

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

Forty-eighth Monthly Environmental Monitoring & Audit (EM&A) Report

10 November 2017

Environmental Resources Management

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



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13 November 2017

By Fax (2293 6300) and By Post

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

Attention: Messrs. Andy Westmoreland / Roger Man

Dear Sirs,

Re: Agreement No. CE 48/2011 (EP) Environmental Project Office for the HZMB Hong Kong Link Road, HZMB Hong Kong Boundary Crossing Facilities, and Tuen Mun-Chek Lap Kok Link – Investigation

Contract No. HY/2012/08 TM-CLKL Northern Connection Sub-sea Tunnel Section 48th Monthly EM&A Report for October 2017 (EP-354/2009/D)

Reference is made to the Monthly Environmental Monitoring and Audit (EM&A) Report (Oct. 2017) (ET's ref.: "0212330_48th Monthly EM&A_20171110.doc" dated 10 Nov. 2017) certified by the ET Leader and provided to us via e-mail on 13 Nov. 2017.

Please be informed that we have no adverse comments on the captioned Report. We write to verify the captioned submission in accordance with Condition 4.4 of EP-354/2009/D.

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

Yours sincerely,

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

c.c.

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

Internal: DY, YH, ENPO Site

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Ramboll Environ Hong Kong Limited 英環香港有限公司 21/F, BEA Harbour View Centre, 56 Gloucester Road, Wan Chai, Hong Kong Tel: 852.3465 2888 Fax: 852.3465 2899 www.Ramboll-Environ.com



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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

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Revision Description This report has been prepared by Environmental Resources Management the trading name of 'ERM Hong-Kong, Limited', with all reasonable skill, care and diligence within the terms of the Contract with the client, incorporating our General Terms and Conditions of Business and taking account of the resources devoted to it by agreement with the client. We disclaim any responsibility to the client and others in respect of any matters outside the scope of the above.		□ Ir ⊠ P	Distribution Internal OH5A5 18001:2007 Certificate No. OH5 515956			



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EXECUTIVE SUMMARY

Under *Contract No. HY/2012/08*, Dragages – Bouygues Joint Venture (DBJV) is commissioned by the Highways Department (HyD) to undertake the design and construction of the Northern Connection Sub-sea Tunnel Section of the Tuen Mun – Chek Lap Kok Link Project (TM-CLK Link Project) while AECOM Asia Company Limited was appointed by HyD as the Supervising Officer. For implementation of the environmental monitoring and audit (EM&A) programme under the Contract, ERM-Hong Kong, Limited (ERM) has been appointed as the Environmental Team (ET) in accordance with *Environmental Permit No. EP-354/2009/A*. Ramboll Environ Hong Kong Ltd. was employed by HyD as the Independent Environmental Checker (IEC) and Environmental Project Office (ENPO). Subsequent applications for variation of environmental permits (VEP), *EP-354/2009/B*, *EP-354/2009/C* and *EP-354/2009/D*, were granted on 28 January 2014, 10 December 2014 and 13 March 2015, respectively.

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

This is the Forty-eighth Monthly EM&A report presenting the EM&A works carried out during the period from 1 to 31 October 2017 for the *Contract No. HY*/2012/08 Northern Connection Sub-sea Tunnel Section (the "Project") in accordance with the Updated EM&A Manual of the TM-CLK Link Project. As informed by the Contractor, major activities in the reporting period included:

Land-based Works

- Box Culvert Extension at Works Area Portion N-A;
- Construction of North Ventilation Building Portion N-C;
- Construction of Cross Passage Tympanum TBM tunnel;
- Cross Passage Lining Installation TBM Tunnel;
- Excavation of Sub-sea Tunnel TBM tunnel;
- Corbel Construction TBM Tunnel;
- Phase 2 Surcharge Removal Portion N-A;
- Bulk Excavation Portion S-A;
- CSM treatment, Jet Grouting works and D-wall Construction; and
- Ground Freezing Works Portion S-A

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

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

24-hour TSP Monitoring	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

Two (2) Action Level exceedances of 1-hour TSP and one (1) Action Level exceedance of 24-hour TSP were recorded on 21 October 2017. Two (2) Action Level exceedances of 1-hour TSP were recorded on 27 October 2017. Investigation reports will be provided in the next monthly EM&A report. Investigation reports of air quality exceedances on 12, 18 and 27 September 2017 are provided in Appendix K.

Breaches of Action and Limit Levels for Dolphin Monitoring

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

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.

One (1) environmental complaint case regarding light pollution at Tuen Mun Pier was referred by IEC on 25 October 2017. The complaint investigation report is under preparation by the ET and will be provided in the next monthly report.

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 2017 include the following:

Land-based Works

- Box Culvert Extension at Works Area Portion N-A;
- Construction of North Ventilation Building Portion N-C;
- Construction of Cross Passage Tympanum TBM tunnel;
- Cross Passage Lining Installation TBM Tunnel;
- Excavation of Sub-sea Tunnel TBM tunnel;
- Corbel Construction TBM Tunnel;
- Phase 2 Surcharge Removal Portion N-A;
- Bulk Excavation Portion S-A;
- CSM treatment, Jet Grouting works and D-wall Construction; and
- Ground Freezing Works Portion S-A

Marine-based Works

• Seawall Enhancement works – Portion N-C

Future Key Issues

Potential environmental impacts arising from the above upcoming construction activities in the next reporting month of November 2017 are mainly associated with dust, marine water quality, marine ecology and waste management issues.

1.1 BACKGROUND

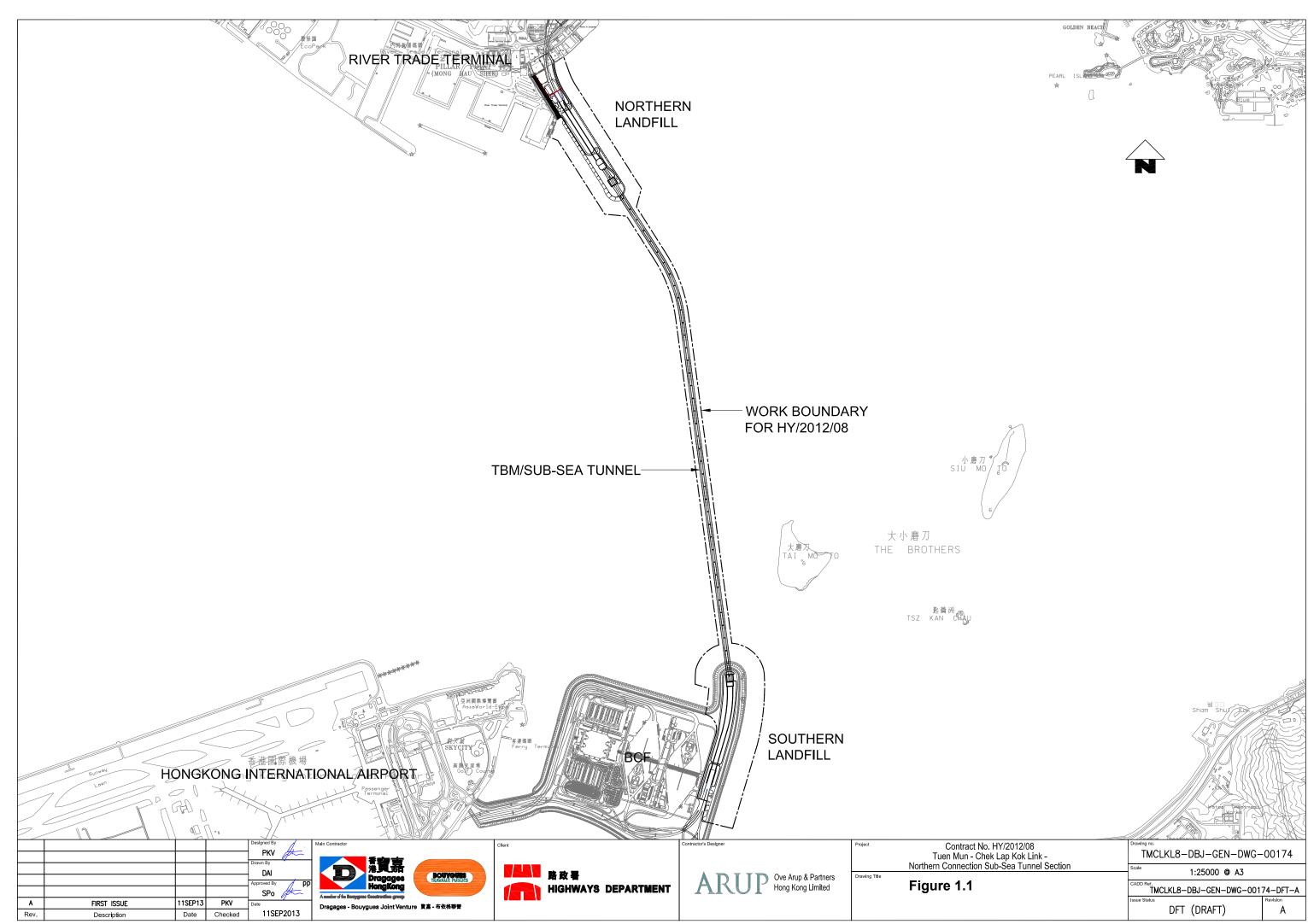
According to the findings of the Northwest New Territories (NWNT) Traffic and Infrastructure Review conducted by the Transport Department, Tuen Mun Road, Ting Kau Bridge, Lantau Link and North Lantau Highway would be operating beyond capacity after 2016. This forecast has been based on the estimated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

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

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



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1.2 SCOPE OF REPORT

This is the Forty-eighth 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 2017.

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 1.1Contact Information of Key Personnel

Party	Position	Name	Telephone	Fax
Highways Department	Engr 22/HZMB	Chow Man Lung, Andrew	2762 4110	2762 4110
SOR (AECOM Asia Company	Chief Resident Engineer	Roger Man	2293 6388	2293 6300
Limited)	0	Andrew Westmoreland	2293 6360	2293 6300
ENPO / IEC (Ramboll Environ Hong	ENPO Leader	Y.H. Hui	3465 2850	3465 2899
Kong Ltd.)	IEC	Dr. F.C. Tsang	3465 2851	3465 2899
Contractor (Dragages – Bouygues Joint Venture)	Environmental Officer	Bryan Lee	2293 7323	2293 7499
	24-hour complaint hotline	Rachel Lam	2293 7330	
ET (ERM-HK)	ET Leader	Jovy Tam	2271 3113	2723 5660

1.4 SUMMARY OF CONSTRUCTION WORKS

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

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

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

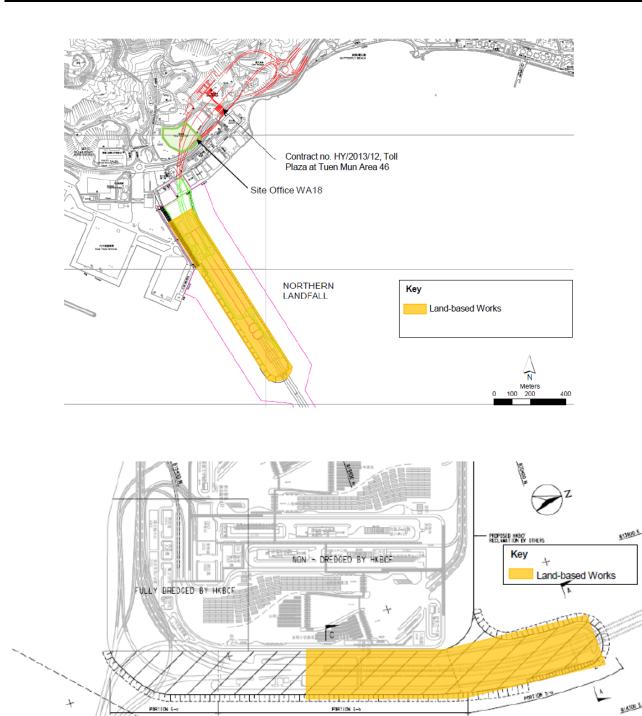
The implementation schedule of environmental mitigation measures is presented in *Appendix C*.

Construction Activities Undertaken

Land-based Works

- Box Culvert Extension at Works Area Portion N-A;
- Construction of North Ventilation Building Portion N-C;
- Construction of Cross Passage Tympanum TBM tunnel;
- Cross Passage Lining Installation TBM Tunnel;
- Excavation of Sub-sea Tunnel TBM tunnel;
- Corbel Construction TBM Tunnel;
- Phase 2 Surcharge Removal Portion N-A;
- Bulk Excavation Portion S-A;
- CSM treatment, Jet Grouting works and D-wall Construction; and
- Ground Freezing Works Portion S-A

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

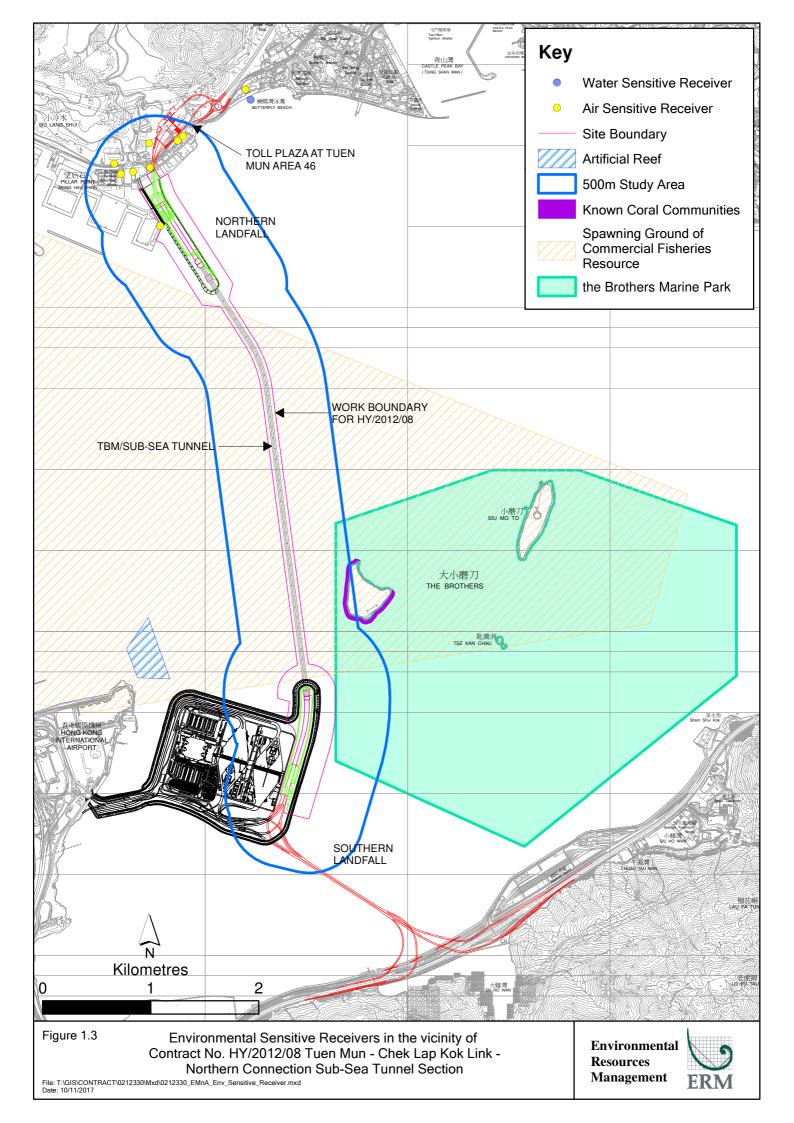


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The EM&A programme required environmental monitoring for air quality, water quality and marine ecology as well as environmental site inspections for air quality, noise, water quality, waste management, marine ecology and landscape and visual impacts.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

2.1 AIR QUALITY

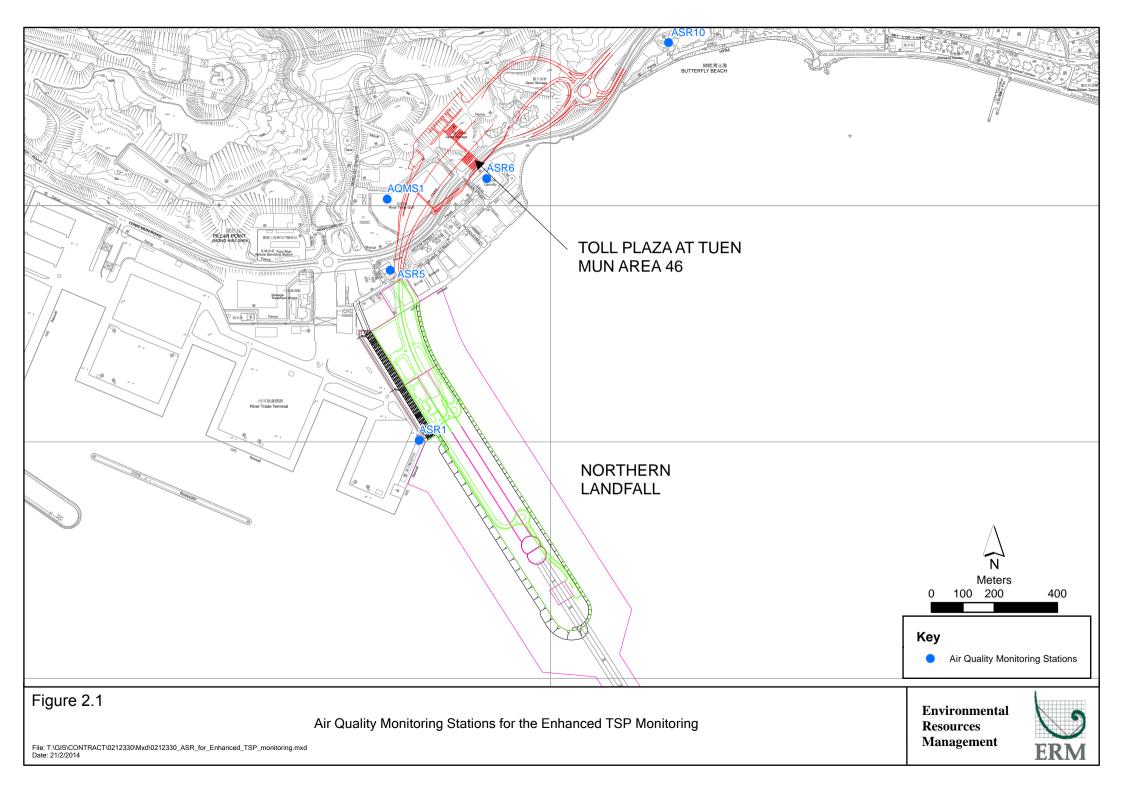
2.1.1 Monitoring Requirements and Equipment

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 24hr 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 3, 6, 9, 12, 18, 21, 24, 27 and 30 October 2017 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*.

Monitoring Station	Monitoring Dates	Location	Description	Parameters & Frequency
ASR1	3, 6, 9, 12, 18, 21, 24,	Tuen Mun	Office	TSP monitoring
	27 and 30 October	Fireboat Station		1-hour Total Suspended
	2017			Particulates (1-hour TSP,
ASR5		Pillar Point Fire	Office	μ g/m ³), 3 times in every 6 day
		Station		• 24-hour Total Suspended
				Particulates (24-hour TSP,
AQMS1		Previous River	Bare ground	μ g/m ³), daily for 24-hour in
		Trade Golf		every 6 days
				Enhanced TSP monitoring
ASR6		Butterfly Beach	Office	(commenced on 24 October 2014)
		Laundry		• 1-hour Total Suspended
		,		Particulates (1-hour TSP,
ASR10		Butterfly Beach	Recreational	μ g/m ³), 3 times in every 3 days
		Park	uses	• 24-hour Total Suspended
				Particulates (24-hour TSP,
				μ g/m ³), daily for 24-hour in
				every 3 days

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



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 2017 is provided in *Appendix F*. Impact air quality monitoring on 15 October 2017 was cancelled due to adverse weather.

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 2.3Summary 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	217	64 - 439	331	500
ASR5	178	74 - 368	340	500
AQMS1	114	41 - 234	335	500
ASR6	139	58 - 388	338	500
ASR10	102	34 - 307	337	500

Table 2.4Summary 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	157	88 - 220	213	260
ASR5	106	78 - 160	238	260
AQMS1	77	39 - 160	213	260
ASR6	85	41 - 138	238	260
ASR10	91	37 - 205	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 1-hour TSP and 24-hour TSP monitoring were undertaken in which four (4) Action Level exceedances of 1-hr TSP and one (1) Action Level exceedance of 24-hr TSP were recorded in this reporting month.

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

2.2 WATER QUALITY MONITORING

Marine works for Phase II reclamation of Northern Landfall were substantially completed in the end of May. Thus, no impact marine water quality monitoring was conducted during the reporting period. Impact marine water quality monitoring for Northern Landfall will resume during the seawall enhancement works at Northern Landfall in November 2017 in accordance with the requirement in the Contract Specific EM&A Manual.

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.

Equipment	Model
Global Positioning System (GPS)	Garmin 18X-PC
	Geo One Phottix
Camera	Nikon D90 300m 2.8D fixed focus
	Nikon D90 20-300m zoom lens
Laser Binocular	Infinitor LRF 1000
Marine Binocular	Bushell 7 x 50 marine binocular with compass and reticules

Table 2.5Dolphin Monitoring Equipment

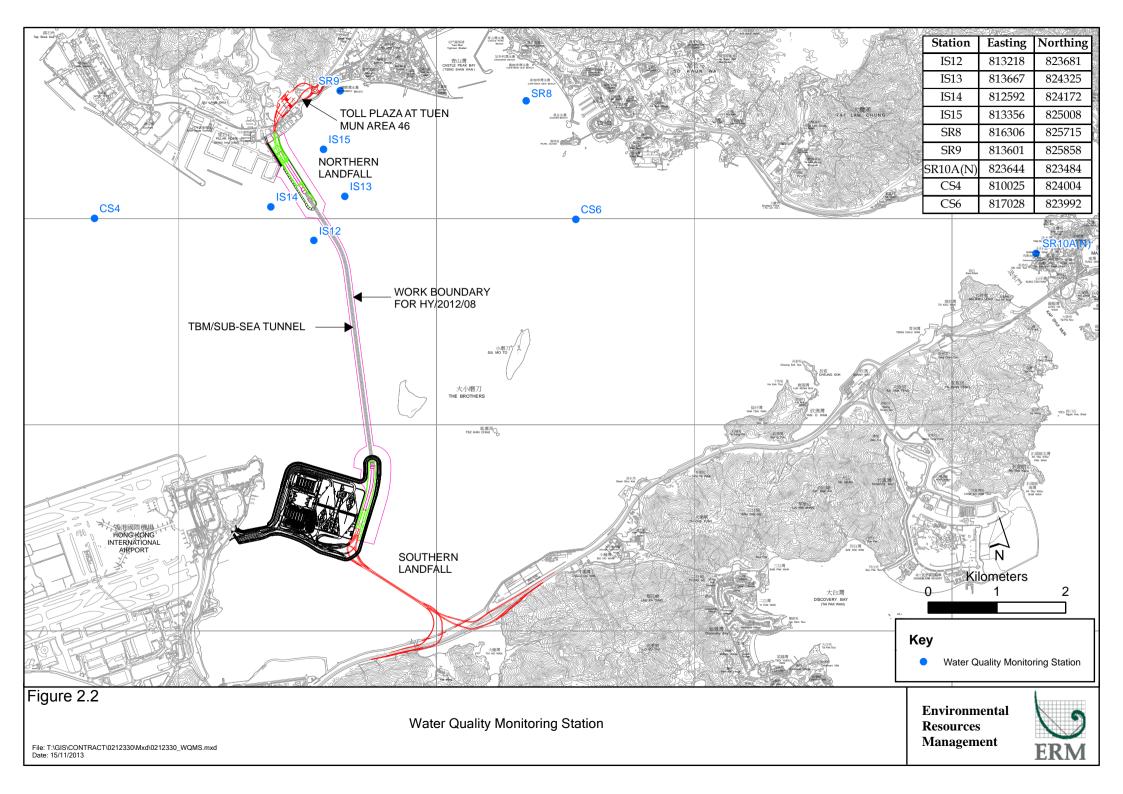
Equipment	Model
Vessel for Monitoring	65 foot single engine motor vessel with
	viewing platform 4.5m above water level

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.



	Line No.	Easting	Northing		Line No.	Easting	Northing
1	Start Point	804671	815456	13	Start Point	816506	819480
1	End Point	804671	831404	13	End Point	816506	824859
2	Start Point	805476	820800*	14	Start Point	817537	820220
2	End Point	805476	826654	14	End Point	817537	824613
3	Start Point	806464	821150*	15	Start Point	818568	820735
3	End Point	806464	822911	15	End Point	818568	824433
4	Start Point	807518	821500*	16	Start Point	819532	821420
4	End Point	807518	829230	16	End Point	819532	824209
5	Start Point	808504	821850*	17	Start Point	820451	822125
5	End Point	808504	828602	17	End Point	820451	823671
6	Start Point	809490	822150*	18	Start Point	821504	822371
6	End Point	809490	825352	18	End Point	821504	823761
7	Start Point	810499	822000*	19	Start Point	822513	823268
7	End Point	810499	824613	19	End Point	822513	824321
8	Start Point	811508	821123	20	Start Point	823477	823402
8	End Point	811508	824254	20	End Point	823477	824613
9	Start Point	812516	821303	21	Start Point	805476	827081
9	End Point	812516	824254	21	End Point	805476	830562
10	Start Point	813525	821176	22	Start Point	806464	824033
10	End Point	813525	824657	22	End Point	806464	829598
11	Start Point	814556	818853	23	Start Point	814559	821739
11	End Point	814556	820992	23	End Point	814559	824768
12	Start Point	815542	818807	24*	Start Point	805476*	815900*
12	End Point	815542	824882	24*	End Point	805476*	819100*

Table 2.6Impact Dolphin Monitoring Line Transect Co-ordinates

Remarks: The coordinates of several starting and ending points have been revised due to the presence of a work zone to the north of the airport platform with intense construction activities in association with the construction of the third runway expansion for the Hong Kong International Airport. Co-ordinates in red and marked with asterisk are revised co-ordinates of transect line.

2.3.5 Action & Limit Levels

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

2.3.6 Monitoring Schedule for the Reporting Month

Dolphin monitoring was carried out on 4, 9, 18 and 26 of October 2017. The dolphin monitoring schedule for the reporting month is shown in *Appendix F*.

2.3.7 Results & Observations

A total of 274.33 km of survey effort was collected, with 90.3% of the total survey effort being conducted under favourable weather conditions (i.e. Beaufort Sea State 3 or below with good visibility) in October 2017. Among the two areas, 105.80 km and 168.53 km of survey effort were collected from NEL and NWL survey areas, respectively. The total survey effort conducted on primary and secondary lines were 191.69 km and 82.64 km respectively. The survey efforts are summarized in *Appendix I*.

Four groups of 8 Chinese White Dolphins sightings were recorded during the two sets of surveys in October 2017. All dolphin sightings were made in NWL, while none was sighted in NEL. All dolphin sightings were made during on-effort search and were made on primary lines. One of the dolphin groups was associated with an operating purse-seiner.

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

Encounter rates of Chinese White Dolphins are deduced from the survey effort and on-effort sighting data made under favourable conditions (Beaufort 3 or below) in October 2017 with the results present in *Tables 2.7* and *2.8*.

Table 2.7Individual Survey Event Encounter Rates

		Encounter rate (STG)	Encounter rate (ANI)	
		(no. of on-effort dolphin	(no. of dolphins from all on-	
		sightings per 100 km of	effort sightings per 100 km of	
		survey effort)	survey effort)	
		Primary Lines Only	Primary Lines Only	
NEL	Set 1: October 4th / 9th	0.0	0.0	
	Set 2: October 18th / 26th	0.0	0.0	
NWL	Set 1: October 4th / 9th	1.9	9.3	
	Set 2: October 18th / 26th	4.9	4.9	

Note: Dolphin Encounter Rates are deduced from the Two Sets of Surveys (Two Surveys in Each Set) in October 2017 in Northeast (NEL) and Northwest Lantau (NWL)

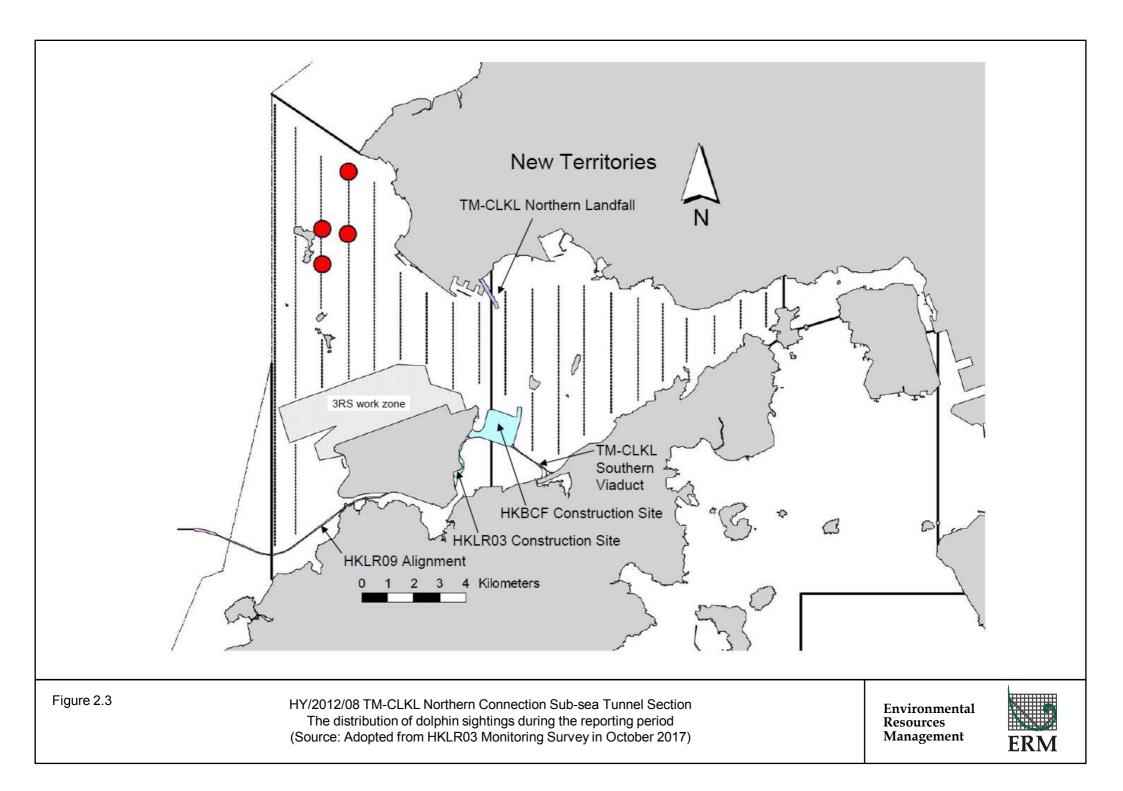


Table 2.8Monthly Average Encounter Rates

	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 Lines		Primary Lines Only	Both Primary and Secondary Lines	
Northeast Lantau	0.0	0.0	0.0	0.0	
Northwest Lantau	3.5	2.6	7.0	5.2	

Note: Overall dolphin encounter rates (sightings per 100 km of survey effort) from all four surveys are conducted in October 2017 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 4, 11, 18 and 25 October 2017.

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

Table 2.9Specific Observations and Recommendations during the Weekly SiteInspection in this Reporting Month

Inspection Date	Observations	Recommendations/ Remarks
4 October 2017	 Works Area - Portion S-A Accumulated rubbish should be removed from the waste container Works Area - Portion S-B Stagnant water should be removed and chemical labels should be provided for the chemical drums. Accumulated rubbish should be removed from the waste container. Works Area - TBM tunnel Drip tray should be provided for the chemical containers. Drip tray should be provided for the chemical containers. 	 Works Area - Portion S-A The Contractor was reminded to remove accumulated rubbish from the waste container. Works Area - Portion S-B The Contractor was reminded to remove the stagnant water and provide chemical labels for the chemical drums. The Contractor was reminded to remove accumulated rubbish from the waste container. Works Area - TBM tunnel The Contractor was reminded to provide drip tray for the chemical containers. The Contractor was reminded to provide drip tray for the chemical container.
11 October 2017	 Works Area -Portion N-C Water spraying should be applied more frequently during dry conditions. Works Area - Portion N-A Water spraying should be applied more frequently during dry conditions. Reminder from SOR: Works Area - Portion N-C Stagnant water should be removed and larvacide should be sprayed regularly. Works Area - Portion S-B Stagnant water should be removed. 	 containers. Works Area -Portion N-C The Contractor was reminded to apply water spraying more frequently during dry conditions. Works Area - Portion N-A The Contractor was reminded to apply water spraying more frequently during dry conditions. Reminder from SOR: Works Area - Portion N-C The Contractor was reminded to remove the stagnant water and spray larvacide regularly. Works Area - Portion S-B The Contractor was reminded to remove the stagnant water.

Inspection Date	Observations	Recommendations/ Remarks		
18 October 2017	 Works Area - TBM tunnel Drip tray should be provided for the chemical containers. Works Area - Portion S-B Drip tray should be provided for the chemical containers. 	 Works Area - TBM tunnel The Contractor was reminded to provide drip tray for the chemical containers. Works Area - Portion S-B The Contractor was reminded to provide drip tray for the chemical containers. 		
25 October 2017	 Works Area - Portion N-C Drip tray should be provided for the chemical containers. Works Area - Portion N-A "Stop work" label should be put on the unused grouting machine. Works Area - Portion S-B Slurry paddles should be tidied up. 	 Works Area - Portion N-C The Contractor was reminded to provide drip tray for the chemical containers. Works Area - Portion N-A The Contractor was reminded to put the "Stop work" label on the unused grouting machine. Works Area - Portion S-B The Contractor was reminded to tidy up the slurry paddles. 		

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	Inert Construction	Non-inert Construction	Recyclable Materials (c)	Chemical Wastes	Marine Sedi	ediment (m ³)
	Waste ^(a) (tonnes)	Waste Re- used (tonnes)	Waste ^(b) (tonnes)	(kg)	(kg)	Category L	Category M (M _p & M _f)
October 2017	706	0	244	0	0	0	0

(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 The Contractor was also reminded to properly maintain the site and wastes. 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.

License/ Permit	License or Permit No.	Date of Issue	Date of Expiry	License/ Permit Holder	
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	363510	19 August 2013	Throughout the Contract	DBJV	Northern Landfall
Notification					
Construction Dust	403620	10 June 2016	Throughout the Contract	DBJV	Southern Landfall
Notification					
Chemical Waste	5213-422-D2516-02	18 January 2017	Throughout the Contract	DBJV	Northern Landfall
Registration Chemical Waste	5213-951-D2591-01	25 May 2016	Throughout the Contract	DBJV	Southern Landfall
Registration	0210 901 02091 01	2010/14/ 2010	inioughout the conduct	20,1	
Construction Waste	7018108	28 August 2013	Throughout the Contract	DBJV	Waste disposal in Contract No. HY/2012/08
Disposal Account					
Waste Water Discharge License	WT00017707-2013	18 November 2013	30 November 2018	DBJV	For site WA18
License					
Waste Water Discharge	WT00018433-2014	6 March 2014	31 March 2019	DBJV	N6 Site
License					
Waste Water Discharge	WT00019248-2014	5 June 2014	30 June 2019	DBJV	For site Portion N6 and Reclamation Area E
License					
Waste Water Discharge	WT00025944-2016	15 December 2016	31 December 2021	DBJV	Southern Landfall
License					
Marine Dumping Permit	EP/MD/18-036	21 October 2017	20 November 2017	DBJV	Type 1 (Dedicated site) and Type 2
* 0				·	(Confined Marine Disposal)
Construction Noise Permit	GW-RW0538-17	16 October 2017	15 April 2018	DBJV	For Urmston Road in front of Pillar Point
Construction Noise Permit Construction Noise Permit	GW-RW0279-17 PP-RS0019-17	13 June 2017 31 August 2017	12 December 2017 30 November 2017	DBJV DBJV	WA23 @ Tsing Yi Southern Landfall (Percussive Piling)
Construction Noise Permit	GW-RS0878-17	11 October 2017	2 April 2018	DBJV DBJV	Southern Landfall
2516 a de de la constant de la constant				20,1	

Table 2.11Summary of Environmental Licensing and Permit Status

ENVIRONMENTAL RESOURCES MANAGEMENT

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License/ Permit	License or Permit No.	Date of Issue	Date of Expiry	License/ Permit Holder Remarks		
Notes:						
HyD = Highways Department						
DBJV = Dragages - Bouyg	ues Joint Venture					
VEP = Variation of Enviro						

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

Two (2) Action Level exceedances of 1-hour TSP and one (1) Action Level exceedance of 24-hour TSP were recorded on 21 October 2017. Two (2) Action Level exceedances of 1-hour TSP were recorded on 27 October 2017. Investigation reports will be provided in the next monthly EM&A report. Investigation reports of air quality exceedances on 12, 18 and 27 September 2017 are provided in Appendix K.

Cumulative statistics are provided in *Appendix K*.

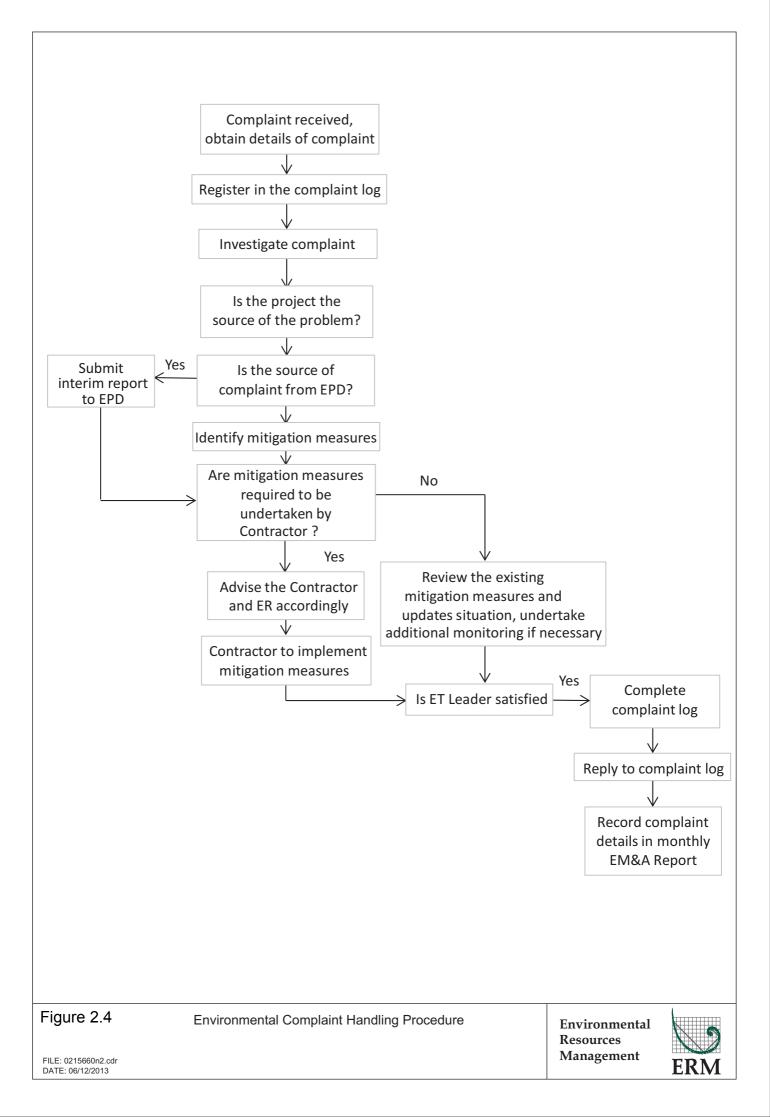
2.9 SUMMARY OF COMPLAINTS, NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

The Environmental Complaint Handling Procedure is provided in Figure 2.4.

One (1) environmental complaint case regarding light pollution at Tuen Mun Pier was referred by IEC on 25 October 2017. The complaint investigation report is under preparation by the ET and will be provided in the next monthly report.

No environmental summons was received in this reporting period.

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



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 2017 are summarized in *Table 3.1*.

Table 3.1Construction Works to Be Undertaken in the Coming Month

Works to be undertaken

Land-based Works

- Box Culvert Extension at Works Area Portion N-A;
- Construction of North Ventilation Building Portion N-C;
- Construction of Cross Passage Tympanum TBM tunnel;
- Cross Passage Lining Installation TBM Tunnel;
- Excavation of Sub-sea Tunnel TBM tunnel;
- Corbel Construction TBM Tunnel;
- Phase 2 Surcharge Removal Portion N-A;
- Bulk Excavation Portion S-A;
- CSM treatment, Jet Grouting works and D-wall Construction; and
- Ground Freezing Works Portion S-A

Marine-based Works

• Seawall Enhancement works - Portion N-C

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 2017 are mainly associated with dust, marine water quality, marine ecology and waste management issues.

3.3 MONITORING SCHEDULE FOR THE COMING MONTH

The tentative schedule for environmental monitoring in November 2017 is provided in *Appendix F*.

4.1 CONCLUSIONS

4

This Forty-eighth Monthly EM&A Report presents the findings of the EM&A activities undertaken during the period from 1 to 31 October 2017, 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. Four (4) Action Level exceedance of 1-hour TSP and one (1) Action Level exceedance of 24-hour TSP were recorded in the air quality monitoring of this reporting month. Investigation reports will be provided in the next monthly EM&A report. Investigation reports of air quality exceedances on 12, 18 and 27 September 2017 are provided in Appendix K.

Four groups of 8 Chinese White Dolphins sightings were recorded during the two sets of surveys in October 2017. All dolphin sightings were made in NWL, while none was sighted in NEL. All dolphin sightings were made during on-effort search and was made on primary lines. One of the dolphin groups was associated with an operating purse-seiner.

Environmental site inspection was carried out four (4) times in October 2017. Remedial actions recommended for the deficiencies identified during the site audits were properly implemented by the Contractor.

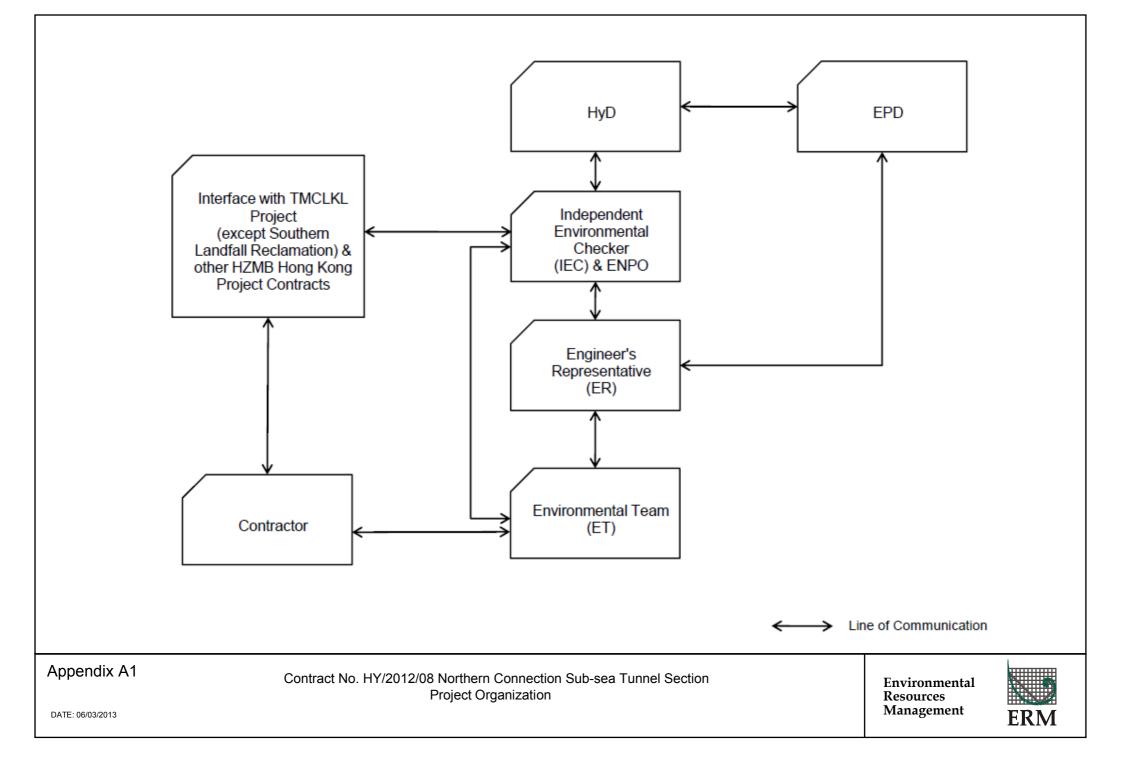
No non-compliance event was recorded during the reporting period.

One (1) environmental complaint case regarding light pollution at Tuen Mun Pier was referred by IEC on 25 October 2017. The complaint investigation report is under preparation by the ET and will be provided in the next monthly report.

No environmental summons was received in this reporting period.

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

Project Organization for Environmental Works



Appendix B

Construction Programme

ame	Orig Dur	DWPF Start	DWPF Finish				A		-	017				I No			2018
CLK - Northern Connection Sub-Sea Tunne	I Sectio	n		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb
nstruction Arthern Landfall																	
orthern Landfall orth Reclamation (Phase 1)																	
ox Culvert Extension									 			, , , , , ,		 	 		
Construction CH100-150 Land Section																	
ELS & Structure Pile A41/A39 CJ to Pile A39/A37 CJ (Bay 7)																	
Box Culvert Structure																	
Removal of strut S2 & Backfilling up to required level Pile A39/A37 CJ to Pile A37/A35 CJ (Bay 8)	6	03-Jun-16	10-Jun-16														
Box Culvert Structure																	
Removal of strut S2 & Backfilling up to required level Pile A37/A35 CJ to Pile A35/A33 CJ (Bay 9)	6	11-Jun-16	17-Jun-16														
Box Culvert Structure								±			- - - - -						
Removal of strut S2 & Backfilling up to required level Pile A35/A33 CJ to Pile A33/P117 CJ (Bay 10)	6	18-Jun-16	24-Jun-16														
Box Culvert Structure																	
Removal of strut S2 & Backfilling up to required level	6	25-Jun-16	02-Jul-16														
Ch150-250 Marine Section ELS & Structure																	
Pile A33/P117 CJ to Pile P113/P109 CJ (Bay 11) Box Culvert Structure																	
Removal of strut S2 & Backfilling up to required level	6	04-Jul-16	09-Jul-16	_													
Pile P113/P109 CJ to Pile P105/P101 CJ (Bay 12) Box Culvert Structure											 		 			[
Box Culvert Structure Removal of strut S2 & Backfilling up to required level	6	11-Jul-16	16-Jul-16									 			 		
Pile P105/P101 CJ to Pile P97/P93 CJ (Bay 13)			·									 					
Box Culvert Structure Removal of strut S2 & Backfilling up to required level	6	18-Jul-16	23-Jul-16														
Pile P97/P93 CJ to Pile P89/P85 CJ (Bay 14)			·							- - - - -		 			, 		
Box Culvert Structure Removal of strut S2 & Backfilling up to required level	6	25-Jul-16	30-Jul-16							- - - -		 			, 		
Pile P89/P85 CJ to Pile P81/P77 CJ (Bay 15)						 									 		
Box Culvert Structure Removal of strut S2 & Backfilling up to required level	6	01-Aug-16	06-Aug-16	/el						1 1 1 1	 	1 1 1 1			 		
Pile P81/P77 CJ to Pile P73/P69 CJ (Bay 16)		_								1 1 1 1	1 1 1 1	- - - -					
Box Culvert Structure Removal of strut S2 & Backfilling up to required level	6	08-Aug-16	13-Aug-16	level						1 1 1 1	1 1 1 1	- - - -					
Ch250-380 Marine Section						 -		+ +				 			 -		 -
ELS & Structure Pile P73/P69 CJ to Pile P65/P61 CJ (Bay17)										1 1 1	1 1 1	1 1 1 1			1 1 1		
Box Culvert Structure															 		
Base slab construction including kicker Removal of strut S1	6	16-Mar-17 23-Mar-17	23-Mar-17 28-Mar-17					constructio	`	g¦kicker -¦							
System Formwork Assembly & Setup	18	28-Mar-17	22-Apr-17	-				1	1	sembly&S	ętup				 		
Walls & top slab construction	6	22-Apr-17	29-Apr-17	_				1	1	phstruction					 		
Removal of strut S2 & Backfilling up to required level Pile P65/P61 CJ to Pile P57/P53 CJ (Bay 18)	6	09-May-17	16-May-17					R	emoval of s	strut S2 & B	ackfilling up	to require	ed level		 		
Box Culvert Structure													 		 -		 -
Removal of strut S2 & Backfilling up to required level	6	16-May-17	23-May-17					•	Removal o	of strut S2 8	Backfilling	up to requ	ired level		 		
Pile P57/P53 CJ to Pile P49/P45 CJ (Bay 19) Box Culvert Structure										 							
Removal of strut S2 & Backfilling up to required level	6	23-May-17	31-May-17					n	Remov	al of strut S	2¦& Backfilli	ng up to re	equired lev	el 			
Pile P49/P45 CJ to Pile P41/P37 CJ (Bay 20) Box Culvert Structure										1 1 1	 	1 1 1 1			 		
Removal of strut S2 & Backfilling up to required level	6	31-May-17	07-Jun-17					1	Rem	dval of strut	t S2 & Back	Illing up to	required l	evel	 		
Pile P41/P37 CJ to Pile P33/P29 CJ (Bay 21) Box Culvert Structure								1							 		
Walls & top slab construction	6	23-May-17	31-May-17	_		 			1		onstruction	1			 		
Removal of strut S2 & Backfilling up to required level Pile P33/P29 CJ to Pile P25/P21 CJ (Bay 22)	6	07-Jun-17	14-Jun-17							emoval of s	rfut S2 & Ba	cktilling u	o;to require	dievel	1 1 1		! !
Box Culvert Structure		07.1															
Base slab construction including kicker Removal of strut S1	6	25-Apr-17 04-May-17	04-May-17 09-May-17					+	slab constr -¦ ¢val of stru		ding kicker						
Walls & top slab construction	6	31-May-17	07-Jun-17	-					1	1	constructio	p		J			
Removal of strut S2 & Backfilling up to required level	6	29-Jun-17	07-Jul-17							Rem	val of strut	S2 & Bac	dilling up to	required l	evel		
Pile P25/P21 CJ to Pile P17/P13 CJ (Bay 23) Box Culvert Structure						1 1 1 1									1 1 1		
Base slab construction including kicker	9	06-May-17	17-May-17		- 1						including ki			 		+	
Removal of strut S1	6	17-May-17	24-May-17	_					Removal	i i		 			1 1 1		1 1 1 1
Walls & top slab construction Removal of strut S2 & Backfilling up to required level	9	19-Jun-17 19-Jul-17	29-Jun-17 29-Jul-17	_				1 1 1			top slab co		1	ng up to re	quired leve	I	1 1 1 1
Pile P17/P13 CJ to Pile P09/P05 CJ (Bay 24)						1 1 1 1			1 1 1 1	, , , ,						 	
Box Culvert Structure Base slab construction including kicker	12	25-May-17	09-Jun-17							e slah cons	struction incl	udina kick	er				
Removal of strut S1	8	09-Jun-17	19-Jun-17	-				-	1	Removal of	1						
Walls & top slab construction	12	05-Jul-17	19-Jul-17							— v	Valls & top			J			! ! !
Removal of strut S2 & Backfilling up to required level	12	02-Aug-17	16-Aug-17								Re	moval of s	strut S2 & E	ackfilling u	p to require	ed level	
Pile P09/P05 CJ to End Wall CJ (Bay 25) Box Culvert Structure												\sim					
Base slab construction including kicker	9	09-Jun-17	20-Jun-17			1 1 1				Base slab o	onstruction	including	kicker		1 1 1		1 1 1
f 6 Planned Bar		TMC	CLK - Northe	ern Conr	nection S	Sub-Sea	unnel S	ection						Date 12-Feb-14	TMCLK/D BJG	evision EN/PRG/98507 EN/PRG/98507	Checked WYu SPa
e: 29-Oct-17 Planned Bar - Critical Planned Milestone		Detailed Wo	orks Progran	nme (Re	ev. F) - T	hree Mor	ths Rolli	ing Prog	ramme					08-Apr-14 28-Aug-14 30-Oct-15	TMCLK/D BJG	EN/PRG/98507 EN/PRG/98507 EN/PRG/98507	SPa CLa WYu
	1							-		1				1			

Activit	y Name	Orig	DWPF	DWPF												
		Dur	Start	Finish	Jan	Feb	Mar	Apr May	20 Jun	017 Jul	Aug Sep	Oct	Nov	Dec	Jan	2018 Feb M
	Removal of strut S1	12	20-Jun-17	05-Jul-17			1			Remo	val of strut S1			1		
	Walls & top slab construction	12	19-Jul-17	02-Aug-17							Walls & top slab					
	Removal of strut S2 & Backfilling up to required level	12	16-Aug-17	30-Aug-17			1 1 1				Remov	al of strut S	2 & Backfilli	ng up to re	quired lev	rel
	Ch380-399 Connection Section Connection to Existing Culvert						1 1 1			1 1 1			1 1 1	1 1 1		
	Removal of CH380 Sheet Pile Wall	12	02-Aug-17	16-Aug-17							Removal of	H380 She	et Pile Wal			
	Backfilling of temporary Drainage diversion channel for Handover	12	16-Aug-17	30-Aug-17							Backfill	ng of temp	orary Drain	age diversi	on chann	el for Handover
	CKS Land Access - diversion to Postion N12 Vertical Seawall	0		30-Aug-17							🔶 CKS La	und Access	diversion	to Postion I	V12 Vertio	al Seawall
	Removal of CKS Access S teel Bridge	18	30-Aug-17	20-Sep-17								1	f CKS Acces			
	Advance preparation works for Main Culvert Structure Connection	23	20-Sep-17	19-Oct-17									Advance pre	paration w	orks for N	lain Culvert Struc
	Connection Stage 1 (Cell 1 & 2) Bulkhead Installation at Cell 1 & 2, divert flow to Cell 3 & 4	12	01-Nov-17	14-Nov-17			1 1 1			1			Bu	Ikhoad Inst	allation at	Cell 1 & 2, divert
	Removal of combi-wall at end wall Cell 1 & 2 for connection	15	15-Nov-17	01-Dec-17			'	$\frac{1}{\frac{1}{1}}$								i-wall at end wall
	Rock & gravel fill	7	02-Dec-17	09-Dec-17	_		1 1 1			1				Rock		-i - i
	Mass concrete fill & blinding layer	6	11-Dec-17	16-Dec-17	_		1 1 1			1				1	- U	ete fill & blinding la
	Bottom slab including kicker	12	18-Dec-17	02-Jan-18	-		1 1 1									n slab including ki
	Wall & top slab	12	04-Jan-18	17-Jan-18	-		1 1 1		1	1				1 1 1		Wall & top slab
	Connection Stage 2 (Cell 3 & 4)					+	·		 	/ 	· <u></u>		1 1 1	 		· - ¹
	Bulkhead Removal at Cell 1 & 2	7	18-Jan-18	25-Jan-18			1 1 1							1 1 1		Bulkhead Rem
	Bulkhead Installation at Cell 3 & 4	12	26-Jan-18	08-Feb-18			1							1 1 1		Bulkhead
	Removal of combi-wall at end wall Cell 3 & 4 & row 2 for connection	12	09-Feb-18	22-Feb-18			1							1 1 1		Remo
	Bottom slab including kicker	12	02-Mar-18	15-Mar-18							· · · · · · · · · · · · · · · · · · ·			, , , ,		-
	Wall & top slab	12	16-Mar-18	29-Mar-18										- - - - -		1
	Backfilling	12	03-Apr-18	17-Apr-18		1	1 1 1							1 1 1		
	Miscellaneous works					1	1 1 1							1 1 1		
	Connection to Existing EOC ELS for Connection to Existing EOC	21	15-Nov-17	09-Dec-17		1	1					1		ELS	for Conne	ection to Existing E
	Removal of EOC temp drainage diversion	18	09-Dec-17	03-Jan-18	+	+ + 										val of EOC temp
	EOC precast structure Installation & Connection	30	03-Jan-18	07-Feb-18	_											EOO preca
	Backfilling & EOC special manhole Construction	24	07-Feb-18	14-Mar-18	-									1		
	Connection to Existing EOB													, , ,		
	ELS for Connection to Existing EOB	21	20-Oct-17	15-Nov-17									EL	S for Conn	ection to	Existing EOB
	Removal of EOB Temporary Drainage Diversion	18	15-Nov-17	06-Dec-17					1					Remo	val of EO	B Temporary Drai
	Precast EOB Structure Installation & Connection	29	06-Dec-17	12-Jan-18			 		1 1 1	 					Pr	ecast EOB Struct
	Backfilling & EOB special manhole Construction	24	12-Jan-18	09-Feb-18			1 1 1		1	1 1 1				 		Backfilling
	Connection to Existing EOA						1 1 1		1	1			1 1 1	1 1 1		
	ELS for Connection to Existing EOA	24	20-Sep-17	20-Oct-17		¦	¦ 					· · · · · ·	ELS for Cor			
	EOA Precast installation & Connection	29	20-Oct-17	24-Nov-17	_									i		ation & Connectio
	Backfilling & EOA special manhole Construction	24	24-Nov-17	22-Dec-17											Backfilling	& EOA special m
	Inspection Manhole (IM) Inspection Manhole IM-13 to IM-16 & backfilling to +6.0mPD	18	30-Aug-17	20-Sep-17								Inspection	Manholo IN		6 & backf	illing to +6.0mPD
		10	30-Aug-17	20-360-17			- - - -					linspection			o a Dauki	
	Balance Hole (BH) BH-10 to BH-12 & backfilling to +6.0mPD	18	20-Sep-17	13-Oct-17		+	 -		 	 		BH	-'10 to BH-1	2 & backfil	ling to +6	0mPD
	Desilting Opening (DO)						 		1	1				 	-	
	DO-05 to DO-08 & backfilling to +6.0mPD	18	13-Oct-17	04-Nov-17			 			1			DO-05	to DO-08	& backfilli	ng to +6.0mPD
	CLP Temporary Substation			-			1 1 1							1 1 1		
	Construction	- 00	05 1	00.0			 				·		 			
	CLP Substation - Prepare for CLP consent for de-energization CLP Substation - De-energization	96 24	05-Jun-17	26-Sep-17 26-Oct-17	_		1 1 1									nt for de-energiza
	CLP Substation - Devenergization CLP Substation - Dismantling & Removal	137	26-Sep-17 30-Jul-18	12-Jan-19	_		1 1 1			1				station - De	energiza	tion
	Handover of Portion N6B	0	30-Jui-16	12-Jan-19	_		1 1 1		1	1				1 1 1		
	TMCLK VO-008 - Construction of Viaduct Foundation		rtion N6A	12-0411-19			1 1 1			1				1 1 1		
	Viaduct Pile Cap	5 αι Γυ				+							1 	 		
	Construction						1							1 1 1		
	Pier G1b													1 1 1		
	Pile Cap G1b - Rebar & Concreting	18	08-Feb-17	01-Mar-17	_		-	p G1b - Rebar & Conc								
	Pile Cap G1b - Backfilling & Temp Reinstatement	6	01-Mar-17	08-Mar-17			Pile 9	Cap G1b - Backfilling &	& Temp Re	instatemer	ıt 					
	Pier H1b Pile Cap H1b - Rebar & Concreting	18	10-May-17	01-Jun-17					Bilo Co		bar & Concreting			1		
	Pile Cap H1b - Backfilling & Temp Reinstatement	6	01-Jun-17	08-Jun-17	_				-	1	Backfilling & Temp Re	instateme		1 1		
	North Approach TBM Tunnelling & Cross Passage	, v					1 1 1 1							1 1 1		
	Construction															
	North Approach Tunnel Internal Structure - NB							L			· •	 ! !		! ! !		
	NB - North TBM Tunnel - Fire proofing and Provision to E&MS and TCSS Contract for KD1	42	14-Sep-16	05-Nov-16	unnel - Fir	e proofing	and Provi	sion to E&MS and TCS	S Contrac	t for KD1	1 I 1 I 1 I 1 I			1 1 1		
	North Approach Tunnel Internal Structure - SB		05.11	04.5		 	¦,		-					1 1 1		
	SB - North TBM Tunnel - Fire proofing & Provision to E&MS and TCSS Contract for KD1	42	05-Nov-16	24-Dec-16	5B - North	i ¦I BM Tuni	nel - Fire pi	roofing & Provision to	⊭&MS and ¦	LCSS Coi	ntract for KD1			1 1 1		
	North Ventilation Building Construction					; ; ;					· 			, 		
	Substructure	120	04-Jul-16	24-Nov-16	re	1								1		
	Superstructure	120	24-Nov-16	25-Apr-17			í.	Superstru	cture					1 1 1		
	Finishing Works	155	28-Apr-17	03-Nov-17									Finishi	ng Works		
	Civil Provision for E&MS Contract	72	12-Jul-17	06-Oct-17	-		- - - -						- Provision fo	E&MS Co	ntract	
	Remaining Finishing Works	96	30-Aug-17	23-Dec-17		+										g Finishing Work
	Handover Portion N9	0		23-Dec-17	_	1 1 1	1 1 1	1 I 1 I 1 I 1 I						1		r Portion N9
	North Reclamation (Phase 2)					1	1 1 1							1 1 1		
	Construction					1	1 1 1							1 1 1		
	Vertical Seawall - Seawall Coping - (Zone G)	78	27-Feb-17	06-Jun-17		¦				al Seawall	- Seawall Coping - (
	Surcharge - Phase 2	105	27-Apr-17	10-Aug-17	_						Surcharge - P	1				
	Removal of Surcharge - Phase 2	18	09-Aug-17	30-Aug-17	_		1						arge - Phas	e 2		
	Handover - Portion N1 to N4	0		30-Aug-17		-	<u> </u>				Handov	/er - Portio	N1 to N4			
Page	2 of 6 Planned Bar		TMC	CLK - Northe	ern Conn	ection S	ub-Sea	Tunnel Section					Date 12-Feb-14		evision EN/PRG/98507	Checked Appro WYu SPo
)ata I	Planned Bar - Critical		Detailed W/	orks Program	nme (Re	v. F) - TI	hree Mo	nths Rolling Prog	ramme				08-Apr-14 28-Aug-14 30-Oct-15	TMCLK/DBJG	EN/PRG/98507 EN/PRG/98507 EN/PRG/98507	. CLa WYu
aid	Planed Milestone Progress bar			•		,		yi roning i royi								· ·
	Progress bar Progress Milestone			Pi	rogress a	as of 29-	Oct-17									
		1								1						

tivity Name	Orig Dur	DWPF Start	DWPF Finish						20)17						2018	
North Approach Down	Dur	Start		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov Dec	Jan	Feb	Mar
North Approach Ramp Construction					1 1 1 1			1 1 1 1	1 1 1 1	1 1 1 1	1 1 1 1						
Zone G - Sheet Piling	23	30-Aug-17	26-Sep-17										Zone G -	Sheet Piling	-		
Zone G- Tension Piles	32	30-Aug-17	09-Oct-17		1					1 1 1			Zon	e G- Tension Piles			
Zone G - Pile Test	24	09-Oct-17	07-Nov-17		1 1 1			 	1	1 1 1	1 1 1			Zone G - Pile T	est		1
Remaining Zine E & Zone G - Excavation - Soft	34	07-Nov-17	16-Dec-17							, , ,	, , ,			R	emaining Zi	ne E & Zo	neG-E
Remaining Zone E & Zone G - Structure	94	16-Dec-17	20-Apr-18		+					, , , ,							+
Remaining Zone E & Zone G - Backfilling	48	20-Apr-18	19-Jun-18		1 1 1			 		1 1 1	1 1 1	1 1					
Provision works for E&MS/TCSS (for Stage 3)	70	05-May-18	30-Jul-18		1 1 1					i 1 1	i i i						
Sub-sea Tunnel Sub-sea TBM Tunnelling				-	1			 									1
Construction			_		1					:	1 1 1	1					
Sub-sea TBM Tunnel - NB ID12.2m - S881										,	 1 1						
S881 - TBM Removal at Southern Landfall	60	02-Apr-17	05-Jun-17	-				1	S881	+ TBM Rem	oval at Sou	uthern Lar	ndfall				
Sub-sea TBM Tunnel - SB ID12.2m - S882 SB - Sub-sea TBM Tunnel - ALLUVIUMS silty with Trimix (Ch2595 to	4	25-Jan-17	01-Feb-17		SB-S	Sub-sea TBN	/ Tunnel - /		S silty with	Trimix (Ch2	2595 to 253	- 					
2533 - 62m) SB - TBM Removal at Southern Landfall	60	01-Feb-17	02-Apr-17					1		rn Landfal	1						1
Sub-sea TBM Tunnel - NB - Precast Invert Gallery					+					· · · · · · · · · · · · · · · · · · ·							
NB - Sub-sea TBM Tunnel - Precast Invert Gallery - Completion to CP08	6	11-Jun-17	18-Jun-17							B - Sub-se	a TBM Tun	nel - Prec	ast Invert G	allery - Completion to	CP08		1
Sub-sea TBM Tunnel - SB - Precast Invert Gallery																	
SB - Sub-sea TBM Tunnel - Precast Invert Gallery - Completion to CP10	6	26-Mar-17	01-Apr-17							recast Inve		1					
SB - Sub-sea TBM Tunnel - Precast Invert Gallery - Completion to CP09	6	01-Apr-17	07-Apr-17					i					etion to CP(-i			
SB - Sub-sea TBM Tunnel - Precast Invert Gallery - Completion to CP08	6	07-Apr-17	13-Apr-17		1 1 1		SB	- Sub-sea	i BM Tunne	eı - Precast	nvert Gall	ery - Com	pletion to C	mus			1
Sub-sea Tunnel Cross Passage & Internal Structure Construction																	
Sub-sea Tunnel Cross Passage																	
CP26 - ML03 - Ch4330	01	10 4	10 14-27		, , , , ,	, , , , , , , , , , , , , , , , , , ,				, 1 1 1	- - - 						
CP - Remaining Internal Structure & Finishing	21	12-Apr-17	12-May-17		1 1			CP ·	Remainin	g Internal S	structure &	Finishing					
CP25 - ML03 - Ch4232 CP - Remaining Internal Structure & Finishing	21	18-Apr-17	13-May-17		1			CP	- Remainir	g Internal s	¦ \$tructure &	Finishina					
CP24 - ML03 - Ch4133					1				1	1 1 1		9					1
CP - Remaining Internal Structure & Finishing	21	04-May-17	29-May-17						CP - Rer	haining Inte	rnal Struct	ure & Fini	ishing				
CP23 - ML03 - Ch4035				[T				1 1 1 1	, ; ; ;	r	 1 1					 ! !
CP - Remaining Internal Structure & Finishing	21	08-May-17	02-Jun-17						CP - Re	emaining In	ternal Stru	cture & Fi	nishing				
CP22 - ML03 - Ch3936 CP - Remaining Internal Structure & Finishing	21	26-May-17	21-Jun-17	-	1	1 1 1 1 1 1 1 1				P - Romai	, hina Intern	al Structur	rd & Finishi				1
CP20 - ML03 - Ch3739	21	way-1/	/	-						nernal - יי י	, mig intern '	u ou uctul	re & Finishi	9			
CP20 - ME03 - CH3739 CP - Remaining Internal Structure & Finishing	21	17-Jun-17	13-Jul-17		+			, , , ,		CP	- Remainin	ig Internal	Structure 8	Finishing	-		+
CP19 - ML03 - Ch3641										, , ,	, , ,						
CP - Remaining Internal Structure & Finishing	21	21-Jun-17	17-Jul-17							CF	- Remain	ing Interna	al Structure	& Finishing			
CP18 - ML03 - Ch3542	40	17	07 4 47	2) 				_		, , , , , ,	NACH C	Dhe				
CP - Piping Jacking Method - Break-in & Excavation CP - Pipe Jacking Method - Break-out & Demobilization	10 12	17-Jun-17 27-Jun-17	27-Jun-17 09-Jul-17		; ; ;	; 				(i-	÷			Excavation 			
CP - Pipe Jacking Method - Break-out & Demobilization CP - Remaining Internal Structure & Finishing	12 21	27-Jun-17 10-Jul-17	09-Jul-17 02-Aug-17		1 1 1			 		CP-		1		t & Demobilization			1
CP - Remaining internal Structure & Prinsning CP17 - ML03 - Ch3444	21		v∠ ∩uy-1/	-	1						ם טר-אני '	unan ing l					
CP - Pipe Jacking Method - Break-out & Demobilization	12	01-Jul-17	13-Jul-17		1 1 1			1 1 1	1 1 1	ср	Pipe Jack	ing Metho	od - Break-o	ut & Demobilization			1
CP - Remaining Internal Structure & Finishing	21	13-Jul-17	07-Aug-17								CP-I	Remaining	g Internal S	ructure & Finishing			
CP16 - ML03 - Ch3345				[! !	, ; ; ;	, ; ; ;	 ! !						 ! !
CP - Pipe Jacking Method - Setup & Assembly	23	24-Feb-17	23-Mar-17				CP - Pipe J	lacking Me	thod - Seti	up & Assem		1 1 1 1					
CP - Piping Jacking Method - Break-in & Excavation	10	09-Jul-17	19-Jul-17		1 1			 	1 1				1	ak-in & Excavation			
CP - Pipe Jacking Method - Break-out & Demobilization	12	19-Jul-17	31-Jul-17		1 1			 				-	1	reak-out & Demobiliz			
CP - Remaining Internal Structure & Finishing CP15 - ML03 - Ch3247	21	31-Jul-17	24-Aug-17		1 1 1 1			! !	 	 	L	UP - Hen	inquining Inte	nal Structure & Finisl			
CP15 - ML03 - CH3247 CP - Pipe Jacking Method - Setup & Assembly	23	03-Mar-17	30-Mar-17		1 1 1		CP - Pip	e Jacking N	¦ /lethod - S	etup & Asse	≑mbly	1 1 1					1
CP - Piping Jacking Method - Break-in & Excavation	10	13-Jul-17	23-Jul-17		1 1 1		·		1			Jacking I	Method - Br	eak-in & Excavation			
CP - Pipe Jacking Method - Break-out & Demobilization	12	23-Jul-17	04-Aug-17								CP - P	ipe Jackin	ng Method	Break-out & Demobil	ization		
CP - Remaining Internal Structure & Finishing	21	04-Aug-17	29-Aug-17									CP - Re	maining Int	ternal Structure & Fini	shing		1
CP14 - ML03 - Ch3148										, , ,	, 1 1				[
CP - Pipe Jacking Method - Setup & Assembly	23	09-Mar-17	06-Apr-17				CP - F	ripe Jackin	g Method	Setup & A		<u> </u>					
CP - Piping Jacking Method - Break-in & Excavation	10	31-Jul-17	10-Aug-17		1 1 1			, 					-	old - Break-in & Excav			
CP - Pipe Jacking Method - Break-out & Demobilization CP - Remaining Internal Structure & Finishing	12 21	10-Aug-17 22-Aug-17	22-Aug-17 15-Sep-17		1 1			1 1		1 1		· -		thod - Break-out & De			
CP - Hemaining Internal Structure & Finishing CP13 - ML03 - Ch3050	21	∠∠-Aug-1/	10-Sep-17							, , , , ,	:	C C	r - Remain	ng Internal Structure	a rinishing		
CP13 - ML03 - Ch3050 CP - Pipe Jacking Method - Setup & Assembly	23	16-Mar-17	13-Apr-17		1 1 1		СР	- Pipe Jacł	ing Metho	¦ d - Setup 8	Assembly	- - - - - - - - - - - - - - - - - - -					
CP - Piping Jacking Method - Break-in & Excavation	10	04-Aug-17	14-Aug-17							, - , , , ,			Jacking Met	hod - Break-in & Exca	avation		1
CP - Pipe Jacking Method - Break-out & Demobilization	12	14-Aug-17	26-Aug-17		1 1			 	1 1 1	1 1 1				ethod - Break-out & [n	
CP - Remaining Internal Structure & Finishing	21	26-Aug-17	20-Sep-17		1					1			ÇP - Rema	hing Internal Structu	e & Finishin	þ	
CP12 - ML03 - Ch2951								T	, , , ,	 , , ,	 , , ,						
CP - Pipe Jacking Method - Setup & Assembly	23	22-Mar-17	22-Apr-17		1 1 1			CP - Pipe J	lacking Me	thod - Setu	ip & Assem	1					1
CP - Piping Jacking Method - Break-in & Excavation	10	22-Aug-17	01-Sep-17		1 1 1			 	1	1 1 1	· –	i.		g Method - Break-in			
CP - Pipe Jacking Method - Break-out & Demobilization	12	01-Sep-17	13-Sep-17		1 1 1			 	1	1 1 1	1 1 1	CF		king Method - Break-			1
CP - Remaining Internal Structure & Finishing CP11 - ML03 - Ch2853	21	13-Sep-17	10-Oct-17		 	 		 	 	 	, , , ,		CP	Remaining Internal	Structure & F	inisning	
CP11 - ML03 - Ch2853 CP - Pipe Jacking Method - Setup & Assembly	23	28-Mar-17	28-Apr-17					CP - Pipe	Jacking N	ethod - Se	tup & Asse	mbly					
CP - Piping Jacking Method - Break-in & Excavation	10	26-Aug-17	05-Sep-17					, , ,					Piping Jack	ihg Method - Break-ii	n & Excavatio	bn	
CP - Pipe Jacking Method - Break-out & Demobilization	12	05-Sep-17	17-Sep-17									1		cking Method - Breal			
CP - Remaining Internal Structure & Finishing	21	18-Sep-17	13-Oct-17											Remaining Internal			1
CP10 - ML03 - Ch2754					+			<u> </u>		! ! !	L		\mathbf{N}		- +		+
CP - Pipe Jacking Method - Setup & Assembly	23	12-Jun-17	08-Jul-17							CP - I	Pipe Jackin	1	Setup &	1			
CP - Piping Jacking Method - Break-in & Excavation	10	13-Sep-17	23-Sep-17		1 1 1			1 1 1		, 1 1	, 1 1		CP - Pipir	g Jacking Method - B	reak-in & Ex	cavation	
ge 3 of 6 Planned Bar		ТМС	CLK - Northe	rn Conne	ection S	Sub-Sea T	unnel S	ection							Revision GEN/PRG/98507	Checked WYu	Approve SPo
Planned Bar - Critical			orks Program	mo (De	, <u> </u>	hroe M	the Dell'	na Pres	amme					08-Apr-14 TMCLK/DBJ 28-Aug-14 TMCLK/DBJ	GEN/PRG/98507 GEN/PRG/98507 GEN/PRG/98507	SPa CLa WYu	WYu WYu
ata Date: 29-Oct-17		Detailed WC	nks Program	inte (Ke)	v.⊏)-II	III ee NION	uns Kolli	ng Progi	annine					JU-DU-15 IMCLKDBJ	aavrna#8507	** 10	
Progress bar Progress Milestone 			Pre	ogress a	as of 29-	Oct-17											
	I									1							

y Name		Orig	DWPF	DWPF Finish				21	017							2018	
	Prook out 9 Demokilier for	Dur 12	Start	Finish	Jan Feb	Mar A	pr May	Jun	Jul	Aug	Sep	Oct	No		Jan	Feb	Ma
CP - Pipe Jacking Method CP - Remaining Internal S	- Break-out & Demobilization	12 21	23-Sep-17 06-Oct-17	05-Oct-17 31-Oct-17	-				1 1 1			CP -	E.	cking Method -			
CP09 - ML03 - Ch26		£1		5. 00-17					 								
CP - Pipe Jacking Method		23	19-Jun-17	15-Jul-17				-	C	P- Pipe Jad	king Meth	od - Setup	k Asse	embly			
CP - Piping Jacking Metho		10	17-Sep-17	27-Sep-17							-	CP - Pip	ning Jac	king Method - I	Break-in & I	Excavation	n
	- Break-out & Demobilization	12	27-Sep-17	09-Oct-17					1		Ì	CP	1	Jacking Method		1	
CP - Remaining Internal S		21	09-Oct-17	02-Nov-17									CF	P - Rémaining l		l¢ture & Fi -¦	
CP08 - ML03 - Ch25 CP - Pipe Jacking Method		23	19-Jun-17	15-Jul-17		. I I I I I I I I			C	P - Pipe Jac	king Meth	od - Setup	& Asse	embly			
CP - Piping Jacking Metho		10	05-Oct-17	15-Oct-17								1	1	ing Jacking Me	hod - Brea	k-in & Exc	avatio
CP - Pipe Jacking Method	- Break-out & Demobilization	12	15-Oct-17	27-Oct-17					1		1 1 1 1	-	CP -	Pipe Jacking N	lethod - Bre	eak-out &	Demol
CP - Remaining Internal S		16	26-Oct-17	15-Nov-17									; -	CP - Remain	ng Internal	Structure	k Fini
	- NB - Remaining Internal Strue Corbel & Cable Trough - Completion to	cture	27-Aug-17	01-Sep-17						_		h and Th	Т	al-Carbel 2.C	blo Trout	- Com-1	otion
CP13	Corbel & Cable Trough - Completion to Corbel & Cable Trough - Completion to	5	27-Aug-17 13-Sep-17	01-Sep-17 18-Sep-17	-				1 1 1	-	1			el - Corbel & C		1 1	
CP12 NB - Sub-sea TBM Tunnel -	Corbel & Cable Trough - Completion to	5	18-Sep-17	23-Sep-17		. 			1		:		1	3M Tunnel - Corb		1	
CP11 NB - Sub-sea TBM Tunnel -	Corbel & Cable Trough - Completion to	3	06-Oct-17	08-Oct-17									1	ea TBM Tunnel		1	1
CP10 NB - Sub-sea TBM Tunnel - CP09	Corbel & Cable Trough - Completion to	15	09-Oct-17	23-Oct-17								-	NB - 5	Sub-sea TBM T	unnel - Cor	bel & Cab	le Tro
NB - Sub-sea TBM Tunnel - CP08	Corbel & Cable Trough - Completion to	11	26-Oct-17	06-Nov-17				 	 		 			NB - Sub-sea Ti	M Tunnel -	Corbel &	Cable
NB - Sub-sea TBM Tunnel - South Retrieval shaft	Corbel & Cable Trough - Completion to	3	06-Nov-17	09-Nov-17										NB - Sub-sea 1	BM Tunnel	Corbel 8	& Cabl
CP32	OHVD Slab installation - Completion to OHVD Slab installation - Completion to	4	11-Feb-17 16-Feb-17	14-Feb-17 19-Feb-17		NB - Sub-sea TBN		1	i	1	i i						
CP31	OHVD Slab Installation - Completion to OHVD Slab installation - Completion to	4	16-Feb-17 04-Mar-17	19-Feb-17 08-Mar-17		NB - Sub-sea TE	3M Tunnel - OHV 					P30					
CP30 NB - Sub-sea TBM Tunnel -	OHVD Slab installation - Completion to	4	09-Mar-17	13-Mar-17			-sea TBM Tunne										
CP29 NB - Sub-sea TBM Tunnel -	OHVD Slab installation - Completion to	4	26-Mar-17	30-Mar-17			- Sub-sea TBM	1	1	1	1		٤				
CP28 NB - Sub-sea TBM Tunnel - CP27	OHVD Slab installation - Completion to	4	31-Mar-17	04-Apr-17		N	IB - Sub-sea TB	M Tunnel -	, OHVD Sla	binstallation	n - Compl	etion to CP	27				
NB - Sub-sea TBM Tunnel - CP26	OHVD Slab installation - Completion to	4	20-Apr-17	24-Apr-17			NB - Sub-	sea TBM T	unnel - OH	IŲ́D Slab ins	tallation -	¢ompletio	to CP	26	 		
NB - Sub-sea TBM Tunnel - CP25	OHVD Slab installation - Completion to	4	25-Apr-17	29-Apr-17			NB - Sul	1	:	1	;	1	1				
CP24	OHVD Slab installation - Completion to OHVD Slab installation - Completion to	4	09-May-17 14-May-17	13-May-17 19-May-17	-	. 		1	1		1		1	1			
CP23	OHVD Slab Installation - Completion to OHVD Slab installation - Completion to	4	14-May-17 31-May-17	04-Jun-17	-			1	1	1	1	1	1.1	tion to CP23	22		
CP22 NB - Sub-sea TBM Tunnel -	OHVD Slab installation - Completion to	4	05-Jun-17	09-Jun-17	-			1	1	1	1	1	1	Completion to C			
	OHVD Slab installation - Completion to	4	22-Jun-17	26-Jun-17							į	4	jan an	ion - Completio			
CP20 NB - Sub-sea TBM Tunnel - CP19	OHVD Slab installation - Completion to	4	27-Jun-17	01-Jul-17					NB - Si	ub-sea TBM	Tunnel - (OHVD Slat	install	ation - Complet	ion to CP1	9	
NB - Sub-sea TBM Tunnel - CP18	OHVD Slab installation - Completion to	4	16-Jul-17	19-Jul-17					: -	1	Î.		1	installation - C	1		
CP17	OHVD Slab installation - Completion to	4	21-Jul-17	24-Jul-17									i.	ab installation -	l .		
CP16	OHVD Slab installation - Completion to OHVD Slab installation - Completion to	4	05-Aug-17 10-Aug-17	09-Aug-17 14-Aug-17							i	4	jan an	/D Slab installa 	i		- i
CP15	OHVD Slab installation - Completion to	4	27-Aug-17	31-Aug-17	-			1	1	1	i	-	1	el - OHVD Slab		i -	- i
CP14 NB - Sub-sea TBM Tunnel -	OHVD Slab installation - Completion to	4	01-Sep-17	05-Sep-17	-					T			1	inel - OHVD Sla		1	1
CP13 NB - Sub-sea TBM Tunnel - CP12	OHVD Slab installation - Completion to	4	18-Sep-17	22-Sep-17							-	NB - Sub-	sea TB	M Tựnnel - OH	D Slab ins	tallation -	Comp
NB - Sub-sea TBM Tunnel - CP11	OHVD Slab installation - Completion to	4	23-Sep-17	27-Sep-17								NB - Sul	b¦sea T	BM Tunnel - O	VD Slab ir	nstallation	Com
NB - Sub-sea TBM Tunnel - CP10	OHVD Slab installation - Completion to	4	09-Oct-17	12-Oct-17								NE		-sea TBM Tunn			1
CP09	OHVD Slab installation - Completion to	4	24-Oct-17	27-Oct-17							 			Sub-sea TBM		1	1
CP08	OHVD Slab installation - Completion to OHVD Slab installation - Completion to	3	06-Nov-17 09-Nov-17	09-Nov-17 11-Nov-17	-				1		1		1	NB - Sub-sea T		1	1
South Retrieval shaft	Fire Proofing - Completion to CP48	4	18-Aug-16	22-Aug-16	ompletion to CP48	3			1					ouD-sea			
	Fire Proofing - Completion to CP47	4	23-Aug-16	27-Aug-16	Completion to CP								 		+		
NB - Sub-sea TBM Tunnel -	Fire Proofing - Completion to CP46	4	08-Sep-16	12-Sep-16	fing - Completion	to CP46			1		1		1				
NB - Sub-sea TBM Tunnel -	Fire Proofing - Completion to CP45	4	14-Sep-16	17-Sep-16	pofing - Completio	n to CP45											
	Fire Proofing - Completion to CP44	4	03-Oct-16	07-Oct-16	Fire Proofing - Co						 						
	Fire Proofing - Completion to CP43	4	08-Oct-16	12-Oct-16		ompletion to CP43											
	Fire Proofing - Completion to CP42 Fire Proofing - Completion to CP41	4	26-Oct-16 31-Oct-16	30-Oct-16 04-Nov-16	Tunnel - Fire Proof												
	Fire Proofing - Completion to CP41	4	18-Nov-16	22-Nov-16	-	ofing - Completion	1		1 1 1		1 1 1						
	Fire Proofing - Completion to CP39	4	23-Nov-16	27-Nov-16	sea TBM Tunnel -			9	1		1						
NB - Sub-sea TBM Tunnel -	Fire Proofing - Completion to CP38	4	10-Dec-16	14-Dec-16	-	nnel - Fire Proofing		1									
NB - Sub-sea TBM Tunnel -	Fire Proofing - Completion to CP37	4	15-Dec-16	19-Dec-16	β - Sub-sea TBM T	unnel - Fire Proofi	ng - Completion	to CP37			 				+		
	Fire Proofing - Completion to CP36	4	01-Jan-17	05-Jan-17	-	TBM Tunnel - Fire		1	1		1		1				
	Fire Proofing - Completion to CP35	9	05-Jan-17	14-Jan-17		ea' TBM Tunniel - F		1	1		1 1 1 1						
	Fire Proofing - Completion to CP34 Fire Proofing - Completion to CP33	3	22-Jan-17 27-Jan-17	25-Jan-17 31-Jan-17		ıb¦sea TBM Tunne Sub-sea TBM Tuni		1	1	1	1 1 1						
	Fire Proofing - Completion to CP32	3	15-Feb-17	17-Feb-17	••••••••••••••••••••••••••••••••••••••	NB - Sub-sea TBM TUN NB - Sub-sea TB							ļ				
	Fire Proofing - Completion to CP31	3	20-Feb-17	22-Feb-17		NB - Sub-sea T											
NB - Sub-sea TBM Tunnel -	Fire Proofing - Completion to CP30	3	08-Mar-17	11-Mar-17		NB - Sub	-sea TBM Tunne	- Fire Pro	ofing - Cor	npletion to C	P30						
NB - Sub-sea TBM Tunnel -	Fire Proofing - Completion to CP29	3	13-Mar-17	16-Mar-17		NB - Su	b-sea TBM Tunr	hel - Fire Pr	, bofing - Co	hpletion to	CP29		ł			1	
	Fire Proofing - Completion to CP28	3	30-Mar-17	02-Apr-17			B - Sub-sea TBN						ļ				
	Fire Proofing - Completion to CP27	3	04-Apr-17	07-Apr-17		\	NB - Sub-sea Th										
	Fire Proofing - Completion to CP26 Fire Proofing - Completion to CP25	3	24-Apr-17 29-Apr-17	27-Apr-17 02-May-17	-			1		re Proofing ·	1	1	1				
	Fire Proofing - Completion to CP25	3	29-Apr-17 13-May-17	02-May-17 17-May-17	-			1	1	Hire Proofing	ĭ ·	1	1	4			
	Fire Proofing - Completion to CP23	3	19-May-17	22-May-17				1	1	unnel - Fire F	1		1				
	Fire Proofing - Completion to CP22	3	04-Jun-17	07-Jun-17						BM Tunnel -					+		
NB - Sub-sea TBM Tunnel -	Fire Proofing - Completion to CP21	3	09-Jun-17	12-Jun-17				1 \	1	TBM Tunne	1	1	1				
NB - Sub-sea TBM Tunnel -	Fire Proofing - Completion to CP20	3	26-Jun-17	29-Jun-17					NB - Su	b-sea TBM	Tunnel - F	ire Proofin	g - Con	npletion to CP2	þ		
	Fire Proofing - Completion to CP19	3	01-Jul-17	04-Jul-17		. I I I I I I I			NB - S	Sub-sea TBN	VI Tunnel -	Fire Proof	fing - Co	ompletion to CF	19		
NB - Sub-sea TBM Tunnel -														Date F	evision	Checked	Арр
	Planned Bar		TMC	CLK - Northe	rn Connection	Sub-Sea Tunr	nel Section						12-F	eb-14 TMCLK/DBJ0	EN/PRG/98507	WYu	SPo
NB - Sub-sea TBM Tunnel - 4 of 6 Date: 29-Oct-17	Planned Bar Planned Bar - Critical Planned Milestone		-		rn Connection nme (Rev. F) - ⁻			rammo					08-A 28-A	pr-14 TMCLKDBJ0 ug-14 TMCLKDBJ0	EN/PRG/98507 EN/PRG/98507 EN/PRG/98507 EN/PRG/98507	WYu SPa CLa WYu	SPo WYu WYu

Activity	Name	Orig	DWPF	DWPF												
		Dur	Start	Finish	Jan	Feb Mar	Apr	May	20 Jun	017 Jul Aud		Oct	Nov	Dec	Jan	2018 Feb Mar
	NB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP18	3	20-Jul-17	22-Jul-17			Apr	Ividy	Jun		b-sea TBM T		_			
	NB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP17	3	25-Jul-17	27-Jul-17				+ !		·····	Sub-sea TBM			·+		
	NB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP16	3	09-Aug-17	12-Aug-17							NB - Sub-sea		1			P16
	NB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP15	3	14-Aug-17	18-Aug-17						_	1		1	roofing - Cor		
	NB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP14	3	31-Aug-17	03-Sep-17									1		· .	tion to CP14
	NB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP13	3	05-Sep-17	08-Sep-17							<u> </u>	1	1	1		letion to CP13
	NB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP12	3	22-Sep-17	25-Sep-17		·				, , , , , , , , , , , , , , , , , , ,						Completion to CP
	NB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP11	3	27-Sep-17	30-Sep-17						1 I 1 I 1 I 1 I	1					- Completion to Cl
	NB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP10	3	13-Oct-17	15-Oct-17									1			ofing - Completion
	NB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP09	3	28-Oct-17	30-Oct-17					1				1	;		e Proofing - Comp
	NB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP08	2	09-Nov-17	11-Nov-17									1	:		- Fire Proofing - C
	NB - Sub-sea TBM Tunnel - Fire Proofing - Completion to South	3	11-Nov-17	14-Nov-17				 		 						I - Fire Proofing - (
	Retrieval Shaft NB - Sub-sea TBM Tunnel - Road Level Fire Proofing	334	22-Mar-17	15-May-18		_										
	NB Tunnel - Road works & Road marking	155	17-Jan-18	02-Aug-18									1	1		ļ
	• 		17-0411-10	02-Aug-10												
	Sub-sea TBM Tunnel - SB - Remaining Internal Strue SB - Sub-sea TBM Tunnel - Corbel & Cable Trough - Completion to	5	31-Jul-17	05-Aug-17						SE	- Sub-sea T	¦ BM Tunnel -	¦ Corbel & C	able Trouch	ן I - Comple	tion to CP16
	CP16 SB - Sub-sea TBM Tunnel - Corbel & Cable Trough - Completion to	5	05-Aug-17	10-Aug-17												letion to CP15
	CP15 SB - Sub-sea TBM Tunnel - Corbel & Cable Trough - Completion to	5	22-Aug-17	27-Aug-17					1		1	1	1	: [· ·	Completion to CP
	CP14 SB - Sub-sea TBM Tunnel - Corbel & Cable Trough - Completion to	5	27-Aug-17	01-Sep-17							7					- Completion to Cl
	CP13 SB - Sub-sea TBM Tunnel - Corbel & Cable Trough - Completion to	5	13-Sep-17	18-Sep-17									1			rough - Completion
	CP12 SB - Sub-sea TBM Tunnel - Corbel & Cable Trough - Completion to	5	18-Sep-17	23-Sep-17								1	1			Trough - Completion
	CP11 SB - Sub-sea TBM Tunnel - Corbel & Cable Trough - Completion to	5	06-Oct-17	10-Oct-17		·				· · · · · · · · · · · · · · · · · · ·						Cable Trough - Complete
	CP10 SB - Sub-sea TBM Tunnel - Corbel & Cable Trough - Completion to	5	11-Oct-17	15-Oct-17						1 I 1 I 1 I 1 I 1 I		1	1	:		& Cable Trough - Co
	CP09 SB - Sub-sea TBM Tunnel - Corbel & Cable Trough - Completion to	5	26-Oct-17	31-Oct-17									i i			orbel & Cable Trough - C
	CP08 SB - Sub-sea TBM Tunnel - Corbel & Cable Trough - Completion to SB - Sub-sea TBM Tunnel - Corbel & Cable Trough - Completion to	5	31-Oct-17	05-Nov-17									T:	;		Corbel & Cable Trou
	SB - Sub-sea TBM Tunnel - Corbei & Cable Trough - Completion to South Retrieval shaft SB - Sub-sea TBM Tunnel - OHVD Slab installation - Completion to	5	31-Oct-17 31-May-17	05-Nov-17 05-Jun-17								ab in at-11 - "	1			
	SB - Sub-sea TBM lunnel - OHVD Slab installation - Completion to CP22 SB - Sub-sea TBM Tunnel - OHVD Slab installation - Completion to	5	-	05-Jun-17 10-Jun-17				¦		Sub-sea TBM Tunn			i.			
	SB - Sub-sea TBM lunnel - OHVD Slab installation - Completion to CP21 SB - Sub-sea TBM Tunnel - OHVD Slab installation - Completion to	5	05-Jun-17						SB.	Sub-sea TBM Tur						
	CP20	-	22-Jun-17	27-Jun-17					7	SB - Sub-sea TE	i.		li i			1
	SB - Sub-sea TBM Tunnel - OHVD Slab installation - Completion to CP19 SP - Sub-sea TBM Tunnel - OHVD Slab installation - Completion to	5	27-Jun-17	02-Jul-17					1	SB - Sub-sea	÷		1			
	SB - Sub-sea TBM Tunnel - OHVD Slab installation - Completion to CP18 SP - Sub-sea TBM Tunnel - OHVD Slab installation - Completion to	5	16-Jul-17	20-Jul-17						1 7 1	o-sea TBM Tu		1			
	SB - Sub-sea TBM Tunnel - OHVD Slab installation - Completion to CP17 SP Sub-sea TBM Tunnel - OHVD Slab installation - Completion to	5	21-Jul-17	25-Jul-17							ub-sea TBM					
	SB - Sub-sea TBM Tunnel - OHVD Slab installation - Completion to	5	05-Aug-17	10-Aug-17					1		1		1	:		letion to CP16
	SB - Sub-sea TBM Tunnel - OHVD Slab installation - Completion to CP15	5	10-Aug-17	16-Aug-17					1							pletion to CP15
	SB - Sub-sea TBM Tunnel - OHVD Slab installation - Completion to	5	27-Aug-17	01-Sep-17							N N					- Completion to CF
	SB - Sub-sea TBM Tunnel - OHVD Slab installation - Completion to CP13	5	01-Sep-17	06-Sep-17							SB -		1			n - Completion to (
	SB - Sub-sea TBM Tunnel - OHVD Slab installation - Completion to	5	18-Sep-17	23-Sep-17				, , , , ,	, , ,	 						allation - Completi
	SB - Sub-sea TBM Tunnel - OHVD Slab installation - Completion to	5	23-Sep-17	28-Sep-17									1	:	1	stallation - Comple
	SB - Sub-sea TBM Tunnel - OHVD Slab installation - Completion to	5	11-Oct-17	15-Oct-17												Slab installation - C
	SB - Sub-sea TBM Tunnel - OHVD Slab installation - Completion to CP09	3	16-Oct-17	18-Oct-17								l l s	1	;		Slab installation -
	SB - Sub-sea TBM Tunnel - OHVD Slab installation - Completion to CP08	3	31-Oct-17	03-Nov-17									T)HVD Slab installa
	SB - Sub-sea TBM Tunnel - OHVD Slab installation - Completion to South Retrieval shaft	3	05-Nov-17	08-Nov-17									SB-	Sub-sea TB	M Tunnel	OHVD Slab instal
	SB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP48	5	19-Aug-16	24-Aug-16	Completion											
	SB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP47	5	24-Aug-16	29-Aug-16	Completic	on to CP47			1 1							
	SB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP46	5	09-Sep-16	14-Sep-16	, i i	npletion to CP46										
	SB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP45	5	14-Sep-16	19-Sep-16	roofing - Co	ompletion to CP45				1 I 1 I 1 I 1 I						
	SB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP44	5	04-Oct-16	09-Oct-16	Fire Proofi	ing - Completion to C	P44	; ; ;					¦	; 		
	SB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP43	5	09-Oct-16	14-Oct-16	I - Fire Pro	ofing - Completion to	CP43									
	SB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP42	5	27-Oct-16	01-Nov-16	Tunnel - Fi	re Proofing - Comple	tion to CP	42								
	SB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP41	5	01-Nov-16	06-Nov-16	M Tunnel - I	Fire Proofing - Comp	letion to C	P41	1	1 I 1 I 1 I 1 I						
	SB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP40	5	19-Nov-16	24-Nov-16	ea TBM Tu	nnel - Fire Proofing -	Completio	n to CP40	1 1 1							
	SB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP39	5	24-Nov-16	29-Nov-16	sea TBM 1	lunnel - Fire Proofing	- Comple	tion to CP3	9							1
	SB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP38	5	11-Dec-16	16-Dec-16	- Sub-sea	TBM Tunnel - Fire Pr	oofing - Co	ompletion to	CP38		1					
	SB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP37	5	16-Dec-16	21-Dec-16	B - Sub-se	a TBM Tunnel - Fire I	Proofing -	Completion	to CP37	1 I 1 I 1 I 1 I						
	SB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP36	5	02-Jan-17	07-Jan-17	E SB-\$	ub-sea TBM Tunnel	Fire Proc	fing - Com	pletion to C	DP36						
	SB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP35	7	07-Jan-17	14-Jan-17	📜 SB	- Sub-sea TBM Tunn	el - Fire Pr	oofing - Co	mpletion to	o CP35						
	SB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP34	3	21-Jan-17	24-Jan-17	🔰	SB - Sub-sea TBM Ti	unnel - Fire	- Proofing -	Completi	on to CP34						
	SB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP33	2	26-Jan-17	31-Jan-17		SB - Sub-sea TBM	Tunnel - F	ire Proofin	g - Comple	etion to CP33			1 1 1	, ,		
	SB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP32	3	16-Feb-17	18-Feb-17		SB - Sub-se	a TBM Tur	nel - Fire F	roofing - (Completion to CP3	2					
	SB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP31	4	21-Feb-17	24-Feb-17		SB - Sub-	sea TBM 1	unnel - Fire	Proofing	- Completion to CF	31					
	SB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP30	4	09-Mar-17	13-Mar-17	1	SB	Sub-sea	TBM Tunne	- Fire Pro	ofing - Completion	to CP30					
	SB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP29	4	14-Mar-17	18-Mar-17		🔪 se	3 - Sub-se	a TBM Tuni	hel - Fire F	Proofing - Completion	on to CP29					
	SB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP28	4	31-Mar-17	04-Apr-17	i		SB-S	ub-sea TBI	M Tunnel -	Fire Proofing - Co	npletion to C	P28	¦			
	SB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP27	4	05-Apr-17	09-Apr-17			SB-	Sub-sea T	; BM Tunne	l- Fire Proofing - C	ompletion to	OP27				
	SB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP26	4	25-Apr-17	29-Apr-17				SB - Sub	- sea TBM	Tunnel - Fire Proo	fing - Comple	etion to CP2	6			
	SB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP25	4	30-Apr-17	04-May-17						M Tunnel - Fire Pro	-					
	SB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP24	4	14-May-17	19-May-17						a TBM Tunnel - Fi			1			
	SB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP23	4	20-May-17	24-May-17	i	·		1	SB - Sub-	sea TBM Tunnel - F	ire Proofing	- Completio	n to CP23			
	SB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP22	4	05-Jun-17	09-Jun-17						Sub-sea TBM Tun	1	· · ·	1	P22		
	SB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP21	4	10-Jun-17	14-Jun-17				1	I	3 - Sub-sea TBM Ti	i.		6			
	SB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP20	4	27-Jun-17	01-Jul-17						SB - Sub-sea 1		-			,	
	SB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP19	4	02-Jul-17	06-Jul-17						SB - Sub-sea			,			
	SB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP18	4	21-Jul-17	24-Jul-17				+			ub-sea TBM		¦			
	SB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP17	4	26-Jul-17	29-Jul-17							Sub-sea TBN		Ŭ			
	SB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP16	4	10-Aug-17	14-Aug-17							SB-Sub-se		1			
	SB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP15	4	16-Aug-17	20-Aug-17						\				roofing - Co		
	SB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP14	4	01-Sep-17	05-Sep-17									1		· .	etion to CP14
			•							<u>:</u>	T 001		Date	Revi	ision	Checked Approved
Page 5			TMC	JLK - Northe	rn Conne	ection Sub-Sea T	unnel S	ection					12-Feb-14 08-Apr-14	TMCLK/DBJGEN	I/PRG/98507	WYu SPo SPa WYu
Data D	ate: 29-Oct-17		Detailed Wo	orks Program	nme (Rev	. F) - Three Mon	ths Rolli	ing Progr	ramme				28-Aug-14 30-Oct-15	TMCLK/DBJGEN TMCLK/DBJGEN		GLa WYu WYu
1	Progress bar							-								
1	Progress Milestone			Pr	ogress as	s of 29-Oct-17										
	1									•			-			

ctivi	ty Name	Orig	DWPF	DWPF									
	,	Dur	Start	Finish	Jan	Feb Mar Apr May	20 Jun	017 Jul	Aug	Sep Oct	Nov	Dec	2018 Jan Feb Mar
	SB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP13	4	06-Sep-17	10-Sep-17	Jan			Jui	Aug				fing - Completion to CP13
	SB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP12	4	23-Sep-17	27-Sep-17	-					SB - Sub	-sea TBM 1	ūnnel - Fire	Proofing - Completion to CP12
	SB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP11	4	28-Sep-17	02-Oct-17	-					SB - Si	b-sea TBN	1 Tunnel - F	ire Proofing - Completion to CP
	SB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP10	3	16-Oct-17	18-Oct-17	-					l s	B - Sub-se	a TBM Tuni	nel - Fire Proofing - Completion
	SB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP09	3	19-Oct-17	21-Oct-17	-						\$B - Sub-se	ea TBM Tur	nel - Fire Proofing - Completion
	SB - Sub-sea TBM Tunnel - Fire Proofing - Completion to CP08	8	03-Nov-17	11-Nov-17		++					📕 SB	Sub-sea T	BM Tunnel - Fire Proofing - Con
	SB - Sub-sea TBM Tunnel - Fire Proofing - Completion to South	3	11-Nov-17	14-Nov-17	-	1 I I I I 1 I I I I 1 I I I 1 I I I 1 I I I 1 I I I I I I I I I I I I I I I I I I I					SB	- Sub-sea	TBM Tunnel - Fire Proofing - Co
	Retrieval Shaft SB - Remaining Fire Proofing in Tunnel	334	04-Feb-17	23-Mar-18	-								
	SB Tunnel - Road works & Road Marking	155	17-Jan-18	02-Aug-18	-								
	Southern Landfall												
	South Cut & Cover Tunnel												
	Construction South C&C Tunnel - Diaph ragm Wall	120	03-Oct-15	02-Mar-16	-								
	C&C Tunnel - 1st 85m - Excavation by ramp	23	03-Mar-16	01-Apr-16	-								
	C&C Tunnel - 1st 85m - Excavation by vertical mean	11	02-Apr-16	15-Apr-16	-								
	C&C Tunnel - 1st 85m - Tunnel Structure	95	16-Apr-16	09-Aug-16									
	C&C Tunnel - 1st 85m - Backfilling	4	10-Aug-16	13-Aug-16	-								
	C&C Tunnel - 2nd 85m - Excavation by ramp	4 17	30-Apr-16	21-May-16	-	I I I I I I I I I I I I I I I I I I I							
	C&C Tunnel - 2nd 85m - Excavation by vertical mean	17	23-May-16	13-Jun-16	-	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1							
	C&C Tunnel - 2nd 85m - Tunnel Structure	83	14-Jun-16	20-Sep-16	tructure								
	C&C Tunnel - 2nd 85m - Backfilling	9	21-Sep-16	30-Sep-16	illing	· · · · · · · · · · · · · · · · · · ·				, , , , , , , , , , , , , , , , , , ,			
ŀ	C&C Tunnel - 3rd 85m - Excavation by ramp	18	23-May-16	13-Jun-16									
	C&C Tunnel - 3rd 85m - Excavation by vertical mean	25	14-Jun-16	13-Jul-16	-								
	C&C Tunnel - 3rd 85m - Tunnel Structure	83	26-Jul-16	02-Nov-16	5m - Tunr	tel Structure							
	C&C Tunnel - 3rd 85m - Backfilling	15	03-Nov-16	19-Nov-16	-	Backfilling							
	C&C Tunnel - 4th 85m - E xcavation by ramp	21	30-Jun-16	25-Jul-16				 		· · · · · · · · · · · · · · · · · · ·	 		
	C&C Tunnel - 4th 85m - E xcavation by vertical mean	35	26-Jul-16	03-Sep-16	ertical mea	an							
	C&C Tunnel - 4th 85m - Tunnel Structure	83	05-Sep-16	13-Dec-16	-	4th 85m - Tunnel Structure							
	C&C Tunnel - 5th 85m - E xcavation by ramp	23	26-Jul-16	20-Aug-16	-								
	C&C Tunnel - 5th 85m - E xcavation by vertical mean	44	22-Aug-16	14-Oct-16	xcavation	by vertical mean							
	C&C Tunnel - 6th 85m - E xcavation by ramp	27	22-Aug-16	22-Sep-16									
	C&C Tunnel - 6th 85m - E xcavation by vertical mean	52	23-Sep-16	24-Nov-16	-	n - Excavation by vertical mean							
	C&C Tunnel - 7th 152m - Excavation by ramp	15	03-Nov-16	19-Nov-16	- 7th 152m	n - Excavation by ramp							
	South Retrieval Shaft					I I I I I I I I I I I I I I I I I I I							
	Construction					1 1		 			 		
	Retrieval Shaft - Temp. Slab/Prepare for TBM Breakthrough	48	03-Oct-16		Shaft - Ter	np. Slab/Prepare for TBM Breakthrough							
	Retrieval Shaft - Mobilization for Retrieval Shaft Tunnel Structure	30	05-Jun-17	11-Jul-17	_			Retria	eval Shaft	- Mobilization for Retr	ieval Shaft	Tunnel Stru	
	Retrieval Shaft - Tunnel Structure	180	11-Jul-17	13-Feb-18	_								Retrieval Sha
	Retrieval Shaft - Tunnel Structure - Provision for TCSS/E&MS works for KD-3	24	13-Feb-18	20-Mar-18	_								
	Retrieval Shaft - Vent duct Structure & Backfilling	48	13-Feb-18	21-Apr-18		· · · · · · · · · · · · · · · · · · ·	-				 		
	South Ventilation Building			-									
ſ	S - Piling (Socket H-piles)	132	23-Oct-15	08-Apr-16									
	S - Pile Test	24	09-Apr-16	07-May-16	-								
	S -Sheet Piling	48	23-Oct-15	17-Dec-15	-								
	S- Excavation	100	09-May-16	05-Sep-16	1	+							
	Substructure	95	06-Sep-16	30-Dec-16	Substruc	cture							
	Superstructure	65	31-Dec-16	21-Mar-17		Superstructure							
ľ	Finishing Works	155	25-Mar-17	30-Sep-17	1			: !		Finishir	g Works		
	E&MS & Equipments Installation (by Others)	72	27-May-17	21-Aug-17				ı ı		E&MS & Equipments		(by Others)	
ľ	Remaining Finishing Works	96	11-Jul-17	02-Nov-17		I I					Remain	iing Finishi	ng Works
	Handover Portion N10	0		02-Nov-17		1 I I I 1 I 1					Hando	er Portion	N10
	South Surface Roadworks, Utility & Drainage works									/			
ſ	Construction South Landfall - Seawall Modification	144	18-Oct-17	19-Apr-18	-								
	South Landiall - Seawall Modification South Landfall - Road Furniture	72	13-Mar-18	19-Apr-18 12-Jun-18		· · · · · · · · · · · · · · · · · · ·							
		12	10-10101-10	12-0011-10									
	Testing & Commissioning/Inspection & Handover Final Inspection & Handover												
	Construction												
ſ	Statutory Inspection	48	04-Aug-18	02-Oct-18	1								
	Final Inspection & Handover	63	02-Oct-18	15-Dec-18		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	-!	lb 		J 			
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Page 6 of 6		TMCLK - Northern Connection Sub-Sea Tunnel Section		Date	Revision	Checked	Approved
raye o u o	Planned Bar	INIGER - Northern Connection Sub-Sea Tunnel Section		12-Feb-14	TMCLK/DBJGEN/PRG/98507	WYu	SPo
				08-Apr-14	TMCLK/DBJGEN/PRG/98507	SPa	WYu
	Planned Bar - Critical			28-Aug-14	TMCLK/DBJGEN/PRG/98507	CLa	WYu
Data Date: 29-Oct-17		Detailed Works Programme (Rev. F) - Three Months Rolling Programme		30-Oct-15	TMCLK/DBJGEN/PRG/98507	WYu	
	Planned Milestone		Γ				
	Progress bar						
		Progress as of 29-Oct-17					
	Progress Milestone						

Appendix C

Environmental Mitigation and Enhancement Measure Implementation Schedules

EIA Reference	EM&A Manual	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Imp	olementa Stages	tion	Status *
	Reference					D	С	0	
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;	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.		Contractor	TMEIA Avoid dust generation		Y		V
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.	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.	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.		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.		Contractor	TMEIA Avoid dust generation		Y		~

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

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement		plementa Stages		Status *
	Kererence					D	C	0	
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.	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.		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		V
WATER QUAL	ITY							1	
Marine Works (Seq	uence A)								
6.1	Annex A	Construction of seawalls to be advanced by at least 200m before the main reclamation dredging and filling can commence. The protection by advanced seawall is a dynamic process depending on the progress of the construction activities and the stage when such protection could be realised is illustrated in Figure 6.2a and detailed in Appendix D6a. The part of the works where such measures can be undertaken for the majority of the time includes the following locations:	backfilling works	Contractor	TM-EIAO		Y		~
Figure 6.2a Appendix D6a		- TM-CLKL northern reclamation;							
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		1

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EIA Reference	Manual	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Imp	olementa Stages	tion	Status *
	Reference					D	С	0	
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.		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		1
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		~

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EIA Reference	EM&A Manual	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Imp	plementa Stages	tion	Status *
	Reference					D	C	0	
6.1	Annex A	For other parts of the reclamation works construction of seawalls to be advanced by at least 200m before the main reclamation dredging and filling can commence. It should be noted that the protection by advanced seawall is a dynamic process depending on the progress of the construction activities and the stage when such protection could be realised is illustrated in Figure 6.2b and detailed in Appendices D6b. The part of the works where such measures can be undertaken for the majority of the time includes the following locations:	Portion D of HKBCF and HKLR	Contractor	TM-EIAO		Y		~
Figure 6.2b Appendix D6b		 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;							
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.	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;	L	Contractor	TM-EIAO		Y		~

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EIA Reference	EM&A Manual	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Imj	olementa Stages	tion	Status *
	Reference					D	С	0	
General Marine W	orks								
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.	construction period	Contractor	Marine Fill Committee Guidelines. DASO permit conditions.		Y		~

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EIA Reference	EM&A Manual	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Imp	olementa Stages	tion	Status *
	Reference					D	С	0	
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.	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.		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		1
6.1	-	The daily maximum production rates shall not exceed those assumed in the water quality assessment.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		~
6.1	-	The dredging and filling works shall be scheduled to spread the works evenly over a working day.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		~

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EIA Reference	EM&A Manual	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Imp	lementa Stages	tion	Status *
	Reference					D	С	0	
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.	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.	-	Contractor	TM-EIAO		Y		1
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.		Contractor	TM-EIAO		Y		1
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.		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.		Contractor	TM-EIAO		Y		~

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EIA Reference	EM&A Manual	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Imj	plementa Stages	tion	Status *
	Reference					D	С	0	1
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.	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.		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.	construction period	Contractor	TM-EIAO		Y		1
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		1
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.	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.		Contractor	TM-EIAO		Y		√
6.1	-	Waste oil should be collected and stored for recycling or disposal, in accordance with the Waste Disposal Ordinance.	All areas/ throughout construction period	Contractor	TM-EIAO Waste Disposal Ordinance		Y		~

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EIA Reference	Manual	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Imp	lementa Stages	tion	Status *
	Reference					D	С	0	
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.	construction period	Contractor	TM-EIAO		Y		~
6.1		Surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓

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EIA Reference	EM&A Manual	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Imj	plementa Stages	tion	Status *
	Reference					D	C	0	1
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.		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 l construction period	Contractor	EM&A Manual		Y		*
Water Quality Mor	nitoring								
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.	s as defined in EM&A Manual, Section 5/ Before, through-out marine construction period, post construction and monthly	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.	f 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 implemente d by AFCD.
8.14	6.3, 6.5	Specification and implementation of marine vessel control specifications	All areas/Detailed Design/during construction works	Design Consultant/ Contractor	TMEIA	Y	Y		✓

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	Reference					D	C	0	1
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 VISUAI								
10.9	7.6	The colour and shape of the toll control buildings, ventilation building and administration building shall adopt a design which could blend it into the vicinity elements, and the details will be developed in detailed design stage (DM2)	All areas/detailed design	Design Consultant	TMEIA	Y			N/A
10.9	7.6	Aesthetic design of the viaduct, retaining wall and other structures will be developed under ACABAS submission (DM5)	All areas/detailed design	Design Consultant	TMEIA	Y			N/A
10.9	7.6	Screening of construction works by hoardings around works area in visually unobtrusive colours, to screen works (CM5)	All areas/detailed design/ during construction/post construction	Design Consultant/ Contractor	TMEIA	Y	Y		~
10.9	7.6	Control night-time lighting and glare by hooding all lights (CM6)	All areas/detailed design/ during construction	Design Consultant/ Contractor	TMEIA	Y	Y		N/A

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EIA Reference	EM&A Manual	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Imj	plementa Stages	tion	Status *
	Reference					D	C	0	1
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 Waster 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.		Contractor	TMEIA, Works Branch Technical Circular No. 5/99 for the Trip-ticket System for Disposal of Construction and Demolition Material		Y		

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	Reference					D	C	0	
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.		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.	0	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.	construction period	Contractor	TMEIA		Y		~

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	Reference					D	C	0	
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.		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.	construction period	Contractor	TMEIA		Y		V
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.	construction period	Contractor	TMEIA		Y		~
12.6	8.1	All falsework will be steel instead of wood.	All areas / throughout construction period	Contractor	TMEIA		Y		~

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EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Imj	plementa Stages	tion	Status *
	Kererence					D	C	0	
12.6	8.1	Chemical waste producers should register with the EPD. Chemical waste should be handled in accordance with the Code of Practice on the Packaging, Handling and Storage of Chemical Wastes as follows: <i>f</i> suitable for the substance to be held, resistant to corrosion, maintained in good conditions and securely closed; <i>f</i> Having a capacity of <450L unless the specifications have been approved by the EPD; and w Chinese according to the instructions prescribed in Schedule 2 of the Regulations. <i>f</i> Clearly labelled and used solely for the storage of chemical wastes; <i>f</i> Enclosed with at least 3 sides; <i>f</i> Impermeable floor and bund with capacity to accommodate 110% of the volume of the largest container or 20% by volume of the chemical waste stored in the area, whichever is greatest; <i>f</i> Sufficiently covered to prevent rainfall entering (water collected within the bund must be tested and disposed of as chemical waste, if necessary); and	construction period	Contractor	TMEIA		Y		\$
		f Incompatible materials are adequately							
		separated.							
12.6	8.1	Waste oils, chemicals or solvents shall not be disposed of to drain,	All areas / throughout construction period	Contractor	TMEIA		Y		
12.6	8.1	Adequate numbers of portable toilets should be provided for on- site workers. Portable toilets should be maintained in reasonable states, which will not deter the workers from utilising them.		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

EIA Reference	EM&A Manual	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Imp	olementa Stages	tion	Status *
	Reference					D	С	0	
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.	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		1
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.		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.	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.	0	Contractor	EM&A Manual		Y		_
CULTURAL HI	ERITAGE								
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

Appendix D

Summary of Action and Limit Levels

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

Table D1Action and Limit Levels for 1-hour and 24-hour TSP

Table D2Action and Limit Levels for Impact Dolphin Monitoring

	North Lan	North Lantau Social Cluster			
	NEL	NWL			
Action Level	STG < 70% of baseline &	STG < 70% of baseline &			
	ANI < 70% of baseline	ANI < 70% of baseline			
Limit Level	[STG < 40% of baseli	[STG < 40% of baseline & ANI < 40% of baseline]			
		and			
	STG < 40% of baseli	ne & ANI < 40% of baseline			
Notes:					
1. STG means quar	terly encounter rate of number of dol	phin sightings, which is 6.00 i			
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 D3Derived Value of Action Level (AL) and Limit Level (LL)

North Lantau Social Cluster NEL NWL			
			STG < 4.2 & ANI< 15.5
NEL = [STG <	NEL = [STG < 2.4 & ANI <8.9]		
á	and		
NWL = [STG < 3.9 & ANI <17.9]			
	NEL STG < 4.2 & ANI< 15.5 NEL = [STG <		

Appendix E

Copies of Calibration Certificates for Air Quality Monitoring

Sampler Model:TE-5170Serial Number:S/N 0816Calibration Orifice and Standard Calibration Relationship Serial Number:2454Service Date:20 March 2017Slope (m):2.08464Intercept (b):-0.036840Correlation Coefficient(r):0.99994Standard Condition Pstd (hpa):1013Tstd (K):298.18Calibration Condition Pa (hpa):1005	Location Calibrated by Date	:	ASR 5 P.F.Yeung 09/08/2017
Serial Number:SolutionSerial Number:S/N 0816Calibration Orifice and Standard Calibration RelationshipSerial Number:2454Service Date:20 March 2017Slope (m):2.08464Intercept (b):-0.036840Correlation Coefficient(r):0.99994Standard Condition			
Calibration Orifice and Standard Calibration RelationshipSerial Number:2454Service Date:20 March 2017Slope (m):2.08464Intercept (b):-0.036840Correlation Coefficient(r):0.99994Standard Condition		:	
Serial Number : 2454 Service Date : 20 March 2017 Slope (m) : 2.08464 Intercept (b) : -0.036840 Correlation Coefficient(r) : 0.99994 Standard Condition	Serial Number	:	S/N 0816
Service Date : 20 March 2017 Slope (m) : 2.08464 Intercept (b) : -0.036840 Correlation Coefficient(r) : 0.99994 Standard Condition		d Calibra	
Slope (m):2.08464Intercept (b):-0.036840Correlation Coefficient(r):0.99994Standard Condition.1013Pstd (hpa):1013Tstd (K):298.18Calibration Condition.		:	-
Intercept (b):-0.036840Correlation Coefficient(r):0.99994Standard Condition		:	20 March 2017
Correlation Coefficient(r):0.99994Standard Condition Pstd (hpa):1013 : 298.18Calibration Condition:298.18	Slope (m)	:	2.08464
Standard ConditionPstd (hpa):Tstd (K):298.18Calibration Condition	Intercept (b)	:	-0.036840
Standard ConditionPstd (hpa):Tstd (K):298.18Calibration Condition	Correlation Coefficient(r)	:	0.99994
Tstd (K) : 298.18 Calibration Condition			1012
Calibration Condition	· ·	:	
	Tstd (K)	:	298.18
	<u>Calibration Condition</u> Pa (hpa)	:	1005
Ta(K) : 305	Ta(K)	:	305

Resi	stance Plate	dH [green liquid]	Z	X=Qstd	IC	Y
		(inch water)		(cubic meter/min)	(chart)	(corrected)
1	18 holes	10.2	3.144	1.526	51	50.21
2	13 holes	8.8	2.921	1.419	45	44.30
3	10 holes	6.6	2.529	1.231	40	39.38
4	7 holes	4.4	2.065	1.008	34	33.47
5	5 holes	2.8	1.647	0.808	26	25.60

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

Sampler Calibration Relationship (Linear Regression)

Slope(m):<u>32.235</u> Intercept(b):<u>-0.0361</u>

Correlation Coefficient(r): 0.9991

Checked by: <u>Magnum Fan</u> Date: <u>11/08/2017</u>

Location Calibrated by Date	:	ASR10 P.F.Yeung 09/08/2017
Sampler		
Model	:	TE-5170
Serial Number	:	S/N 8162
Calibration Orifice and Standa Serial Number Service Date Slope (m) Intercept (b) Correlation Coefficient(r)	rd Calibrat : : : :	tion Relationship 2454 20 March 2017 2.08464 -0.036840 0.99994
<u>Standard Condition</u> Pstd (hpa) Tstd (K)	:	1013 298.18
Calibration Condition Pa (hpa)	:	1005
Ta(K)	:	305

						1
Resi	stance Plate	dH [green liquid]	Z	X=Qstd	IC	Y
		(inch water)		(cubic meter/min)	(chart)	(corrected)
1	18 holes	11.2	3.295	1.598	53	52.18
2	13 holes	9.2	2.986	1.450	48	47.26
3	10 holes	7.2	2.642	1.285	43	42.34
4	7 holes	4.7	2.134	1.042	35	34.46
5	5 holes	3.0	1.705	0.836	26	25.60

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):<u>34.219</u> Intercept(b): -2.138 Correlation Coefficient(r): 0.9976

Checked by: <u>Magnum Fan</u>

Date: 11/08/17

Location Calibrated by Date	: : :	AQMS1 P.F.Yeung 09/08/2017
Sampler		
Model Serial Number	:	TE-5170 S/N 1253
Serial Number	:	S/IN 1255
Calibration Orifice and Standard	d Calibra	ation Relationship
Serial Number	:	2454
Service Date	:	20 March 2017
Slope (m)	:	2.08464
Intercept (b)	:	-0.036840
Correlation Coefficient(r)	:	0.99994
Standard Condition		
Pstd (hpa)	:	1013
Tstd (K)	:	298.18
Calibration Condition		
Pa (hpa)	:	1005
Ta(K)	:	305

Resi	stance Plate	dH [green liquid]	Ζ	X=Qstd	IC	Y
		(inch water)		(cubic meter/min)	(chart)	(corrected)
1	18 holes	12.1	3.425	1.661	52	51.20
2	13 holes	9.9	3.098	1.504	46	45.29
3	10 holes	7.5	2.696	1.311	40	39.38
4	7 holes	5.0	2.202	1.074	33	32.49
5	5 holes	3.1	1.733	0.849	27	26.58

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

Sampler Calibration Relationship (Linear Regression)

Slope(m):30.080 Intercept(b):0.496

Correlation Coefficient(r): 0.9980

Checked by: <u>Magnum Fan</u>

Date: 11/08/2017

Location	:	ASR 1
Calibrated by	:	P.F.Yeung
Date	:	09/08/2017
<u>Sampler</u> Model Serial Number	:	TE-5170 S/N 0146

Calibration Orifice and Standard Calibration Relationship

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

Standard Condition		
Pstd (hpa)	:	1013
Tstd (K)	:	298.18
Calibration Condition		
Pa (hpa)	:	1005
Ta(K)	:	305

Resi	stance Plate	dH [green liquid]	Ζ	X=Qstd	IC	Y
		(inch water)		(cubic meter/min)	(chart)	(corrected)
1	18 holes	11.6	3.353	1.626	53	52.18
2	13 holes	9.8	3.082	1.496	48	47.26
3	10 holes	7.6	2.714	1.320	42	41.35
4	7 holes	5.0	2.202	1.074	36	35.44
5	5 holes	3.2	1.761	0.863	28	27.57

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):<u>31.141</u> Intercept(b):<u>1.034</u>

correlation Coefficient(r): 0.9972

Checked by: <u>Magnum Fan</u>

Date: <u>11/08/2017</u>

Location Calibrated by Date	: :	ASR 6 P.F.Yeung 09/08/2017
<u>Sampler</u> Model Serial Number	:	TE-5170 S/N 3957
Calibration Orfice and Standard Serial Number Service Date Slope (m) Intercept (b) Correlation Coefficient(r)	<u>l Calibra</u> : : : :	tion Relationship 2454 20 March 2017 2.08464 -0.036840 0.99994

Standard Condition		
Pstd (hpa)	:	1013
Tstd (K)	:	298.18
Calibration Condition		
Pa (hpa)	:	1005
Ta(K)	:	305

Resi	stance Plate	dH [green liquid]	Ζ	X=Qstd	IC	Y
		(inch water)		(cubic meter/min)	(chart)	(corrected)
1	18 holes	12.8	3.522	1.707	54	53.17
2	13 holes	9.3	3.002	1.458	47	46.27
3	10 holes	7.0	2.605	1.267	41	40.37
4	7 holes	4.6	2.112	1.031	33	32.49
5	5 holes	3.2	1.761	0.863	27	26.58

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):<u>31.557</u> Intercept(b):<u>-0.148</u>

Correlation Coefficient(r): 0.9988

Checked by: <u>Magnum Fan</u>

Date: 11/08/2017

Location Calibrated by Date	:	ASR 5 P.F.Yeung 09/10/2017
Sampler		
Model	:	TE-5170
Serial Number	:	S/N 0816
Calibration Orifice and Standa	ard Calibrat	ion Relationship
Serial Number	:	2454
Service Date	:	20 March 2017
Slope (m)	:	2.08464
Intercept (b)	:	-0.036840
Correlation Coefficient(r)	:	0.99994
Standard Condition		
Pstd (hpa)	:	1013
Tstd (K)	:	298.18
Calibration Condition		
Pa (hpa)		1009
Ta(K)	•	302
1 4 (13)	•	502

Resi	stance Plate	dH [green liquid]	Ζ	X=Qstd	IC	Y
		(inch water)		(cubic meter/min)	(chart)	(corrected)
1	18 holes	10.0	3.135	1.522	54	53.54
2	13 holes	8.0	2.804	1.363	49	48.58
3	10 holes	5.8	2.388	1.163	43	42.63
4	7 holes	3.8	1.933	0.945	38	37.67
5	5 holes	2.5	1.568	0.770	30	29.74

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

Sampler Calibration Relationship (Linear Regression)

Slope(m):<u>30.353</u>

Intercept(b):7.454

Correlation Coefficient(r): 0.9947

Checked by: Magnum Fan

Location Calibrated by Date	: : :	ASR10 P.F.Yeung 09/10/2017
Sampler Madal	_	TE 5170
Model Serial Number	:	TE-5170 S/N 8162
Calibration Orifice and Stand	ard Calibrat	ion Relationship
Serial Number	:	2454
Service Date	:	20 March 2017
Slope (m)	:	2.08464
Intercept (b)	:	-0.036840
Correlation Coefficient(r)	:	0.99994
Standard Condition		
Pstd (hpa)	:	1013
Tstd (K)	:	298.18
Calibration Condition Pa (hpa)	:	1009

:

r				r	1	
Resi	stance Plate	dH [green liquid]	Z	X=Qstd	IC	Y
		(inch water)		(cubic meter/min)	(chart)	(corrected)
1	18 holes	11	3.288	1.595	57	56.51
2	13 holes	8	2.804	1.363	50	49.57
3	10 holes	6	2.428	1.183	44	43.62
4	7 holes	4.2	2.032	0.992	37	36.68
5	5 holes	2.8	1.659	0.813	29	28.75

302

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):<u>35.265</u>

Ta(K)

Intercept(b): 1.089

Correlation Coefficient(r): 0.9968

Checked by: Magnum Fan

Location Calibrated by Date	: : :	AQMS1 P.F.Yeung 09/10/2017
Sampler		
Model	:	TE-5170
Serial Number	:	S/N 1253
<u>Calibration Orifice and Standar</u> Serial Number	d Calibra	ation Relationship 2454
Service Date	:	20 March 2017
Slope (m)	:	2.08464
Intercept (b)	:	-0.036840
Correlation Coefficient(r)	:	0.99994
<u>Standard Condition</u> Pstd (hpa) Tstd (K)	:	1013 298.18
Calibration Condition		
Pa (hpa)	:	1009
Ta(K)	:	302

Resi	stance Plate	dH [green liquid]	Z	X=Qstd	IC	Y
		(inch water)		(cubic meter/min)	(chart)	(corrected)
1	18 holes	12.7	3.533	1.712	51	50.56
2	13 holes	9.3	3.023	1.468	45	44.61
3	10 holes	7.6	2.733	1.329	40	39.66
4	7 holes	4.8	2.172	1.060	34	33.71
5	5 holes	3.1	1.746	0.855	28	27.76

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

Sampler Calibration Relationship (Linear Regression)

Slope(m):26.496

Intercept(b):5.218

Correlation Coefficient(r): 0.9984

Checked by: <u>Magnum Fan</u>

Location	:	ASR 1
Calibrated by	:	P.F.Yeung
Date	:	09/10/2017
Sampler Model Serial Number	:	TE-5170 S/N 0146

Calibration Orifice and Standard Calibration Relationship

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

:	1013
:	298.18
:	1009
:	302
	:

-						
Resistance Plate		dH [green liquid]	Ζ	X=Qstd	IC	Y
		(inch water)		(cubic meter/min)	(chart)	(corrected)
1	18 holes	11.7	3.391	1.644	52	51.55
2	13 holes	9.6	3.072	1.491	47	46.60
3	10 holes	6.2	2.469	1.202	42	41.64
4	7 holes	4.2	2.032	0.992	34	33.71
5	5 holes	2.6	1.599	0.785	29	28.75

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):<u>26.214</u> Intercept(b):<u>8.3</u>

Intercept(b):<u>8.393</u> correlation Coefficient(r): <u>0.9937</u>

Checked by: <u>Magnum Fan</u>

-0.036840

0.99994

Location Calibrated by Date	: : :	ASR 6 P.F.Yeung 09/10/2017
<u>Sampler</u> Model Serial Number	:	TE-5170 S/N 3957
Calibration Orifice and Standard Serial Number Service Date Slope (m)	<u>l Calibr</u> : :	ation Relationship 2454 20 March 2017 2.08464

:

:

<u>Standard Condition</u> Pstd (hpa) Tstd (K)	:	1013 298.18
1 Stu (1X)	·	270.10
Calibration Condition		
Pa (hpa)	:	1009
Ta(K)	:	302

Resistance Plate		dH [green liquid]	Z	X=Qstd	IC	Y
		(inch water)		(cubic meter/min)	(chart)	(corrected)
1	18 holes	12.3	3.477	1.686	54	53.54
2	13 holes	9.0	2.974	1.444	48	47.59
3	10 holes	7.0	2.623	1.276	42	41.64
4	7 holes	4.5	2.103	1.027	35	34.70
5	5 holes	2.8	1.659	0.813	27	26.77

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):<u>30.676</u>

Intercept (b)

Correlation Coefficient(r)

Intercept(b): 2.526

Correlation Coefficient(r): 0.9977

Checked by: <u>Magnum Fan</u>



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 - Ma Operator		7 Rootsmeter Orifice I.I		438320 2454	Ta (K) - Pa (mm) -	293 759.46
========	================				METER	ORFICE
PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	DIFF TIME (min)	DIFF Hg (mm)	DIFF H2O (in.)
1 2 3 4 5	NA NA NA NA	NA NA NA NA NA	1.00 1.00 1.00 1.00 1.00	1.4390 1.0240 0.9170 0.8730 0.7200	3.2 6.4 7.9 8.8 12.8	2.00 4.00 5.00 5.50 8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)		Va	(x axis) Qa	(y axis)
1.0120 1.0078 1.0057 1.0045 0.9992	0.7033 0.9842 1.0967 1.1507 1.3878	$ \begin{array}{r} 1.4257\\2.0163\\2.2543\\2.3643\\2.8514\end{array} $		0.9958 0.9916 0.9895 0.9884 0.9831	0.6920 0.9683 1.0791 1.1322 1.3654	0.8784 1.2423 1.3889 1.4567 1.7568
Qstd slop intercept coefficie	t (b) =	2.08464 -0.03684 0.99994		Qa slope intercept coefficie	t (b) =	1.30537 -0.02270 0.99994
y axis =	SQRT [H20 (1	Pa/760) (298/5	[[a)]	y axis =	SQRT [H20 (7	[a/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 = $1/m\{ [SQRT(H2O(Ta/Pa)] - b \}$

ENVIROTECH SERVICES CO.

Date of Calibration :	18 April 2017	
Brand of Test Meter:	Davis	
Model:	Vantage Pro 2 (s/n: AS160104014)	
Location :	Roof of Tuen Mun Firestation	
Procedures :		
1. Wind Still Test:	The wind speed sensor was hold by hand until it keep still	
2. Wind Speed Test:	The wind meter was on-site calibrated against the Anemom	ieter
3.Wind Direction Test	t : The wind meter was on-site calibrated against the marine c	ompass at four directions
Results:		

Wind Still Test

Wind Speed (m/s) 0.00

Wind Speed Test

Davis (m/s)	Anemometer (m/s)
0.5	0.6
1.0	1.1
2.1	2.3

Wind Direction Test

Davis (o)	Marine Compass (o)
269	270
359	0
91	90
180	180

Calibrated by:

Ao

Checked by: Fat

Yeung Ping Fai (Technical Officer) Ho Kam Fat (Senior Technical Officer)

Calibration Report of Wind Meter

ENVIROTECH SERVICES CO.

Date of Calibration :	18 October 2017
Brand of Test Meter:	Davis
Model:	Vantage Pro 2 (s/n: AS160104014)
Location :	Roof of Tuen Mun Firestation
Procedures :	
1. Wind Still Test :	The wind speed sensor was hold by hand until it keep still
2.Wind Speed Test :	The wind meter was on-site calibrated against the Anemometer
3.Wind Direction Test :	The wind meter was on-site calibrated against the marine compass at four directions
Results:	

Calibration Report of Wind Meter

Wind Still Test

Wind Speed	(m/s)
0.00	

Wind Speed Test

Davis (m/s)	Anemometer (m/s)
0.7	0.8
1.2	1.4
2.5	2.8

Wind Direction Test

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

Calibrated by:

Að

Checked by :

Fat

Yeung Ping Fai (Technical Officer) Ho Kam Fat (Senior Technical Officer)



輝創工程有限公司

Sun Creation Engineering Limited

Calibration and Testing Laboratory

Certificate of Calibration 校正證書

Certificate No. : C175727 證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號: IC17-227 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 W New Territories, Hong Kong	
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 W New Territories, Hong Kong	
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 W New Territories, Hong Kong	Wing Road, Tuen Mun,
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 W New Territories, Hong Kong	Wing Road, Tuen Mun,
Supplied By / 委託者 : Envirotech Services Co. Room 113, 1/F, My Loft, 9 Hoi V New Territories, Hong Kong	Wing Road, Tuen Mun,
Room 113, 1/F, My Loft, 9 Hoi V New Territories, Hong Kong	Wing Road, Tuen Mun,
New Territories, Hong Kong	Wing Road, Tuen Mun,
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 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 Nationa - Testo Industrial Services GmbH, Germany	al Standards via :
Tested By : 別試 H C Chan Engineer	
Tested By : <u>Unn Un Un</u> 測試 H C Chan Engineer	
Tested By : Chan An C 測試 H C Chan	Date of Issue : 16 October 2017 簽發日期

The test equipment used for ca ration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory. 本證書所載校正用。之測試器科均可溯源至國際標準。局部海印本證書需先獲本實驗所書面批准。



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Certificate No. : C175727 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	S16493

- 4. Test procedure : MA130N.
- 5. Results :

Air Velocity

Applied	UUT	Measured Correction		
Value	Reading	Value	Measurement Unce	ertainty
(m/s)	(m/s)	(m/s)	Expanded Uncertainty (m/s)	Coverage Factor
1.9	1.7	+0.2	0.2	2.0
4.0	3.8	+0.2	0.2	2.0
6.0	5.9	+0.1	0.3	2.0
8.0	8.0	0.0	0.3	2.0
10.0	10.1	-0.1	0.4	2.0

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

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

Note :

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

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

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

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

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 2017

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

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1-Oct	Public holiday 2-Oct		4-Oct	Public holiday 5-Oct		7-Oct
		1-hour TSP - 3 times			1-hour TSP - 3 times	
		24-hour TSP - 1 time			24-hour TSP - 1 time	
		Impact AQM				
8-Oct	9-Oct		11-Oct	12-Oct	Impact AQM 13-Oct	
8-001	1-hour TSP - 3 times	10-001		1-hour TSP - 3 times	15-001	14-001
	24-hour TSP - 1 time			24-hour TSP - 1 time		
				24-11001 1 3F - 1 time		
	Impact AQM			Impact AQM		
15-Oct	16-Oct	17-Oct	18-Oct		20-Oct	21-Oct
Impact AQM cancelled			1-hour TSP - 3 times			1-hour TSP - 3 times
due to T8.			24-hour TSP - 1 time			24-hour TSP - 1 time
			Impact AQM			Impact AQM
22-Oct	23-Oct	24-Oct		26-Oct		Public holiday 28-Oct
		1-hour TSP - 3 times			1-hour TSP - 3 times	
		24-hour TSP - 1 time			24-hour TSP - 1 time	
		Impact AQM			Impact AQM	
29-Oct	30-Oct	31-Oct				
	1-hour TSP - 3 times					
	24-hour TSP - 1 time					
	Impact AQM					

Impact AQM on 15/10/2017 was cancelled due to adverse weather.

HY/2012/08 - Tuen Mun - Chek Lap Kok Link Northern Connection Sub-sea Tunnel Section Tentative Air Quality Impact Monitoring Schedule - November 2017

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

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1-Oct			1-Nov		3-Nov	4-Nov
				1-hour TSP - 3 times		
				24-hour TSP - 1 time		
				Impact AQM		
5-Nov	6-Nov	7-Nov	8-Nov		10-Nov	11-Nov
1-hour TSP - 3 times	01101	11101	1-hour TSP - 3 times	0 1101		1-hour TSP - 3 times
24-hour TSP - 1 time			24-hour TSP - 1 time			24-hour TSP - 1 time
Impact AQM			Impact AQM			Impact AQM
12-Nov	13-Nov		15-Nov		17-Nov	18-Nov
		1-hour TSP - 3 times			1-hour TSP - 3 times	
		24-hour TSP - 1 time			24-hour TSP - 1 time	
		Impact AQM			Impact AQM	
				23-Nov	24-Nov	25-Nov
13-1107	1-hour TSP - 3 times	21-100	22-1107	1-hour TSP - 3 times	27-1100	20-1107
	24-hour TSP - 1 time			24-hour TSP - 1 time		
	Impact AQM			Impact AQM		
26-Nov	27-Nov	28-Nov	29-Nov	30-Nov		
1-hour TSP - 3 times			1-hour TSP - 3 times			
24-hour TSP - 1 time			24-hour TSP - 1 time			
Impact AOM						
Impact AQM			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 Impact Marine Water Quality Monitoring (WQM) Schedule (November 2017)

Sundav	Monday	Tuesdav	Wednesdav	Thursdav	Fridav	Saturdav
			1/Nov	2/Nov	3/Nov	
			ebb tide 8:50 - 12:20 flood tide 15:31 - 19:01		ebb tide 10:19 - 13:49 flood tide 4:21 - 7:51	
5/Nov	6/Nov	7/Nov	8/Nov	9/Nov	10/Nov	11/Nov
	ebb tide 12:36 - 16:06 flood tide 6:55 - 10:25		ebb tide 14:18 - 17:48 flood tide 8:54 - 12:24		ebb tide 16:45 - 19:47 flood tide 11:17 - 14:47	
12/Nov	13/Nov	14/Nov	15/Nov	16/Nov	17/Nov	/ 18/Nov
	ebb tide 7:21 - 10:51 flood tide 14:26 - 17:56		ebb tide 9:13 - 12:43 flood tide 15:27 - 18:57		ebb tide 10:38 - 14:08 flood tide 4:51 - 8:21	
19/Nov	20/Nov	21/Nov	22/Nov	23/Nov	24/Nov	25/Nov
	ebb tide 12:26 - 15:56 flood tide 6:56 - 10:26		ebb tide 13:35 - 17:05 flood tide 8:15 - 11:45		ebb tide 15:16 - 17:59 flood tide 9:52 - 13:22	
26/Nov	27/Nov	28/Nov	29/Nov	30/Nov		
	ebb tide 4:33 - 8:03 flood tide 12:58 - 16:28		ebb tide 7:03 - 10:33 flood tide 14:07 - 17:37			

HY/2012/08 - Tuen Mun - Chek Lap Kok Link Northern Connection Sub-sea Tunnel Section Impact Dolphin Monitoring Survey Monitoring Schedule - October 2017

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

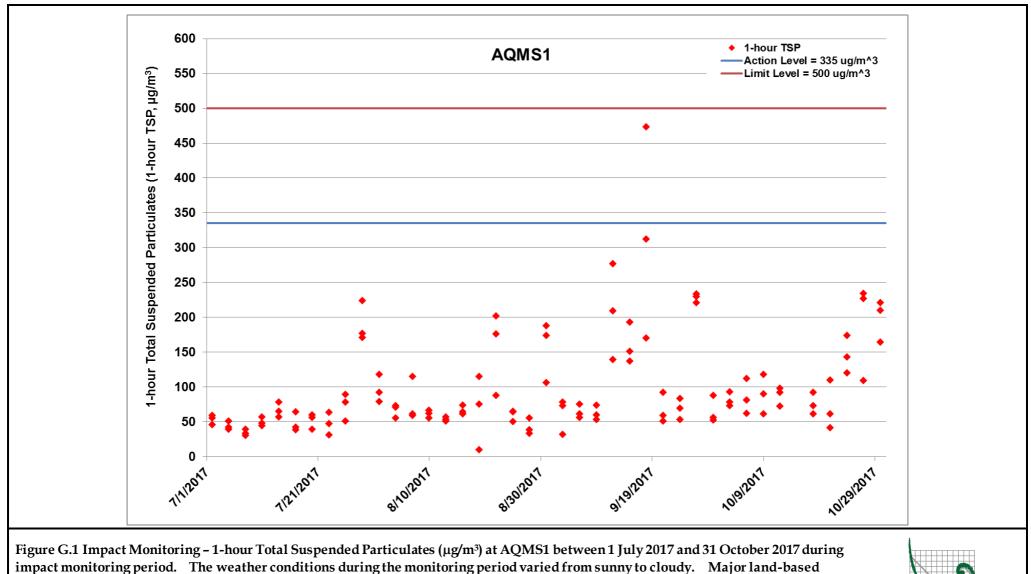
HY/2012/08 - Tuen Mun - Chek Lap Kok Link Northern Connection Sub-sea Tunnel Section Tentative Impact Dolphin Monitoring Survey Monitoring Schedule - November 2017

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

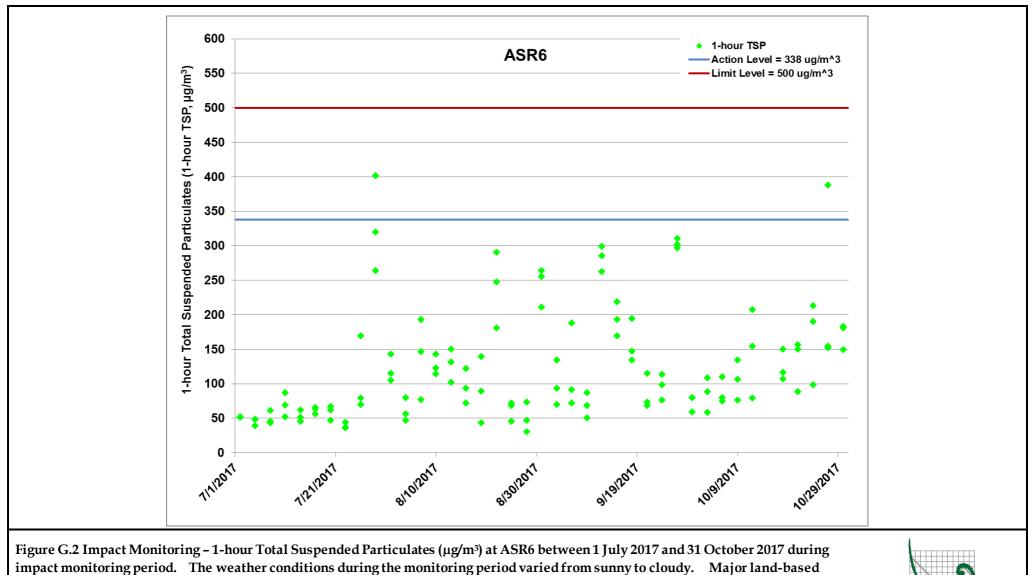
Appendix G

Impact Air Quality Monitoring Results



construction activities included: Box Culvert Extension, Construction of North Ventilation Building, Bulk Excavation and Phase 2 Surcharge Removal (1/7/2017 – 31/10/2017) Ref: 0212330_Impact AQM graphs_October 2017_REV a.xlsx





construction activities included: Box Culvert Extension, Construction of North Ventilation Building, Bulk Excavation and Phase 2 Surcharge Removal (1/7/2017 – 31/10/2017) Ref: 0212330_Impact AQM graphs_October 2017_REV a.xlsx



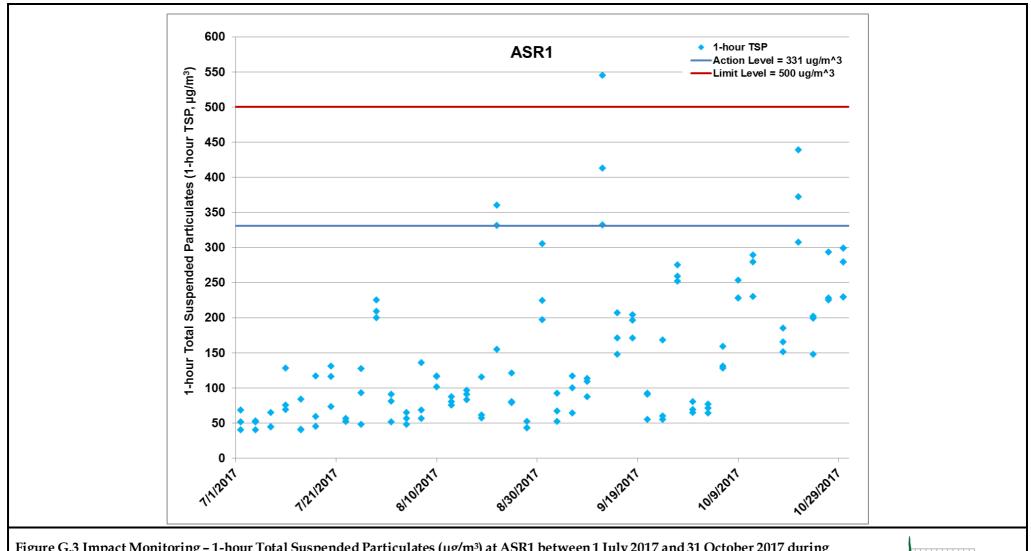


Figure G.3 Impact Monitoring – 1-hour Total Suspended Particulates (µg/m³) at ASR1 between 1 July 2017 and 31 October 2017 during impact monitoring period. The weather conditions during the monitoring period varied from sunny to cloudy. Major land-based construction activities included: Box Culvert Extension, Construction of North Ventilation Building, Bulk Excavation and Phase 2 Surcharge Removal (1/7/2017 – 31/10/2017) Ref: 0212330_Impact AQM graphs_October 2017_REV a.xlsx



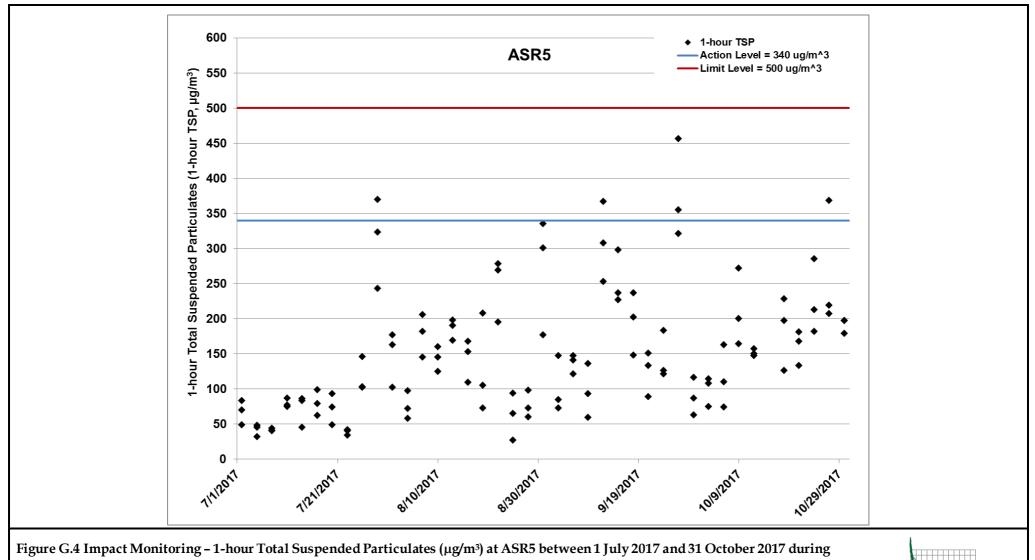


Figure G.4 Impact Monitoring – 1-hour Total Suspended Particulates (µg/m³) at ASR5 between 1 July 2017 and 31 October 2017 during impact monitoring period. The weather conditions during the monitoring period varied from sunny to cloudy. Major land-based construction activities included: Box Culvert Extension, Construction of North Ventilation Building, Bulk Excavation and Phase 2 Surcharge Removal (1/7/2017 – 31/10/2017) Ref: 0212330_Impact AQM graphs_October 2017_REV a.xlsx



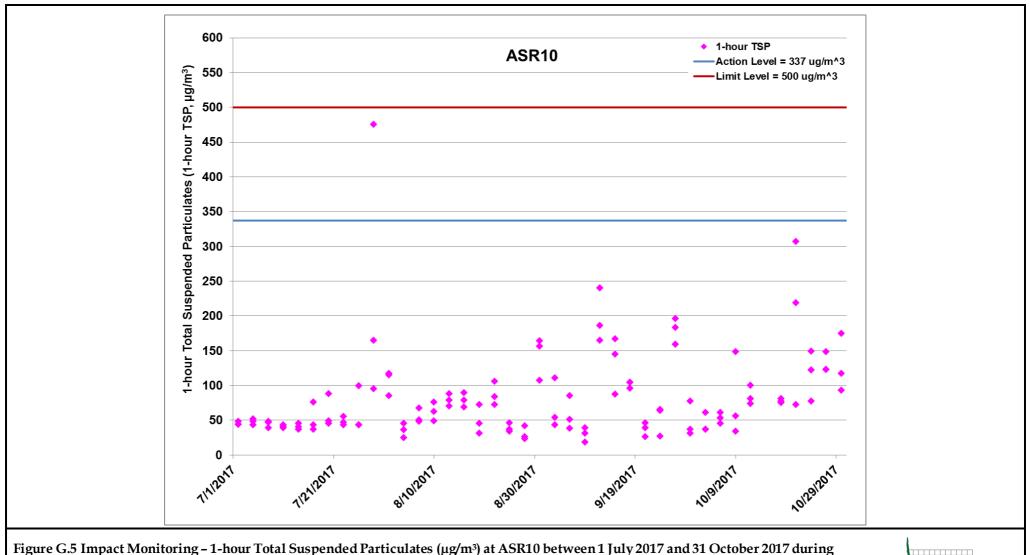


Figure G.5 Impact Monitoring – 1-hour Total Suspended Particulates (µg/m³) at ASR10 between 1 July 2017 and 31 October 2017 during impact monitoring period. The weather conditions during the monitoring period varied from sunny to cloudy. Major land-based construction activities included: Box Culvert Extension, Construction of North Ventilation Building, Bulk Excavation and Phase 2 Surcharge Removal (1/7/2017 – 31/10/2017) *Ref:* 0212330_Impact AQM graphs_October 2017_REV a.xlsx



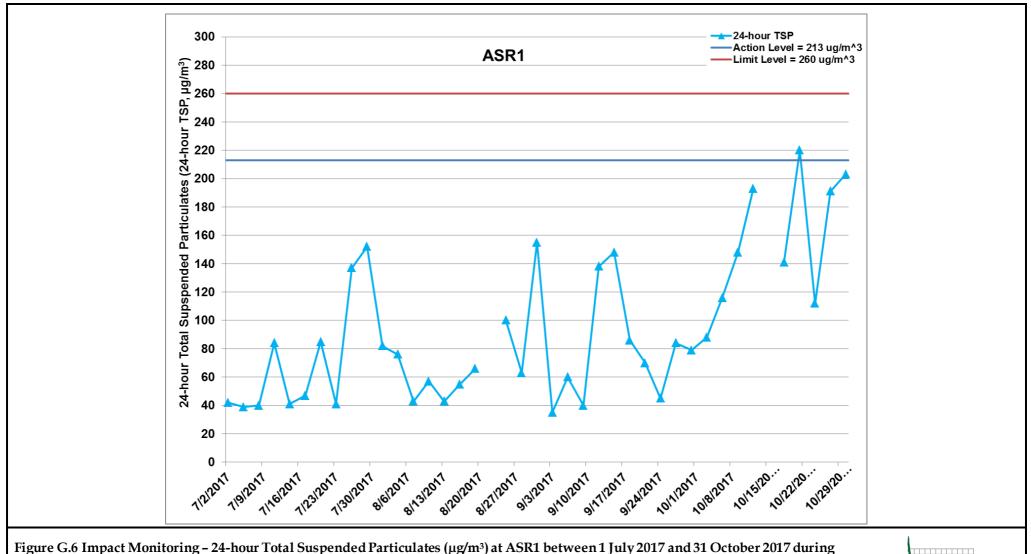


Figure G.6 Impact Monitoring – 24-hour Total Suspended Particulates (µg/m³) at ASR1 between 1 July 2017 and 31 October 2017 during impact monitoring period. The weather conditions during the monitoring period varied from sunny to cloudy. Major land-based construction activities included: Box Culvert Extension, Construction of North Ventilation Building, Bulk Excavation and Phase 2 Surcharge Removal (1/7/2017 – 31/10/2017) *Ref:* 0212330_Impact AQM graphs_October 2017_REV a.xlsx



Remarks: 24-hour TSP monitoring was cancelled on 22 August 2017 due to adverse weather.

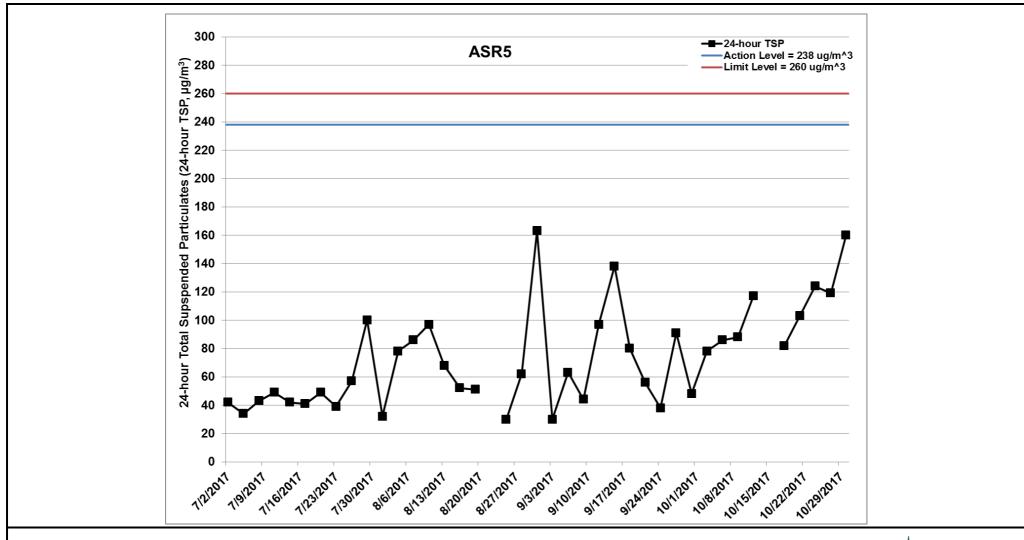
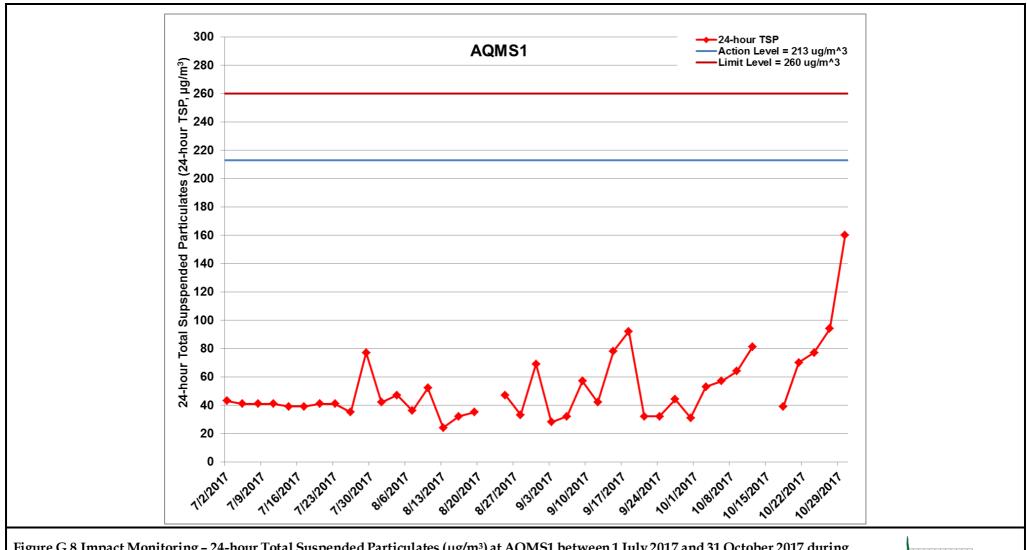


Figure G.7 Impact Monitoring – 24-hour Total Suspended Particulates (µg/m³) at ASR5 between 1 July 2017 and 31 October 2017 during impact monitoring period. The weather conditions during the monitoring period varied from sunny to cloudy. Major land-based construction activities included: Box Culvert Extension, Construction of North Ventilation Building, Bulk Excavation and Phase 2 Surcharge Removal (1/7/2017 – 31/10/2017) Ref: 0212330_Impact AQM graphs_October 2017_REV a.xlsx

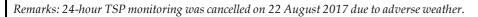


Remarks: 24-hour TSP monitoring was cancelled on 22 August 2017 due to adverse weather.



ERM

Figure G.8 Impact Monitoring – 24-hour Total Suspended Particulates (µg/m³) at AQMS1 between 1 July 2017 and 31 October 2017 during impact monitoring period. The weather conditions during the monitoring period varied from sunny to cloudy. Major land-based construction activities included: Box Culvert Extension, Construction of North Ventilation Building, Bulk Excavation and Phase 2 Surcharge Removal (1/7/2017 – 31/10/2017) Ref: 0212330_Impact AQM graphs_October 2017_REV a.xlsx



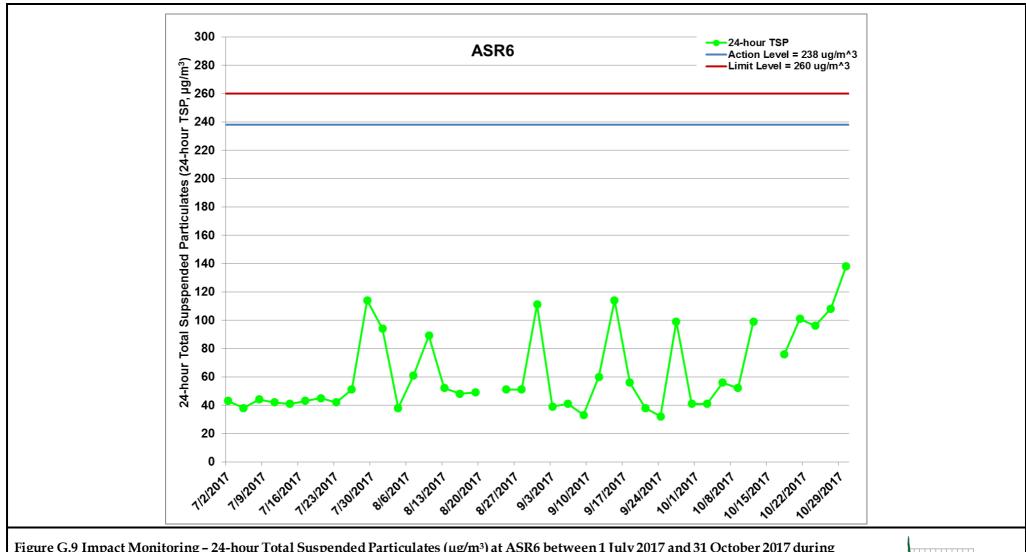
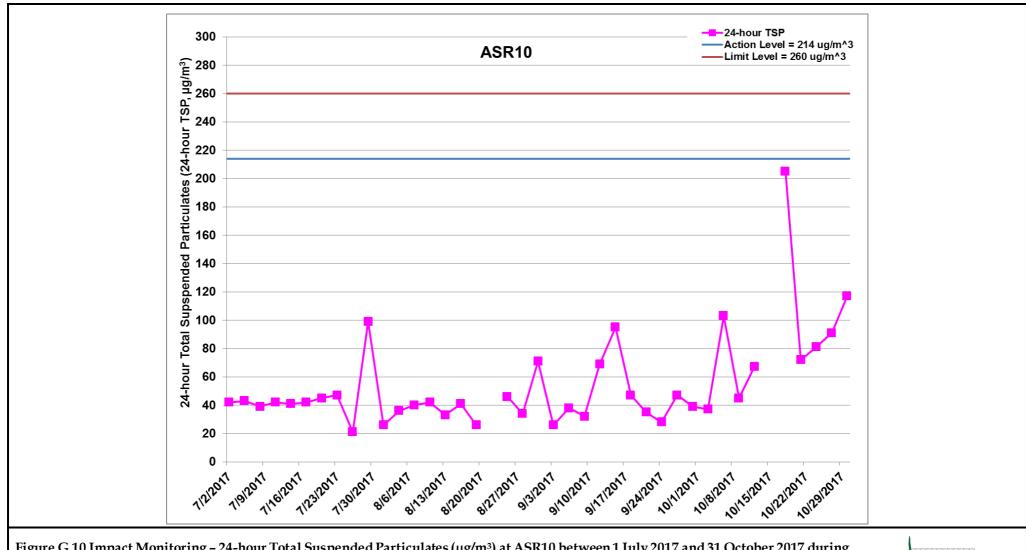


Figure G.9 Impact Monitoring – 24-hour Total Suspended Particulates (µg/m³) at ASR6 between 1 July 2017 and 31 October 2017 during impact monitoring period. The weather conditions during the monitoring period varied from sunny to cloudy. Major land-based construction activities included: Box Culvert Extension, Construction of North Ventilation Building, Bulk Excavation and Phase 2 Surcharge Removal (1/7/2017 – 31/10/2017) Ref: 0212330_Impact AQM graphs_October 2017_REV a.xlsx



Remarks: 24-hour TSP monitoring was cancelled on 22 August 2017 due to adverse weather.



ERM

Figure G.10 Impact Monitoring – 24-hour Total Suspended Particulates (μg/m³) at ASR10 between 1 July 2017 and 31 October 2017 during
impact monitoring period. The weather conditions during the monitoring period varied from sunny to cloudy. Major land-based
construction activities included: Box Culvert Extension, Construction of North Ventilation Building, Bulk Excavation and Phase 2Surcharge Removal (1/7/2017 – 31/10/2017)Ref:0212330_Impact AQM graphs_October 2017_REV a.xlsx

Remarks: 24-hour TSP monitoring was cancelled on 22 August 2017 due to adverse weather.

Project	Works	Date	Station	Weather	Start time	Parameters	Results	units
TMCLKL	HY/2012/08	2017-10-03	AQMS1	Sunny	13:42	1-hour TSP	73	ug/m3
TMCLKL	HY/2012/08	2017-10-03	AQMS1	Sunny	14:44	1-hour TSP	78	ug/m3
TMCLKL	HY/2012/08	2017-10-03	AQMS1	Sunny	15:46	1-hour TSP	93	ug/m3
TMCLKL	HY/2012/08	2017-10-03	ASR1	Sunny	13:30	1-hour TSP	77	ug/m3
TMCLKL	HY/2012/08	2017-10-03	ASR1	Sunny	14:32	1-hour TSP	64	ug/m3
TMCLKL	HY/2012/08	2017-10-03	ASR1	Sunny	15:34	1-hour TSP	71	ug/m3
TMCLKL	HY/2012/08	2017-10-03	ASR10	Sunny	12:57	1-hour TSP	61	ug/m3
TMCLKL	HY/2012/08	2017-10-03	ASR10	Sunny	13:59	1-hour TSP	37	ug/m3
TMCLKL	HY/2012/08	2017-10-03	ASR10	Sunny	15:01	1-hour TSP	37	ug/m3
TMCLKL	HY/2012/08	2017-10-03	ASR5	Sunny	13:19	1-hour TSP	114	ug/m3
TMCLKL	HY/2012/08	2017-10-03	ASR5	Sunny	14:21	1-hour TSP	108	ug/m3
TMCLKL	HY/2012/08	2017-10-03	ASR5	Sunny	15:23	1-hour TSP	75	ug/m3
TMCLKL	HY/2012/08	2017-10-03	ASR6	Sunny	13:08	1-hour TSP	108	ug/m3
TMCLKL	HY/2012/08	2017-10-03	ASR6	Sunny	14:10	1-hour TSP	88	ug/m3
TMCLKL	HY/2012/08	2017-10-03	ASR6	Sunny	15:12	1-hour TSP	58	ug/m3
TMCLKL	HY/2012/08	2017-10-06	AQMS1	Sunny	13:20	1-hour TSP	112	ug/m3
TMCLKL	HY/2012/08	2017-10-06	AQMS1	Sunny	14:22	1-hour TSP	81	ug/m3
TMCLKL	HY/2012/08	2017-10-06	AQMS1	Sunny	15:34	1-hour TSP	62	ug/m3
TMCLKL	HY/2012/08	2017-10-06	ASR1	Sunny	13:06	1-hour TSP	159	ug/m3
TMCLKL	HY/2012/08	2017-10-06	ASR1	Sunny	14:10	1-hour TSP	128	ug/m3
TMCLKL	HY/2012/08	2017-10-06	ASR1	Sunny	15:23	1-hour TSP	131	ug/m3
TMCLKL	HY/2012/08	2017-10-06	ASR10	Sunny	12:30	1-hour TSP	61	ug/m3
TMCLKL	HY/2012/08	2017-10-06	ASR10	Sunny	13:32	1-hour TSP	45	ug/m3
TMCLKL	HY/2012/08	2017-10-06	ASR10	Sunny	14:50	1-hour TSP	53	ug/m3
TMCLKL	HY/2012/08	2017-10-06	ASR5	Sunny	12:50	1-hour TSP	163	ug/m3
TMCLKL	HY/2012/08	2017-10-06	ASR5	Sunny	13:55	1-hour TSP	110	ug/m3
TMCLKL	HY/2012/08	2017-10-06	ASR5	Sunny	15:12	1-hour TSP	74	ug/m3
TMCLKL	HY/2012/08	2017-10-06	ASR6	Sunny	12:40	1-hour TSP	110	ug/m3
TMCLKL	HY/2012/08	2017-10-06	ASR6	Sunny	13:43	1-hour TSP	75	ug/m3
TMCLKL	HY/2012/08	2017-10-06	ASR6	Sunny	15:00	1-hour TSP	80	ug/m3

Project	Works	Date	Station	Weather	Start time	Parameters	Results	units
TMCLKL	HY/2012/08	2017-10-09	AQMS1	Sunny	13:45	1-hour TSP	118	ug/m3
TMCLKL	HY/2012/08	2017-10-09	AQMS1	Sunny	14:47	1-hour TSP	90	ug/m3
TMCLKL	HY/2012/08	2017-10-09	AQMS1	Sunny	15:49	1-hour TSP	61	ug/m3
TMCLKL	HY/2012/08	2017-10-09	ASR1	Sunny	13:32	1-hour TSP	228	ug/m3
TMCLKL	HY/2012/08	2017-10-09	ASR1	Sunny	14:34	1-hour TSP	253	ug/m3
TMCLKL	HY/2012/08	2017-10-09	ASR1	Sunny	15:36	1-hour TSP	228	ug/m3
TMCLKL	HY/2012/08	2017-10-09	ASR10	Sunny	12:58	1-hour TSP	56	ug/m3
TMCLKL	HY/2012/08	2017-10-09	ASR10	Sunny	14:00	1-hour TSP	34	ug/m3
TMCLKL	HY/2012/08	2017-10-09	ASR10	Sunny	15:02	1-hour TSP	148	ug/m3
TMCLKL	HY/2012/08	2017-10-09	ASR5	Sunny	13:20	1-hour TSP	272	ug/m3
TMCLKL	HY/2012/08	2017-10-09	ASR5	Sunny	14:22	1-hour TSP	164	ug/m3
TMCLKL	HY/2012/08	2017-10-09	ASR5	Sunny	15:24	1-hour TSP	200	ug/m3
TMCLKL	HY/2012/08	2017-10-09	ASR6	Sunny	13:10	1-hour TSP	134	ug/m3
TMCLKL	HY/2012/08	2017-10-09	ASR6	Sunny	14:12	1-hour TSP	76	ug/m3
TMCLKL	HY/2012/08	2017-10-09	ASR6	Sunny	15:14	1-hour TSP	106	ug/m3
TMCLKL	HY/2012/08	2017-10-12	AQMS1	Sunny	14:02	1-hour TSP	72	ug/m3
TMCLKL	HY/2012/08	2017-10-12	AQMS1	Sunny	15:04	1-hour TSP	92	ug/m3
TMCLKL	HY/2012/08	2017-10-12	AQMS1	Sunny	16:06	1-hour TSP	98	ug/m3
TMCLKL	HY/2012/08	2017-10-12	ASR1	Sunny	13:50	1-hour TSP	230	ug/m3
TMCLKL	HY/2012/08	2017-10-12	ASR1	Sunny	14:52	1-hour TSP	279	ug/m3
TMCLKL	HY/2012/08	2017-10-12	ASR1	Sunny	15:54	1-hour TSP	289	ug/m3
TMCLKL	HY/2012/08	2017-10-12	ASR10	Sunny	13:17	1-hour TSP	100	ug/m3
TMCLKL	HY/2012/08	2017-10-12	ASR10	Sunny	14:19	1-hour TSP	81	ug/m3
TMCLKL	HY/2012/08	2017-10-12	ASR10	Sunny	15:21	1-hour TSP	74	ug/m3
TMCLKL	HY/2012/08	2017-10-12	ASR5	Sunny	13:39	1-hour TSP	147	ug/m3
TMCLKL	HY/2012/08	2017-10-12	ASR5	Sunny	14:41	1-hour TSP	150	ug/m3
TMCLKL	HY/2012/08	2017-10-12	ASR5	Sunny	15:43	1-hour TSP	157	ug/m3
TMCLKL	HY/2012/08	2017-10-12	ASR6	Sunny	13:28	1-hour TSP	207	ug/m3
TMCLKL	HY/2012/08	2017-10-12	ASR6	Sunny	14:30	1-hour TSP	154	ug/m3
TMCLKL	HY/2012/08	2017-10-12	ASR6	Sunny	15:32	1-hour TSP	79	ug/m3

Project	Works	Date	Station	Weather	Start time	Parameters	Results	units
TMCLKL	HY/2012/08	2017-10-15	AQMS1	Sunny	-	1-hour TSP	-	ug/m3
TMCLKL	HY/2012/08	2017-10-15	AQMS1	Sunny	-	1-hour TSP	-	ug/m3
TMCLKL	HY/2012/08	2017-10-15	AQMS1	Sunny	-	1-hour TSP	-	ug/m3
TMCLKL	HY/2012/08	2017-10-15	ASR1	Sunny	-	1-hour TSP	-	ug/m3
TMCLKL	HY/2012/08	2017-10-15	ASR1	Sunny	-	1-hour TSP	-	ug/m3
TMCLKL	HY/2012/08	2017-10-15	ASR1	Sunny	-	1-hour TSP	-	ug/m3
TMCLKL	HY/2012/08	2017-10-15	ASR10	Sunny	-	1-hour TSP	-	ug/m3
TMCLKL	HY/2012/08	2017-10-15	ASR10	Sunny	-	1-hour TSP	-	ug/m3
TMCLKL	HY/2012/08	2017-10-15	ASR10	Sunny	-	1-hour TSP	-	ug/m3
TMCLKL	HY/2012/08	2017-10-15	ASR5	Sunny	-	1-hour TSP	-	ug/m3
TMCLKL	HY/2012/08	2017-10-15	ASR5	Sunny	-	1-hour TSP	-	ug/m3
TMCLKL	HY/2012/08	2017-10-15	ASR5	Sunny	-	1-hour TSP	-	ug/m3
TMCLKL	HY/2012/08	2017-10-15	ASR6	Sunny	-	1-hour TSP	-	ug/m3
TMCLKL	HY/2012/08	2017-10-15	ASR6	Sunny	-	1-hour TSP	-	ug/m3
TMCLKL	HY/2012/08	2017-10-15	ASR6	Sunny	-	1-hour TSP	-	ug/m3
TMCLKL	HY/2012/08	2017-10-18	AQMS1	Sunny	13:36	1-hour TSP	73	ug/m3
TMCLKL	HY/2012/08	2017-10-18	AQMS1	Sunny	14:38	1-hour TSP	61	ug/m3
TMCLKL	HY/2012/08	2017-10-18	AQMS1	Sunny	15:40	1-hour TSP	92	ug/m3
TMCLKL	HY/2012/08	2017-10-18	ASR1	Sunny	13:24	1-hour TSP	185	ug/m3
TMCLKL	HY/2012/08	2017-10-18	ASR1	Sunny	14:26	1-hour TSP	151	ug/m3
TMCLKL	HY/2012/08	2017-10-18	ASR1	Sunny	15:28	1-hour TSP	165	ug/m3
TMCLKL	HY/2012/08	2017-10-18	ASR10	Sunny	12:49	1-hour TSP	81	ug/m3
TMCLKL	HY/2012/08	2017-10-18	ASR10	Sunny	13:51	1-hour TSP	75	ug/m3
TMCLKL	HY/2012/08	2017-10-18	ASR10	Sunny	14:53	1-hour TSP	77	ug/m3
TMCLKL	HY/2012/08	2017-10-18	ASR5	Sunny	13:11	1-hour TSP	228	ug/m3
TMCLKL	HY/2012/08	2017-10-18	ASR5	Sunny	14:13	1-hour TSP	197	ug/m3
TMCLKL	HY/2012/08	2017-10-18	ASR5	Sunny	15:15	1-hour TSP	126	ug/m3
TMCLKL	HY/2012/08	2017-10-18	ASR6	Sunny	13:00	1-hour TSP	116	ug/m3
TMCLKL	HY/2012/08	2017-10-18	ASR6	Sunny	14:02	1-hour TSP	107	ug/m3
TMCLKL	HY/2012/08	2017-10-18	ASR6	Sunny	15:04	1-hour TSP	150	ug/m3

Project	Works	Date	Station	Weather	Start time	Parameters	Results	units
TMCLKL	HY/2012/08	2017-10-21	AQMS1	Sunny	10:58	1-hour TSP	61	ug/m3
TMCLKL	HY/2012/08	2017-10-21	AQMS1	Sunny	12:00	1-hour TSP	41	ug/m3
TMCLKL	HY/2012/08	2017-10-21	AQMS1	Sunny	13:02	1-hour TSP	110	ug/m3
TMCLKL	HY/2012/08	2017-10-21	ASR1	Sunny	10:47	1-hour TSP	372	ug/m3
TMCLKL	HY/2012/08	2017-10-21	ASR1	Sunny	11:49	1-hour TSP	439	ug/m3
TMCLKL	HY/2012/08	2017-10-21	ASR1	Sunny	12:51	1-hour TSP	307	ug/m3
TMCLKL	HY/2012/08	2017-10-21	ASR10	Sunny	10:12	1-hour TSP	307	ug/m3
TMCLKL	HY/2012/08	2017-10-21	ASR10	Sunny	11:14	1-hour TSP	72	ug/m3
TMCLKL	HY/2012/08	2017-10-21	ASR10	Sunny	12:16	1-hour TSP	219	ug/m3
TMCLKL	HY/2012/08	2017-10-21	ASR5	Sunny	10:35	1-hour TSP	181	ug/m3
TMCLKL	HY/2012/08	2017-10-21	ASR5	Sunny	11:37	1-hour TSP	168	ug/m3
TMCLKL	HY/2012/08	2017-10-21	ASR5	Sunny	12:39	1-hour TSP	133	ug/m3
TMCLKL	HY/2012/08	2017-10-21	ASR6	Sunny	10:24	1-hour TSP	150	ug/m3
TMCLKL	HY/2012/08	2017-10-21	ASR6	Sunny	11:26	1-hour TSP	88	ug/m3
TMCLKL	HY/2012/08	2017-10-21	ASR6	Sunny	12:28	1-hour TSP	156	ug/m3
TMCLKL	HY/2012/08	2017-10-24	AQMS1	Sunny	13:52	1-hour TSP	120	ug/m3
TMCLKL	HY/2012/08	2017-10-24	AQMS1	Sunny	14:54	1-hour TSP	143	ug/m3
TMCLKL	HY/2012/08	2017-10-24	AQMS1	Sunny	15:56	1-hour TSP	174	ug/m3
TMCLKL	HY/2012/08	2017-10-24	ASR1	Sunny	13:41	1-hour TSP	148	ug/m3
TMCLKL	HY/2012/08	2017-10-24	ASR1	Sunny	14:43	1-hour TSP	199	ug/m3
TMCLKL	HY/2012/08	2017-10-24	ASR1	Sunny	15:45	1-hour TSP	202	ug/m3
TMCLKL	HY/2012/08	2017-10-24	ASR10	Sunny	13:07	1-hour TSP	77	ug/m3
TMCLKL	HY/2012/08	2017-10-24	ASR10	Sunny	14:09	1-hour TSP	122	ug/m3
TMCLKL	HY/2012/08	2017-10-24	ASR10	Sunny	15:11	1-hour TSP	149	ug/m3
TMCLKL	HY/2012/08	2017-10-24	ASR5	Sunny	13:30	1-hour TSP	182	ug/m3
TMCLKL	HY/2012/08	2017-10-24	ASR5	Sunny	14:32	1-hour TSP	213	ug/m3
TMCLKL	HY/2012/08	2017-10-24	ASR5	Sunny	15:34	1-hour TSP	285	ug/m3
TMCLKL	HY/2012/08	2017-10-24	ASR6	Sunny	13:18	1-hour TSP	213	ug/m3
TMCLKL	HY/2012/08	2017-10-24	ASR6	Sunny	14:20	1-hour TSP	190	ug/m3
TMCLKL	HY/2012/08	2017-10-24	ASR6	Sunny	15:22	1-hour TSP	98	ug/m3

Project	Works	Date	Station	Weather	Start time	Parameters	Results	units
TMCLKL	HY/2012/08	2017-10-27	AQMS1	Sunny	14:02	1-hour TSP	109	ug/m3
TMCLKL	HY/2012/08	2017-10-27	AQMS1	Sunny	15:04	1-hour TSP	227	ug/m3
TMCLKL	HY/2012/08	2017-10-27	AQMS1	Sunny	16:06	1-hour TSP	234	ug/m3
TMCLKL	HY/2012/08	2017-10-27	ASR1	Sunny	13:51	1-hour TSP	228	ug/m3
TMCLKL	HY/2012/08	2017-10-27	ASR1	Sunny	14:53	1-hour TSP	225	ug/m3
TMCLKL	HY/2012/08	2017-10-27	ASR1	Sunny	15:55	1-hour TSP	293	ug/m3
TMCLKL	HY/2012/08	2017-10-27	ASR10	Sunny	13:17	1-hour TSP	123	ug/m3
TMCLKL	HY/2012/08	2017-10-27	ASR10	Sunny	14:14	1-hour TSP	123	ug/m3
TMCLKL	HY/2012/08	2017-10-27	ASR10	Sunny	15:21	1-hour TSP	148	ug/m3
TMCLKL	HY/2012/08	2017-10-27	ASR5	Sunny	13:39	1-hour TSP	207	ug/m3
TMCLKL	HY/2012/08	2017-10-27	ASR5	Sunny	14:41	1-hour TSP	219	ug/m3
TMCLKL	HY/2012/08	2017-10-27	ASR5	Sunny	15:42	1-hour TSP	368	ug/m3
TMCLKL	HY/2012/08	2017-10-27	ASR6	Sunny	13:28	1-hour TSP	152	ug/m3
TMCLKL	HY/2012/08	2017-10-27	ASR6	Sunny	14:30	1-hour TSP	154	ug/m3
TMCLKL	HY/2012/08	2017-10-27	ASR6	Sunny	15:32	1-hour TSP	388	ug/m3
TMCLKL	HY/2012/08	2017-10-30	AQMS1	Sunny	13:39	1-hour TSP	221	ug/m3
TMCLKL	HY/2012/08	2017-10-30	AQMS1	Sunny	14:41	1-hour TSP	210	ug/m3
TMCLKL	HY/2012/08	2017-10-30	AQMS1	Sunny	15:43	1-hour TSP	164	ug/m3
TMCLKL	HY/2012/08	2017-10-30	ASR1	Sunny	13:28	1-hour TSP	229	ug/m3
TMCLKL	HY/2012/08	2017-10-30	ASR1	Sunny	14:30	1-hour TSP	299	ug/m3
TMCLKL	HY/2012/08	2017-10-30	ASR1	Sunny	15:32	1-hour TSP	279	ug/m3
TMCLKL	HY/2012/08	2017-10-30	ASR10	Sunny	12:54	1-hour TSP	175	ug/m3
TMCLKL	HY/2012/08	2017-10-30	ASR10	Sunny	13:56	1-hour TSP	93	ug/m3
TMCLKL	HY/2012/08	2017-10-30	ASR10	Sunny	14:58	1-hour TSP	117	ug/m3
TMCLKL	HY/2012/08	2017-10-30	ASR5	Sunny	13:17	1-hour TSP	179	ug/m3
TMCLKL	HY/2012/08	2017-10-30	ASR5	Sunny	14:19	1-hour TSP	197	ug/m3
TMCLKL	HY/2012/08	2017-10-30	ASR5	Sunny	15:21	1-hour TSP	197	ug/m3
TMCLKL	HY/2012/08	2017-10-30	ASR6	Sunny	13:05	1-hour TSP	149	ug/m3
TMCLKL	HY/2012/08	2017-10-30	ASR6	Sunny	14:07	1-hour TSP	181	ug/m3
TMCLKL	HY/2012/08	2017-10-30	ASR6	Sunny	15:09	1-hour TSP	183	ug/m3

Project	Works	Date	Station	Weather	Start time	Parameters	Results	units
TMCLKL	HY/2012/08	2017-10-03	AQMS1	Sunny	16:48	24-hour TSP	53	ug/m3
TMCLKL	HY/2012/08	2017-10-03	ASR1	Sunny	16:36	24-hour TSP	88	ug/m3
TMCLKL	HY/2012/08	2017-10-03	ASR10	Sunny	16:03	24-hour TSP	37	ug/m3
TMCLKL	HY/2012/08	2017-10-03	ASR5	Sunny	16:25	24-hour TSP	78	ug/m3
TMCLKL	HY/2012/08	2017-10-03	ASR6	Sunny	16:14	24-hour TSP	41	ug/m3
TMCLKL	HY/2012/08	2017-10-06	AQMS1	Sunny	16:36	24-hour TSP	57	ug/m3
TMCLKL	HY/2012/08	2017-10-06	ASR1	Sunny	16:24	24-hour TSP	116	ug/m3
TMCLKL	HY/2012/08	2017-10-06	ASR10	Sunny	15:52	24-hour TSP	103	ug/m3
TMCLKL	HY/2012/08	2017-10-06	ASR5	Sunny	16:14	24-hour TSP	86	ug/m3
TMCLKL	HY/2012/08	2017-10-06	ASR6	Sunny	16:02	24-hour TSP	56	ug/m3
TMCLKL	HY/2012/08	2017-10-09	AQMS1	Sunny	16:51	24-hour TSP	64	ug/m3
TMCLKL	HY/2012/08	2017-10-09	ASR1	Sunny	16:38	24-hour TSP	148	ug/m3
TMCLKL	HY/2012/08	2017-10-09	ASR10	Sunny	16:04	24-hour TSP	45	ug/m3
TMCLKL	HY/2012/08	2017-10-09	ASR5	Sunny	16:26	24-hour TSP	88	ug/m3
TMCLKL	HY/2012/08	2017-10-09	ASR6	Sunny	16:16	24-hour TSP	52	ug/m3
TMCLKL	HY/2012/08	2017-10-12	AQMS1	Sunny	17:08	24-hour TSP	81	ug/m3
TMCLKL	HY/2012/08	2017-10-12	ASR1	Sunny	16:56	24-hour TSP	193	ug/m3
TMCLKL	HY/2012/08	2017-10-12	ASR10	Sunny	16:23	24-hour TSP	67	ug/m3
TMCLKL	HY/2012/08	2017-10-12	ASR5	Sunny	16:45	24-hour TSP	117	ug/m3
TMCLKL	HY/2012/08	2017-10-12	ASR6	Sunny	16:34	24-hour TSP	99	ug/m3
TMCLKL	HY/2012/08	2017-10-15	AQMS1	Sunny	-	24-hour TSP	-	ug/m3
TMCLKL	HY/2012/08	2017-10-15	ASR1	Sunny	-	24-hour TSP	-	ug/m3
TMCLKL	HY/2012/08	2017-10-15	ASR10	Sunny	-	24-hour TSP	-	ug/m3
TMCLKL	HY/2012/08	2017-10-15	ASR5	Sunny	-	24-hour TSP	-	ug/m3
TMCLKL	HY/2012/08	2017-10-15	ASR6	Sunny	-	24-hour TSP	-	ug/m3
TMCLKL	HY/2012/08	2017-10-18	AQMS1	Sunny	16:42	24-hour TSP	39	ug/m3
TMCLKL	HY/2012/08	2017-10-18	ASR1	Sunny	16:30	24-hour TSP	141	ug/m3
TMCLKL	HY/2012/08	2017-10-18	ASR10	Sunny	15:55	24-hour TSP	205	ug/m3
TMCLKL	HY/2012/08	2017-10-18	ASR5	Sunny	16:17	24-hour TSP	82	ug/m3
TMCLKL	HY/2012/08	2017-10-18	ASR6	Sunny	16:06	24-hour TSP	76	ug/m3

Project	Works	Date	Station	Weather	Start time	Parameters	Results	units
TMCLKL	HY/2012/08	2017-10-21	AQMS1	Sunny	14:04	24-hour TSP	70	ug/m3
TMCLKL	HY/2012/08	2017-10-21	ASR1	Sunny	13:53	24-hour TSP	220	ug/m3
TMCLKL	HY/2012/08	2017-10-21	ASR10	Sunny	13:18	24-hour TSP	72	ug/m3
TMCLKL	HY/2012/08	2017-10-21	ASR5	Sunny	13:41	24-hour TSP	103	ug/m3
TMCLKL	HY/2012/08	2017-10-21	ASR6	Sunny	13:30	24-hour TSP	101	ug/m3
TMCLKL	HY/2012/08	2017-10-24	AQMS1	Sunny	16:58	24-hour TSP	77	ug/m3
TMCLKL	HY/2012/08	2017-10-24	ASR1	Sunny	16:47	24-hour TSP	112	ug/m3
TMCLKL	HY/2012/08	2017-10-24	ASR10	Sunny	16:13	24-hour TSP	81	ug/m3
TMCLKL	HY/2012/08	2017-10-24	ASR5	Sunny	16:36	24-hour TSP	124	ug/m3
TMCLKL	HY/2012/08	2017-10-24	ASR6	Sunny	16:24	24-hour TSP	96	ug/m3
TMCLKL	HY/2012/08	2017-10-27	AQMS1	Sunny	17:08	24-hour TSP	94	ug/m3
TMCLKL	HY/2012/08	2017-10-27	ASR1	Sunny	16:57	24-hour TSP	191	ug/m3
TMCLKL	HY/2012/08	2017-10-27	ASR10	Sunny	16:23	24-hour TSP	91	ug/m3
TMCLKL	HY/2012/08	2017-10-27	ASR5	Sunny	16:44	24-hour TSP	119	ug/m3
TMCLKL	HY/2012/08	2017-10-27	ASR6	Sunny	16:34	24-hour TSP	108	ug/m3
TMCLKL	HY/2012/08	2017-10-30	AQMS1	Sunny	16:45	24-hour TSP	160	ug/m3
TMCLKL	HY/2012/08	2017-10-30	ASR1	Sunny	16:34	24-hour TSP	203	ug/m3
TMCLKL	HY/2012/08	2017-10-30	ASR10	Sunny	16:00	24-hour TSP	117	ug/m3
TMCLKL	HY/2012/08	2017-10-30	ASR5	Sunny	16:23	24-hour TSP	160	ug/m3
TMCLKL	HY/2012/08	2017-10-30	ASR6	Sunny	16:11	24-hour TSP	138	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)	
17/10/03	0:00	1.2	70	
17/10/03	1:00	2.3	80	
17/10/03	2:00	1	120	
17/10/03	3:00	1.9	153	
17/10/03	4:00	0.8	163	
17/10/03	5:00	1.2	174	
17/10/03	6:00	1.3	85	
17/10/03	7:00	1.4	93	
17/10/03	8:00	1.5	66	
17/10/03	9:00	2.3	115	
17/10/03	10:00	2.2	135	
17/10/03	11:00	0.4	147	
17/10/03	12:00	0.3	128	
17/10/03	13:00	1.1	113	
17/10/03	14:00	2.2	126	
17/10/03	15:00	3.6	125	
17/10/03	16:00	3.2	117	
17/10/03	17:00	3.1	130	
17/10/03	18:00	2.3	102	
17/10/03	19:00	2.2	106	
17/10/03	20:00	2	104	
17/10/03	21:00	1.2	103	
17/10/03	22:00	1.3	99	
17/10/03	23:00	1.1	85	
17/10/04	0:00	0.9	74	
17/10/04	1:00	0.8	81	
17/10/04	2:00	1.5	115	
17/10/04	3:00	1.7	116	
17/10/04	4:00	1.4	117	
17/10/04	5:00	1.6	154	
17/10/04	6:00	1.1	162	
17/10/04	7:00	0.5	183	
17/10/04	8:00	0.8	113	
17/10/04	9:00	0.9	104	
17/10/04	10:00	1.4	115	
17/10/04	11:00	1.5	43	
17/10/04	12:00	1.1	25	
17/10/04	13:00	1.7	36	
17/10/04	14:00	1.6	105	
17/10/04	15:00	1.2	354	
17/10/04	16:00	1.8	123	
17/10/04	17:00	1.1	185	
17/10/04	18:00	1.2	170	
17/10/04	19:00	1.1	115	
17/10/04	20:00	0.4	102	
17/10/04	21:00	0.5	102	
17/10/04	22:00	0.6	109	
17/10/04	23:00	0.9	98	
17/10/06	0:00	2.2	92	
17/10/06	1:00	2.2	99	
17/10/06	2:00	1.3	46	
17/10/06	3:00	0.4	48	
17/10/06	4:00	0.9	51	
17/10/06	5:00	0.9	44	
1// 10/ 00	5.00	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)	
17/10/06	7:00	0.9	51	
17/10/06	8:00	1.3	63	
17/10/06	9:00	1.3	48	
17/10/06	10:00	1.8	92	
17/10/06	11:00	3.1	112	
17/10/06	12:00	3.6	105	
17/10/06	13:00	3.1	113	
17/10/06	14:00	4	132	
17/10/06	15:00	4.9	128	
17/10/06	16:00	4.5	134	
17/10/06	17:00	2.7	110	
17/10/06	18:00	2.7	122	
17/10/06	19:00	2.7	105	
17/10/06	20:00	1.8	96	
17/10/06	21:00	2.2	77	
17/10/06	22:00	1.3	72	
17/10/06	23:00	2.2	86	
17/10/07	0:00	0.9	74	
17/10/07	1:00	1.3	68	
17/10/07	2:00	1.5	66	
17/10/07	3:00	0.9	65	
17/10/07	4:00	1.8	43	
17/10/07	5:00	2.2	79	
17/10/07	6:00	1.3	42	
17/10/07	7:00	0.9	38	
17/10/07	8:00	0.9	51	
17/10/07	9:00	1.8	99	
17/10/07	10:00	2.2	44	
17/10/07	11:00	2.2	52	
17/10/07	12:00	3.1	105	
17/10/07	13:00	3.1	113	
17/10/07	14:00	3.1	121	
17/10/07	15:00	3.1	117	
17/10/07	16:00	4	119	
17/10/07	17:00	4.9	113	
17/10/07	18:00	4	94	
17/10/07	19:00	4	95	
17/10/07	20:00	3.6	88	
17/10/07	21:00	2.2	64	
17/10/07	22:00	1.3	66	
17/10/07	23:00	2.2	95	
17/10/09	0:00	3.6	98	
17/10/09	1:00	2.7	92	
17/10/09	2:00	1.8	48	
17/10/09	3:00	2.7	96	
17/10/09	4:00	1.8	42	
17/10/09	5:00	1.3	38	
17/10/09	6:00	1.3	12	
17/10/09	7:00	1.3	55	
17/10/09	8:00	1.3	42	
17/10/09	9:00	1.3	10	
17/10/09	10:00	1.3	50	
17/10/09	11:00	2.7	42	
17/10/09	12:00	3.6	96	
17/10/09	13:00	4	81	

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)	
17/10/09	14:00	3.6	82	
17/10/09	15:00	5.8	87	
17/10/09	16:00	4.9	93	
17/10/09	17:00	5.8	100	
17/10/09	18:00	5.4	98	
17/10/09	19:00	4	94	
17/10/09	20:00	4.5	91	
17/10/09	21:00	4.5	100	
17/10/09	22:00	2.2	102	
17/10/09	23:00	3.6	79	
17/10/10	0:00	2.7	85	
17/10/10	1:00	1.8	93	
17/10/10	2:00	2.7	91	
17/10/10	3:00	3.6	93	
17/10/10	4:00	2.7	97	
17/10/10	5:00	0.9	78	
17/10/10	6:00	1.3	85	
17/10/10	7:00	0.9	86	
17/10/10	8:00	1.8	93	
17/10/10	9:00	3.1	94	
17/10/10	10:00	3.1	102	
17/10/10	11:00	2.7	92	
17/10/10	12:00	4	84	
17/10/10	13:00	4	82	
17/10/10	14:00	4	81	
17/10/10	15:00	4.9	85	
17/10/10	16:00	4.5	88	
17/10/10	17:00	4.5	90	
17/10/10	18:00	4.5	97	
17/10/10	19:00	3.1	81	
17/10/10	20:00	2.7	95	
17/10/10	21:00	2.2	88	
17/10/10	22:00	1.8	74	
17/10/10	23:00	2.2	91	
17/10/12	0:00	1.3	72	
17/10/12	1:00	1.3	73	
17/10/12	2:00	1.3	76	
17/10/12	3:00	1.3	68	
17/10/12	4:00	1.8	66	
17/10/12	5:00	1.8	65	
17/10/12	6:00	1.8	100	
17/10/12	7:00	0	-	
17/10/12	8:00	1.3	46	
17/10/12	9:00	1.8	50	
17/10/12	10:00	1.8	52	
17/10/12	11:00	1.8	55	
17/10/12	12:00	1.8	54	
17/10/12	13:00	2.2	59	
17/10/12	14:00	1.8	11	
17/10/12	15:00	1.8	95	
17/10/12	16:00	2.2	345	
17/10/12	17:00	2.7	351	
17/10/12	18:00	1.8	349	
17/10/12	19:00	2.2	352	
1//10/12	17.00	<i>2.2</i>	332	

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)	
17/10/12	21:00	2.2	355	
17/10/12	22:00	2.2	346	
17/10/12	23:00	2.2	351	
17/10/13	0:00	2.2	301	
17/10/13	1:00	1.8	310	
17/10/13	2:00	2.2	346	
17/10/13	3:00	1.8	352	
17/10/13	4:00	1.8	355	
17/10/13	5:00	1.8	344	
17/10/13	6:00	2.7	339	
17/10/13	7:00	2.2	348	
17/10/13	8:00	0.9	298	
17/10/13	9:00	1.8	46	
17/10/13	10:00	2.2	51	
17/10/13	11:00	2.7	47	
17/10/13	12:00	3.1	44	
17/10/13	13:00	3.1	38	
17/10/13	14:00	2.7	350	
17/10/13	15:00	3.1	346	
17/10/13	16:00	3.6	348	
17/10/13	17:00	2.2	339	
17/10/13	18:00	1.3	344	
17/10/13	19:00	1.3	342	
17/10/13	20:00	1.8	350	
17/10/13	21:00	2.2	341	
17/10/13	22:00	4	357	
17/10/13	23:00	5.4	3	
17/10/15	0:00	2.2	352	
17/10/15	1:00	1.3	284	
17/10/15	2:00	2.7	351	
17/10/15	3:00	2.2	349	
17/10/15	4:00	2.2	355	
17/10/15	5:00	2.7	356	
17/10/15	6:00	3.6	351	
17/10/15	7:00	3.6	350	
17/10/15	8:00	4.9	348	
17/10/15	9:00	5.4	357	
17/10/15	10:00	4	351	
17/10/15	11:00	6.3	2	
17/10/15	12:00	5.8	352	
17/10/15	12:00	7.2	344	
17/10/15	14:00	7.2	356	
17/10/15	15:00	6.7	15	
17/10/15	16:00	6.3	22	
17/10/15	17:00	5.4	22 24	
17/10/15	17:00	4.9	26	
17/10/15	19:00	3.1	46	
17/10/15	20:00	2.7	51	
17/10/15	20:00	2.2	48	
17/10/15	22:00	1.8	42	
17/10/15	23:00	3.1	73	
17/10/16	0:00	5.8	91	
17/10/16	1:00	4.9	82	
17/10/16	2:00	4	95	
17/10/16	3:00	3.6	84	

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)	
17/10/16	4:00	4.9	113	
17/10/16	5:00	3.1	92	
17/10/16	6:00	3.1	98	
17/10/16	7:00	1.3	47	
17/10/16	8:00	3.6	94	
17/10/16	9:00	2.7	99	
17/10/16	10:00	2.2	95	
17/10/16	11:00	3.6	84	
17/10/16	12:00	4	90	
17/10/16	13:00	2.2	46	
17/10/16	14:00	1.8	48	
17/10/16	15:00	1.8	51	
17/10/16	16:00	1.8	42	
17/10/16	17:00	2.2	38	
17/10/16	18:00	1.8	39	
17/10/16	19:00	2.2	41	
17/10/16	20:00	2.7	41 40	
17/10/16	20:00	2.7	20	
17/10/16	22:00	2.2 3.1	46	
17/10/16	23:00		51	
17/10/18	0:00	2.2	47	
17/10/18	1:00	2.7	52	
17/10/18	2:00	2.7	43	
17/10/18	3:00	1.8	48	
17/10/18	4:00	2.2	24	
17/10/18	5:00	1.8	46	
17/10/18 17/10/18	6:00 7:00	1.3 3.1	51 42	
	8:00	2.7	39	
17/10/18 17/10/18	9:00	2.7	55	
17/10/18	10:00	2.7	40	
17/10/18	11:00	2.2	37	
17/10/18	12:00	1.8	46	
17/10/18	13:00	1.3	23	
17/10/18	14:00	1.8	48	
17/10/18	15:00	1.8	51	
17/10/18	16:00	1.8	352	
17/10/18	17:00	1.8	356	
17/10/18	18:00	1.8	357	
17/10/18	19:00	1.8	351	
17/10/18	20:00	1.3	355	
17/10/18	21:00	2.7	352	
17/10/18	22:00	3.1	5	
17/10/18	23:00	2.7	23	
17/10/19	0:00	1.8	46	
17/10/19	1:00	2.2	21	
17/10/19	2:00	2.2	19	
17/10/19	3:00	1.8	48	
17/10/19	4:00	2.2	22	
17/10/19	5:00	1.8	345	
17/10/19	6:00	0.9	349	
17/10/19	7:00	0	-	
17/10/19	8:00	0.4	228	
17/10/19	9:00	0.4	299	
17/10/19	10:00	0.4	230	
17/10/19	11:00	0.9	47	

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)	
17/10/19	12:00	1.8	301	
17/10/19	13:00	2.7	298	
17/10/19	14:00	3.1	299	
17/10/19	15:00	2.7	298	
17/10/19	16:00	2.2	301	
17/10/19	17:00	0.9	281	
17/10/19	18:00	1.3	302	
17/10/19	19:00	1.3	346	
17/10/19	20:00	1.3	351	
17/10/19	21:00	1.3	349	
17/10/19	22:00	1.3	355	
17/10/19	23:00	1.8	359	
17/10/21	0:00	3.6	342	
17/10/21	1:00	4.5	352	
17/10/21	2:00	3.6	351	
17/10/21	3:00	3.6	339	
17/10/21	4:00	2.2	348	
17/10/21	5:00	3.1	347	
17/10/21	6:00	3.1	350	
17/10/21	7:00	3.1	338	
17/10/21	8:00	3.1	340	
17/10/21	9:00	2.2	52	
17/10/21	10:00	2.2	48	
17/10/21	11:00	2.2	42	
17/10/21	12:00	1.8	45	
17/10/21	13:00	1.8	350	
17/10/21	14:00	2.7	341	
17/10/21	15:00	3.1	339	
17/10/21	16:00	3.6	305	
17/10/21	17:00	2.7	310	
17/10/21	18:00	1.3	294	
17/10/21	19:00	1.3	355	
17/10/21	20:00	1.8	340	
17/10/21	20.00	1.3	337	
17/10/21	22:00	1.3	346	
17/10/21	23:00	0.9	344	
	0:00	1.3	336	
17/10/22		3.1		
17/10/22	1:00 2:00	3.6	331 335	
17/10/22				
17/10/22	3:00	3.6	16	
17/10/22	4:00	2.7	15	
17/10/22	5:00	3.1	20	
17/10/22	6:00	3.1	15	
17/10/22	7:00	3.1	14	
17/10/22	8:00	3.1	46	
17/10/22	9:00	3.6	50	
17/10/22	10:00	3.1	42	
17/10/22	11:00	2.7	48	
17/10/22	12:00	1.8	47	
17/10/22	13:00	1.8	350	
17/10/22	14:00	2.2	342	
17/10/22	15:00	1.8	294	
17/10/22	16:00	2.7	305	
17/10/22	17:00	2.2	293	
17/10/22	18:00	1.3	2	
17/10/22	19:00	1.8	300	
17/10/22	20:00	0.9	349	

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)			
17/10/22	21:00	0	-			
17/10/22	22:00	0	-			
17/10/22	23:00	0	-			
17/10/24	0:00	0	-			
17/10/24	1:00	0.4	46			
17/10/24	2:00	0.4	51			
17/10/24	3:00	0.4	44			
17/10/24	4:00	1.3	47			
17/10/24	5:00	1.3	23			
17/10/24	6:00	0.9	22			
17/10/24	7:00	0.9	51			
17/10/24	8:00	1.8	47			
17/10/24	9:00	1.8	51			
17/10/24	10:00	1.3	46			
17/10/24	11:00	2.2	102			
17/10/24	11:00	2.2	102			
17/10/24	13:00	1.3	221			
17/10/24	14:00	1.3	274			
17/10/24	15:00	0.9	256			
17/10/24	16:00	0.9	269			
17/10/24	17:00	0.9	251			
17/10/24	18:00	0.4	223			
17/10/24	19:00	0.9	351			
17/10/24	20:00	0.4	304			
17/10/24	21:00	1.3	92			
17/10/24	22:00	0.9	48			
17/10/24	23:00	0.9	77			
17/10/25	0:00	0.4	68			
17/10/25	1:00	0.9	43			
17/10/25	2:00	1.3	42			
17/10/25	3:00	1.3	41			
17/10/25	4:00	0.9	50			
17/10/25	5:00	0.9	39			
17/10/25	6:00	1.3	48			
17/10/25	7:00	1.3	37			
17/10/25	8:00	1.3	51			
17/10/25	9:00	1.3	46			
17/10/25	10:00	2.7	105			
17/10/25	11:00	2.7	113			
17/10/25	12:00	3.1	131			
17/10/25	13:00	3.6	138			
	14:00	2.7				
17/10/25			111			
17/10/25	15:00	2.7	128			
17/10/25	16:00	2.2	132			
17/10/25	17:00	2.7	130			
17/10/25	18:00	2.7	119			
17/10/25	19:00	2.7	113			
17/10/25	20:00	2.2	105			
17/10/25	21:00	1.8	95			
17/10/25	22:00	1.3	88			
17/10/25	23:00	1.3	75			
17/10/27	0:00	0				
17/10/27	1:00	0.9	352			
17/10/27	2:00	0.9	339			
17/10/27	3:00	0.4	345			
17/10/27	4:00	0.4	351			
17/10/27	5:00	0.4	355			

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)			
17/10/27	6:00	0.4	6			
17/10/27	7:00	0.4	3			
17/10/27	8:00	0.9	48			
17/10/27	9:00	1.8	49			
17/10/27	10:00	1.8	50			
17/10/27	11:00	2.2	71			
17/10/27	12:00	1.8	43			
17/10/27	13:00	1.8	40			
17/10/27	14:00	2.2	225			
17/10/27	15:00	1.3	19			
17/10/27	16:00	1.8	119			
17/10/27	17:00	2.2	94			
17/10/27	18:00	2.2	93			
17/10/27	19:00	0.9	88			
17/10/27	20:00	0	_			
17/10/27	21:00	0	_			
17/10/27	22:00	0	-			
17/10/27	23:00	0	-			
17/10/28	0:00	0.9	350			
17/10/28	1:00	0.9	348			
17/10/28	2:00	1.3	351			
17/10/28	3:00	1.8	342			
17/10/28	4:00	1.3	339			
17/10/28	5:00	1.3	15			
17/10/28	6:00	1.3	51			
17/10/28	7:00	1.3	50			
17/10/28	8:00	1.5	43			
		2.2				
17/10/28	9:00		40 38			
17/10/28	10:00	1.8	92			
17/10/28	11:00	1.8				
17/10/28	12:00	1.8	351			
17/10/28	13:00	2.2	348			
17/10/28	14:00	1.8	350			
17/10/28	15:00	2.2	339			
17/10/28	16:00	2.2	341			
17/10/28	17:00	1.8	288			
17/10/28	18:00	1.3	301			
17/10/28	19:00	2.2	349			
17/10/28	20:00	0	-			
17/10/28	21:00	0.4	351			
17/10/28	22:00	0.9	300			
17/10/28	23:00	1.3	294			
17/10/30	0:00	2.7	351			
17/10/30	1:00	2.7	340			
17/10/30	2:00	1.8	355			
17/10/30	3:00	1.3	349			
17/10/30	4:00	1.3	5			
17/10/30	5:00	1.3	2			
17/10/30	6:00	1.8	11			
17/10/30	7:00	2.2	51			
17/10/30	8:00	2.7	13			
17/10/30	9:00	2.7	69			
17/10/30	10:00	2.2	40			
17/10/30	11:00	2.2	22			
17/10/30	12:00	2.2	21			
17/10/30	13:00	2.2	24			
17/10/30	14:00	1.8	74			

Meteorological Data for Impact Monitoring in the reporting period					
Date (yy-mm-dd)	Time (24hrs)	Average of Wind Speed (m/s)	Average of Wind Direction(degree)		
17/10/30	15:00	1.8	46		
17/10/30	16:00	1.3	2		
17/10/30	17:00	1.8	351		
17/10/30	18:00	1.3	306		
17/10/30	19:00	1.3	310		
17/10/30	20:00	0.9	304		
17/10/30	21:00	0.9	308		
17/10/30	22:00	1.8	4		
17/10/30	23:00	2.7	3		
17/10/31	0:00	3.1	7		
17/10/31	1:00	2.7	358		
17/10/31	2:00	1.8	10		
17/10/31	3:00	1.8	12		
17/10/31	4:00	2.2	46		
17/10/31	5:00	3.1	13		
17/10/31	6:00	2.7	47		
17/10/31	7:00	2.7	51		
17/10/31	8:00	2.7	48		
17/10/31	9:00	2.7	12		
17/10/31	10:00	1.8	10		
17/10/31	11:00	1.8	13		
17/10/31	12:00	1.8	11		
17/10/31	13:00	1.8	16		
17/10/31	14:00	1.3	291		
17/10/31	15:00	1.3	274		
17/10/31	16:00	1.3	285		
17/10/31	17:00	0.9	279		
17/10/31	18:00	1.8	223		
17/10/31	19:00	1.8	94		
17/10/31	20:00	0.9	350		
17/10/31	21:00	0.9	44		
17/10/31	22:00	0.4	20		
17/10/31	23:00	0.1	25		

Appendix I

Impact Dolphin Monitoring Survey

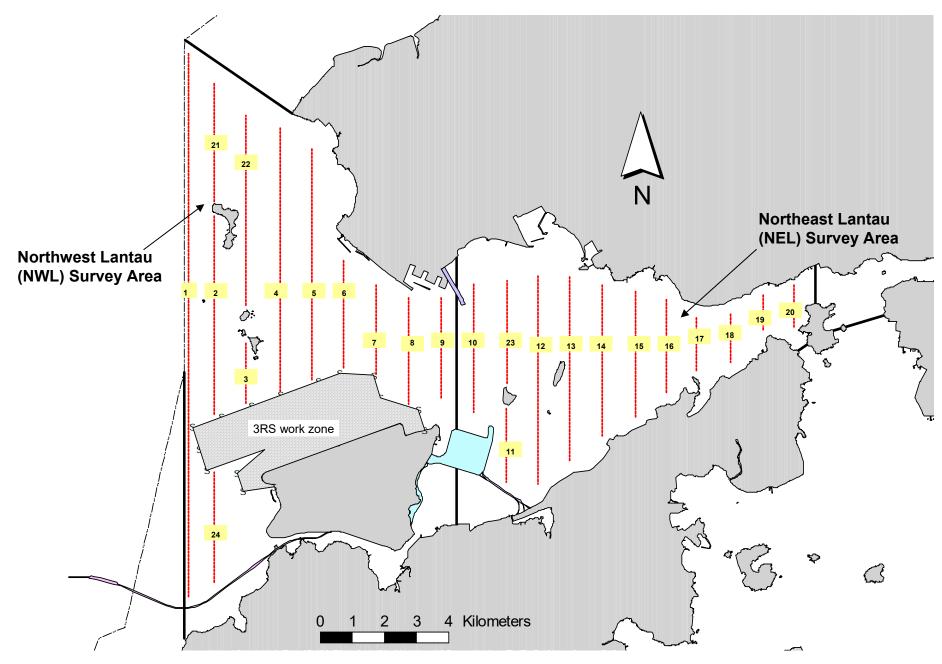


Figure 1. Transect Line Layout in Northwest and Northeast Lantau Survey Areas

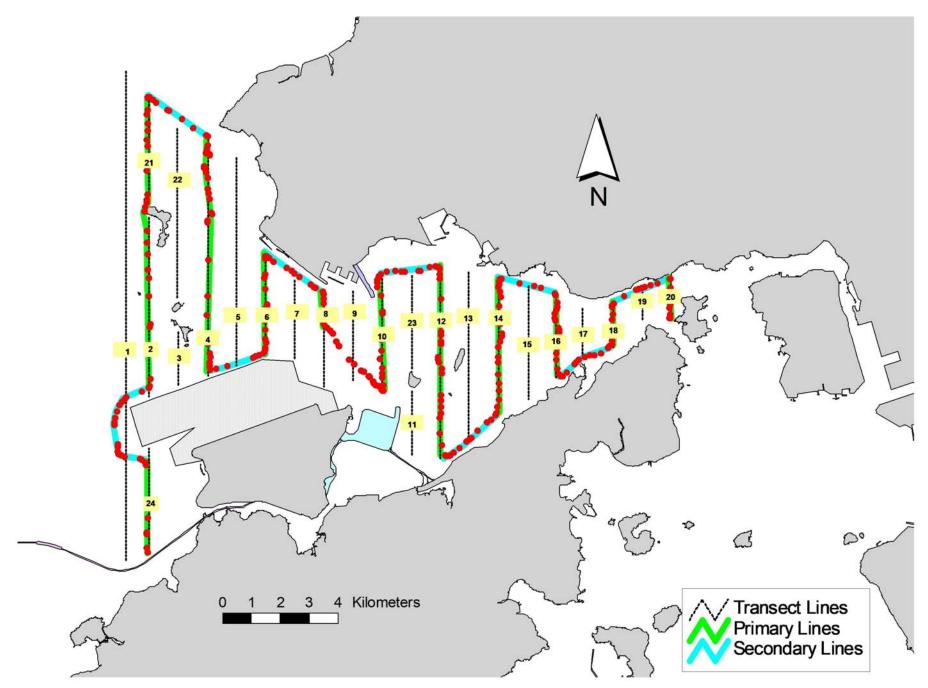


Figure 2. Survey Route on October 4th, 2017 (from HKLR03 project)

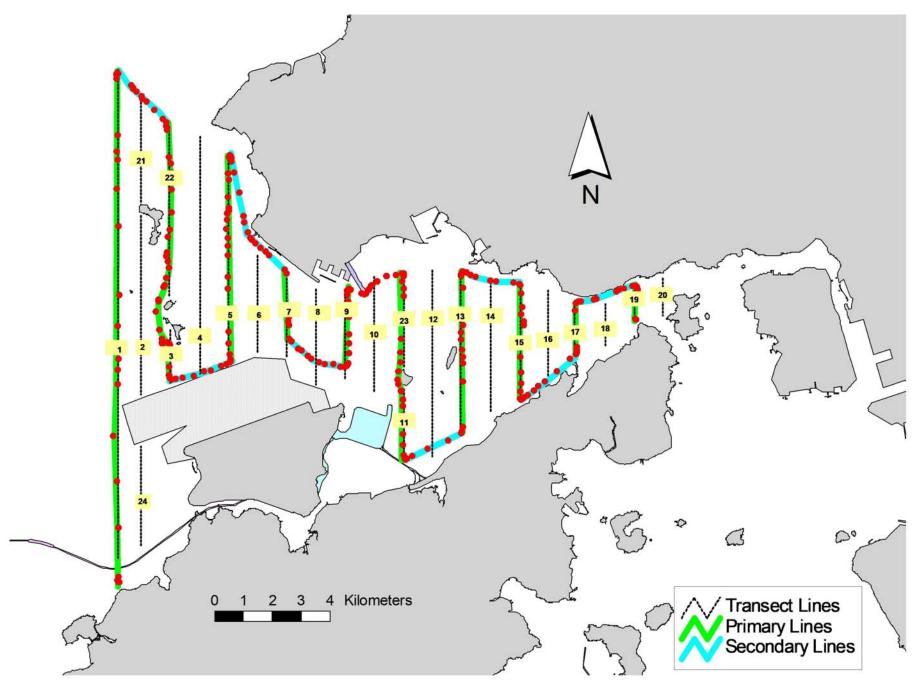


Figure 3. Survey Route on October 9th, 2017 (from HKLR03 project)

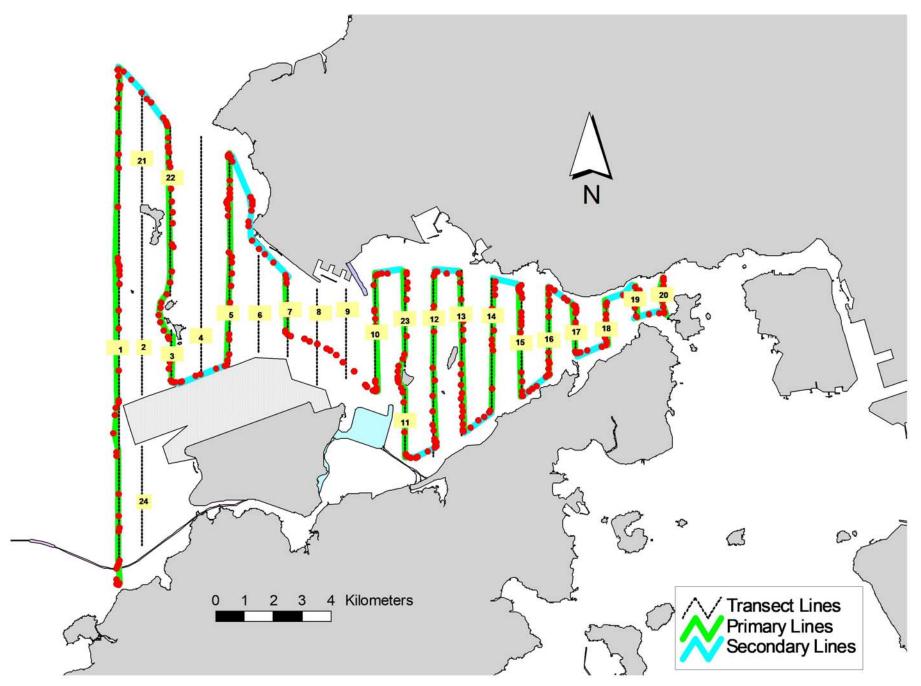


Figure 4. Survey Route on October 18th, 2017 (from HKLR03 project)

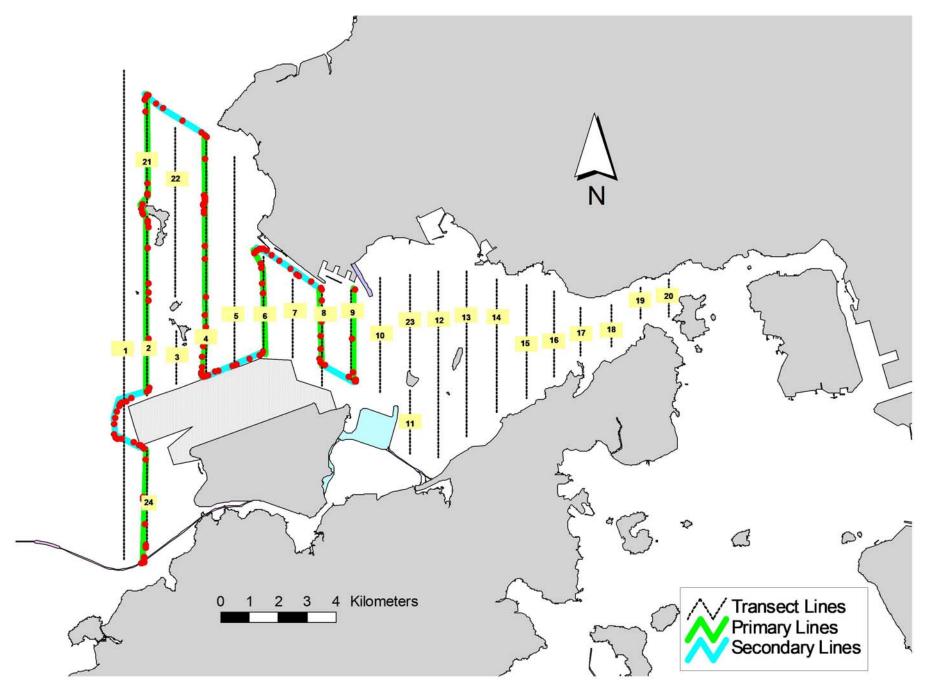


Figure 5. Survey Route on October 26th, 2017 (from HKLR03 project)

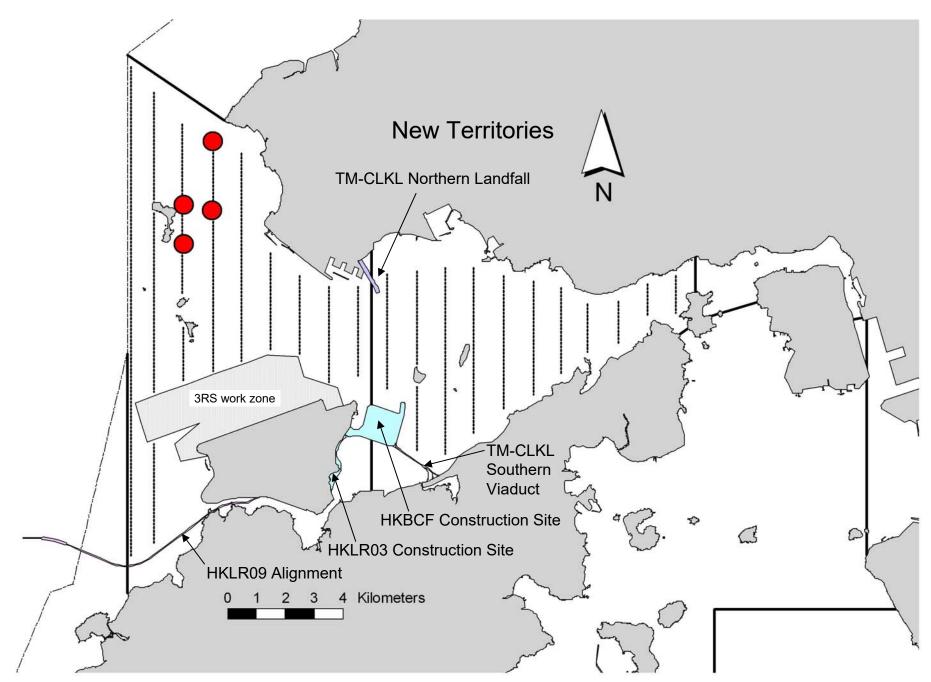


Figure 6. Distribution of Chinese White Dolphin Sightings during October 2017 HKLR03 Monitoring Surveys

Appendix I. HKLR03 Survey Effort Database (October 2017)

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

DATE	AREA	BEAU	EFFORT	SEASON	VESSEL	TYPE	P/S
4-Oct-17	NW LANTAU	2	0.88	AUTUMN	STANDARD36826	HKLR	Р
4-Oct-17	NW LANTAU	3	20.90	AUTUMN	STANDARD36826	HKLR	Р
4-Oct-17	NW LANTAU	4	2.00	AUTUMN	STANDARD36826	HKLR	Р
4-Oct-17	NW LANTAU	2	3.80	AUTUMN	STANDARD36826	HKLR	S
4-Oct-17	NW LANTAU	3	5.02	AUTUMN	STANDARD36826	HKLR	S
4-Oct-17	NW LANTAU	4	2.40	AUTUMN	STANDARD36826	HKLR	S
4-Oct-17	NE LANTAU	2	8.22	AUTUMN	STANDARD36826	HKLR	Р
4-Oct-17	NE LANTAU	3	11.59	AUTUMN	STANDARD36826	HKLR	Р
4-Oct-17	NE LANTAU	2	9.49	AUTUMN	STANDARD36826	HKLR	S
4-Oct-17	NE LANTAU	3	1.30	AUTUMN	STANDARD36826	HKLR	S
9-Oct-17	NW LANTAU	2	1.68	AUTUMN	STANDARD36826	HKLR	Р
9-Oct-17	NW LANTAU	3	30.32	AUTUMN	STANDARD36826	HKLR	Р
9-Oct-17	NW LANTAU	4	2.50	AUTUMN	STANDARD36826	HKLR	Р
9-Oct-17	NW LANTAU	2	2.30	AUTUMN	STANDARD36826	HKLR	S
9-Oct-17	NW LANTAU	3	4.90	AUTUMN	STANDARD36826	HKLR	S
9-Oct-17	NW LANTAU	4	6.70	AUTUMN	STANDARD36826	HKLR	S
9-Oct-17	NE LANTAU	3	6.99	AUTUMN	STANDARD36826	HKLR	Р
9-Oct-17	NE LANTAU	4	9.93	AUTUMN	STANDARD36826	HKLR	Р
9-Oct-17	NE LANTAU	3	6.79	AUTUMN	STANDARD36826	HKLR	S
9-Oct-17	NE LANTAU	4	3.09	AUTUMN	STANDARD36826	HKLR	S
18-Oct-17	NW LANTAU	2	11.46	AUTUMN	STANDARD36826	HKLR	Р
18-Oct-17	NW LANTAU	3	20.72	AUTUMN	STANDARD36826	HKLR	Р
18-Oct-17	NW LANTAU	2	8.55	AUTUMN	STANDARD36826	HKLR	S
18-Oct-17	NW LANTAU	3	2.50	AUTUMN	STANDARD36826	HKLR	S
18-Oct-17	NE LANTAU	1	2.44	AUTUMN	STANDARD36826	HKLR	Р
18-Oct-17	NE LANTAU	2	27.42	AUTUMN	STANDARD36826	HKLR	Р
18-Oct-17	NE LANTAU	3	5.50	AUTUMN	STANDARD36826	HKLR	Р
18-Oct-17	NE LANTAU	1	1.70	AUTUMN	STANDARD36826	HKLR	S
18-Oct-17	NE LANTAU	2	11.34	AUTUMN	STANDARD36826	HKLR	S
26-Oct-17	NW LANTAU	2	24.70	AUTUMN	STANDARD36826	HKLR	Р
26-Oct-17	NW LANTAU	3	4.44	AUTUMN	STANDARD36826	HKLR	P
26-Oct-17	NW LANTAU	2	11.91	AUTUMN	STANDARD36826	HKLR	S
26-Oct-17	NW LANTAU	3	0.85	AUTUMN	STANDARD36826	HKLR	S

Appendix II. HKLR03 Chinese White Dolphin Sighting Database (October 2017) (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
4-Oct-17	1	1143	5	NW LANTAU	3	52	ON	HKLR	828985	807490	AUTUMN	NONE	Р
18-Oct-17	1	1149	1	NW LANTAU	2	65	ON	HKLR	826905	806487	AUTUMN	NONE	Р
18-Oct-17	2	1159	1	NW LANTAU	2	264	ON	HKLR	825632	806485	AUTUMN	PURSE-SEINE	Р
26-Oct-17	1	1135	1	NW LANTAU	2	34	ON	HKLR	826737	807455	AUTUMN	NONE	Р

Appendix III. Individual dolphins identified during HKLR03 monitoring surveys in October 2017

ID#	DATE	STG#	AREA
NL12	04/10/17	1	NW LANTAU
NL104	04/10/17	1	NW LANTAU
NL136	04/10/17	1	NW LANTAU
	18/10/17	2	NW LANTAU
NL182	04/10/17	1	NW LANTAU
	18/10/17	1	NW LANTAU
NL321	04/10/17	1	NW LANTAU



Appendix IV. Photographs of Identified Individual Dolphins in October 2017 (HKLR03)

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. 2. 3. 4. 5. 6. 7.	Identify the source. Repeat measurement to confirm finding. If two consecutive measurements exceed Action Level, the exceedance is then confirmed. Inform the IEC and the SOR. Investigate the cause of exceedance and check Contractor's working procedures to determine possible mitigation to be implemented. If the exceedance is confirmed to be Project related after investigation, increase monitoring frequency to daily. Discuss with the IEC and the Contractor on remedial actions required. If exceedance continues, arrange meeting with the IEC and the SOR.	1. 2. 3. 4.	Check monitoring data submitted by the ET. Check the Contractor's working method. If the exceedance is confirmed to be Project related after investigation, discuss with the ET and the Contractor on possible remedial measures. Advise the SOR on the effectiveness of the proposed remedial measures. Supervise implementation of	1. 2. 3.	Confirm receipt of notification of failure in writing. Notify the Contractor. Ensure remedial measures properly implemented.	1. 2. 3. 4.	Rectify any unacceptable practice Amend working methods if appropriate If the exceedance is confirmed to be Project related, submit proposals for remedial actions to IEC within 3 working days of notification Implement the agreed proposals Amend proposal if
8.	If exceedance stops, cease additional monitoring.	0.	remedial measures.			0.	appropriate

			Action				
	ET (a)		IEC (a)		SOR (a)		Contractor(s)
Limit Level Exceedance							
	 Identify the source. Repeat measurement to confirm finding. If two consecutive measurements exceed Limit 	1. 2.	Check monitoring data submitted by the ET. Check Contractor's working	1.	Confirm receipt of notification of failure in writing.	1.	Take immediate action to avoid further exceedance.
	 Level, the exceedance is then confirmed. Inform the IEC, the SOR, the DEP and the Contractor. Investigate the cause of exceedance and check Contractor's working procedures to determine possible mitigation to be implemented. 	3.	method. If the exceedance is confirmed to be Project related after investigation, discuss with the ET and the Contractor on possible remedial measures.	2. 3.	Notify the Contractor. 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	2.	If the exceedance is confirmed to be Project related after investigation, submit proposals for remedia actions to IEC within 3
Į	implemented.5. If the exceedance is confirmed to be Project related after investigation, increase monitoring frequency to daily.	4.	Advise the SOR on the effectiveness of the proposed remedial measures.	4.	implemented. Ensure remedial measures are properly implemented.	3.	working days of notification. Implement the agreed proposals.
(Carry out analysis of the Contractor's working procedures to determine possible mitigation to be implemented. 	5.	Supervise implementation of remedial measures.	5.	If exceedance continues, consider what activity of the work is responsible and	4. 5.	Amend proposal if appropriate. Stop the relevant
:	7. Arrange meeting with the IEC and the SOR to discuss the remedial actions to be taken.				instruct the Contractor to stop that activity of work		activity of works as determined by the SO
٤	 Assess effectiveness of the Contractor's remedial actions and keep the IEC, the DEP and the SOR informed of the results. 				until the exceedance is abated.		until the exceedance is abated.
9	 If exceedance stops, cease additional monitoring. 						

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	 Repeat statistical data analysis to confirm findings; 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; Identify source(s) of impact; Inform the IEC, SOR and Contractor; Check monitoring data. Review to ensure all the dolphin protective measures are fully and properly implemented and advise on additional measures if necessary. 	 Check monitoring data submitted by ET and Contractor; Discuss monitoring results and finding with the ET and the Contractor. 	 Discuss monitoring with the IEC and any other measures proposed by the ET; If SOR is satisfied with the proposal of any other measures, SOR to signify the agreement in writing on the measures to be implemented. 	 Inform the SOR and confirm notification of the non-compliance in writing; Discuss with the ET and the IEC and propose measures to the IEC and the SOR; Implement the agreed measures.
Limit Level	 Repeat statistical data analysis to confirm findings; 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; 	 Check monitoring data submitted by ET and Contractor; Discuss monitoring results and findings with the ET and the Contractor; Attend the meeting to discuss with ET, SOR and 	 Attend the meeting to discuss with ET, IEC and Contractor the necessity of additional dolphin monitoring and any other potential mitigation measures. If SOR is satisfied with the 	 Inform the SOR and confirm notification of the non-compliance in writing; 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
	 Identify source(s) of impact; Inform the IEC, SOR and Contractor of findings; Check monitoring data; Repeat review to ensure all the dolphin protective measures are fully and properly implemented and advise on additional measures if necessary. 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 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 K1Cumulative Statistics on Exceedances

Parameters	Level of Exceedance	Total No. recorded in this reporting month	Total No. recorded since project commencement
1-hr TSP	Action	4	44
	Limit	0	3
24-hr TSP	Action	1	6
	Limit	0	1
Water Quality	Action	0	6
-	Limit	0	1
Impact Dolphin	Action	0	9
Monitoring	Limit	0	10

Table K2Cumulative Statistics on Complaints, Notifications of Summons and
Successful Prosecutions

Reporting Period	Cumulative Statistics					
_	Complaints	Notifications of Summons	Successful Prosecutions			
This Reporting Month (October 2017)	1	0	0			
Total No. received since project commencement	15	1	0			

Email message		Environmental Resources Management
То	Ramboll Environ - Hong Kong, Limited (ENPO)	16/F Berkshire House, 25 Westlands Road Quarry Bay, Hong Kong Telephone: (852) 2271 3113
From	ERM- Hong Kong, Limited	Facsimile: (852) 2723 5660 E-mail: jovy.tam@erm.com
Ref/Project number	Contract No. HY/2012/08 Tuen Mun-Chek Lap Kok Link-Northern Connection Sub-sea Tunnel Section	
Subject	Notification of Exceedance for Air Quality Impact Monitoring	
Date	12 September 2017	ERM

Dear Sir or Madam,

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

0212330_12September2017_1hrTSP_Station ASR1 0212330_12September2017_1hrTSP_Station ASR1 0212330_12September2017_1hrTSP_Station ASR1 0212330_12September2017_1hrTSP_Station ASR5

Three Action Level and one Limit Level Exceedances were recorded on 12 September 2017.

Regards,

Mr Jovy Tam Environmental Team Leader

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ERM-Hong Kong, Limited

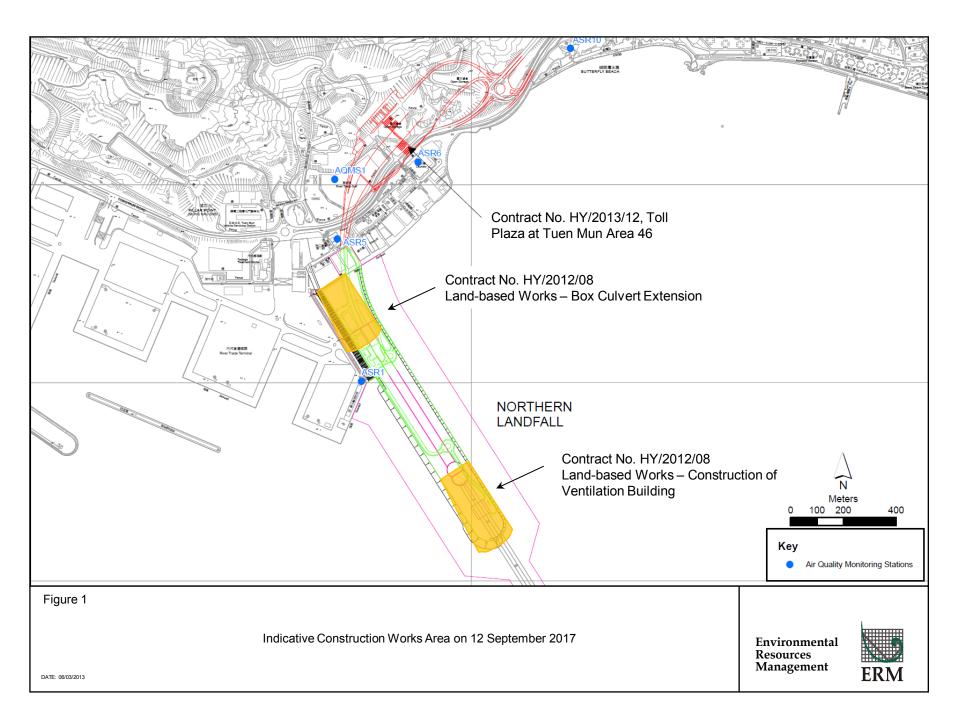


CONTRACT NO. HY/2012/08 Tuen Mun – Chek Lap Kok Link – Northern Connection Sub-sea Tunnel Section

Air Quality Impact Monitoring Notification of Exceedance

Log No.	0212330_12September2017_1hrTSP_Station ASR1					
)_12September2017_1hrTSP_Station ASR1				
)_12September2017_1hrTSP_Station ASR1				
	0212330)_12September2017_1hrTSP_Station ASR5				
		[Total No. of Exceedances = 4]				
Date	12 September 2017 (Measured)					
	21 September 2017 (Laboratory results received by ERM)					
Monitoring Station	A	SR1, ASR5, ASR6, ASR10 and AQMS1				
Parameter(s) with		1-hr TSP				
Exceedance(s)		1-11 151				
Action Levels	24-hr TSP (μg/m ³)	ASR1 = 213				
		ASR5 = 238				
		AQMS1 = 213				
		ASR6 = 238				
		ASR10 = 214				
	1-hr TSP (μg/m ³)	ASR1 = 331				
		ASR5 = 340				
		AQMS1 = 335				
		ASR6 = 338				
	ASR10 = 337					
Limit Levels	1-hr TSP (μg/m ³)	500				
	24-hr TSP ($\mu g/m^3$) 260					
Measured Levels	Action Level Exceedance for 1-hr TSP is observed at ASR1 (332 µg/m3) during 1338 - 1438 hrs.					
	Action Level Exceedance for 1-hr TSP is observed at ASR1 (413 μ g/m3) during 1542 - 1642 hrs.					
	Action Level Exceedance for 1-hr TSP is observed at ASR5 (367 μ g/m3) during 1327 - 1427 hrs.					
	Limit Level Exceedance for 1-hr TSP is observed at ASR1 (545 μ g/m3) during 1440 - 1540 hrs.					
Works Undertaken (at	On 12 September 2017, box culvert extension was carried out at Works Area Portion N-A and					
the time of monitoring	Construction of Ventilation Build	ding at Portion N-C.				
event)						

Possible Reason for	The exceedances are unlikely to be due to the Project, in view of the following:					
Action or Limit Level	 According to the construction information provided by the Contractor, the majority of 					
Exceedance(s)	construction works on 12 September 2017 were box culvert extension at Works Area Portion					
()	N-A and Construction of Ventilation Building at Portions N-C During the period of the					
	land-based construction works, the Contractor has implemented the required mitigation					
	measures as per the EP, approved EIA and Updated EM&A Manual (e.g. water spraying by					
	water trucks on exposed soil within the Project site and associated work areas; use of wheel					
	washing facilities).					
	• Whilst exceedances of Action Level and Limit Level were observed at ASR1 and ASR5, the					
	24-hr TSP level at the monitoring station (ASR1 = $138 \mu g/m^3$, ASR5 = $97\mu g/m^3$) on 12					
	September 2017 were in compliance with the Action and Limit Levels.					
	• As stated in the EIA report (Section 4.2.3), the background TSP level of Tuen Mun is higher					
	than the other region of Hong Kong, thus the exceedances may be also contributed					
	cumulatively by the other construction works / traffic within the Tuen Mun Area rather than					
	causing by the construction works of the Project.					
	Based on the above, the exceedances are unlikely to be due to the project.					
Actions Taken / To Be	Based on the contractor's photo record on 12 September 2017, no dust nuisance was recorded at the					
Taken	Northern Landfall and activities conducted in this Contract's work have strictly followed the					
	requirements stated in the EP (EP-354/2009/D). Site inspection was carried out on 27 September					
	2017 to audit proper implementation of mitigation measures. In addition, the Contractor has					
	implemented the required mitigation measures as per the EP, approved EIA and Updated EM&A					
	Manual including watering to maintain all exposed road surfaces and dust sources wet, use of					
	wheel washing facilities, use of sprinklers for water spraying, materials having the potential to					
	create dust covered by a clean tarpaulin, use of water truck and watering on all exposed soil within					
	the Project site) throughout the construction period, no additional mitigation is deemed necessary.					
	Inspection on the air quality monitoring stations was also carried out on 6 October 2017. No dust					
	nuisance was observed. Photo record is provided in <i>Annex A</i> . Weekly water spraying record is					
	also provided. The Enhanced TSP Monitoring has commenced on 24 October 2014, the ET will monitor for future trends in exceedances.					
Remarks	The monitoring results and the locations of air quality monitoring stations are attached.					





*Note: Photos taken on 12/9/2017



Water spraying was applied frequently during dry conditions.(Works Area Portion N-B)



No dust nuisance was observed. (Works Area Portion N-B)



*Note: Photos taken on 12/9/2017



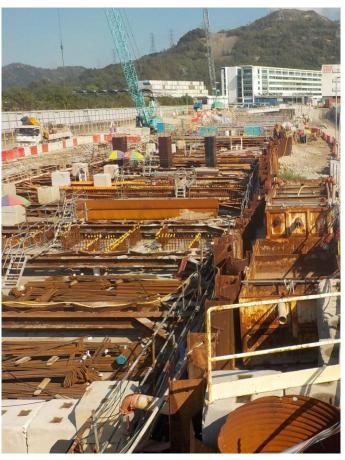
Water spraying was applied frequently during dry conditions. (Works Area Portion N-A)



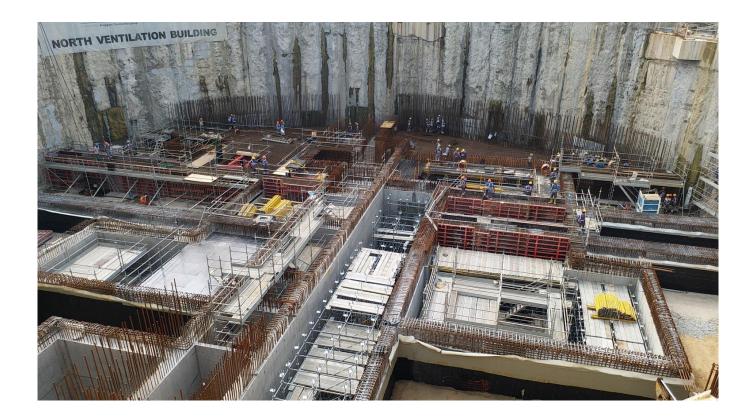
Water spraying was applied frequently during dry conditions. (Works Area Portion N-A)



*Note: Photos taken on 12/9/2017



Box Culvert Extension. (Works Area Portion N-A)

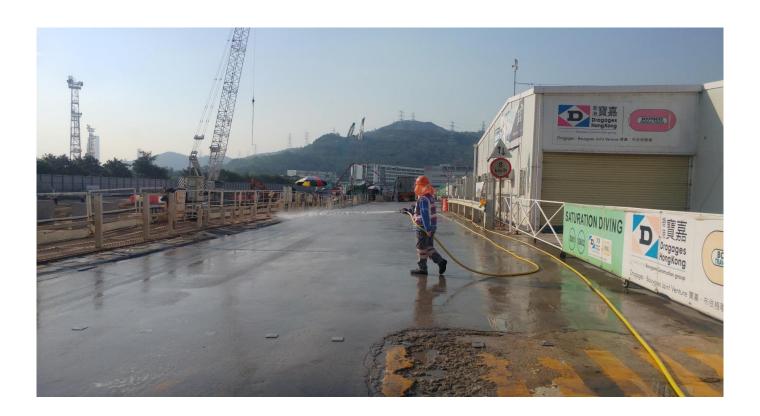


Construction of Ventilation Building (Works Area Portion N-C)



Annex A Photo Records during site inspection

*Note: Photos taken on 27/9/2017



Water spraying was applied frequently during dry conditions. (Works Area Portion N-A)



Exposed soil surface are covered by tarpaulin sheets to prevent dust nuisance. (Works Area Portion N-A)



Site Date		位置: :		for them Land, th Sep. 201		至	7th Sep. 20	17
	<u>Time</u> 時間	<u>Monday</u> 星期一	<u>Tuesday</u> 星期二	<u>Wednesday</u> 星期三	<u>Thursday</u> 星期四	<u>Friday</u> 星期五	<u>Saturday</u> 星期六	<u>Sunday</u> 星期日
1	8:00 - 8:45	/	1	/	1	1	/	1
2	8:45 - 9:30	~	/	/	/	/		1
3	9:30 - 10:15	/	/	/		1		
4	10:15 - 11:00	/	/		/	-		1
5	11:00 - 11:45	/	/		/		-/-	
6	11:45 - 12:30		/		/	/		
7	12:30 - 13:15	/	/		/		/	~
8	13:15 - 14:00	/	1		/	/	/	_
9	14:00 - 14:45	/		/		/		
10	14:45 - 15:30		/		/	/		
11	15:30 - 16:45		1	/	1			
12	16:45 - 17:30	./	1		/	/	/	1
	Verified by Site Foreman 地盤科文簽署確認			T	P	7	7	-

Night shift 夜間工作 (if nec	essary 如需要)	 -	 1	1
17:30 - 19:00		 	 _	
19:00 - 20:30		 	 	
20:30 - 22:00		 	 	
22:00 - 23:00		 	_	

tick ($\sqrt{}$) in the box if complete the spraying of water. *Please circle (O) in the box if it is raining.

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

Remarks:

- Pursuant to EP Clause 3.15, the Permit Holder shall undertake watering at least 12 times per day on all exposed soil (1)within the Project site and associated work areas in Tuen Mun area throughout the construction phase.
- Spraying position includes the main haul road, open area, slopes, stockpiles and any other dusty materials. (2)
- If it is raining, no water spraying is needed. (3)
- The no of spraying will be increased due to site condition. (4)

備註:

- 根據環境許可證 3.15 條例, 在整個施工階段內, 許可證持有人須每天至少 12 次在屯門區項目工地和 (1)相關的工作區域內的所有暴露土壤灑水。
- 灑水位置包括主要運輸道路,空曠地帶,斜坡,存料堆,以及任何其他產生塵埃物料。 (2)
- 當下雨時, 地盤將不需要灑水。 (3)
- 如果地盤情況更改或有需要時,灑水次數會相應增加。 (4)

TMCLKL8 82339 В

TMCLKL HY/2012/08 12/9/2017 AQMS1 Sunny 13:49 1-hour TSP 277 ug/m3 TMCLKL HY/2012/08 12/9/2017 AQMS1 Sunny 14:51 1-hour TSP 209 ug/m3 TMCLKL HY/2012/08 12/9/2017 AQMS1 Sunny 15:53 1-hour TSP 139 ug/m3 TMCLKL HY/2012/08 12/9/2017 ASR1 Sunny 13:38 1-hour TSP 332 ug/m3 TMCLKL HY/2012/08 12/9/2017 ASR1 Sunny 13:38 1-hour TSP 332 ug/m3 TMCLKL HY/2012/08 12/9/2017 ASR1 Sunny 15:42 1-hour TSP 413 ug/m3 TMCLKL HY/2012/08 12/9/2017 ASR10 Sunny 13:02 1-hour TSP 165 ug/m3 TMCLKL HY/2012/08 12/9/2017 ASR10 Sunny 13:02 1-hour TSP 165 ug/m3 TMCLKL HY/2012/08 12/9/2017 ASR10 Sunny 14:04 1-hour TSP 240 ug/m3 TMCLKL HY/2012					~				
TMCLKL HY/2012/08 12/9/2017 AQMS1 Sunny 15:53 1-hour TSP 139 ug/m3 TMCLKL HY/2012/08 12/9/2017 ASR1 Sunny 13:38 1-hour TSP 332 ug/m3 TMCLKL HY/2012/08 12/9/2017 ASR1 Sunny 14:40 1-hour TSP 545 ug/m3 TMCLKL HY/2012/08 12/9/2017 ASR1 Sunny 15:42 1-hour TSP 413 ug/m3 TMCLKL HY/2012/08 12/9/2017 ASR1 Sunny 15:42 1-hour TSP 413 ug/m3 TMCLKL HY/2012/08 12/9/2017 ASR10 Sunny 13:02 1-hour TSP 165 ug/m3 TMCLKL HY/2012/08 12/9/2017 ASR10 Sunny 14:04 1-hour TSP 146 ug/m3 TMCLKL HY/2012/08 12/9/2017 ASR10 Sunny 15:06 1-hour TSP 186 ug/m3 TMCLKL HY/2012/08 12/9/2017 ASR5 Sunny 13:27 1-hour TSP 308 ug/m3 TMCLKL HY/2012/0	TMCLKL	HY/2012/08	12/9/2017	AQMS1	Sunny	13:49	1-hour TSP	277	ug/m3
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TMCLKLHY/2012/0812/9/2017ASR1Sunny14:401-hour TSP545ug/m3TMCLKLHY/2012/0812/9/2017ASR1Sunny15:421-hour TSP413ug/m3TMCLKLHY/2012/0812/9/2017ASR10Sunny13:021-hour TSP165ug/m3TMCLKLHY/2012/0812/9/2017ASR10Sunny14:041-hour TSP240ug/m3TMCLKLHY/2012/0812/9/2017ASR10Sunny14:041-hour TSP240ug/m3TMCLKLHY/2012/0812/9/2017ASR10Sunny15:061-hour TSP186ug/m3TMCLKLHY/2012/0812/9/2017ASR5Sunny13:271-hour TSP367ug/m3TMCLKLHY/2012/0812/9/2017ASR5Sunny14:291-hour TSP308ug/m3TMCLKLHY/2012/0812/9/2017ASR5Sunny15:311-hour TSP253ug/m3TMCLKLHY/2012/0812/9/2017ASR6Sunny13:151-hour TSP285ug/m3TMCLKLHY/2012/0812/9/2017ASR6Sunny13:151-hour TSP285ug/m3TMCLKLHY/2012/0812/9/2017ASR6Sunny13:151-hour TSP299ug/m3	TMCLKL	HY/2012/08	12/9/2017	AQMS1	Sunny	15:53	1-hour TSP	139	ug/m3
TMCLKLHY/2012/0812/9/2017ASR1Sunny15:421-hour TSP413ug/m3TMCLKLHY/2012/0812/9/2017ASR10Sunny13:021-hour TSP165ug/m3TMCLKLHY/2012/0812/9/2017ASR10Sunny14:041-hour TSP240ug/m3TMCLKLHY/2012/0812/9/2017ASR10Sunny15:061-hour TSP186ug/m3TMCLKLHY/2012/0812/9/2017ASR5Sunny13:271-hour TSP367ug/m3TMCLKLHY/2012/0812/9/2017ASR5Sunny14:291-hour TSP308ug/m3TMCLKLHY/2012/0812/9/2017ASR5Sunny15:311-hour TSP308ug/m3TMCLKLHY/2012/0812/9/2017ASR5Sunny15:311-hour TSP253ug/m3TMCLKLHY/2012/0812/9/2017ASR6Sunny13:151-hour TSP285ug/m3TMCLKLHY/2012/0812/9/2017ASR6Sunny14:171-hour TSP299ug/m3	TMCLKL	HY/2012/08	12/9/2017	ASR1	Sunny	13:38	1-hour TSP	332	ug/m3
TMCLKL HY/2012/08 12/9/2017 ASR10 Sunny 13:02 1-hour TSP 165 ug/m3 TMCLKL HY/2012/08 12/9/2017 ASR10 Sunny 14:04 1-hour TSP 240 ug/m3 TMCLKL HY/2012/08 12/9/2017 ASR10 Sunny 15:06 1-hour TSP 186 ug/m3 TMCLKL HY/2012/08 12/9/2017 ASR5 Sunny 13:27 1-hour TSP 367 ug/m3 TMCLKL HY/2012/08 12/9/2017 ASR5 Sunny 13:27 1-hour TSP 308 ug/m3 TMCLKL HY/2012/08 12/9/2017 ASR5 Sunny 14:29 1-hour TSP 308 ug/m3 TMCLKL HY/2012/08 12/9/2017 ASR5 Sunny 15:31 1-hour TSP 253 ug/m3 TMCLKL HY/2012/08 12/9/2017 ASR6 Sunny 13:15 1-hour TSP 285 ug/m3 TMCLKL HY/2012/08 12/9/2017 ASR6 Sunny 13:15 1-hour TSP 285 ug/m3 TMCLKL HY/2012/08	TMCLKL	HY/2012/08	12/9/2017	ASR1	Sunny	14:40	1-hour TSP	545	ug/m3
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TMCLKL HY/2012/08 12/9/2017 ASR10 Sunny 15:06 1-hour TSP 186 ug/m3 TMCLKL HY/2012/08 12/9/2017 ASR5 Sunny 13:27 1-hour TSP 367 ug/m3 TMCLKL HY/2012/08 12/9/2017 ASR5 Sunny 14:29 1-hour TSP 308 ug/m3 TMCLKL HY/2012/08 12/9/2017 ASR5 Sunny 15:31 1-hour TSP 253 ug/m3 TMCLKL HY/2012/08 12/9/2017 ASR5 Sunny 15:31 1-hour TSP 253 ug/m3 TMCLKL HY/2012/08 12/9/2017 ASR6 Sunny 13:15 1-hour TSP 285 ug/m3 TMCLKL HY/2012/08 12/9/2017 ASR6 Sunny 13:15 1-hour TSP 285 ug/m3 TMCLKL HY/2012/08 12/9/2017 ASR6 Sunny 14:17 1-hour TSP 299 ug/m3	TMCLKL	HY/2012/08	12/9/2017	ASR10	Sunny	13:02	1-hour TSP	165	ug/m3
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TMCLKLHY/2012/0812/9/2017ASR5Sunny14:291-hour TSP308ug/m3TMCLKLHY/2012/0812/9/2017ASR5Sunny15:311-hour TSP253ug/m3TMCLKLHY/2012/0812/9/2017ASR6Sunny13:151-hour TSP285ug/m3TMCLKLHY/2012/0812/9/2017ASR6Sunny14:171-hour TSP285ug/m3TMCLKLHY/2012/0812/9/2017ASR6Sunny14:171-hour TSP299ug/m3	TMCLKL	HY/2012/08	12/9/2017	ASR10	Sunny	15:06	1-hour TSP	186	ug/m3
TMCLKL HY/2012/08 12/9/2017 ASR5 Sunny 15:31 1-hour TSP 253 ug/m3 TMCLKL HY/2012/08 12/9/2017 ASR6 Sunny 13:15 1-hour TSP 285 ug/m3 TMCLKL HY/2012/08 12/9/2017 ASR6 Sunny 13:15 1-hour TSP 285 ug/m3 TMCLKL HY/2012/08 12/9/2017 ASR6 Sunny 14:17 1-hour TSP 299 ug/m3	TMCLKL	HY/2012/08	12/9/2017	ASR5	Sunny	13:27	1-hour TSP	367	ug/m3
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TMCLKL HY/2012/08 12/9/2017 ASR6 Sunny 14:17 1-hour TSP 299 ug/m3	TMCLKL	HY/2012/08	12/9/2017	ASR5	Sunny	15:31	1-hour TSP	253	ug/m3
	TMCLKL	HY/2012/08	12/9/2017	ASR6	Sunny	13:15	1-hour TSP	285	ug/m3
TMCLKL HY/2012/08 12/9/2017 ASR6 Sunny 15:19 1-hour TSP 262 ug/m3	TMCLKL	HY/2012/08	12/9/2017	ASR6	Sunny	14:17	1-hour TSP	299	ug/m3
	TMCLKL	HY/2012/08	12/9/2017	ASR6	Sunny	15:19	1-hour TSP	262	ug/m3

Email message		Environmental Resources Management
То	Ramboll Environ - Hong Kong, Limited (ENPO)	16/F Berkshire House, 25 Westlands Road Quarry Bay, Hong Kong
From	ERM- Hong Kong, Limited	Telephone: (852) 2271 3113 Facsimile: (852) 2723 5660 E-mail: jovy.tam@erm.com
Ref/Project number	Contract No. HY/2012/08 Tuen Mun-Chek Lap Kok Link-Northern Connection Sub-sea Tunnel Section	
Subject	Notification of Exceedance for Air Quality Impact Monitoring	
Date	18 September 2017	ERM

Dear Sir or Madam,

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

0212330_18September2017_1hrTSP_Station AQMS1

One Action Level Exceedance was recorded on 18 September 2017.

Regards,

Mr Jovy Tam Environmental Team Leader

CONFIDENTIALITY NOTICE

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

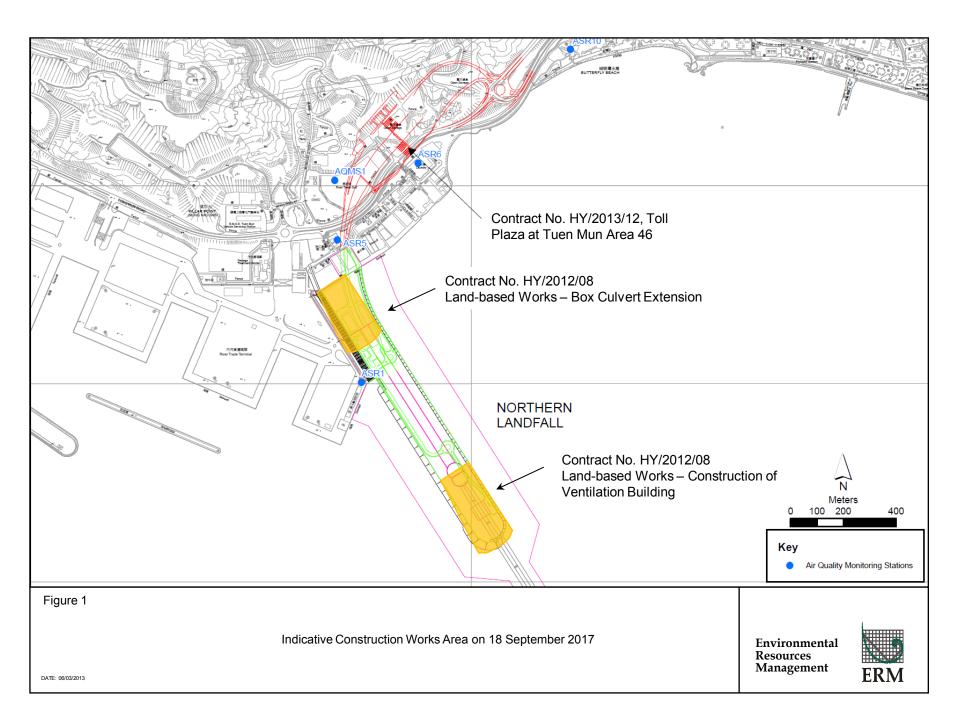


CONTRACT NO. HY/2012/08 Tuen Mun – Chek Lap Kok Link – Northern Connection Sub-sea Tunnel Section

Air Quality Impact Monitoring Notification of Exceedance

Intervel Iteration Date 18 September 2017 (Measured) 29 September 2017 (Measured) 2016 (Measured) 2017 (Measured) 2016 (Measured) 2016 (Measured) 2016 (Measured) 2016 (Measured) 2016 (Measured) 2017 (Measured) 2016 (Measured) 2017 (Measured) 2016 (Measured) 2016 (Measured) 2016 (Measured) 2017 (Measured) 2016 (Measured) 2017 (Measured) 2016 (Measured) 2017 (Measured) 2016 (Measured) 2016 (Measured) 2017 (Measured) 2016 (Measured) 2017 (Measured) 2017 (Measured) 2017 (Measured) 2016 (Measured) 2017 (Measured) 2016 (Measured) 2017 (Measured)	Log No.	0212330_18September2017_1hrTSP_Station AQMS1						
Image: Parameter (s)29 September 2017 (Laboratory results received by ERM)Monitoring StationASR1, ASR5, ASR6, ASR10 and AQM51Parameter(s) with Exceedance(s)1-hr TSPAction Levels24-hr TSP (µg/m³)ASR1 = 213 ASR5 = 238 (AQM51 = 213) ASR6 = 238 ASR10 = 214Action Levels24-hr TSP (µg/m³)ASR1 = 213 ASR5 = 238 (AQM51 = 213) ASR10 = 214Image: Parameter (a)24-hr TSP (µg/m³)ASR1 = 331 ASR5 = 340 (AQM51 = 335) ASR10 = 337Image: Parameter (a)1-hr TSP (µg/m³)ASR1 = 331 ASR6 = 338 ASR6 = 338 ASR10 = 337Image: Parameter (a)1-hr TSP (µg/m³)260Morks Undertaken (at the ime of monitoring event)Charter (a) The exceedance for 1-hr TSP is observed at AQM51 (473 µg/m3) during 1352 - 1452 hrs.Vorks Undertaken (at the ime of monitoring event)The exceedance is unlikely to be due to the Project, in view of the following: Action or Ventilation Building at Portion N-C.Possible Reason for Action or Limit Level Exceedance(s)The exceedance is unlikely to be due to the Project, in view of the following: According to the construction information provided by the Contractor, the majority of construction works on 18 September 2017 were box culvert extension at Works Area Portion N-A and Construction Vertilation Building at Portion N-C.Possible Reason for Action or Limit Level Exceedance(s)The exceedance is antikely to be due to the Project, in view of the following: According to the construction works on 18 September 2017 were box culvert extension at Works Area Portion N-A and Construction works on 18 September 2017 were box culvert extension at Works Area Portion N-A		[Total No. of Exceedances = 1]						
Monitoring Station ASR1, ASR5, ASR6, ASR10 and AQMS1 Parameter(s) with Exceedance(s) 1-hr TSP Action Levels 24-hr TSP (µg/m ³) ASR1 = 213 ASR5 = 238 AQMS1 = 213 ASR6 = 238 AQMS1 = 214 1-hr TSP (µg/m ³) ASR1 = 331 ASR6 = 330 AQMS1 = 335 ASR6 = 338 Imit Levels 1-hr TSP (µg/m ³) ASR1 = 333 ASR6 = 338 ASR10 = 337 Limit Levels 1-hr TSP (µg/m ³) 500 24-hr TSP (µg/m ³) Measured Levels Action Level Exceedance for 1-hr TSP is observed at AQMS1 (473 µg/m3) during 1352 - 1452 hrs. Works Undertaken (at the time of monitoring event) On 18 September 2017, box culvert extension was carried out at Works Area Portion N-A and Construction of Ventilation Building at Portion N-C. Possible Reason for Action or Limit Level Exceedance(s) The exceedance is unlikely to be due to the Project, in view of the following: • According to the construction information provided by the Contractor, the majority of construction works on 18 September 2017 were box culvert extension at Works Area Portion N-A and Construction of Ventilation Building at Portion N-C. • According to the construction information provided by the Contractor, the majority of construction works on 18 September 2017 were box culvert extension at Works Area Portion N-A and Construction of Ventilation Building at Portion N-C. • According to the construction information provided by the Contractor, the majority of construction works on 18 Septemb	Date	18 September 2017 (Measured)						
Parameter(s) with Exceedance(s) 1-hr TSP Action Levels 24-hr TSP (µg/m ³) ASR1 = 213 ASR5 = 238 AQM51 = 213 ASR6 = 238 ASR10 = 214 1-hr TSP (µg/m ³) ASR1 = 331 ASR6 = 340 AQM51 = 335 ASR6 = 338 ASR10 = 337 Limit Levels 1-hr TSP (µg/m ³) ASR1 = 331 ASR0 = 338 ASR10 = 337 Limit Levels 1-hr TSP (µg/m ³) 260 Measured Levels Action Level Exceedance for 1-hr TSP is observed at AQM51 (473 µg/m3) during 1352 - 1452 hrs. Works Undertaken (at the time of monitoring event) The exceedance is unlikely to be due to the Project, in view of the following: • According to the construction information provided by the Contractor, the majority of construction works on 18 September 2017 were box culvert extension at Works Area Portion N-A and Construction of Ventilation Building at Portions N-C. During the period of the land-based construction works, the Contractor has implemented the required mitigation measures as per the EP, approved EIA and Updated EM&A Manual (e.g. water spraying by water trucks on exposed soil within the Project site and associated work areas; use of wheel washing facilities). • Whilst exceedances of Action Level as observed at AQM51, the 24-hr TSP level at the monitoring station (AQM51 = 92 µg/m ³) on 18 September 2017 were in compliance with the Action and Limit Levels.								
Exceedance(s)1-hr TSP (μg/m³)ASR1 = 213 ASR5 = 238 AQMS1 = 213 ASR6 = 238 ASR0 = 2141-hr TSP (μg/m³)ASR1 = 331 ASR6 = 238 ASR10 = 2141-hr TSP (μg/m³)ASR1 = 331 ASR6 = 338 ASR0 = 337Limit Levels1-hr TSP (μg/m³)24-hr TSP (μg/m³)ASR1 = 335 ASR6 = 338 ASR10 = 337Limit Levels1-hr TSP (μg/m³)024-hr TSP (μg/m³)24-hr TSP (μg/m³)260Measured LevelsAction Level Exceedance for 1-hr TSP is observed at AQMS1 (473 µg/m3) during 1352 - 1452 hrs.Works Undertaken (at the time of monitoring event)The exceedance is unlikely to be due to the Project, in view of the following: • According to the construction information provided out at Works Area Portion N-A and Construction of Ventilation Building at Portion N-C. • According to the construction information provided by the Contractor, the majority of construction or Ventilation Building at Portions N-C. During the period of the land-based construction vorks, the Contractor has implemented the required mitigation measures as per the EP, approved EIA and Updated EM&A Manual (e.g. water spraying by water trucks on exposed soil within the Project site and associated work areas; use of wheel washing facilities).• Whils exceedances of Action Level was observed at AQMS1, the 24-hr TSP level at the monitoring station (AQMS1 = 92 µg/m³) on 18 September 2017 were in compliance with the Action and Limit Levels.	Monitoring Station	A	SR1, ASR5, ASR6, ASR10 and AQMS1					
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24-hr TSP (μg/m³)260Measured LevelsAction Level Exceedance for 1-hr TSP is observed at AQMS1 (473 μg/m3) during 1352 - 1452 hrs.Works Undertaken (at the time of monitoring event)On 18 September 2017, box culvert extension was carried out at Works Area Portion N-A and Construction of Ventilation Building at Portion N-C.Possible Reason for Action or Limit Level Exceedance(s)The exceedance is unlikely to be due to the Project, in view of the following: • According to the construction information provided by the Contractor, the majority of construction works on 18 September 2017 were box culvert extension at Works Area Portion N-A and Construction of Ventilation Building at Portions N-C. During the period of the land-based construction works, the Contractor has implemented the required mitigation measures as per the EP, approved EIA and Updated EM&A Manual (e.g. water spraying by water trucks on exposed soil within the Project site and associated work areas; use of wheel washing facilities).• Whilst exceedances of Action Level was observed at AQMS1, the 24-hr TSP level at the monitoring station (AQMS1 = 92 µg/m³) on 18 September 2017 were in compliance with the Action and Limit Levels.			ASR10 = 337					
Measured LevelsAction Level Exceedance for 1-hr TSP is observed at AQMS1 (473 μg/m3) during 1352 - 1452 hrs.Works Undertaken (at the time of monitoring event)On 18 September 2017, box culvert extension was carried out at Works Area Portion N-A and Construction of Ventilation Building at Portion N-C.Possible Reason for Action or Limit Level Exceedance(s)The exceedance is unlikely to be due to the Project, in view of the following: • According to the construction information provided by the Contractor, the majority of construction works on 18 September 2017 were box culvert extension at Works Area Portion N-A and Construction of Ventilation Building at Portions N-C. During the period of the land-based construction works, the Contractor has implemented the required mitigation measures as per the EP, approved EIA and Updated EM&A Manual (e.g. water spraying by water trucks on exposed soil within the Project site and associated work areas; use of wheel washing facilities).• Whilst exceedances of Action Level was observed at AQMS1, the 24-hr TSP level at the monitoring station (AQMS1 = 92 µg/m³) on 18 September 2017 were in compliance with the Action and Limit Levels.	Limit Levels	1-hr TSP (μg/m ³)	500					
Works Undertaken (at the time of monitoring event) On 18 September 2017, box culvert extension was carried out at Works Area Portion N-A and Construction of Ventilation Building at Portion N-C. Possible Reason for Action or Limit Level The exceedance is unlikely to be due to the Project, in view of the following: • According to the construction information provided by the Contractor, the majority of construction works on 18 September 2017 were box culvert extension at Works Area Portion N-A and Construction of Ventilation Building at Portions N-C. During the period of the land-based construction works, the Contractor has implemented the required mitigation measures as per the EP, approved EIA and Updated EM&A Manual (e.g. water spraying by water trucks on exposed soil within the Project site and associated work areas; use of wheel washing facilities). • Whilst exceedances of Action Level was observed at AQMS1, the 24-hr TSP level at the monitoring station (AQMS1 = 92 µg/m ³) on 18 September 2017 were in compliance with the Action and Limit Levels.		24-hr TSP (μg/m ³)	260					
the time of monitoring event)Construction of Ventilation Building at Portion N-C.Possible Reason for Action or Limit Level Exceedance(s)The exceedance is unlikely to be due to the Project, in view of the following: 	Measured Levels	Action Level Exceedance for 1-h	r TSP is observed at AQMS1 (473 μg/m3) during 1352 - 1452 hrs.					
event)The exceedance is unlikely to be due to the Project, in view of the following:Possible Reason for Action or Limit LevelThe exceedance is unlikely to be due to the Project, in view of the following:Exceedance(s)According to the construction information provided by the Contractor, the majority of construction works on 18 September 2017 were box culvert extension at Works Area Portion N-A and Construction of Ventilation Building at Portions N-C. During the period of the land-based construction works, the Contractor has implemented the required mitigation measures as per the EP, approved EIA and Updated EM&A Manual (e.g. water spraying by water trucks on exposed soil within the Project site and associated work areas; use of wheel washing facilities).• Whilst exceedances of Action Level was observed at AQMS1, the 24-hr TSP level at the monitoring station (AQMS1 = 92 µg/m³) on 18 September 2017 were in compliance with the Action and Limit Levels.	Works Undertaken (at	On 18 September 2017, box culve	ert extension was carried out at Works Area Portion N-A and					
Possible Reason for Action or Limit LevelThe exceedance is unlikely to be due to the Project, in view of the following:Exceedance(s)According to the construction information provided by the Contractor, the majority of construction works on 18 September 2017 were box culvert extension at Works Area Portion N-A and Construction of Ventilation Building at Portions N-C. During the period of the land-based construction works, the Contractor has implemented the required mitigation measures as per the EP, approved EIA and Updated EM&A Manual (e.g. water spraying by water trucks on exposed soil within the Project site and associated work areas; use of wheel washing facilities).• Whilst exceedances of Action Level was observed at AQMS1, the 24-hr TSP level at the monitoring station (AQMS1 = 92 µg/m³) on 18 September 2017 were in compliance with the Action and Limit Levels.	the time of monitoring	-						
 Action or Limit Level Exceedance(s) According to the construction information provided by the Contractor, the majority of construction works on 18 September 2017 were box culvert extension at Works Area Portion N-A and Construction of Ventilation Building at Portions N-C. During the period of the land-based construction works, the Contractor has implemented the required mitigation measures as per the EP, approved EIA and Updated EM&A Manual (e.g. water spraying by water trucks on exposed soil within the Project site and associated work areas; use of wheel washing facilities). Whilst exceedances of Action Level was observed at AQMS1, the 24-hr TSP level at the monitoring station (AQMS1 = 92 μg/m³) on 18 September 2017 were in compliance with the Action and Limit Levels. 	event)							
 Exceedance(s) construction works on 18 September 2017 were box culvert extension at Works Area Portion N-A and Construction of Ventilation Building at Portions N-C. During the period of the land-based construction works, the Contractor has implemented the required mitigation measures as per the EP, approved EIA and Updated EM&A Manual (e.g. water spraying by water trucks on exposed soil within the Project site and associated work areas; use of wheel washing facilities). Whilst exceedances of Action Level was observed at AQMS1, the 24-hr TSP level at the monitoring station (AQMS1 = 92 µg/m³) on 18 September 2017 were in compliance with the Action and Limit Levels. 	Possible Reason for	The exceedance is unlikely to be	due to the Project, in view of the following:					
 N-A and Construction of Ventilation Building at Portions N-C. During the period of the land-based construction works, the Contractor has implemented the required mitigation measures as per the EP, approved EIA and Updated EM&A Manual (e.g. water spraying by water trucks on exposed soil within the Project site and associated work areas; use of wheel washing facilities). Whilst exceedances of Action Level was observed at AQMS1, the 24-hr TSP level at the monitoring station (AQMS1 = 92 µg/m³) on 18 September 2017 were in compliance with the Action and Limit Levels. 	Action or Limit Level	According to the construct	ction information provided by the Contractor, the majority of					
 land-based construction works, the Contractor has implemented the required mitigation measures as per the EP, approved EIA and Updated EM&A Manual (e.g. water spraying by water trucks on exposed soil within the Project site and associated work areas; use of wheel washing facilities). Whilst exceedances of Action Level was observed at AQMS1, the 24-hr TSP level at the monitoring station (AQMS1 = 92 µg/m³) on 18 September 2017 were in compliance with the Action and Limit Levels. 	Exceedance(s)	construction works on 18	September 2017 were box culvert extension at Works Area Portion					
 measures as per the EP, approved EIA and Updated EM&A Manual (e.g. water spraying by water trucks on exposed soil within the Project site and associated work areas; use of wheel washing facilities). Whilst exceedances of Action Level was observed at AQMS1, the 24-hr TSP level at the monitoring station (AQMS1 = 92 µg/m³) on 18 September 2017 were in compliance with the Action and Limit Levels. 		N-A and Construction of	Ventilation Building at Portions N-C. During the period of the					
 water trucks on exposed soil within the Project site and associated work areas; use of wheel washing facilities). Whilst exceedances of Action Level was observed at AQMS1, the 24-hr TSP level at the monitoring station (AQMS1 = 92 µg/m³) on 18 September 2017 were in compliance with the Action and Limit Levels. 		land-based construction v	works, the Contractor has implemented the required mitigation					
 washing facilities). Whilst exceedances of Action Level was observed at AQMS1, the 24-hr TSP level at the monitoring station (AQMS1 = 92 µg/m³) on 18 September 2017 were in compliance with the Action and Limit Levels. 		measures as per the EP, a	pproved EIA and Updated EM&A Manual (e.g. water spraying by					
 Whilst exceedances of Action Level was observed at AQMS1, the 24-hr TSP level at the monitoring station (AQMS1 = 92 µg/m³) on 18 September 2017 were in compliance with the Action and Limit Levels. 		water trucks on exposed	soil within the Project site and associated work areas; use of wheel					
monitoring station (AQMS1 = $92 \mu g/m^3$) on 18 September 2017 were in compliance with the Action and Limit Levels.								
Action and Limit Levels.		Whilst exceedances of Ac	tion Level was observed at AQMS1, the 24-hr TSP level at the					
		monitoring station (AQM	IS1 = 92 μ g/m ³) on 18 September 2017 were in compliance with the					
• As stated in the EIA report (Section 4.2.3), the background TSP level of Tuen Mun is higher								
than the other region of Hong Kong, thus the exceedances may be also contributed								
cumulatively by the other construction works / traffic within the Tuen Mun Area rather than		cumulatively by the other	r construction works / traffic within the Tuen Mun Area rather than					
causing by the construction works of the Project.		causing by the construction						
Based on the above, the exceedance is unlikely to be due to the project.		Based on the above, the exceeda	nce is unlikely to be due to the project.					

Actions Taken / To Be	Based on the contractor's photo record on 18 September 2017, no dust nuisance was recorded at the			
Taken	Northern Landfall and activities conducted in this Contract's work have strictly followed the			
	requirements stated in the EP (EP-354/2009/D). Site inspection was carried out on 27 September			
	2017 audit proper implementation of mitigation measures. In addition, the Contractor has			
	implemented the required mitigation measures as per the EP, approved EIA and Updated EM&A			
	Manual including watering to maintain all exposed road surfaces and dust sources wet, use of			
	wheel washing facilities, use of sprinklers for water spraying, materials having the potential to			
	create dust covered by a clean tarpaulin, use of water truck and watering on all exposed soil within			
	the Project site) throughout the construction period, no additional mitigation is deemed necessary.			
	Inspection on the air quality monitoring stations was also carried out on 6 October 2017. No dust			
	nuisance was observed. Photo record is provided in <i>Annex A</i> . Weekly water spraying record is			
	also provided. The Enhanced TSP Monitoring has commenced on 24 October 2014, the ET will			
	monitor for future trends in exceedances.			
Remarks	The monitoring results and the locations of air quality monitoring stations are attached.			





*Note: Photos taken on 18/9/2017



Water spraying was applied frequently during dry conditions.(Works Area Portion N-B)



No dust nuisance was observed. (Works Area Portion N-B)

Page 1



Annex A Photo Records provided by the Contractor

*Note: Photos taken on 18/9/2017



Water spraying was applied frequently during dry conditions. (Works Area Portion N-A)



Use of sprinklers for water spraying,. (Works Area Portion N-C)



Annex A Photo Records provided by the Contractor

*Note: Photos taken on 18/9/2017



Box Culvert Extension. (Works Area Portion N-A)

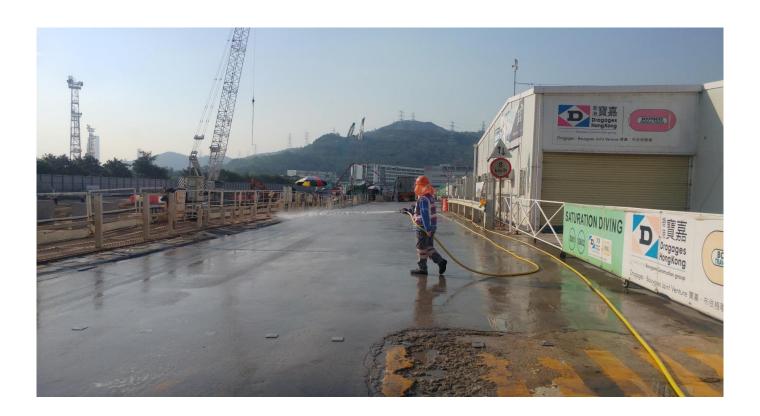


Construction of Ventilation Building. (Works Area Portion N-C)



Annex A Photo Records during site inspection

*Note: Photos taken on 27/9/2017



Water spraying was applied frequently during dry conditions. (Works Area Portion N-A)



Exposed soil surface are covered by tarpaulin sheets to prevent dust nuisance. (Works Area Portion N-A)



Sit	Site Location 地盤位置: Northern Landfell								
Da	te 日期]:		1 th Sep - i	2017 to	至	th Sep .	2017	
	<u>Time</u> 時間	<u>Monday</u> 星期一	<u>Tuesday</u> <u>星期二</u>	<u>Wednesday</u> <u>星期三</u>	<u>Thursday</u> 星期四	<u>Friday</u> 星期五	<u>Saturday</u> 星期六	<u>Sunday</u> 星期日	
1	8:00 - 8:45				/	1		1	
2	8:45 - 9:30					/	/		
3	9:30 - 10:15					/	/	/	
4	10:15 - 11:00				/		/		
5	11:00 - 11:45		/				-	/	
6	11:45 - 12:30		/				/		
7	12:30 - 13:15	-/		/					
8	13:15 - 14:00						/	-	
9	14:00 - 14:45					/	/	/	
10	14:45 – 15:30				/	-	/	/	
11	15:30 - 16:45				/	~	/	/	
12	16:45 – 17:30					/			
	Verified by Site Foreman 地盤科文簽署確認	F	-7	T	5	3	1	7	

Night shift 夜間工作 (if necessary 如需要)

Inght shirt 汉间上下 (II nece	issaly 如而安/	
17:30 - 19:00		
19:00 - 20:30		
20:30 - 22:00		
22:00 - 23:00		

*Please - tick ($\sqrt{}$) in the box if complete the spraying of water. circle (O) in the box if it is raining. *如果 - 已經完成灑水,請於方格內加上剔號(√)。 是下雨天, 請於方格內加上圓圈(O)。

Remarks:

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

備註:

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

TMCLKL	HY/2012/08	18/9/2017	AQMS1	Sunny	13:52	1-hour TSP	473 ug/m3
TMCLKL	HY/2012/08	18/9/2017	AQMS1	Sunny	14:54	1-hour TSP	312 ug/m3
TMCLKL	HY/2012/08	18/9/2017	AQMS1	Sunny	15:56	1-hour TSP	170 ug/m3
TMCLKL	HY/2012/08	18/9/2017	ASR1	Sunny	13:40	1-hour TSP	204 ug/m3
TMCLKL	HY/2012/08	18/9/2017	ASR1	Sunny	14:42	1-hour TSP	196 ug/m3
TMCLKL	HY/2012/08	18/9/2017	ASR1	Sunny	15:44	1-hour TSP	171 ug/m3
TMCLKL	HY/2012/08	18/9/2017	ASR10	Sunny	13:06	1-hour TSP	104 ug/m3
TMCLKL	HY/2012/08	18/9/2017	ASR10	Sunny	14:08	1-hour TSP	96 ug/m3
TMCLKL	HY/2012/08	18/9/2017	ASR10	Sunny	15:10	1-hour TSP	104 ug/m3
TMCLKL	HY/2012/08	18/9/2017	ASR5	Sunny	13:29	1-hour TSP	237 ug/m3
TMCLKL	HY/2012/08	18/9/2017	ASR5	Sunny	14:31	1-hour TSP	202 ug/m3
TMCLKL	HY/2012/08	18/9/2017	ASR5	Sunny	15:33	1-hour TSP	148 ug/m3
TMCLKL	HY/2012/08	18/9/2017	ASR6	Sunny	13:17	1-hour TSP	194 ug/m3
TMCLKL	HY/2012/08	18/9/2017	ASR6	Sunny	14:19	1-hour TSP	147 ug/m3
TMCLKL	HY/2012/08	18/9/2017	ASR6	Sunny	15:21	1-hour TSP	134 ug/m3

Email message		Environmental Resources Management
То	Ramboll Environ - Hong Kong, Limited (ENPO)	16/F Berkshire House, 25 Westlands Road Quarry Bay, Hong Kong Telephone: (852) 2271 3113
From	ERM- Hong Kong, Limited	Facsimile: (852) 2773 5660 E-mail: jovy.tam@erm.com
Ref/Project number	Contract No. HY/2012/08 Tuen Mun-Chek Lap Kok Link-Northern Connection Sub-sea Tunnel Section	
Subject	Notification of Exceedance for Air Quality Impact Monitoring	9
Date	27 September 2017	ERM

Dear Sir or Madam,

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

0212330_27September2017_1hrTSP_Station ASR5 0212330_27September2017_1hrTSP_Station ASR5

Two Action Level Exceedances were recorded on 27 September 2017.

Regards,

Mr Jovy Tam Environmental Team Leader

CONFIDENTIALITY NOTICE

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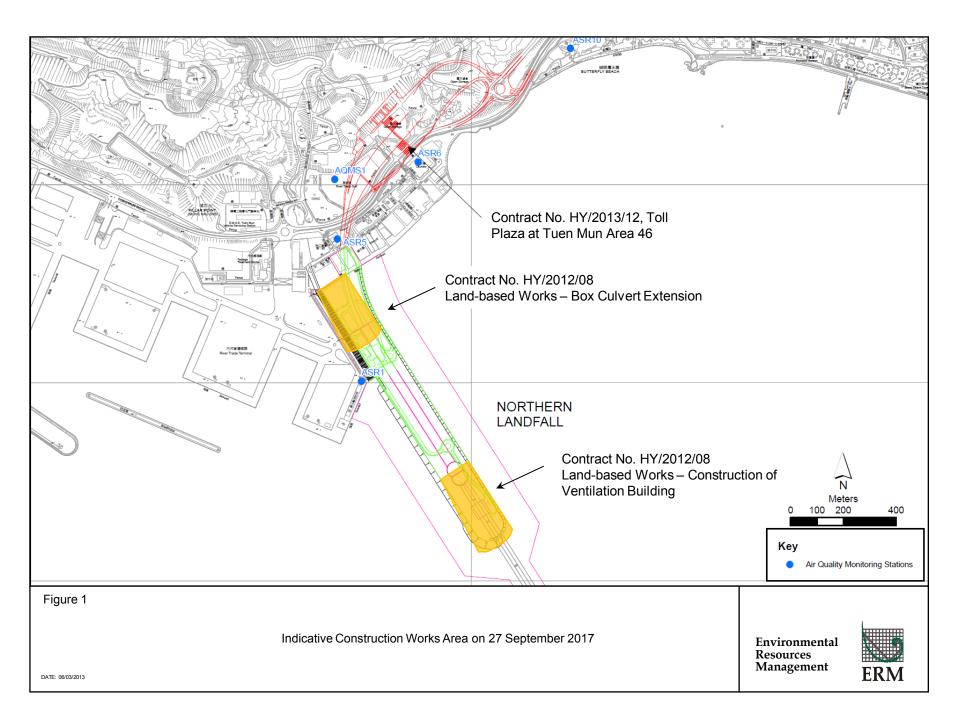


CONTRACT NO. HY/2012/08 Tuen Mun – Chek Lap Kok Link – Northern Connection Sub-sea Tunnel Section

Air Quality Impact Monitoring Notification of Exceedance

Log No.	0212330_27September2017_1hrTSP_Station ASR5							
U	0212330_27September2017_1hrTSP_Station ASR5 [Total No. of Exceedances = 2]							
Date		27 September 2017 (Measured)						
	10 Octobe	er 2017 (Laboratory results received by ERM)						
Monitoring Station	AS	GR1, ASR5, ASR6, ASR10 and AQMS1						
Parameter(s) with		1 L. TOD						
Exceedance(s)		1-hr TSP						
Action Levels	24-hr TSP (μg/m ³)	ASR1 = 213						
		ASR5 = 238						
		AQMS1 = 213						
		ASR6 = 238						
		ASR10 = 214						
	1-hr TSP (μg/m ³)	ASR1 = 331						
		ASR5 = 340						
		AQMS1 = 335						
		ASR6 = 338						
		ASR10 = 337						
Limit Levels	1-hr TSP (μg/m ³)	500						
	24-hr TSP ($\mu g/m^3$)	260						
Measured Levels	Action Level Exceedance for 1-h	TSP is observed at ASR5 (355 μ g/m3) during 1430 - 1530 hrs.						
	Action Level Exceedance for 1-h	TSP is observed at ASR5 (456 μ g/m3) during 1532 - 1632 hrs.						
Works Undertaken (at	On 27 September 2017, box culve	ert extension was carried out at Works Area Portion N-A and						
the time of monitoring	Construction of Ventilation Build	ling at Portion N-C.						
event)								
Possible Reason for	The exceedances are unlikely to I	be due to the Project, in view of the following:						
Action or Limit Level	According to the construct	tion information provided by the Contractor, the majority of						
Exceedance(s)	construction works on 27	September 2017 were box culvert extension at Works Area Portion						
	N-A and Construction of	Ventilation Building at Portions N-C. During the period of the						
		vorks, the Contractor has implemented the required mitigation						
		pproved EIA and Updated EM&A Manual (e.g. water spraying by						
		soil within the Project site and associated work areas; use of wheel						
	washing facilities).	,						
	а ,	tion Level was observed at ASR5, the 24-hr TSP level at the						
		= 91 μ g/m ³) on 27 September 2017 were in compliance with the						
	Action and Limit Levels.							
	Based on the above, the exceedar	nces are unlikely to be due to the project.						
	<u> </u>	· * /						

Actions Taken / To Be	Based on the site photo record on 27 September 2017, no dust nuisance was recorded at the
Actions Taken / To Be Taken	Based on the site photo record on 27 September 2017, no dust nuisance was recorded at the Northern Landfall and activities conducted in this Contract's work have strictly followed the requirements stated in the EP (EP-354/2009/D). Site inspection was carried out on 27 September 2017 and 11 October 2017 to audit proper implementation of mitigation measures. In addition, the Contractor has implemented the required mitigation measures as per the EP, approved EIA and Updated EM&A Manual including watering to maintain all exposed road surfaces and dust sources wet, use of wheel washing facilities, use of sprinklers for water spraying, materials having the potential to create dust covered by a clean tarpaulin, use of water truck and watering on all exposed soil within the Project site) throughout the construction period, no additional mitigation is deemed necessary. Inspection on the air quality monitoring stations was also carried out on 6 October 2017. No dust nuisance was observed. Photo record is provided in <i>Annex A</i> . Weekly water spraying record is also provided. The Enhanced TSP Monitoring has commenced on 24 October 2014, the ET will monitor for future trends in exceedances.
Remarks	The monitoring results and the locations of air quality monitoring stations are attached.





Annex A Photo Record during site inspection

*Note: Photos taken on 27/9/2017



Water spraying was applied frequently during dry conditions.(Works Area Portion N-B)



No dust nuisance was observed. (Works Area Portion N-A)

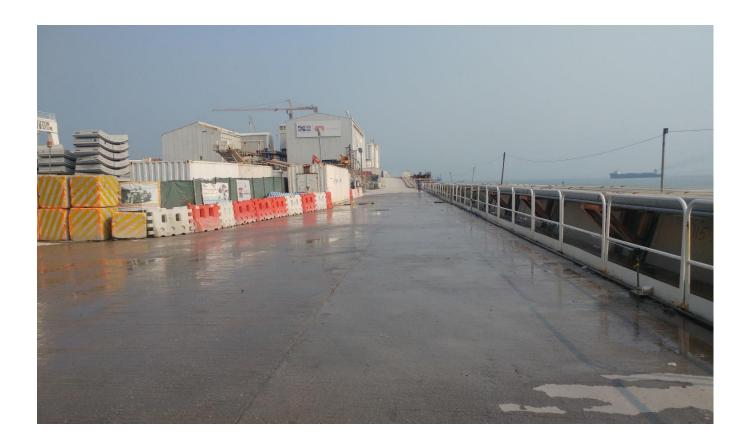


Annex A Photo Record during site inspection

*Note: Photos taken on 27/9/2017



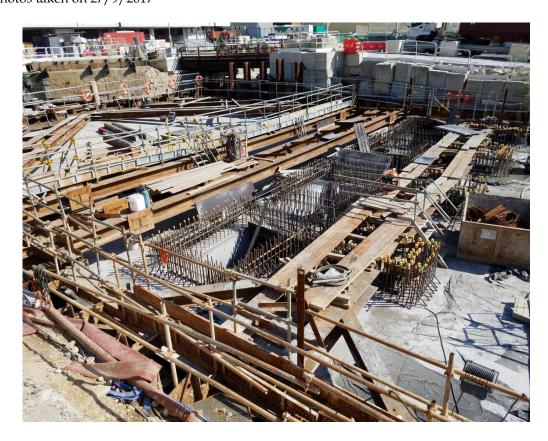
Water spraying was applied frequently during dry conditions. (Works Area Portion N-A)



Water spraying was applied frequently during dry conditions. (Works Area Portion N-B)



Annex A Photo Record provided by the Contractor *Note: Photos taken on 27/9/2017



Box Culvert Extension. (Works Area Portion N-A)



Construction of Ventilation Building. (Works Area Portion N-C)



Annex A Photo Record during inspection on AQM stations *Note: Photos taken on 6/10/2017



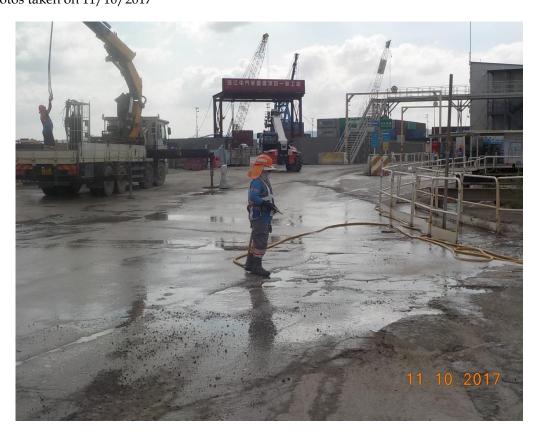
Photo at ASR5 during 1-hour TSP monitoring



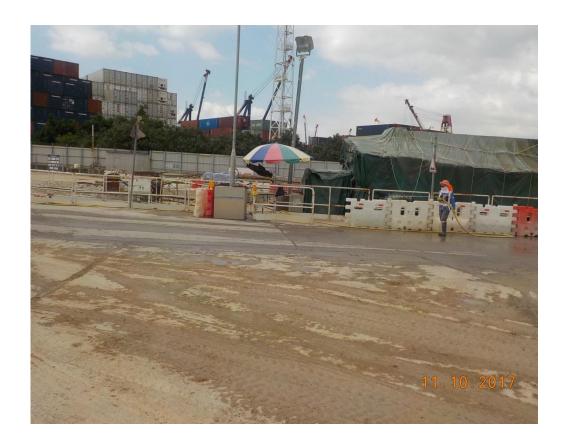
Photo at ASR5 during 1-hour TSP monitoring



Annex A Photo Record during site inspection *Note: Photos taken on 11/10/2017



Water spraying was applied frequently during dry conditions.(Works Area Portion N-A)



Water spraying was applied frequently during dry conditions.(Works Area Portion N-A)



Sit Da		盘位置: 月:	Northern Landfall 25-th Sep. 2017 to 至 1st Oct 2017					
	<u>Time</u> 時間	<u>Monday</u> 星期一	<u>Tuesday</u> 星期二	<u>Wednesday</u> <u>星期三</u>	<u>Thursday</u> <u>星期四</u>	<u>Friday</u> 星期五	<u>Saturday</u> 星期六	<u>Sunday</u> 星期日
1	8:00 - 8:45	/	/	/	/	1	~	1
2	8:45 - 9:30	1	/	/	/	/	/	1
3	9:30 - 10:15	/		1	1	/	/	/
4	10:15 - 11:00		/			1	/	1
5	11:00 - 11:45		/	/	/		~	~
6	11:45 - 12:30	/			/	~	2	1
7	12:30 - 13:15	/	1	/	/	1	/	/
8	13:15 - 14:00	/	/	/	/	/	/	
9	14:00 - 14:45		1	/	2	1	/	/
10	14:45 - 15:30	1	/	/	/		-	~
11	15:30 - 16:45		/	/	/	/	/	2
12	16:45 - 17:30	/	/	/	1	/	/	/
	Verified by Site Foreman 地盤科文簽署確認	-1	7	7	7	7	7	7

Night shift 夜間工作 (if n	ecessary 如需要)		
17:30 - 19:00			
19:00 - 20:30			
20:30 - 22:00			
22:00 - 23:00			

*Please - tick $(\sqrt{)}$ in the box if complete the spraying of water. circle (O) in the box if it is raining. *如果 已經完成灑水,請於方格內加上剔號(v)。 是下雨天, 請於方格內加上圓圈(O)。

Remarks:

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

備註:

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

TMCLKL	HY/2012/08	27/9/2017	AQMS1	Sunny	13:50	1-hour TSP	230	ug/m3
TMCLKL	HY/2012/08	27/9/2017	AQMS1	Sunny	14:52	1-hour TSP	233	ug/m3
TMCLKL	HY/2012/08	27/9/2017	AQMS1	Sunny	15:54	1-hour TSP	221	ug/m3
TMCLKL	HY/2012/08	27/9/2017	ASR1	Sunny	13:40	1-hour TSP	275	ug/m3
TMCLKL	HY/2012/08	27/9/2017	ASR1	Sunny	14:42	1-hour TSP	252	ug/m3
TMCLKL	HY/2012/08	27/9/2017	ASR1	Sunny	15:44	1-hour TSP	259	ug/m3
TMCLKL	HY/2012/08	27/9/2017	ASR10	Sunny	13:15	1-hour TSP	159	ug/m3
TMCLKL	HY/2012/08	27/9/2017	ASR10	Sunny	14:17	1-hour TSP	183	ug/m3
TMCLKL	HY/2012/08	27/9/2017	ASR10	Sunny	15:19	1-hour TSP	196	ug/m3
TMCLKL	HY/2012/08	27/9/2017	ASR5	Sunny	13:28	1-hour TSP	321	ug/m3
TMCLKL	HY/2012/08	27/9/2017	ASR5	Sunny	14:30	1-hour TSP	355	ug/m3
TMCLKL	HY/2012/08	27/9/2017	ASR5	Sunny	15:32	1-hour TSP	456	ug/m3
TMCLKL	HY/2012/08	27/9/2017	ASR6	Sunny	13:27	1-hour TSP	297	ug/m3
TMCLKL	HY/2012/08	27/9/2017	ASR6	Sunny	14:29	1-hour TSP	302	ug/m3
TMCLKL	HY/2012/08	27/9/2017	ASR6	Sunny	15:31	1-hour TSP	310	ug/m3
TMCLKL	HY/2012/08	27/9/2017	AQMS1	Sunny	16:56	24-hour TSP	44	ug/m3
TMCLKL	HY/2012/08	27/9/2017	ASR1	Sunny	16:46	24-hour TSP	84	ug/m3
TMCLKL	HY/2012/08	27/9/2017	ASR10	Sunny	16:21	24-hour TSP	47	ug/m3
TMCLKL	HY/2012/08	27/9/2017	ASR5	Sunny	16:34	24-hour TSP		ug/m3
TMCLKL	HY/2012/08	27/9/2017	ASR6	Sunny	16:33	24-hour TSP	99	ug/m3

Appendix L

Waste Flow Table



Monthly Summary Waste Flow Table

Name of Department: HyD

Contract No. / Works Order No.: <u>HY/2012/08</u>

Monthly Summary Waste Flow Table for October 2017

[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.)

	N	Monthly Break-down of <u>Inert</u> Construct	ion & Demolition Materia	als (i.e. Public Fill Materials)
Month	(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	1097.465	0.000	0.000	0.000	1097.465
Jan-2017	60.781	0.000	0.000	0.000	60.781
Feb-2017	17.367	0.000	0.000	0.000	17.367
Mar-2017	7.508	0.000	0.000	0.000	7.508
Apr-2017	15.603	0.000	0.000	0.000	15.603
May-2017	12.358	0.000	0.000	0.000	12.358
Jun-2017	0.194	0.000	0.000	0.000	0.194
Half Year Sub-total	113.811	0.000	0.000	0.000	113.811
Jul-2017	0.652	0.000	0.000	0.000	0.652
Aug-2017	1.624	0.000	0.000	0.000	1.624
Sep-2017	0.886	0.000	0.000	0.000	0.886
Oct-2017	0.706	0.000	0.000	0.000	0.706
Nov-2017					
Dec-2017					
Project Total Quantities	1215.144	0.000	0.000	0.000	1215.144



			Actu	al Quantities of <u>I</u>	<u>Non-inert</u> Cons	truction Waste	Generated Mon	thly		
Month	Metals		Paper/ cardboard packaging			Plastics (see Note 3)		al Waste	Others, e.g. General Refuse disposed at Landfill	
	(in '0	000kg)	(in '000kg)		(in '000kg)		(in '000kg)		(in '000ton)	
	generated	recycled	generated	recycled	generated	recycled	generated	Disposed	generated	
Sub-total	1.850	1.850	3.150	3.150	6.870	6.870	9.450	9.450	4.935	
Jan-2017	0.000	0.000	0.000	0.000	0.000	0.000	3.400	3.400	0.257	
Feb-2017	0.000	0.000	0.200	0.200	0.000	0.000	0.000	0.000	0.340	
Mar-2017	0.000	0.000	0.000	0.000	0.000	0.000	6.100	6.100	0.286	
Apr-2017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.237	
May-2017	0.000	0.000	0.000	0.000	0.000	0.000	10.400	10.400	0.300	
Jun-2017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.317	
Half Year Sub-total	0.000	0.000	0.200	0.200	0.000	0.000	19.900	19.900	1.737	
Jul-2017	0.000	0.000	0.200	0.200	0.000	0.000	0.000	0.000	0.272	
Aug-2017	141.990	141.990	0.200	0.200	0.000	0.000	0.000	0.000	0.305	
Sep-2017	0.000	0.000	0.200	0.200	0.000	0.000	0.000	0.000	0.300	
Oct-2017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.244	
Nov-2017										
Dec-2017										
Project Total Quantities	143.840	143.840	3.950	3.950	6.870	6.870	29.350	29.350	7.793	



	Forecast of Total Quantities of Construction and Demolition Materials to be Generated from the Contract*											
Total Quantity GeneratedHard Rock and Large Broken ConcreteReused in the ContractReused in other ProjectsDisposed of as Public Fill												
(in '000 ton)	(in '000 ton)	(in '000 ton)	(in '000 ton)	(in '000 ton)								
2.000 0.000 0.000 0.000 2.000												

Forecast of Total Quantities of Construction and Demolition Materials to be Generated from the Contract*				
Metals	Paper/ cardboard packaging	Plastics (see Note 3)	Chemical Waste	General Refuse disposed of at Landfill
(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000 ton)
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 m³. (**ER Part 8 Clause 8.8.5** (d) (ii) refers).