36	36.36
5	5 holes	2.7	1.660	0.810	28	28.28

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

Sampler Calibration Relationship (Linear Regression)

Slope(m): 31.314 Intercept(b): 3.263 Correlation Coefficient(r): 0.9994

Checked by: Magnum Fan

Date: 15/12/2015

High-Volume TSP Sampler
5-Point Calibration Record

Location : ASR 1
 Calibrated by : P.F.Yeung
 Date : 10/12/2015

Sampler

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

Calibration Office and Standard Calibration Relationship

Serial Number : 2454
 Service Date : 24 Mar 2015
 Slope (m) : 2.09532
 Intercept (b) : -0.03812
 Correlation Coefficient(r) : 0.99994

Standard Condition

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

Calibration Condition

Pa (hpa) : 1016
 Ta(K) : 293

Resistance Plate	dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1 18 holes	11.5	3.425	1.653	55	55.55
2 13 holes	9.0	3.030	1.465	48	48.48
3 10 holes	6.6	2.595	1.257	42	42.42
4 7 holes	4.6	2.166	1.052	34	34.34
5 5 holes	2.8	1.690	0.825	26	26.26

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): 35.166 Intercept(b): -2.551 Correlation Coefficient(r): 0.9991

Checked by: Magnum Fan

Date: 15/12/2015

High-Volume TSP Sampler
5-Point Calibration Record

Location : ASR 6
 Calibrated by : P.F.Yeung
 Date : 10/12/2015

Sampler

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

Calibration Office and Standard Calibration Relationship

Serial Number : 2454
 Service Date : 24 Mar 2015
 Slope (m) : 2.09532
 Intercept (b) : -0.03812
 Correlation Coefficient(r) : 0.99994

Standard Condition

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

Calibration Condition

Pa (hpa) : 1016
 Ta(K) : 293

Resistance Plate	dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1 18 holes	12.2	3.528	1.702	54	54.54
2 13 holes	9.2	3.063	1.480	48	48.48
3 10 holes	6.7	2.614	1.266	41	41.41
4 7 holes	4.4	2.119	1.029	34	34.34
5 5 holes	2.6	1.629	0.795	27	27.27

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

Sampler Calibration Relationship (Linear Regression)

Slope(m): 30.338 Intercept(b): 3.148 Correlation Coefficient(r): 0.9997

Checked by: Magnum Fan

Date: 15/12/2015

ENVIROTECH SERVICES CO.

Calibration Report of Wind Meter

Date of Calibration : 29 June 2015

Brand of Test Meter: Davis

Model: Weather Wizard III (s/n: WE90911A30)

Location : ASR5

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)	Anemomete (m/s)
1.9	1.8
2.4	2.2
2.9	3.1

Wind Direction Test

Davis (o)	Marine Compass (o)
269	270
1	0
88	90
181	180

Calibrated by:

Fai
Yeung Ping Fai
(Technical Officer)

Checked by :

Fat
Ho Kam Fat
(Senior Technical Officer)

ENVIROTECH SERVICES CO.

Calibration Report of Wind Meter

Date of Calibration : 10 November 2015

Brand of Test Meter: Davis

Model: Weather Wizard III (s/n: WE90911A30)

Location : ASR5

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)	Anemomete (m/s)
1.6	1.4
2.1	2.5
2.5	2.9

Wind Direction Test

Davis (o)	Marine Compass (o)
271	270
2	0
91	90
179	180

Calibrated by: fai
Yeung Ping Fai
(Technical Officer)

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



TISCH ENVIRONMENTAL, INC.
 145 SOUTH MIAMI AVE
 VILLAGE OF CLEVELAND, OH
 45002
 513.467.9000
 877.263.7610 TOLL FREE
 513.467.9009 FAX

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Mar 24, 2015 Rootmeter S/N 0438320 Ta (K) - 292
 Operator Tisch Orifice I.D. - 2454 Pa (mm) - 756.92

PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	DIFF TIME (min)	METER DIFF Hg (mm)	ORFICE DIFF H2O (in.)
1	NA	NA	1.00	1.4460	3.2	2.00
2	NA	NA	1.00	1.0300	6.4	4.00
3	NA	NA	1.00	0.9180	7.9	5.00
4	NA	NA	1.00	0.8780	8.7	5.50
5	NA	NA	1.00	0.7240	12.6	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)	Va	(x axis) Qa	(y axis)
1.0121	0.6999	1.4258	0.9958	0.6886	0.8784
1.0078	0.9785	2.0163	0.9916	0.9627	1.2422
1.0057	1.0955	2.2543	0.9895	1.0779	1.3888
1.0047	1.1443	2.3644	0.9885	1.1258	1.4566
0.9994	1.3805	2.8515	0.9833	1.3582	1.7568
Qstd slope (m) = 2.09532		Qa slope (m) = 1.31205			
intercept (b) = -0.03812		intercept (b) = -0.02349			
coefficient (r) = 0.99994		coefficient (r) = 0.99994			
y axis = SQRT[H2O(Pa/760) (298/Ta)]			y axis = SQRT[H2O(Ta/Pa)]		

CALCULATIONS

Vstd = Diff. Vol [(Pa-Diff. Hg) / 760] (298/Ta)
 Qstd = Vstd/Time

Va = Diff Vol [(Pa-Diff Hg) / Pa]
 Qa = Va/Time

For subsequent flow rate calculations:

Qstd = 1/m { [SQRT(H2O(Pa/760) (298/Ta))] - b }
 Qa = 1/m { [SQRT H2O(Ta/Pa)] - b }



輝創工程有限公司

Sun Creation Engineering Limited

Calibration and Testing Laboratory

Certificate of Calibration

校正證書

Certificate No. : C153422

證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC15-1330)

Date of Receipt / 收件日期 : 10 June 2015

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.

Shop 6, G/F., Casio Mansion, 209 Shaukeiwan Road,
Hong Kong

TEST CONDITIONS / 測試條件

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

Relative Humidity / 相對濕度 : $(55 \pm 20)\%$

Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 23 June 2015

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.

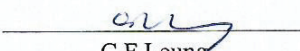
The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via :

- Testo Industrial Services GmbH, Germany

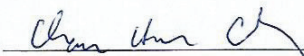
Tested By

測試


C F Leung
Project Engineer

Certified By

核證


H C Chan
Engineer

Date of Issue

簽發日期

23 June 2015

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, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong

輝創工程有限公司 校正及檢測實驗室

c/o 香港新界屯門興安里一號青洲灣機樓四樓

Tel/電話: 2927 2606

Fax/傳真: 2744 8986

E-mail/電郵: callab@suncreation.com

Website/網址: www.suncreation.com

Page 1 of 2

Certificate of Calibration

校正證書

Certificate No. : C153422

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	S12109

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
1.9	1.8	+0.1	0.2	2.0
4.0	3.9	+0.1	0.2	2.0
6.0	6.0	0.0	0.3	2.0
8.0	8.1	-0.1	0.3	2.0
10.0	10.3	-0.3	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 :

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.

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 - December 2015**

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

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		01-Dec	02-Dec	03-Dec	04-Dec	05-Dec
		1-hour TSP - 3 times 24-hour TSP - 1 time Impact AQM			1-hour TSP - 3 times 24-hour TSP - 1 time Impact AQM	
06-Dec	07-Dec	08-Dec	09-Dec	10-Dec	11-Dec	12-Dec
	1-hour TSP - 3 times 24-hour TSP - 1 time Impact AQM			1-hour TSP - 3 times 24-hour TSP - 1 time Impact AQM		
13-Dec	14-Dec	15-Dec	16-Dec	17-Dec	18-Dec	19-Dec
1-hour TSP - 3 times 24-hour TSP - 1 time Impact AQM			1-hour TSP - 3 times 24-hour TSP - 1 time Impact AQM			1-hour TSP - 3 times 24-hour TSP - 1 time Impact AQM
20-Dec	21-Dec	22-Dec	23-Dec	24-Dec	public holiday 25-Dec	public holiday 26-Dec
		1-hour TSP - 3 times 24-hour TSP - 1 time Impact AQM			1-hour TSP - 3 times 24-hour TSP - 1 time Impact AQM	
27-Dec	28-Dec	29-Dec	30-Dec	31-Dec		
	1-hour TSP - 3 times 24-hour TSP - 1 time Impact AQM			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 Connection Sub-sea Tunnel Section
Tentative Air Quality Impact Monitoring Schedule - January 2016**

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

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

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

**HY/2012/08 - Tuen Mun - Chek Lap Kok Link
Northern Connection Sub-sea Tunnel Section
Impact Dolphin Monitoring Survey Monitoring Schedule - December 2015**

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

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

**HY/2012/08 - Tuen Mun - Chek Lap Kok Link
Northern Connection Sub-sea Tunnel Section
Tentative Impact Dolphin Monitoring Survey Monitoring Schedule - January 2016**

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

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

Appendix G

Impact Air Quality Monitoring Results

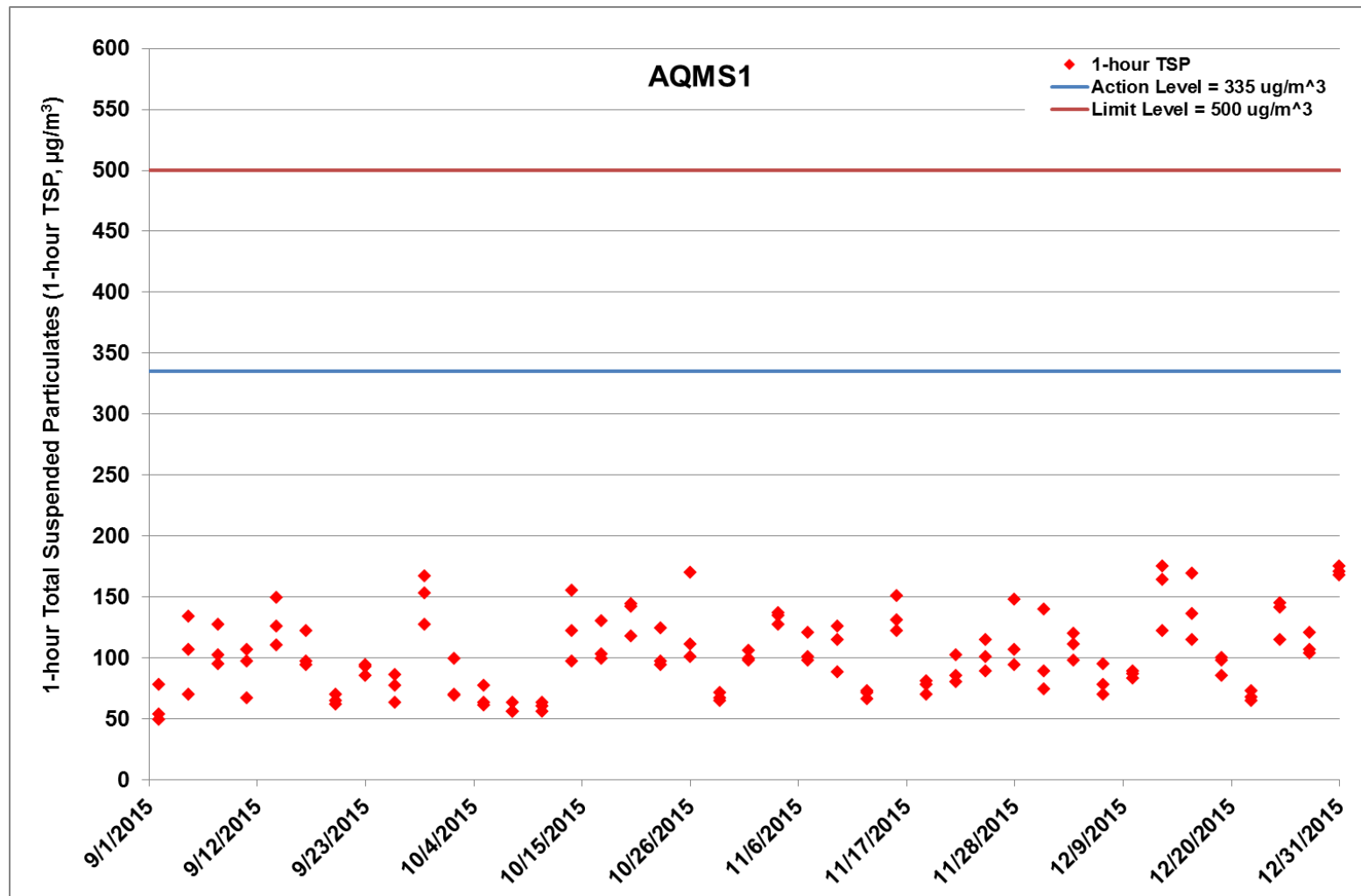


Figure G.1 Impact Monitoring – 1-hour Total Suspended Particulates (µg/m³) at AQMS1 between 1 September 2015 and 31 December 2015 during impact monitoring period. The weather conditions during the monitoring period varied from sunny to cloudy. Major land-based construction activities included: Construction of capping beam and base slab for Ventilation Shaft at Works Area – Portion N-C (1/9/2015 – 31/12/2015) and Box Culvert Extension (1/9/2015 – 31/12/2015). Ref: 0212330_Impact AQM graphs_ December 2015_REV a.xlsx



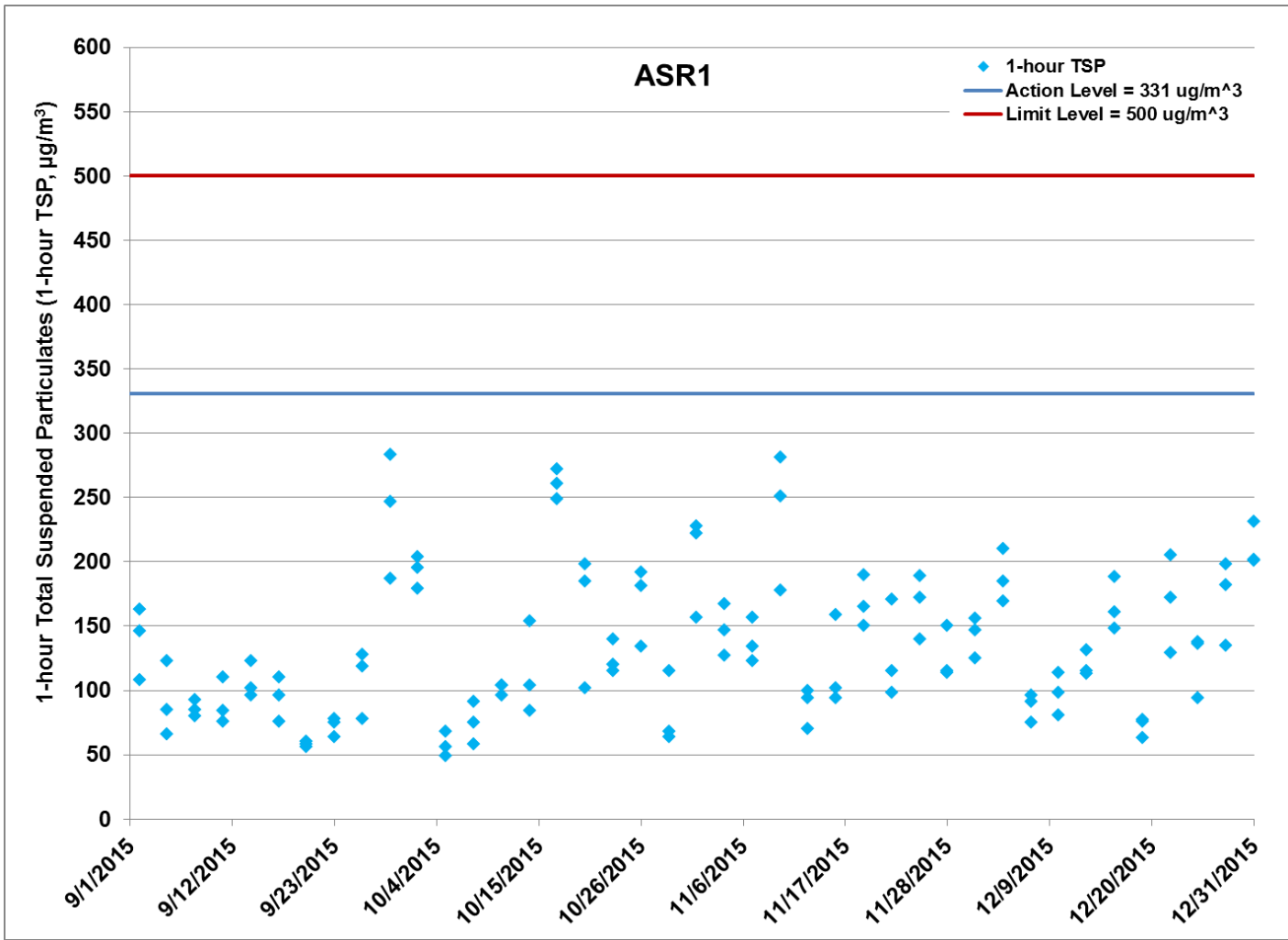


Figure G.3 Impact Monitoring - 1-hour Total Suspended Particulates ($\mu\text{g}/\text{m}^3$) at ASR1 between 1 September 2015 and 31 December 2015 during impact monitoring period. The weather conditions during the monitoring period varied from sunny to cloudy. Major land-based construction activities included: Construction of capping beam and base slab for Ventilation Shaft at Works Area - Portion N-C (1/9/2015 - 31/12/2015) and Box Culvert Extension (1/9/2015 - 31/12/2015). Ref: 0212330_Impact AQM graphs_ December 2015_REV a.xlsx



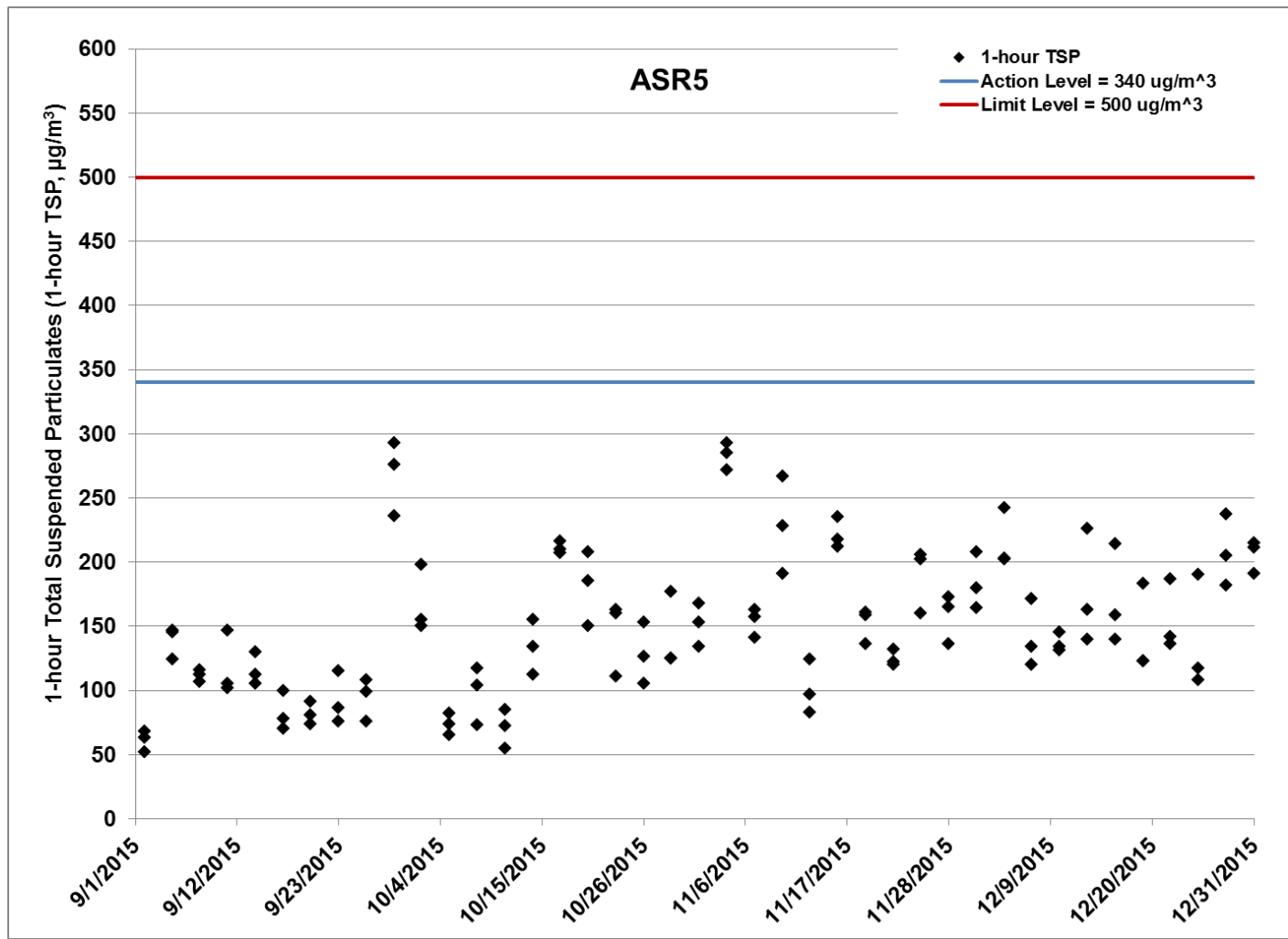


Figure G.4 Impact Monitoring - 1-hour Total Suspended Particulates ($\mu\text{g}/\text{m}^3$) at ASR5 between 1 September 2015 and 31 December 2015 during impact monitoring period. The weather conditions during the monitoring period varied from sunny to cloudy. Major land-based construction activities included: Construction of capping beam and base slab for Ventilation Shaft at Works Area - Portion N-C (1/9/2015 - 31/12/2015) and Box Culvert Extension (1/9/2015 - 31/12/2015). Ref: 0212330_Impact AQM graphs_ December 2015_REV a.xlsx



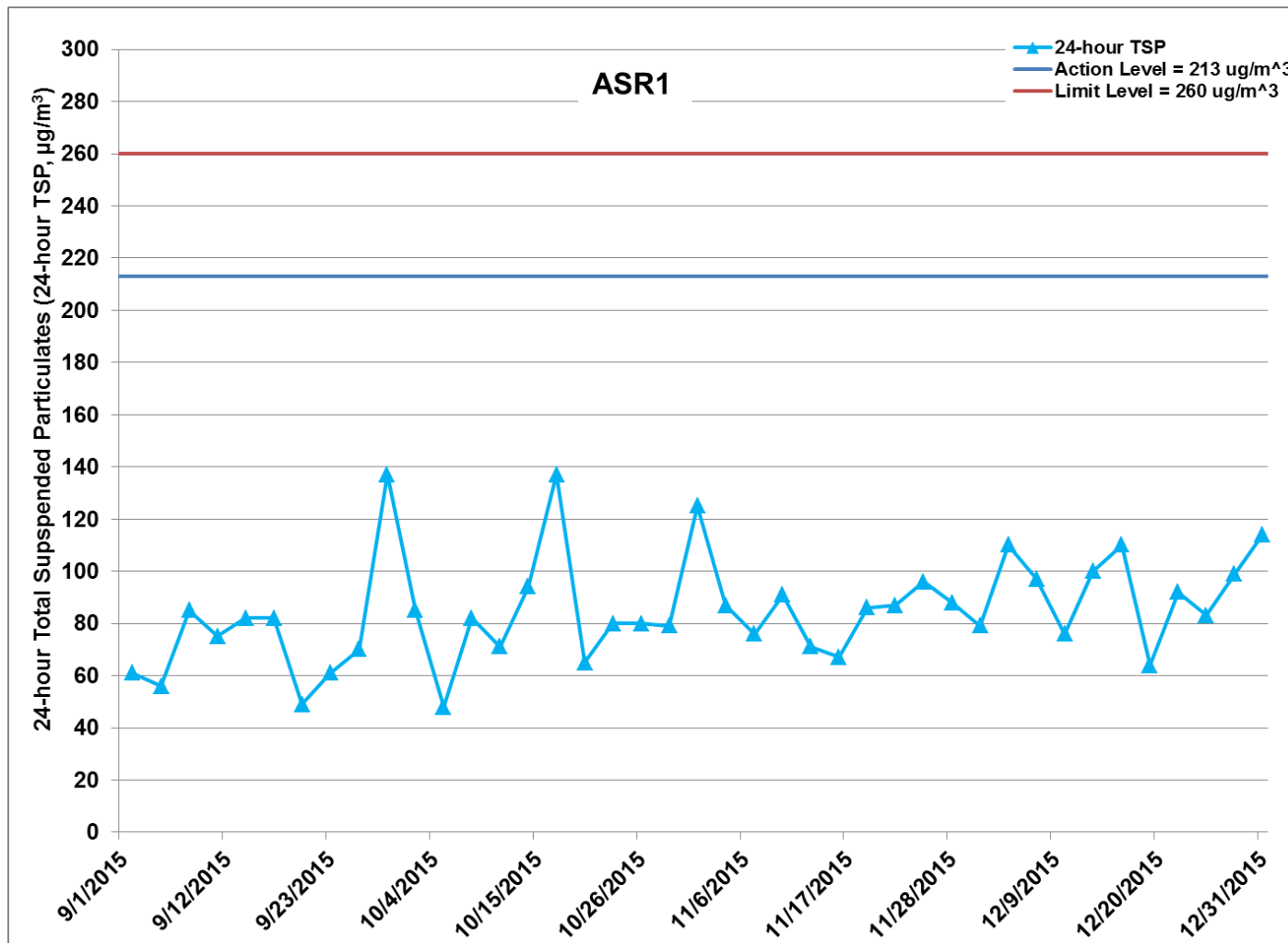


Figure G.6 Impact Monitoring - 24-hour Total Suspended Particulates ($\mu\text{g}/\text{m}^3$) at ASR1 between 1 September 2015 and 31 December 2015 during impact monitoring period. The weather conditions during the monitoring period varied from sunny to cloudy. Major land-based construction activities included: Construction of capping beam and base slab for Ventilation Shaft at Works Area - Portion N-C (1/9/2015 - 31/12/2015) and Box Culvert Extension (1/9/2015 - 31/12/2015). Ref: 0212330_Impact AQM graphs_ December 2015_REV a.xlsx



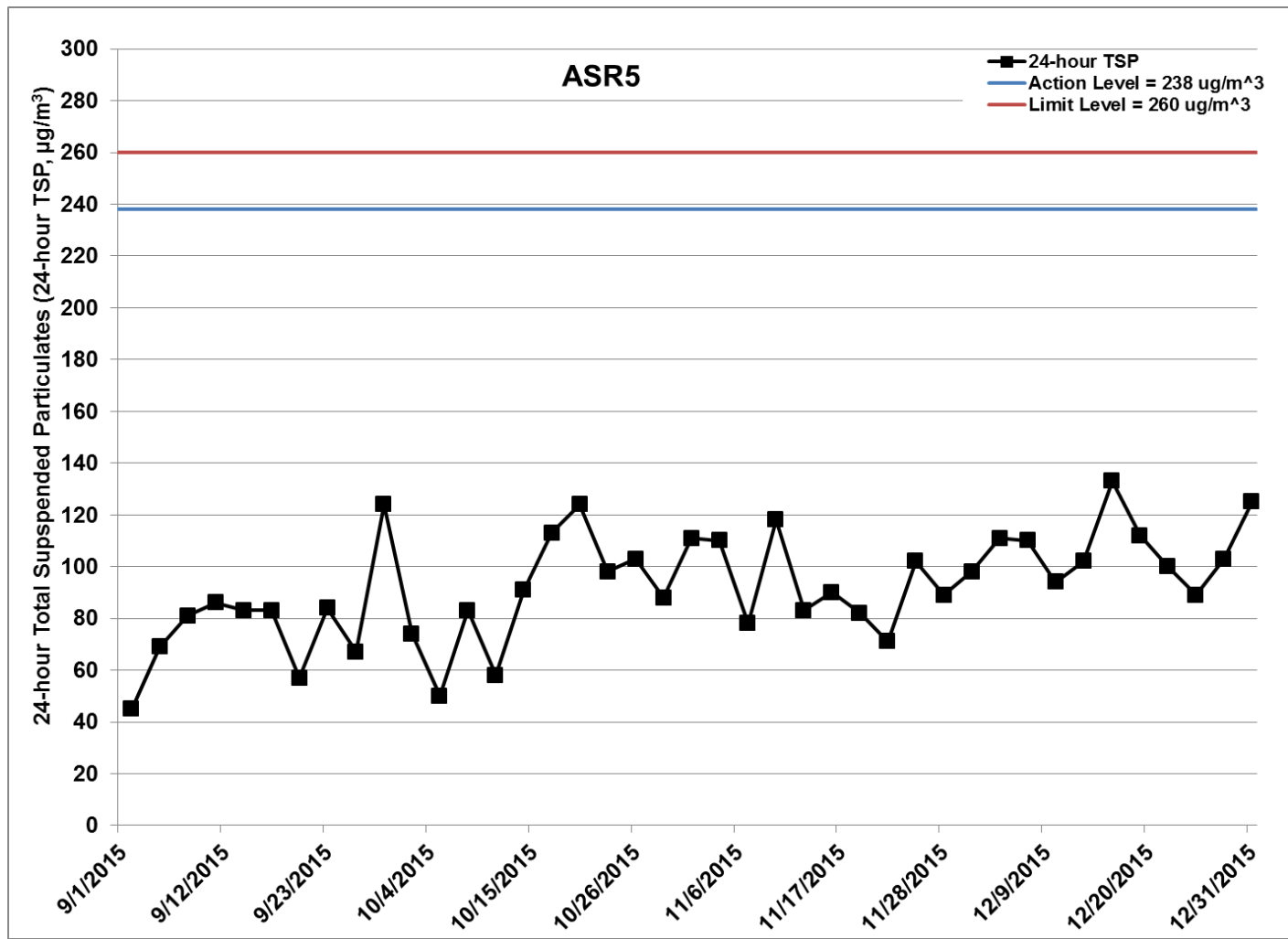


Figure G.7 Impact Monitoring - 24-hour Total Suspended Particulates ($\mu\text{g}/\text{m}^3$) at ASR5 between 1 September 2015 and 31 December 2015 during impact monitoring period. The weather conditions during the monitoring period varied from sunny to cloudy. Major land-based construction activities included: Construction of capping beam and base slab for Ventilation Shaft at Works Area - Portion N-C (1/9/2015 - 31/12/2015) and Box Culvert Extension (1/9/2015 - 31/12/2015). Ref: 0212330_Impact AQM graphs_ December 2015_REV a.xlsx



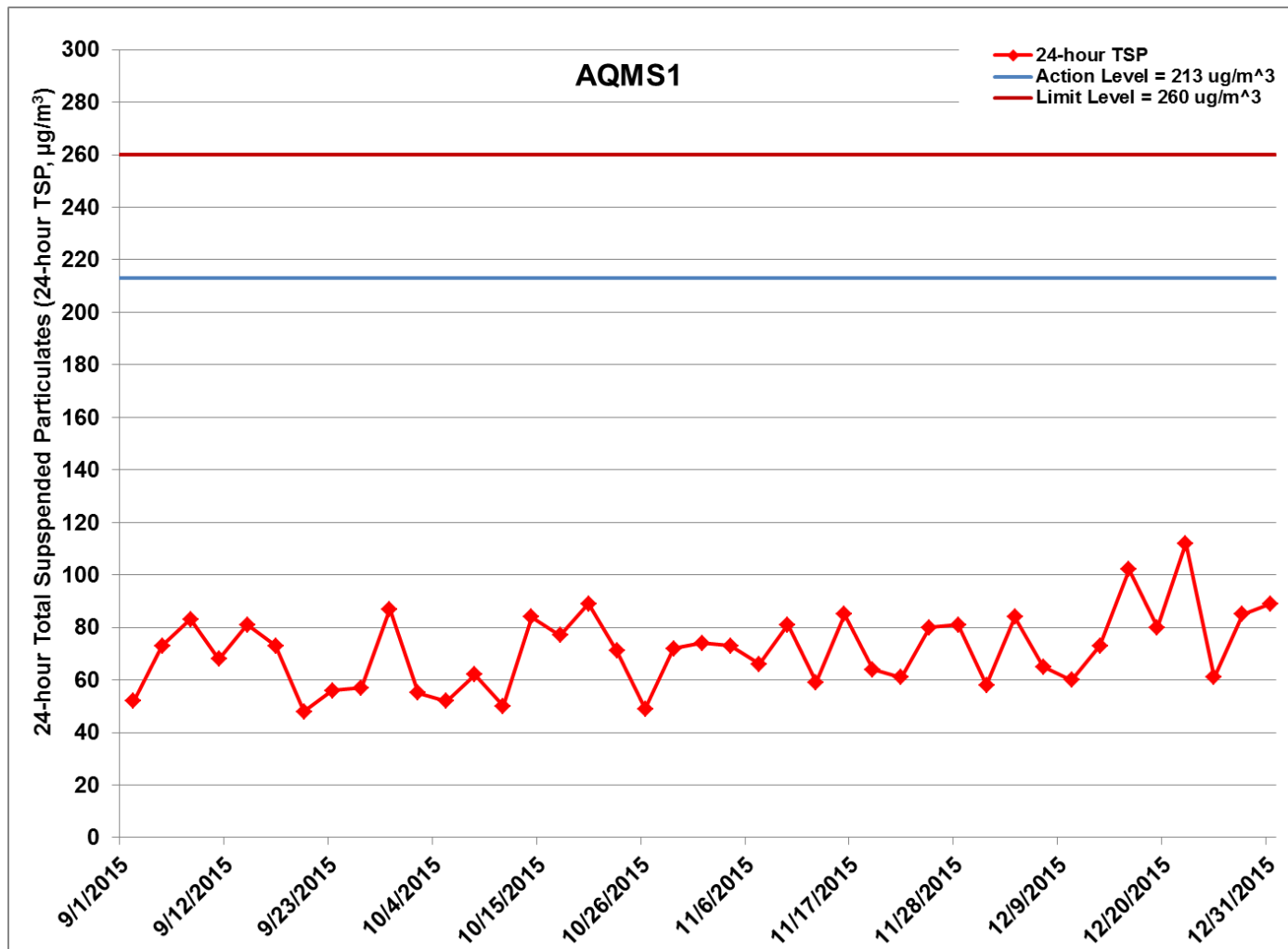


Figure G.8 Impact Monitoring - 24-hour Total Suspended Particulates ($\mu\text{g}/\text{m}^3$) at AQMS1 between 1 September 2015 and 31 December 2015 during impact monitoring period. The weather conditions during the monitoring period varied from sunny to cloudy. Major land-based construction activities included: Construction of capping beam and base slab for Ventilation Shaft at Works Area - Portion N-C (1/9/2015 - 31/12/2015) and Box Culvert Extension (1/9/2015 - 31/12/2015). Ref: 0212330_Impact AQM graphs_ December 2015_REV a.xlsx



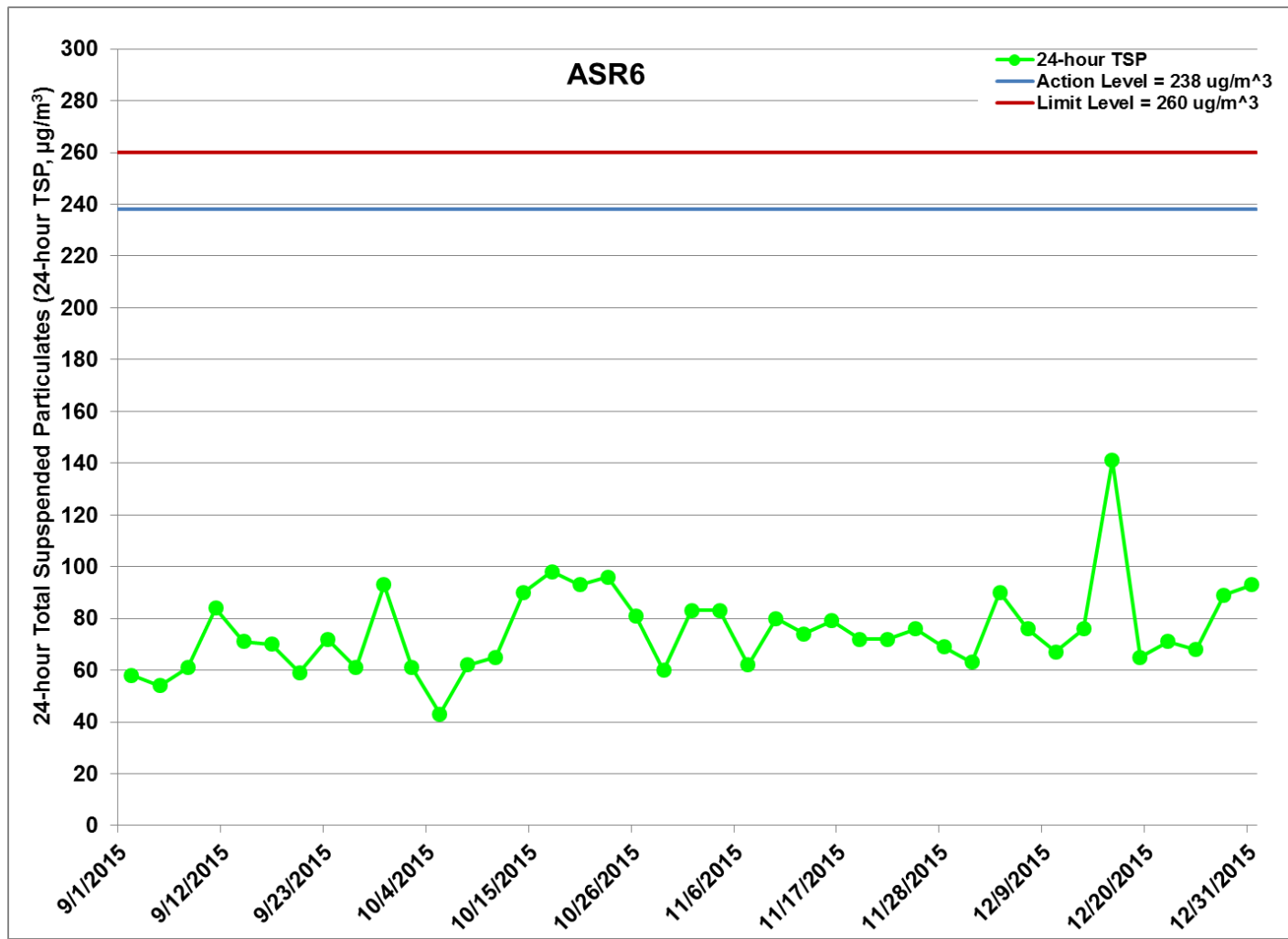


Figure G.9 Impact Monitoring - 24-hour Total Suspended Particulates ($\mu\text{g}/\text{m}^3$) at ASR6 between 1 September 2015 and 31 December 2015 during impact monitoring period. The weather conditions during the monitoring period varied from sunny to cloudy. Major land-based construction activities included: Construction of capping beam and base slab for Ventilation Shaft at Works Area - Portion N-C (1/9/2015 - 31/12/2015) and Box Culvert Extension (1/9/2015 - 31/12/2015). Ref: 0212330_Impact AQM graphs_ December 2015_REV a.xlsx



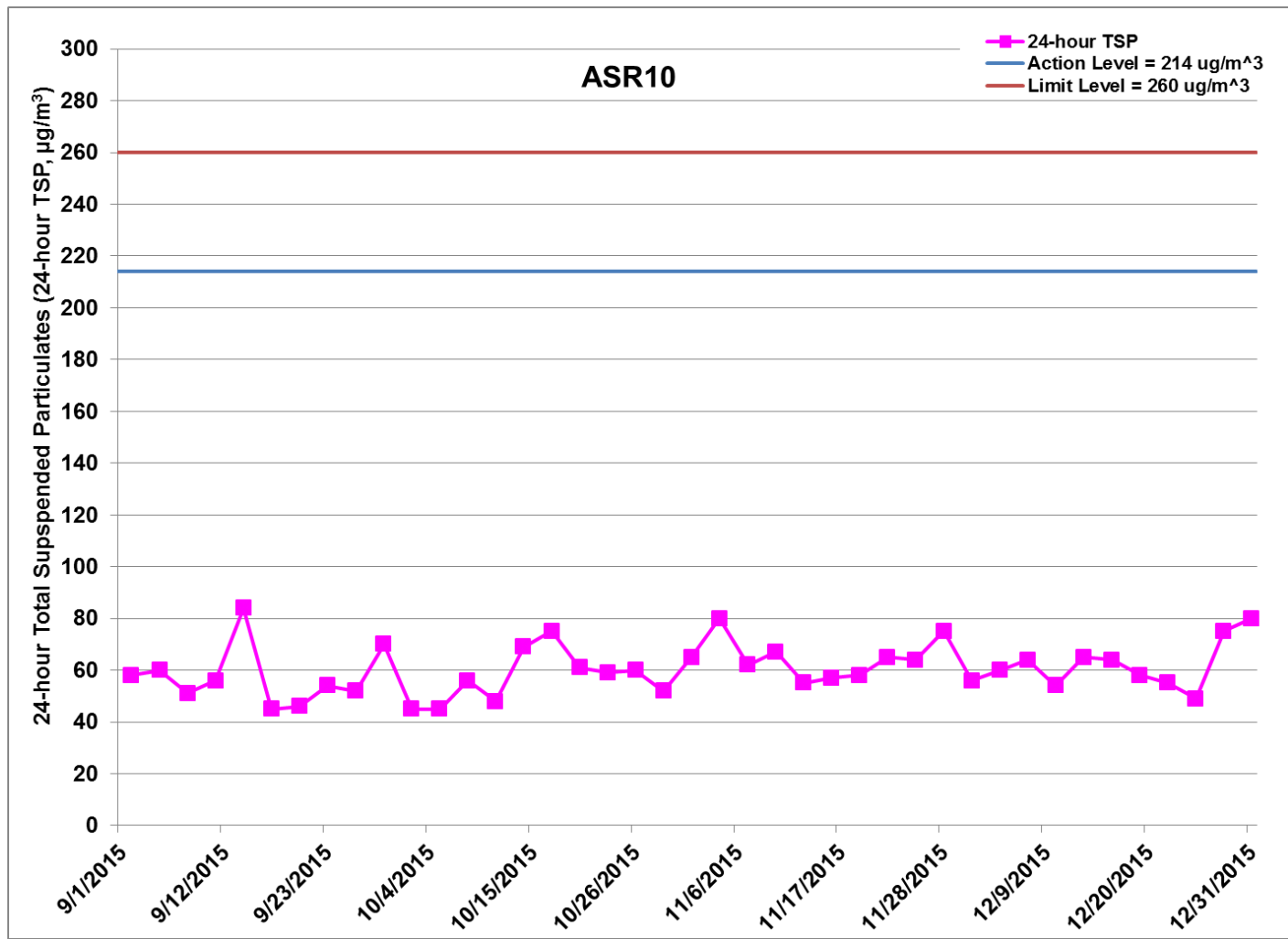


Figure G.10 Impact Monitoring - 24-hour Total Suspended Particulates ($\mu\text{g}/\text{m}^3$) at ASR10 between 1 September 2015 and 31 December 2015 during impact monitoring period. The weather conditions during the monitoring period varied from sunny to cloudy. Major land-based construction activities included: Construction of capping beam and base slab for Ventilation Shaft at Works Area - Portion N-C (1/9/2015 - 31/12/2015) and Box Culvert Extension (1/9/2015 - 31/12/2015). Ref: 0212330_Impact AQM graphs_ December 2015_REV a.xlsx



Project	Works	Date	Station	Weather	Start time	Parameters	Results	units
TMCLKL	HY/2012/08	2015-12-01	AQMS1	Sunny	13:25	1-hour TSP	140	ug/m3
TMCLKL	HY/2012/08	2015-12-01	AQMS1	Sunny	14:27	1-hour TSP	89	ug/m3
TMCLKL	HY/2012/08	2015-12-01	AQMS1	Sunny	15:29	1-hour TSP	74	ug/m3
TMCLKL	HY/2012/08	2015-12-01	ASR1	Sunny	13:14	1-hour TSP	156	ug/m3
TMCLKL	HY/2012/08	2015-12-01	ASR1	Sunny	14:16	1-hour TSP	147	ug/m3
TMCLKL	HY/2012/08	2015-12-01	ASR1	Sunny	15:18	1-hour TSP	125	ug/m3
TMCLKL	HY/2012/08	2015-12-01	ASR10	Sunny	12:42	1-hour TSP	71	ug/m3
TMCLKL	HY/2012/08	2015-12-01	ASR10	Sunny	13:44	1-hour TSP	61	ug/m3
TMCLKL	HY/2012/08	2015-12-01	ASR10	Sunny	14:46	1-hour TSP	69	ug/m3
TMCLKL	HY/2012/08	2015-12-01	ASR5	Sunny	13:03	1-hour TSP	208	ug/m3
TMCLKL	HY/2012/08	2015-12-01	ASR5	Sunny	14:05	1-hour TSP	180	ug/m3
TMCLKL	HY/2012/08	2015-12-01	ASR5	Sunny	15:07	1-hour TSP	164	ug/m3
TMCLKL	HY/2012/08	2015-12-01	ASR6	Sunny	12:53	1-hour TSP	92	ug/m3
TMCLKL	HY/2012/08	2015-12-01	ASR6	Sunny	13:55	1-hour TSP	85	ug/m3
TMCLKL	HY/2012/08	2015-12-01	ASR6	Sunny	14:57	1-hour TSP	76	ug/m3
TMCLKL	HY/2012/08	2015-12-04	AQMS1	Sunny	09:04	1-hour TSP	111	ug/m3
TMCLKL	HY/2012/08	2015-12-04	AQMS1	Sunny	10:06	1-hour TSP	98	ug/m3
TMCLKL	HY/2012/08	2015-12-04	AQMS1	Sunny	11:08	1-hour TSP	120	ug/m3
TMCLKL	HY/2012/08	2015-12-04	ASR1	Sunny	08:53	1-hour TSP	210	ug/m3
TMCLKL	HY/2012/08	2015-12-04	ASR1	Sunny	09:55	1-hour TSP	169	ug/m3
TMCLKL	HY/2012/08	2015-12-04	ASR1	Sunny	10:57	1-hour TSP	185	ug/m3
TMCLKL	HY/2012/08	2015-12-04	ASR10	Sunny	08:20	1-hour TSP	78	ug/m3
TMCLKL	HY/2012/08	2015-12-04	ASR10	Sunny	09:22	1-hour TSP	89	ug/m3
TMCLKL	HY/2012/08	2015-12-04	ASR10	Sunny	10:24	1-hour TSP	110	ug/m3
TMCLKL	HY/2012/08	2015-12-04	ASR5	Sunny	08:42	1-hour TSP	242	ug/m3
TMCLKL	HY/2012/08	2015-12-04	ASR5	Sunny	09:44	1-hour TSP	203	ug/m3
TMCLKL	HY/2012/08	2015-12-04	ASR5	Sunny	10:46	1-hour TSP	202	ug/m3
TMCLKL	HY/2012/08	2015-12-04	ASR6	Sunny	08:30	1-hour TSP	190	ug/m3
TMCLKL	HY/2012/08	2015-12-04	ASR6	Sunny	09:32	1-hour TSP	156	ug/m3
TMCLKL	HY/2012/08	2015-12-04	ASR6	Sunny	10:34	1-hour TSP	168	ug/m3

Project	Works	Date	Station	Weather	Start time	Parameters	Results	units
TMCLKL	HY/2012/08	2015-12-07	AQMS1	Cloudy	14:20	1-hour TSP	95	ug/m3
TMCLKL	HY/2012/08	2015-12-07	AQMS1	Cloudy	15:22	1-hour TSP	70	ug/m3
TMCLKL	HY/2012/08	2015-12-07	AQMS1	Cloudy	16:24	1-hour TSP	78	ug/m3
TMCLKL	HY/2012/08	2015-12-07	ASR1	Cloudy	14:08	1-hour TSP	96	ug/m3
TMCLKL	HY/2012/08	2015-12-07	ASR1	Cloudy	15:10	1-hour TSP	75	ug/m3
TMCLKL	HY/2012/08	2015-12-07	ASR1	Cloudy	16:12	1-hour TSP	91	ug/m3
TMCLKL	HY/2012/08	2015-12-07	ASR10	Cloudy	13:36	1-hour TSP	189	ug/m3
TMCLKL	HY/2012/08	2015-12-07	ASR10	Cloudy	14:38	1-hour TSP	127	ug/m3
TMCLKL	HY/2012/08	2015-12-07	ASR10	Cloudy	15:40	1-hour TSP	99	ug/m3
TMCLKL	HY/2012/08	2015-12-07	ASR5	Cloudy	13:57	1-hour TSP	134	ug/m3
TMCLKL	HY/2012/08	2015-12-07	ASR5	Cloudy	14:59	1-hour TSP	120	ug/m3
TMCLKL	HY/2012/08	2015-12-07	ASR5	Cloudy	16:01	1-hour TSP	171	ug/m3
TMCLKL	HY/2012/08	2015-12-07	ASR6	Cloudy	13:47	1-hour TSP	121	ug/m3
TMCLKL	HY/2012/08	2015-12-07	ASR6	Cloudy	14:49	1-hour TSP	89	ug/m3
TMCLKL	HY/2012/08	2015-12-07	ASR6	Cloudy	15:51	1-hour TSP	132	ug/m3
TMCLKL	HY/2012/08	2015-12-10	AQMS1	Sunny	14:25	1-hour TSP	83	ug/m3
TMCLKL	HY/2012/08	2015-12-10	AQMS1	Sunny	15:27	1-hour TSP	87	ug/m3
TMCLKL	HY/2012/08	2015-12-10	AQMS1	Sunny	16:29	1-hour TSP	89	ug/m3
TMCLKL	HY/2012/08	2015-12-10	ASR1	Sunny	14:14	1-hour TSP	114	ug/m3
TMCLKL	HY/2012/08	2015-12-10	ASR1	Sunny	15:16	1-hour TSP	98	ug/m3
TMCLKL	HY/2012/08	2015-12-10	ASR1	Sunny	16:18	1-hour TSP	81	ug/m3
TMCLKL	HY/2012/08	2015-12-10	ASR10	Sunny	13:43	1-hour TSP	54	ug/m3
TMCLKL	HY/2012/08	2015-12-10	ASR10	Sunny	14:45	1-hour TSP	68	ug/m3
TMCLKL	HY/2012/08	2015-12-10	ASR10	Sunny	15:47	1-hour TSP	67	ug/m3
TMCLKL	HY/2012/08	2015-12-10	ASR5	Sunny	14:04	1-hour TSP	131	ug/m3
TMCLKL	HY/2012/08	2015-12-10	ASR5	Sunny	15:06	1-hour TSP	145	ug/m3
TMCLKL	HY/2012/08	2015-12-10	ASR5	Sunny	16:08	1-hour TSP	134	ug/m3
TMCLKL	HY/2012/08	2015-12-10	ASR6	Sunny	13:53	1-hour TSP	96	ug/m3
TMCLKL	HY/2012/08	2015-12-10	ASR6	Sunny	14:55	1-hour TSP	72	ug/m3
TMCLKL	HY/2012/08	2015-12-10	ASR6	Sunny	15:57	1-hour TSP	86	ug/m3

Project	Works	Date	Station	Weather	Start time	Parameters	Results	units
TMCLKL	HY/2012/08	2015-12-13	AQMS1	Sunny	13:45	1-hour TSP	122	ug/m3
TMCLKL	HY/2012/08	2015-12-13	AQMS1	Sunny	14:47	1-hour TSP	164	ug/m3
TMCLKL	HY/2012/08	2015-12-13	AQMS1	Sunny	15:49	1-hour TSP	175	ug/m3
TMCLKL	HY/2012/08	2015-12-13	ASR1	Sunny	13:33	1-hour TSP	115	ug/m3
TMCLKL	HY/2012/08	2015-12-13	ASR1	Sunny	14:35	1-hour TSP	113	ug/m3
TMCLKL	HY/2012/08	2015-12-13	ASR1	Sunny	15:37	1-hour TSP	131	ug/m3
TMCLKL	HY/2012/08	2015-12-13	ASR10	Sunny	13:00	1-hour TSP	102	ug/m3
TMCLKL	HY/2012/08	2015-12-13	ASR10	Sunny	14:02	1-hour TSP	160	ug/m3
TMCLKL	HY/2012/08	2015-12-13	ASR10	Sunny	15:04	1-hour TSP	126	ug/m3
TMCLKL	HY/2012/08	2015-12-13	ASR5	Sunny	13:22	1-hour TSP	140	ug/m3
TMCLKL	HY/2012/08	2015-12-13	ASR5	Sunny	14:24	1-hour TSP	226	ug/m3
TMCLKL	HY/2012/08	2015-12-13	ASR5	Sunny	15:26	1-hour TSP	163	ug/m3
TMCLKL	HY/2012/08	2015-12-13	ASR6	Sunny	13:12	1-hour TSP	160	ug/m3
TMCLKL	HY/2012/08	2015-12-13	ASR6	Sunny	14:14	1-hour TSP	182	ug/m3
TMCLKL	HY/2012/08	2015-12-13	ASR6	Sunny	15:16	1-hour TSP	193	ug/m3
TMCLKL	HY/2012/08	2015-12-16	AQMS1	Sunny	13:53	1-hour TSP	169	ug/m3
TMCLKL	HY/2012/08	2015-12-16	AQMS1	Sunny	14:55	1-hour TSP	136	ug/m3
TMCLKL	HY/2012/08	2015-12-16	AQMS1	Sunny	15:57	1-hour TSP	115	ug/m3
TMCLKL	HY/2012/08	2015-12-16	ASR1	Sunny	13:42	1-hour TSP	188	ug/m3
TMCLKL	HY/2012/08	2015-12-16	ASR1	Sunny	14:44	1-hour TSP	148	ug/m3
TMCLKL	HY/2012/08	2015-12-16	ASR1	Sunny	15:46	1-hour TSP	161	ug/m3
TMCLKL	HY/2012/08	2015-12-16	ASR10	Sunny	13:19	1-hour TSP	112	ug/m3
TMCLKL	HY/2012/08	2015-12-16	ASR10	Sunny	14:21	1-hour TSP	92	ug/m3
TMCLKL	HY/2012/08	2015-12-16	ASR10	Sunny	15:23	1-hour TSP	77	ug/m3
TMCLKL	HY/2012/08	2015-12-16	ASR5	Sunny	13:30	1-hour TSP	159	ug/m3
TMCLKL	HY/2012/08	2015-12-16	ASR5	Sunny	14:32	1-hour TSP	214	ug/m3
TMCLKL	HY/2012/08	2015-12-16	ASR5	Sunny	15:34	1-hour TSP	140	ug/m3
TMCLKL	HY/2012/08	2015-12-16	ASR6	Sunny	13:29	1-hour TSP	186	ug/m3
TMCLKL	HY/2012/08	2015-12-16	ASR6	Sunny	14:31	1-hour TSP	147	ug/m3
TMCLKL	HY/2012/08	2015-12-16	ASR6	Sunny	15:33	1-hour TSP	94	ug/m3

Project	Works	Date	Station	Weather	Start time	Parameters	Results	units
TMCLKL	HY/2012/08	2015-12-19	AQMS1	Sunny	14:10	1-hour TSP	85	ug/m3
TMCLKL	HY/2012/08	2015-12-19	AQMS1	Sunny	15:12	1-hour TSP	100	ug/m3
TMCLKL	HY/2012/08	2015-12-19	AQMS1	Sunny	16:14	1-hour TSP	98	ug/m3
TMCLKL	HY/2012/08	2015-12-19	ASR1	Sunny	13:59	1-hour TSP	77	ug/m3
TMCLKL	HY/2012/08	2015-12-19	ASR1	Sunny	15:01	1-hour TSP	63	ug/m3
TMCLKL	HY/2012/08	2015-12-19	ASR1	Sunny	16:03	1-hour TSP	76	ug/m3
TMCLKL	HY/2012/08	2015-12-19	ASR10	Sunny	13:26	1-hour TSP	63	ug/m3
TMCLKL	HY/2012/08	2015-12-19	ASR10	Sunny	14:28	1-hour TSP	60	ug/m3
TMCLKL	HY/2012/08	2015-12-19	ASR10	Sunny	15:30	1-hour TSP	58	ug/m3
TMCLKL	HY/2012/08	2015-12-19	ASR5	Sunny	13:47	1-hour TSP	123	ug/m3
TMCLKL	HY/2012/08	2015-12-19	ASR5	Sunny	14:49	1-hour TSP	123	ug/m3
TMCLKL	HY/2012/08	2015-12-19	ASR5	Sunny	15:51	1-hour TSP	183	ug/m3
TMCLKL	HY/2012/08	2015-12-19	ASR6	Sunny	13:37	1-hour TSP	78	ug/m3
TMCLKL	HY/2012/08	2015-12-19	ASR6	Sunny	14:39	1-hour TSP	86	ug/m3
TMCLKL	HY/2012/08	2015-12-19	ASR6	Sunny	15:41	1-hour TSP	69	ug/m3
TMCLKL	HY/2012/08	2015-12-22	AQMS1	Sunny	14:00	1-hour TSP	68	ug/m3
TMCLKL	HY/2012/08	2015-12-22	AQMS1	Sunny	15:02	1-hour TSP	73	ug/m3
TMCLKL	HY/2012/08	2015-12-22	AQMS1	Sunny	16:04	1-hour TSP	65	ug/m3
TMCLKL	HY/2012/08	2015-12-22	ASR1	Sunny	13:49	1-hour TSP	205	ug/m3
TMCLKL	HY/2012/08	2015-12-22	ASR1	Sunny	14:51	1-hour TSP	172	ug/m3
TMCLKL	HY/2012/08	2015-12-22	ASR1	Sunny	15:53	1-hour TSP	129	ug/m3
TMCLKL	HY/2012/08	2015-12-22	ASR10	Sunny	13:16	1-hour TSP	96	ug/m3
TMCLKL	HY/2012/08	2015-12-22	ASR10	Sunny	14:18	1-hour TSP	87	ug/m3
TMCLKL	HY/2012/08	2015-12-22	ASR10	Sunny	15:20	1-hour TSP	71	ug/m3
TMCLKL	HY/2012/08	2015-12-22	ASR5	Sunny	13:38	1-hour TSP	136	ug/m3
TMCLKL	HY/2012/08	2015-12-22	ASR5	Sunny	14:40	1-hour TSP	187	ug/m3
TMCLKL	HY/2012/08	2015-12-22	ASR5	Sunny	15:42	1-hour TSP	142	ug/m3
TMCLKL	HY/2012/08	2015-12-22	ASR6	Sunny	13:27	1-hour TSP	111	ug/m3
TMCLKL	HY/2012/08	2015-12-22	ASR6	Sunny	14:29	1-hour TSP	90	ug/m3
TMCLKL	HY/2012/08	2015-12-22	ASR6	Sunny	15:31	1-hour TSP	83	ug/m3

Project	Works	Date	Station	Weather	Start time	Parameters	Results	units
TMCLKL	HY/2012/08	2015-12-25	AQMS1	Cloudy	14:01	1-hour TSP	145	ug/m3
TMCLKL	HY/2012/08	2015-12-25	AQMS1	Cloudy	15:03	1-hour TSP	115	ug/m3
TMCLKL	HY/2012/08	2015-12-25	AQMS1	Cloudy	16:05	1-hour TSP	141	ug/m3
TMCLKL	HY/2012/08	2015-12-25	ASR1	Cloudy	13:49	1-hour TSP	138	ug/m3
TMCLKL	HY/2012/08	2015-12-25	ASR1	Cloudy	14:51	1-hour TSP	94	ug/m3
TMCLKL	HY/2012/08	2015-12-25	ASR1	Cloudy	15:53	1-hour TSP	136	ug/m3
TMCLKL	HY/2012/08	2015-12-25	ASR10	Cloudy	13:17	1-hour TSP	79	ug/m3
TMCLKL	HY/2012/08	2015-12-25	ASR10	Cloudy	14:19	1-hour TSP	70	ug/m3
TMCLKL	HY/2012/08	2015-12-25	ASR10	Cloudy	15:21	1-hour TSP	91	ug/m3
TMCLKL	HY/2012/08	2015-12-25	ASR5	Cloudy	13:38	1-hour TSP	117	ug/m3
TMCLKL	HY/2012/08	2015-12-25	ASR5	Cloudy	14:40	1-hour TSP	108	ug/m3
TMCLKL	HY/2012/08	2015-12-25	ASR5	Cloudy	15:42	1-hour TSP	190	ug/m3
TMCLKL	HY/2012/08	2015-12-25	ASR6	Cloudy	13:27	1-hour TSP	100	ug/m3
TMCLKL	HY/2012/08	2015-12-25	ASR6	Cloudy	14:29	1-hour TSP	111	ug/m3
TMCLKL	HY/2012/08	2015-12-25	ASR6	Cloudy	15:31	1-hour TSP	156	ug/m3
TMCLKL	HY/2012/08	2015-12-28	AQMS1	Cloudy	14:27	1-hour TSP	104	ug/m3
TMCLKL	HY/2012/08	2015-12-28	AQMS1	Cloudy	15:29	1-hour TSP	121	ug/m3
TMCLKL	HY/2012/08	2015-12-28	AQMS1	Cloudy	16:31	1-hour TSP	107	ug/m3
TMCLKL	HY/2012/08	2015-12-28	ASR1	Cloudy	14:16	1-hour TSP	198	ug/m3
TMCLKL	HY/2012/08	2015-12-28	ASR1	Cloudy	15:18	1-hour TSP	182	ug/m3
TMCLKL	HY/2012/08	2015-12-28	ASR1	Cloudy	16:20	1-hour TSP	135	ug/m3
TMCLKL	HY/2012/08	2015-12-28	ASR10	Cloudy	13:43	1-hour TSP	104	ug/m3
TMCLKL	HY/2012/08	2015-12-28	ASR10	Cloudy	14:45	1-hour TSP	80	ug/m3
TMCLKL	HY/2012/08	2015-12-28	ASR10	Cloudy	15:47	1-hour TSP	89	ug/m3
TMCLKL	HY/2012/08	2015-12-28	ASR5	Cloudy	14:06	1-hour TSP	237	ug/m3
TMCLKL	HY/2012/08	2015-12-28	ASR5	Cloudy	15:08	1-hour TSP	205	ug/m3
TMCLKL	HY/2012/08	2015-12-28	ASR5	Cloudy	16:10	1-hour TSP	182	ug/m3
TMCLKL	HY/2012/08	2015-12-28	ASR6	Cloudy	13:55	1-hour TSP	169	ug/m3
TMCLKL	HY/2012/08	2015-12-28	ASR6	Cloudy	14:57	1-hour TSP	121	ug/m3
TMCLKL	HY/2012/08	2015-12-28	ASR6	Cloudy	15:59	1-hour TSP	115	ug/m3

Project	Works	Date	Station	Weather	Start time	Parameters	Results	units
TMCLKL	HY/2012/08	2015-12-31	AQMS1	Sunny	13:55	1-hour TSP	171	ug/m3
TMCLKL	HY/2012/08	2015-12-31	AQMS1	Sunny	14:57	1-hour TSP	168	ug/m3
TMCLKL	HY/2012/08	2015-12-31	AQMS1	Sunny	15:59	1-hour TSP	175	ug/m3
TMCLKL	HY/2012/08	2015-12-31	ASR1	Sunny	13:45	1-hour TSP	231	ug/m3
TMCLKL	HY/2012/08	2015-12-31	ASR1	Sunny	14:47	1-hour TSP	201	ug/m3
TMCLKL	HY/2012/08	2015-12-31	ASR1	Sunny	15:49	1-hour TSP	202	ug/m3
TMCLKL	HY/2012/08	2015-12-31	ASR10	Sunny	13:11	1-hour TSP	133	ug/m3
TMCLKL	HY/2012/08	2015-12-31	ASR10	Sunny	14:13	1-hour TSP	165	ug/m3
TMCLKL	HY/2012/08	2015-12-31	ASR10	Sunny	15:15	1-hour TSP	127	ug/m3
TMCLKL	HY/2012/08	2015-12-31	ASR5	Sunny	13:33	1-hour TSP	211	ug/m3
TMCLKL	HY/2012/08	2015-12-31	ASR5	Sunny	14:35	1-hour TSP	191	ug/m3
TMCLKL	HY/2012/08	2015-12-31	ASR5	Sunny	15:37	1-hour TSP	215	ug/m3
TMCLKL	HY/2012/08	2015-12-31	ASR6	Sunny	13:22	1-hour TSP	185	ug/m3
TMCLKL	HY/2012/08	2015-12-31	ASR6	Sunny	14:24	1-hour TSP	176	ug/m3
TMCLKL	HY/2012/08	2015-12-31	ASR6	Sunny	15:26	1-hour TSP	180	ug/m3
TMCLKL	HY/2012/08	2015-12-01	AQMS1	Sunny	16:31	24-hour TSP	58	ug/m3
TMCLKL	HY/2012/08	2015-12-01	ASR1	Sunny	16:20	24-hour TSP	79	ug/m3
TMCLKL	HY/2012/08	2015-12-01	ASR10	Sunny	15:48	24-hour TSP	56	ug/m3
TMCLKL	HY/2012/08	2015-12-01	ASR5	Sunny	16:09	24-hour TSP	98	ug/m3
TMCLKL	HY/2012/08	2015-12-01	ASR6	Sunny	15:59	24-hour TSP	63	ug/m3
TMCLKL	HY/2012/08	2015-12-04	AQMS1	Sunny	12:10	24-hour TSP	84	ug/m3
TMCLKL	HY/2012/08	2015-12-04	ASR1	Sunny	11:59	24-hour TSP	110	ug/m3
TMCLKL	HY/2012/08	2015-12-04	ASR10	Sunny	11:26	24-hour TSP	60	ug/m3
TMCLKL	HY/2012/08	2015-12-04	ASR5	Sunny	11:48	24-hour TSP	111	ug/m3
TMCLKL	HY/2012/08	2015-12-04	ASR6	Sunny	11:36	24-hour TSP	90	ug/m3
TMCLKL	HY/2012/08	2015-12-07	AQMS1	Sunny	17:26	24-hour TSP	65	ug/m3
TMCLKL	HY/2012/08	2015-12-07	ASR1	Sunny	17:14	24-hour TSP	97	ug/m3
TMCLKL	HY/2012/08	2015-12-07	ASR10	Sunny	16:42	24-hour TSP	64	ug/m3
TMCLKL	HY/2012/08	2015-12-07	ASR5	Sunny	17:03	24-hour TSP	110	ug/m3
TMCLKL	HY/2012/08	2015-12-07	ASR6	Sunny	16:53	24-hour TSP	76	ug/m3

Project	Works	Date	Station	Weather	Start time	Parameters	Results	units
TMCLKL	HY/2012/08	2015-12-10	AQMS1	Sunny	17:31	24-hour TSP	60	ug/m3
TMCLKL	HY/2012/08	2015-12-10	ASR1	Sunny	17:20	24-hour TSP	76	ug/m3
TMCLKL	HY/2012/08	2015-12-10	ASR10	Sunny	16:49	24-hour TSP	54	ug/m3
TMCLKL	HY/2012/08	2015-12-10	ASR5	Sunny	17:10	24-hour TSP	94	ug/m3
TMCLKL	HY/2012/08	2015-12-10	ASR6	Sunny	16:59	24-hour TSP	67	ug/m3
TMCLKL	HY/2012/08	2015-12-13	AQMS1	Sunny	16:51	24-hour TSP	73	ug/m3
TMCLKL	HY/2012/08	2015-12-13	ASR1	Sunny	16:39	24-hour TSP	100	ug/m3
TMCLKL	HY/2012/08	2015-12-13	ASR10	Sunny	16:06	24-hour TSP	65	ug/m3
TMCLKL	HY/2012/08	2015-12-13	ASR5	Sunny	16:28	24-hour TSP	102	ug/m3
TMCLKL	HY/2012/08	2015-12-13	ASR6	Sunny	16:18	24-hour TSP	76	ug/m3
TMCLKL	HY/2012/08	2015-12-16	AQMS1	Sunny	16:59	24-hour TSP	102	ug/m3
TMCLKL	HY/2012/08	2015-12-16	ASR1	Sunny	16:48	24-hour TSP	110	ug/m3
TMCLKL	HY/2012/08	2015-12-16	ASR10	Sunny	16:25	24-hour TSP	64	ug/m3
TMCLKL	HY/2012/08	2015-12-16	ASR5	Sunny	16:36	24-hour TSP	133	ug/m3
TMCLKL	HY/2012/08	2015-12-16	ASR6	Sunny	16:35	24-hour TSP	141	ug/m3
TMCLKL	HY/2012/08	2015-12-19	AQMS1	Sunny	17:16	24-hour TSP	80	ug/m3
TMCLKL	HY/2012/08	2015-12-19	ASR1	Sunny	17:05	24-hour TSP	64	ug/m3
TMCLKL	HY/2012/08	2015-12-19	ASR10	Sunny	16:32	24-hour TSP	58	ug/m3
TMCLKL	HY/2012/08	2015-12-19	ASR5	Sunny	16:53	24-hour TSP	112	ug/m3
TMCLKL	HY/2012/08	2015-12-19	ASR6	Sunny	16:43	24-hour TSP	65	ug/m3
TMCLKL	HY/2012/08	2015-12-22	AQMS1	Sunny	17:06	24-hour TSP	112	ug/m3
TMCLKL	HY/2012/08	2015-12-22	ASR1	Sunny	16:35	24-hour TSP	92	ug/m3
TMCLKL	HY/2012/08	2015-12-22	ASR10	Sunny	16:22	24-hour TSP	55	ug/m3
TMCLKL	HY/2012/08	2015-12-22	ASR5	Sunny	16:44	24-hour TSP	100	ug/m3
TMCLKL	HY/2012/08	2015-12-22	ASR6	Sunny	16:33	24-hour TSP	71	ug/m3
TMCLKL	HY/2012/08	2015-12-25	AQMS1	Cloudy	17:07	24-hour TSP	61	ug/m3
TMCLKL	HY/2012/08	2015-12-25	ASR1	Cloudy	16:55	24-hour TSP	83	ug/m3
TMCLKL	HY/2012/08	2015-12-25	ASR10	Cloudy	16:23	24-hour TSP	49	ug/m3
TMCLKL	HY/2012/08	2015-12-25	ASR5	Cloudy	16:44	24-hour TSP	89	ug/m3
TMCLKL	HY/2012/08	2015-12-25	ASR6	Cloudy	16:33	24-hour TSP	68	ug/m3

Project	Works	Date	Station	Weather	Start time	Parameters	Results	units
TMCLKL	HY/2012/08	2015-12-28	AQMS1	Cloudy	17:33	24-hour TSP	85	ug/m3
TMCLKL	HY/2012/08	2015-12-28	ASR1	Cloudy	17:22	24-hour TSP	99	ug/m3
TMCLKL	HY/2012/08	2015-12-28	ASR10	Cloudy	16:49	24-hour TSP	75	ug/m3
TMCLKL	HY/2012/08	2015-12-28	ASR5	Cloudy	17:12	24-hour TSP	103	ug/m3
TMCLKL	HY/2012/08	2015-12-28	ASR6	Cloudy	17:01	24-hour TSP	89	ug/m3
TMCLKL	HY/2012/08	2015-12-31	AQMS1	Sunny	17:01	24-hour TSP	89	ug/m3
TMCLKL	HY/2012/08	2015-12-31	ASR1	Sunny	16:51	24-hour TSP	114	ug/m3
TMCLKL	HY/2012/08	2015-12-31	ASR10	Sunny	16:17	24-hour TSP	80	ug/m3
TMCLKL	HY/2012/08	2015-12-31	ASR5	Sunny	16:39	24-hour TSP	125	ug/m3
TMCLKL	HY/2012/08	2015-12-31	ASR6	Sunny	16:28	24-hour TSP	93	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)
15/12/01	1:00	0.4	344
15/12/01	2:00	0	-
15/12/01	3:00	0	-
15/12/01	4:00	0	-
15/12/01	5:00	0.9	46
15/12/01	6:00	0	-
15/12/01	7:00	0	-
15/12/01	8:00	0.4	32
15/12/01	9:00	0	-
15/12/01	10:00	0.9	91
15/12/01	11:00	1.3	89
15/12/01	12:00	1.8	100
15/12/01	13:00	2.2	124
15/12/01	14:00	2.7	115
15/12/01	15:00	2.2	143
15/12/01	16:00	2.2	151
15/12/01	17:00	2.7	162
15/12/01	18:00	2.2	174
15/12/01	19:00	2.2	169
15/12/01	20:00	2.2	134
15/12/01	21:00	1.8	151
15/12/01	22:00	2.2	87
15/12/01	23:00	2.7	122
15/12/01	0:00	1.8	134
15/12/02	1:00	0.9	101
15/12/02	2:00	0.4	125
15/12/02	3:00	0.9	124
15/12/02	4:00	0.9	133
15/12/02	5:00	0.9	65
15/12/02	6:00	0.4	51
15/12/02	7:00	0.4	57
15/12/02	8:00	0.4	129
15/12/02	9:00	0.9	105
15/12/02	10:00	1.8	115
15/12/02	11:00	2.2	130
15/12/02	12:00	2.2	104
15/12/02	13:00	2.2	116
15/12/02	14:00	1.8	173
15/12/02	15:00	1.8	165
15/12/02	16:00	1.3	159
15/12/02	17:00	0.9	148
15/12/02	18:00	0.4	95
15/12/02	19:00	0	-
15/12/02	20:00	0.9	132
15/12/02	21:00	1.3	114
15/12/02	22:00	0.9	85
15/12/02	23:00	0	-
15/12/02	0:00	1.3	5
15/12/04	1:00	2.7	44
15/12/04	2:00	3.1	32
15/12/04	3:00	3.6	45
15/12/04	4:00	3.1	63
15/12/04	5:00	3.6	41
15/12/04	6:00	3.6	48

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)
15/12/04	7:00	3.1	52
15/12/04	8:00	2.7	55
15/12/04	9:00	3.1	56
15/12/04	10:00	3.1	44
15/12/04	11:00	2.7	43
15/12/04	12:00	2.7	39
15/12/04	13:00	2.2	65
15/12/04	14:00	2.7	67
15/12/04	15:00	2.2	50
15/12/04	16:00	1.3	25
15/12/04	17:00	2.2	38
15/12/04	18:00	2.2	42
15/12/04	19:00	1.8	54
15/12/04	20:00	1.8	49
15/12/04	21:00	1.8	60
15/12/04	22:00	2.7	58
15/12/04	23:00	1.3	51
15/12/04	0:00	1.8	55
15/12/05	1:00	1.8	47
15/12/05	2:00	2.2	53
15/12/05	3:00	2.2	63
15/12/05	4:00	0.9	71
15/12/05	5:00	1.3	63
15/12/05	6:00	2.7	95
15/12/05	7:00	4.5	114
15/12/05	8:00	4.9	106
15/12/05	9:00	4.9	111
15/12/05	10:00	4	117
15/12/05	11:00	4.9	123
15/12/05	12:00	6.3	131
15/12/05	13:00	3.1	125
15/12/05	14:00	0.9	116
15/12/05	15:00	2.7	347
15/12/05	16:00	4.5	335
15/12/05	17:00	4.9	5
15/12/05	18:00	4.5	10
15/12/05	19:00	4.5	46
15/12/05	20:00	6.3	52
15/12/05	21:00	5.8	59
15/12/05	22:00	6.7	63
15/12/05	23:00	6.7	64
15/12/05	0:00	1.8	51
15/12/07	1:00	1.3	66
15/12/07	2:00	0.4	3
15/12/07	3:00	1.8	354
15/12/07	4:00	1.8	359
15/12/07	5:00	1.8	8
15/12/07	6:00	1.8	2
15/12/07	7:00	1.3	5
15/12/07	8:00	1.3	9
15/12/07	9:00	0.9	13
15/12/07	10:00	0.4	354
15/12/07	11:00	1.3	355
15/12/07	12:00	1.3	42

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)
15/12/07	13:00	1.3	38
15/12/07	14:00	1.3	39
15/12/07	15:00	1.3	11
15/12/07	16:00	1.3	4
15/12/07	17:00	1.3	6
15/12/07	18:00	0.4	42
15/12/07	19:00	0.4	51
15/12/07	20:00	0.9	10
15/12/07	21:00	0.9	46
15/12/07	22:00	1.3	52
15/12/07	23:00	1.8	39
15/12/07	0:00	3.1	47
15/12/08	1:00	3.1	52
15/12/08	2:00	2.2	47
15/12/08	3:00	2.7	38
15/12/08	4:00	2.7	62
15/12/08	5:00	2.7	44
15/12/08	6:00	2.2	51
15/12/08	7:00	2.2	63
15/12/08	8:00	2.2	43
15/12/08	9:00	1.8	63
15/12/08	10:00	1.3	51
15/12/08	11:00	1.8	44
15/12/08	12:00	2.2	52
15/12/08	13:00	1.8	96
15/12/08	14:00	0.9	87
15/12/08	15:00	1.8	88
15/12/08	16:00	2.2	46
15/12/08	17:00	1.3	38
15/12/08	18:00	0.9	49
15/12/08	19:00	1.3	52
15/12/08	20:00	2.2	57
15/12/08	21:00	1.3	56
15/12/08	22:00	1.8	49
15/12/08	23:00	0.4	23
15/12/08	0:00	0.9	42
15/12/10	1:00	0	-
15/12/10	2:00	1.8	46
15/12/10	3:00	0.4	51
15/12/10	4:00	0.4	46
15/12/10	5:00	0.9	5
15/12/10	6:00	1.3	358
15/12/10	7:00	0.9	352
15/12/10	8:00	0	-
15/12/10	9:00	0.9	3
15/12/10	10:00	0.9	5
15/12/10	11:00	1.8	5
15/12/10	12:00	2.2	10
15/12/10	13:00	0.9	8
15/12/10	14:00	0.4	163
15/12/10	15:00	0.4	171
15/12/10	16:00	0.9	163
15/12/10	17:00	0.9	321
15/12/10	18:00	0.9	303

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)
15/12/10	19:00	0.9	351
15/12/10	20:00	1.3	10
15/12/10	21:00	2.2	12
15/12/10	22:00	1.8	24
15/12/10	23:00	1.3	36
15/12/10	0:00	0.9	48
15/12/11	1:00	2.2	51
15/12/11	2:00	4	63
15/12/11	3:00	4	55
15/12/11	4:00	3.1	48
15/12/11	5:00	1.8	47
15/12/11	6:00	1.3	59
15/12/11	7:00	1.8	65
15/12/11	8:00	0	-
15/12/11	9:00	0.4	58
15/12/11	10:00	1.3	63
15/12/11	11:00	1.8	55
15/12/11	12:00	1.3	232
15/12/11	13:00	0.9	62
15/12/11	14:00	1.3	226
15/12/11	15:00	0.9	216
15/12/11	16:00	0.9	271
15/12/11	17:00	0.4	50
15/12/11	18:00	0.4	312
15/12/11	19:00	0	-
15/12/11	20:00	0	-
15/12/11	21:00	1.3	46
15/12/11	22:00	1.3	51
15/12/11	23:00	1.3	67
15/12/11	0:00	0.9	57
15/12/13	1:00	2.2	96
15/12/13	2:00	3.1	122
15/12/13	3:00	2.7	98
15/12/13	4:00	2.7	85
15/12/13	5:00	2.2	91
15/12/13	6:00	2.7	86
15/12/13	7:00	3.1	84
15/12/13	8:00	3.6	87
15/12/13	9:00	3.6	92
15/12/13	10:00	3.6	100
15/12/13	11:00	3.6	103
15/12/13	12:00	4	124
15/12/13	13:00	3.6	96
15/12/13	14:00	4	134
15/12/13	15:00	3.1	142
15/12/13	16:00	3.1	126
15/12/13	17:00	3.1	151
15/12/13	18:00	1.8	133
15/12/13	19:00	2.2	124
15/12/13	20:00	1.8	117
15/12/13	21:00	1.8	151
15/12/13	22:00	2.7	126
15/12/13	23:00	2.7	98
15/12/13	0:00	1.8	74

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)
15/12/14	1:00	1.8	105
15/12/14	2:00	1.3	126
15/12/14	3:00	0	-
15/12/14	4:00	0	-
15/12/14	5:00	0	-
15/12/14	6:00	0	-
15/12/14	7:00	0	-
15/12/14	8:00	0	-
15/12/14	9:00	0.9	341
15/12/14	10:00	1.3	326
15/12/14	11:00	1.8	355
15/12/14	12:00	1.3	6
15/12/14	13:00	1.8	47
15/12/14	14:00	2.7	65
15/12/14	15:00	1.3	71
15/12/14	16:00	1.3	26
15/12/14	17:00	1.3	5
15/12/14	18:00	0.9	10
15/12/14	19:00	1.3	8
15/12/14	20:00	1.8	6
15/12/14	21:00	0.9	344
15/12/14	22:00	0.4	25
15/12/14	23:00	0.9	22
15/12/14	0:00	0.4	340
15/12/16	1:00	0.9	21
15/12/16	2:00	1.3	5
15/12/16	3:00	2.2	3
15/12/16	4:00	0.4	2
15/12/16	5:00	0.4	338
15/12/16	6:00	1.3	1
15/12/16	7:00	1.8	6
15/12/16	8:00	3.1	10
15/12/16	9:00	3.6	25
15/12/16	10:00	4.9	22
15/12/16	11:00	5.4	47
15/12/16	12:00	5.4	51
15/12/16	13:00	4.9	63
15/12/16	14:00	3.6	52
15/12/16	15:00	2.2	42
15/12/16	16:00	2.2	50
15/12/16	17:00	3.1	3
15/12/16	18:00	2.7	1
15/12/16	19:00	1.8	5
15/12/16	20:00	1.3	355
15/12/16	21:00	2.2	21
15/12/16	22:00	3.6	28
15/12/16	23:00	1.8	44
15/12/16	0:00	0	-
15/12/17	1:00	0.9	4
15/12/17	2:00	0.9	2
15/12/17	3:00	2.2	8
15/12/17	4:00	1.8	26
15/12/17	5:00	1.8	24
15/12/17	6:00	5.4	15

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)
15/12/17	7:00	5.4	11
15/12/17	8:00	5.4	60
15/12/17	9:00	5.8	9
15/12/17	10:00	6.3	46
15/12/17	11:00	7.2	35
15/12/17	12:00	5.8	44
15/12/17	13:00	4	49
15/12/17	14:00	3.1	33
15/12/17	15:00	3.1	62
15/12/17	16:00	2.2	51
15/12/17	17:00	2.2	46
15/12/17	18:00	2.2	51
15/12/17	19:00	1.8	22
15/12/17	20:00	0.9	5
15/12/17	21:00	1.3	22
15/12/17	22:00	1.8	36
15/12/17	23:00	2.7	41
15/12/17	0:00	4	58
15/12/19	1:00	2.7	36
15/12/19	2:00	2.7	63
15/12/19	3:00	1.8	42
15/12/19	4:00	2.2	47
15/12/19	5:00	2.2	52
15/12/19	6:00	3.1	60
15/12/19	7:00	1.3	74
15/12/19	8:00	3.1	63
15/12/19	9:00	1.8	55
15/12/19	10:00	2.7	38
15/12/19	11:00	3.6	34
15/12/19	12:00	4.5	36
15/12/19	13:00	2.2	54
15/12/19	14:00	1.8	28
15/12/19	15:00	1.3	41
15/12/19	16:00	0.9	122
15/12/19	17:00	0.9	171
15/12/19	18:00	0.4	128
15/12/19	19:00	1.8	23
15/12/19	20:00	1.8	8
15/12/19	21:00	1.8	23
15/12/19	22:00	3.1	45
15/12/19	23:00	3.6	55
15/12/19	0:00	3.6	63
15/12/20	1:00	3.1	48
15/12/20	2:00	2.7	63
15/12/20	3:00	1.3	21
15/12/20	4:00	0.9	96
15/12/20	5:00	1.3	47
15/12/20	6:00	0.9	104
15/12/20	7:00	0.9	52
15/12/20	8:00	0.9	96
15/12/20	9:00	0	-
15/12/20	10:00	0	-
15/12/20	11:00	0.4	20
15/12/20	12:00	0.4	14

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)
15/12/20	13:00	0.9	3
15/12/20	14:00	0.9	46
15/12/20	15:00	1.8	52
15/12/20	16:00	0.4	58
15/12/20	17:00	0.9	57
15/12/20	18:00	2.2	39
15/12/20	19:00	1.3	95
15/12/20	20:00	0.4	77
15/12/20	21:00	0.4	51
15/12/20	22:00	0.4	76
15/12/20	23:00	0	-
15/12/20	0:00	0.9	40
15/12/22	1:00	0.4	123
15/12/22	2:00	2.2	115
15/12/22	3:00	2.2	104
15/12/22	4:00	1.8	99
15/12/22	5:00	0.4	87
15/12/22	6:00	0.4	85
15/12/22	7:00	0	-
15/12/22	8:00	0.9	104
15/12/22	9:00	1.8	123
15/12/22	10:00	1.8	88
15/12/22	11:00	0.9	91
15/12/22	12:00	0.4	168
15/12/22	13:00	2.2	122
15/12/22	14:00	1.3	144
15/12/22	15:00	1.8	151
15/12/22	16:00	2.2	132
15/12/22	17:00	2.7	161
15/12/22	18:00	2.2	171
15/12/22	19:00	0.9	144
15/12/22	20:00	0	-
15/12/22	21:00	0.9	165
15/12/22	22:00	1.8	103
15/12/22	23:00	1.8	95
15/12/22	0:00	1.3	104
15/12/23	1:00	1.3	111
15/12/23	2:00	1.3	115
15/12/23	3:00	1.3	89
15/12/23	4:00	0.9	97
15/12/23	5:00	0.9	103
15/12/23	6:00	0.4	118
15/12/23	7:00	0	-
15/12/23	8:00	0	-
15/12/23	9:00	0	-
15/12/23	10:00	0	-
15/12/23	11:00	0	-
15/12/23	12:00	0	-
15/12/23	13:00	1.3	96
15/12/23	14:00	1.8	88
15/12/23	15:00	1.8	94
15/12/23	16:00	1.3	87
15/12/23	17:00	1.8	98
15/12/23	18:00	1.3	99

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)
15/12/23	19:00	1.3	100
15/12/23	20:00	0.9	123
15/12/23	21:00	0.9	128
15/12/23	22:00	0.9	69
15/12/23	23:00	0.9	75
15/12/23	0:00	0	-
15/12/25	1:00	3.6	351
15/12/25	2:00	3.6	5
15/12/25	3:00	3.6	356
15/12/25	4:00	2.2	342
15/12/25	5:00	0.9	331
15/12/25	6:00	0.9	351
15/12/25	7:00	0.9	5
15/12/25	8:00	0.9	359
15/12/25	9:00	1.3	44
15/12/25	10:00	0.9	14
15/12/25	11:00	0.4	85
15/12/25	12:00	0.4	92
15/12/25	13:00	0.4	22
15/12/25	14:00	0.9	351
15/12/25	15:00	1.8	5
15/12/25	16:00	1.8	46
15/12/25	17:00	1.8	51
15/12/25	18:00	1.3	3
15/12/25	19:00	0.4	25
15/12/25	20:00	1.3	11
15/12/25	21:00	1.3	13
15/12/25	22:00	1.3	22
15/12/25	23:00	2.7	56
15/12/25	0:00	4	54
15/12/26	1:00	3.1	49
15/12/26	2:00	2.7	53
15/12/26	3:00	1.8	55
15/12/26	4:00	1.8	47
15/12/26	5:00	1.8	40
15/12/26	6:00	2.2	51
15/12/26	7:00	2.2	63
15/12/26	8:00	2.7	51
15/12/26	9:00	2.2	40
15/12/26	10:00	3.1	38
15/12/26	11:00	0.9	42
15/12/26	12:00	0.9	55
15/12/26	13:00	1.3	41
15/12/26	14:00	0.9	33
15/12/26	15:00	0	-
15/12/26	16:00	2.7	6
15/12/26	17:00	2.7	3
15/12/26	18:00	2.2	344
15/12/26	19:00	2.2	7
15/12/26	20:00	1.3	12
15/12/26	21:00	0.9	8
15/12/26	22:00	0.9	16
15/12/26	23:00	0.4	355
15/12/26	0:00	0.9	52

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)
15/12/28	1:00	2.7	44
15/12/28	2:00	2.7	16
15/12/28	3:00	2.2	48
15/12/28	4:00	2.2	23
15/12/28	5:00	2.2	49
15/12/28	6:00	3.6	41
15/12/28	7:00	2.7	51
15/12/28	8:00	1.3	56
15/12/28	9:00	3.6	54
15/12/28	10:00	3.1	63
15/12/28	11:00	2.7	50
15/12/28	12:00	2.2	66
15/12/28	13:00	1.3	37
15/12/28	14:00	1.8	33
15/12/28	15:00	2.2	52
15/12/28	16:00	2.2	59
15/12/28	17:00	1.3	95
15/12/28	18:00	1.3	109
15/12/28	19:00	1.3	121
15/12/28	20:00	1.3	100
15/12/28	21:00	0.4	111
15/12/28	22:00	0.9	56
15/12/28	23:00	1.3	13
15/12/28	0:00	2.2	47
15/12/29	1:00	2.7	50
15/12/29	2:00	1.8	66
15/12/29	3:00	0.9	49
15/12/29	4:00	1.8	48
15/12/29	5:00	1.8	44
15/12/29	6:00	1.8	38
15/12/29	7:00	1.3	2
15/12/29	8:00	1.3	17
15/12/29	9:00	1.8	100
15/12/29	10:00	1.8	63
15/12/29	11:00	2.2	66
15/12/29	12:00	2.2	120
15/12/29	13:00	2.7	132
15/12/29	14:00	2.2	119
15/12/29	15:00	1.3	165
15/12/29	16:00	1.3	171
15/12/29	17:00	0.9	13
15/12/29	18:00	0.4	172
15/12/29	19:00	0.4	349
15/12/29	20:00	0.9	102
15/12/29	21:00	1.3	113
15/12/29	22:00	1.3	111
15/12/29	23:00	0.9	63
15/12/29	0:00	0.9	65
15/12/31	1:00	1.8	57
15/12/31	2:00	1.8	69
15/12/31	3:00	1.3	71
15/12/31	4:00	2.7	44
15/12/31	5:00	2.7	53
15/12/31	6:00	3.6	57

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)
15/12/31	7:00	3.6	52
15/12/31	8:00	2.7	61
15/12/31	9:00	2.7	66
15/12/31	10:00	2.2	65
15/12/31	11:00	1.8	21
15/12/31	12:00	2.2	39
15/12/31	13:00	1.8	34
15/12/31	14:00	1.3	51
15/12/31	15:00	1.3	270
15/12/31	16:00	0.9	301
15/12/31	17:00	1.3	322
15/12/31	18:00	0.9	351
15/12/31	19:00	0	-
15/12/31	20:00	0	-
15/12/31	21:00	0.9	177
15/12/31	22:00	0.9	96
15/12/31	23:00	0	-
15/12/31	0:00	0	-
16/01/01	1:00	0.4	51
16/01/01	2:00	0.4	47
16/01/01	3:00	0.9	97
16/01/01	4:00	0.9	100
16/01/01	5:00	1.3	88
16/01/01	6:00	1.3	95
16/01/01	7:00	0.9	42
16/01/01	8:00	1.3	44
16/01/01	9:00	0.9	128
16/01/01	10:00	1.8	126
16/01/01	11:00	1.3	144
16/01/01	12:00	0.9	169
16/01/01	13:00	1.3	181
16/01/01	14:00	1.3	344
16/01/01	15:00	1.3	301
16/01/01	16:00	0.9	321
16/01/01	17:00	0.9	315
16/01/01	18:00	1.3	351
16/01/01	19:00	1.3	35
16/01/01	20:00	0.9	348
16/01/01	21:00	0.4	345
16/01/01	22:00	0	-
16/01/01	23:00	0	-
16/01/01	0:00	0.9	5

Appendix I

Impact Dolphin Monitoring Survey

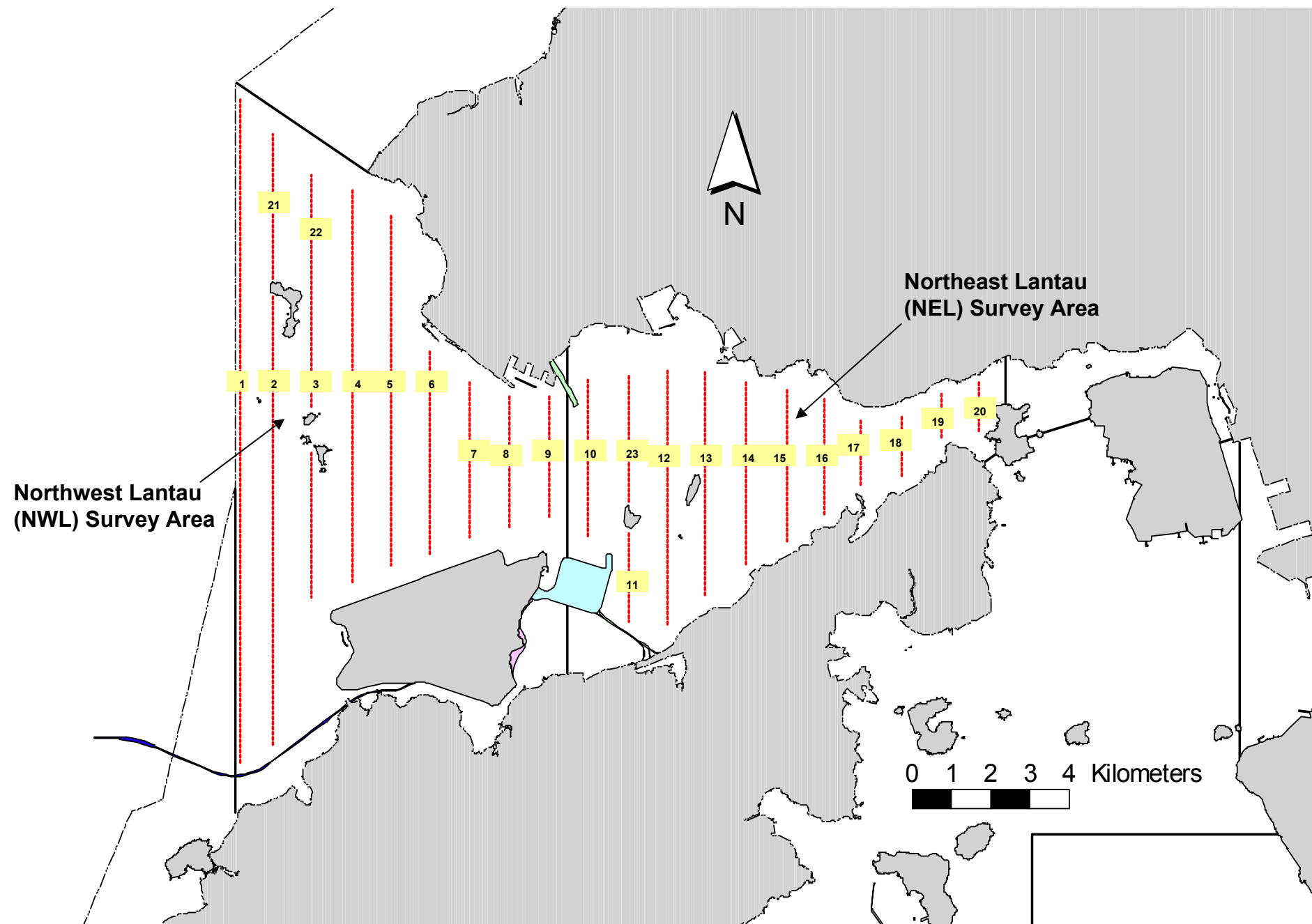


Figure 1. Transect Line Layout in Northwest and Northeast Lantau Survey Areas

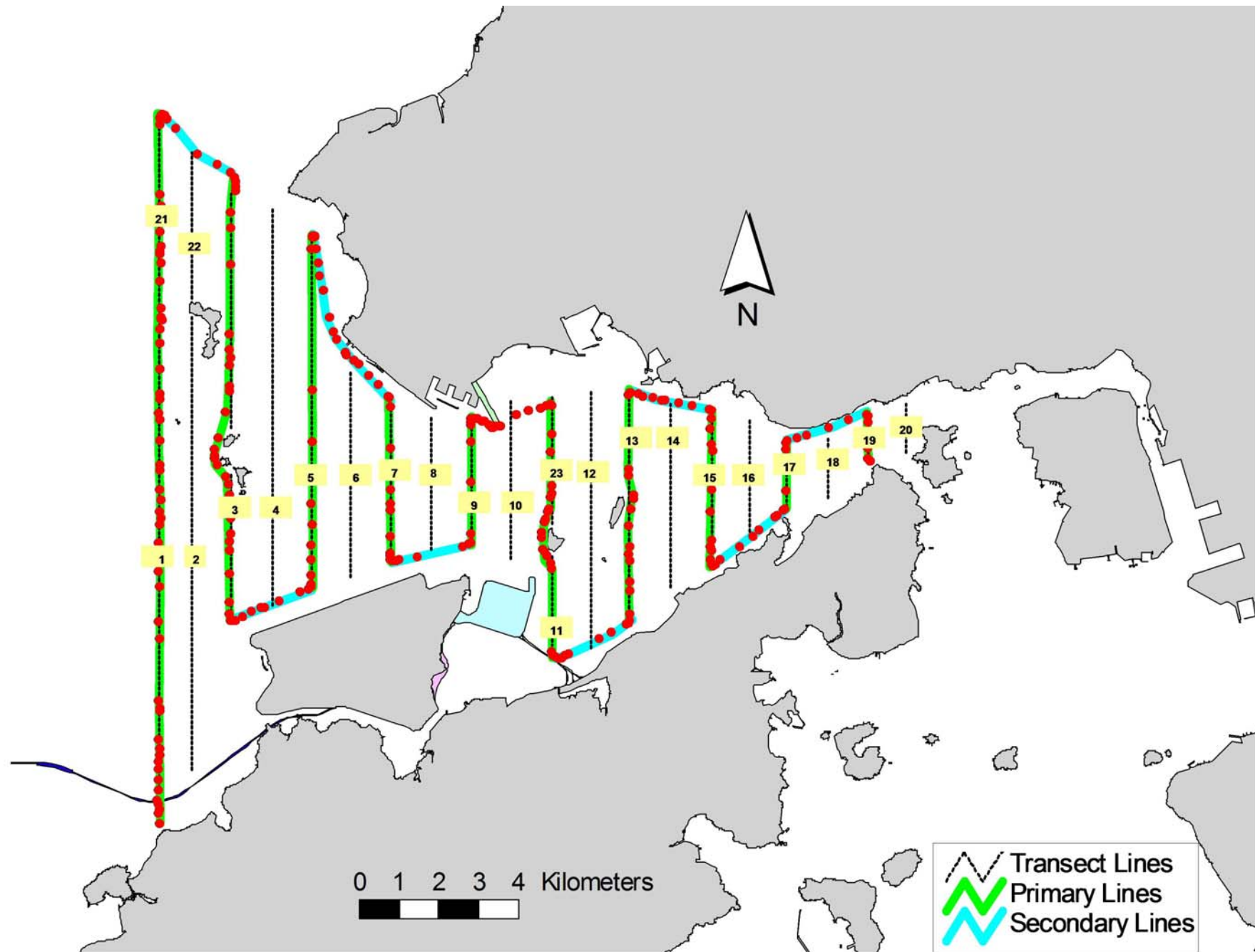


Figure 2. Survey Route on December 2nd, 2015 (from HKLR03 project)

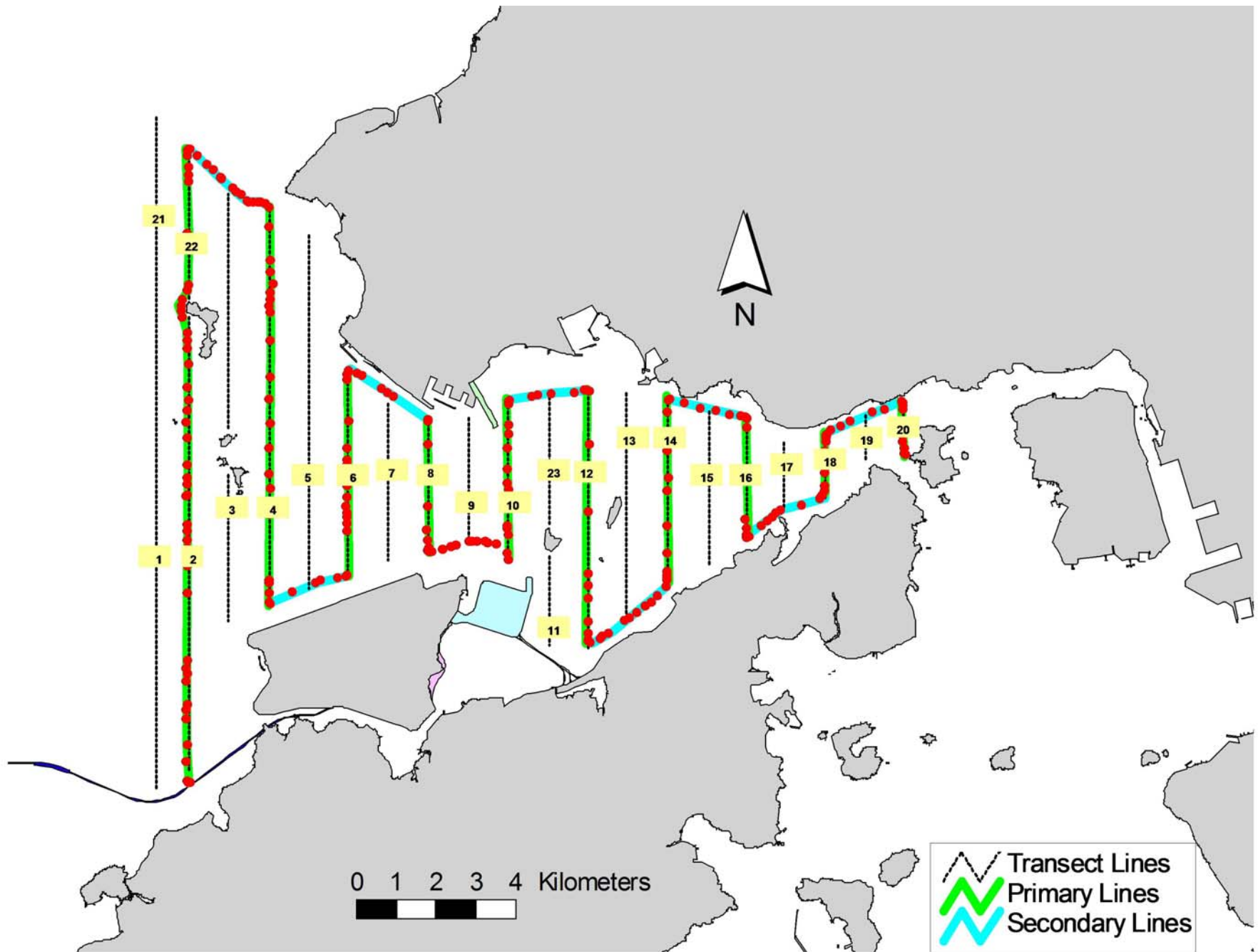


Figure 3. Survey Route on December 7th, 2015 (from HKLR03 project)

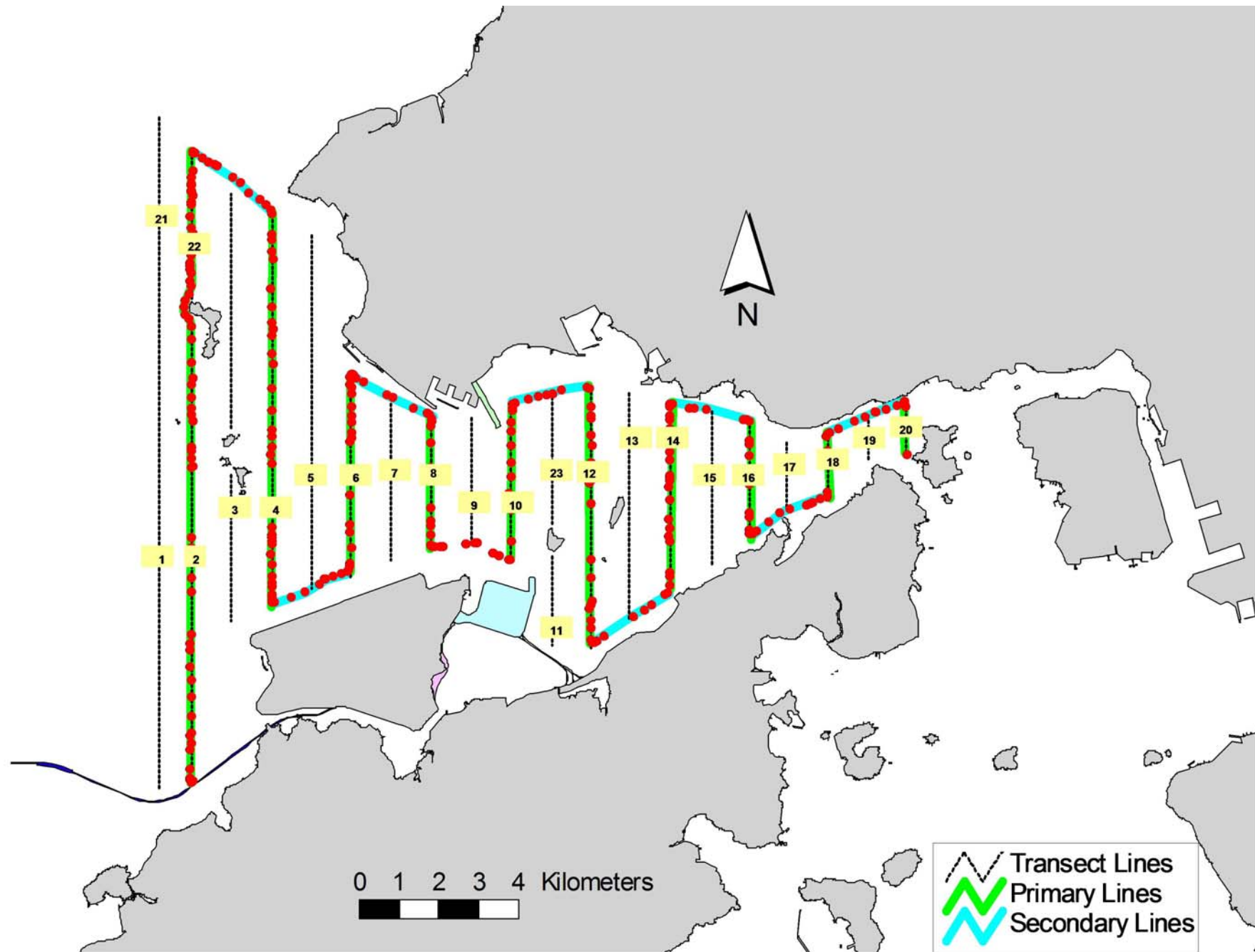


Figure 4. Survey Route on December 9th, 2015 (from HKLR03 project)

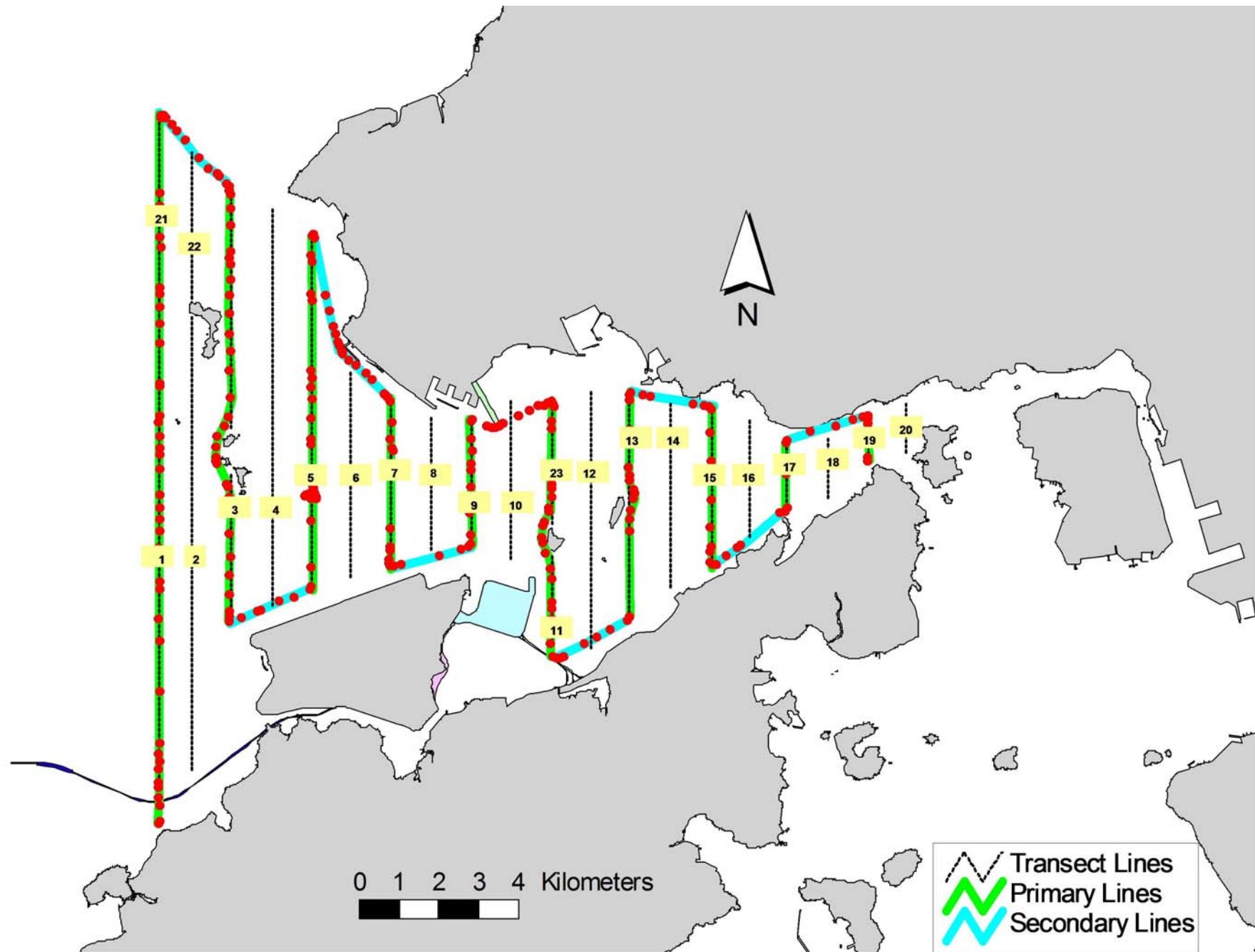


Figure 5. Survey Route on December 15th, 2015 (from HKLR03 project)

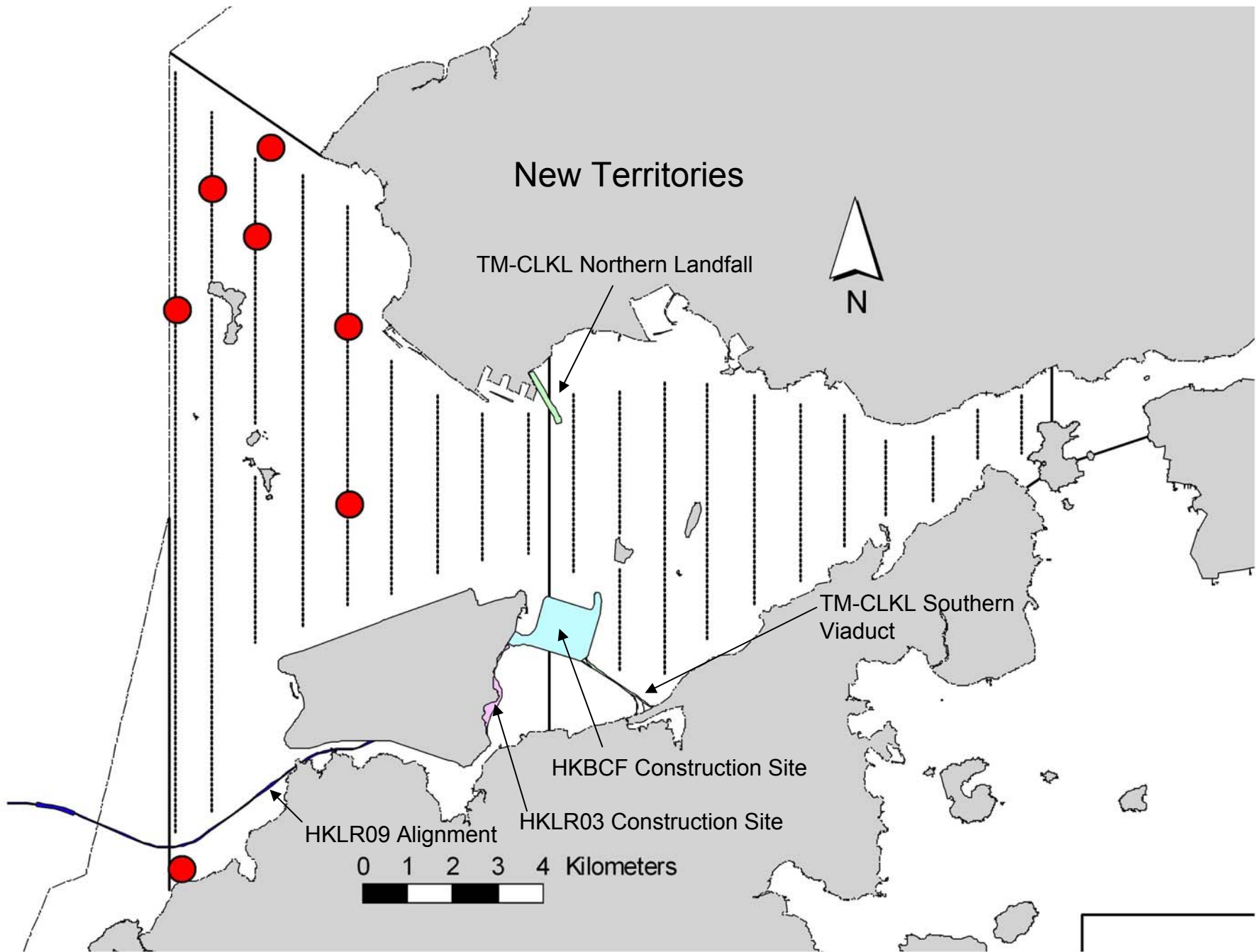


Figure 6. Distribution of Chinese White Dolphin Sightings During December 2015 HKLR03 Monitoring Surveys

Appendix I. HKLR03 Survey Effort Database (December 2015)

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

DATE	AREA	BEAU	EFFORT	SEASON	VESSEL	TYPE	P/S
2-Dec-15	NW LANTAU	2	34.36	WINTER	STANDARD31516	HKLR	P
2-Dec-15	NW LANTAU	3	6.71	WINTER	STANDARD31516	HKLR	P
2-Dec-15	NW LANTAU	2	12.06	WINTER	STANDARD31516	HKLR	S
2-Dec-15	NW LANTAU	3	0.90	WINTER	STANDARD31516	HKLR	S
2-Dec-15	NE LANTAU	1	0.77	WINTER	STANDARD31516	HKLR	P
2-Dec-15	NE LANTAU	2	15.53	WINTER	STANDARD31516	HKLR	P
2-Dec-15	NE LANTAU	2	10.30	WINTER	STANDARD31516	HKLR	S
7-Dec-15	NE LANTAU	2	18.39	WINTER	STANDARD31516	HKLR	P
7-Dec-15	NE LANTAU	3	1.75	WINTER	STANDARD31516	HKLR	P
7-Dec-15	NE LANTAU	2	9.11	WINTER	STANDARD31516	HKLR	S
7-Dec-15	NE LANTAU	3	1.35	WINTER	STANDARD31516	HKLR	S
7-Dec-15	NW LANTAU	2	3.22	WINTER	STANDARD31516	HKLR	P
7-Dec-15	NW LANTAU	3	28.58	WINTER	STANDARD31516	HKLR	P
7-Dec-15	NW LANTAU	2	0.27	WINTER	STANDARD31516	HKLR	S
7-Dec-15	NW LANTAU	3	7.53	WINTER	STANDARD31516	HKLR	S
9-Dec-15	NW LANTAU	2	1.20	WINTER	STANDARD31516	HKLR	P
9-Dec-15	NW LANTAU	3	13.30	WINTER	STANDARD31516	HKLR	P
9-Dec-15	NW LANTAU	4	14.71	WINTER	STANDARD31516	HKLR	P
9-Dec-15	NW LANTAU	5	2.69	WINTER	STANDARD31516	HKLR	P
9-Dec-15	NW LANTAU	2	1.10	WINTER	STANDARD31516	HKLR	S
9-Dec-15	NW LANTAU	3	1.84	WINTER	STANDARD31516	HKLR	S
9-Dec-15	NW LANTAU	4	4.72	WINTER	STANDARD31516	HKLR	S
9-Dec-15	NE LANTAU	2	12.20	WINTER	STANDARD31516	HKLR	P
9-Dec-15	NE LANTAU	3	7.10	WINTER	STANDARD31516	HKLR	P
9-Dec-15	NE LANTAU	2	8.50	WINTER	STANDARD31516	HKLR	S
9-Dec-15	NE LANTAU	3	2.30	WINTER	STANDARD31516	HKLR	S
15-Dec-15	NW LANTAU	2	10.12	WINTER	STANDARD31516	HKLR	P
15-Dec-15	NW LANTAU	3	17.24	WINTER	STANDARD31516	HKLR	P
15-Dec-15	NW LANTAU	4	13.57	WINTER	STANDARD31516	HKLR	P
15-Dec-15	NW LANTAU	2	2.83	WINTER	STANDARD31516	HKLR	S
15-Dec-15	NW LANTAU	3	10.47	WINTER	STANDARD31516	HKLR	S
15-Dec-15	NE LANTAU	2	15.04	WINTER	STANDARD31516	HKLR	P
15-Dec-15	NE LANTAU	3	1.60	WINTER	STANDARD31516	HKLR	P
15-Dec-15	NE LANTAU	2	10.16	WINTER	STANDARD31516	HKLR	S

Appendix II. HKLR03 Chinese White Dolphin Sighting Database (December 2015)

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

DATE	STG #	TIME	HRD SZ	AREA	BEAU	PSD	EFFORT	TYPE	NORTHING	EASTING	SEASON	BOAT ASSOC.	P/S
2-Dec-15	1	1058	1	NW LANTAU	2	477	ON	HKLR	826399	804684	WINTER	NONE	P
2-Dec-15	2	1149	2	NW LANTAU	2	257	ON	HKLR	827946	806459	WINTER	NONE	P
7-Dec-15	1	1449	10	NW LANTAU	3	553	ON	HKLR	828945	805462	WINTER	NONE	P
9-Dec-15	1	1209	9	NW LANTAU	4	126	ON	HKLR	829795	806761	WINTER	NONE	S
15-Dec-15	1	1015	1	NW LANTAU	2	ND	OFF	HKLR	814683	804794	WINTER	NONE	N/A
15-Dec-15	2	1303	2	NW LANTAU	2	169	ON	HKLR	822328	808518	WINTER	NONE	P
15-Dec-15	3	1329	3	NW LANTAU	3	236	ON	HKLR	826060	808504	WINTER	NONE	P

Appendix III. Individual dolphins identified during HKLR03 monitoring surveys in December 2015

ID#	DATE	STG#	AREA
CH34	09/12/15	1	NW LANTAU
NL33	07/12/15	1	NW LANTAU
	09/12/15	1	NW LANTAU
NL48	09/12/15	1	NW LANTAU
NL104	09/12/15	1	NW LANTAU
	15/12/15	3	NW LANTAU
NL136	09/12/15	1	NW LANTAU
NL202	07/12/15	1	NW LANTAU
NL210	07/12/15	1	NW LANTAU
NL220	09/12/15	1	NW LANTAU
	15/12/15	3	NW LANTAU
NL233	07/12/15	1	NW LANTAU
NL261	15/12/15	2	NW LANTAU
NL269	09/12/15	1	NW LANTAU
NL272	07/12/15	1	NW LANTAU
	15/12/15	2	NW LANTAU
NL280	07/12/15	1	NW LANTAU
NL284	07/12/15	1	NW LANTAU
NL286	02/12/15	1	NW LANTAU
	02/12/15	2	NW LANTAU
	07/12/15	1	NW LANTAU



Appendix IV. Photographs of Identified Individual Dolphins in December 2015 (HKLR03)



Appendix IV. (cont'd)



Appendix IV. (cont'd)

Appendix J

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 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 K

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

Table K1 *Cumulative Statistics on Exceedances*

Parameters	Level of Exceedance	Total No. recorded in this reporting month	Total No. recorded since project commencement
1-hr TSP	Action	0	30
	Limit	0	2
24-hr TSP	Action	0	5
	Limit	0	1
Water Quality	Action	0	6
	Limit	0	1
Impact Dolphin Monitoring	Action	0	9
	Limit	0	3

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

Reporting Period	Cumulative Statistics		
	Complaints	Notifications of Summons	Successful Prosecutions
This Reporting Month (December 2015)	0	0	0
Total No. received since project commencement	4	0	0

Appendix L

Waste Flow Table

Monthly Summary Waste Flow Table

Name of Department: HyD

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

Monthly Summary Waste Flow Table for **December 2015** [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	64.216	0.000	0.000	0.000	64.216
Jan-2015	30.877	0.000	0.000	0.000	30.877
Feb-2015	4.152	0.000	0.000	0.000	4.152
Mar-2015	36.718	0.000	0.000	0.000	36.718
Apr-2015	62.847	0.000	0.000	0.000	62.847
May-2015	121.436	0.000	0.000	0.000	121.436
Jun-2015	247.282	0.000	0.000	0.000	247.282
Half Year Sub-total	503.312	0.000	0.000	0.000	503.312
Jul-2015	233.422	0.000	0.000	0.000	233.422
Aug-2015	62.367	0.000	0.000	0.000	62.367
Sep-2015	9.555	0.000	0.000	0.000	9.555
Oct-2015	7.218	0.000	0.000	0.000	7.218
Nov-2015	11.578	0.000	0.000	0.000	11.578
Dec-2015	38.600	0.000	0.000	0.000	38.600
Project Total Quantities	930.268	0.000	0.000	0.000	930.268

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	0.000	0.000	1.050	1.050	0.000	0.000	0.110	0.110	0.605
Jan-2015	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.080
Feb-2015	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.074
Mar-2015	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.115
Apr-2015	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.091
May-2015	0.000	0.000	0.000	0.000	0.000	0.000	1.600	1.600	0.108
Jun-2015	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.120
Half Year Sub-total	0.000	0.000	0.000	0.000	0.000	0.000	1.600	1.600	0.588
Jul-2015	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.172
Aug-2015	0.000	0.000	0.300	0.300	0.000	0.000	0.000	0.000	0.246
Sep-2015	0.000	0.000	0.300	0.300	0.220	0.220	0.000	0.000	0.195
Oct-2015	0.000	0.000	0.300	0.300	0.000	0.000	0.000	0.000	0.177
Nov-2015	0.000	0.000	0.200	0.200	5.950	5.950	0.000	0.000	0.093
Dec-2015	0.000	0.000	0.000	0.000	0.700	0.700	0.000	0.000	0.141
Project Total Quantities	0.000	0.000	2.150	2.150	6.870	6.870	1.710	1.710	2.217

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)
50.000	0.000	0.000	0.000	50.000

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 '000m ³)
0.000	0.000	0.000	0.000	0.200

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