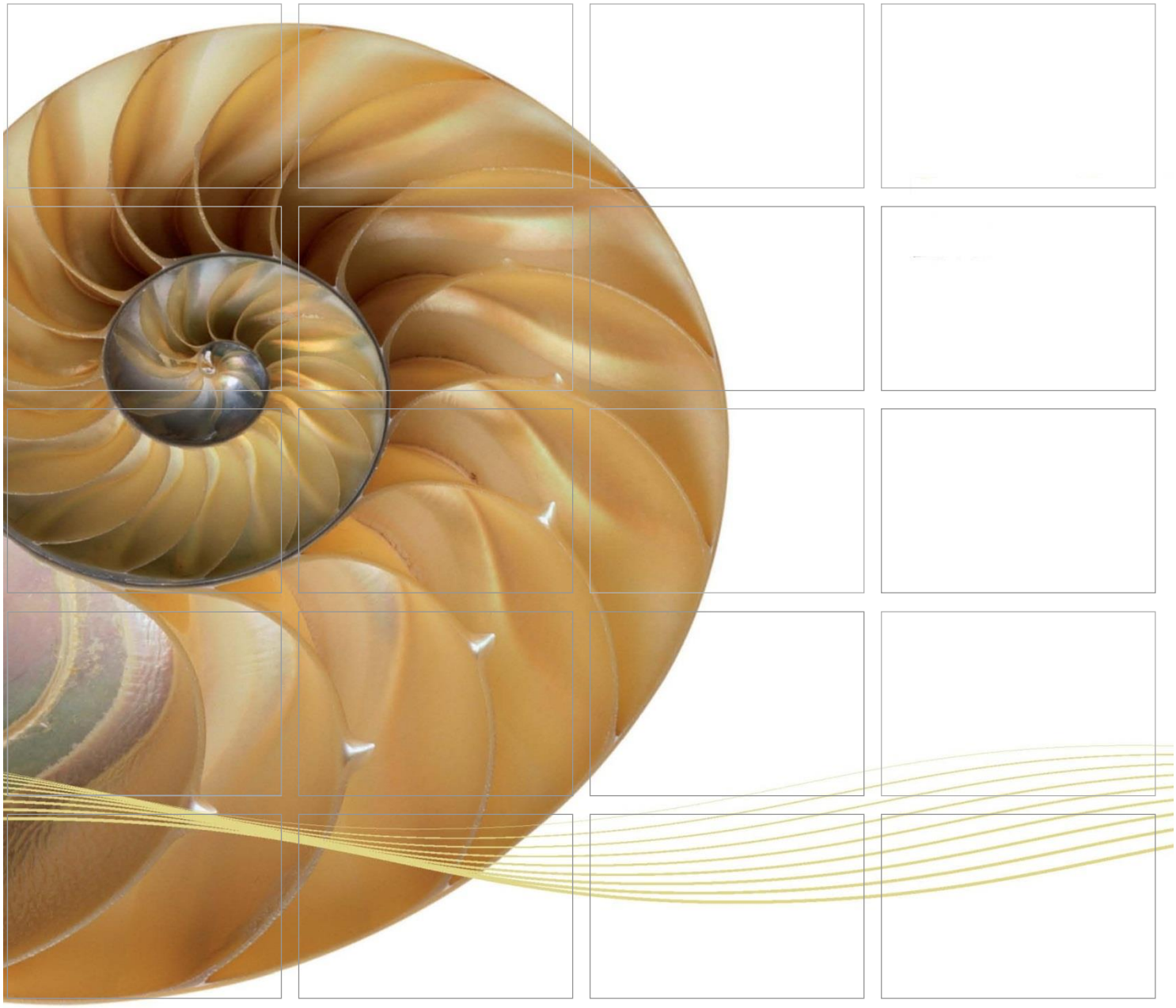
Report



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

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

15 November 2016

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

www.erm.com

ERM

The business of sustainability

RAMBOLL ENVIRON

Ref.: HYDHZMBEEM00_0_4762L.16 15 November 2016

AECOM By Fax (2293 6300) and By Post
Supervising Officer Representative's Office
No.8 Mong Fat Street, Tuen Mun,
New Territories, Hong Kong

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
36th Monthly EM&A Report for October 2016 (EP-354/2009/D)

Reference is made to the Monthly Environmental Monitoring and Audit (EM&A) Report (Oct. 2016) (ET's ref.: "0212330_36th Monthly EM&A_20161115.doc" dated 15 Nov. 2016) certified by the ET Leader and provided to us via e-mail on 15 Nov. 2016.

Please be informed 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 attention. Please do not hesitate to contact the undersigned or the ENPO Leader Mr. Y. H. Hui should you have any queries.

Yours sincerely,

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

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

Internal: DY, YH, ENPO Site

Q:\Projects\HYDHZMBEEM00\02_Proj_Mgt\02_Corr\HYDHZMBEEM00_0_4762L.16.docx

Ramboll Environ Hong Kong Limited 英環香港有限公司
Room 2403, 24/F., Jubilee Centre, 18 Fenwick Street, Wanchai, Hong Kong Tel: 852.3465 2888 Fax: 852.3465 2899
www.Ramboll-Environ.com

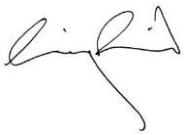
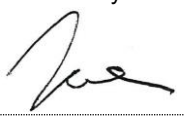
Contract No. HY/2012/08
Tuen Mun – Chek Lap Kok Link – Northern Connection Sub-sea Tunnel Section

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

Document Code: 0212330_36th Monthly EM&A_20161115.doc

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

Client: DBJV	Project No: 0212330
Summary: This document presents the thirty-sixth Monthly EM&A Report for Tuen Mun – Chek Lap Kok Link Northern Connection Sub-sea Tunnel Section.	Date: 15 November 2016 Approved by:  *Mr Craig Reid* *Partner* Certified by:  *Mr Jovy Tam* *ET Leader*

Revision	Description	By	Checked	Approved	Date
	36th Monthly EM&A Report	VAR	JT	CAR	15/11/16

Distribution

☐ Internal

☒ Public

☐ Confidential

TABLE OF CONTENTS

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 Thirty-sixth Monthly EM&A report presenting the EM&A works carried out during the period from 1 to 31 October 2016 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;
- Shaft Structure and Backfilling – Portion N-C;
- Construction of Cross Passage Tympanum – TBM tunnel;
- Cross Passage Lining Installation – TBM Tunnel;
- Corbel Construction – TBM Tunnel;
- Excavation of Sub-sea Tunnel – TBM tunnel;
- Sub-sea Tunnel Gallery Installation – TBM tunnel;
- Deep Band Drain Installation – Portion S-A;
- Dewatering Deep well Installation – Portion S-A; and
- Jet Grouting, CSM Ground Treatment and Diaphragm Wall Construction – Portion S-A.

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

24-hour TSP Monitoring	9 sessions
1-hour TSP Monitoring	9 sessions
Impact Dolphin Monitoring	2 sessions
Joint Environmental Site Inspection	4 sessions

Implementation of Marine Mammal Exclusion Zone

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

Summary of Breaches of Action/Limit Levels

Breaches of Action and Limit Levels for Air Quality

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 November 2016 include the following:

Land-based Works

- Box Culvert Extension at Works Area – Portion N-A;
- Preparation of Phase 2 Reclamation – Portion N-A;
- Shaft Structure and Backfilling – Portion N-C;
- Construction of Cross Passage Tympanum – TBM tunnel;
- Cross Passage Lining Installation – TBM Tunnel;
- Corbel Construction – TBM Tunnel;

- Excavation of Sub-sea Tunnel – TBM tunnel;
- Sub-sea Tunnel Gallery Installation – TBM tunnel;
- Deep Band Drain Installation – Portion S-A;
- Dewatering Deep well Installation – Portion S-A; and
- Jet Grouting, CSM Ground Treatment and Diaphragm Wall Construction – Portion S-A.

Future Key Issues

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

1 INTRODUCTION

1.1 BACKGROUND

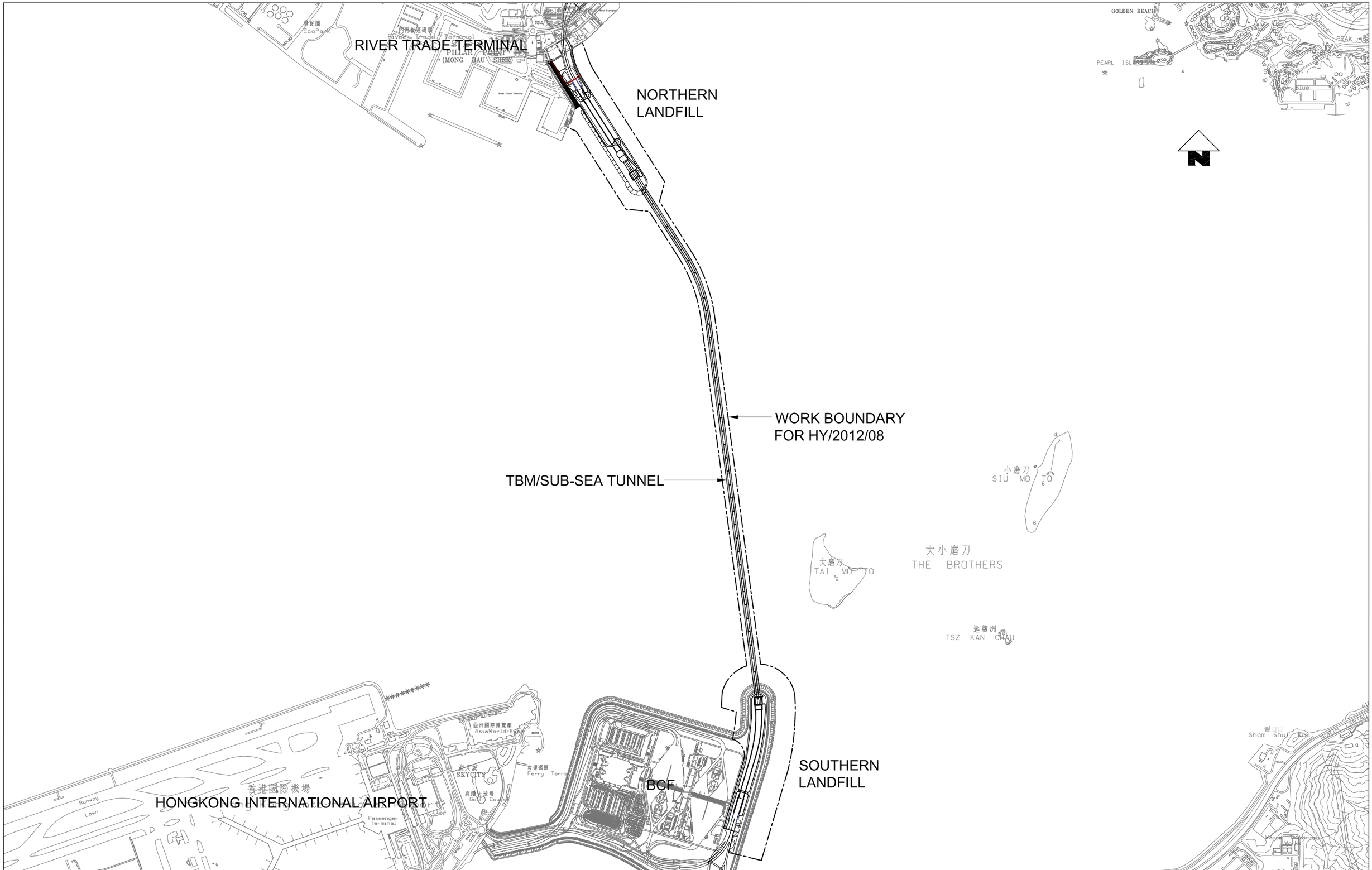
According to the findings of the Northwest New Territories (NWNT) Traffic and Infrastructure Review conducted by the Transport Department, Tuen Mun Road, Ting Kau Bridge, Lantau Link and North Lantau Highway would be operating beyond capacity after 2016. This forecast has been based on the estimated increase in cross boundary traffic, developments in the Northwest New Territories (NWNT), and possible developments in North Lantau, including the Airport developments, the Lantau Logistics Park (LLP) and the Hong Kong – Zhuhai – Macao Bridge (HZMB). In order to cope with the anticipated traffic demand, two new road sections between NWNT and North Lantau – Tuen Mun – Chek Lap Kok Link (TM-CLKL) and Tuen Mun Western Bypass (TMWB) are proposed.

An Environmental Impact Assessment (EIA) of TM-CLKL (the Project) was prepared in accordance with the EIA Study Brief (No. ESB-175/2007) and the *Technical Memorandum of the Environmental Impact Assessment Process* (*EIAO-TM*). The EIA Report was submitted under the Environmental Impact Assessment Ordinance (EIAO) in August 2009. Subsequent to the approval of the EIA Report (EIAO Register Number AEIAR-146/2009), an Environmental Permit (EP-354/2009) for TM-CLKL was granted by the Director of Environmental Protection (DEP) on 4 November 2009, and EP variation (VEP) (EP-354/2009/A) was issued on 8 December 2010. Subsequent applications for variation of environmental permits (VEPs), *EP-354/2009/B, EP-354/2009/C* and *EP-354/2009/D*, were granted on 28 January 2014, 10 December 2014 and 13 March 2015, respectively.

Under *Contract No. HY/2012/08*, Dragages – Bouygues Joint Venture (DBJV) is commissioned by the Highways Department (HyD) to undertake the design and construction of the Northern Connection Sub-sea Tunnel Section of TM-CLKL while AECOM Asia Company Limited was appointed by HyD as the Supervising Officer. For implementation of the environmental monitoring and audit (EM&A) programme under the Contract, ERM-Hong Kong, Limited (ERM) has been appointed as the Environmental Team (ET). Ramboll 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.



Rev.	Description	Date	Checked
A	FIRST ISSUE	11SEP13	PKV

Designed By: PKV
Drawn By: DAI
Approved By: SPo PP
Date: 11SEP2013

Main Contractor: Dragages - Bouygues Joint Venture 實嘉 - 布依格聯營

Client: 路政署 HIGHWAYS DEPARTMENT

Contractor's Designer: ARUP Ove Arup & Partners Hong Kong Limited

Project: Contract No. HY/2012/08
Tuen Mun - Chek Lap Kok Link -
Northern Connection Sub-Sea Tunnel Section

Drawing Title: **Figure 1.1**

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

1.2 SCOPE OF REPORT

This is the Thirty-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 October 2016.

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
	Environmental Officer	Ality Chan	5933 5904	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*.

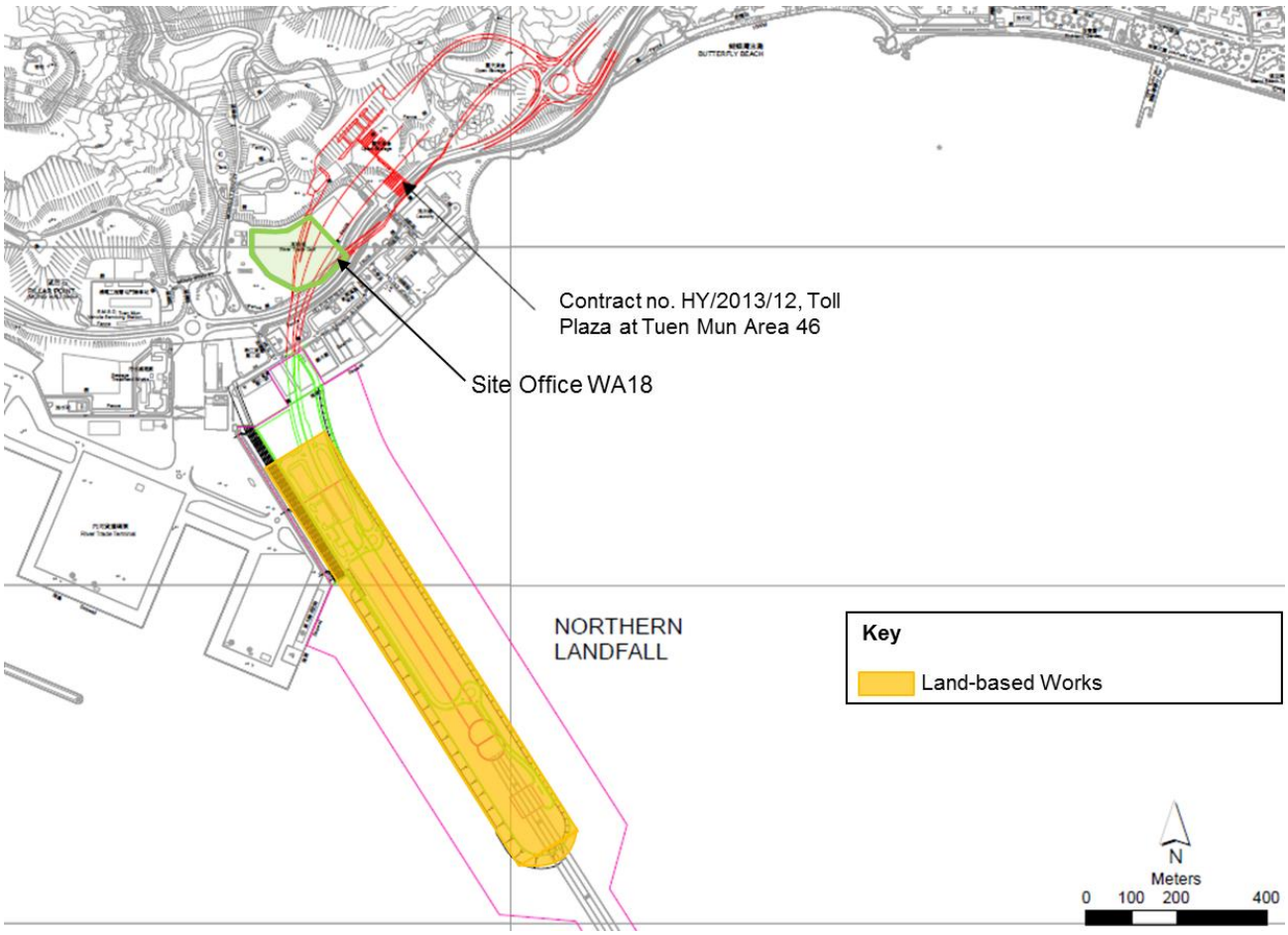
The general layout plan of the site showing the detailed works areas is shown in *Figure 1.2*. The Environmental Sensitive Receivers in the vicinity of the Project are shown in *Figure 1.3*.

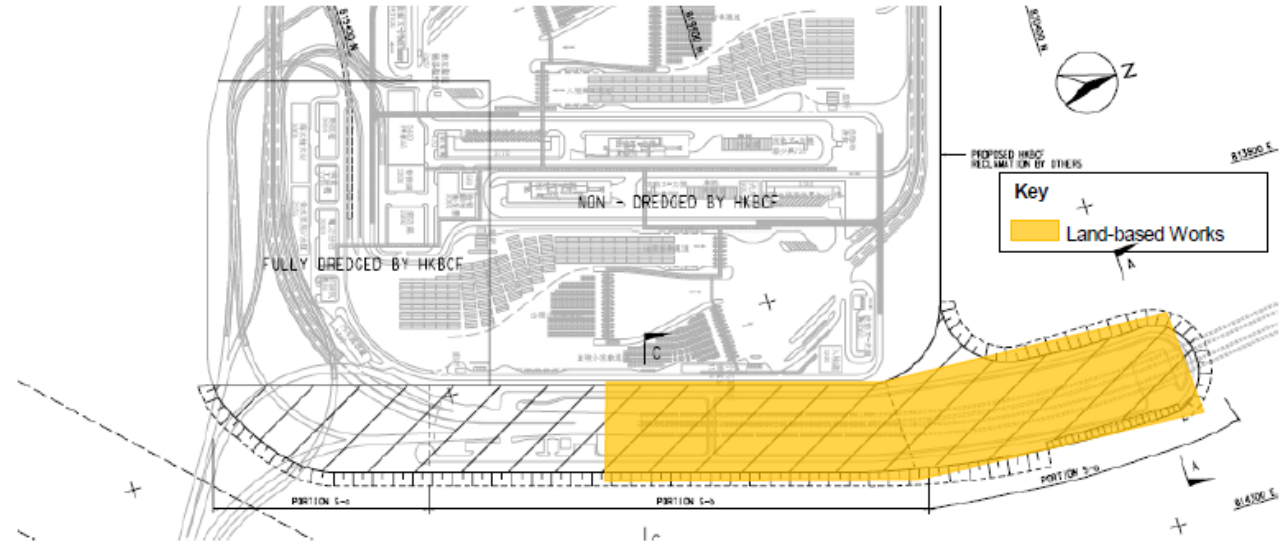
The implementation schedule of environmental mitigation measures is presented in *Appendix C*.

Table 1.2 Summary of Construction Activities Undertaken during the Reporting Period

Construction Activities Undertaken
Land-based Works
• Box Culvert Extension at Works Area – Portion N-A; • Shaft Structure and Backfilling – Portion N-C; • Construction of Cross Passage Tympanum – TBM tunnel; • Cross Passage Lining Installation – TBM Tunnel; • Corbel Construction – TBM Tunnel; • Excavation of Sub-sea Tunnel – TBM tunnel; • Sub-sea Tunnel Gallery Installation – TBM tunnel; • Deep Band Drain Installation – Portion S-A; • Dewatering Deep well Installation – Portion S-A; and • Jet Grouting, CSM Ground Treatment and Diaphragm Wall Construction – Portion S-A.

Figure 1.2 Locations of Construction Activities – October 2016





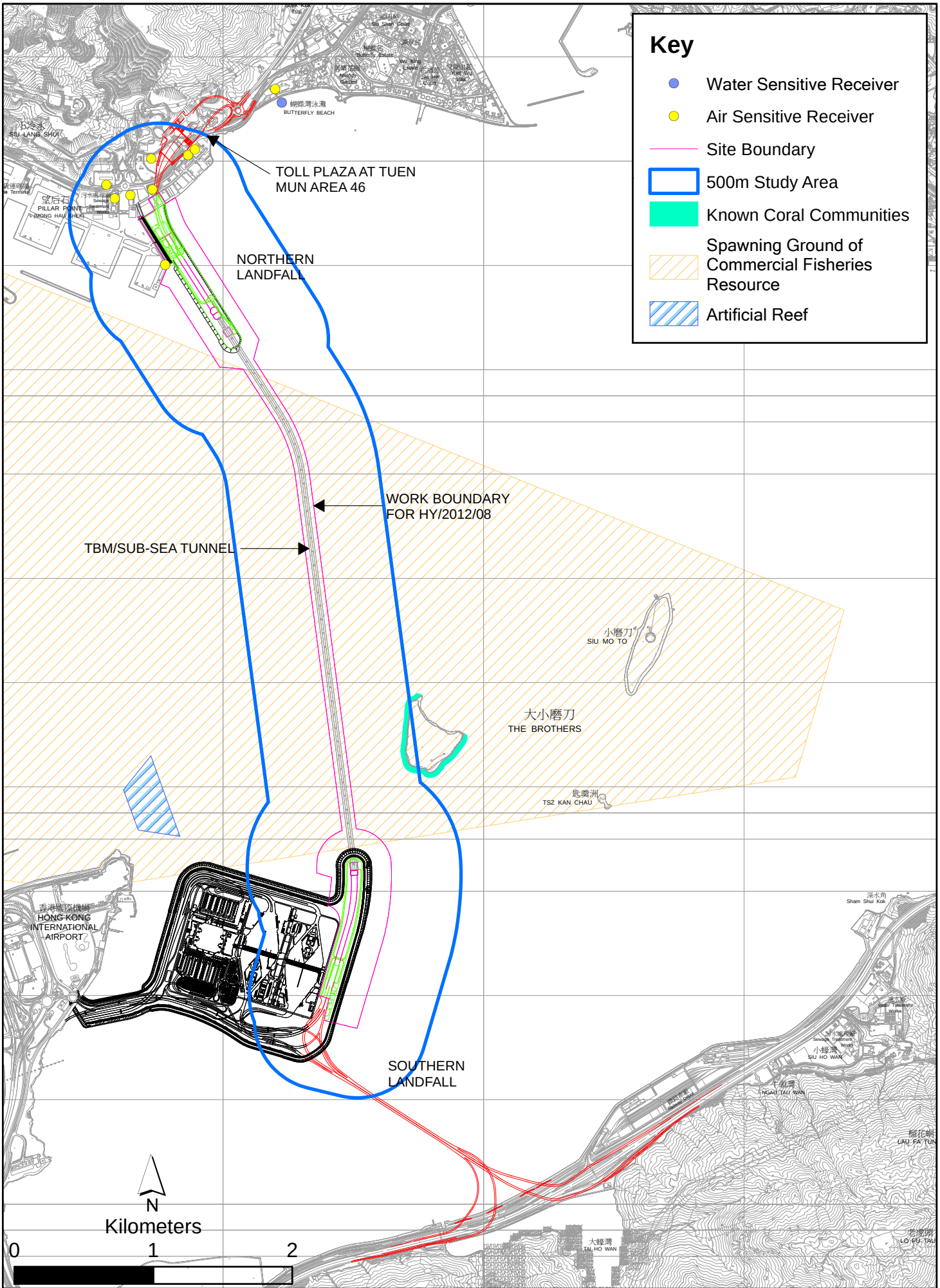


Figure 1.3 Environmental Sensitive Receivers in the vicinity of Contract No. HY/2012/08 Tuen Mun - Chek Lap Kok Link - Northern Connection Sub-Sea Tunnel Section

File: T:\GIS\CONTRACT\0212330\Mxd\0212330_EMnA_Env_Sensitive_Receiver.mxd
Date: 15/4/2014

Environmental Resources Management

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

2.1 AIR QUALITY

2.1.1 Monitoring Requirements and Equipment

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

High volume samplers (HVSs) were used to carry out the 1-hour and 24-hour TSP monitoring on 2, 5, 8, 11, 14, 17, 23, 26 and 29 October 2016 at the five (5) air quality monitoring stations in accordance with the requirements stipulated in the Updated EM&A Manual (*Figure 2.1*; *Table 2.1*). Wind meter was installed at the rooftop of ASR5 for logging wind speed and wind direction. Details of the equipment deployed are provided in *Table 2.2*. Copies of the calibration certificates for the equipment are presented in *Appendix E*.

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

Monitoring Station	Monitoring Dates	Location	Description	Parameters & Frequency
ASR1	2, 5, 8, 11, 14, 17, 23, 26 and 29 October 2016	Tuen Mun Fireboat Station	Office	TSP monitoring • 1-hour Total Suspended Particulates (1-hour TSP, µg/m³), 3 times in every 6 days • 24-hour Total Suspended Particulates (24-hour TSP, µg/m³), daily for 24-hour in every 6 days Enhanced TSP monitoring (commenced on 24 October 2014) • 1-hour Total Suspended Particulates (1-hour TSP, µg/m³), 3 times in every 3 days • 24-hour Total Suspended Particulates (24-hour TSP, µg/m³), daily for 24-hour in every 3 days
ASR5		Pillar Point Fire Station	Office	
AQMS1		Previous River Trade Golf	Bare ground	
ASR6		Butterfly Beach Laundry	Office	
ASR10		Butterfly Beach Park	Recreational uses	

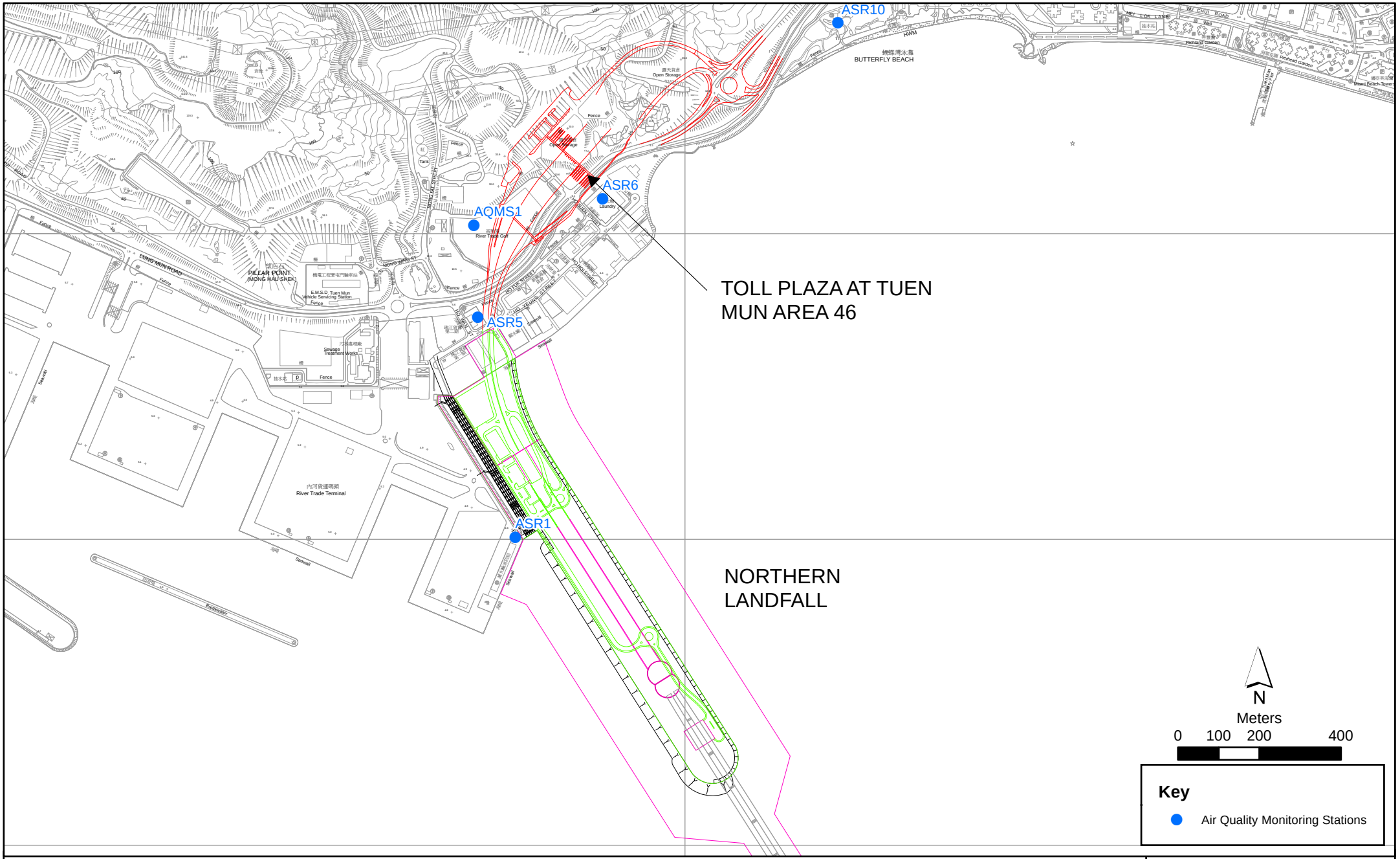


Figure 2.1

Air Quality Monitoring Stations for the Enhanced TSP Monitoring

File: T:\GIS\CONTRACT\0212330\Mxd\0212330_ASR_for_Enhanced_TSP_monitoring.mxd
Date: 21/2/2014

Environmental Resources Management

ERM

Table 2.2 ***Air Quality Monitoring Equipment***

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

2.1.2 Action & Limit Levels

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

2.1.3 Monitoring Schedule for the Reporting Month

The schedule for air quality monitoring in October 2016 is provided in *Appendix F*.

2.1.4 Results and Observations

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

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

Station	Average (µg/m³)	Range (µg/m³)	Action Level (µg/m³)	Limit Level (µg/m³)
ASR1	134	58 - 243	331	500
ASR5	100	48 - 180	340	500
AQMS1	74	40 - 165	335	500
ASR6	97	52 - 151	338	500
ASR10	66	42 - 99	337	500

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

Station	Average (µg/m³)	Range (µg/m³)	Action Level (µg/m³)	Limit Level (µg/m³)
ASR1	78	51 - 102	213	260
ASR5	64	47 - 96	238	260
AQMS1	52	38 - 69	213	260
ASR6	60	44 - 77	238	260
ASR10	53	44 - 64	214	260

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

A total of 9 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. 1-hour TSP

and 24-hour TSP monitoring was cancelled on 20 October 2016 due to safety reasons. On 20 October 2016, the Super Typhoon Haima was heading to Hong Kong and was forecast to make a direct hit on 21 October 2016. It was forecast that T3 signal would be hoisted later on 20 October and T8 signal would probably be hoisted on 21 October if the Super Typhoon Haima continued on its predicted path. Moreover, the air quality monitoring team reported that the condition was not safe to continue the monitoring. In addition, preventive measures had to prepare in advance to ensure that no risk would arise from the equipment to the public from the coming typhoon.

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

Equipment	Model
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.

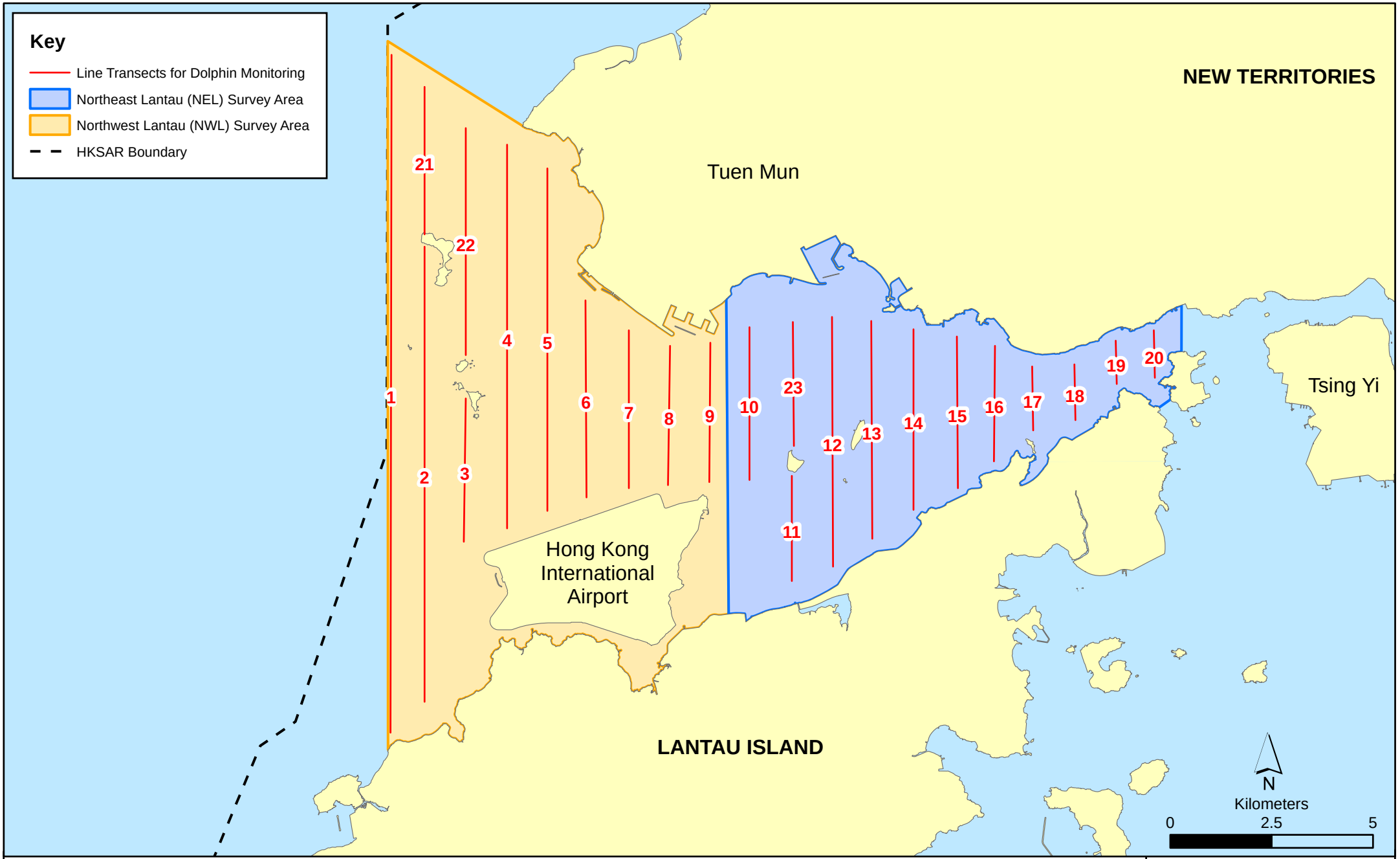


Figure 2.2

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

File: T:\GIS\CONTRACT\0212330\Mxd\0212330_Transect_of_Dolphin_Monitoring.mxd
Date: 29/11/2013

Environmental Resources Management

ERM

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 4, 7, 11 and 13 of October 2016. The dolphin monitoring schedule for the reporting month is shown in *Appendix F*.

2.3.7 Results & Observations

A total of 299.44 km of survey effort was collected, with 100% of the total survey effort being conducted under favourable weather conditions (i.e. Beaufort Sea State 3 or below with good visibility) in October 2016. Among the two areas, 114.80 km and 184.64 km of survey effort were collected from NEL and NWL survey areas, respectively. The total survey effort conducted on primary and secondary lines were 215.58 km and 83.86 km respectively. The survey efforts are summarized in *Appendix I*.

A total of six groups of 15 Chinese White Dolphins sightings were recorded during the two sets of surveys in October 2016. All six dolphin sightings were made in NWL, while none was sighted in NEL. Five of the six dolphin sightings were made on primary lines during on-effort search, and neither dolphin group was associated with any operating fishing vessel.

None of the dolphin sightings was made in the proximity of the TM-CLKL alignment. One sighting was made adjacent to the HKLR09 alignment. The distribution of dolphin sightings during the reporting month is shown in *Figure 2.3*.

Encounter rates of Chinese White Dolphins are deduced from the survey effort and on-effort sighting data made under favourable conditions (Beaufort 3 or below) in October 2016 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: October 4th / 7th	0.0	0.0
	Set 2: October 11th / 13th	0.0	0.0
NWL	Set 1: October 4th / 7th	4.1	9.6
	Set 2: October 11th / 13th	2.9	8.5

Note: Dolphin Encounter Rates are deduced from the Two Sets of Surveys (Two Surveys in Each Set) in October 2016 in Northeast (NEL) and Northwest Lantau (NWL)

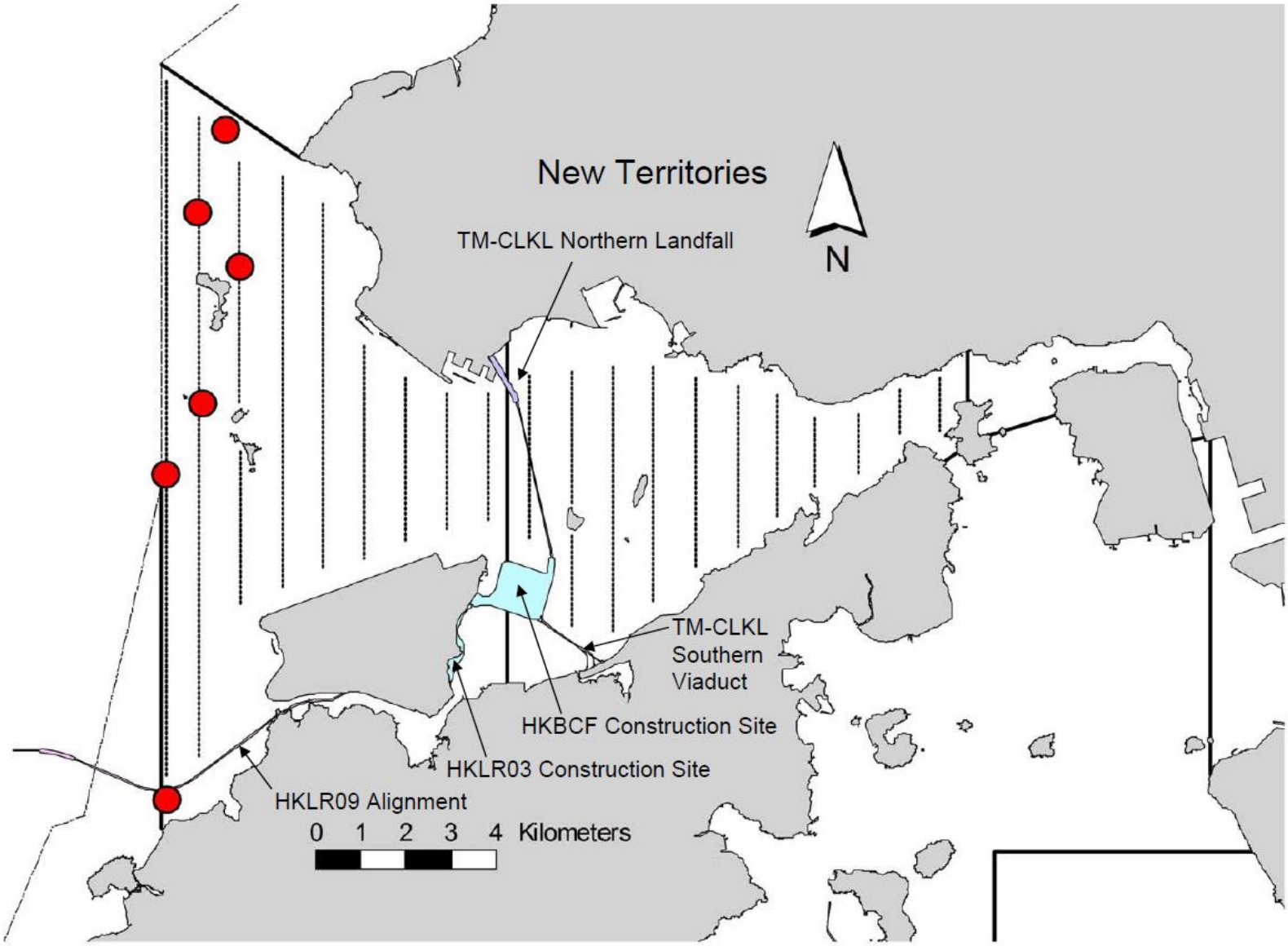


Figure 2.3

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 October 2016)

Environmental
Resources
Management

ERM

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	3.5	3.2	9.1	8.1

Note: Overall dolphin encounter rates (sightings per 100 km of survey effort) from all four surveys are conducted in October 2016 on primary lines only as well as both primary lines and secondary lines in Northeast and Northwest Lantau.

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

2.3.8 Implementation of Marine Mammal Exclusion Zone

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

2.4 EM&A SITE INSPECTION

Site inspections were carried out on a weekly basis to monitor the implementation of proper environmental pollution control and mitigation measures under the Contract. In the reporting month, four (4) site inspections were carried out on 5, 12, 19 and 26 October 2016.

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
5 October 2016	Works Area - TBM Tunnel • The grouting devices should be enclosed with tarpaulin sheets at the 3 sides and the top. • Drip tray and labels should be provided to the oil drums. Works Area - Portion S-C • Drip tray should be provided to the oil drums. • Accumulated waste should be removed.	Works Area - TBM Tunnel • The Contractor was reminded to enclose the grouting devices with tarpaulin sheets at the 3 sides and the top. • The Contractor was reminded to provide drip tray and labels to the oil drums. Works Area - Portion S-C • The Contractor was reminded to provide drip tray to the chemical drums. • The Contractor was reminded to remove the accumulated waste.
12 October 2016	Works Area - Portion N-B • The dust cover of the sewage treatment plant should be closed to avoid dust dispersal. • The discharged water should be properly directed to the drainage system. • Stagnant water should be removed from the drainage. • Muddy substance and stagnant water should be removed from the drainage. Works Area - Portion N-A • Muddy substance and rubbish should be removed. Works Area - Portion S-C • Accumulated waste should be removed.	Works Area - Portion N-B • The Contractor was reminded to close the dust cover of the sewage treatment plant to avoid dust dispersal. • The Contractor was reminded to properly direct the discharged water to the drainage system. • The Contractor was reminded to remove the stagnant water from the drainage. • The Contractor was reminded to remove the muddy substance and stagnant water from the drainage. Works Area - Portion N-A • The Contractor was reminded to remove the muddy substance and rubbish. Works Area - Portion S-C • The Contractor was reminded to remove the accumulated waste.
19 October 2016	Works Area –TBM Tunnel • Drip tray should be provided to the chemical drums. • Cement bags should be covered by tarpaulin sheet. Reminder from SOR Works Area - Portion S-A • Noise mitigation measures should be implemented during rock-breaking process.	Works Area –TBM Tunnel • The Contractor was reminded to provide drip tray to the chemical drums. • The Contractor was reminded to cover the cement bags by tarpaulin sheet. Reminder from SOR Works Area - Portion S-A • Noise mitigation measures should be implemented during rock-breaking process.

Inspection Date	Observations	Recommendations/ Remarks
26 October 2016	Works Area – Portion N-A • Unwanted containers should be removed. Works Area – Portion S-B • Grouting facility should be enclosed with tarpaulin sheets at the 3 sides and the top.	Works Area – Portion N-A • The Contractor was reminded to remove the unwanted containers. Works Area – Portion S-B • The Contractor was reminded to enclose the grouting facility with tarpaulin sheets at the 3 sides and the top.

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

2.5 WASTE MANAGEMENT STATUS

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

Wastes generated during this reporting period included mainly construction wastes (inert and non-inert). Reference has been made to the waste flow table prepared by the Contractor (*Appendix 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)
October 2016	23,118	0	0	235	0	0	0	0

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

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

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

2.6 ENVIRONMENTAL LICENSES AND PERMITS

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

Table 2.11 Summary of Environmental Licensing and Permit Status

License/ Permit	License or Permit No.	Date of Issue	Date of Expiry	License/ Permit Holder	Remarks
Environmental Permit	EP-354/2009/D	13 March 2015	Throughout the Contract	HyD	Application for VEP on 3 March 2015 to supersede EP-354/2009/C
Construction Dust Notification	363510	19 August 2013	Throughout the Contract	DBJV	Northern Landfall
Construction Dust Notification	403620	10 June 2016	Throughout the Contract	DBJV	Southern Landfall
Chemical Waste Registration	5213-422-D2516-01	10 September 2013	Throughout the Contract	DBJV	Northern Landfall
Chemical Waste Registration	5213-951-D2591-01	25 May 2016	Throughout the Contract	DBJV	Southern Landfall
Construction Waste Disposal Account	7018108	28 August 2013	Throughout the Contract	DBJV	Waste disposal in Contract No. HY/2012/08
Waste Water Discharge License	WT00017707-2013	18 November 2013	30 November 2018	DBJV	For site WA18
Waste Water Discharge License	WT00019248-2014	5 June 2014	30 June 2019	DBJV	For site Portion N6 and Reclamation Area E
Marine Dumping Permit	EP/MD/17-086	9 September 2016	8 October 2016	DBJV	Southern Landfall
Construction Noise Permit	GW-RW0450-16	27 July 2016	19 Jan 2017	DBJV	For Urmston Road in front of Pillar Point
Construction Noise Permit	GW-RW0334-16	14 June 2016	13 December 2016	DBJV	For site WA23A+B
Construction Noise Permit	GW-RW0533-16	29 September 2016	28 March 2017	DBJV	For Portion N6
Construction Noise Permit	GW-RS0860-16	25 August 2016	24 February 2017	DBJV	For Southern Landfall

Notes:
HyD = Highways Department
DBJV = Dragages – Bouygues Joint Venture
VEP = Variation of Environmental Permit

2.7 IMPLEMENTATION STATUS OF ENVIRONMENTAL MITIGATION MEASURES

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

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

2.8 SUMMARY OF EXCEEDANCES OF THE ENVIRONMENTAL QUALITY PERFORMANCE LIMIT

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 this 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*.

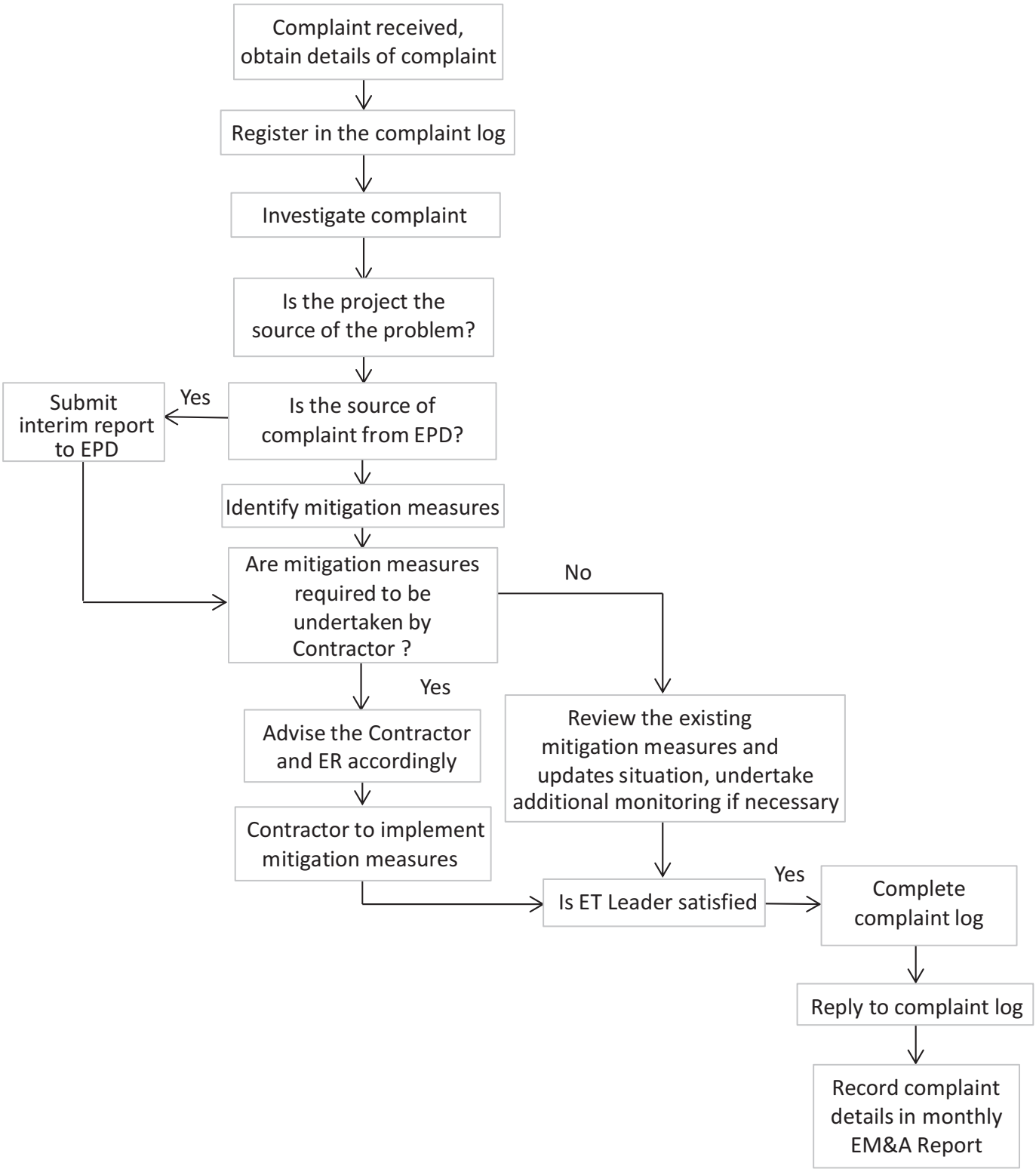


Figure 2.4 Environmental Complaint Handling Procedure

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

Environmental Resources Management

ERM

3 FUTURE KEY ISSUES

3.1 CONSTRUCTION ACTIVITIES FOR THE COMING MONTH

As informed by the Contractor, the major works for the Project in November 2016 are summarized in *Table 3.1*.

Table 3.1 Construction Works to Be Undertaken in the Coming Month

Works to be undertaken
Land-based Works
• Box Culvert Extension at Works Area – Portion N-A; • Preparation of Phase 2 Reclamation – Portion N-A; • Shaft Structure and Backfilling – Portion N-C; • Construction of Cross Passage Tympanum – TBM tunnel; • Cross Passage Lining Installation – TBM Tunnel; • Corbel Construction – TBM Tunnel; • Excavation of Sub-sea Tunnel – TBM tunnel; • Sub-sea Tunnel Gallery Installation – TBM tunnel; • Deep Band Drain Installation – Portion S-A; • Dewatering Deep well Installation – Portion S-A; and • Jet Grouting, CSM Ground Treatment and Diaphragm Wall Construction – Portion S-A.

3.2 KEY ISSUES FOR THE COMING MONTH

Potential environmental impacts arising from the above upcoming construction activities in the next reporting month of November 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 November 2016 is provided in *Appendix F*.

4 CONCLUSIONS AND RECOMMENDATIONS

4.1 CONCLUSIONS

This Thirty-sixth Monthly EM&A Report presents the findings of the EM&A activities undertaken during the period from 1 to 31 October 2016, 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 six groups of 15 Chinese White Dolphins sightings were recorded during the two sets of surveys in October 2016. All six dolphin sightings were made in NWL, while none was sighted in NEL. Five of the six dolphin sightings were made on primary lines during on-effort search, and neither dolphin group was associated with any operating fishing vessel.

Environmental site inspection was carried out four (4) times in October 2016. 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.

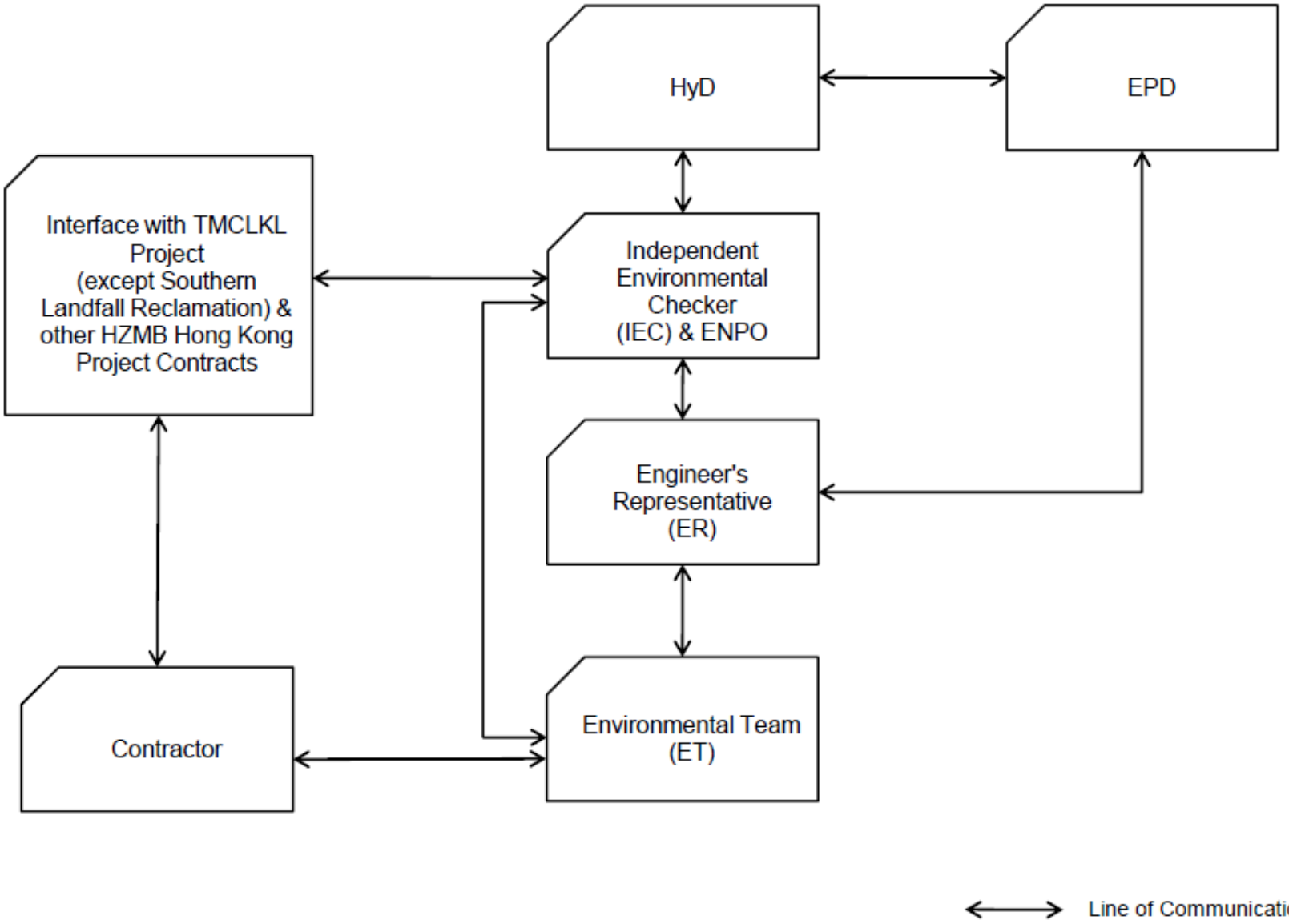
No environmental complaint was received in this reporting period.

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



Appendix A1

Contract No. HY/2012/08 Northern Connection Sub-sea Tunnel Section
Project Organization

DATE: 06/03/2013

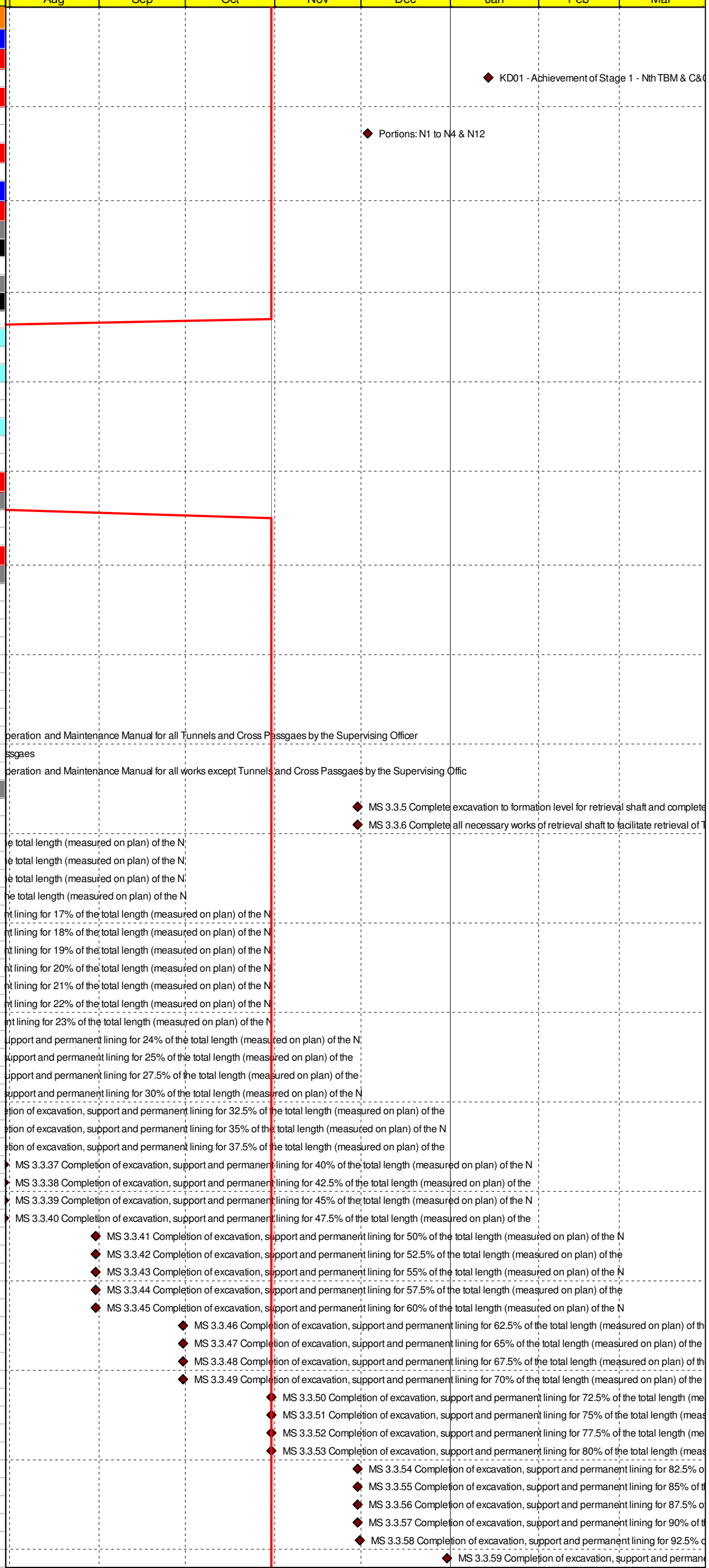
Environmental Resources Management

ERM

Appendix B

Construction Programme

Activity Name
TMCLK - Northern Connection Sub-Sea Tunnel Section
Contract Dates
Commencement and Completion Dates
KD01 - Achievement of Stage 1 - Nth TBM & C&C for E&MS/TCSS
Site Possession Date
Portions: X1,(N10,11,13 & 14) - Sth Landfall
Portions: N1 to N4 & N12
Handover Date
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
Sediment Quality Report/Dumping Permit
Southern Landfall
Southern landfall - Commencement of Shaft & C&C Tunnel Dwall
Sediment Sampling & Testing Plan (SSTP) - if required
Complete SSTP and Obtain EPD's approval
Sediment Quality Report (SQR) - if required
Advance Ground Investigation works for Sediment sampling
Sediment Sample Testing & Report preparation
Dumping Permit for Load Dumping (Loading Permit) - if required
Finalize the applivation doucment and submit to EPD - for Dwall
Notify the results and issue Loading Permit for Local & Cross Boundary Crossing - for Dwall
General Design Submissions
(G6) IFA for Tunnel GBP
SO's Review
SO Approval with Condition Received
PAYMENT MILESTONE
Design and Design Checking of the Works
MS 2.32 Approve DDA for Approach Ramp Structures to Cut-and-cover Tunnels by the Supervising Officer
MS 2.44 Approve DDA for South Ventilation Building by the Supervising Officer
MS 2.48 Approve DDA for North Ventilation Building by the Supervising Officer
MS 2.51 Submit DDA for Facilities Provision for TCSS
MS 2.52 Approve DDA for Facilities Provision for TCSS by the Supervising Officer
MS 2.56 Approve DDA for Drainage, Sewerage, Waterworks and Utilities at Southern Landfall by the Supervi
MS 2.60 Approve DDA for Drainage, Sewerage, Waterworks and Utilities at Northern Landfall by the Supervis
MS 2.69 Submit draft Operation and Maintenance Manual for all Tunnels and Cross Passgaes
MS 2.70 Accept Operation and Maintenance Manual for all Tunnels and Cross Passgaes by the Supervising
MS 2.71 Submit draft Operation and Maintenance Manual for all works except Tunnels and Cross Passgaes
MS 2.72 Accept Operation and Maintenance Manual for all works except Tunnels and Cross Passgaes by the
TBM Tunnel
MS 3.3.5 Complete excavation to formation level for retrieval shaft and complete casting of base slab
MS 3.3.6 Complete all necessary works of retrieval shaft to facilitate retrieval of TBM
MS 3.3.19 Completion of excavation, support and permanent lining for 13% of the total length (measured on p
MS 3.3.20 Completion of excavation, support and permanent lining for 14% of the total length (measured on p
MS 3.3.21 Completion of excavation, support and permanent lining for 15% of the total length (measured on p
MS 3.3.22 Completion of excavation, support and permanent lining for 16% of the total length (measured on p
MS 3.3.23 Completion of excavation, support and permanent lining for 17% of the total length (measured on p
MS 3.3.24 Completion of excavation, support and permanent lining for 18% of the total length (measured on p
MS 3.3.25 Completion of excavation, support and permanent lining for 19% of the total length (measured on p
MS 3.3.26 Completion of excavation, support and permanent lining for 20% of the total length (measured on p
MS 3.3.27 Completion of excavation, support and permanent lining for 21% of the total length (measured on p
MS 3.3.28 Completion of excavation, support and permanent lining for 22% of the total length (measured on p
MS 3.3.29 Completion of excavation, support and permanent lining for 23% of the total length (measured on p
MS 3.3.30 Completion of excavation, support and permanent lining for 24% of the total length (measured on p
MS 3.3.3 1 Completion of excavation, support and permanent lining for 25% of the total length (measured on
MS 3.3.32 Completion of excavation, support and permanent lining for 27.5% of the total length (measured o
MS 3.3.33 Completion of excavation, support and permanent lining for 30% of the total length (measured on p
MS 3.3.34 Completion of excavation, support and permanent lining for 32.5% of the total length (measured o
MS 3.3.35 Completion of excavation, support and permanent lining for 35% of the total length (measured on p
MS 3.3.36 Completion of excavation, support and permanent lining for 37.5% of the total length (measured o
MS 3.3.37 Completion of excavation, support and permanent lining for 40% of the total length (measured on p
MS 3.3.38 Completion of excavation, support and permanent lining for 42.5% of the total length (measured o
MS 3.3.39 Completion of excavation, support and permanent lining for 45% of the total length (measured on p
MS 3.3.40 Completion of excavation, support and permanent lining for 47.5% of the total length (measured o
MS 3.3.41 Completion of excavation, support and permanent lining for 50% of the total length (measured on p
MS 3.3.42 Completion of excavation, support and permanent lining for 52.5% of the total length (measured o
MS 3.3.43 Completion of excavation, support and permanent lining for 55% of the total length (measured on p
MS 3.3.44 Completion of excavation, support and permanent lining for 57.5% of the total length (measured o
MS 3.3.45 Completion of excavation, support and permanent lining for 60% of the total length (measured on p
MS 3.3.46 Completion of excavation, support and permanent lining for 62.5% of the total length (measured o
MS 3.3.47 Completion of excavation, support and permanent lining for 65% of the total length (measured on p
MS 3.3.48 Completion of excavation, support and permanent lining for 67.5% of the total length (measured o
MS 3.3.49 Completion of excavation, support and permanent lining for 70% of the total length (measured on p
MS 3.3.50 Completion of excavation, support and permanent lining for 72.5% of the total length (measured o
MS 3.3.51 Completion of excavation, support and permanent lining for 75% of the total length (measured on p
MS 3.3.52 Completion of excavation, support and permanent lining for 77.5% of the total length (measured o
MS 3.3.53 Completion of excavation, support and permanent lining for 80% of the total length (measured on p
MS 3.3.54 Completion of excavation, support and permanent lining for 82.5% of the total length (measured o
MS 3.3.55 Completion of excavation, support and permanent lining for 85% of the total length (measured on p
MS 3.3.56 Completion of excavation, support and permanent lining for 87.5% of the total length (measured o
MS 3.3.57 Completion of excavation, support and permanent lining for 90% of the total length (measured on p
MS 3.3.58 Completion of excavation, support and permanent lining for 92.5% of the total length (measured o
MS 3.3.59 Completion of excavation, support and permanent lining for 95% of the total length (measured on p



Project ID: TMCLK DWPF 16W43

Data Date: 30-Oct-16

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

TMCLK - Northern Connection Sub-Sea Tunnel Section

Detailed Works Programme (Rev. F)

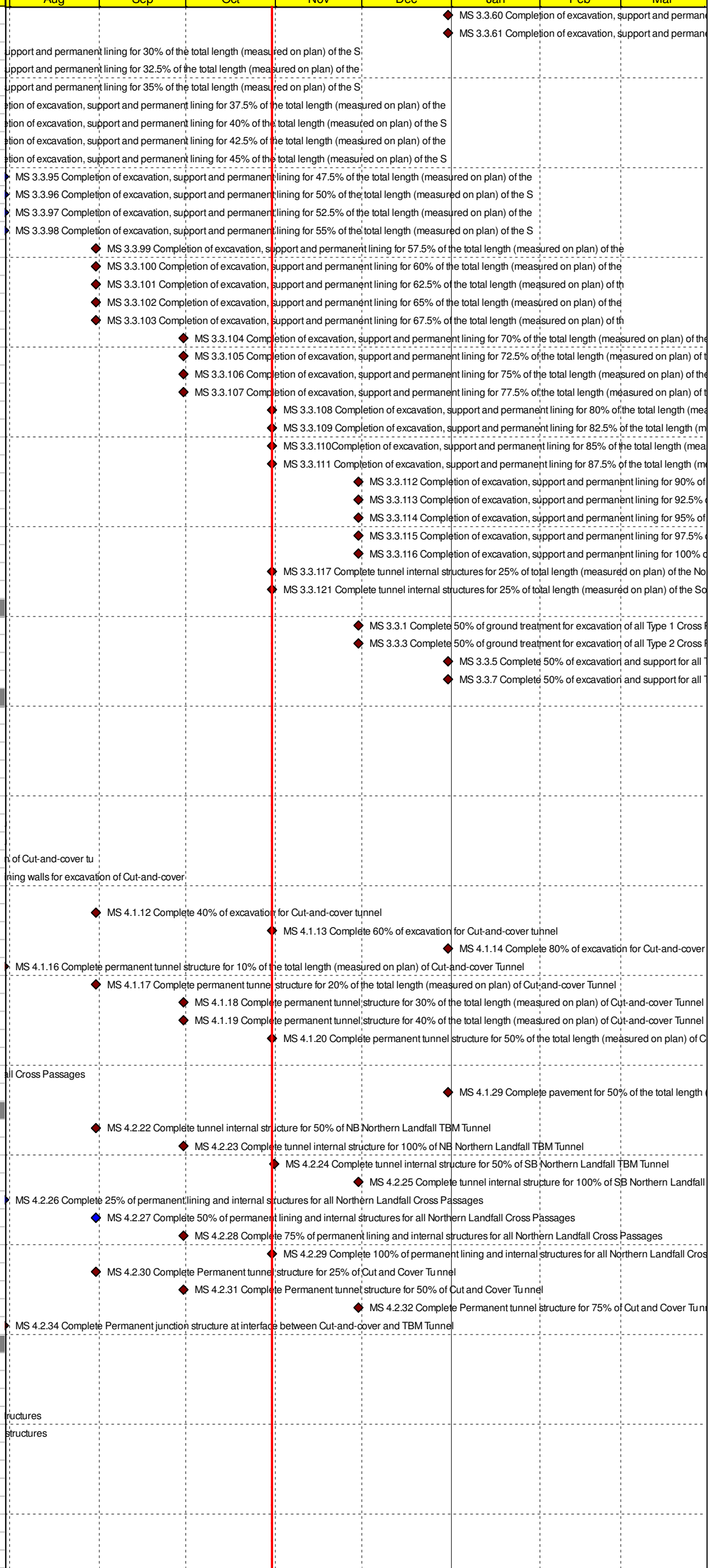
Three Months Rolling Programme

Progress as of 30-Oct-16

Dragages - Bouygues Joint Venture 寶嘉 - 布依格聯營

Date	Revision	Checked	Approved
12-Feb-14	TMCLK/DBJGEN/PRG/98507	WYu	SPo
08-Apr-14	TMCLK/DBJGEN/PRG/98507 Rev.B	SPa	WYu
28-Aug-14	TMCLK/DBJGEN/PRG/98507 Rev.C	CLa	WYu
30-Oct-15	TMCLK/DBJGEN/PRG/98507 Rev.F	WYu	

Activity Name
MS 3.3.60 Completion of excavation, support and permanent lining for 97.5% of the total length (measured o
MS 3.3.61 Completion of excavation, support and permanent lining for 100% of the total length (measured or
MS 3.3.88 Completion of excavation, support and permanent lining for 30% of the total length (measured on p
MS 3.3.89 Completion of excavation, support and permanent lining for 32.5% of the total length (measured o
MS 3.3.90 Completion of excavation, support and permanent lining for 35% of the total length (measured on p
MS 3.3.91 Completion of excavation, support and permanent lining for 37.5% of the total length (measured o
MS 3.3.92 Completion of excavation, support and permanent lining for 40% of the total length (measured on p
MS 3.3.93 Completion of excavation, support and permanent lining for 42.5% of the total length (measured o
MS 3.3.94 Completion of excavation, support and permanent lining for 45% of the total length (measured on p
MS 3.3.95 Completion of excavation, support and permanent lining for 47.5% of the total length (measured o
MS 3.3.96 Completion of excavation, support and permanent lining for 50% of the total length (measured on p
MS 3.3.97 Completion of excavation, support and permanent lining for 52.5% of the total length (measured o
MS 3.3.98 Completion of excavation, support and permanent lining for 55% of the total length (measured on p
MS 3.3.99 Completion of excavation, support and permanent lining for 57.5% of the total length (measured o
MS 3.3.100 Completion of excavation, support and permanent lining for 60% of the total length (measured or
MS 3.3.101 Completion of excavation, support and permanent lining for 62.5% of the total length (measured
MS 3.3.102 Completion of excavation, support and permanent lining for 65% of the total length (measured or
MS 3.3.103 Completion of excavation, support and permanent lining for 67.5% of the total length (measured
MS 3.3.104 Completion of excavation, support and permanent lining for 70% of the total length (measured or
MS 3.3.105 Completion of excavation, support and permanent lining for 72.5% of the total length (measured
MS 3.3.106 Completion of excavation, support and permanent lining for 75% of the total length (measured or
MS 3.3.107 Completion of excavation, support and permanent lining for 77.5% of the total length (measured
MS 3.3.108 Completion of excavation, support and permanent lining for 80% of the total length (measured or
MS 3.3.109 Completion of excavation, support and permanent lining for 82.5% of the total length (measured
MS 3.3.110Completion of excavation, support and permanent lining for 85% of the total length (measured on
MS 3.3.111 Completion of excavation, support and permanent lining for 87.5% of the total length (measured
MS 3.3.112 Completion of excavation, support and permanent lining for 90% of the total length (measured on
MS 3.3.113 Completion of excavation, support and permanent lining for 92.5% of the total length (measured
MS 3.3.114 Completion of excavation, support and permanent lining for 95% of the total length (measured on
MS 3.3.115 Completion of excavation, support and permanent lining for 97.5% of the total length (measured
MS 3.3.116 Completion of excavation, support and permanent lining for 100% of the total length (measured o
MS 3.3.117 Complete tunnel internal structures for 25% of total length (measured on plan) of the Northbound
MS 3.3.121 Complete tunnel internal structures for 25% of total length (measured on plan) of the Southbound
Cross Passages for TBM Tunnel
MS 3.3.1 Complete 50% of ground treatment for excavation of all Type 1 Cross Passages(Percentage to be c
MS 3.3.3 Complete 50% of ground treatment for excavation of all Type 2 Cross Passages(Percentage to be c
MS 3.3.5 Complete 50% of excavation and support for all Type 1 Cross Passages(Percentage to be certified f
MS 3.3.7 Complete 50% of excavation and support for all Type 2 Cross Passages(Percentage to be certified f
Cut-and-cover Tunnels at Southern Landfalls
MS 4.1.1 Complete 10% of total length (measured on plan) of temporary retaining walls for excavation of Cut-
MS 4.1.2 Complete 20% of total length (measured on plan)of temporary retaining walls for excavation of Cut-
MS 4.1.3 Complete 30% of total length (measured on plan) of temporary retaining walls for excavation of Cut-
MS 4.1.4 Complete 40% of total length (measured on plan) of temporary retaining walls for excavation of Cut-
MS 4.1.5 Complete 50% of total length (measured on plan) of temporary retaining walls for excavation of Cut-
MS 4.1.6 Complete 60% of total length (measured on plan) of temporary retaining walls for excavation of Cut-
MS 4.1.7 Complete 70% of total length (measured on plan) of temporary retaining walls for excavation of Cut-
MS 4.1.8 Complete 80% of total length (measured on plan) of temporary retaining walls for excavation of Cut-
MS 4.1.9 Complete 90% of total length (measured on plan) of temporary retaining walls for excavation of Cut-
MS 4.1.10 Complete 100% of total length (measured on plan) of temporary retaining walls for excavation of C
MS 4.1.11
MS 4.1.12 Complete 40% of excavation for Cut-and-cover tunnel
MS 4.1.13 Complete 60% of excavation for Cut-and-cover tunnel
MS 4.1.14 Complete 80% of excavation for Cut-and-cover tunnel
MS 4.1.16 Complete permanent tunnel structure for 10% of the total length (measured on plan) of Cut-and-cc
MS 4.1.17 Complete permanent tunnel structure for 20% of the total length (measured on plan) of Cut-and-cc
MS 4.1.18 Complete permanent tunnel structure for 30% of the total length (measured on plan) of Cut-and-cc
MS 4.1.19 Complete permanent tunnel structure for 40% of the total length (measured on plan) of Cut-and-cc
MS 4.1.20 Complete permanent tunnel structure for 50% of the total length (measured on plan) of Cut-and-cc
MS 4.1.26 Complete excavation for 50% of total length (measured on plan) of all Cross Passages
MS 4.1.27 Complete excavation for 100% of total length (measured on plan) of all Cross Passages
MS 4.1.29 Complete pavement for 50% of the total length (measured on plan) of Cut-and-cover Tunnel
Cut-and-cover Tunnel at Northern Landfall
MS 4.2.22 Complete tunnel internal structure for 50% of NB Northern Landfall TBM Tunnel
MS 4.2.23 Complete tunnel internal structure for 100% of NB Northern Landfall TBM Tunnel
MS 4.2.24 Complete tunnel internal structure for 50% of SB Northern Landfall TBM Tunnel
MS 4.2.25 Complete tunnel internal structure for 100% of SB Northern Landfall TBM Tunnel
MS 4.2.26 Complete 25% of permanent lining and internal structures for all Northern Landfall Cross Passage
MS 4.2.27 Complete 50% of permanent lining and internal structures for all Northern Landfall Cross Passage
MS 4.2.28 Complete 75% of permanent lining and internal structures for all Northern Landfall Cross Passage
MS 4.2.29 Complete 100% of permanent lining and internal structures for all Northern Landfall Cross Passag
MS 4.2.30 Complete Permanent tunnel structure for 25% of Cut and Cover Tunnel
MS 4.2.31 Complete Permanent tunnel structure for 50% of Cut and Cover Tunnel
MS 4.2.32 Complete Permanent tunnel structure for 75% of Cut and Cover Tunnel
MS 4.2.34 Complete Permanent junction structure at interface between Cut-and-cover and TBM Tunnel
Approach Ramp Structures to Cut-and-cover Tunnel at Southern Landfall
MS 5.1.1 Complete 20% of excavation for approach ramp structures
MS 5.1.2 Complete 40% of excavation for approach ramp structures
MS 5.1.3 Complete 60% of excavation for approach ramp structures
MS 5.1.4 Complete 80% of excavation for approach ramp structures
MS 5.1.5 Complete 100% of excavation for approach ramp structures
MS 5.1.6 Complete retaining wall foundation for 10% of the total length (measured on plan) of approach ramp
MS 5.1.7 Complete retaining wall foundation for 20% of the total length (measured on plan) of approach ramp
MS 5.1.8 Complete retaining wall foundation for 30% of the total length (measured on plan) of approach ramp
MS 5.1.9 Complete retaining wall foundation for 40% of the total length (measured on plan) of approach ramp
MS 5.1.10 Complete retaining wall foundation for 50% of the total length (measured on plan) of approach ran
MS 5.1.11 Complete retaining wall foundation for 60% of the total length (measured on plan) of approach ran
MS 5.1.12 Complete retaining wall foundation for 70% of the total length (measured on plan) of approach ran



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

TMCLK - Northern Connection Sub-Sea Tunnel Section

Detailed Works Programme (Rev. F)

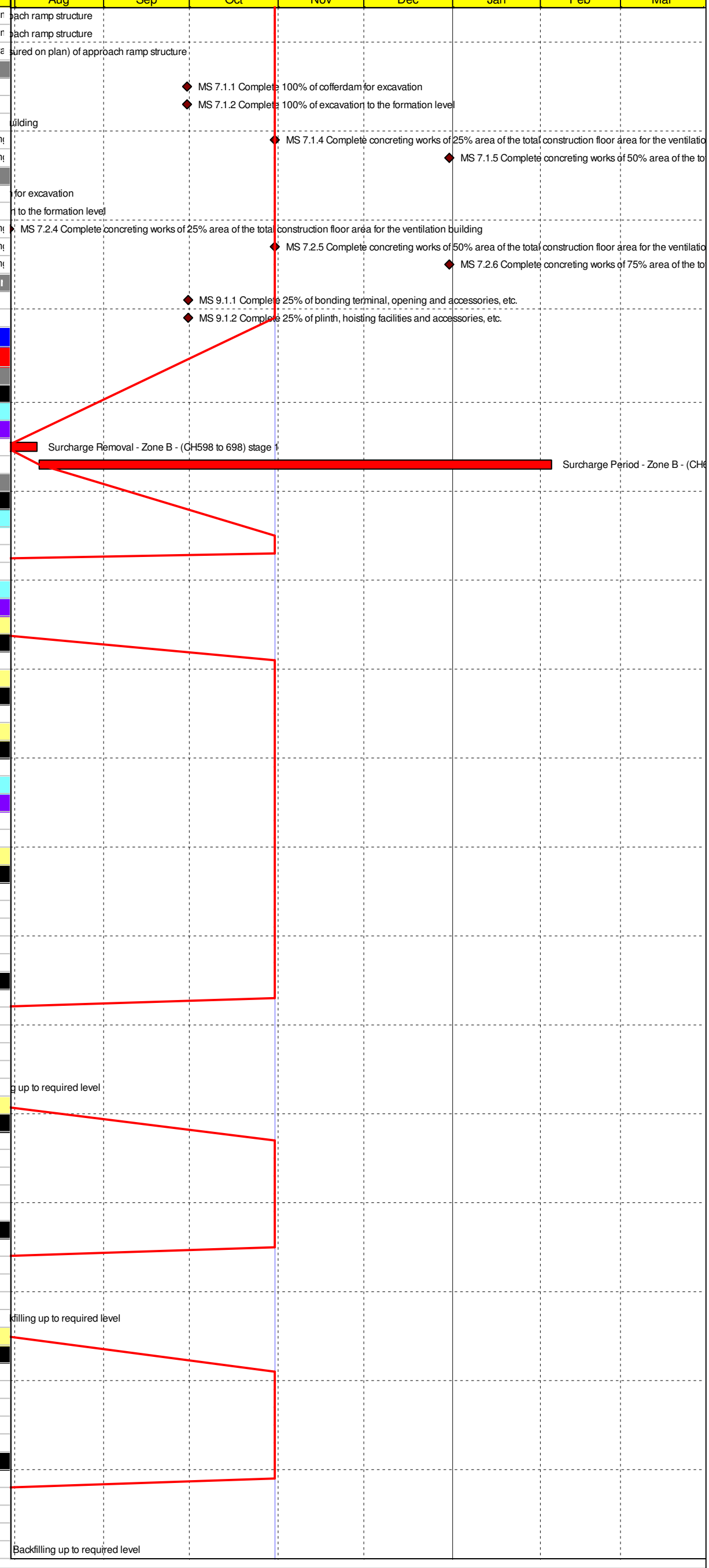
Three Months Rolling Programme

Progress as of 30-Oct-16

Dragages - Bouygues Joint Venture 寶嘉 - 布依格聯營

Date	Revision	Checked	Approved
12-Feb-14	TMCLK/DBJGEN/PRG/98507	WYu	SPo
08-Apr-14	TMCLK/DBJGEN/PRG/98507 Rev.B	SPa	WYu
28-Aug-14	TMCLK/DBJGEN/PRG/98507 Rev.C	CLa	WYu
30-Oct-15	TMCLK/DBJGEN/PRG/98507 Rev.F	WYu	

Activity Name
MS 5.1.13 Complete retaining wall foundation for 80% of the total length (measured on plan) of approach ran
MS 5.1.14 Complete retaining wall foundation for 90% of the total length (measured on plan) of approach ran
MS 5.1.15 Complete retaining wall foundation for 100% of the total length (measured on plan) of approach ra
South Ventilation Buildings
MS 7.1.1 Complete 100% of cofferdam for excavation
MS 7.1.2 Complete 100% of excavation to the formation level
MS 7.1.3 Complete 100% of foundation for the ventilation building
MS 7.1.4 Complete concreting works of 25% area of the total construction floor area for the ventilation buildin
MS 7.1.5 Complete concreting works of 50% area of the total construction floor area for the ventilation buildin
North Ventilation Buildings
MS 7.2.1 Complete 100% of cofferdam for excavation
MS 7.2.2 Complete 100% of excavation to the formation level
MS 7.2.4 Complete concreting works of 25% area of the total construction floor area for the ventilation buildin
MS 7.2.5 Complete concreting works of 50% area of the total construction floor area for the ventilation buildin
MS 7.2.6 Complete concreting works of 75% area of the total construction floor area for the ventilation buildin
Facilities Provision for E&M Works for TBM Tunnel, Cut & Cover Tunnels and Cı
MS 9.1.1 Complete 25% of bonding terminal, opening and accessories, etc.
MS 9.1.2 Complete 25% of plinth, hoisting facilities and accessories, etc.
Construction
Northern Landfall
North Reclamation (Phase 1)
Construction
Zone B
Reclamation
Surcharge Removal - Zone B - (CH598 to 698) stage 1
Surcharge Period - Zone B - (CH648 to 698) stage 2
Box Culvert Extension
Construction
Ch000-010 Culvert Outfall
Removal of temporary seawall block
Concreting in-situ Top Slab and sticth joint
Removal of temporary bulk head
CH000-150 Land Section
ELS & Structure
Pile A43/A41 CJ to Pile A41/A39 CJ
Box Culvert Structure
Removal of strut S2 & Backfilling up to required level
Pile A45/A43 CJ to Pile A43/A41 CJ
Box Culvert Structure
Removal of strut S2 & Backfilling up to required level
Pile A52/A49 CJ to Pile A49/A47 CJ
Box Culvert Structure
Preparation for Temp Access Road for N8 handvoer
Ch150-250 Marine Section
ELS & Structure
Toe grouting Ch100-250
2nd Pumping test Ch100-250
Pile A41/A39 CJ to Pile A39/A37 CJ
ELS
Excavation to 0.5m below strut S2
Installation of strut S2
Excavation to 0.5m below strut S1
Installation of strut S1
Excavation to FEL
Box Culvert Structure
Pile cap construction
Base slab construction including kicker
Removal of strut S1
Sliding formworks 1st assembly
Walls & top slab construction
Removal of strut S2 & Backfilling up to required level
Pile A39/A37 CJ to Pile A37/A35 CJ
ELS
Excavation to 0.5m below strut S2
Installation of strut S2
Excavation to 0.5m below strut S1
Installation of strut S1
Excavation to FEL
Box Culvert Structure
Pile cap construction
Base slab construction including kicker
Removal of strut S1
Walls & top slab construction
Removal of strut S2 & Backfilling up to required level
Pile A37/A35 CJ to Pile A35/A33 CJ
ELS
Excavation to 0.5m below strut S2
Installation of strut S2
Excavation to 0.5m below strut S1
Installation of strut S1
Excavation to FEL
Box Culvert Structure
Pile cap construction
Base slab construction including kicker
Removal of strut S1
Walls & top slab construction
Removal of strut S2 & Backfilling up to required level



Project ID: TMCLK DWPF 16W43

Data Date: 30-Oct-16

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

TMCLK - Northern Connection Sub-Sea Tunnel Section

Detailed Works Programme (Rev. F)

Three Months Rolling Programme

Progress as of 30-Oct-16

Dragages - Bouygues Joint Venture 寶嘉 - 布依格聯營

Date	Revision	Checked	Approved
12-Feb-14	TMCLK/DBJGEN/PRG/98507	WYu	SPo
08-Apr-14	TMCLK/DBJGEN/PRG/98507 Rev.B	SPa	WYu
28-Aug-14	TMCLK/DBJGEN/PRG/98507 Rev.C	CLa	WYu
30-Oct-15	TMCLK/DBJGEN/PRG/98507 Rev.F	WYu	

Activity Name	2016 Aug	Sep	Oct	Nov	Dec	2017 Jan	Feb	Mar
Pile A35/A33 CJ to Pile A33/P117 CJ								
ELS								
Excavation to 0.5m below strut S2								
Installation of strut S2								
Excavation to 0.5m below strut S1								
Installation of strut S1								
Excavation to FEL								
Box Culvert Structure								
Pile cap construction								
Base slab construction including kicker								
Removal of strut S1								
Walls & top slab construction								
Removal of strut S2 & Backfilling up to required level								
Pile A33/P117 CJ to Pile P113/P109 CJ								
ELS								
Excavation to 0.5m below strut S1								
Installation of strut S1								
Excavation to FEL								
Box Culvert Structure								
Base slab construction including kicker								
Removal of strut S1								
Walls & top slab construction								
Removal of strut S2 & Backfilling up to required level								
Pile P113/P109 CJ to Pile P105/P101 CJ								
ELS								
Excavation to 0.5m below strut S1								
Installation of strut S1								
Excavation to FEL								
Box Culvert Structure								
Base slab construction including kicker								
Removal of strut S1								
Walls & top slab construction								
Removal of strut S2 & Backfilling up to required level								
Pile P105/P101 CJ to Pile P97/P93 CJ								
ELS								
Excavation to 0.5m below strut S1								
Installation of strut S1								
Excavation to FEL								
Box Culvert Structure								
Base slab construction including kicker								
Removal of strut S1								
Walls & top slab construction								
Pile P97/P93 CJ to Pile P89/P85 CJ								
ELS								
Excavation to 0.5m below strut S1								
Installation of strut S1								
Excavation to FEL								
Box Culvert Structure								
Base slab construction including kicker								
Removal of strut S1								
Walls & top slab construction								
Removal of strut S2 & Backfilling up to required level								
Pile P89/P85 CJ to Pile P81/P77 CJ								
ELS								
Excavation to FEL								
Box Culvert Structure								
Base slab construction including kicker								
Removal of strut S1								
Removal of strut S2 & Backfilling up to required level								
Pile P81/P77 CJ to Pile P73/P69 CJ								
Box Culvert Structure								
Base slab construction including kicker								
Removal of strut S1								
Walls & top slab construction								
Removal of strut S2 & Backfilling up to required level								
Ch250-380 Marine Section								
Installation of Dewatering & Observation Well Ch 250-380								
1st Pumping Test & Analysis								
Toe Grouting								
2nd Pumping test & Analysis								
Remaining toe grouting Ch250-380								
New Activity								
ELS & Structure								
Geotextile - Phase 2 Reclamation - along combi wall system								
Sand Blanket - Phase 2 Reclamation - along combi wall system								
Band Drain - Phase 2 Reclamation - along combi wall system								
Public Fill - Phase 2 Reclamation - along combi wall system								
Miscellaneous works								
Inspection Manhole (IM)								
Inspection Manhole IM-01 to IM-04 & backfilling to +6.0mPD								
Inspection Manhole IM-05 to IM-08 & backfilling to +6.0mPD								
Inspection Manhole IM-09 to IM-12 & backfilling to +6.0mPD								
Stop Log Opening (SLO)								
SLO-01 to SLO-05 & backfilling to +6.0mPD								
Balance Hole (BH)								
BH-01 to BH-03 & backfilling to +6.0mPD								
BH-04 to BH-06 & backfilling to +6.0mPD								

Project ID: TMCLK DWPF 16W43

Data Date: 30-Oct-16

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

TMCLK - Northern Connection Sub-Sea Tunnel Section

Detailed Works Programme (Rev. F)

Three Months Rolling Programme

Progress as of 30-Oct-16

Dragages - Bouygues Joint Venture 寶嘉 - 布依格聯營

Date	Revision	Checked	Approved
12-Feb-14	TMCLK/DBJGEN/PRG/98507	WYu	SPo
08-Apr-14	TMCLK/DBJGEN/PRG/98507 Rev.B	SPa	WYu
28-Aug-14	TMCLK/DBJGEN/PRG/98507 Rev.C	CLa	WYu
30-Oct-15	TMCLK/DBJGEN/PRG/98507 Rev.F	WYu	

Activity Name	2016 Aug	Sep	Oct	Nov	Dec	2017 Jan	Feb	Mar
BH-07 to BH-09 & backfilling to +6.0mPD				BH-07 to BH-09 & backfilling to +6.0mPD				
Desilting Opening (DO)								
DO-01 to DO-04 & backfilling to +6.0mPD			DO-01 to DO-04 & backfilling to +6.0mPD					
North Launching Shaft								
Design Submission								
(C1) DDA for North C&C Tunnel Permanent Structure								
SO's Review								
SO Approval with Condition Received								
(C1) DDA for North Approach Ramp Permanent Structure								
IPs Review								
IP's No Objection Received								
SO's Review								
SO Approval with Condition Received								
North Ventilation Shaft								
Construction								
North Ventilation Shaft Structure								
NVS - ML03 Tunnel Structure	- ML03 Tunnel Structure							
NVS - ML02 Tunnel Structure								
TMCLK VO-008 - Construction of Viaduct Foundations at Portion N6A								
Viaduct Pile Cap								
Construction								
Pier G1b								
Pile Cap G1b - ELS Foundation					Pile Cap G1b - ELS Foundation			
Pile Cap G1b - Removal of Existing ground slab						Pile Cap G1b - Removal of Existing ground slab		
Pile Cap G1b - Excavation & ELS Installation						Pile Cap G1b - Excavation & ELS		
Pier G1c								
Pile Cap G1c - Preparation for ELS								
Pile Cap G1c - Removal of Existing ground slab								
Pile Cap G1c - Excavation & ELS Installation								
Pile Cap G1c - Blinding Concrete								
Pile Cap G1c - Rebar & Concreting								
Pile Cap G1c - Backfilling & Temp Reinstatement								
Pier H1c								
Pile Cap H1c - Preparation for ELS								
Pile Cap H1c - Removal of Existing ground slab								
Pile Cap H1c - Excavation & ELS Installation								
North Approach TBM Tunnelling & Cross Passage								
Construction								
North Approach Tunnel Internal Structure - NB								
CP55 - Excavation & Lining completion	completion							
CP54 - Excavation & Lining completion		CP54 - Excavation & Lining completion						
CP51 - Excavation & Lining completion				CP51 - Excavation & Lining completion				
NB - North TBM Tunnel - Corbel & Cable Trough installation				NB - North TBM Tunnel - Corbel & Cable Trough installation				
NB - North TBM Tunnel - OHVD Slab installation				NB - North TBM Tunnel - OHVD Slab installation				
NB - North TBM Tunnel - Fire proofing and Provision to E&MS and TCSS Contract for KD1				NB - North TBM Tunnel - Fire proofing and Provision to E&MS and TCSS Contract for KD1				
North Approach Tunnel Internal Structure - SB								
SB - North TBM Tunnel - Corbel & Cable Trough installation					SB - North TBM Tunnel - Corbel & Cable Trough installation			
SB - North TBM Tunnel - OHVD Slab installation					SB - North TBM Tunnel - OHVD Slab installation			
SB - North TBM Tunnel - Fire proofing & Provision to E&MS and TCSS Contract for KD1					SB - North TBM Tunnel - Fire proofing & Provision to E&MS an			
North Approach Cross Passage								
CP55 - Traditional Method								
CP Excavation								
CP Lining								
2nd Segment Opening								
CP Finishing & Demobilization	on							
CP54 - Traditional Method								
CP Lining	CP Lining							
2nd Segment Opening	2nd Segment Opening							
CP Finishing & Demobilization	CP Finishing & Demobilization							
CP53 - Pipe Jacking Method								
CP - Waterproofing, Finishing								
CP52 - Pipe Jacking Method								
CP Finishing & Demobilization								
CP51 - Traditional Method								
CP Setup		CP Setup						
1st Segment Opening		1st Segment Opening						
CP Excavation		CP Excavation						
CP Lining		CP Lining						
2nd Segment Opening		2nd Segment Opening						
CP Finishing & Demobilization		CP Finishing & Demobilization						
CP50 - Pipe Jacking Method								
CP Finishing & Demobilization	CP Finishing & Demobilization							
North Ventilation Building								
Design Submission								
(A11) Submissons to Design Advisory Panel of ArchSD								
ArchSD's comment								
(I1) DDA for North Vent.Bldgs. GBP & Arch.Submission								
IPs Review								
IP's No Objection Received								
SO's Review								
SO Approval with Condition Received								
(I1) DDA for North & South Vent.Bldg. ABWF works								
IPs/ SO's Advance Comments/ ICE Comments								
Comments Received								
Designer to Reply RtC + Update Submission								
Submit Updated DDA to SO/ ICE/ IPs								
ICE Approval & Issue Check Cert								

Project ID: TMCLK DWPF 16W43

Data Date: 30-Oct-16

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

TMCLK - Northern Connection Sub-Sea Tunnel Section

Detailed Works Programme (Rev. F)

Three Months Rolling Programme

Progress as of 30-Oct-16

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

Date	Revision	Checked	Approved
12-Feb-14	TMCLK/DBJGEN/PRG/98507	WYu	SPo
08-Apr-14	TMCLK/DBJGEN/PRG/98507 Rev.B	SPa	WYu
28-Aug-14	TMCLK/DBJGEN/PRG/98507 Rev.C	CLa	WYu
30-Oct-15	TMCLK/DBJGEN/PRG/98507 Rev.F	WYu	

Activity Name	2016 Aug	Sep	Oct	Nov	Dec	2017 Jan	Feb	Mar
Submit ICE Check Cert to SO								
IPs Review								
IP's No Objection Received								
SO's Review								
SO Approval with Condition Received								
(I2) DDA for North Vent.Bldgs.Structural Design incl.Vent.Connections								
IPs Review								
IP's No Objection Received								
SO's Review								
SO Approval with Condition Received								
(I3) DDA for North & South Vent.Bldgs. Service and E&M Provision								
ICE Approval & Issue Check Cert								
Submit ICE Check Cert to SO								
IPs Review								
IP's No Objection Received								
SO's Review								
SO Approval with Condition Received								
Construction								
Substructure					Substructure			
Superstructure								
North Reclamation (Phase 2)								
Construction								
Dredging - Phase 2 (Zone G)						Dredging - Phase 2 (Zone G)		
VS - Rock Grade 400 - Zone G						VS - Rock Grade 400 - Zone G		
VS - Levelling Stone & Seawall Block - Zone G							VS - Levelling Stone & Se	
Geotextile (Zone G)						Geotextile (Zone G)		
Sand Blanket (Zone G)						Sand Blanket (Zone G)		
Band Drain (Zone G)							Band Drain (Zone	
North Surface Roadworks, Utility & Drainage works								
Design Submission								
(C2) DDA for Sewerage, Drainage, Waterworks & Utility works for North Landf								
IPs Review								
IP's No Objection Received								
SO's Review								
SO Approval with Condition Received								
Construction								
North Landfall - Underground Sewerage & Drainage - Summary								
Sub-sea Tunnel								
Sub-sea TBM Tunnelling								
Major Procurement								
Precast Semgnet ID12.40 - Production for Sub-sea TBM Tunnel								
ID12.40 TBM Segment Ring Fabrication - 12 rings per day								
Design Submission								
(G1) DDA for TBM Tunnel Lining Structural Design - Sub-sea tunnel								
Sub-sea TBM Tunnel Segment - Fabrication								
(G3) DDA for TBM Tunnel Internal Structures (Sub-sea)								
Sub-sea Tunnel - Precast Gallery Fabrication								
Construction								
Sub-sea TBM Tunnel - NB ID12.2m - S881								
NB - Sub-sea TBM Tunnel - CDG with Saturation (Ch6010 to 5830 - 180m)	-sea TBM Tunnel - CDG with Saturation (Ch6010 to 5830 - 180m)							
NB - Sub-sea TBM Tunnel - CDG+Boulder with Saturation (Ch5830 to 5810 - 20m)	b-sea TBM Tunnel - CDG+Boulder with Saturation (Ch5830 to 5810 - 20m)							
NB - Sub-sea TBM Tunnel - Transition with Saturation (Ch5810 to 5740 - 70m)	NB - Sub-sea TBM Tunnel - Transition with Saturation (Ch5810 to 5740 - 70m)							
NB - Sub-sea TBM Tunnel - CDG+Boulder with Saturation (Ch5740 to 5550 - 190m)	NB - Sub-sea TBM Tunnel - CDG+Boulder with Saturation (Ch5740 to 5550 - 190m)							
NB - Sub-sea TBM Tunnel - CDG with Saturation (Ch5550 to 5330 - 220m)	NB - Sub-sea TBM Tunnel - CDG with Saturation (Ch5550 to 5330 - 220m)							
NB - Sub-sea TBM Tunnel - CDG with Saturation (Ch5330 to 4950 - 380m)	NB - Sub-sea TBM Tunnel - CDG with Saturation (Ch5330 to 4950 - 380m)							
NB - Sub-sea TBM Tunnel - CDG with Saturation (Ch4950 to 4870 - 80m)	NB - Sub-sea TBM Tunnel - CDG with Saturation (Ch4950 to 4870 - 80m)							
NB - Sub-sea TBM Tunnel - ALLUVIUMS silty with Trimix (Ch4870 to 4750 - 120m)	NB - Sub-sea TBM Tunnel - ALLUVIUMS silty with Trimix (Ch4870 to 4750 - 120m)							
NB - Sub-sea TBM Tunnel - ALLUVIUMS sandy with Trimix (Ch4750 to 4600 - 150m)	NB - Sub-sea TBM Tunnel - ALLUVIUMS sandy with Trimix (Ch4750 to 4600 - 150m)							
NB - Sub-sea TBM Tunnel - ALLUVIUMS sandy with Trimix (Ch4600 to 4400 - 200m)	NB - Sub-sea TBM Tunnel - ALLUVIUMS sandy with Trimix (Ch4600 to 4400 - 200m)							
NB - Sub-sea TBM Tunnel - ALLUVIUMS sandy with Trimix (Ch4400 to 4300 - 100m)	NB - Sub-sea TBM Tunnel - ALLUVIUMS sandy with Trimix (Ch4400 to 4300 - 100m)							
NB - Sub-sea TBM Tunnel - ALLUVIUMS sandy with Trimix (Ch4300 to 4200 - 100m)	NB - Sub-sea TBM Tunnel - ALLUVIUMS sandy with Trimix (Ch4300 to 4200 - 100							
NB - Sub-sea TBM Tunnel - ALLUVIUMS silty with Trimix (Ch4200 to 3830 - 370m)	NB - Sub-sea TBM Tunnel - ALLUVIUMS silty with Trimix (Ch420							
NB - Sub-sea TBM Tunnel - ALLUVIUMS sandy with Trimix (Ch3830 to 3710 - 120m)	NB - Sub-sea TBM Tunnel - ALLUVIUMS sandy with Trimix							
NB - Sub-sea TBM Tunnel - ALLUVIUMS silty with Trimix (Ch3710 to 3590 - 120m)	NB - Sub-sea TBM Tunnel - ALLUVIUMS silty with Trin							
NB - Sub-sea TBM Tunnel - ALLUVIUMS sandy with Trimix (Ch3590 to 3460 - 130m)	NB - Sub-sea TBM Tunnel - ALLUVIUMS sandy							
NB - Sub-sea TBM Tunnel - ALLUVIUMS silty with Trimix (Ch3460 to 3360 - 100m)	NB - Sub-sea TBM Tunnel - ALLUVIUMS sil							
NB - Sub-sea TBM Tunnel - ALLUVIUMS sandy with Trimix (Ch3360 to 3160 - 200m)	NB - Sub-sea TBM Tunnel - ALL							
Sub-sea TBM Tunnel - SB ID12.2m - S882								
SB - Sub-sea TBM Tunnel - CDG with Saturation (Ch5351 to 4971 - 380m)	SB - Sub-sea TBM Tunnel - CDG with Saturation (Ch5351 to 4971 - 380m)							
SB - Sub-sea TBM Tunnel - CDG with Saturation (Ch4971 to 4891 - 80m)	SB - Sub-sea TBM Tunnel - CDG with Saturation (Ch4971 to 4891 - 80m)							
SB - Sub-sea TBM Tunnel - ALLUVIUMS silty with Trimix (Ch4891 to 4771 - 120)	SB - Sub-sea TBM Tunnel - ALLUVIUMS silty with Trimix (Ch4891 to 4771 - 120)							
SB - Sub-sea TBM Tunnel - ALLUVIUMS sandy with Trimix (Ch4771 to 4621 - 150m)	SB - Sub-sea TBM Tunnel - ALLUVIUMS sandy with Trimix (Ch4771 to 4621 - 150m)							
SB - Sub-sea TBM Tunnel - ALLUVIUMS sandy with Trimix (Ch4621 to 4421 - 200m)	SB - Sub-sea TBM Tunnel - ALLUVIUMS sandy with Trimix (Ch4621 to 4421 - 200m)							
SB - Sub-sea TBM Tunnel - ALLUVIUMS silty with Trimix (Ch4421 to 4321 - 100m)	SB - Sub-sea TBM Tunnel - ALLUVIUMS silty with Trimix (Ch4421 to 4321 - 100m)							
SB - Sub-sea TBM Tunnel - ALLUVIUMS sandy with Trimix (Ch4321 to 4221 - 100m)	SB - Sub-sea TBM Tunnel - ALLUVIUMS sandy with Trimix (Ch4321 to 4221 - 100m)							
SB - Sub-sea TBM Tunnel - ALLUVIUMS silty with Trimix (Ch4221 to 3851 - 370m)	SB - Sub-sea TBM Tunnel - ALLUVIUMS silty with Trimix (Ch4221 to 3851 - 370m)							
SB - Sub-sea TBM Tunnel - ALLUVIUMS sandy with Trimix (Ch3851 to 3731 - 120m)	SB - Sub-sea TBM Tunnel - ALLUVIUMS sandy with Trimix (Ch3851 to 3731 - 120m)							
SB - Sub-sea TBM Tunnel - ALLUVIUMS silty with Trimix (Ch3731 to 3611 - 120m)	SB - Sub-sea TBM Tunnel - ALLUVIUMS silty with Trimix (Ch3731 to 3611 - 120m)							
SB - Sub-sea TBM Tunnel - ALLUVIUMS sandy with Trimix (Ch3611 to 3481 - 130m)	SB - Sub-sea TBM Tunnel - ALLUVIUMS sandy with Trimix (Ch3611 to 3481 - 130							
SB - Sub-sea TBM Tunnel - ALLUVIUMS silty with Trimix (Ch3481 to 3381 - 100m)	SB - Sub-sea TBM Tunnel - ALLUVIUMS silty with Trimix (Ch3481 to 3381 - 1							
SB - Sub-sea TBM Tunnel - ALLUVIUMS sandy with Trimix (Ch3381 to 3181 - 200m)	SB - Sub-sea TBM Tunnel - ALLUVIUMS sandy with Trimix (Ch3381							
SB - Sub-sea TBM Tunnel - ALLUVIUMS silty with Trimix (Ch3181 to 3081 - 100m)	SB - Sub-sea TBM Tunnel - ALLUVIUMS silty with Trimix (Ch31							
SB - Sub-sea TBM Tunnel - ALLUVIUMS silty with Trimix (Ch3081 to 2941 - 140m)	SB - Sub-sea TBM Tunnel - ALLUVIUMS silty with Trimix							
SB - Sub-sea TBM Tunnel - ALLUVIUMS silty with Trimix (Ch2941 to 2841 - 100m)	SB - Sub-sea TBM Tunnel - ALLUVIUMS silty with T							
SB - Sub-sea TBM Tunnel - ALLUVIUMS sandy with Trimix (Ch2841 to 2741 - 100m)	SB - Sub-sea TBM Tunnel - ALLUVIUMS sandy							
SB - Sub-sea TBM Tunnel - ALLUVIUMS silty with Trimix (Ch2741 to 2694 - 47m)	SB - Sub-sea TBM Tunnel - ALLUVIUMS silty							
SB - Sub-sea TBM Tunnel - ALLUVIUMS silty with Trimix (Ch2694 to 2595 - 99m)	SB - Sub-sea TBM Tunnel - ALLUVIUMS							

Project ID: TMCLK DWPF 16W43

Data Date: 30-Oct-16

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

TMCLK - Northern Connection Sub-Sea Tunnel Section

Detailed Works Programme (Rev. F)

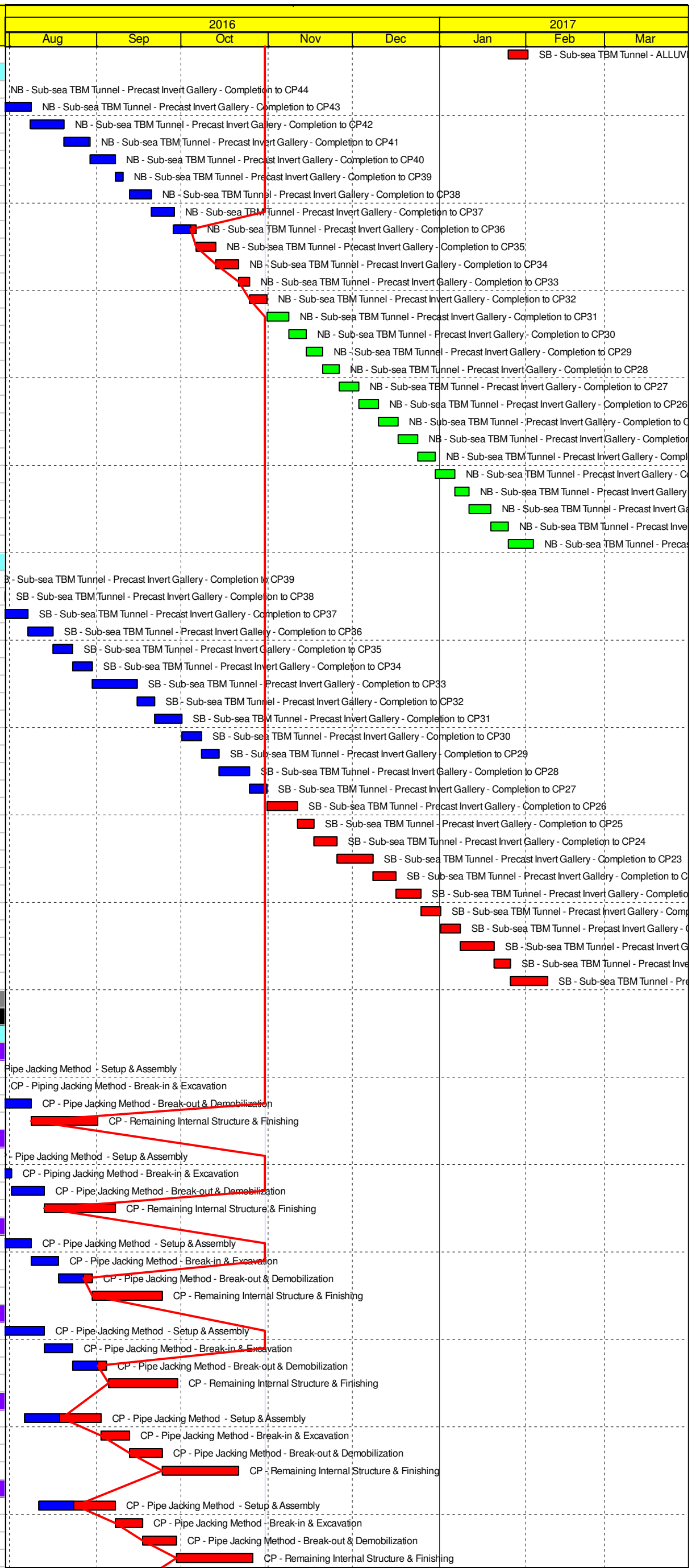
Three Months Rolling Programme

Progress as of 30-Oct-16

Dragages - Bouygues Joint Venture 寶嘉 - 布依格聯營

Date	Revision	Checked	Approved
12-Feb-14	TMCLK/DBJGEN/PRG/98507	WYu	SPo
08-Apr-14	TMCLK/DBJGEN/PRG/98507 Rev.B	SPa	WYu
28-Aug-14	TMCLK/DBJGEN/PRG/98507 Rev.C	CLa	WYu
30-Oct-15	TMCLK/DBJGEN/PRG/98507 Rev.F	WYu	

Activity Name
SB - Sub-sea TBM Tunnel - ALLUVIUMS silty with Trimix (Ch2595 to 2533 - 62m)
Sub-sea TBM Tunnel - NB - Precast Invert Gallery
NB - Sub-sea TBM Tunnel - Precast Invert Gallery - Completion to CP44
NB - Sub-sea TBM Tunnel - Precast Invert Gallery - Completion to CP43
NB - Sub-sea TBM Tunnel - Precast Invert Gallery - Completion to CP42
NB - Sub-sea TBM Tunnel - Precast Invert Gallery - Completion to CP41
NB - Sub-sea TBM Tunnel - Precast Invert Gallery - Completion to CP40
NB - Sub-sea TBM Tunnel - Precast Invert Gallery - Completion to CP39
NB - Sub-sea TBM Tunnel - Precast Invert Gallery - Completion to CP38
NB - Sub-sea TBM Tunnel - Precast Invert Gallery - Completion to CP37
NB - Sub-sea TBM Tunnel - Precast Invert Gallery - Completion to CP36
NB - Sub-sea TBM Tunnel - Precast Invert Gallery - Completion to CP35
NB - Sub-sea TBM Tunnel - Precast Invert Gallery - Completion to CP34
NB - Sub-sea TBM Tunnel - Precast Invert Gallery - Completion to CP33
NB - Sub-sea TBM Tunnel - Precast Invert Gallery - Completion to CP32
NB - Sub-sea TBM Tunnel - Precast Invert Gallery - Completion to CP31
NB - Sub-sea TBM Tunnel - Precast Invert Gallery - Completion to CP30
NB - Sub-sea TBM Tunnel - Precast Invert Gallery - Completion to CP29
NB - Sub-sea TBM Tunnel - Precast Invert Gallery - Completion to CP28
NB - Sub-sea TBM Tunnel - Precast Invert Gallery - Completion to CP27
NB - Sub-sea TBM Tunnel - Precast Invert Gallery - Completion to CP26
NB - Sub-sea TBM Tunnel - Precast Invert Gallery - Completion to CP25
NB - Sub-sea TBM Tunnel - Precast Invert Gallery - Completion to CP24
NB - Sub-sea TBM Tunnel - Precast Invert Gallery - Completion to CP23
NB - Sub-sea TBM Tunnel - Precast Invert Gallery - Completion to CP22
NB - Sub-sea TBM Tunnel - Precast Invert Gallery - Completion to CP21
NB - Sub-sea TBM Tunnel - Precast Invert Gallery - Completion to CP20
NB - Sub-sea TBM Tunnel - Precast Invert Gallery - Completion to CP19
NB - Sub-sea TBM Tunnel - Precast Invert Gallery - Completion to CP18
Sub-sea TBM Tunnel - SB - Precast Invert Gallery
SB - Sub-sea TBM Tunnel - Precast Invert Gallery - Completion to CP39
SB - Sub-sea TBM Tunnel - Precast Invert Gallery - Completion to CP38
SB - Sub-sea TBM Tunnel - Precast Invert Gallery - Completion to CP37
SB - Sub-sea TBM Tunnel - Precast Invert Gallery - Completion to CP36
SB - Sub-sea TBM Tunnel - Precast Invert Gallery - Completion to CP35
SB - Sub-sea TBM Tunnel - Precast Invert Gallery - Completion to CP34
SB - Sub-sea TBM Tunnel - Precast Invert Gallery - Completion to CP33
SB - Sub-sea TBM Tunnel - Precast Invert Gallery - Completion to CP32
SB - Sub-sea TBM Tunnel - Precast Invert Gallery - Completion to CP31
SB - Sub-sea TBM Tunnel - Precast Invert Gallery - Completion to CP30
SB - Sub-sea TBM Tunnel - Precast Invert Gallery - Completion to CP29
SB - Sub-sea TBM Tunnel - Precast Invert Gallery - Completion to CP28
SB - Sub-sea TBM Tunnel - Precast Invert Gallery - Completion to CP27
SB - Sub-sea TBM Tunnel - Precast Invert Gallery - Completion to CP26
SB - Sub-sea TBM Tunnel - Precast Invert Gallery - Completion to CP25
SB - Sub-sea TBM Tunnel - Precast Invert Gallery - Completion to CP24
SB - Sub-sea TBM Tunnel - Precast Invert Gallery - Completion to CP23
SB - Sub-sea TBM Tunnel - Precast Invert Gallery - Completion to CP22
SB - Sub-sea TBM Tunnel - Precast Invert Gallery - Completion to CP21
SB - Sub-sea TBM Tunnel - Precast Invert Gallery - Completion to CP20
SB - Sub-sea TBM Tunnel - Precast Invert Gallery - Completion to CP19
SB - Sub-sea TBM Tunnel - Precast Invert Gallery - Completion to CP18
SB - Sub-sea TBM Tunnel - Precast Invert Gallery - Completion to CP17
SB - Sub-sea TBM Tunnel - Precast Invert Gallery - Completion to CP16
Sub-sea Tunnel Cross Passage & Internal Structure
Construction
Sub-sea Tunnel Cross Passage
CP48 - ML03 - Ch6489
CP - Pipe Jacking Method - Setup & Assembly
CP - Piping Jacking Method - Break-in & Excavation
CP - Pipe Jacking Method - Break-out & Demobilization
CP - Remaining Internal Structure & Finishing
CP47 - ML03 - Ch6390
CP - Pipe Jacking Method - Setup & Assembly
CP - Piping Jacking Method - Break-in & Excavation
CP - Pipe Jacking Method - Break-out & Demobilization
CP - Remaining Internal Structure & Finishing
CP46 - ML03 - Ch6292
CP - Pipe Jacking Method - Setup & Assembly
CP - Pipe Jacking Method - Break-in & Excavation
CP - Pipe Jacking Method - Break-out & Demobilization
CP - Remaining Internal Structure & Finishing
CP45 - ML03 - Ch6193
CP - Pipe Jacking Method - Setup & Assembly
CP - Pipe Jacking Method - Break-in & Excavation
CP - Pipe Jacking Method - Break-out & Demobilization
CP - Remaining Internal Structure & Finishing
CP44 - ML03 - Ch6095
CP - Pipe Jacking Method - Setup & Assembly
CP - Pipe Jacking Method - Break-in & Excavation
CP - Pipe Jacking Method - Break-out & Demobilization
CP - Remaining Internal Structure & Finishing
CP43 - ML03 - Ch5996
CP - Pipe Jacking Method - Setup & Assembly
CP - Pipe Jacking Method - Break-in & Excavation
CP - Pipe Jacking Method - Break-out & Demobilization
CP - Remaining Internal Structure & Finishing



Project ID: TMCLK DWPF 16W43

Data Date: 30-Oct-16

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

TMCLK - Northern Connection Sub-Sea Tunnel Section

Detailed Works Programme (Rev. F)

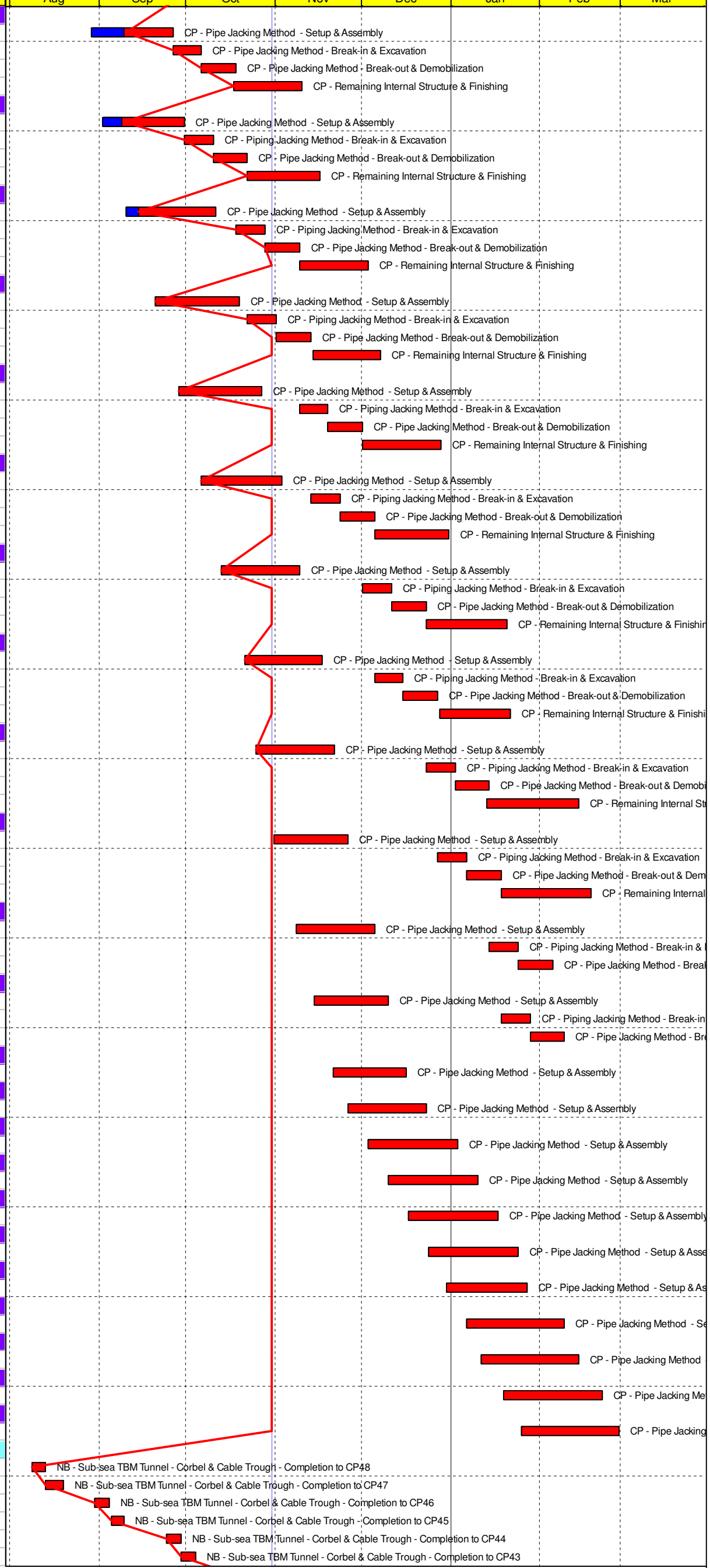
Three Months Rolling Programme

Progress as of 30-Oct-16

Dragages - Bouygues Joint Venture 寶嘉 - 布依格聯營

Date	Revision	Checked	Approved
12-Feb-14	TMCLK/DBJGEN/PRG/98507	WYu	SPo
08-Apr-14	TMCLK/DBJGEN/PRG/98507 Rev.B	SPa	WYu
28-Aug-14	TMCLK/DBJGEN/PRG/98507 Rev.C	CLa	WYu
30-Oct-15	TMCLK/DBJGEN/PRG/98507 Rev.F	WYu	

Activity Name
CP42 - ML03 - Ch5898
CP - Pipe Jacking Method - Setup & Assembly
CP - Pipe Jacking Method - Break-in & Excavation
CP - Pipe Jacking Method - Break-out & Demobilization
CP - Remaining Internal Structure & Finishing
CP41 - ML03 - Ch5800
CP - Pipe Jacking Method - Setup & Assembly
CP - Piping Jacking Method - Break-in & Excavation
CP - Pipe Jacking Method - Break-out & Demobilization
CP - Remaining Internal Structure & Finishing
CP40 - ML03 - Ch5703
CP - Pipe Jacking Method - Setup & Assembly
CP - Piping Jacking Method - Break-in & Excavation
CP - Pipe Jacking Method - Break-out & Demobilization
CP - Remaining Internal Structure & Finishing
CP39 - ML03 - Ch5607
CP - Pipe Jacking Method - Setup & Assembly
CP - Piping Jacking Method - Break-in & Excavation
CP - Pipe Jacking Method - Break-out & Demobilization
CP - Remaining Internal Structure & Finishing
CP38 - ML03 - Ch5510
CP - Pipe Jacking Method - Setup & Assembly
CP - Piping Jacking Method - Break-in & Excavation
CP - Pipe Jacking Method - Break-out & Demobilization
CP - Remaining Internal Structure & Finishing
CP37 - ML03 - Ch5413
CP - Pipe Jacking Method - Setup & Assembly
CP - Piping Jacking Method - Break-in & Excavation
CP - Pipe Jacking Method - Break-out & Demobilization
CP - Remaining Internal Structure & Finishing
CP36 - ML03 - Ch5315
CP - Pipe Jacking Method - Setup & Assembly
CP - Piping Jacking Method - Break-in & Excavation
CP - Pipe Jacking Method - Break-out & Demobilization
CP - Remaining Internal Structure & Finishing
CP35 - ML03 - Ch5217
CP - Pipe Jacking Method - Setup & Assembly
CP - Piping Jacking Method - Break-in & Excavation
CP - Pipe Jacking Method - Break-out & Demobilization
CP - Remaining Internal Structure & Finishing
CP34 - ML03 - Ch5118
CP - Pipe Jacking Method - Setup & Assembly
CP - Piping Jacking Method - Break-in & Excavation
CP - Pipe Jacking Method - Break-out & Demobilization
CP - Remaining Internal Structure & Finishing
CP33 - ML03 - Ch5020
CP - Pipe Jacking Method - Setup & Assembly
CP - Piping Jacking Method - Break-in & Excavation
CP - Pipe Jacking Method - Break-out & Demobilization
CP - Remaining Internal Structure & Finishing
CP32 - ML03 - Ch4921
CP - Pipe Jacking Method - Setup & Assembly
CP - Piping Jacking Method - Break-in & Excavation
CP - Pipe Jacking Method - Break-out & Demobilization
CP31 - ML03 - Ch4823
CP - Pipe Jacking Method - Setup & Assembly
CP - Piping Jacking Method - Break-in & Excavation
CP - Pipe Jacking Method - Break-out & Demobilization
CP30 - ML03 - Ch4724
CP - Pipe Jacking Method - Setup & Assembly
CP29 - ML03 - Ch4626
CP - Pipe Jacking Method - Setup & Assembly
CP28 - ML03 - Ch4527
CP - Pipe Jacking Method - Setup & Assembly
CP27 - ML03 - Ch4429
CP - Pipe Jacking Method - Setup & Assembly
CP26 - ML03 - Ch4330
CP - Pipe Jacking Method - Setup & Assembly
CP25 - ML03 - Ch4232
CP - Pipe Jacking Method - Setup & Assembly
CP24 - ML03 - Ch4133
CP - Pipe Jacking Method - Setup & Assembly
CP23 - ML03 - Ch4035
CP - Pipe Jacking Method - Setup & Assembly
CP22 - ML03 - Ch3936
CP - Pipe Jacking Method - Setup & Assembly
CP21 - ML03 - Ch3838
CP - Pipe Jacking Method - Setup & Assembly
CP20 - ML03 - Ch3739
CP - Pipe Jacking Method - Setup & Assembly
Sub-sea TBM Tunnel - NB - Remaining Internal Structure
NB - Sub-sea TBM Tunnel - Corbel & Cable Trough - Completion to CP48
NB - Sub-sea TBM Tunnel - Corbel & Cable Trough - Completion to CP47
NB - Sub-sea TBM Tunnel - Corbel & Cable Trough - Completion to CP46
NB - Sub-sea TBM Tunnel - Corbel & Cable Trough - Completion to CP45
NB - Sub-sea TBM Tunnel - Corbel & Cable Trough - Completion to CP44
NB - Sub-sea TBM Tunnel - Corbel & Cable Trough - Completion to CP43



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

TMCLK - Northern Connection Sub-Sea Tunnel Section

Detailed Works Programme (Rev. F)

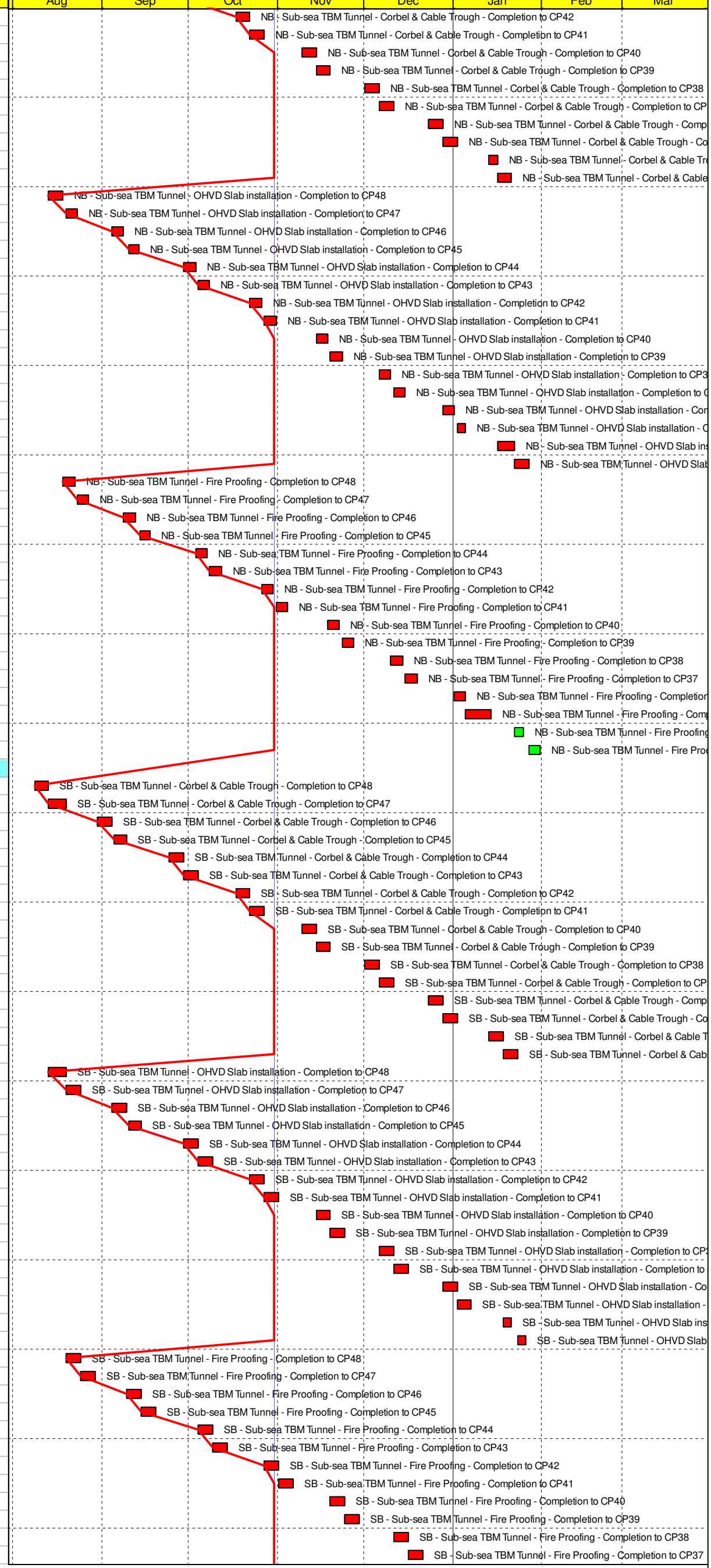
Three Months Rolling Programme

Progress as of 30-Oct-16

Dragages - Bouygues Joint Venture 寶嘉 - 布依格聯營

Date	Revision	Checked	Approved
12-Feb-14	TMCLK/DBJGEN/PRG/98507	WYu	SPo
08-Apr-14	TMCLK/DBJGEN/PRG/98507 Rev.B	SPa	WYu
28-Aug-14	TMCLK/DBJGEN/PRG/98507 Rev.C	CLa	WYu
30-Oct-15	TMCLK/DBJGEN/PRG/98507 Rev.F	WYu	

Activity Name
NB - Sub-sea TBM Tunnel - Corbel & Cable Trough - Completion to CP42
NB - Sub-sea TBM Tunnel - Corbel & Cable Trough - Completion to CP41
NB - Sub-sea TBM Tunnel - Corbel & Cable Trough - Completion to CP40
NB - Sub-sea TBM Tunnel - Corbel & Cable Trough - Completion to CP39
NB - Sub-sea TBM Tunnel - Corbel & Cable Trough - Completion to CP38
NB - Sub-sea TBM Tunnel - Corbel & Cable Trough - Completion to CP37
NB - Sub-sea TBM Tunnel - Corbel & Cable Trough - Completion to CP36
NB - Sub-sea TBM Tunnel - Corbel & Cable Trough - Completion to CP35
NB - Sub-sea TBM Tunnel - Corbel & Cable Trough - Completion to CP34
NB - Sub-sea TBM Tunnel - Corbel & Cable Trough - Completion to CP33
NB - Sub-sea TBM Tunnel - OHVD Slab installation - Completion to CP48
NB - Sub-sea TBM Tunnel - OHVD Slab installation - Completion to CP47
NB - Sub-sea TBM Tunnel - OHVD Slab installation - Completion to CP46
NB - Sub-sea TBM Tunnel - OHVD Slab installation - Completion to CP45
NB - Sub-sea TBM Tunnel - OHVD Slab installation - Completion to CP44
NB - Sub-sea TBM Tunnel - OHVD Slab installation - Completion to CP43
NB - Sub-sea TBM Tunnel - OHVD Slab installation - Completion to CP42
NB - Sub-sea TBM Tunnel - OHVD Slab installation - Completion to CP41
NB - Sub-sea TBM Tunnel - OHVD Slab installation - Completion to CP40
NB - Sub-sea TBM Tunnel - OHVD Slab installation - Completion to CP39
NB - Sub-sea TBM Tunnel - OHVD Slab installation - Completion to CP38
NB - Sub-sea TBM Tunnel - OHVD Slab installation - Completion to CP37
NB - Sub-sea TBM Tunnel - OHVD Slab installation - Completion to CP36
NB - Sub-sea TBM Tunnel - OHVD Slab installation - Completion to CP35
NB - Sub-sea TBM Tunnel - OHVD Slab installation - Completion to CP34
NB - Sub-sea TBM Tunnel - OHVD Slab installation - Completion to CP33
NB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP48
NB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP47
NB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP46
NB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP45
NB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP44
NB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP43
NB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP42
NB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP41
NB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP40
NB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP39
NB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP38
NB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP37
NB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP36
NB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP35
NB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP34
NB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP33
Sub-sea TBM Tunnel - SB - Remaining Internal Structure
SB - Sub-sea TBM Tunnel - Corbel & Cable Trough - Completion to CP48
SB - Sub-sea TBM Tunnel - Corbel & Cable Trough - Completion to CP47
SB - Sub-sea TBM Tunnel - Corbel & Cable Trough - Completion to CP46
SB - Sub-sea TBM Tunnel - Corbel & Cable Trough - Completion to CP45
SB - Sub-sea TBM Tunnel - Corbel & Cable Trough - Completion to CP44
SB - Sub-sea TBM Tunnel - Corbel & Cable Trough - Completion to CP43
SB - Sub-sea TBM Tunnel - Corbel & Cable Trough - Completion to CP42
SB - Sub-sea TBM Tunnel - Corbel & Cable Trough - Completion to CP41
SB - Sub-sea TBM Tunnel - Corbel & Cable Trough - Completion to CP40
SB - Sub-sea TBM Tunnel - Corbel & Cable Trough - Completion to CP39
SB - Sub-sea TBM Tunnel - Corbel & Cable Trough - Completion to CP38
SB - Sub-sea TBM Tunnel - Corbel & Cable Trough - Completion to CP37
SB - Sub-sea TBM Tunnel - Corbel & Cable Trough - Completion to CP36
SB - Sub-sea TBM Tunnel - Corbel & Cable Trough - Completion to CP35
SB - Sub-sea TBM Tunnel - Corbel & Cable Trough - Completion to CP34
SB - Sub-sea TBM Tunnel - Corbel & Cable Trough - Completion to CP33
SB - Sub-sea TBM Tunnel - OHVD Slab installation - Completion to CP48
SB - Sub-sea TBM Tunnel - OHVD Slab installation - Completion to CP47
SB - Sub-sea TBM Tunnel - OHVD Slab installation - Completion to CP46
SB - Sub-sea TBM Tunnel - OHVD Slab installation - Completion to CP45
SB - Sub-sea TBM Tunnel - OHVD Slab installation - Completion to CP44
SB - Sub-sea TBM Tunnel - OHVD Slab installation - Completion to CP43
SB - Sub-sea TBM Tunnel - OHVD Slab installation - Completion to CP42
SB - Sub-sea TBM Tunnel - OHVD Slab installation - Completion to CP41
SB - Sub-sea TBM Tunnel - OHVD Slab installation - Completion to CP40
SB - Sub-sea TBM Tunnel - OHVD Slab installation - Completion to CP39
SB - Sub-sea TBM Tunnel - OHVD Slab installation - Completion to CP38
SB - Sub-sea TBM Tunnel - OHVD Slab installation - Completion to CP37
SB - Sub-sea TBM Tunnel - OHVD Slab installation - Completion to CP36
SB - Sub-sea TBM Tunnel - OHVD Slab installation - Completion to CP35
SB - Sub-sea TBM Tunnel - OHVD Slab installation - Completion to CP34
SB - Sub-sea TBM Tunnel - OHVD Slab installation - Completion to CP33
SB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP48
SB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP47
SB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP46
SB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP45
SB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP44
SB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP43
SB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP42
SB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP41
SB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP40
SB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP39
SB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP38
SB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP37



Project ID: TMCLK DWPF 16W43

Data Date: 30-Oct-16

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

TMCLK - Northern Connection Sub-Sea Tunnel Section

Detailed Works Programme (Rev. F)

Three Months Rolling Programme

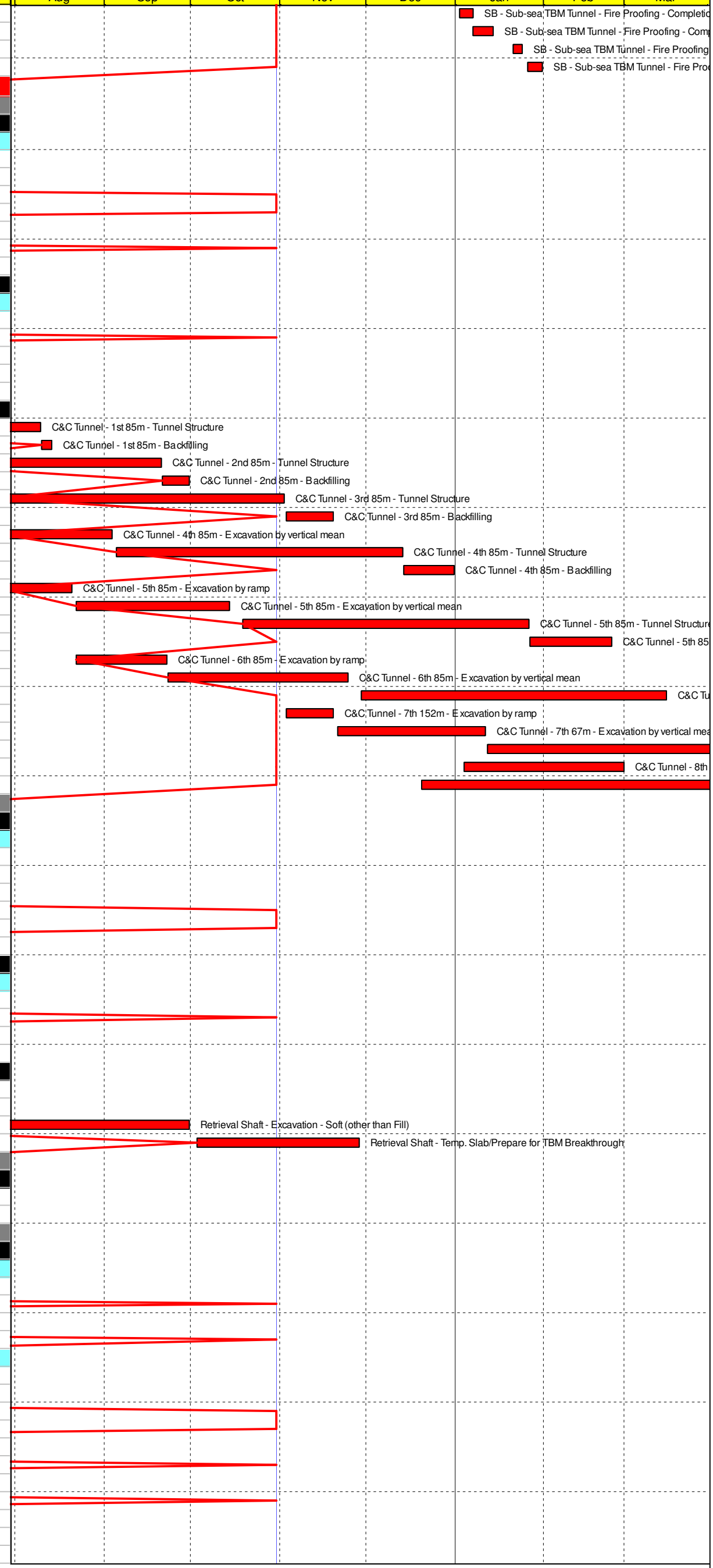
Progress as of 30-Oct-16

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

BOUYGUES TRAVAUX PUBLICS

Date	Revision	Checked	Approved
12-Feb-14	TMCLK/DBJGEN/PRG/98507	WYu	SPo
08-Apr-14	TMCLK/DBJGEN/PRG/98507 Rev.B	SPa	WYu
28-Aug-14	TMCLK/DBJGEN/PRG/98507 Rev.C	CLa	WYu
30-Oct-15	TMCLK/DBJGEN/PRG/98507 Rev.F	WYu	

Activity Name
SB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP36
SB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP35
SB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP34
SB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP33
Southern Landfall
South Cut & Cover Tunnel
Design Submission
(E2) DDA for South C&C Box & Approach Ramp
Review & Comment by JV
Designer prepare DDA
Formal Submission of DDA to ICE/ IPs
Advanced Submission to SO
IPs/ SO's Advance Comments/ ICE Comments
Comments Received
Designer to Reply RtC + Update Submission
Method Statement Submission
Method Statement of Construction Methodology of C&C Tunnels
Preparation Method Statement for C&C Tunnels
Submit Method Statement to SO
SO Reviews & Comments
Re-submission
SO's Review
Construction
C&C Tunnel - 1st 85m - Tunnel Structure
C&C Tunnel - 1st 85m - Backfilling
C&C Tunnel - 2nd 85m - Tunnel Structure
C&C Tunnel - 2nd 85m - Backfilling
C&C Tunnel - 3rd 85m - Tunnel Structure
C&C Tunnel - 3rd 85m - Backfilling
C&C Tunnel - 4th 85m - Excavation by vertical mean
C&C Tunnel - 4th 85m - Tunnel Structure
C&C Tunnel - 4th 85m - Backfilling
C&C Tunnel - 5th 85m - Excavation by ramp
C&C Tunnel - 5th 85m - Excavation by vertical mean
C&C Tunnel - 5th 85m - Tunnel Structure
C&C Tunnel - 5th 85m - Backfilling
C&C Tunnel - 6th 85m - Excavation by ramp
C&C Tunnel - 6th 85m - Excavation by vertical mean
C&C Tunnel - 6th 85m - Tunnel Structure
C&C Tunnel - 7th 152m - Excavation by ramp
C&C Tunnel - 7th 67m - Excavation by vertical mean
C&C Tunnel - 7th 67m - Tunnel Structure
C&C Tunnel - 8th 85m - Excavation by vertical mean
Intermediate Slab
South Retrieval Shaft
Design Submission
(F4) Gantry Crane Support/Foundations in Southern Landfall
Preparation of IFA Gantry Crane / Foundation
Review & Comment by JV
Designer prepare IFA
Formal Submission of IFA to ICE/ IPs
Advanced Submission to SO
IPs/ SO's Advance Comments/ ICE Comments
Method Statement Submission
Method Statement of Construction Methodology of Retrieval Shaft
Preparation Method Statement for Retrieval Shaft
Submit Method Statement to SO
SO Reviews & Comments
Re-submission
Construction
South Landfall GI Works/DW Setting Up
South Retrieval Shaft - Diaphragm Wall
Retrieval Shaft - Excavation - Soft (other than Fill)
Retrieval Shaft - Temp. Slab/Prepare for TBM Breakthrough
South Approach Ramp
Construction
Appoach Ramp (CH1580-1850) - Pipe Pile/Sheet Piles Wall
Appoach Ramp (CH1580-1850) - Tension Piles
South Ventilation Building
Design Submission
(I1) DDA for South Vent.Bldg. GBP & Arch.Submission
IPs Review
IP's No Objection Received
SO's Review
SO Approval with Condition Received
(I2) DDA for South Vent.Bldg. Foundation Design
Review & Comment by JV
Designer prepare DDA
Formal Submission of DDA to ICE/ IPs
Advanced Submission to SO
IPs/ SO's Advance Comments/ ICE Comments
Comments Received
Designer to Reply RtC + Update Submission
Submit Updated DDA to SO/ ICE/ IPs
ICE Approval & Issue Check Cert
IPs Review
SO's Review



Project ID: TMCLK DWPF 16W43

Data Date: 30-Oct-16

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

TMCLK - Northern Connection Sub-Sea Tunnel Section

Detailed Works Programme (Rev. F)

Three Months Rolling Programme

Progress as of 30-Oct-16

Dragages - Bouygues Joint Venture 寶嘉 - 布依格聯營

Date	Revision	Checked	Approved
12-Feb-14	TMCLK/DBJGEN/PRG/98507	WYu	SPo
08-Apr-14	TMCLK/DBJGEN/PRG/98507 Rev.B	SPa	WYu
28-Aug-14	TMCLK/DBJGEN/PRG/98507 Rev.C	CLa	WYu
30-Oct-15	TMCLK/DBJGEN/PRG/98507 Rev.F	WYu	

Activity Name	2016 Aug	Sep	Oct	Nov	Dec	2017 Jan	Feb	Mar
(I2) DDA for South Vent.Bldg.Structural Design incl.Vent.Connections								
Review & Comment by JV								
Designer prepare DDA								
Formal Submission of DDA to ICE/ IPs								
Advanced Submission to SO								
IPs/ SO's Advance Comments/ ICE Comments								
Comments Received								
Designer to Reply RtC + Update Submission								
Submit Updated DDA to SO/ ICE/ IPs								
ICE Approval & Issue Check Cert								
IPs Review								
SO's Review								
(J1) DDA Temp.works for Construction of Sth.Vent.Bldg.								
Designer to Reply RtC + Update Submission								
Submit Updated DDA to SO/ ICE/ IPs								
ICE Approval & Issue Check Cert								
Submit ICE Check Cert to SO								
IPs Review								
IP's No Objection Received								
SO's Review								
SO Approval with Condition Received								
Construction								
Mobilization & Setting Up Piling Rigs								
S -Sheet Piling								
S- Excavation	S- Excavation							
Substructure		Substructure						
Superstructure						S		
South Surface Roadworks, Utility & Drainage works								
Design Submission								
(E1) AIP - Southern Landfall Seawall Modification								
Designer Prepare AIP - Southern Landfall Seawall Modification				Designer Prepare AIP - Southern Landfall Seawall Modification				
Review & Comment by JV				Review & Comment by JV				
Designer prepare AIP				Designer prepare AIP				
Formal Submission of AIP to ICE/IPs				Formal Submission of AIP to ICE/IPs				
Advanced Submission of AIP to SO				Advanced Submission of AIP to SO				
Review & Comment by SO/ ICE/ IPs				Review & Comment by SO/ ICE				
(E1) DDA - Southern Landfall Seawall Modification								
IPs/ SO's Advance Comments/ ICE Comments								
Comments Received								
Designer to Reply RtC + Update Submission								
Submit Updated DDA to SO/ ICE/ IPs								
ICE Approval & Issue Check Cert								
Submit ICE Check Cert to SO								
IPs Review								
IP's No Objection Received								
SO's Review								
SO Approval with Condition Received								
(E3) DDA for Sewerage, Drainage, Waterworks & Utility works for South Landf								
IPs Review								
IP's No Objection Received								
SO's Review								
SO Approval with Condition Received								
Method Statement Submission								
Method Statement of Ground Treatment for TBMs Passing under Southern La								
Preparation Method Statement for Ground Improvement in South Landfall								
Submit Method Statement to SO								
SO Reviews & Comments								
Re-submission								
SO's Review								
SO's Approval								
Construction								
Temporary Platform for Ground Treatment for TBM passing under Southern Seawall								
Grouting Treatment for TBM passing under Southern Seawall	Grouting Treatment for TBM passing under Southern Seawall							
Testing & Commissioning/Inspection & Handover								
Final Inspection & Handover								
Design Submission								
(A12) Maintenance Matrix								
Prepare Re-submission								
2nd Submission								
SO's Condition Approval								
(A13) Operation & Maintenance Manual								
Preparation of Operation and Maintenance Manual								
1st Submission								
SO's Comments for 1st Submission								
Prepare Re-submission								
(A14) As-built & As-fabricated Drawings								
Preparation of As-built and As-fabricated Drawings								
1st Submission								
SO's Comments for 1st Submission								
(A15) Health & Safety File incl.As-built Dwgs & Records,Maintenance Schedul								
Preparation of Health and Safety File including as-built drawings and records, maintenance schedules, op	s, operation and mai							
1st Submission								
SO's Comments for 1st Submission								

Project ID: TMCLK DWPF 16W43

Data Date: 30-Oct-16

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

TMCLK - Northern Connection Sub-Sea Tunnel Section

Detailed Works Programme (Rev. F)

Three Months Rolling Programme

Progress as of 30-Oct-16

Dragages - Bouygues Joint Venture 寶嘉 - 布依格聯營

Date	Revision	Checked	Approved
12-Feb-14	TMCLK/DBJGEN/PRG/98507	WYu	SPo
08-Apr-14	TMCLK/DBJGEN/PRG/98507 Rev.B	SPa	WYu
28-Aug-14	TMCLK/DBJGEN/PRG/98507 Rev.C	CLa	WYu
30-Oct-15	TMCLK/DBJGEN/PRG/98507 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

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

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

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

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

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

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 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		✓

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

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

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

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	-	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		✓

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

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

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

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

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

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	-	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		✓

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

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	-	Roadside gullies to trap silt and grit shall be provided prior to discharging the stormwater into the marine environment. The sumps will be maintained and cleaned at regular intervals.	Roadside/design and operation	Design Consultant/ Contractor	TM-EIAO	Y		Y	✓
6.1	Section 5	All construction works shall be subject to routine audit to ensure implementation of all EIA recommendations and good working practice.	All areas/ throughout construction period	Contractor	EM&A Manual		Y		✓
Water Quality Monitoring									
6.1	Section 5	Water quality monitoring shall be undertaken for suspended solids, turbidity, and dissolved oxygen. Nutrients and metal parameters shall also be measured for Mf sediment operations (only HKBCF and HKLR required handling of Mf sediment) during baseline, backfilling and post construction period. One year operation phase water quality monitoring at designated stations.	Designated monitoring stations as defined in EM&A Manual, Section 5/ Before, through-out marine construction period, post construction and monthly operational phase water quality monitoring for a year.	Contractor	EM&A Manual		Y	Y	✓
ECOLOGY									
8.14	6.3	Specification for and implement pre, during and post construction dolphin abundance monitoring.	All Areas/Detailed Design/ during construction works/post construction	Design Consultant/ Contractor	TMEIA	Y	Y	Y	✓
8.14	6.3,6.5	Specification and implementation of 250m dolphin exclusion zone.	All dredging and reclamation areas/Detailed Design/during all reclamation and dredging works	Design Consultant/ Contractor	TMEIA	Y	Y		✓
8.15	6.3, 6.5	Specification and deployment of an artificial reef of an area of 3,600m2 in an area where fishing activities are prohibited.	Area of prohibited fishing activities/Detailed Design/towards end of construction period	TM-CLKL/ HKBCF Design Consultant/TM-CLKL/ HKBCF Contractor	TMEIA	Y		Y	N/A. To be implemented by AFCD.
8.14	6.3, 6.5	Specification and implementation of marine vessel control specifications	All areas/Detailed Design/during construction works	Design Consultant/ Contractor	TMEIA	Y	Y		✓

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

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status *
						D	C	O	
8.14	6.3, 6.5	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

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

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status *
						D	C	O	
10.9	7.6	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		✓

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

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status *
						D	C	O	
12.6		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		✓

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

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status *
						D	C	O	
12.6	8.1	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		✓

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

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status *
						D	C	O	
12.6	8.1	Chemical waste producers should register with the EPD. Chemical waste should be handled in accordance with the Code of Practice on the Packaging, Handling and Storage of Chemical Wastes as follows: *f* suitable for the substance to be held, resistant to corrosion, maintained in good conditions and securely closed; *f* Having a capacity of <450L unless the specifications have been approved by the EPD; and w Chinese according to the instructions prescribed in Schedule 2 of the Regulations. *f* Clearly labelled and used solely for the storage of chemical wastes; *f* Enclosed with at least 3 sides; *f* Impermeable floor and bund with capacity to accommodate 110% of the volume of the largest container or 20% by volume of the chemical waste stored in the area, whichever is greatest; *f* Adequate ventilation; *f* Sufficiently covered to prevent rainfall entering (water collected within the bund must be tested and disposed of as chemical waste, if necessary); and *f* Incompatible materials are adequately separated.	All areas / throughout construction period	Contractor	TMEIA		Y		<>
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

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

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status *
						D	C	O	
12.6	8.1	General refuse arising on-site should be stored in enclosed bins or compaction units separately from C&D and chemical wastes. Sufficient dustbins shall be provided for storage of waste as required under the Public Cleansing and Prevention of Nuisances By-laws. In addition, general refuse shall be cleared daily and shall be disposed of to the nearest licensed landfill or refuse transfer station. Burning of refuse on construction sites is prohibited.	All areas / throughout construction period	Contractor	TMEIA		Y		<>
12.6	8.1	All waste containers shall be in a secure area on hardstanding;	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	Training shall be provided to workers about the concepts of site cleanliness and appropriate waste management procedure, including waste reduction, reuse and recycling.	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	Office wastes can be reduced by recycling of paper if such volume is sufficiently large to warrant collection. Participation in a local collection scheme by the Contractor should be advocated. Waste separation facilities for paper, aluminium cans, plastic bottles, etc should be provided on-site.	Site Offices/ throughout construction period	Contractor	TMEIA		Y		✓
12.6	Section 8	EM&A of waste handling, storage, transportation, disposal procedures and documentation through the site audit programme shall be undertaken.	All areas / throughout construction period	Contractor	EM&A Manual		Y		✓
CULTURAL HERITAGE									
11.8	Section 9	EM&A in the form of audit of the mitigation measures	All areas / throughout construction period	Highways Department	EIAO-TM		Y		N/A

*** Remarks:**

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

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

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 μg/m³	ASR1 = 213 ASR5 = 238 AQMS1 = 213 ASR6 = 238 ASR10 = 214	260
1 Hour TSP Level in μg /m³	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	:	11/08/2016

Sampler

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

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	2454
Service Date	:	14 Mar 2016
Slope (m)	:	2.10326
Intercept (b)	:	-0.06696
Correlation Coefficient(r)	:	0.99989

Standard Condition

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

Calibration Condition

Pa (hpa)	:	1003
Ta(K)	:	302

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	11.8	3.395	1.646	50	49.42
2	13 holes	9.5	3.047	1.480	45	44.48
3	10 holes	6.8	2.578	1.257	38	37.56
4	7 holes	4.2	2.026	0.995	31	30.64
5	5 holes	2.8	1.654	0.818	25	24.71

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

Sampler Calibration Relationship (Linear Regression)

Slope(m):29.492 Intercept(b):0.811 Correlation Coefficient(r): 0.9993

Checked by: Magnum Fan Date: 15/08/2016

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	ASR10
Calibrated by	:	P.F.Yeung
Date	:	11/08/2016

Sampler

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

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	2454
Service Date	:	14 Mar 2016
Slope (m)	:	2.10326
Intercept (b)	:	-0.06696
Correlation Coefficient(r)	:	0.99989

Standard Condition

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

Calibration Condition

Pa (hpa)	:	1003
Ta(K)	:	302

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	9.6	3.063	1.488	53	52.39
2	13 holes	7.6	2.725	1.327	47	46.46
3	10 holes	5.6	2.339	1.144	40	39.54
4	7 holes	4.2	2.026	0.995	35	34.60
5	5 holes	2.8	1.654	0.818	28	27.68

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

Sampler Calibration Relationship (Linear Regression)

Slope(m):36.672 Intercept(b): -2.207 Correlation Coefficient(r): 0.9998

Checked by: Magnum Fan Date: 15/08/16

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	AQMS1
Calibrated by	:	P.F.Yeung
Date	:	11/08/2016

Sampler

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

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	2454
Service Date	:	14 Mar 2016
Slope (m)	:	2.10326
Intercept (b)	:	-0.06696
Correlation Coefficient(r)	:	0.99989

Standard Condition

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

Calibration Condition

Pa (hpa)	:	1003
Ta(K)	:	302

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	11.0	3.278	1.591	49	48.43
2	13 holes	9.0	2.965	1.442	44	43.49
3	10 holes	6.7	2.559	1.248	38	37.56
4	7 holes	4.4	2.073	1.018	30	29.65
5	5 holes	2.5	1.563	0.775	23	22.73

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

Sampler Calibration Relationship (Linear Regression)

Slope(m):31.705 Intercept(b):-2.134 Correlation Coefficient(r): 0.9996

Checked by: Magnum Fan Date: 15/08/2016

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	ASR 1
Calibrated by	:	P.F.Yeung
Date	:	11/08/2016

Sampler

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

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	2454
Service Date	:	14 Mar 2016
Slope (m)	:	2.10326
Intercept (b)	:	-0.06696
Correlation Coefficient(r)	:	0.99989

Standard Condition

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

Calibration Condition

Pa (hpa)	:	1003
Ta(K)	:	302

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	11.6	3.367	1.632	53	52.39
2	13 holes	9.6	3.063	1.488	47	46.46
3	10 holes	6.8	2.578	1.257	38	37.56
4	7 holes	4.5	2.097	1.029	30	29.65
5	5 holes	2.8	1.654	0.818	22	21.75

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

Sampler Calibration Relationship (Linear Regression)

Slope(m):37.347 Intercept(b): -8.935 Correlation Coefficient(r): 0.9996

Checked by: Magnum Fan Date: 15/08/2016

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	ASR 6
Calibrated by	:	P.F.Yeung
Date	:	11/08/2016

Sampler

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

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	2454
Service Date	:	14 Mar 2016
Slope (m)	:	2.10326
Intercept (b)	:	-0.06696
Correlation Coefficient(r)	:	0.99989

Standard Condition

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

Calibration Condition

Pa (hpa)	:	1003
Ta(K)	:	302

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	12.0	3.424	1.660	52	51.40
2	13 holes	9.2	2.998	1.457	46	45.47
3	10 holes	7.0	2.615	1.275	40	39.54
4	7 holes	4.8	2.166	1.061	32	31.63
5	5 holes	2.8	1.654	0.818	24	23.72

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

Sampler Calibration Relationship (Linear Regression)

Slope(m):33.306 Intercept(b): -3.427 Correlation Coefficient(r): 0.9993

Checked by: Magnum Fan Date: 15/08/2016

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	ASR 5
Calibrated by	:	P.F.Yeung
Date	:	11/10/2016

Sampler

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

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	2454
Service Date	:	14 Mar 2016
Slope (m)	:	2.10326
Intercept (b)	:	-0.06696
Correlation Coefficient(r)	:	0.99989

Standard Condition

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

Calibration Condition

Pa (hpa)	:	1008
Ta(K)	:	300

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	9.8	3.112	1.512	46	45.73
2	13 holes	7.4	2.705	1.318	40	39.77
3	10 holes	5.6	2.353	1.150	34	33.80
4	7 holes	3.6	1.886	0.929	28	27.84
5	5 holes	2.2	1.475	0.733	22	21.87

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

Sampler Calibration Relationship (Linear Regression)

Slope(m):30.599 Intercept(b):-0.722 Correlation Coefficient(r): 0.9992

Checked by: Magnum Fan Date: 16/10/2016

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	ASR10
Calibrated by	:	P.F.Yeung
Date	:	11/10/2016

Sampler

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

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	2454
Service Date	:	14 Mar 2016
Slope (m)	:	2.10326
Intercept (b)	:	-0.06696
Correlation Coefficient(r)	:	0.99989

Standard Condition

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

Calibration Condition

Pa (hpa)	:	1008
Ta(K)	:	300

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	11.0	3.297	1.600	60	59.65
2	13 holes	8.4	2.881	1.402	54	53.69
3	10 holes	6.6	2.554	1.246	50	49.71
4	7 holes	4.0	1.988	0.977	42	41.76
5	5 holes	2.6	1.603	0.794	36	35.79

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

Sampler Calibration Relationship (Linear Regression)

Slope(m):29.330 Intercept(b): 12.813 Correlation Coefficient(r): 0.9995

Checked by: Magnum Fan Date: 16/10/16

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	AQMS1
Calibrated by	:	P.F.Yeung
Date	:	11/10/2016

Sampler

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

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	2454
Service Date	:	14 Mar 2016
Slope (m)	:	2.10326
Intercept (b)	:	-0.06696
Correlation Coefficient(r)	:	0.99989

Standard Condition

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

Calibration Condition

Pa (hpa)	:	1008
Ta(K)	:	300

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	11.8	3.415	1.656	57	56.67
2	13 holes	9.2	3.016	1.466	50	49.71
3	10 holes	6.8	2.593	1.264	44	43.74
4	7 holes	4.4	2.085	1.023	37	36.79
5	5 holes	2.8	1.664	0.823	30	29.83

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

Sampler Calibration Relationship (Linear Regression)

Slope(m):31.561 Intercept(b):4.011 Correlation Coefficient(r): 0.9991

Checked by: Magnum Fan Date: 16/10/2016

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	ASR 1
Calibrated by	:	P.F.Yeung
Date	:	11/10/2016

Sampler

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

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	2454
Service Date	:	14 Mar 2016
Slope (m)	:	2.10326
Intercept (b)	:	-0.06696
Correlation Coefficient(r)	:	0.99989

Standard Condition

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

Calibration Condition

Pa (hpa)	:	1008
Ta(K)	:	300

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	11.8	3.415	1.656	52	51.70
2	13 holes	9.6	3.080	1.496	46	45.73
3	10 holes	7.0	2.630	1.282	39	38.77
4	7 holes	4.6	2.133	1.046	31	30.82
5	5 holes	2.8	1.664	0.823	22	21.87

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

Sampler Calibration Relationship (Linear Regression)

Slope(m):35.235 Intercept(b): -6.638 rrelation Coefficient(r): 0.9993

Checked by: Magnum Fan Date: 16/10/2016

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	ASR 6
Calibrated by	:	P.F.Yeung
Date	:	11/10/2016

Sampler

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

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	2454
Service Date	:	14 Mar 2016
Slope (m)	:	2.10326
Intercept (b)	:	-0.06696
Correlation Coefficient(r)	:	0.99989

Standard Condition

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

Calibration Condition

Pa (hpa)	:	1008
Ta(K)	:	300

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	12.4	3.501	1.696	52	51.70
2	13 holes	10.0	3.144	1.527	46	45.73
3	10 holes	7.2	2.668	1.300	39	38.77
4	7 holes	4.6	2.132	1.046	30	29.83
5	5 holes	3.0	1.722	0.851	23	22.87

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

Sampler Calibration Relationship (Linear Regression)

Slope(m):33.861 Intercept(b): -5.694 Correlation Coefficient(r): 0.9997

Checked by: Magnum Fan Date: 16/10/2016

ENVIROTECH SERVICES CO.

Calibration Report of Wind Meter

Date of Calibration : 02 May 2016

Brand of Test Meter: Davis

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

Location : Roof of Tuen Mun Firestation

Procedures :

1. Wind Still Test: The wind speed sensor was hold by hand until it keep still

2.Wind Speed Test: The wind meter was on-site calibrated against the Anemometer

3.Wind Direction Test : The wind meter was on-site calibrated against the marine compass at four directions

Results:

Wind Still Test

Wind Speed (m/s)
0.00

Wind Speed Test

Davis (m/s)	Anemomete (m/s)
1.4	1.5
2.4	2.3
2.6	2.8

Wind Direction Test

Davis (o)	Marine Compass (o)
270	270
1	0
89	90
181	180

Calibrated by: Yeung Ping Fai (Technical Officer)

Checked by : Ho Kam Fat (Senior Technical Officer)

TISCH Environmental

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

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Mar 14, 2016 Rootsmeter S/N 0438320 Ta (K) - 295
Operator Tisch Orifice I.D. - 2454 Pa (mm) - 745.49

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	1.4020	3.2	2.00
2	NA	NA	1.00	1.0060	6.4	4.00
3	NA	NA	1.00	0.9010	7.9	5.00
4	NA	NA	1.00	0.8590	8.8	5.50
5	NA	NA	1.00	0.7090	12.8	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)
0.9866	0.7037	1.4078
0.9824	0.9765	1.9909
0.9803	1.0880	2.2259
0.9792	1.1399	2.3345
0.9738	1.3735	2.8155

Qstd slope (m) = 2.10326
intercept (b) = -0.06696
coefficient (r) = 0.99989

y axis = SQRT[H2O(Pa/760)(298/Ta)]

Va	(x axis) Qa	(y axis)
0.9957	0.7102	0.8896
0.9914	0.9855	1.2581
0.9893	1.0980	1.4066
0.9882	1.1504	1.4753
0.9828	1.3862	1.7792

Qa slope (m) = 1.31703
intercept (b) = -0.04232
coefficient (r) = 0.99989

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. : C160461
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC16-0158) Date of Receipt / 收件日期 : 19 January 2016

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

TEST CONDITIONS / 測試條件

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

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 27 January 2016

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 : M T Leung
Assistant Technical Officer

Certified By 核證 : H C Chan
Engineer

Date of Issue 簽發日期 : 27 January 2016

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 – 校正及檢測實驗所
c/o 香港新界屯門興安里一號青山灣機樓四樓
Tel/電話: 2927 2606 Fax/傳真: 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

Certificate of Calibration
校正證書

Certificate No. : C160461
證書編號

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours before the commencement of the test.

2. The results presented are the mean of 10 measurements at each calibration point.

3. Test equipment :

Equipment ID	Description	Certificate No.
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
2.0	1.8	+0.2	0.2	2.0
4.1	3.9	+0.2	0.3	2.0
6.0	5.9	+0.1	0.3	2.0
8.0	8.0	0.0	0.3	2.0
10.0	10.2	-0.2	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.

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 – 校正及檢測實驗所
c/o 香港新界屯門興安里一號青山灣機樓四樓
Tel/電話: 2927 2606 Fax/傳真: 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

Appendix F

EM&A Monitoring Schedules

HY/2012/08 - Tuen Mun - Chek Lap Kok Link
Northern Connection Sub-sea Tunnel Section
Air Quality Impact Monitoring Schedule - October 2016

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

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

On 20 October 2016, the Super Typhoon Haima was heading to Hong Kong and was forecast to make a direct hit on 21 October 2016. It was forecast that T3 signal would be hoisted later on 20 October and T8 signal would probably be hoisted on 21 October if the Super Typhoon Haima continued on its predicted path. Moreover, the air quality monitoring team reported that the condition was not safe to continue the monitoring. In addition, preventive measures had to prepare in advance to ensure that no risk would arise from the equipment to the public from the coming typhoon.

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

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

HY/2012/08 - Tuen Mun - Chek Lap Kok Link
Northern Connection Sub-sea Tunnel Section
Tentative Air Quality Impact Monitoring Schedule - November 2016

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

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

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

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

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

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

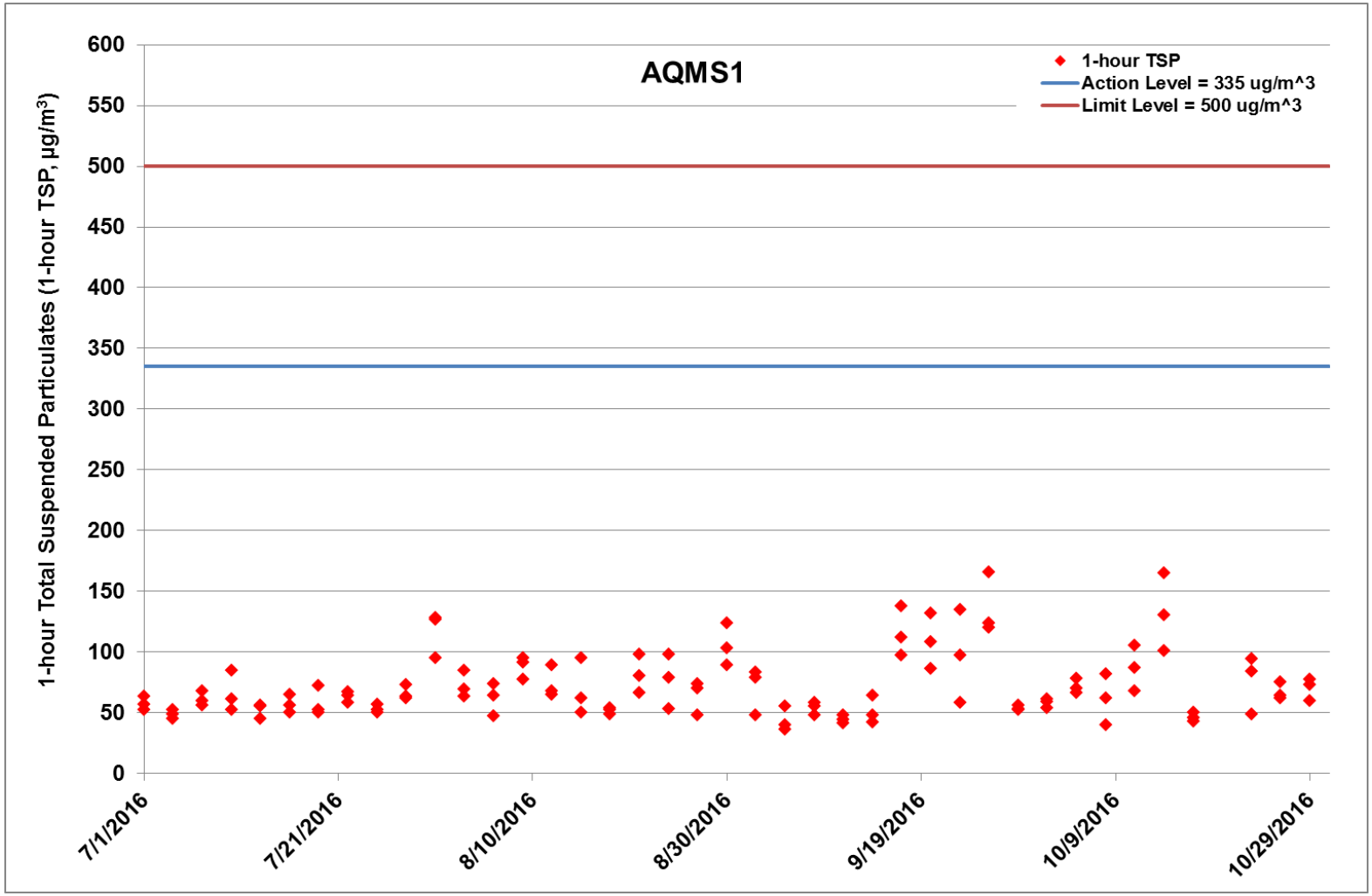


Figure G.1 Impact Monitoring – 1-hour Total Suspended Particulates (µg/m³) at AQMS1 between 1 July 2016 and 1 October 2016 during impact monitoring period. The weather conditions during the monitoring period varied from sunny to cloudy. Major land-based construction activities included: Jet Grouting, CSM Ground Treatment and Diaphragm Wall Construction (1/7/2016 – 31/10/2016) and Box Culvert Extension (1/7/2016 – 31/10/2016). *Ref: 0212330_Impact AQM graphs_ October 2016_REV a.xlsx*

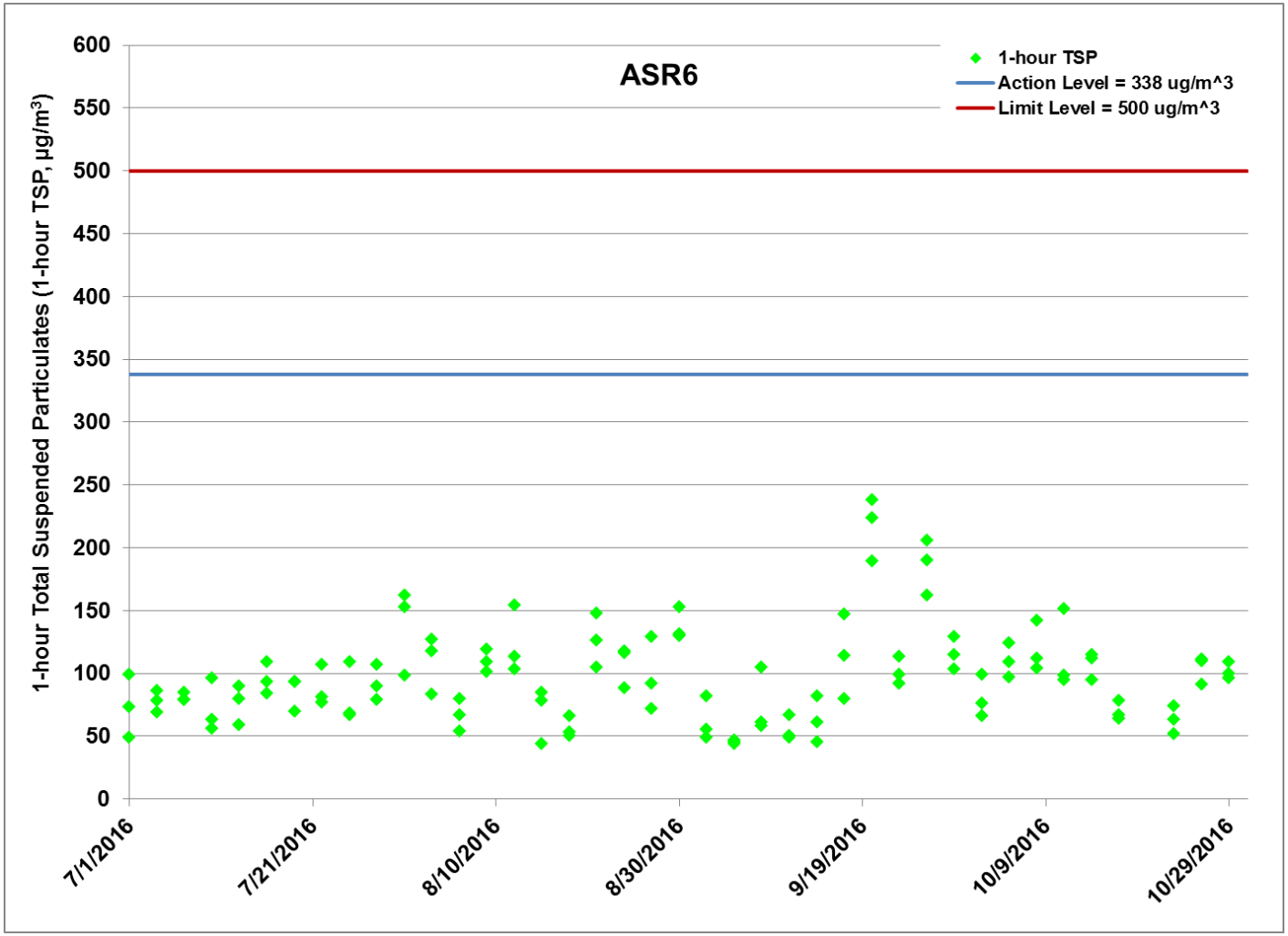


Figure G.2 Impact Monitoring – 1-hour Total Suspended Particulates (µg/m³) at ASR6 between 1 July 2016 and 1 October 2016 during impact monitoring period. The weather conditions during the monitoring period varied from sunny to cloudy. Major land-based construction activities included: Jet Grouting, CSM Ground Treatment and Diaphragm Wall Construction (1/7/2016 – 31/10/2016) and Box Culvert Extension (1/7/2016 – 31/10/2016). *Ref: 0212330_Impact AQM graphs_ October 2016_REV a.xlsx*

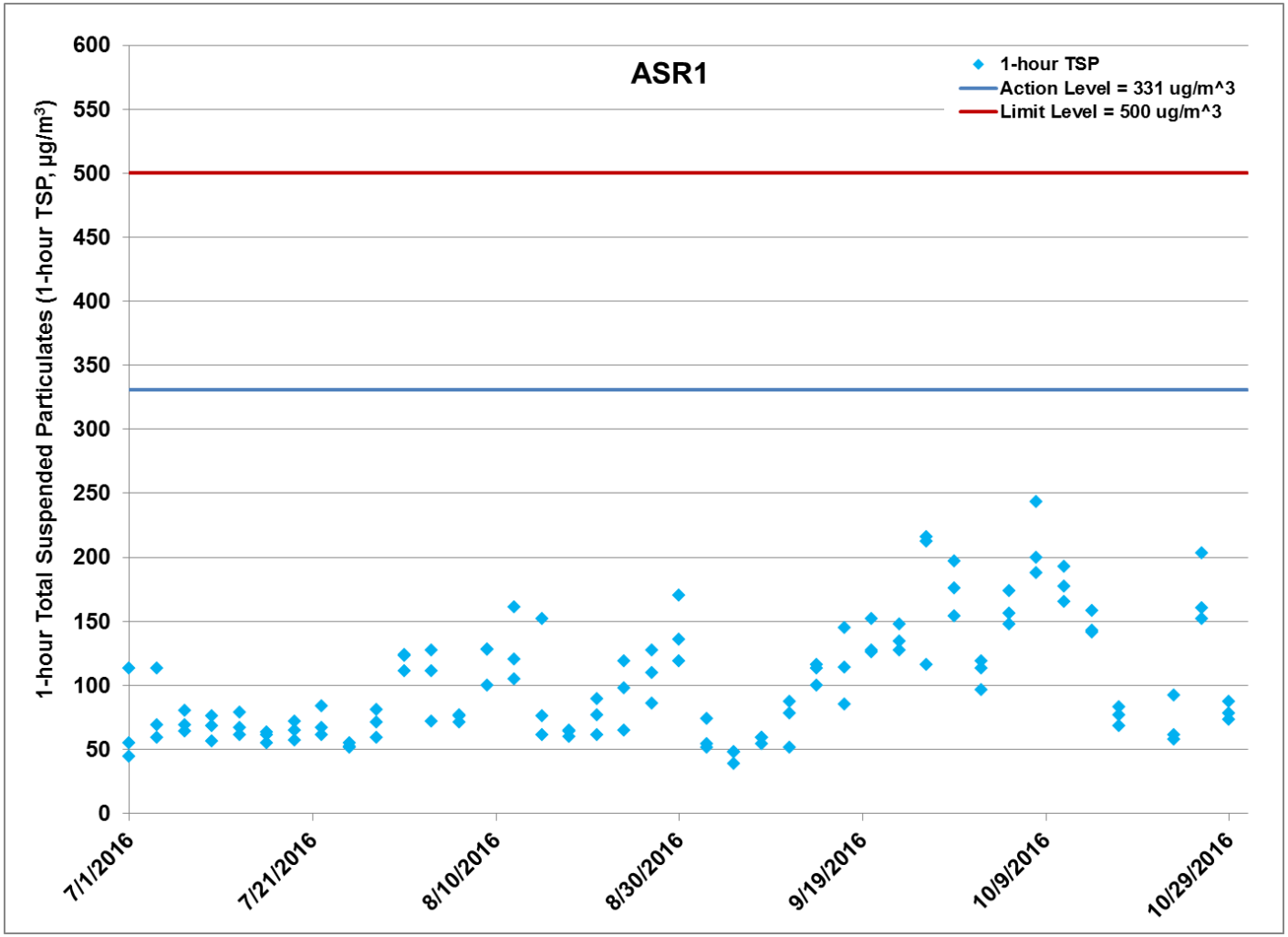


Figure G.3 Impact Monitoring – 1-hour Total Suspended Particulates (µg/m³) at ASR1 between 1 July 2016 and 1 October 2016 during impact monitoring period. The weather conditions during the monitoring period varied from sunny to cloudy. Major land-based construction activities included: Jet Grouting, CSM Ground Treatment and Diaphragm Wall Construction (1/7/2016 – 31/10/2016) and Box Culvert Extension (1/7/2016 – 31/10/2016). *Ref: 0212330_Impact AQM graphs_ October 2016_REV a.xlsx*

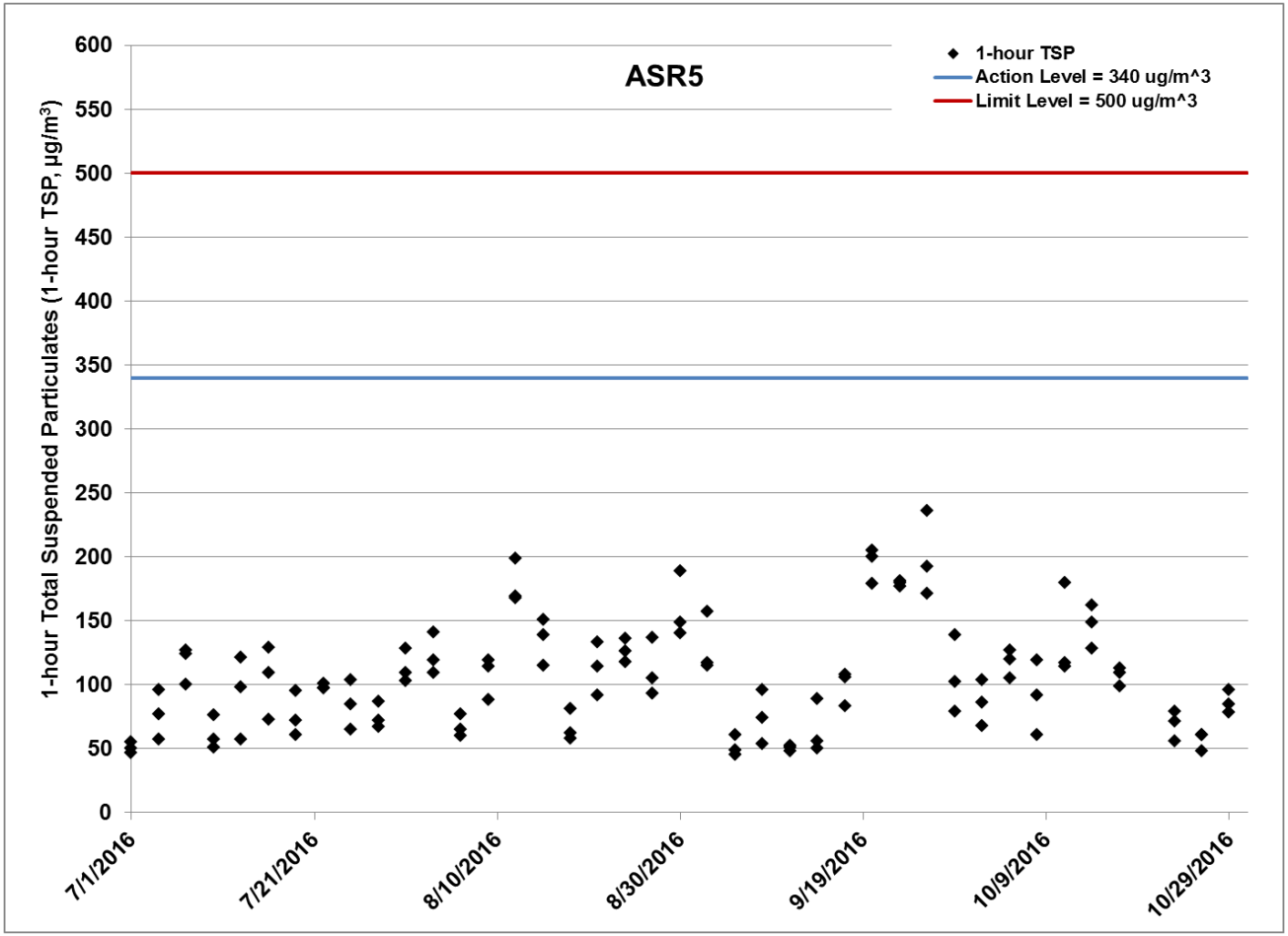


Figure G.4 Impact Monitoring – 1-hour Total Suspended Particulates (µg/m³) at ASR5 between 1 July 2016 and 1 October 2016 during impact monitoring period. The weather conditions during the monitoring period varied from sunny to cloudy. Major land-based construction activities included: Jet Grouting, CSM Ground Treatment and Diaphragm Wall Construction (1/7/2016 – 31/10/2016) and Box Culvert Extension (1/7/2016 – 31/10/2016). *Ref: 0212330_Impact AQM graphs_ October 2016_REV a.xlsx*

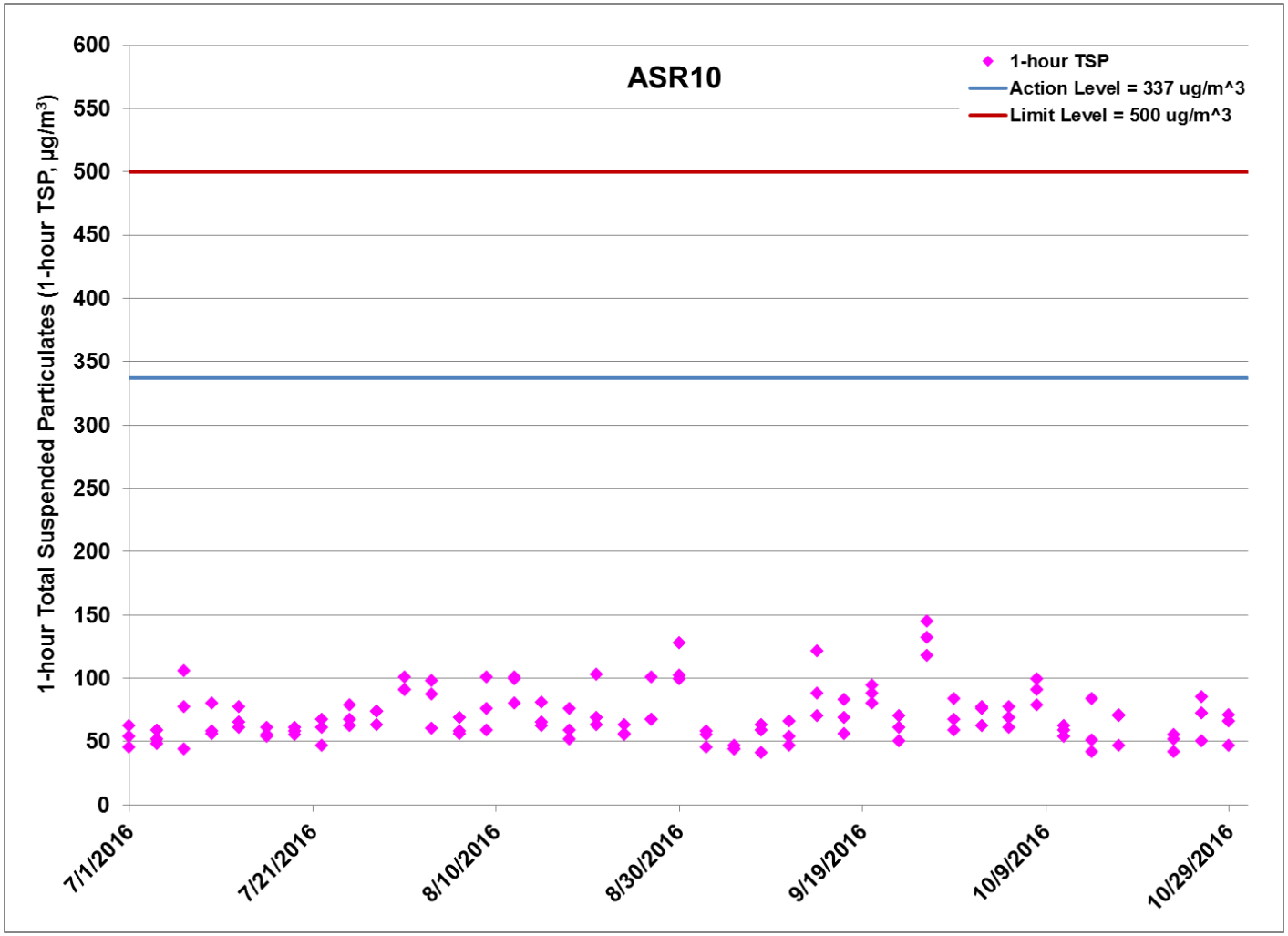


Figure G.5 Impact Monitoring – 1-hour Total Suspended Particulates (µg/m³) at ASR10 between 1 July 2016 and 1 October 2016 during impact monitoring period. The weather conditions during the monitoring period varied from sunny to cloudy. Major land-based construction activities included: Jet Grouting, CSM Ground Treatment and Diaphragm Wall Construction (1/7/2016 – 31/10/2016) and Box Culvert Extension (1/7/2016 – 31/10/2016). *Ref: 0212330_Impact AQM graphs_ October 2016_REV a.xlsx*

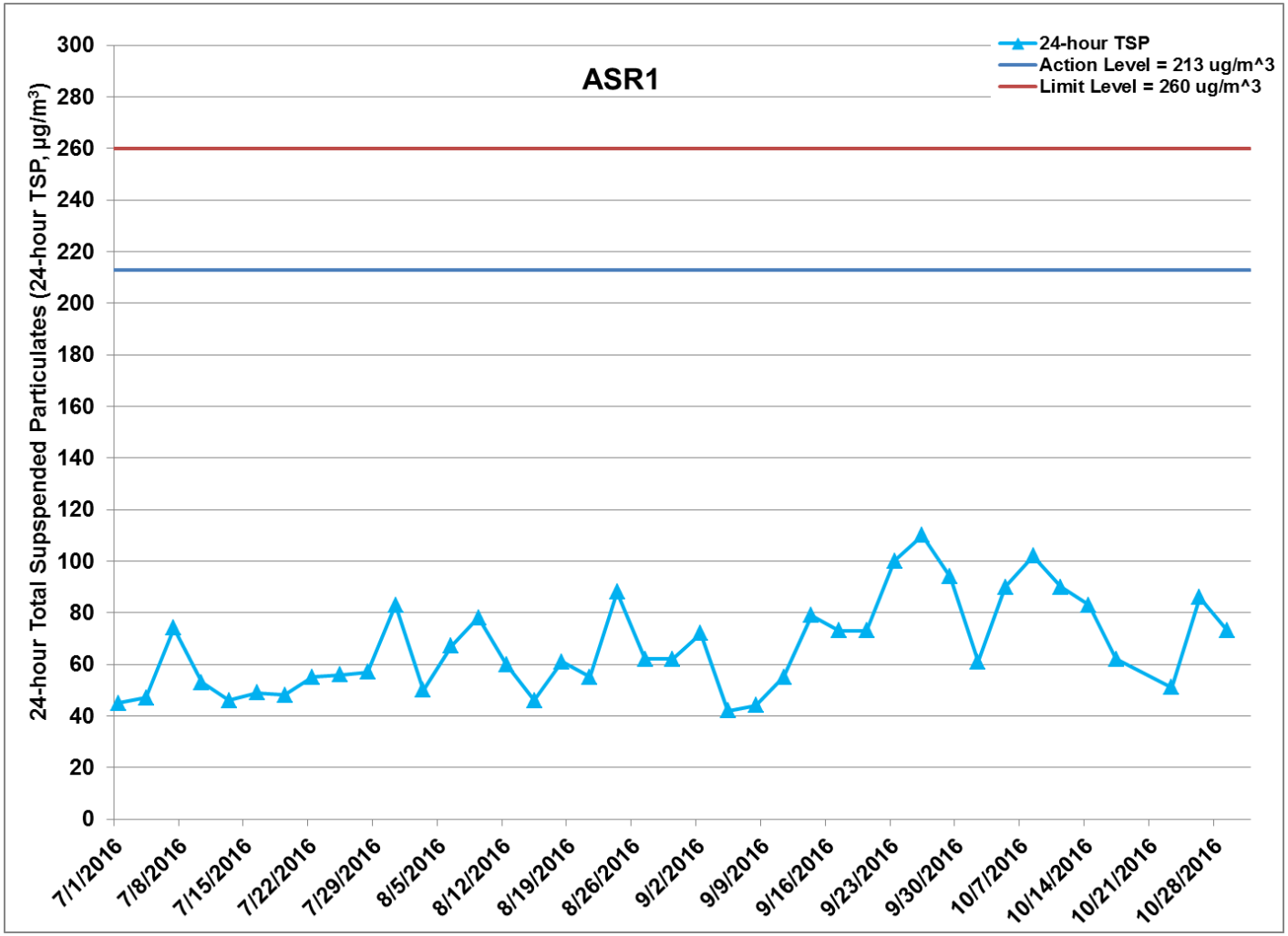


Figure G.6 Impact Monitoring – 24-hour Total Suspended Particulates (µg/m³) at ASR1 between 1 July 2016 and 1 October 2016 during impact monitoring period. The weather conditions during the monitoring period varied from sunny to cloudy. Major land-based construction activities included: Jet Grouting, CSM Ground Treatment and Diaphragm Wall Construction (1/7/2016 – 31/10/2016) and Box Culvert Extension (1/7/2016 – 31/10/2016). *Ref: 0212330_Impact AQM graphs_ October 2016_REV a.xlsx*

ERM

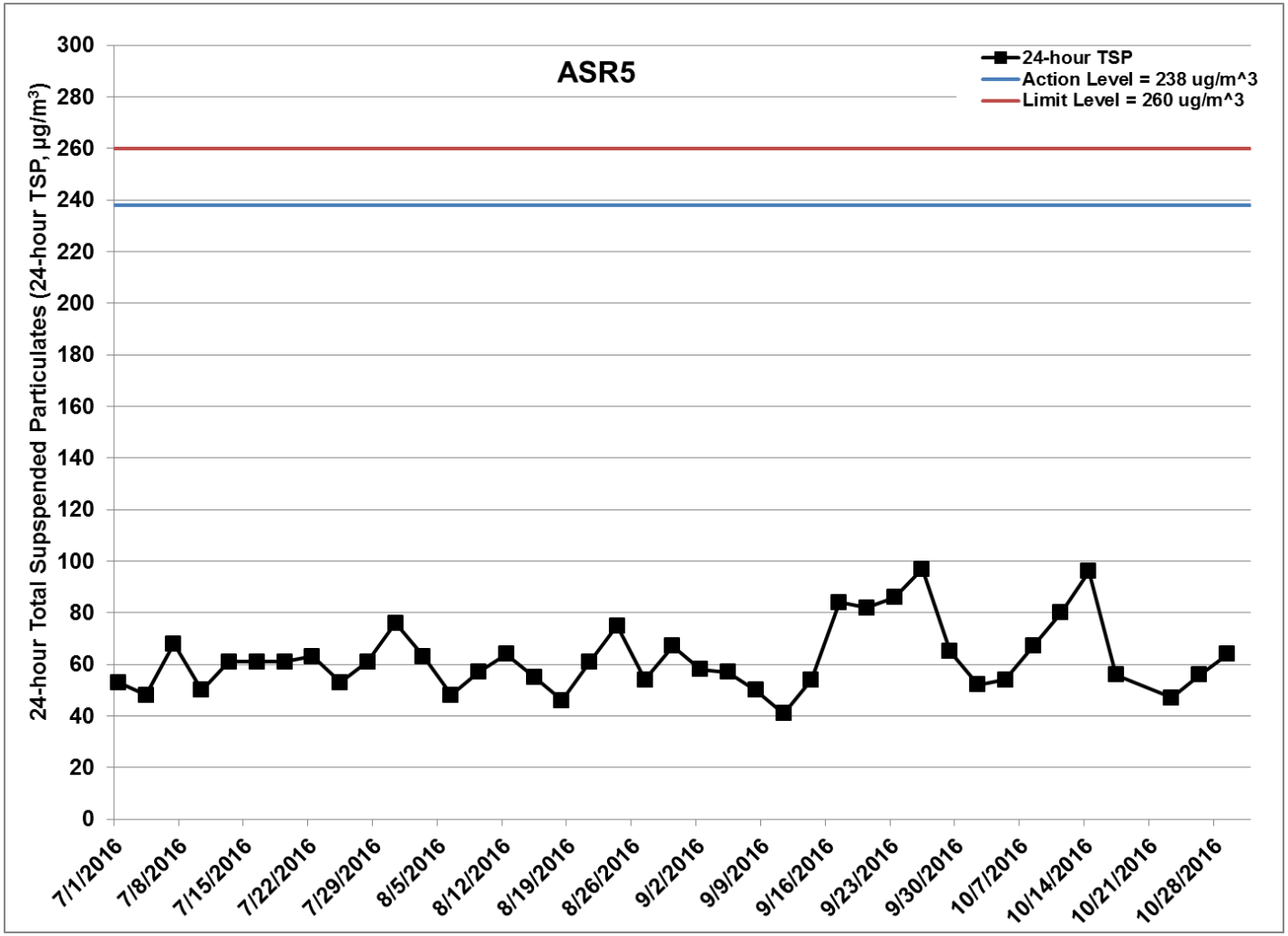


Figure G.7 Impact Monitoring – 24-hour Total Suspended Particulates (µg/m³) at ASR5 between 1 July 2016 and 1 October 2016 during impact monitoring period. The weather conditions during the monitoring period varied from sunny to cloudy. Major land-based construction activities included: Jet Grouting, CSM Ground Treatment and Diaphragm Wall Construction (1/7/2016 – 31/10/2016) and Box Culvert Extension (1/7/2016 – 31/10/2016). *Ref: 0212330_Impact AQM graphs_ October 2016_REV a.xlsx*

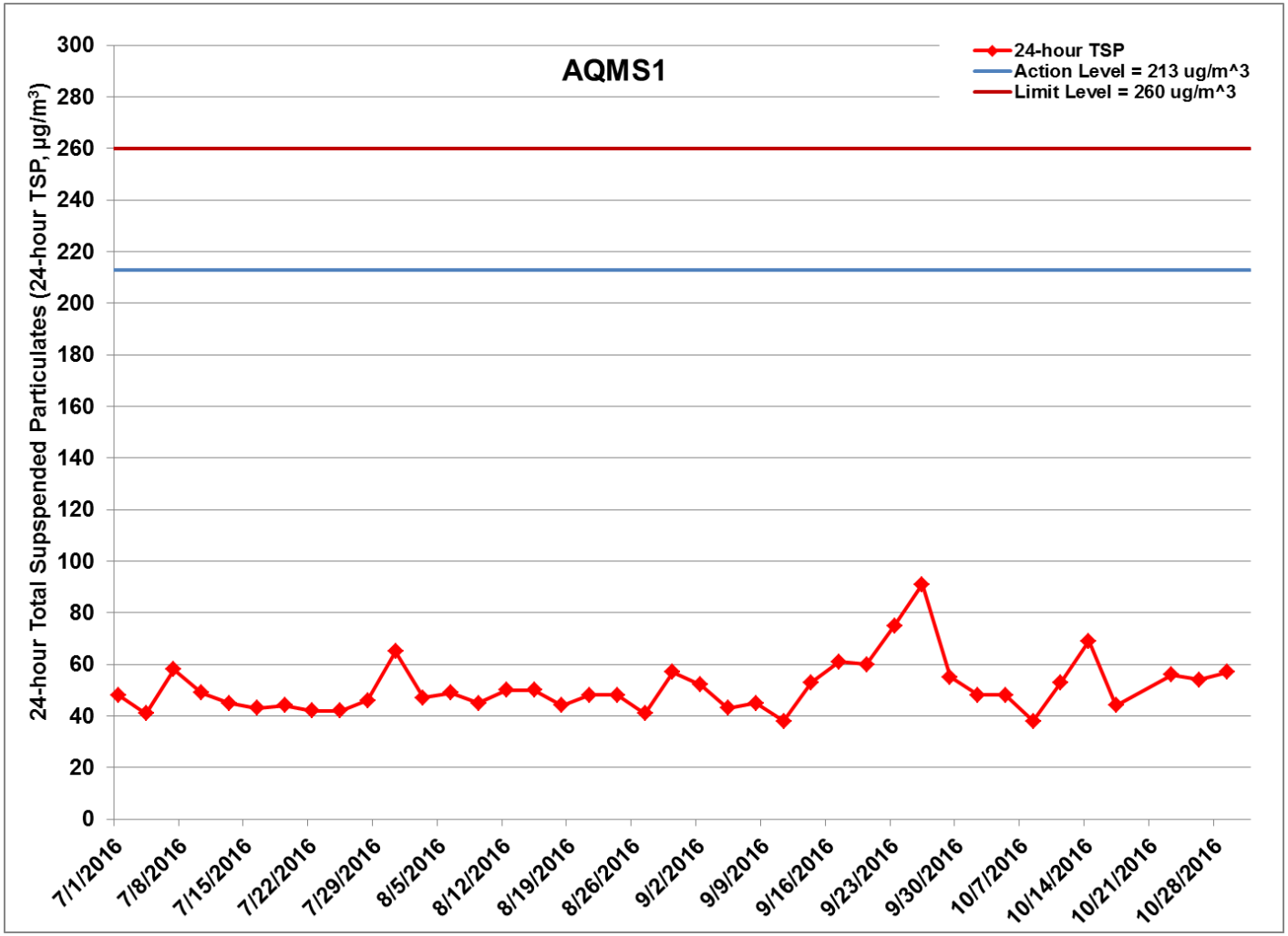


Figure G.8 Impact Monitoring – 24-hour Total Suspended Particulates (µg/m³) at AQMS1 between 1 July 2016 and 1 October 2016 during impact monitoring period. The weather conditions during the monitoring period varied from sunny to cloudy. Major land-based construction activities included: Jet Grouting, CSM Ground Treatment and Diaphragm Wall Construction (1/7/2016 – 31/10/2016) and Box Culvert Extension (1/7/2016 – 31/10/2016). *Ref: 0212330_Impact AQM graphs_ October 2016_REV a.xlsx*

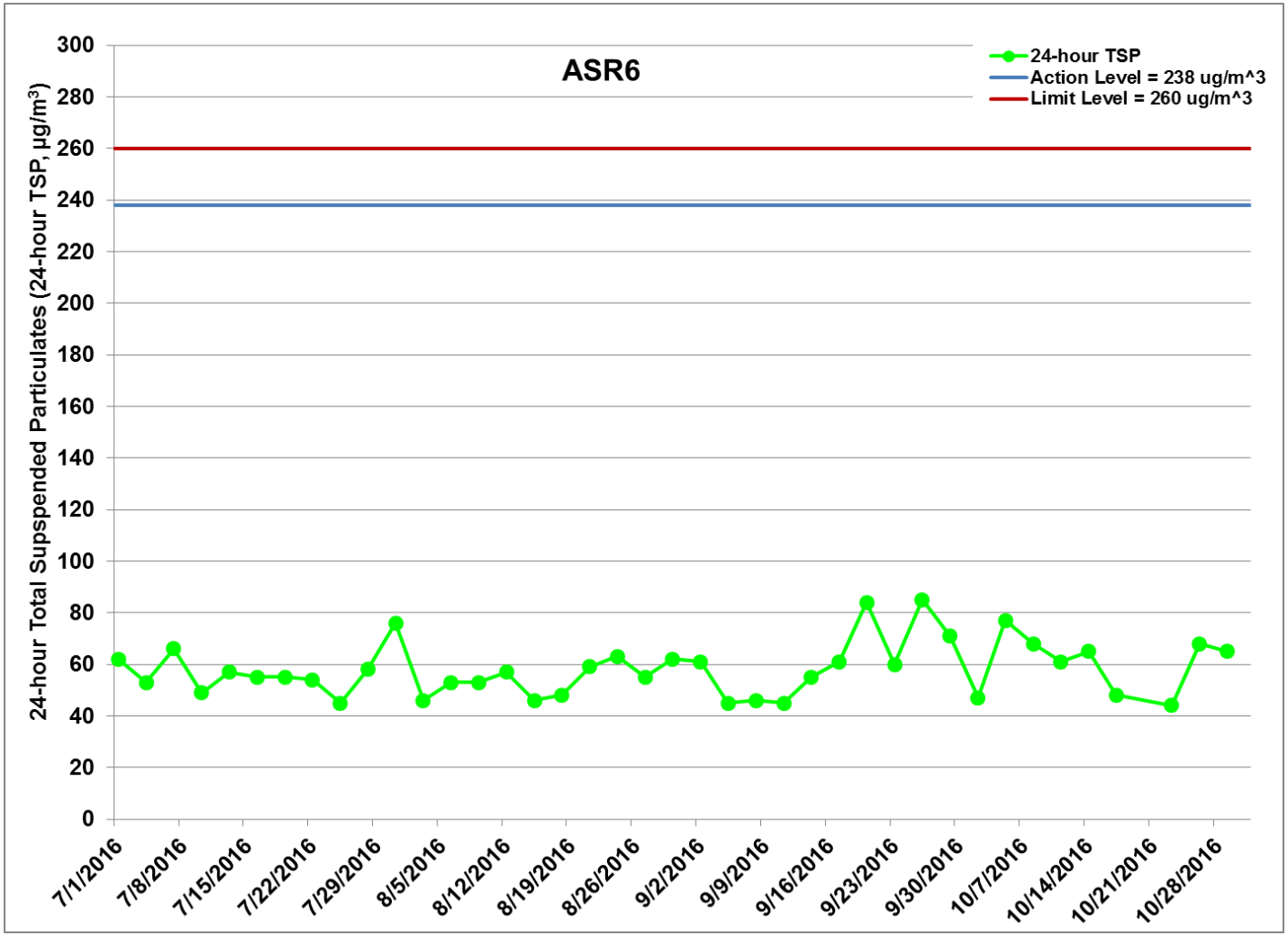


Figure G.9 Impact Monitoring – 24-hour Total Suspended Particulates (µg/m³) at ASR6 between 1 July 2016 and 1 October 2016 during impact monitoring period. The weather conditions during the monitoring period varied from sunny to cloudy. Major land-based construction activities included: Jet Grouting, CSM Ground Treatment and Diaphragm Wall Construction (1/7/2016 – 31/10/2016) and Box Culvert Extension (1/7/2016 – 31/10/2016). *Ref: 0212330_Impact AQM graphs_ October 2016_REV a.xlsx*

ERM

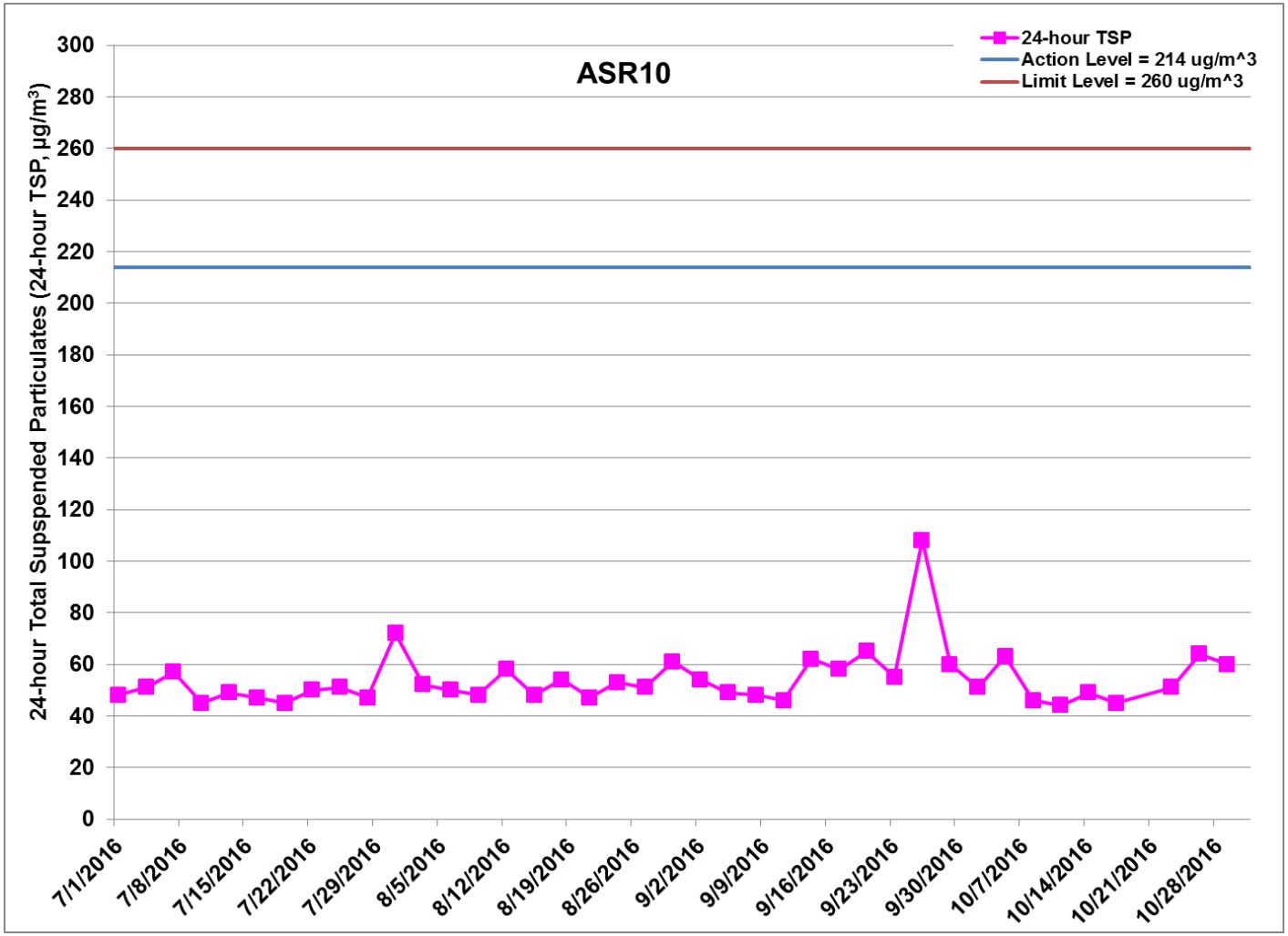


Figure G.10 Impact Monitoring – 24-hour Total Suspended Particulates (µg/m³) at ASR10 between 1 July 2016 and 1 October 2016 during impact monitoring period. The weather conditions during the monitoring period varied from sunny to cloudy. Major land-based construction activities included: Jet Grouting, CSM Ground Treatment and Diaphragm Wall Construction (1/7/2016 – 31/10/2016) and Box Culvert Extension (1/7/2016 – 31/10/2016). *Ref: 0212330_Impact AQM graphs_ October 2016_REV a.xlsx*

ERM

Project	Works	Date	Station	Weather	Start time	Parameters	Results	units
TMCLKL	HY/2012/08	2016-10-02	AQMS1	Sunny	09:56	1-hour TSP	54	ug/m3
TMCLKL	HY/2012/08	2016-10-02	AQMS1	Sunny	10:58	1-hour TSP	59	ug/m3
TMCLKL	HY/2012/08	2016-10-02	AQMS1	Sunny	12:00	1-hour TSP	61	ug/m3
TMCLKL	HY/2012/08	2016-10-02	ASR1	Sunny	09:45	1-hour TSP	119	ug/m3
TMCLKL	HY/2012/08	2016-10-02	ASR1	Sunny	10:47	1-hour TSP	113	ug/m3
TMCLKL	HY/2012/08	2016-10-02	ASR1	Sunny	11:49	1-hour TSP	96	ug/m3
TMCLKL	HY/2012/08	2016-10-02	ASR10	Sunny	09:13	1-hour TSP	62	ug/m3
TMCLKL	HY/2012/08	2016-10-02	ASR10	Sunny	10:15	1-hour TSP	77	ug/m3
TMCLKL	HY/2012/08	2016-10-02	ASR10	Sunny	11:17	1-hour TSP	76	ug/m3
TMCLKL	HY/2012/08	2016-10-02	ASR5	Sunny	09:34	1-hour TSP	104	ug/m3
TMCLKL	HY/2012/08	2016-10-02	ASR5	Sunny	10:36	1-hour TSP	68	ug/m3
TMCLKL	HY/2012/08	2016-10-02	ASR5	Sunny	11:38	1-hour TSP	86	ug/m3
TMCLKL	HY/2012/08	2016-10-02	ASR6	Sunny	09:24	1-hour TSP	99	ug/m3
TMCLKL	HY/2012/08	2016-10-02	ASR6	Sunny	10:26	1-hour TSP	66	ug/m3
TMCLKL	HY/2012/08	2016-10-02	ASR6	Sunny	11:28	1-hour TSP	76	ug/m3
TMCLKL	HY/2012/08	2016-10-05	AQMS1	Cloudy	14:04	1-hour TSP	78	ug/m3
TMCLKL	HY/2012/08	2016-10-05	AQMS1	Cloudy	15:06	1-hour TSP	70	ug/m3
TMCLKL	HY/2012/08	2016-10-05	AQMS1	Cloudy	16:08	1-hour TSP	66	ug/m3
TMCLKL	HY/2012/08	2016-10-05	ASR1	Cloudy	13:53	1-hour TSP	148	ug/m3
TMCLKL	HY/2012/08	2016-10-05	ASR1	Cloudy	14:55	1-hour TSP	174	ug/m3
TMCLKL	HY/2012/08	2016-10-05	ASR1	Cloudy	15:57	1-hour TSP	156	ug/m3
TMCLKL	HY/2012/08	2016-10-05	ASR10	Cloudy	13:20	1-hour TSP	61	ug/m3
TMCLKL	HY/2012/08	2016-10-05	ASR10	Cloudy	14:22	1-hour TSP	69	ug/m3
TMCLKL	HY/2012/08	2016-10-05	ASR10	Cloudy	15:24	1-hour TSP	77	ug/m3
TMCLKL	HY/2012/08	2016-10-05	ASR5	Cloudy	13:42	1-hour TSP	120	ug/m3
TMCLKL	HY/2012/08	2016-10-05	ASR5	Cloudy	14:44	1-hour TSP	105	ug/m3
TMCLKL	HY/2012/08	2016-10-05	ASR5	Cloudy	15:46	1-hour TSP	127	ug/m3
TMCLKL	HY/2012/08	2016-10-05	ASR6	Cloudy	13:30	1-hour TSP	97	ug/m3
TMCLKL	HY/2012/08	2016-10-05	ASR6	Cloudy	14:32	1-hour TSP	109	ug/m3
TMCLKL	HY/2012/08	2016-10-05	ASR6	Cloudy	15:34	1-hour TSP	124	ug/m3

Project	Works	Date	Station	Weather	Start time	Parameters	Results	units
TMCLKL	HY/2012/08	2016-10-08	AQMS1	Cloudy	09:28	1-hour TSP	40	ug/m3
TMCLKL	HY/2012/08	2016-10-08	AQMS1	Cloudy	10:30	1-hour TSP	82	ug/m3
TMCLKL	HY/2012/08	2016-10-08	AQMS1	Cloudy	11:32	1-hour TSP	62	ug/m3
TMCLKL	HY/2012/08	2016-10-08	ASR1	Cloudy	09:17	1-hour TSP	188	ug/m3
TMCLKL	HY/2012/08	2016-10-08	ASR1	Cloudy	10:19	1-hour TSP	243	ug/m3
TMCLKL	HY/2012/08	2016-10-08	ASR1	Cloudy	11:21	1-hour TSP	200	ug/m3
TMCLKL	HY/2012/08	2016-10-08	ASR10	Cloudy	08:45	1-hour TSP	91	ug/m3
TMCLKL	HY/2012/08	2016-10-08	ASR10	Cloudy	09:47	1-hour TSP	79	ug/m3
TMCLKL	HY/2012/08	2016-10-08	ASR10	Cloudy	10:49	1-hour TSP	99	ug/m3
TMCLKL	HY/2012/08	2016-10-08	ASR5	Cloudy	09:06	1-hour TSP	92	ug/m3
TMCLKL	HY/2012/08	2016-10-08	ASR5	Cloudy	10:08	1-hour TSP	61	ug/m3
TMCLKL	HY/2012/08	2016-10-08	ASR5	Cloudy	11:10	1-hour TSP	119	ug/m3
TMCLKL	HY/2012/08	2016-10-08	ASR6	Cloudy	08:55	1-hour TSP	104	ug/m3
TMCLKL	HY/2012/08	2016-10-08	ASR6	Cloudy	09:57	1-hour TSP	112	ug/m3
TMCLKL	HY/2012/08	2016-10-08	ASR6	Cloudy	10:59	1-hour TSP	142	ug/m3
TMCLKL	HY/2012/08	2016-10-11	AQMS1	Cloudy	14:03	1-hour TSP	68	ug/m3
TMCLKL	HY/2012/08	2016-10-11	AQMS1	Cloudy	15:05	1-hour TSP	105	ug/m3
TMCLKL	HY/2012/08	2016-10-11	AQMS1	Cloudy	16:07	1-hour TSP	87	ug/m3
TMCLKL	HY/2012/08	2016-10-11	ASR1	Cloudy	13:52	1-hour TSP	193	ug/m3
TMCLKL	HY/2012/08	2016-10-11	ASR1	Cloudy	14:54	1-hour TSP	165	ug/m3
TMCLKL	HY/2012/08	2016-10-11	ASR1	Cloudy	15:56	1-hour TSP	177	ug/m3
TMCLKL	HY/2012/08	2016-10-11	ASR10	Cloudy	13:20	1-hour TSP	62	ug/m3
TMCLKL	HY/2012/08	2016-10-11	ASR10	Cloudy	14:22	1-hour TSP	54	ug/m3
TMCLKL	HY/2012/08	2016-10-11	ASR10	Cloudy	15:24	1-hour TSP	59	ug/m3
TMCLKL	HY/2012/08	2016-10-11	ASR5	Cloudy	13:41	1-hour TSP	180	ug/m3
TMCLKL	HY/2012/08	2016-10-11	ASR5	Cloudy	14:43	1-hour TSP	114	ug/m3
TMCLKL	HY/2012/08	2016-10-11	ASR5	Cloudy	15:45	1-hour TSP	117	ug/m3
TMCLKL	HY/2012/08	2016-10-11	ASR6	Cloudy	13:30	1-hour TSP	151	ug/m3
TMCLKL	HY/2012/08	2016-10-11	ASR6	Cloudy	14:32	1-hour TSP	95	ug/m3
TMCLKL	HY/2012/08	2016-10-11	ASR6	Cloudy	15:34	1-hour TSP	98	ug/m3

Project	Works	Date	Station	Weather	Start time	Parameters	Results	units
TMCLKL	HY/2012/08	2016-10-14	AQMS1	Cloudy	09:43	1-hour TSP	130	ug/m3
TMCLKL	HY/2012/08	2016-10-14	AQMS1	Cloudy	10:45	1-hour TSP	101	ug/m3
TMCLKL	HY/2012/08	2016-10-14	AQMS1	Cloudy	11:47	1-hour TSP	165	ug/m3
TMCLKL	HY/2012/08	2016-10-14	ASR1	Cloudy	09:32	1-hour TSP	158	ug/m3
TMCLKL	HY/2012/08	2016-10-14	ASR1	Cloudy	10:34	1-hour TSP	143	ug/m3
TMCLKL	HY/2012/08	2016-10-14	ASR1	Cloudy	11:36	1-hour TSP	141	ug/m3
TMCLKL	HY/2012/08	2016-10-14	ASR10	Cloudy	09:00	1-hour TSP	84	ug/m3
TMCLKL	HY/2012/08	2016-10-14	ASR10	Cloudy	10:02	1-hour TSP	51	ug/m3
TMCLKL	HY/2012/08	2016-10-14	ASR10	Cloudy	11:04	1-hour TSP	42	ug/m3
TMCLKL	HY/2012/08	2016-10-14	ASR5	Cloudy	09:21	1-hour TSP	128	ug/m3
TMCLKL	HY/2012/08	2016-10-14	ASR5	Cloudy	10:23	1-hour TSP	149	ug/m3
TMCLKL	HY/2012/08	2016-10-14	ASR5	Cloudy	11:25	1-hour TSP	162	ug/m3
TMCLKL	HY/2012/08	2016-10-14	ASR6	Cloudy	09:10	1-hour TSP	112	ug/m3
TMCLKL	HY/2012/08	2016-10-14	ASR6	Cloudy	10:12	1-hour TSP	95	ug/m3
TMCLKL	HY/2012/08	2016-10-14	ASR6	Cloudy	11:14	1-hour TSP	115	ug/m3
TMCLKL	HY/2012/08	2016-10-17	AQMS1	Cloudy	13:57	1-hour TSP	46	ug/m3
TMCLKL	HY/2012/08	2016-10-17	AQMS1	Cloudy	14:59	1-hour TSP	50	ug/m3
TMCLKL	HY/2012/08	2016-10-17	AQMS1	Cloudy	16:01	1-hour TSP	43	ug/m3
TMCLKL	HY/2012/08	2016-10-17	ASR1	Cloudy	13:47	1-hour TSP	77	ug/m3
TMCLKL	HY/2012/08	2016-10-17	ASR1	Cloudy	14:49	1-hour TSP	83	ug/m3
TMCLKL	HY/2012/08	2016-10-17	ASR1	Cloudy	15:51	1-hour TSP	68	ug/m3
TMCLKL	HY/2012/08	2016-10-17	ASR10	Cloudy	13:14	1-hour TSP	71	ug/m3
TMCLKL	HY/2012/08	2016-10-17	ASR10	Cloudy	14:16	1-hour TSP	47	ug/m3
TMCLKL	HY/2012/08	2016-10-17	ASR10	Cloudy	15:18	1-hour TSP	70	ug/m3
TMCLKL	HY/2012/08	2016-10-17	ASR5	Cloudy	13:36	1-hour TSP	109	ug/m3
TMCLKL	HY/2012/08	2016-10-17	ASR5	Cloudy	14:38	1-hour TSP	113	ug/m3
TMCLKL	HY/2012/08	2016-10-17	ASR5	Cloudy	15:40	1-hour TSP	99	ug/m3
TMCLKL	HY/2012/08	2016-10-17	ASR6	Cloudy	13:25	1-hour TSP	67	ug/m3
TMCLKL	HY/2012/08	2016-10-17	ASR6	Cloudy	14:27	1-hour TSP	64	ug/m3
TMCLKL	HY/2012/08	2016-10-17	ASR6	Cloudy	15:29	1-hour TSP	78	ug/m3

Project	Works	Date	Station	Weather	Start time	Parameters	Results	units
TMCLKL	HY/2012/08	2016-10-23	AQMS1	Sunny	14:23	1-hour TSP	49	ug/m3
TMCLKL	HY/2012/08	2016-10-23	AQMS1	Sunny	15:25	1-hour TSP	84	ug/m3
TMCLKL	HY/2012/08	2016-10-23	AQMS1	Sunny	16:27	1-hour TSP	94	ug/m3
TMCLKL	HY/2012/08	2016-10-23	ASR1	Sunny	14:12	1-hour TSP	92	ug/m3
TMCLKL	HY/2012/08	2016-10-23	ASR1	Sunny	15:14	1-hour TSP	58	ug/m3
TMCLKL	HY/2012/08	2016-10-23	ASR1	Sunny	16:16	1-hour TSP	61	ug/m3
TMCLKL	HY/2012/08	2016-10-23	ASR10	Sunny	13:40	1-hour TSP	52	ug/m3
TMCLKL	HY/2012/08	2016-10-23	ASR10	Sunny	14:42	1-hour TSP	42	ug/m3
TMCLKL	HY/2012/08	2016-10-23	ASR10	Sunny	15:44	1-hour TSP	55	ug/m3
TMCLKL	HY/2012/08	2016-10-23	ASR5	Sunny	14:01	1-hour TSP	71	ug/m3
TMCLKL	HY/2012/08	2016-10-23	ASR5	Sunny	15:03	1-hour TSP	79	ug/m3
TMCLKL	HY/2012/08	2016-10-23	ASR5	Sunny	16:05	1-hour TSP	56	ug/m3
TMCLKL	HY/2012/08	2016-10-23	ASR6	Sunny	13:50	1-hour TSP	74	ug/m3
TMCLKL	HY/2012/08	2016-10-23	ASR6	Sunny	14:52	1-hour TSP	52	ug/m3
TMCLKL	HY/2012/08	2016-10-23	ASR6	Sunny	15:54	1-hour TSP	63	ug/m3
TMCLKL	HY/2012/08	2016-10-26	AQMS1	Sunny	15:15	1-hour TSP	64	ug/m3
TMCLKL	HY/2012/08	2016-10-26	AQMS1	Sunny	16:17	1-hour TSP	75	ug/m3
TMCLKL	HY/2012/08	2016-10-26	AQMS1	Sunny	17:19	1-hour TSP	62	ug/m3
TMCLKL	HY/2012/08	2016-10-26	ASR1	Sunny	15:04	1-hour TSP	203	ug/m3
TMCLKL	HY/2012/08	2016-10-26	ASR1	Sunny	16:06	1-hour TSP	152	ug/m3
TMCLKL	HY/2012/08	2016-10-26	ASR1	Sunny	17:08	1-hour TSP	160	ug/m3
TMCLKL	HY/2012/08	2016-10-26	ASR10	Sunny	14:33	1-hour TSP	50	ug/m3
TMCLKL	HY/2012/08	2016-10-26	ASR10	Sunny	15:35	1-hour TSP	72	ug/m3
TMCLKL	HY/2012/08	2016-10-26	ASR10	Sunny	16:37	1-hour TSP	85	ug/m3
TMCLKL	HY/2012/08	2016-10-26	ASR5	Sunny	14:53	1-hour TSP	61	ug/m3
TMCLKL	HY/2012/08	2016-10-26	ASR5	Sunny	15:55	1-hour TSP	48	ug/m3
TMCLKL	HY/2012/08	2016-10-26	ASR5	Sunny	16:57	1-hour TSP	61	ug/m3
TMCLKL	HY/2012/08	2016-10-26	ASR6	Sunny	14:43	1-hour TSP	110	ug/m3
TMCLKL	HY/2012/08	2016-10-26	ASR6	Sunny	15:45	1-hour TSP	91	ug/m3
TMCLKL	HY/2012/08	2016-10-26	ASR6	Sunny	16:47	1-hour TSP	111	ug/m3

Project	Works	Date	Station	Weather	Start time	Parameters	Results	units
TMCLKL	HY/2012/08	2016-10-29	AQMS1	Sunny	08:42	1-hour TSP	60	ug/m3
TMCLKL	HY/2012/08	2016-10-29	AQMS1	Sunny	09:44	1-hour TSP	73	ug/m3
TMCLKL	HY/2012/08	2016-10-29	AQMS1	Sunny	10:46	1-hour TSP	77	ug/m3
TMCLKL	HY/2012/08	2016-10-29	ASR1	Sunny	08:31	1-hour TSP	87	ug/m3
TMCLKL	HY/2012/08	2016-10-29	ASR1	Sunny	09:33	1-hour TSP	78	ug/m3
TMCLKL	HY/2012/08	2016-10-29	ASR1	Sunny	10:35	1-hour TSP	73	ug/m3
TMCLKL	HY/2012/08	2016-10-29	ASR10	Sunny	08:00	1-hour TSP	66	ug/m3
TMCLKL	HY/2012/08	2016-10-29	ASR10	Sunny	09:02	1-hour TSP	47	ug/m3
TMCLKL	HY/2012/08	2016-10-29	ASR10	Sunny	10:04	1-hour TSP	71	ug/m3
TMCLKL	HY/2012/08	2016-10-29	ASR5	Sunny	08:20	1-hour TSP	96	ug/m3
TMCLKL	HY/2012/08	2016-10-29	ASR5	Sunny	09:22	1-hour TSP	78	ug/m3
TMCLKL	HY/2012/08	2016-10-29	ASR5	Sunny	10:24	1-hour TSP	85	ug/m3
TMCLKL	HY/2012/08	2016-10-29	ASR6	Sunny	08:10	1-hour TSP	100	ug/m3
TMCLKL	HY/2012/08	2016-10-29	ASR6	Sunny	09:12	1-hour TSP	109	ug/m3
TMCLKL	HY/2012/08	2016-10-29	ASR6	Sunny	10:14	1-hour TSP	96	ug/m3
TMCLKL	HY/2012/08	2016-10-02	AQMS1	Sunny	13:02	24-hour TSP	48	ug/m3
TMCLKL	HY/2012/08	2016-10-02	ASR1	Sunny	12:51	24-hour TSP	61	ug/m3
TMCLKL	HY/2012/08	2016-10-02	ASR10	Sunny	12:19	24-hour TSP	51	ug/m3
TMCLKL	HY/2012/08	2016-10-02	ASR5	Sunny	12:40	24-hour TSP	52	ug/m3
TMCLKL	HY/2012/08	2016-10-02	ASR6	Sunny	12:30	24-hour TSP	47	ug/m3
TMCLKL	HY/2012/08	2016-10-05	AQMS1	Cloudy	17:10	24-hour TSP	48	ug/m3
TMCLKL	HY/2012/08	2016-10-05	ASR1	Cloudy	16:59	24-hour TSP	90	ug/m3
TMCLKL	HY/2012/08	2016-10-05	ASR10	Cloudy	16:26	24-hour TSP	63	ug/m3
TMCLKL	HY/2012/08	2016-10-05	ASR5	Cloudy	16:48	24-hour TSP	54	ug/m3
TMCLKL	HY/2012/08	2016-10-05	ASR6	Cloudy	16:36	24-hour TSP	77	ug/m3
TMCLKL	HY/2012/08	2016-10-08	AQMS1	Cloudy	12:34	24-hour TSP	38	ug/m3
TMCLKL	HY/2012/08	2016-10-08	ASR1	Cloudy	12:23	24-hour TSP	102	ug/m3
TMCLKL	HY/2012/08	2016-10-08	ASR10	Cloudy	11:51	24-hour TSP	46	ug/m3
TMCLKL	HY/2012/08	2016-10-08	ASR5	Cloudy	12:12	24-hour TSP	67	ug/m3
TMCLKL	HY/2012/08	2016-10-08	ASR6	Cloudy	12:01	24-hour TSP	68	ug/m3

Project	Works	Date	Station	Weather	Start time	Parameters	Results	units
TMCLKL	HY/2012/08	2016-10-11	AQMS1	Cloudy	17:09	24-hour TSP	53	ug/m3
TMCLKL	HY/2012/08	2016-10-11	ASR1	Cloudy	16:58	24-hour TSP	90	ug/m3
TMCLKL	HY/2012/08	2016-10-11	ASR10	Cloudy	16:26	24-hour TSP	44	ug/m3
TMCLKL	HY/2012/08	2016-10-11	ASR5	Cloudy	16:47	24-hour TSP	80	ug/m3
TMCLKL	HY/2012/08	2016-10-11	ASR6	Cloudy	16:36	24-hour TSP	61	ug/m3
TMCLKL	HY/2012/08	2016-10-14	AQMS1	Cloudy	12:49	24-hour TSP	69	ug/m3
TMCLKL	HY/2012/08	2016-10-14	ASR1	Cloudy	12:38	24-hour TSP	83	ug/m3
TMCLKL	HY/2012/08	2016-10-14	ASR10	Cloudy	12:06	24-hour TSP	49	ug/m3
TMCLKL	HY/2012/08	2016-10-14	ASR5	Cloudy	12:27	24-hour TSP	96	ug/m3
TMCLKL	HY/2012/08	2016-10-14	ASR6	Cloudy	12:16	24-hour TSP	65	ug/m3
TMCLKL	HY/2012/08	2016-10-17	AQMS1	Cloudy	17:03	24-hour TSP	44	ug/m3
TMCLKL	HY/2012/08	2016-10-17	ASR1	Cloudy	16:53	24-hour TSP	62	ug/m3
TMCLKL	HY/2012/08	2016-10-17	ASR10	Cloudy	16:20	24-hour TSP	45	ug/m3
TMCLKL	HY/2012/08	2016-10-17	ASR5	Cloudy	16:42	24-hour TSP	56	ug/m3
TMCLKL	HY/2012/08	2016-10-17	ASR6	Cloudy	16:31	24-hour TSP	48	ug/m3
TMCLKL	HY/2012/08	2016-10-23	AQMS1	Sunny	17:29	24-hour TSP	56	ug/m3
TMCLKL	HY/2012/08	2016-10-23	ASR1	Sunny	17:18	24-hour TSP	51	ug/m3
TMCLKL	HY/2012/08	2016-10-23	ASR10	Sunny	16:46	24-hour TSP	51	ug/m3
TMCLKL	HY/2012/08	2016-10-23	ASR5	Sunny	17:07	24-hour TSP	47	ug/m3
TMCLKL	HY/2012/08	2016-10-23	ASR6	Sunny	16:56	24-hour TSP	44	ug/m3
TMCLKL	HY/2012/08	2016-10-26	AQMS1	Sunny	18:21	24-hour TSP	54	ug/m3
TMCLKL	HY/2012/08	2016-10-26	ASR1	Sunny	18:10	24-hour TSP	86	ug/m3
TMCLKL	HY/2012/08	2016-10-26	ASR10	Sunny	17:39	24-hour TSP	64	ug/m3
TMCLKL	HY/2012/08	2016-10-26	ASR5	Sunny	17:59	24-hour TSP	56	ug/m3
TMCLKL	HY/2012/08	2016-10-26	ASR6	Sunny	17:49	24-hour TSP	68	ug/m3
TMCLKL	HY/2012/08	2016-10-29	AQMS1	Sunny	11:48	24-hour TSP	57	ug/m3
TMCLKL	HY/2012/08	2016-10-29	ASR1	Sunny	11:37	24-hour TSP	73	ug/m3
TMCLKL	HY/2012/08	2016-10-29	ASR10	Sunny	11:06	24-hour TSP	60	ug/m3
TMCLKL	HY/2012/08	2016-10-29	ASR5	Sunny	11:26	24-hour TSP	64	ug/m3
TMCLKL	HY/2012/08	2016-10-29	ASR6	Sunny	11:16	24-hour TSP	65	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)**
16/10/02	0:00	1.3	321
16/10/02	1:00	2.2	322
16/10/02	2:00	1.8	329
16/10/02	3:00	2.2	315
16/10/02	4:00	2.2	331
16/10/02	5:00	1.8	315
16/10/02	6:00	3.1	329
16/10/02	7:00	2.2	308
16/10/02	8:00	0.4	355
16/10/02	9:00	1.8	310
16/10/02	10:00	1.3	309
16/10/02	11:00	1.3	278
16/10/02	12:00	1.8	291
16/10/02	13:00	1.3	272
16/10/02	14:00	1.3	281
16/10/02	15:00	1.3	275
16/10/02	16:00	0.9	225
16/10/02	17:00	0.9	216
16/10/02	18:00	0.4	268
16/10/02	19:00	0.9	171
16/10/02	20:00	1.3	95
16/10/02	21:00	0.9	71
16/10/02	22:00	0.4	82
16/10/02	23:00	0.4	46
16/10/03	0:00	0.4	355
16/10/03	1:00	0.4	1
16/10/03	2:00	0.4	39
16/10/03	3:00	0.4	15
16/10/03	4:00	1.3	10
16/10/03	5:00	0.9	351
16/10/03	6:00	0.4	322
16/10/03	7:00	0.9	331
16/10/03	8:00	0.9	341
16/10/03	9:00	1.8	46
16/10/03	10:00	2.2	5
16/10/03	11:00	2.2	68
16/10/03	12:00	1.8	91
16/10/03	13:00	2.7	132
16/10/03	14:00	2.7	95
16/10/03	15:00	3.1	88
16/10/03	16:00	2.7	92
16/10/03	17:00	2.2	96
16/10/03	18:00	2.2	97
16/10/03	19:00	1.8	100
16/10/03	20:00	1.3	62
16/10/03	21:00	1.8	92
16/10/03	22:00	1.8	74
16/10/03	23:00	1.3	85
16/10/05	0:00	1.3	82
16/10/05	1:00	1.3	93
16/10/05	2:00	1.3	100
16/10/05	3:00	0.4	48
16/10/05	4:00	0.4	35
16/10/05	5:00	0.4	126
16/10/05	6:00	0.9	12

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)**
16/10/05	7:00	0.4	5
16/10/05	8:00	0.9	88
16/10/05	9:00	1.3	19
16/10/05	10:00	1.3	357
16/10/05	11:00	1.3	13
16/10/05	12:00	1.8	21
16/10/05	13:00	1.8	18
16/10/05	14:00	1.8	4
16/10/05	15:00	1.3	312
16/10/05	16:00	1.8	132
16/10/05	17:00	0.4	224
16/10/05	18:00	0.4	256
16/10/05	19:00	1.3	305
16/10/05	20:00	2.2	102
16/10/05	21:00	1.8	98
16/10/05	22:00	1.3	13
16/10/05	23:00	1.3	10
16/10/06	0:00	1.3	15
16/10/06	1:00	0.9	81
16/10/06	2:00	0.9	24
16/10/06	3:00	0.9	21
16/10/06	4:00	0.9	16
16/10/06	5:00	1.3	5
16/10/06	6:00	1.3	13
16/10/06	7:00	1.3	11
16/10/06	8:00	1.8	7
16/10/06	9:00	2.2	8
16/10/06	10:00	2.2	19
16/10/06	11:00	2.2	21
16/10/06	12:00	2.2	15
16/10/06	13:00	1.8	347
16/10/06	14:00	1.8	215
16/10/06	15:00	2.2	274
16/10/06	16:00	1.8	321
16/10/06	17:00	1.3	274
16/10/06	18:00	1.8	344
16/10/06	19:00	1.8	349
16/10/06	20:00	1.3	5
16/10/06	21:00	0.4	2
16/10/06	22:00	0.4	358
16/10/06	23:00	1.3	13
16/10/08	0:00	0.4	316
16/10/08	1:00	1.3	311
16/10/08	2:00	1.8	324
16/10/08	3:00	1.3	351
16/10/08	4:00	1.8	349
16/10/08	5:00	2.7	355
16/10/08	6:00	2.7	337
16/10/08	7:00	3.1	325
16/10/08	8:00	2.2	324
16/10/08	9:00	2.7	328
16/10/08	10:00	2.2	312
16/10/08	11:00	2.7	357
16/10/08	12:00	3.6	309
16/10/08	13:00	3.1	318

Meteorological Data for Impact Monitoring in the reporting period			
Date (yy-mm-dd)	**Time (24hrs)**	**Average of Wind Speed (m/s)**	**Average of Wind Direction(degree)**
16/10/08	14:00	3.1	322
16/10/08	15:00	2.7	300
16/10/08	16:00	1.8	349
16/10/08	17:00	1.8	352
16/10/08	18:00	2.7	348
16/10/08	19:00	1.3	6
16/10/08	20:00	1.3	317
16/10/08	21:00	1.8	351
16/10/08	22:00	1.3	329
16/10/08	23:00	2.2	311
16/10/09	0:00	1.8	349
16/10/09	1:00	1.8	352
16/10/09	2:00	1.3	351
16/10/09	3:00	1.3	346
16/10/09	4:00	1.3	308
16/10/09	5:00	1.3	344
16/10/09	6:00	1.3	352
16/10/09	7:00	0.9	322
16/10/09	8:00	0.9	231
16/10/09	9:00	0.9	308
16/10/09	10:00	0.9	319
16/10/09	11:00	1.3	6
16/10/09	12:00	1.8	14
16/10/09	13:00	1.3	12
16/10/09	14:00	1.8	20
16/10/09	15:00	1.8	18
16/10/09	16:00	1.8	341
16/10/09	17:00	1.8	339
16/10/09	18:00	2.2	352
16/10/09	19:00	2.7	355
16/10/09	20:00	3.1	4
16/10/09	21:00	1.8	345
16/10/09	22:00	2.2	336
16/10/09	23:00	2.7	2
16/10/11	0:00	3.6	15
16/10/11	1:00	4	11
16/10/11	2:00	4	10
16/10/11	3:00	3.1	8
16/10/11	4:00	1.8	17
16/10/11	5:00	0.4	274
16/10/11	6:00	0.4	222
16/10/11	7:00	0.4	340
16/10/11	8:00	1.8	339
16/10/11	9:00	3.6	13
16/10/11	10:00	3.6	359
16/10/11	11:00	1.8	355
16/10/11	12:00	1.8	346
16/10/11	13:00	2.7	3
16/10/11	14:00	2.7	20
16/10/11	15:00	2.2	18
16/10/11	16:00	2.7	9
16/10/11	17:00	2.7	13
16/10/11	18:00	2.7	14
16/10/11	19:00	2.7	12
16/10/11	20:00	3.1	9

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)**
16/10/11	21:00	4	16
16/10/11	22:00	2.7	20
16/10/11	23:00	2.7	21
16/10/12	0:00	2.7	23
16/10/12	1:00	2.2	11
16/10/12	2:00	2.2	17
16/10/12	3:00	3.1	16
16/10/12	4:00	3.6	14
16/10/12	5:00	4	6
16/10/12	6:00	3.6	12
16/10/12	7:00	3.1	5
16/10/12	8:00	3.1	13
16/10/12	9:00	3.1	21
16/10/12	10:00	2.7	20
16/10/12	11:00	3.1	18
16/10/12	12:00	2.2	10
16/10/12	13:00	2.2	9
16/10/12	14:00	2.2	4
16/10/12	15:00	1.8	6
16/10/12	16:00	1.8	348
16/10/12	17:00	1.8	2
16/10/12	18:00	1.3	341
16/10/12	19:00	1.8	2
16/10/12	20:00	2.2	12
16/10/12	21:00	1.8	8
16/10/12	22:00	2.2	15
16/10/12	23:00	1.8	11
16/10/14	0:00	0.9	4
16/10/14	1:00	0.9	65
16/10/14	2:00	1.3	14
16/10/14	3:00	1.3	9
16/10/14	4:00	1.3	357
16/10/14	5:00	1.8	10
16/10/14	6:00	3.1	8
16/10/14	7:00	2.7	23
16/10/14	8:00	2.7	21
16/10/14	9:00	3.1	26
16/10/14	10:00	2.7	22
16/10/14	11:00	2.2	17
16/10/14	12:00	1.8	14
16/10/14	13:00	2.7	115
16/10/14	14:00	2.7	125
16/10/14	15:00	1.3	305
16/10/14	16:00	0.9	312
16/10/14	17:00	0.9	222
16/10/14	18:00	3.6	166
16/10/14	19:00	3.6	95
16/10/14	20:00	2.7	77
16/10/14	21:00	2.7	64
16/10/14	22:00	2.7	92
16/10/14	23:00	1.8	15
16/10/15	0:00	0.4	15
16/10/15	1:00	0.9	8
16/10/15	2:00	0.9	12
16/10/15	3:00	1.3	23

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)**
16/10/15	4:00	1.3	26
16/10/15	5:00	1.3	31
16/10/15	6:00	1.8	24
16/10/15	7:00	1.8	15
16/10/15	8:00	2.2	18
16/10/15	9:00	2.2	23
16/10/15	10:00	2.2	27
16/10/15	11:00	2.7	11
16/10/15	12:00	1.8	5
16/10/15	13:00	1.8	358
16/10/15	14:00	1.8	351
16/10/15	15:00	1.8	12
16/10/15	16:00	1.8	340
16/10/15	17:00	0.4	167
16/10/15	18:00	0.9	350
16/10/15	19:00	0.9	342
16/10/15	20:00	1.3	341
16/10/15	21:00	0.9	353
16/10/15	22:00	0.9	8
16/10/15	23:00	1.3	10
16/10/17	0:00	1.3	13
16/10/17	1:00	3.6	5
16/10/17	2:00	4.5	7
16/10/17	3:00	3.1	349
16/10/17	4:00	2.7	358
16/10/17	5:00	3.1	3
16/10/17	6:00	2.2	6
16/10/17	7:00	0.9	352
16/10/17	8:00	1.8	2
16/10/17	9:00	2.2	66
16/10/17	10:00	2.2	14
16/10/17	11:00	2.7	357
16/10/17	12:00	2.7	20
16/10/17	13:00	3.1	70
16/10/17	14:00	2.2	69
16/10/17	15:00	2.7	95
16/10/17	16:00	2.7	71
16/10/17	17:00	1.8	62
16/10/17	18:00	1.3	16
16/10/17	19:00	1.3	14
16/10/17	20:00	1.8	20
16/10/17	21:00	1.8	81
16/10/17	22:00	2.2	22
16/10/17	23:00	4	69
16/10/18	0:00	3.6	71
16/10/18	1:00	2.2	15
16/10/18	2:00	2.7	11
16/10/18	3:00	2.7	23
16/10/18	4:00	2.7	51
16/10/18	5:00	2.2	14
16/10/18	6:00	1.8	56
16/10/18	7:00	1.8	63
16/10/18	8:00	1.8	74
16/10/18	9:00	2.2	72
16/10/18	10:00	4.9	92
16/10/18	11:00	4	85

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)**
16/10/18	12:00	3.6	64
16/10/18	13:00	4.9	58
16/10/18	14:00	4	95
16/10/18	15:00	3.1	82
16/10/18	16:00	6.3	100
16/10/18	17:00	6.3	93
16/10/18	18:00	4	94
16/10/18	19:00	7.6	96
16/10/18	20:00	6.3	88
16/10/18	21:00	5.4	71
16/10/18	22:00	6.3	100
16/10/18	23:00	6.3	93
16/10/20	0:00	2.2	87
16/10/20	1:00	3.1	92
16/10/20	2:00	2.7	96
16/10/20	3:00	1.3	71
16/10/20	4:00	0.9	46
16/10/20	5:00	0.9	25
16/10/20	6:00	0.4	316
16/10/20	7:00	0.4	317
16/10/20	8:00	0.9	92
16/10/20	9:00	1.8	349
16/10/20	10:00	1.3	12
16/10/20	11:00	1.3	351
16/10/20	12:00	1.3	328
16/10/20	13:00	1.8	274
16/10/20	14:00	1.8	268
16/10/20	15:00	0.9	251
16/10/20	16:00	1.8	263
16/10/20	17:00	1.8	321
16/10/20	18:00	0.1	315
16/10/20	19:00	0.1	320
16/10/20	20:00	0.1	331
16/10/20	21:00	0.1	306
16/10/20	22:00	0.1	298
16/10/20	23:00	0.1	274
16/10/21	0:00	0.1	299
16/10/21	1:00	0.1	285
16/10/21	2:00	0.1	311
16/10/21	3:00	0.1	314
16/10/21	4:00	0.1	320
16/10/21	5:00	0.1	228
16/10/21	6:00	0.1	316
16/10/21	7:00	0.1	325
16/10/21	8:00	0.1	341
16/10/21	9:00	0.1	339
16/10/21	10:00	0.1	305
16/10/21	11:00	0.1	307
16/10/21	12:00	0.1	315
16/10/21	13:00	0.1	326
16/10/21	14:00	0.1	322
16/10/21	15:00	0.1	315
16/10/21	16:00	0.1	265
16/10/21	17:00	0.1	274
16/10/21	18:00	0.1	298
16/10/21	19:00	0.1	266
16/10/21	20:00	0.1	285

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)**
16/10/21	21:00	0.1	293
16/10/21	22:00	0.1	268
16/10/21	23:00	0.2	301
16/10/23	0:00	0.1	315
16/10/23	1:00	0.1	311
16/10/23	2:00	0.1	256
16/10/23	3:00	0.1	310
16/10/23	4:00	0.2	342
16/10/23	5:00	0.1	321
16/10/23	6:00	0.1	328
16/10/23	7:00	0.1	321
16/10/23	8:00	0.1	316
16/10/23	9:00	0.1	337
16/10/23	10:00	0.1	304
16/10/23	11:00	0.4	122
16/10/23	12:00	1.8	131
16/10/23	13:00	1.3	91
16/10/23	14:00	1.3	120
16/10/23	15:00	1.3	171
16/10/23	16:00	1.3	88
16/10/23	17:00	1.8	86
16/10/23	18:00	1.3	92
16/10/23	19:00	1.8	94
16/10/23	20:00	1.8	85
16/10/23	21:00	2.2	115
16/10/23	22:00	3.1	136
16/10/23	23:00	1.8	124
16/10/24	0:00	1.8	93
16/10/24	1:00	0.9	84
16/10/24	2:00	0.9	100
16/10/24	3:00	1.3	96
16/10/24	4:00	0.9	109
16/10/24	5:00	0.9	85
16/10/24	6:00	0.9	92
16/10/24	7:00	0.4	81
16/10/24	8:00	0.9	87
16/10/24	9:00	1.8	96
16/10/24	10:00	2.2	126
16/10/24	11:00	1.8	115
16/10/24	12:00	3.1	132
16/10/24	13:00	2.7	141
16/10/24	14:00	3.6	152
16/10/24	15:00	3.1	150
16/10/24	16:00	3.1	143
16/10/24	17:00	3.6	128
16/10/24	18:00	2.2	131
16/10/24	19:00	2.2	92
16/10/24	20:00	1.8	84
16/10/24	21:00	1.8	100
16/10/24	22:00	1.8	95
16/10/24	23:00	1.8	97
16/10/26	0:00	1.8	119
16/10/26	1:00	0.9	124
16/10/26	2:00	0.9	88
16/10/26	3:00	0.4	71
16/10/26	4:00	0.9	69
16/10/26	5:00	1.3	72

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)**
16/10/26	6:00	0.9	75
16/10/26	7:00	0.4	88
16/10/26	8:00	1.3	93
16/10/26	9:00	1.8	109
16/10/26	10:00	2.2	115
16/10/26	11:00	2.7	108
16/10/26	12:00	2.2	116
16/10/26	13:00	2.7	124
16/10/26	14:00	2.7	119
16/10/26	15:00	2.2	171
16/10/26	16:00	2.7	126
16/10/26	17:00	1.3	133
16/10/26	18:00	1.8	140
16/10/26	19:00	1.3	115
16/10/26	20:00	1.8	109
16/10/26	21:00	1.8	143
16/10/26	22:00	0.9	138
16/10/26	23:00	0.4	71
16/10/27	0:00	1.8	127
16/10/27	1:00	1.3	95
16/10/27	2:00	0.4	440
16/10/27	3:00	0.4	59
16/10/27	4:00	0.4	63
16/10/27	5:00	0.4	81
16/10/27	6:00	0.4	77
16/10/27	7:00	0.4	78
16/10/27	8:00	0.9	93
16/10/27	9:00	1.3	118
16/10/27	10:00	1.3	132
16/10/27	11:00	0.9	140
16/10/27	12:00	1.3	96
16/10/27	13:00	1.3	166
16/10/27	14:00	1.8	212
16/10/27	15:00	2.2	215
16/10/27	16:00	2.7	223
16/10/27	17:00	1.8	204
16/10/27	18:00	1.3	170
16/10/27	19:00	1.8	126
16/10/27	20:00	1.8	95
16/10/27	21:00	1.8	90
16/10/27	22:00	1.3	68
16/10/27	23:00	1.3	91
16/10/29	0:00	0.4	57
16/10/29	1:00	0.4	73
16/10/29	2:00	0.9	342
16/10/29	3:00	0.9	356
16/10/29	4:00	0.9	351
16/10/29	5:00	0.4	355
16/10/29	6:00	0	348
16/10/29	7:00	0.9	48
16/10/29	8:00	1.8	51
16/10/29	9:00	2.2	16
16/10/29	10:00	2.2	52
16/10/29	11:00	2.2	19
16/10/29	12:00	2.7	115
16/10/29	13:00	3.1	95
16/10/29	14:00	4	125

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)**
16/10/29	15:00	4.5	116
16/10/29	16:00	2.7	11
16/10/29	17:00	2.2	13
16/10/29	18:00	2.2	21
16/10/29	19:00	3.1	17
16/10/29	20:00	3.1	15
16/10/29	21:00	3.6	14
16/10/29	22:00	3.1	18
16/10/29	23:00	2.7	10
16/10/30	0:00	3.1	16
16/10/30	1:00	3.1	23
16/10/30	2:00	2.7	24
16/10/30	3:00	2.2	21
16/10/30	4:00	2.7	20
16/10/30	5:00	3.1	12
16/10/30	6:00	3.1	19
16/10/30	7:00	3.1	18
16/10/30	8:00	2.7	15
16/10/30	9:00	2.2	12
16/10/30	10:00	2.2	10
16/10/30	11:00	2.2	13
16/10/30	12:00	2.2	14
16/10/30	13:00	1.8	16
16/10/30	14:00	1.3	18
16/10/30	15:00	1.3	163
16/10/30	16:00	2.2	131
16/10/30	17:00	1.8	95
16/10/30	18:00	1.3	12
16/10/30	19:00	0.9	13
16/10/30	20:00	1.3	4
16/10/30	21:00	2.2	16
16/10/30	22:00	2.7	20
16/10/30	23:00	2.7	21

Appendix I

Impact Dolphin Monitoring Survey

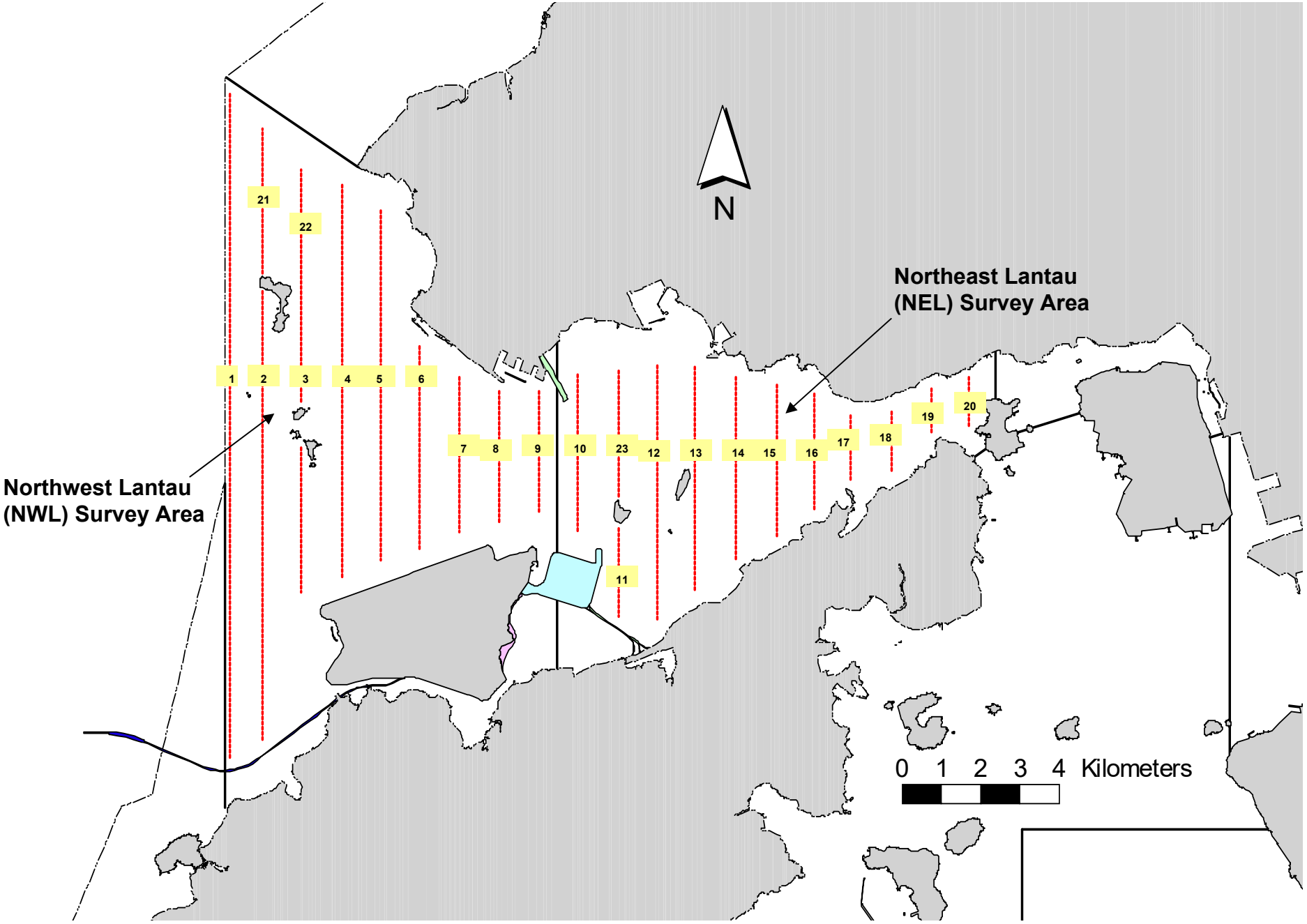


Figure 1. Transect Line Layout in Northwest and Northeast Lantau Survey Areas

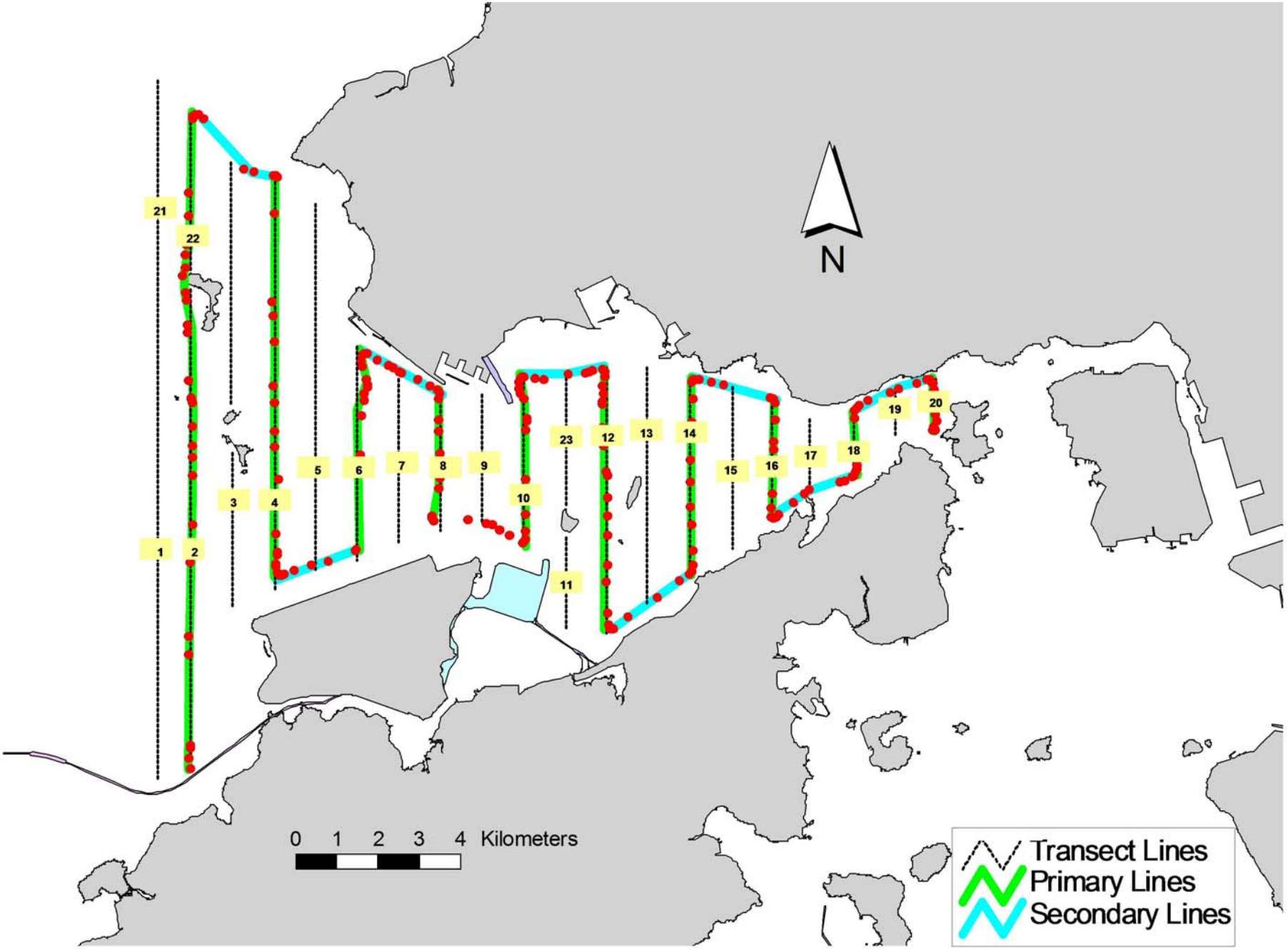


Figure 2. Survey Route on October 4th, 2016 (from HKLR03 project)

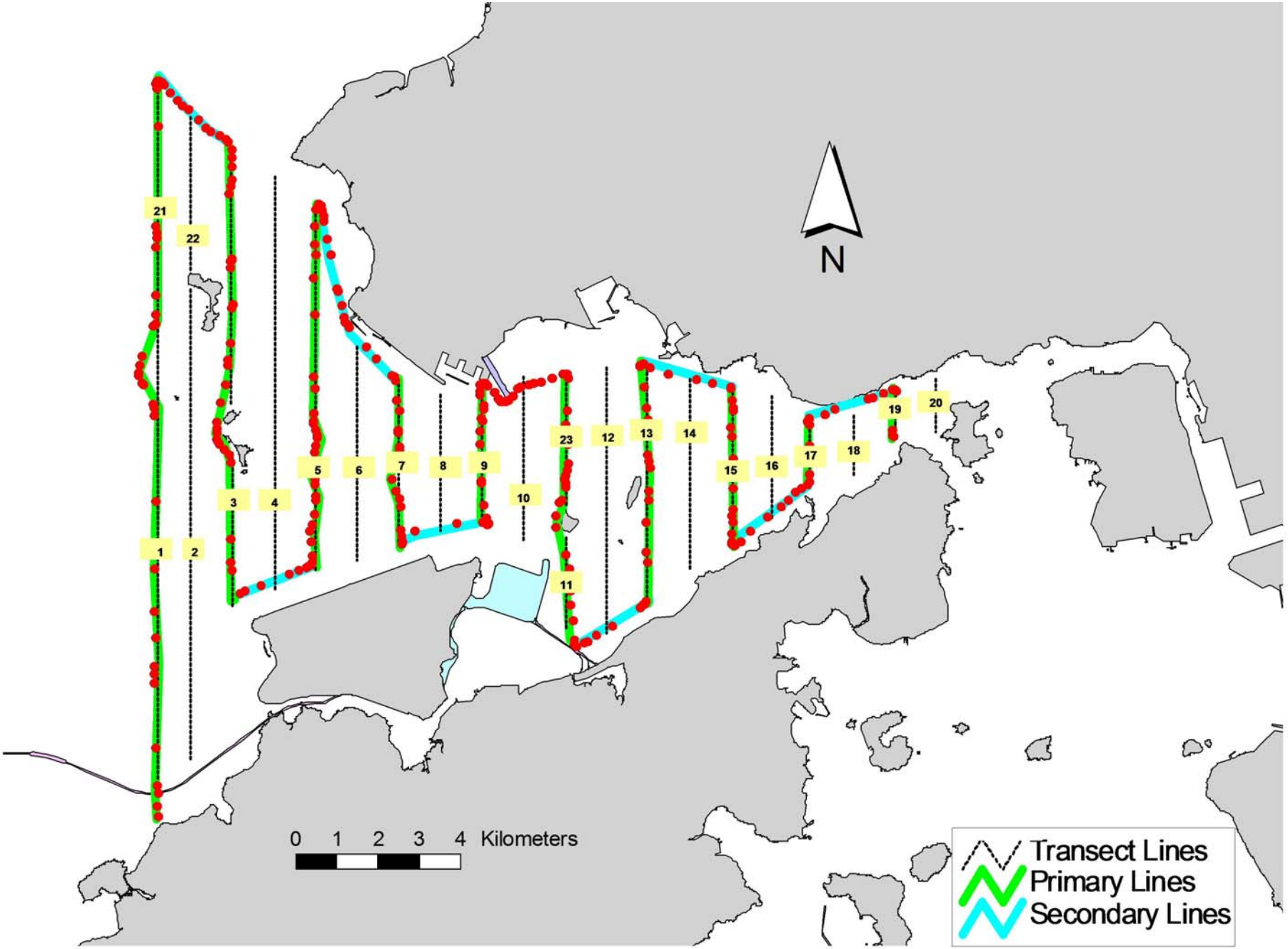


Figure 3. Survey Route on October 7th, 2016 (from HKLR03 project)

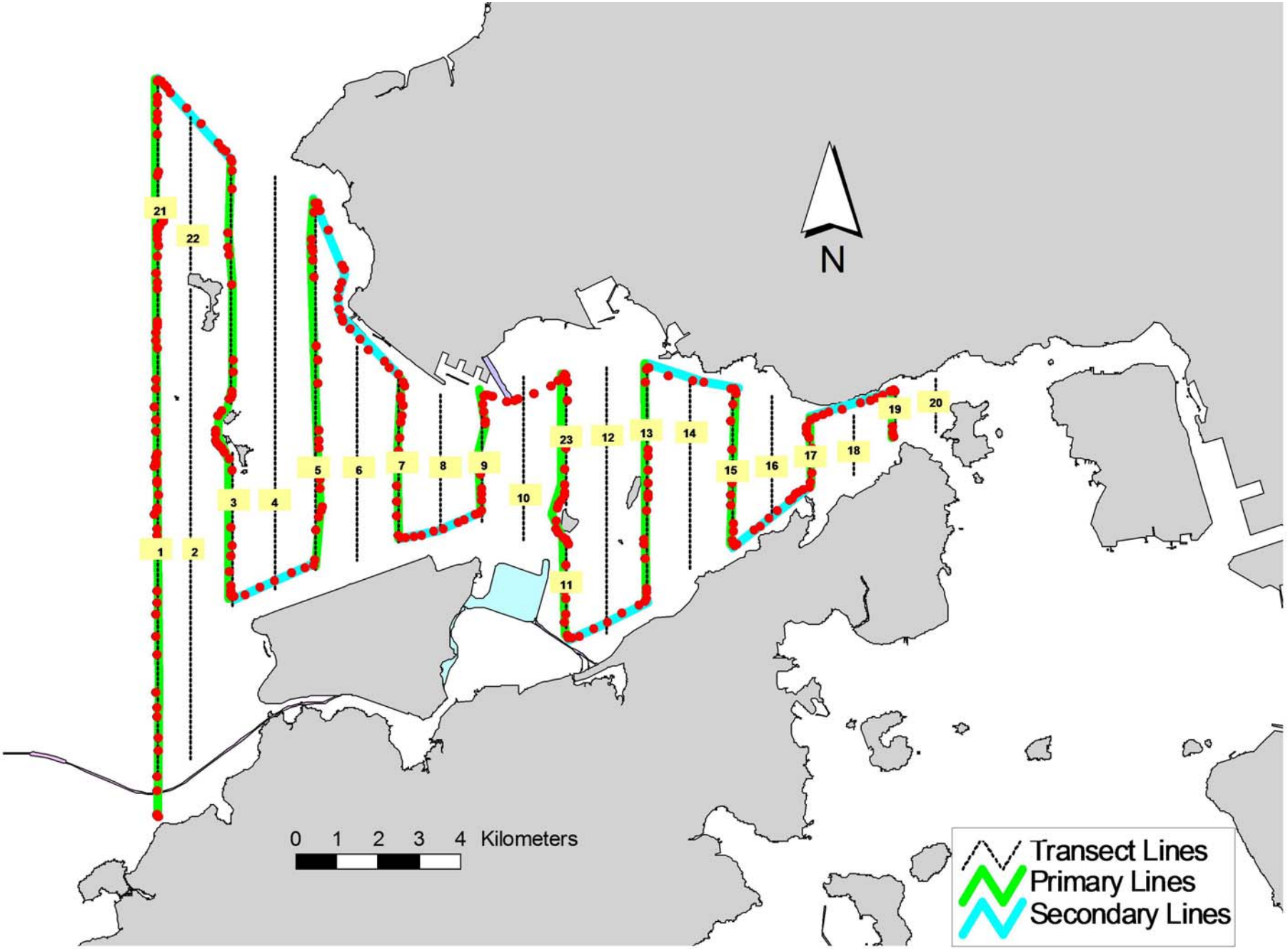


Figure 4. Survey Route on October 11th, 2016 (from HKLR03 project)

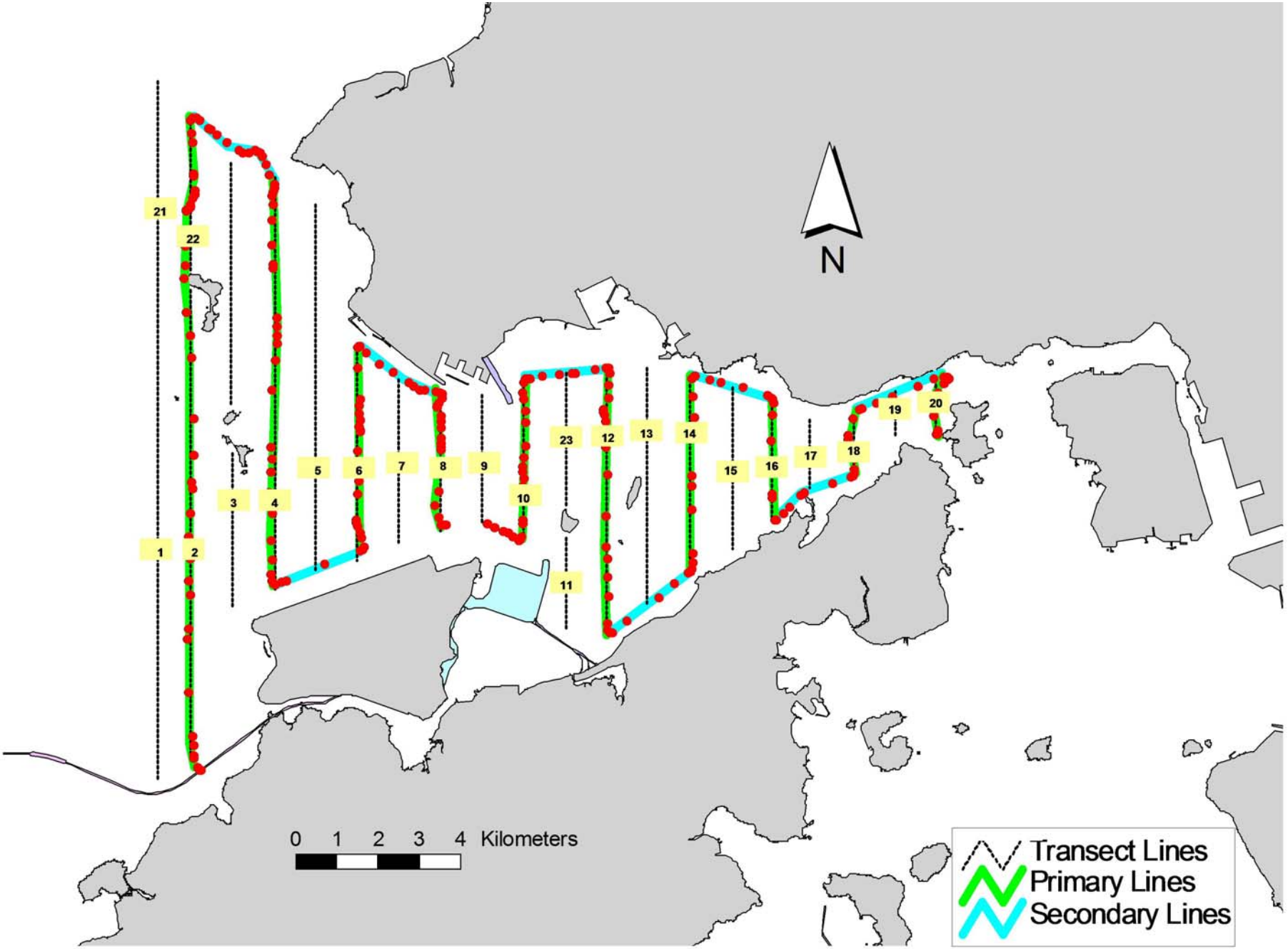


Figure 5. Survey Route on October 13th, 2016 (from HKLR03 project)

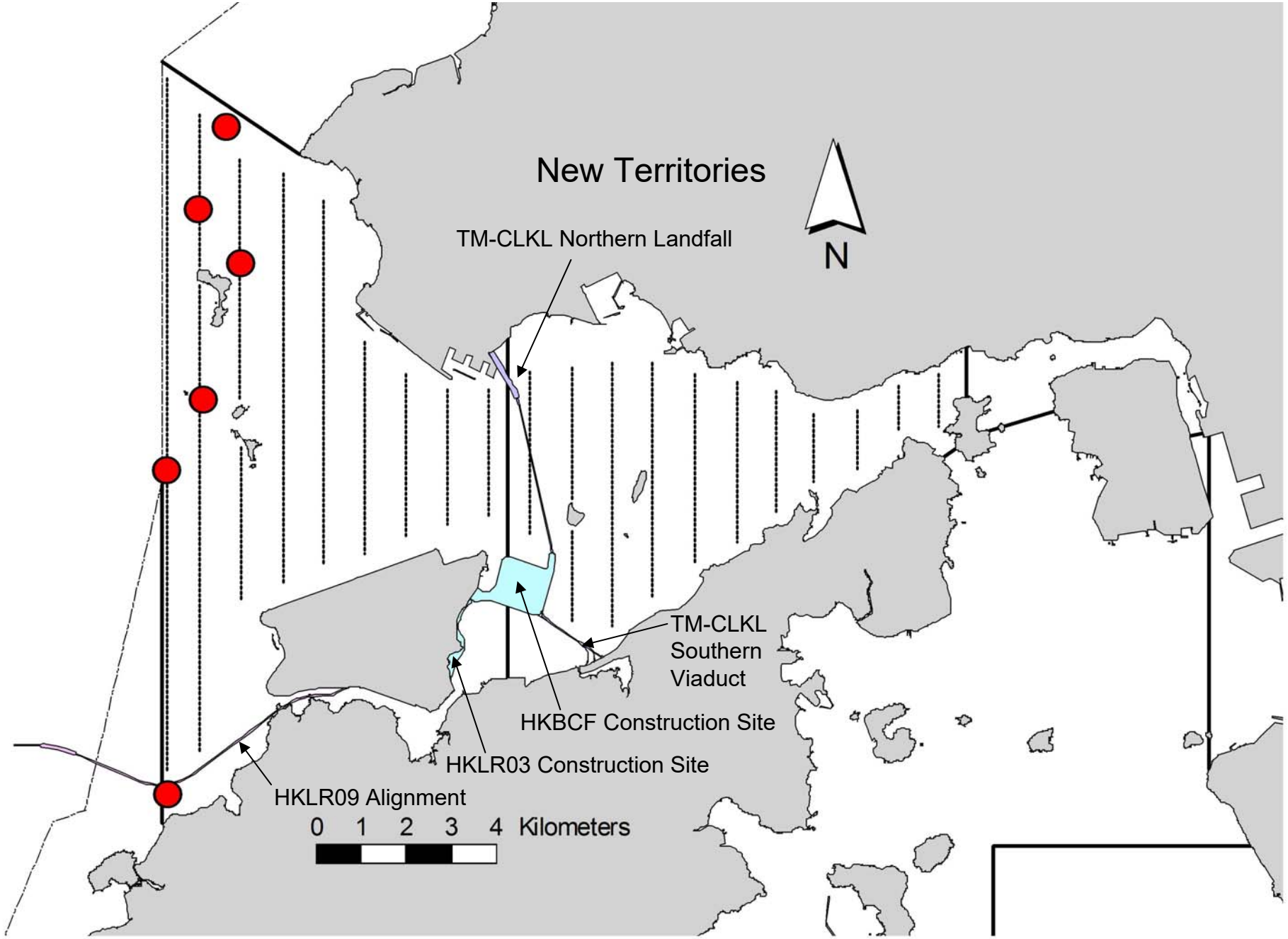


Figure 6. Distribution of Chinese White Dolphin Sightings during October 2016 HKLR03 Monitoring Surveys

Appendix I. HKLR03 Survey Effort Database (October 2016)

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

DATE	AREA	BEAU	EFFORT	SEASON	VESSEL	TYPE	P/S
4-Oct-16	NW LANTAU	2	25.94	AUTUMN	STANDARD36826	HKLR	P
4-Oct-16	NW LANTAU	3	5.70	AUTUMN	STANDARD36826	HKLR	P
4-Oct-16	NW LANTAU	2	6.60	AUTUMN	STANDARD36826	HKLR	S
4-Oct-16	NE LANTAU	2	15.22	AUTUMN	STANDARD36826	HKLR	P
4-Oct-16	NE LANTAU	3	4.57	AUTUMN	STANDARD36826	HKLR	P
4-Oct-16	NE LANTAU	2	10.41	AUTUMN	STANDARD36826	HKLR	S
7-Oct-16	NE LANTAU	2	16.19	AUTUMN	STANDARD36826	HKLR	P
7-Oct-16	NE LANTAU	2	10.71	AUTUMN	STANDARD36826	HKLR	S
7-Oct-16	NW LANTAU	1	4.54	AUTUMN	STANDARD36826	HKLR	P
7-Oct-16	NW LANTAU	2	36.45	AUTUMN	STANDARD36826	HKLR	P
7-Oct-16	NW LANTAU	1	1.03	AUTUMN	STANDARD36826	HKLR	S
7-Oct-16	NW LANTAU	2	11.81	AUTUMN	STANDARD36826	HKLR	S
7-Oct-16	NW LANTAU	3	0.40	AUTUMN	STANDARD36826	HKLR	S
11-Oct-16	NW LANTAU	2	29.01	AUTUMN	STANDARD36826	HKLR	P
11-Oct-16	NW LANTAU	3	10.75	AUTUMN	STANDARD36826	HKLR	P
11-Oct-16	NW LANTAU	2	12.21	AUTUMN	STANDARD36826	HKLR	S
11-Oct-16	NW LANTAU	3	1.40	AUTUMN	STANDARD36826	HKLR	S
11-Oct-16	NE LANTAU	2	15.82	AUTUMN	STANDARD36826	HKLR	P
11-Oct-16	NE LANTAU	3	0.80	AUTUMN	STANDARD36826	HKLR	P
11-Oct-16	NE LANTAU	2	7.48	AUTUMN	STANDARD36826	HKLR	S
11-Oct-16	NE LANTAU	3	2.40	AUTUMN	STANDARD36826	HKLR	S
13-Oct-16	NW LANTAU	2	14.72	AUTUMN	STANDARD36826	HKLR	P
13-Oct-16	NW LANTAU	3	15.81	AUTUMN	STANDARD36826	HKLR	P
13-Oct-16	NW LANTAU	2	3.21	AUTUMN	STANDARD36826	HKLR	S
13-Oct-16	NW LANTAU	3	5.06	AUTUMN	STANDARD36826	HKLR	S
13-Oct-16	NE LANTAU	2	20.06	AUTUMN	STANDARD36826	HKLR	P
13-Oct-16	NE LANTAU	2	11.14	AUTUMN	STANDARD36826	HKLR	S

Appendix II. HKLR03 Chinese White Dolphin Sighting Database (October 2016)

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

DATE	STG #	TIME	HRD SZ	AREA	BEAU	PSD	EFFORT	TYPE	NORTHING	EASTING	SEASON	BOAT ASSOC.	P/S
04-Oct-16	1	1039	1	NW LANTAU	2	14	ON	HKLR	823995	805534	AUTUMN	NONE	P
04-Oct-16	2	1114	2	NW LANTAU	2	377	ON	HKLR	830283	806082	AUTUMN	NONE	S
07-Oct-16	1	1419	4	NW LANTAU	1	103	ON	HKLR	827149	806447	AUTUMN	NONE	P
07-Oct-16	2	1553	2	NW LANTAU	2	8	ON	HKLR	814927	804671	AUTUMN	NONE	P
11-Oct-16	1	1049	1	NW LANTAU	2	243	ON	HKLR	822391	804655	AUTUMN	NONE	P
13-Oct-16	1	1104	5	NW LANTAU	3	69	ON	HKLR	828391	805399	AUTUMN	NONE	P

Appendix III. Individual dolphins identified during HKLR03 monitoring surveys in October 2016

ID#	DATE	STG#	AREA
CH34	13/10/16	1	NW LANTAU
NL104	13/10/16	1	NW LANTAU
NL136	04/10/16	2	NW LANTAU
NL182	04/10/16	2	NW LANTAU
NL202	07/10/16	1	NW LANTAU
	13/10/16	1	NW LANTAU
NL286	07/10/16	1	NW LANTAU
	13/10/16	1	NW LANTAU
NL320	07/10/16	1	NW LANTAU
NL321	13/10/16	1	NW LANTAU
WL243	07/10/16	2	NW LANTAU

Appendix IV. Photographs of Identified Individual Dolphins in October 2016 (HKLR03)

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				
	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.	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.	1. Confirm receipt of notification of failure in writing. 2. Notify the Contractor. 3. Ensure remedial measures properly implemented.	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				
	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.	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.	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.	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	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.	1. Check monitoring data submitted by ET and Contractor; 2. Discuss monitoring results and finding with the ET and the Contractor.	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.	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	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;	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	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	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**
	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.	Contractor the necessity of additional dolphin monitoring and any other potential mitigation measures. 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.	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. 3. Supervise the implementation of additional monitoring and/or any other mitigation measures.	potential mitigation measures. 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	6

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 (October 2016)	0	0	0
Total No. received since project commencement	8	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 October 2016 [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 Inert 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	930.268	0.000	0.000	0.000	930.268
Jan-2016	24.068	0.000	0.000	0.000	24.068
Feb-2016	9.229	0.000	0.000	0.000	9.229
Mar-2016	3.501	0.000	0.000	0.000	3.501
Apr-2016	9.175	0.000	0.000	0.000	9.175
May-2016	2.392	0.000	0.000	0.000	2.392
Jun-2016	5.597	0.000	0.000	0.000	5.597
Half Year Sub-total	53.962	0.000	0.000	0.000	53.962
Jul-2016	10.063	0.000	0.000	0.000	10.063
Aug-2016	31.621	0.000	0.000	0.000	31.621
Sep-2016	9.450	0.000	0.000	0.000	9.450
Oct-2016	23.118	0.000	0.000	0.000	23.118
Nov-2016					
Dec-2016					
Project Total Quantities	1058.482	0.000	0.000	0.000	1058.482

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	2.150	2.150	6.870	6.870	1.710	1.710	2.217
Jan-2016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.113
Feb-2016	1.850	1.850	0.000	0.000	0.000	0.000	4.740	4.740	0.102
Mar-2016	0.000	0.000	0.200	0.200	0.000	0.000	3.000	3.000	0.111
Apr-2016	0.000	0.000	0.200	0.200	0.000	0.000	0.000	0.000	0.198
May-2016	0.000	0.000	0.200	0.200	0.000	0.000	0.000	0.000	0.202
Jun-2016	0.000	0.000	0.200	0.200	0.000	0.000	0.000	0.000	0.214
Half Year Sub-total	1.850	1.850	0.800	0.800	0.000	0.000	7.740	7.740	0.940
Jul-2016	0.000	0.000	0.200	0.200	0.000	0.000	0.000	0.000	0.292
Aug-2016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.323
Sep-2016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.335
Oct-2016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.235
Nov-2016									
Dec-2016									
Project Total Quantities	1.850	1.850	3.150	3.150	6.870	6.870	9.450	9.450	4.342

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)
20.000	0.000	0.000	0.000	20.000

Forecast of Total Quantities of Construction and Demolition Materials to be Generated from the Contract*				
Metals	Paper/ cardboard packaging	Plastics (see Note 3)	Chemical Waste	General Refuse disposed of at Landfill
(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000 ton)
0.000	0.000	0.000	0.000	0.100

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