

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

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

14 January 2019

Environmental Resources Management
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Ref.: HYDHZMBEEM00_0_7116L.19

17 January 2019

AECOM
Supervising Officer Representative's Office
No.8 Mong Fat Street, Tuen Mun,
New Territories, Hong Kong
Attention: Messrs. Andy Westmoreland / Roger Man

By Fax (2293 6300) and By Post

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
62nd Monthly EM&A Report for December 2018 (EP-354/2009/D)**

Reference is made to the Monthly Environmental Monitoring and Audit (EM&A) Report (Dec. 2018) (ET's ref.: "0212330_62nd Monthly EM&A_20190114.doc") certified by the ET Leader and provided to us via e-mail.

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. Mr. Patrick Ng (By Fax: 3188 6614)
HyD – Mr. Tony Pang (By Fax: 3188 6614)
AECOM – Mr. Conrad Ng (By Fax: 3922 9797)
ERM – Dr. Jasmine Ng (By Fax: 2723 5660)
Dragages – Bouygues JV - Mr. Bryan Lee (By Fax: 2293 7499)

Internal: DY, YH, DF, ENPO Site

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

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

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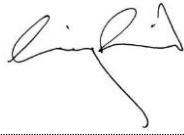
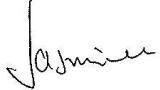


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|--|--------------------------------------|--|---------|----------|----------|
| Client: DBJV | | Project No: 0212330 | | | |
| Summary: This document presents the Sixty-second Monthly EM&A Report for Tuen Mun – Chek Lap Kok Link Northern Connection Sub-sea Tunnel Section. | | Date: 14 January 2019 | | | |
| | | Approved by:  | | | |
| | | <i>Mr Craig Reid Partner</i> | | | |
| | | Certified by:  | | | |
| | | <i>Dr Jasmine Ng ET Leader</i> | | | |
| | | | | | |
| | | | | | |
| | 62 nd Monthly EM&A Report | VAR | JN | CAR | 14/01/19 |
| Revision | Description | By | Checked | Approved | Date |
| <p>This report has been prepared by Environmental Resources Management the trading name of 'ERM Hong-Kong, Limited', with all reasonable skill, care and diligence within the terms of the Contract with the client, incorporating our General Terms and Conditions of Business and taking account of the resources devoted to it by agreement with the client.</p> <p>We disclaim any responsibility to the client and others in respect of any matters outside the scope of the above.</p> | | <p>Distribution</p> <p><input type="checkbox"/> Internal</p> <p><input checked="" type="checkbox"/> Public</p> <p><input type="checkbox"/> Confidential</p> | | | |
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TABLE OF CONTENTS

| | | |
|------------|---|-----------|
| | <i>EXECUTIVE SUMMARY</i> | <i>1</i> |
| <i>1</i> | <i>INTRODUCTION</i> | <i>4</i> |
| <i>1.1</i> | <i>BACKGROUND</i> | <i>4</i> |
| <i>1.2</i> | <i>SCOPE OF REPORT</i> | <i>5</i> |
| <i>1.3</i> | <i>ORGANIZATION STRUCTURE</i> | <i>5</i> |
| <i>1.4</i> | <i>SUMMARY OF CONSTRUCTION WORKS</i> | <i>6</i> |
| <i>2</i> | <i>EM&A RESULTS</i> | <i>8</i> |
| <i>2.1</i> | <i>AIR QUALITY</i> | <i>8</i> |
| <i>2.2</i> | <i>DOLPHIN MONITORING</i> | <i>10</i> |
| <i>2.3</i> | <i>EM&A SITE INSPECTION</i> | <i>15</i> |
| <i>2.4</i> | <i>WASTE MANAGEMENT STATUS</i> | <i>16</i> |
| <i>2.5</i> | <i>ENVIRONMENTAL LICENSES AND PERMITS</i> | <i>16</i> |
| <i>2.6</i> | <i>IMPLEMENTATION STATUS OF ENVIRONMENTAL MITIGATION MEASURES</i> | <i>18</i> |
| <i>2.7</i> | <i>SUMMARY OF EXCEEDANCES OF THE ENVIRONMENTAL QUALITY PERFORMANCE LIMIT</i> | <i>18</i> |
| <i>2.8</i> | <i>SUMMARY OF COMPLAINTS, NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS</i> | <i>18</i> |
| <i>3</i> | <i>FUTURE KEY ISSUES</i> | <i>19</i> |
| <i>3.1</i> | <i>CONSTRUCTION ACTIVITIES FOR THE COMING MONTH</i> | <i>19</i> |
| <i>3.2</i> | <i>KEY ISSUES FOR THE COMING MONTH</i> | <i>19</i> |
| <i>3.3</i> | <i>MONITORING SCHEDULE FOR THE COMING MONTH</i> | <i>19</i> |
| <i>4</i> | <i>CONCLUSIONS AND RECOMMENDATIONS</i> | <i>20</i> |
| <i>4.1</i> | <i>CONCLUSIONS</i> | <i>20</i> |

| | |
|-------------------|--|
| <i>APPENDIX A</i> | <i>PROJECT ORGANIZATION FOR ENVIRONMENTAL WORKS</i> |
| <i>APPENDIX B</i> | <i>CONSTRUCTION PROGRAMME</i> |
| <i>APPENDIX C</i> | <i>ENVIRONMENTAL MITIGATION AND ENHANCEMENT MEASURE IMPLEMENTATION SCHEDULES (EMIS)</i> |
| <i>APPENDIX D</i> | <i>SUMMARY OF ACTION AND LIMIT LEVELS</i> |
| <i>APPENDIX E</i> | <i>COPIES OF CALIBRATION CERTIFICATE FOR AIR QUALITY MONITORING</i> |
| <i>APPENDIX F</i> | <i>EM&A MONITORING SCHEDULES</i> |
| <i>APPENDIX G</i> | <i>IMPACT AIR QUALITY MONITORING RESULTS</i> |
| <i>APPENDIX H</i> | <i>METEOROLOGICAL DATA</i> |
| <i>APPENDIX I</i> | <i>IMPACT DOLPHIN MONITORING SURVEY</i> |
| <i>APPENDIX J</i> | <i>EVENT AND ACTION PLAN</i> |
| <i>APPENDIX K</i> | <i>CUMULATIVE STATISTICS ON EXCEEDANCE, COMPLAINTS, NOTIFICATIONS OF SUMMONS AND SUCCESSFUL PROSECUTIONS</i> |
| <i>APPENDIX L</i> | <i>WASTE FLOW TABLE</i> |

EXECUTIVE SUMMARY

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

The construction phase of the Project commenced on 1 November 2013 and will tentatively be completed by the end of 2019. The impact monitoring of the EM&A programme, including air quality, water quality, marine ecological monitoring and environmental site inspections, were commenced on 1 November 2013.

This is the Sixty-second Monthly EM&A report presenting the EM&A works carried out during the period from 1 to 31 December 2018 for the *Contract No. HY/2012/08 Northern Connection Sub-sea Tunnel Section* (the “Project”) in accordance with the Updated EM&A Manual of the TM-CLK Link Project. As informed by the Contractor, major activities in the reporting period included:

Land-based Works

- Construction of Cross Passage Tympanum – TBM tunnel;
- Cross Passage Lining Installation – TBM Tunnel;
- Cross Passage Construction by Pipe Jacking – TBM Tunnel;
- Corbel & OVHD Construction – TBM Tunnel;
- Parapet wall and fireboard Installation – TBM Tunnel;
- Bulk Excavation – Portion N-A; and
- D-wall Construction – Portion S-A

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

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

Implementation of Marine Mammal Exclusion Zone

Daily marine mammal exclusion zone was in effect during the period of silt curtain installation in open waters under this Contract. No sighting of the Indo-Pacific humpback dolphin *Sousa chinensis* (i.e. Chinese White Dolphin) was recorded in December 2018 during the exclusion zone monitoring.

Summary of Breaches of Action/Limit Levels

Breaches of Action and Limit Levels for Air Quality

One (1) Action Level exceedance of 1-hour TSP was recorded at ASR1 on 9 December 2018. One (1) Action Level exceedance of 1-hour TSP was recorded at ASR1 on 12 December 2018. One (1) Action Level exceedance of 1-hour TSP was recorded at ASR6 on 18 December 2018. Investigation reports are provided in Appendix K.

Breaches of Action and Limit Levels for Dolphin Monitoring

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

Environmental Complaints, Non-compliance & Summons

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

No environmental complaint was received in this reporting period.

No environmental summons was received in this reporting period.

Reporting Change

There was no reporting change required in the reporting period.

Upcoming Works for the Next Reporting Month

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

Land-based Works

- Construction of Cross Passage Tympanum – TBM tunnel;
- Cross Passage Construction by Pipe Jacking – TBM tunnel;
- Cross Passage Lining Installation – TBM Tunnel;
- Parapet wall and fireboard Installation – TBM Tunnel
- Corbel & OVHD Construction – TBM Tunnel;
- Construction of RC structure – Portion N-A
- Bulk Excavation – Portion S-C; and
- Construction of Ventilation building– Portion S-A

Marine-based Works

- Sloping seawall construction – Portion S-B

Future Key Issue

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

1.1

BACKGROUND

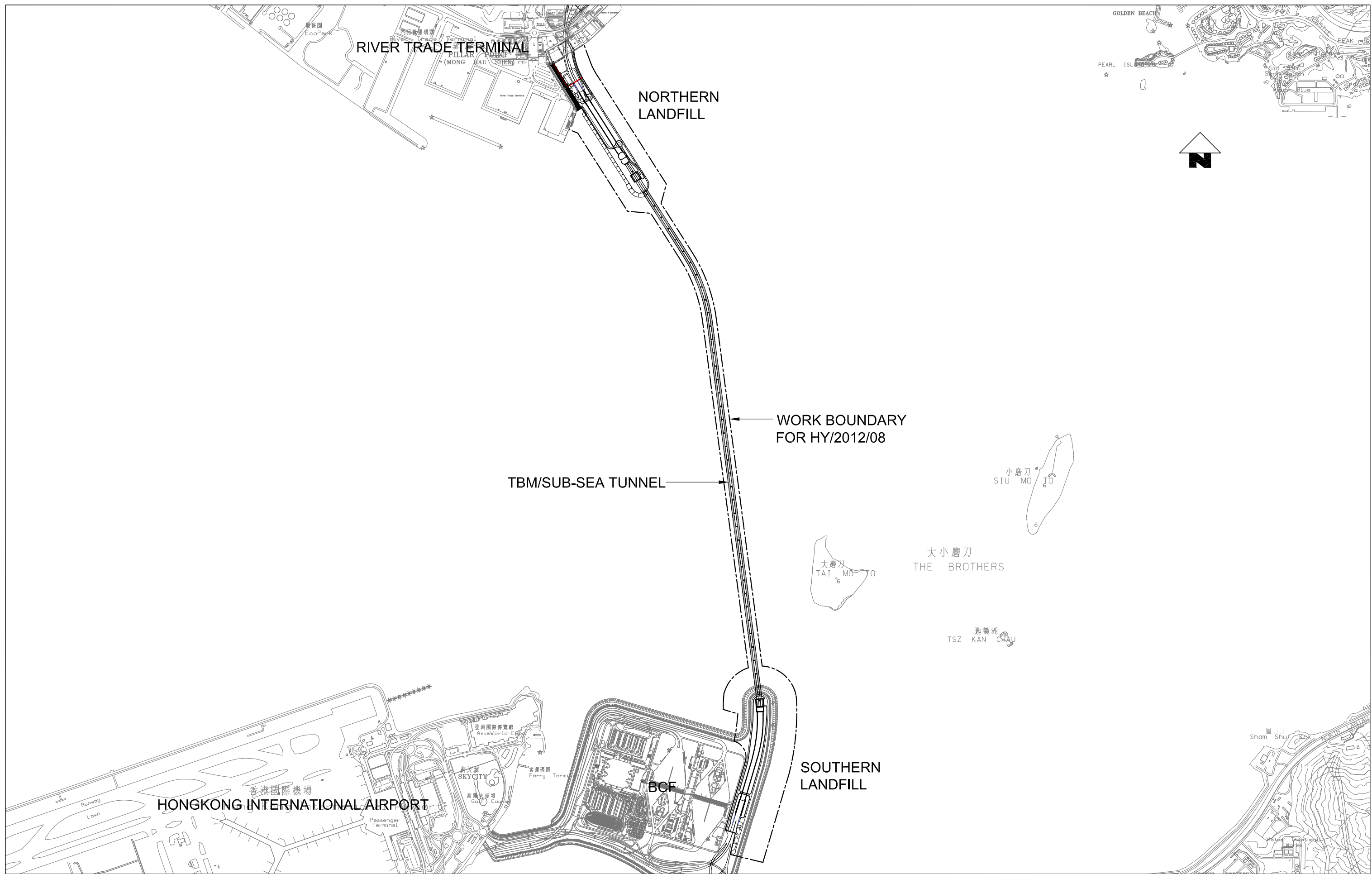
According to the findings of the Northwest New Territories (NWNT) Traffic and Infrastructure Review conducted by the Transport Department, Tuen Mun Road, Ting Kau Bridge, Lantau Link and North Lantau Highway would be operating beyond capacity after 2016. This forecast has been based on the estimated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

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

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

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

The construction phase of the Contract commenced on 1 November 2013 and will tentatively be completed by the end of 2019. The impact monitoring phase of the EM&A programme, including air quality, water quality, marine ecological monitoring and environmental site inspections, were commenced on 1 November 2013.



| | | | |
|-------------|-------------|------|---------|
| Designed By | PKV | | |
| Drawn By | DAI | | |
| Approved By | SPo | | |
| Date | 11SEP2013 | PKV | Checked |
| Rev. | Description | Date | Checked |

Main Contractor

Dragages - Bouygues Joint Venture 寶嘉 - 布依格聯營

Client

HIGHWAYS DEPARTMENT

Contractor's Designer

Arup Ove Arup & Partners Hong Kong Limited

Project

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

Drawing Title

Figure 1.1

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

1.2 SCOPE OF REPORT

This is the Sixty-second Monthly EM&A Report under the *Contract No. HY/2012/08 Tuen Mun – Chek Lap Kok Link – Northern Connection Sub-sea Tunnel Section*. This report presents a summary of the environmental monitoring and audit works in December 2018.

1.3 ORGANIZATION STRUCTURE

The organization structure of the Contract is shown in *Appendix A*. The key personnel contact names and contact details are summarized in *Table 1.1* below.

Table 1.1 *Contact Information of Key Personnel*

| Party | Position | Name | Telephone | Fax |
|--|------------------------------------|--------------------------|------------------|------------|
| Highways Department | Engr 22/HZMB | Chow Man Lung, Andrew | 2762 4110 | 2762 4110 |
| SOR (AECOM Asia Company Limited) | Chief Resident Engineer | Roger Man | 2293 6388 | 2293 6300 |
| | | Andrew Westmoreland | 2293 6360 | 2293 6300 |
| ENPO / IEC (Ramboll Hong Kong Ltd.) | ENPO Leader | Y.H. Hui | 3465 2850 | 3465 2899 |
| | IEC | Dr. F.C. Tsang | 3465 2851 | 3465 2899 |
| Contractor (Dragages – Bouygues Joint Venture) | Deputy Environmental Manager | Bryan Lee | 2293 7323 | 2293 7499 |
| | | Ashley Au | 52950766 | |
| | | 24-hour hotline | 2293 7330 | |
| ET (ERM-HK) | ET Leader | Jasmine Ng | 2271 3311 | 2723 5660 |

1.4 SUMMARY OF CONSTRUCTION WORKS

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

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

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

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

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

| Construction Activities Undertaken |
|---|
| <i>Land-based Works</i> |
| <ul style="list-style-type: none">• Construction of Cross Passage Tympanum – TBM tunnel;• Cross Passage Lining Installation – TBM Tunnel;• Cross Passage Construction by Pipe Jacking – TBM Tunnel;• Corbel & OVHD Construction – TBM Tunnel;• Parapet wall and fireboard Installation – TBM Tunnel;• Bulk Excavation – Portion N-A; and• D-wall Construction – Portion S-A |

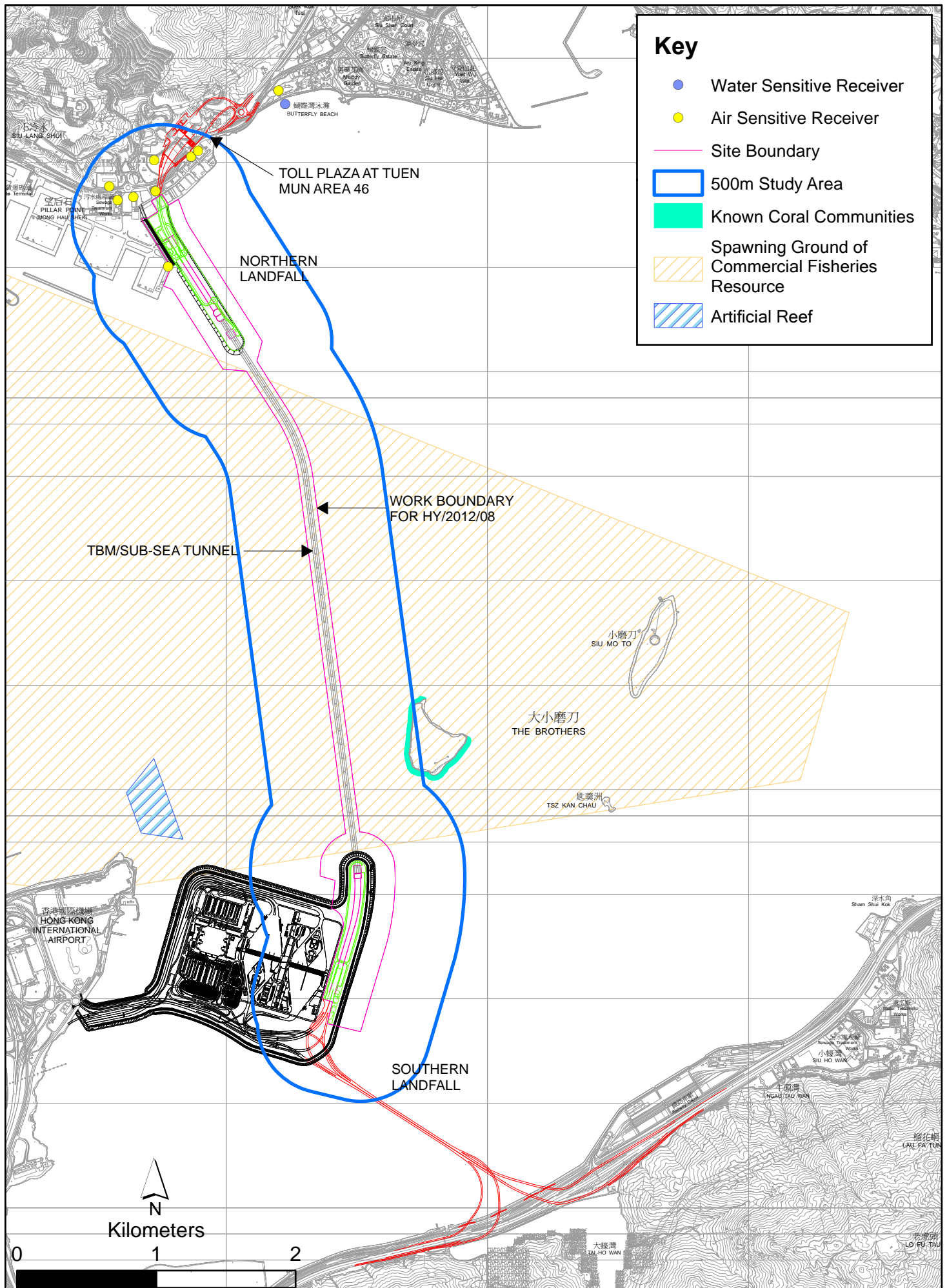


Figure 1.3 Environmental Sensitive Receivers in the vicinity of Contract No. HY/2012/08 Tuen Mun - Chek Lap Kok Link - Northern Connection Sub-Sea Tunnel Section

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

2.1 AIR QUALITY

2.1.1 Monitoring Requirements and Equipment

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

High volume samplers (HVSs) were used to carry out the 1-hour and 24-hour TSP monitoring on 3, 6, 9, 12, 15, 18, 21, 24, 27 and 30 December 2018 at the five (5) air quality monitoring stations in accordance with the requirements stipulated in the Updated EM&A Manual (*Figure 2.1; Table 2.1*). Wind meter was installed at the rooftop of ASR5 for logging wind speed and wind direction. Details of the equipment deployed are provided in *Table 2.2*. Copies of the calibration certificates for the equipment are presented in *Appendix E*.

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

| Monitoring Station | Monitoring Dates | Location | Description | Parameters & Frequency |
|--------------------|--|---------------------------|-------------------|--|
| ASR1 | 3, 6, 9, 12, 15, 18, 21, 24, 27 and 30 December 2018 | Tuen Mun Fireboat Station | Office | TSP monitoring |
| ASR5 | | Pillar Point Fire Station | Office | <ul style="list-style-type: none"> 1-hour Total Suspended Particulates (1-hour TSP, $\mu\text{g}/\text{m}^3$), 3 times in every 6 days 24-hour Total Suspended Particulates (24-hour TSP, $\mu\text{g}/\text{m}^3$), daily for 24-hour in every 6 days |
| AQMS1 | | Previous River Trade Golf | Bare ground | Enhanced TSP monitoring (commenced on 24 October 2014) |
| ASR6 | | Butterfly Beach Laundry | Office | <ul style="list-style-type: none"> 1-hour Total Suspended Particulates (1-hour TSP, $\mu\text{g}/\text{m}^3$), 3 times in every 3 days 24-hour Total Suspended Particulates (24-hour TSP, $\mu\text{g}/\text{m}^3$), daily for 24-hour in every 3 days |
| ASR10 | | Butterfly Beach Park | Recreational uses | <ul style="list-style-type: none"> 1-hour Total Suspended Particulates (1-hour TSP, $\mu\text{g}/\text{m}^3$), 3 times in every 3 days 24-hour Total Suspended Particulates (24-hour TSP, $\mu\text{g}/\text{m}^3$), daily for 24-hour in every 3 days |

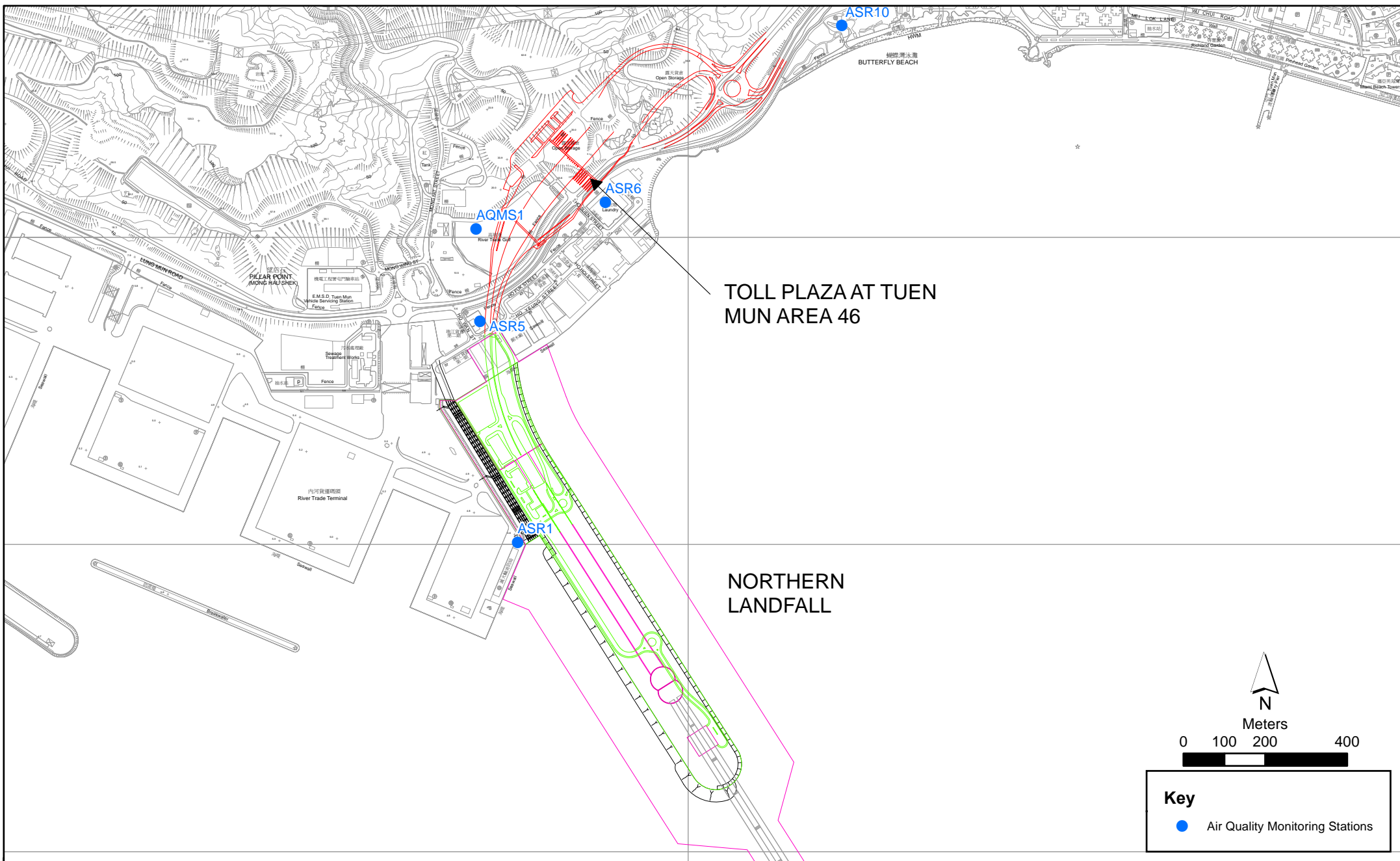


Figure 2.1

Air Quality Monitoring Stations for the Enhanced TSP Monitoring

Table 2.2 Air Quality Monitoring Equipment

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

2.1.2 Action & Limit Levels

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

2.1.3 Monitoring Schedule for the Reporting Month

The schedule for air quality monitoring in December 2018 is provided in *Appendix F*.

2.1.4 Results and Observations

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

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

| Station | Average (µg/m³) | Range (µg/m³) | Action Level (µg/m³) | Limit Level (µg/m³) |
|----------------|-----------------------------------|---------------------------------|--|---------------------------------------|
| ASR1 | 158 | 63 - 414 | 331 | 500 |
| ASR5 | 186 | 109 - 340 | 340 | 500 |
| AQMS1 | 108 | 50 - 221 | 335 | 500 |
| ASR6 | 132 | 59 - 478 | 338 | 500 |
| ASR10 | 88 | 54 - 152 | 337 | 500 |

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

| Station | Average (µg/m³) | Range (µg/m³) | Action Level (µg/m³) | Limit Level (µg/m³) |
|----------------|-----------------------------------|---------------------------------|--|---------------------------------------|
| ASR1 | 100 | 59 - 136 | 213 | 260 |
| ASR5 | 130 | 94 - 180 | 238 | 260 |
| AQMS1 | 73 | 35 - 115 | 213 | 260 |
| ASR6 | 105 | 53 - 176 | 238 | 260 |
| ASR10 | 82 | 40 - 120 | 214 | 260 |

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

A total of 10 1-hour TSP and 24-hour TSP monitoring were undertaken in this reporting month. One (1) Action Level exceedance of 1-hour TSP was recorded at ASR1 on 9 December 2018. One (1) Action Level exceedance of 1-

hour TSP was recorded at ASR1 on 12 December 2018. One (1) Action Level exceedance of 1-hour TSP was recorded at ASR6 on 18 December 2018.

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

2.2 WATER QUALITY MONITORING

Seawall Enhancement Works at Northern Landfall has been completed on 31 December 2017. Notification of suspension of water quality monitoring has been approved by EPD on 2 March 2018. Water Quality Monitoring will be resumed prior to the start of Seawall Modification Works at Southern Landfall in January 2019.

2.3 DOLPHIN MONITORING

2.3.1 Monitoring Requirements

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

2.3.2 Monitoring Equipment

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

Table 2.5 Dolphin Monitoring Equipment

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

2.3.3 *Monitoring Parameter, Frequencies & Duration*

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

2.3.4 *Monitoring Location*

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

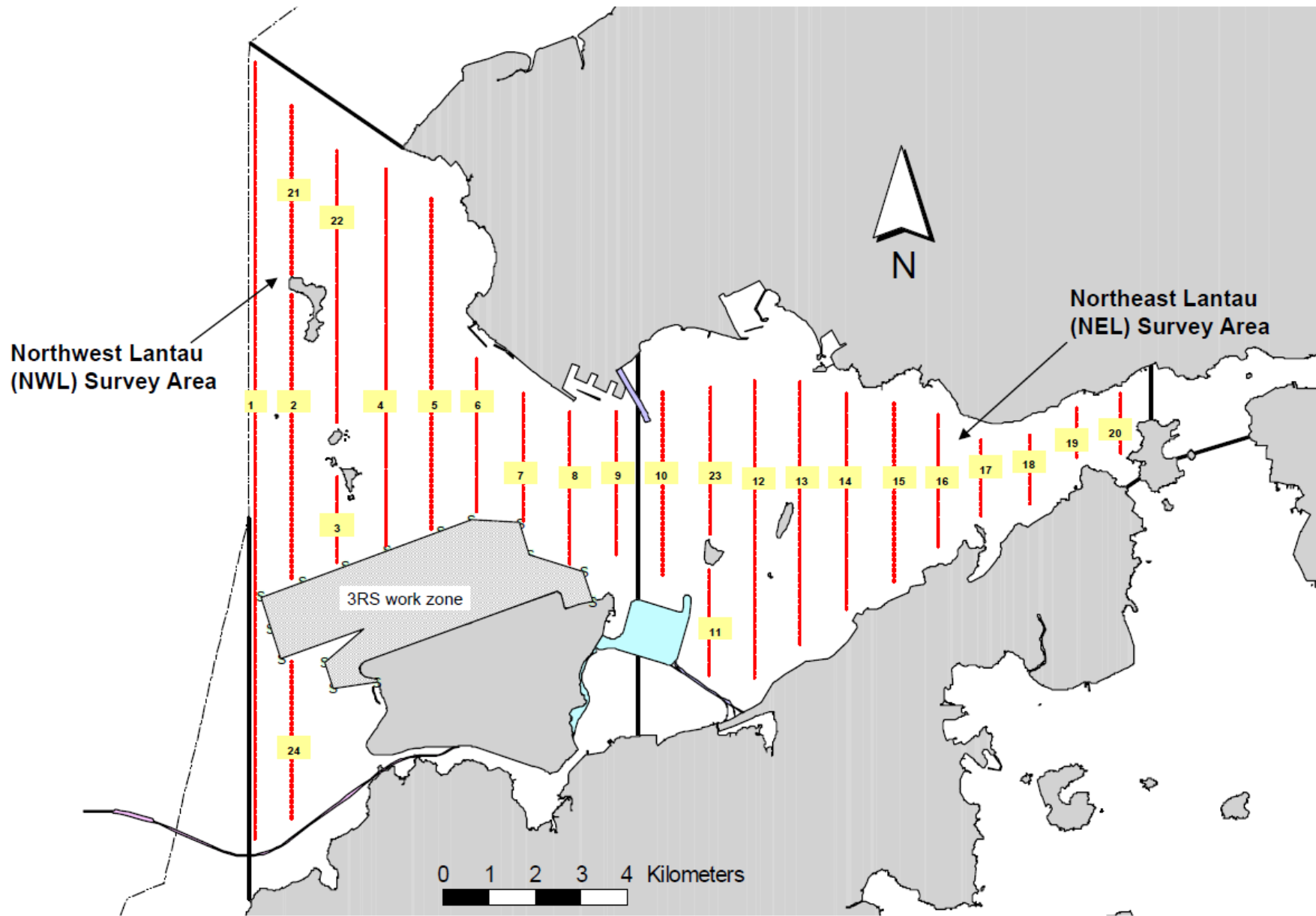


Figure 2.2

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

Table 2.6 Impact Dolphin Monitoring Line Transect Co-ordinates

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

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

2.3.5 Action & Limit Levels

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

2.3.6 *Monitoring Schedule for the Reporting Month*

Dolphin monitoring was carried out on 3, 5, 10 and 12 of December 2018. The dolphin monitoring schedule for the reporting month is shown in *Appendix F*.

2.3.7 *Results & Observations*

A total of 261.96 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 December 2018. Among the two areas, 97.00 km and 164.96 km of survey effort were collected from NEL and NWL survey areas, respectively. The total survey effort conducted on primary and secondary lines were 193.46 km and 68.50 km respectively. The survey efforts are summarized in *Appendix I*.

Two group of 6 Chinese White Dolphins sightings was recorded during the two sets of surveys in December 2018. All the dolphin sightings were made in NWL, while none was sighted in NEL. All dolphin sightings were made during on-effort search and on primary lines. The dolphin groups were not associated with any operating fishing vessel.

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

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

Table 2.7 *Individual Survey Event Encounter Rates*

| | | Encounter rate (STG) (no. of on-effort dolphin sightings per 100 km of survey effort) | Encounter rate (ANI) (no. of dolphins from all on-effort sightings per 100 km of survey effort) |
|-----|-----------------------------|--|--|
| | | Primary Lines Only | Primary Lines Only |
| NEL | Set 1: December 3rd / 5th | 0.0 | 0.0 |
| | Set 2: December 10th / 12th | 0.0 | 0.0 |
| NWL | Set 1: December 3rd / 5th | 4.0 | 11.9 |
| | Set 2: December 10th / 12th | 0.0 | 0.0 |

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

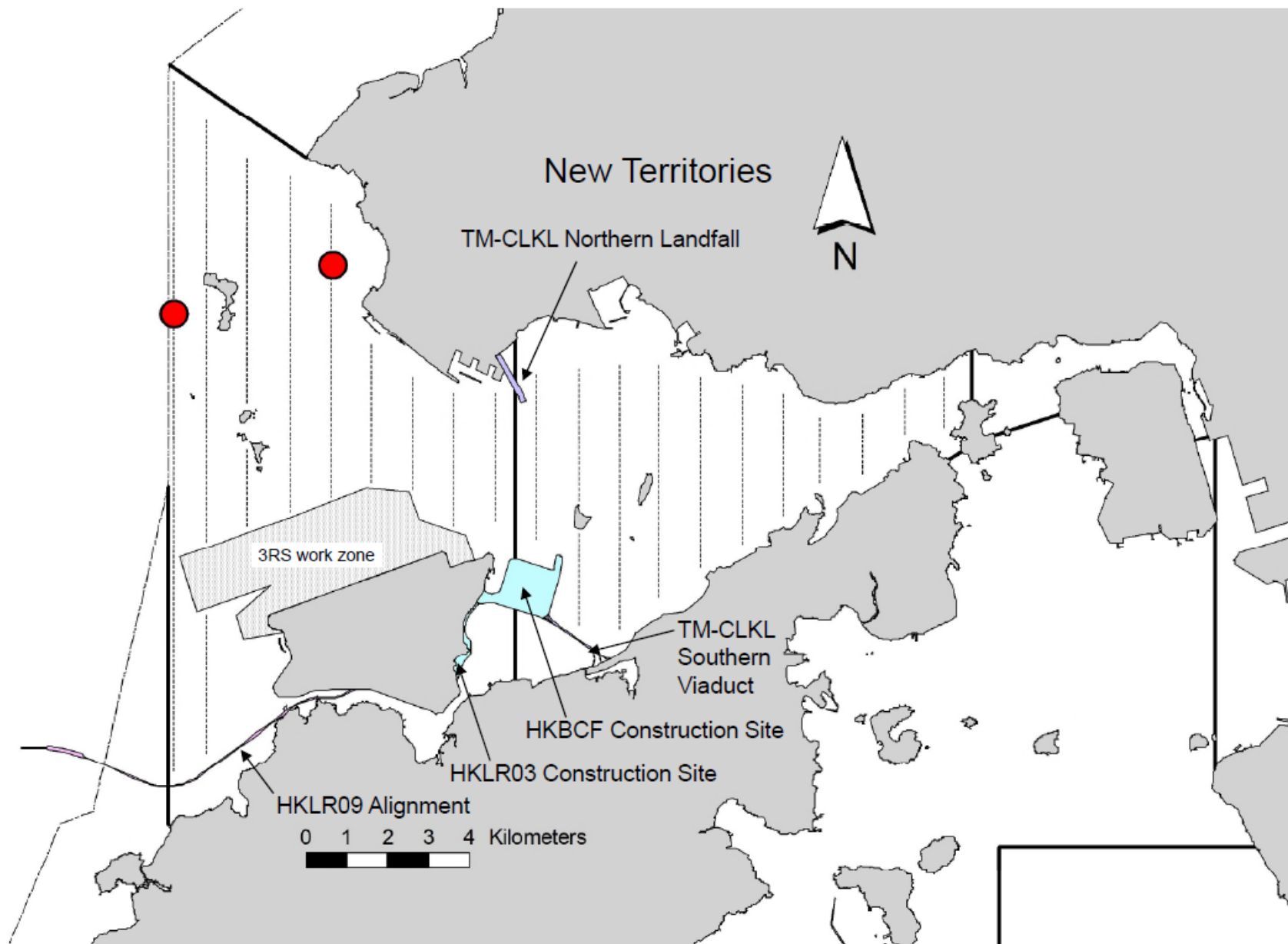


Figure 2.3

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

Table 2.8 Monthly Average Encounter Rates

| | Encounter rate (STG) (no. of on-effort dolphin sightings per 100 km of survey effort) | | Encounter rate (ANI) (no. of dolphins from all on-effort sightings per 100 km of survey effort) | |
|-------------------------|--|----------------------------------|--|----------------------------------|
| | Primary Lines Only | Both Primary and Secondary Lines | Primary Lines Only | Both Primary and Secondary Lines |
| Northeast Lantau | 0.0 | 0.0 | 0.0 | 0.0 |
| Northwest Lantau | 1.9 | 1.4 | 5.7 | 4.3 |

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

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

2.3.8 Implementation of Marine Mammal Exclusion Zone

Daily marine mammal exclusion zone was in effect during the period of silt curtain installation in open waters under this Contract. No sighting of the Indo-Pacific humpback dolphin *Sousa chinensis* (i.e. Chinese White Dolphin) was recorded in December 2018 during the exclusion zone monitoring.

2.4

EM&A SITE INSPECTION

Site inspections were carried out on a weekly basis to monitor the implementation of proper environmental pollution control and mitigation measures under the Contract. In the reporting month, four (4) site inspections were carried out on 5, 12, 19 and 27 December 2018.

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

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

| Inspection Date | Observations | Recommendations/ Remarks |
|------------------|--|---|
| 5 December 2018 | <p>Works Area – Portion N-C</p> <ul style="list-style-type: none"> Chemical label should be provided for oil drums. <p>Works Area – Portion N-A</p> <ul style="list-style-type: none"> Accumulated waste in the waste skip should be removed. Drip tray and chemical label should be provided for the chemical containers. <p>Works Area – Portion S-B</p> <ul style="list-style-type: none"> Rubbish in the drainage channel should be cleared. | <p>Works Area – Portion N-C</p> <ul style="list-style-type: none"> The Contractor was reminded to provide chemical label for the oil drums. <p>Works Area – Portion N-A</p> <ul style="list-style-type: none"> The Contractor was reminded to remove accumulated waste in the waste skip. The Contractor was reminded to provide drip tray and chemical label for the chemical containers. <p>Works Area – Portion S-B</p> <ul style="list-style-type: none"> The Contractor was reminded to clear the rubbish in the drainage channel. |
| 12 December 2018 | <p>Works Area – Portion S-A</p> <ul style="list-style-type: none"> Drip tray should be provided for the chemical containers. | <p>Works Area – Portion S-A</p> <ul style="list-style-type: none"> The Contractor was reminded to provide drip tray for the chemical containers. |
| 19 December 2018 | <p>Works Area – Portion S-B</p> <ul style="list-style-type: none"> Drip tray should be provided for the chemical containers. <p>Works Area – Portion N-C</p> <ul style="list-style-type: none"> Water discharge should be diverted to the drainage system. <p>Works Area – Portion N-A</p> <ul style="list-style-type: none"> Drip tray should be provided for the chemical containers. | <p>Works Area – Portion S-B</p> <ul style="list-style-type: none"> The Contractor was reminded to provide drip tray for the chemical containers. <p>Works Area – Portion N-C</p> <ul style="list-style-type: none"> The Contractor was reminded to divert the water discharge to the drainage system. <p>Works Area – Portion N-A</p> <ul style="list-style-type: none"> The Contractor was reminded to provide drip tray for the chemical containers. |
| 27 December 2018 | <p>No Environmental Observation was recorded during the site audit.</p> <p>Reminder from the SOR</p> <p>Works Area - Portion N-A</p> <ol style="list-style-type: none"> Stagnant water in the drip tray should be removed. <p>Works Area - Portion S-A</p> <ol style="list-style-type: none"> Stagnant water should be removed. | <p>No Environmental Observation was recorded during the site audit.</p> <p>Reminder from the SOR</p> <p>Works Area - Portion N-A</p> <ol style="list-style-type: none"> The Contractor was reminded to remove the stagnant water in the drip tray. <p>Works Area - Portion S-A</p> <ol style="list-style-type: none"> The Contractor was reminded to remove the stagnant water. |

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

2.5 WASTE MANAGEMENT STATUS

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

Wastes generated during this reporting period included mainly construction wastes (inert and non-inert). Reference has been made to the waste flow table prepared by the Contractor (*Appendix L*). The quantities of different types of wastes are summarized in *Table 2.10*.

Table 2.10 Quantities of Different Waste Generated in the Reporting Month

| Month/Year | Inert Construction Waste ^(a) (tonnes) | Inert Construction Waste Re-used (tonnes) | Non-inert Construction Waste ^(b) (tonnes) | Recyclable Materials ^(c) (kg) | Chemical Wastes (kg) | Marine Sediment (m ³) | | |
|---------------|--|---|--|--|----------------------|-----------------------------------|---|-------------|
| | | | | | | Category L | Category M (M _p & M _f) | Mixed (L+M) |
| December 2018 | 146,997 | 137,101 | 519 | 213,450 | 0 | 0 | 0 | 0 |

Notes:

(a) Inert construction wastes include hard rock and large broken concrete, and materials disposed as public fill.

(b) Non-inert construction wastes include general refuse disposed at landfill.

(c) Recyclable materials include metals, paper, cardboard, plastics, timber and others.

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

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

2.6 ENVIRONMENTAL LICENSES AND PERMITS

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

Table 2.11 Summary of Environmental Licensing and Permit Status

| License/ Permit | License or Permit No. | Date of Issue | Date of Expiry | License/ Permit Holder | Remarks |
|-------------------------------------|-----------------------|------------------|-------------------------|------------------------|--|
| Environmental Permit | EP-354/2009/D | 13 March 2015 | Throughout the Contract | HyD | Application for VEP on 3 March 2015 to supersede EP-354/2009/C |
| Construction Dust Notification | 363510 | 19 August 2013 | Throughout the Contract | DBJV | Northern Landfall |
| Construction Dust Notification | 403620 | 10 June 2016 | Throughout the Contract | DBJV | Southern Landfall |
| Chemical Waste Registration | 5213-422-D2516-02 | 18 January 2017 | Throughout the Contract | DBJV | Northern Landfall |
| Chemical Waste Registration | 5213-951-D2591-01 | 25 May 2016 | Throughout the Contract | DBJV | Southern Landfall |
| Construction Waste Disposal Account | 7018108 | 28 August 2013 | Throughout the Contract | DBJV | Waste disposal in Contract No. HY/2012/08 |
| Construction Waste Disposal Account | 7021715 | 18 October 2018 | 17 January 2019 | DBJV | Vessel Disposal |
| Waste Water Discharge License | WT00019248-2014 | 5 June 2014 | 30 June 2019 | DBJV | For site Portion N6 and Reclamation Area E |
| Waste Water Discharge License | WT00031435-2018 | 2 August 2018 | 31 August 2023 | DBJV | Southern Landfall |
| Marine Dumping Permit | EP/MD/19-063 | 19 November 2018 | 18 May 2019 | DBJV | Type 1 (Open Sea Disposal) |
| Marine Dumping Permit | EP/MD/19-057 | 5 November 2018 | 4 December 2018 | DBJV | Type 1 (Dedicated site) and Type 2 (Confined Marine Disposal) |
| Marine Dumping Permit | EP/MD/19-015 | 5 September 2018 | 4 March 2019 | DBJV | Catepillar Area |
| Construction Noise Permit | GW-RW0344-18 | 20 August 2018 | 19 February 2019 | DBJV | WA23 @ Tsing Yi |
| Construction Noise Permit | GW-RS0598-18 | 15 July 2018 | 14 January 2019 | DBJV | Southern Landfall |
| Construction Noise Permit | GW-RW0406-18 | 16 October 2018 | 15 April 2019 | DBJV | Urmston Road in front of Pillar Point |
| Construction Noise Permit | GW-RS0966-18 | 26 October 2018 | 14 April 2019 | DBJV | Southern Landfall |

Notes:

HyD = Highways Department

DBJV = Dragages - Bouygues Joint Venture

VEP = Variation of Environmental Permit

2.7 *IMPLEMENTATION STATUS OF ENVIRONMENTAL MITIGATION MEASURES*

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

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

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

One (1) Action Level exceedance of 1-hour TSP was recorded at ASR1 on 9 December 2018. One (1) Action Level exceedance of 1-hour TSP was recorded at ASR1 on 12 December 2018. One (1) Action Level exceedance of 1-hour TSP was recorded at ASR6 on 18 December 2018. Investigation reports are provided in *Appendix K*.

Cumulative statistics are provided in *Appendix K*.

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

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

No environmental complaint was received in this reporting period.

No environmental summons was received in this reporting period.

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

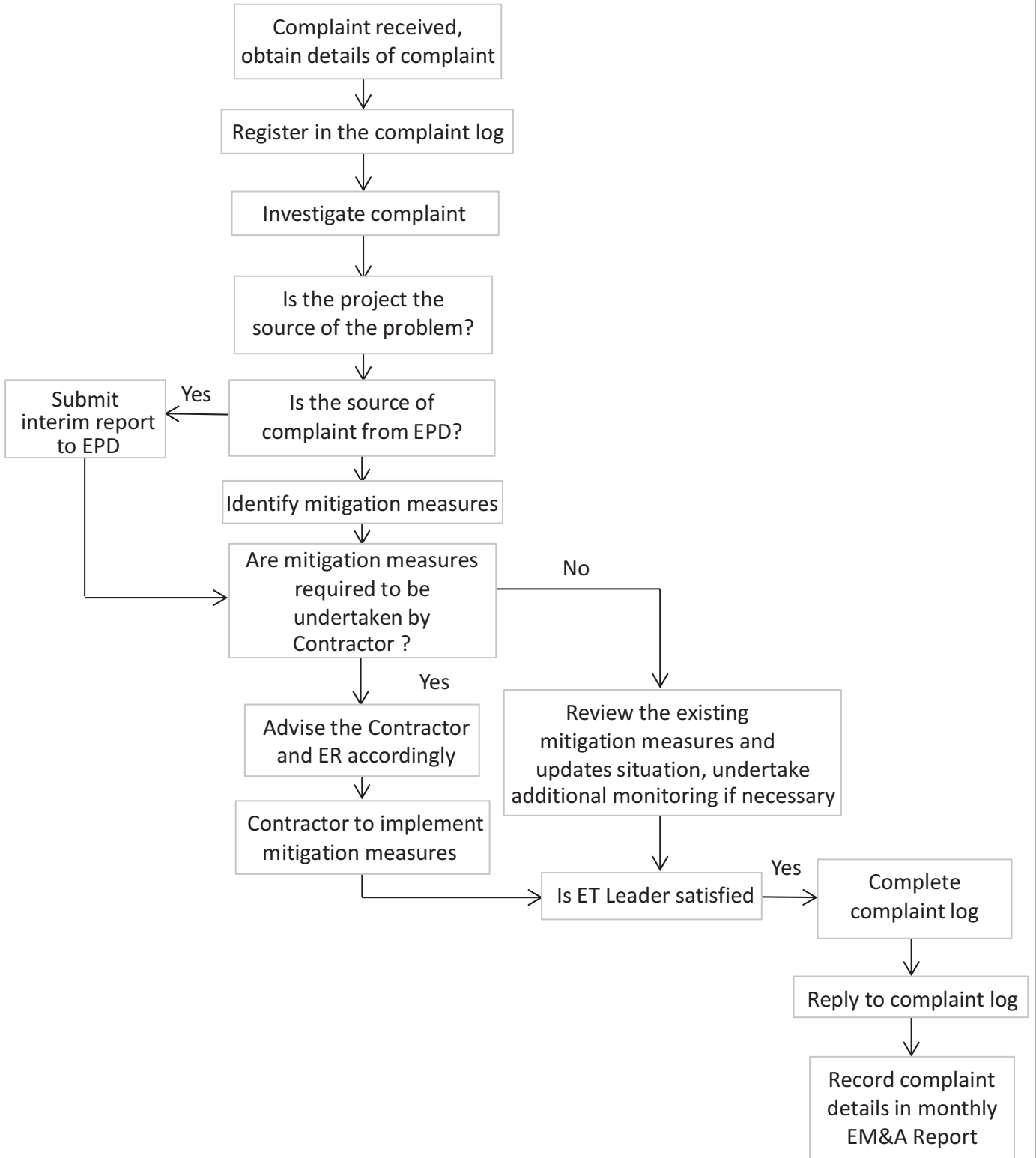


Figure 2.4

Environmental Complaint Handling Procedure

3 FUTURE KEY ISSUES

3.1 CONSTRUCTION ACTIVITIES FOR THE COMING MONTH

As informed by the Contractor, the major works for the Project in January 2019 are summarized in *Table 3.1*.

Table 3.1 Construction Works to Be Undertaken in the Coming Month

| Works to be undertaken |
|---|
| <i>Land-based Works</i> |
| <ul style="list-style-type: none">• Construction of Cross Passage Tympanum – TBM tunnel;• Cross Passage Construction by Pipe Jacking – TBM tunnel;• Cross Passage Lining Installation – TBM Tunnel;• Parapet wall and fireboard Installation – TBM Tunnel• Corbel & OVHD Construction – TBM Tunnel;• Construction of RC structure – Portion N-A• Bulk Excavation – Portion S-C; and• Construction of Ventilation building– Portion S-A |
| <i>Marine-based Works</i> |
| <ul style="list-style-type: none">• Sloping seawall construction – Portion S-B |

3.2 KEY ISSUES FOR THE COMING MONTH

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

3.3 MONITORING SCHEDULE FOR THE COMING MONTH

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

4.1 CONCLUSIONS

This Sixty-second Monthly EM&A Report presents the findings of the EM&A activities undertaken during the period from 1 to 31 December 2018, in accordance with the Updated EM&A Manual and the requirements of EP-354/2009/D.

Air quality (including 1-hour TSP and 24-hour TSP) and dolphin monitoring were carried out in this reporting month.

One (1) Action Level exceedance of 1-hour TSP was recorded at ASR1 on 9 December 2018. One (1) Action Level exceedance of 1-hour TSP was recorded at ASR1 on 12 December 2018. One (1) Action Level exceedance of 1-hour TSP was recorded at ASR6 on 18 December 2018.

Two group of 6 Chinese White Dolphins sightings was recorded during the two sets of surveys in December 2018. All the dolphin sightings were made in NWL, while none was sighted in NEL. All dolphin sightings were made during on-effort search and on primary lines. The dolphin groups were not associated with any operating fishing vessel.

Environmental site inspection was carried out four (4) times in December 2018. Remedial actions recommended for the deficiencies identified during the site audits were properly implemented by the Contractor.

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

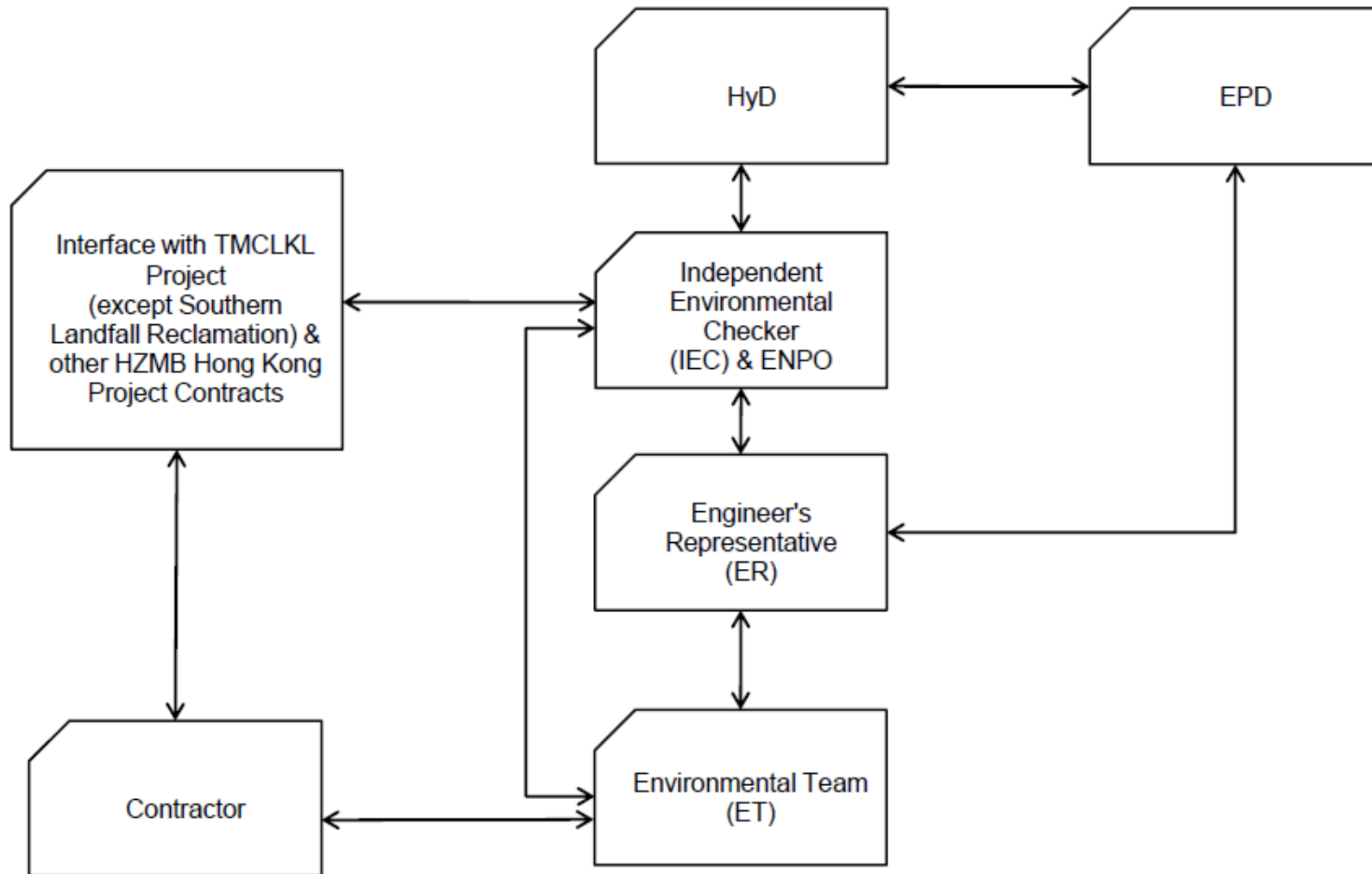
No environmental complaint was received in this reporting period.

No environmental summons was received in this reporting period.

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

Appendix A

Project Organization for Environmental Works



↔ Line of Communication

Appendix B

Construction Programme

TMCLKL Northern Connection Sub-sea Tunnel Section

Contract Key Dates

| | | |
|--|---|------------|
| [KD-2b] Stage 2b Completion - TSS between CP33 to CP13 | 0 | 15-Apr-19* |
|--|---|------------|

Portion Handover Dates

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

North Approach Ramp

Portion N12 Section

| | | | |
|---|----|-----------|-----------|
| NAR - N12 - Open Cut Section - Structure Start | 0 | 04-Jun-18 | |
| NAR - N12 - Open cut Section - Ramp Structure | 84 | 04-Jun-18 | 11-Sep-18 |
| NAR - N12 - Open Cut Excavation - Bay 2 | 12 | 20-Jun-18 | 04-Jul-18 |
| NAR - N12 - Bay 2 Structure | 36 | 06-Jul-18 | 16-Aug-18 |
| NAR - Sheet Pile at bay 6 & 7 | 18 | 20-Jun-18 | 11-Jul-18 |
| NAR - Dewatering well Installation (Bay 3 to 6) | 36 | 12-Jul-18 | 22-Aug-18 |
| NAR - Pumping Test (Bay 3 to 6) | 12 | 23-Aug-18 | 05-Sep-18 |
| NAR - Excavation & Strut Installtion (Bay 3 to 6) | 36 | 06-Sep-18 | 20-Oct-18 |
| NAR - Bay 3 - Base Slab + Retaining Wall | 48 | 20-Sep-18 | 17-Nov-18 |
| NAR - Bay 4 - Base Slab + Retaining Wall | 72 | 06-Oct-18 | 02-Jan-19 |
| NAR - Bay 5 - Base Slab + Retaining Wall | 72 | 22-Oct-18 | 16-Jan-19 |

Access Ramp Section

| | | | |
|--|----|-----------|-----------|
| NLS Temp Access Ramp - Closure | 0 | 04-Jun-18 | |
| NLS Temp Access Ramp - Concrete Block & Backfill | 18 | 04-Jun-18 | 25-Jun-18 |
| Pre-drilling - 4 G.I. | 12 | 26-Jun-18 | 10-Jul-18 |
| Pre-bored H-piles - 12p | 36 | 11-Jul-18 | 21-Aug-18 |
| Pre-bored H-piles - Pile Load Test | 36 | 22-Aug-18 | 04-Oct-18 |
| Pipe Pile Wall - Access Ramp Section | 36 | 11-Jul-18 | 21-Aug-18 |
| Pipe Pile Wall - TAM Grouting | 36 | 22-Aug-18 | 04-Oct-18 |
| Pump wells | 35 | 05-Oct-18 | 15-Nov-18 |
| Pump Test | 12 | 16-Nov-18 | 29-Nov-18 |
| Pipe Pile Wall Section - Excavation Start | 0 | 30-Nov-18 | |
| Excavation to S1 - 7,200 m3 | 12 | 30-Nov-18 | 13-Dec-18 |
| Strut & Waling Installtaion - S1 - 7 struts | 14 | 07-Dec-18 | 22-Dec-18 |
| Excavation to S2 - 9,650 m3 | 16 | 14-Dec-18 | 04-Jan-19 |
| Strut & Waling Installtaion - S2 - 7 struts | 15 | 24-Dec-18 | 12-Jan-19 |
| Excavation to FEL - 7,600 m3 | 14 | 05-Jan-19 | 21-Jan-19 |
| NAR Pipe Pile Section - Base Slab | 48 | 22-Jan-19 | 25-Mar-19 |
| NAR Pipe Pile Section - Strut S2 Removal | 24 | 12-Mar-19 | 09-Apr-19 |
| NAR Pipe Pile Section - Wall up to S1 | 48 | 26-Mar-19 | 27-May-19 |

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

| | | | |
|--|----|-----------|-----------|
| NLS Cell 3 Dwall removal (down to +2.5mPD) - 90m3 | 15 | 14-Dec-18 | 03-Jan-19 |
| Strut Installation and Excavation down to S2 | 12 | 04-Jan-19 | 17-Jan-19 |
| NLS Cell 3 Dwall removal (down to -3.0mPD) - 188m3 | 18 | 18-Jan-19 | 14-Feb-19 |
| Strut Installation and Excavation down to FWL | 12 | 15-Feb-19 | 28-Feb-19 |
| NLS Cell 3 Dwall removal (down to -6.0mPD) - 134m3 | 18 | 01-Mar-19 | 21-Mar-19 |
| NLS/NAR Stich structure - Base Slab & S2 removed | 36 | 19-Mar-19 | 04-May-19 |

North Ventilation Building

| | | | |
|--|----|-----------|-----------|
| North Vent Bldg - Roof Steel Structure | 48 | 04-Jun-18 | 31-Jul-18 |
|--|----|-----------|-----------|

North Launching Shaft

NLS Cell 1 False Tunnel

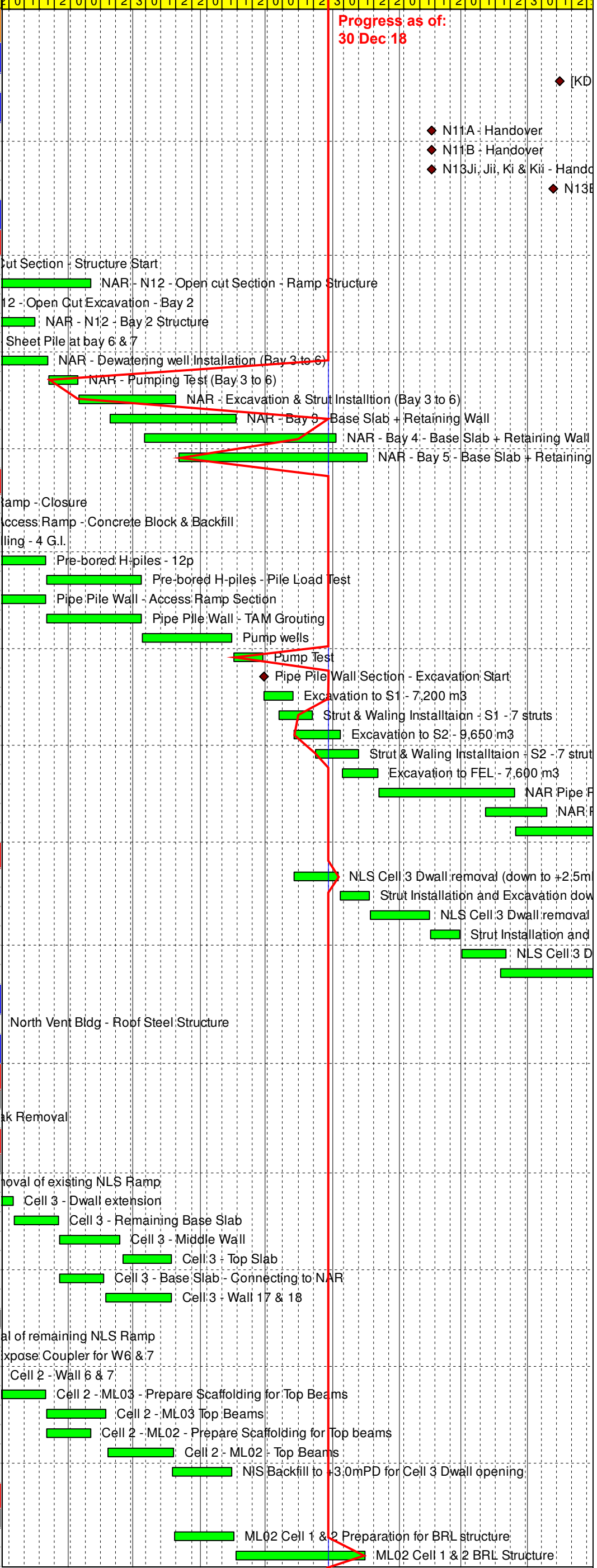
| | | | |
|-------------------------|----|-----------|-----------|
| ML03 | | | |
| Cell 1 - Alimak Removal | 15 | 06-Jun-18 | 23-Jun-18 |

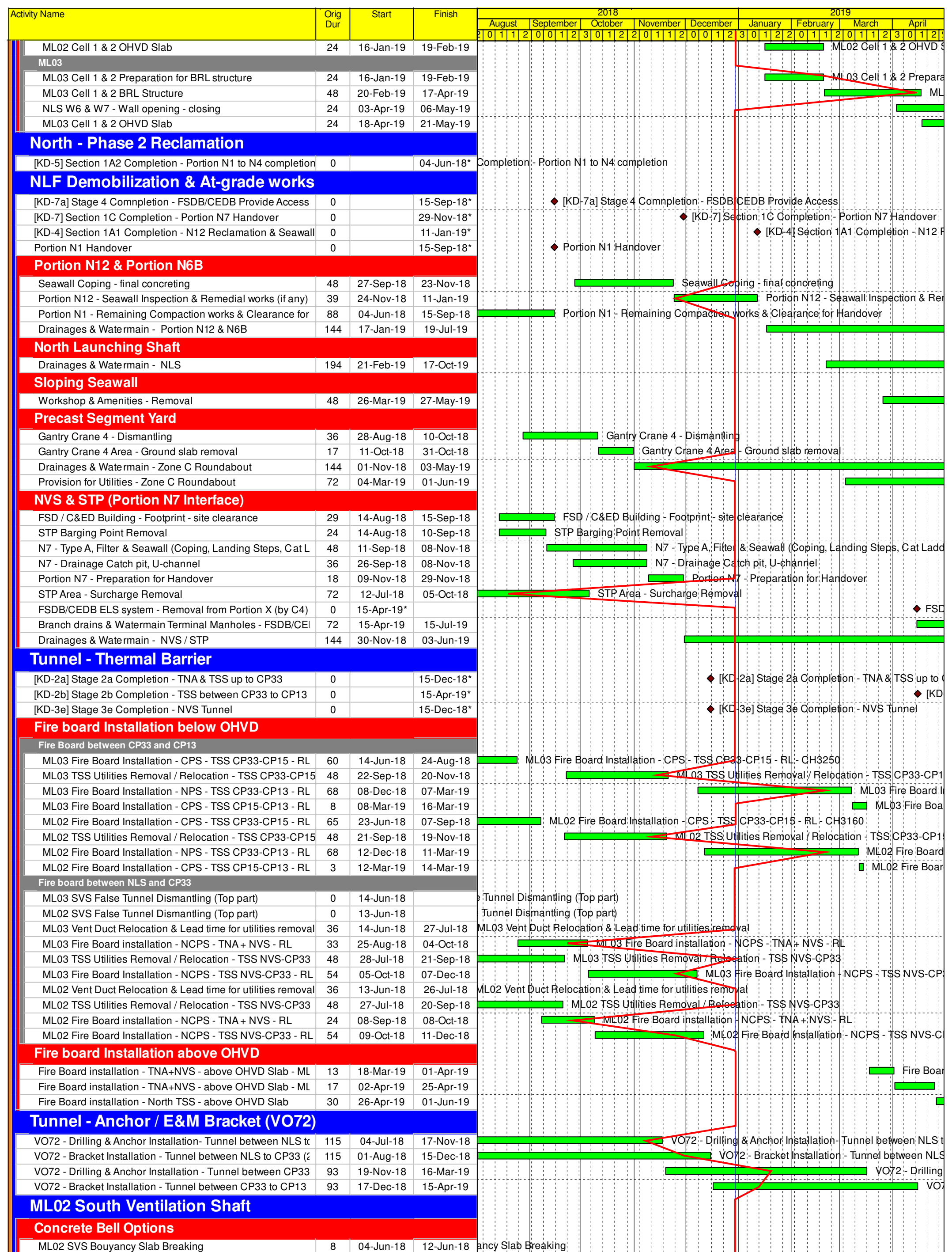
NLS Cell 1-3 Structure for Cell 3 Dwall opening

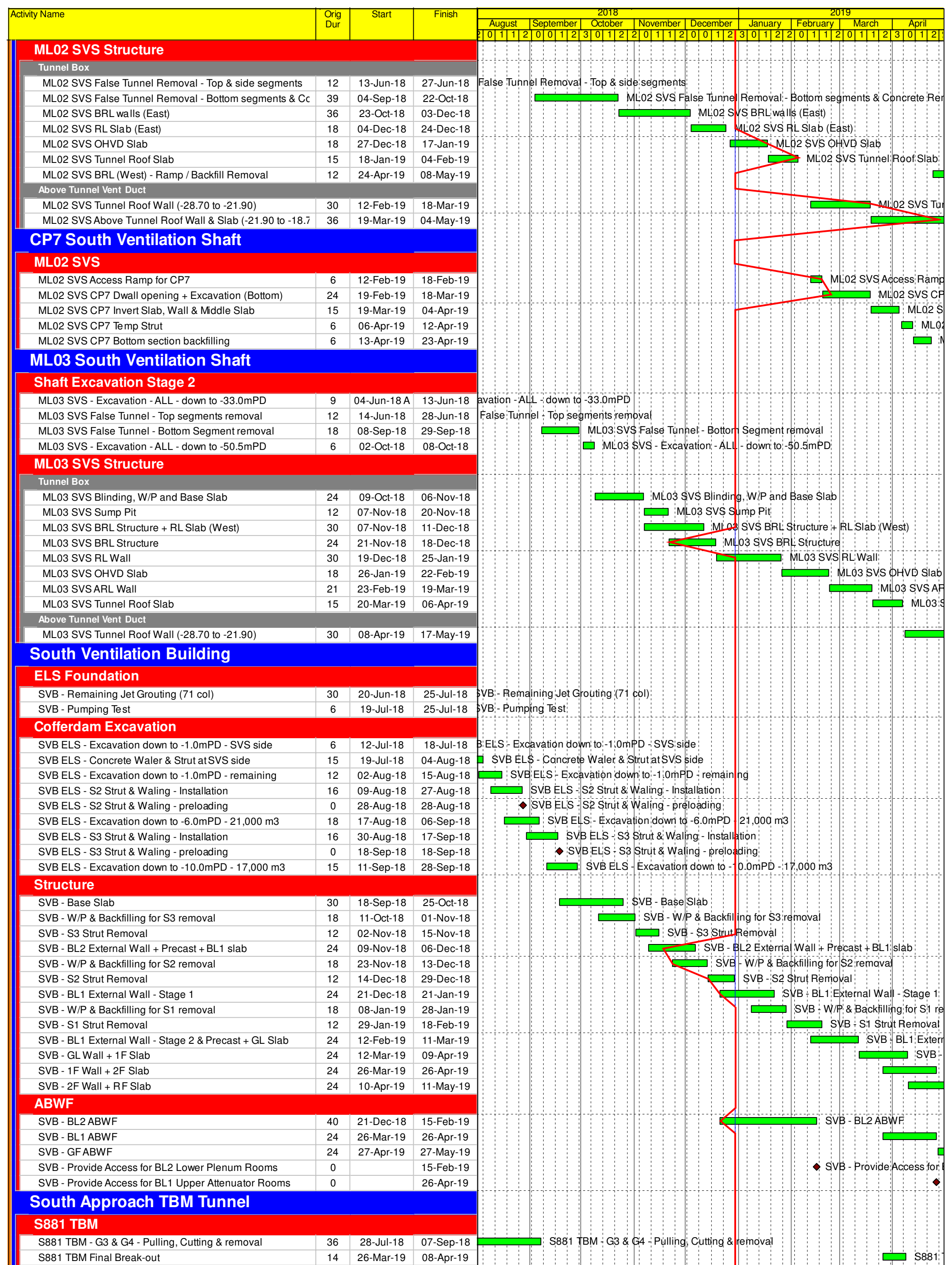
| | | | |
|---|----|-----------|-----------|
| Cell 3 | | | |
| Cell 3 - Removal of existing NLS Ramp | 18 | 04-Jun-18 | 25-Jun-18 |
| Cell 3 - Dwall extension | 35 | 26-Jun-18 | 06-Aug-18 |
| Cell 3 - Remaining Base Slab | 18 | 07-Aug-18 | 27-Aug-18 |
| Cell 3 - Middle Wall | 24 | 28-Aug-18 | 24-Sep-18 |
| Cell 3 - Top Slab | 18 | 26-Sep-18 | 18-Oct-18 |
| Cell 3 - Base Slab - Connecting to NAR | 18 | 28-Aug-18 | 17-Sep-18 |
| Cell 3 - Wall 17 & 18 | 24 | 18-Sep-18 | 18-Oct-18 |
| Cell 2 | | | |
| Cell 2 - Removal of remaining NLS Ramp | 12 | 04-Jun-18 | 16-Jun-18 |
| Cell 2 - Expose Coupler for W6 & 7 | 12 | 19-Jun-18 | 03-Jul-18 |
| Cell 2 - Wall 6 & 7 | 24 | 04-Jul-18 | 31-Jul-18 |
| Cell 2 - ML03 - Prepare Scaffolding for Top Beams | 18 | 01-Aug-18 | 21-Aug-18 |
| Cell 2 - ML03 Top Beams | 24 | 22-Aug-18 | 18-Sep-18 |
| Cell 2 - ML02 - Prepare Scaffolding for Top beams | 18 | 22-Aug-18 | 11-Sep-18 |
| Cell 2 - ML02 - Top Beams | 24 | 19-Sep-18 | 19-Oct-18 |
| NIS Backfill to +3.0mPD for Cell 3 Dwall opening | 24 | 19-Oct-18 | 15-Nov-18 |

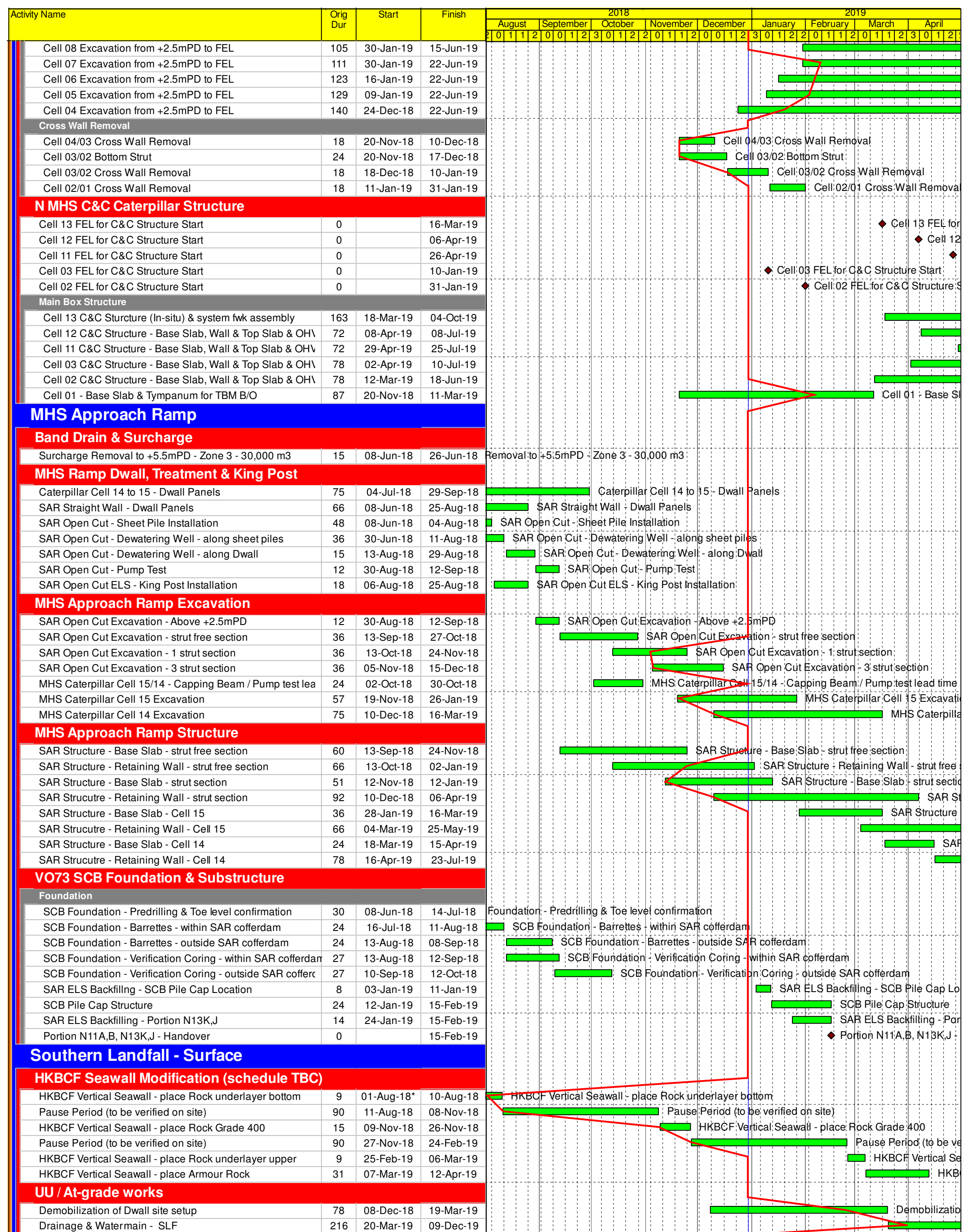
NLS Cell 1-3 Remaining Structure

| | | | |
|---|----|-----------|-----------|
| ML02 | | | |
| ML02 Cell 1 & 2 Preparation for BRL structure | 24 | 20-Oct-18 | 16-Nov-18 |
| ML02 Cell 1 & 2 BRL Structure | 48 | 17-Nov-18 | 15-Jan-19 |









Appendix C

Environmental Mitigation
and Enhancement Measure
Implementation Schedules

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

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

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

| EIA Reference | EM&A Manual Reference | Environmental Protection Measures | Location/ Timing | Implementation Agent | Relevant Standard or Requirement | Implementation Stages | | | Status * |
|----------------------------------|-----------------------|---|---|----------------------|----------------------------------|-----------------------|---|---|----------|
| | | | | | | D | C | O | |
| 4.8.1 | 3.8 | Materials having the potential to create dust shall not be loaded to a level higher than the side and tail boards, and shall be covered by a clean tarpaulin. The tarpaulin shall be properly secured and shall extend at least 300mm over the edges of the side and tail boards. | All areas / throughout construction period | Contractor | TMEIA Avoid dust generation | | Y | | ✓ |
| 4.8.1 | 3.8 | No earth, mud, debris, dust and the like shall be deposited on public roads. Wheel washing facility shall be usable prior to any earthworks excavation activity on the site. | All site exits / throughout construction period | Contractor | TMEIA Avoid dust | | Y | | ✓ |
| 4.8.1 | 3.8 | Areas of exposed soil shall be minimised to areas in which works have been completed shall be restored as soon as is practicable. | All exposed surfaces / throughout construction period | Contractor | TMEIA Avoid dust generation | | Y | | ✓ |
| 4.8.1 | 3.8 | All stockpiles of aggregate or spoil shall be enclosed or covered and water applied in dry or windy condition. | All areas / throughout construction period | Contractor | TMEIA Avoid dust generation | | Y | | ✓ |
| 4.11 | Section 3 | EM&A in the form of 1 hour and 24 hour dust monitoring and site audit. | All representative existing ASRs / throughout construction period | Contractor | EM&A Manual | | Y | | ✓ |
| WATER QUALITY | | | | | | | | | |
| <i>Marine Works (Sequence A)</i> | | | | | | | | | |
| 6.1 | Annex A | Construction of seawalls to be advanced by at least 200m before the main reclamation dredging and filling can commence. The protection by advanced seawall is a dynamic process depending on the progress of the construction activities and the stage when such protection could be realised is illustrated in Figure 6.2a and detailed in Appendix D6a. The part of the works where such measures can be undertaken for the majority of the time includes the following locations: - TM-CLKL northern reclamation; | All areas/ prior to dredging and backfilling works | Contractor | TM-EIAO | | Y | | ✓ |
| 6.1 | - | a maximum of 50% public fill to be used for all seawall filling below +2.5mPD for TM-CLKL southern and northern landfalls. | TM-CLKL seawall filling | Contractor | TM-EIAO | | Y | | ✓ |

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

| EIA Reference | EM&A Manual Reference | Environmental Protection Measures | Location/ Timing | Implementation Agent | Relevant Standard or Requirement | Implementation Stages | | | Status * |
|-----------------------------|-----------------------|---|--|----------------------|---|-----------------------|---|---|----------|
| | | | | | | D | C | O | |
| 6.1 | - | a maximum of 30% public fill to be used for reclamation filling below +2.5mPD for TM-CLKL southern landfall | TM-CLKL southern landfall reclamation filling | Contractor | TM-EIAO | | Y | | N/A |
| 6.1 | - | a maximum of 100% public fill to be used for reclamation filling below +2.5mPD for TM-CLKL northern landfall | TM-CLKL northern landfall reclamation filling | Contractor | TM-EIAO | | Y | | ✓ |
| 6.1 | - | Use of cage type silt curtains round all grab dredgers during the HKBCF, HKLR and TM-CLKL southern reclamation works. | All areas dredging works | Contractor | TM-EIAO | | Y | | ✓ |
| | Figure 1.1 of Annex C | A layer of floating type silt curtain will be applied when dredging and reclamation works are being undertaken at Portion N-a as shown in Figure 1.1 of Annex C of the EM&A Manual. | All areas/ through out marine works | Contractor | TM-EIAO | | Y | | ✓ |
| 6.1 | - | Trailer suction hopper dredgers shall not allow mud to overflow. | All areas/ throughout construction period | Contractor | Marine Fill Committee Guidelines. DASO permit conditions. | | Y | | ✓ |
| 6.1 | - | The use of Lean Material Overboard (LMOB) systems shall be prohibited. | All areas/ throughout construction period | Contractor | Marine Fill Committee Guidelines. DASO permit conditions. | | Y | | ✓ |
| 6.1 | Annex A | For other parts of the reclamation works construction of seawalls to be advanced by at least 200m before the main reclamation dredging and filling can commence. It should be noted that the protection by advanced seawall is a dynamic process depending on the progress of the construction activities and the stage when such protection could be realised is illustrated in Figure 6.2b and detailed in Appendices D6b. The part of the works where such measures can be undertaken for the majority of the time includes the following locations: - TM-CLKL northern reclamation; - Reclamation filling for Portion D of HKBCF; Reclamation filling for FSD berth of HKBCF; and | TM-CLKL northern landfall, Portion D of HKBCF and HKLR | Contractor | TM-EIAO | | Y | | ✓ |
| Figure 6.2b Appendix D6b | | | | | | | | | |

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

| EIA Reference | EM&A Manual Reference | Environmental Protection Measures | Location/ Timing | Implementation Agent | Relevant Standard or Requirement | Implementation Stages | | | Status * |
|-----------------------------|-----------------------|--|---|----------------------|---|-----------------------|---|---|----------|
| | | | | | | D | C | O | |
| | | - Reclamation dredging and filling for Portion 1 of HKLR; | | | | | | | |
| 6.1 | - | The filling material for the other parts of the works are the same as Sequence A; | All other areas/backfilling works | Contractor | TM-EIAO | | Y | | N/A |
| 6.1 | 5.7 | Cage type silt curtain (with steel enclosure) shall be used for grab dredgers working in the site of HKBCF and TM- CLKL southern reclamation. Cage type silt curtains will be applied round all grab dredgers at other works area. | HKBCF, HKLR and TM-CLKL grab dredging | Contractor | TM-EIAO | | Y | | ✓ |
| 6.1 | Annex A | A layer of floating type silt curtain will be applied around all works as defined in Appendix D6b. | All areas/ through out marine works | Contractor | TM-EIAO | | Y | | ✓ |
| 6.1 | - | TM-CLKL northern landfall: - Reclamation filling shall not proceed until at least 200m section of leading seawall at both the east and west sides of the reclamation are formed above +2.5 mPD, except for 100m gaps for marine access; | All areas/ through out marine works | Contractor | TM-EIAO | | Y | | ✓ |
| <i>General Marine Works</i> | | | | | | | | | |
| 6.1 | - | Use of TBM for the construction of the submarine tunnel. | Tunnel works / Construction phase | Contractor | TM-EIAO | | Y | | N/A |
| 6.1 | - | Export dredged spoils from NWWCZ. | All areas as much as possible / dredging activities | Contractor | DASO Permit conditions | | Y | | ✓ |
| 6.1 | - | Where public fill is proposed for filling below +2.5mPD, the fine content in the public fill will be controlled to 25% | All areas/ backfilling works | Contractor | TM-EIAO | | Y | | N/A |
| 6.1 | - | Where sand fill is proposed for filling below +2.5mPD, the fine content in the sand fill will be controlled to 5%. | All areas/ backfilling works | Contractor | TM-EIAO | | Y | | N/A |
| 6.1 | - | Mechanical grabs shall be designed and maintained to avoid spillage and should seal tightly while being lifted. | All areas/ throughout construction period | Contractor | Marine Fill Committee Guidelines. DASO permit conditions. | | Y | | ✓ |
| 6.1 | - | Barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material. | All areas/ throughout construction period | Contractor | Marine Fill Committee | | Y | | ✓ |

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

| EIA Reference | EM&A Manual Reference | Environmental Protection Measures | Location/ Timing | Implementation Agent | Relevant Standard or Requirement | Implementation Stages | | | Status * |
|---------------|-----------------------|--|---|----------------------|---|-----------------------|---|---|----------|
| | | | | | | D | C | O | |
| | | | | | Guidelines, DASO permit conditions. | | | | |
| 6.1 | - | Any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes. | All areas/ throughout construction period | Contractor | Marine Fill Committee Guidelines, DASO permit conditions. | | Y | | ✓ |
| 6.1 | - | Loading of barges and hoppers shall be controlled to prevent splashing of dredged material to the surrounding water. Barges or hoppers shall not be filled to a level which will cause overflow of materials or pollution of water during loading or transportation. | All areas/ throughout construction period | Contractor | Marine Fill Committee Guidelines, DASO permit conditions. | | Y | | ✓ |
| 6.1 | - | Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved. | All areas/ throughout construction period | Contractor | Marine Fill Committee Guidelines, DASO permit conditions. | | Y | | ✓ |
| 6.1 | - | Adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; | All areas/ throughout construction period | Contractor | Marine Fill Committee Guidelines, DASO permit conditions. | | Y | | N/A |
| 6.1 | - | All vessels shall be sized such that adequate clearance is maintained between vessels and the sea bed at all states of the tide to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash. | All areas/ throughout construction period | Contractor | Marine Fill Committee Guidelines, DASO permit conditions. | | Y | | N/A |
| 6.1 | - | The works shall not cause foam, oil, grease, litter or other objectionable matter to be present in the water within and adjacent to the works site. | All areas/ throughout construction period | Contractor | Marine Fill Committee Guidelines, DASO permit | | Y | | ✓ |

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

| EIA Reference | EM&A Manual Reference | Environmental Protection Measures | Location/ Timing | Implementation Agent | Relevant Standard or Requirement | Implementation Stages | | | Status * |
|-------------------|-----------------------|--|---|----------------------|----------------------------------|-----------------------|---|---|----------|
| | | | | | | D | C | O | |
| | | | | | conditions. | | | | |
| 6.1 | 5.2 | Silt curtain shall have proved effectiveness from the producer and shall be fully maintained throughout the works by the contractor. | All areas/ throughout construction period | Contractor | TM-EIAO | | Y | | ✓ |
| 6.1 | - | The daily maximum production rates shall not exceed those assumed in the water quality assessment. | All areas/ throughout construction period | Contractor | TM-EIAO | | Y | | ✓ |
| 6.1 | - | The dredging and filling works shall be scheduled to spread the works evenly over a working day. | All areas/ throughout construction period | Contractor | TM-EIAO | | Y | | ✓ |
| <i>Land Works</i> | | | | | | | | | |
| 6.1 | - | Wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters. | All areas/ throughout construction period | Contractor | TM-EIAO | | Y | | ✓ |
| 6.1 | - | Sewage effluent and discharges from on- site kitchen facilities shall be directed to Government sewer in accordance with the requirements of the WPCO or collected for disposal offsite. The use of soakaways shall be avoided. | All areas/ throughout construction period | Contractor | TM-EIAO | | Y | | ✓ |
| 6.1 | - | Storm drainage shall be directed to storm drains via adequately designed sand/silt removal facilities such as sand traps, silt traps and sediment basins. Channels, earth bunds or sand bag barriers should be provided on site to properly direct stormwater to such silt removal facilities. Catchpits and perimeter channels should be constructed in advance of site formation works and earthworks. | All areas/ throughout construction period | Contractor | TM-EIAO | | Y | | <> |
| 6.1 | - | Silt removal facilities, channels and manholes shall be maintained and any deposited silt and grit shall be removed regularly, including specifically at the onset of and after each rainstorm. | All areas/ throughout construction period | Contractor | TM-EIAO | | Y | | ✓ |
| 6.1 | - | Temporary access roads should be surfaced with crushed stone or gravel. | All areas/ throughout construction period | Contractor | TM-EIAO | | Y | | ✓ |
| 6.1 | - | Rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities. | All areas/ throughout construction period | Contractor | TM-EIAO | | Y | | ✓ |

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

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

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

| EIA Reference | EM&A Manual Reference | Environmental Protection Measures | Location/ Timing | Implementation Agent | Relevant Standard or Requirement | Implementation Stages | | | Status * |
|---------------------------------|-----------------------|---|--|-------------------------------|----------------------------------|-----------------------|---|---|----------|
| | | | | | | D | C | O | |
| 6.1 | - | Waste oil should be collected and stored for recycling or disposal, in accordance with the Waste Disposal Ordinance. | All areas/ throughout construction period | Contractor | TM-EIAO Waste Disposal Ordinance | | Y | | ✓ |
| 6.1 | - | All fuel tanks and chemical storage areas should be provided with locks and be sited on sealed areas. The storage areas should be surrounded by bunds with a capacity equal to 110% of the storage capacity of the largest tank. | All areas/ throughout construction period | Contractor | TM-EIAO | | Y | | ✓ |
| 6.1 | - | Surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system. | All areas/ throughout construction period | Contractor | TM-EIAO | | Y | | ✓ |
| 6.1 | - | Roadside gullies to trap silt and grit shall be provided prior to discharging the stormwater into the marine environment. The sumps will be maintained and cleaned at regular intervals. | Roadside/design and operation | Design Consultant/ Contractor | TM-EIAO | Y | | Y | ✓ |
| 6.1 | Section 5 | All construction works shall be subject to routine audit to ensure implementation of all EIA recommendations and good working practice. | All areas/ throughout construction period | Contractor | EM&A Manual | | Y | | ✓ |
| Water Quality Monitoring | | | | | | | | | |
| 6.1 | Section 5 | Water quality monitoring shall be undertaken for suspended solids, turbidity, and dissolved oxygen. Nutrients and metal parameters shall also be measured for Mf sediment operations (only HKBCF and HKLR required handling of Mf sediment) during baseline, backfilling and post construction period. One year operation phase water quality monitoring at designated stations. | Designated monitoring stations as defined in EM&A Manual, Section 5/ Before, throughout marine construction period, post construction and monthly operational phase water quality monitoring for a year. | Contractor | EM&A Manual | | Y | Y | N/A |
| ECOLOGY | | | | | | | | | |
| 8.14 | 6.3 | Specification for and implement pre, during and post construction dolphin abundance monitoring. | All Areas/Detailed Design/ during construction works/post construction | Design Consultant/ Contractor | TMEIA | Y | Y | Y | ✓ |
| 8.14 | 6.3,6.5 | Specification and implementation of 250m dolphin exclusion zone. | All dredging and reclamation areas/Detailed Design/ during all reclamation and dredging works | Design Consultant/ Contractor | TMEIA | Y | Y | | ✓ |

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

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

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

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

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

| EIA Reference | EM&A Manual Reference | Environmental Protection Measures | Location/ Timing | Implementation Agent | Relevant Standard or Requirement | Implementation Stages | | | Status * |
|---------------|-----------------------|--|--|----------------------|---|-----------------------|---|---|----------|
| | | | | | | D | C | O | |
| | | | | | Provisions) Ordinance (Cap 28); Waste Disposal Ordinance (Cap 354); Dumping at Sea Ordinance (Cap 466); Water Pollution Control Ordinance. | | | | |
| 12.6 | 8.1 | Training shall be provided to workers about the concepts of site cleanliness and appropriate waste management procedures including waste reduction, reuse and recycling. | Contract Mobilisation | Contractor | TMEIA | | Y | | ✓ |
| 12.6 | 8.1 | The extent of cutting operation should be optimised where possible. Earth retaining structures and bored pile walls should be proposed to minimise the extent of cutting. | All areas / throughout construction period | Contractor | TMEIA | | Y | | ✓ |
| 12.6 | 8.1 | The surplus surcharge should be transferred to a fill bank | Reclamation areas / after surcharge works | Contractor | TMEIA | | Y | | N/A |
| 12.6 | 8.1 | Rock armour from the existing seawall should be reused on the new sloping seawall as far as possible | All areas / throughout construction period | Contractor | TMEIA | | Y | | ✓ |
| 12.6 | 8.1 | The site and surroundings shall be kept tidy and litter free. | All areas / throughout construction period | Contractor | TMEIA | | Y | | <> |
| 12.6 | 8.1 | No waste shall be burnt on site. | All areas / throughout construction period | Contractor | TMEIA | | Y | | ✓ |
| 12.6 | 8.1 | Provisions to be made in contract documents to allow and promote the use of recycled aggregates where appropriate. | Detailed Design | Design Consultant | TMEIA | Y | | | ✓ |
| 12.6 | 8.1 | The Contractor shall be prohibited from disposing of C&D materials at any sensitive locations. The Contractor should propose the final disposal sites in the EMP and WMP for approval before implementation. | All areas / throughout construction period | Contractor | TMEIA | | Y | | ✓ |
| 12.6 | 8.1 | Stockpiled material shall be covered by tarpaulin and /or watered as appropriate to prevent windblown dust/ surface run off. | All areas / throughout construction period | Contractor | TMEIA | | Y | | ✓ |

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

| EIA Reference | EM&A Manual Reference | Environmental Protection Measures | Location/ Timing | Implementation Agent | Relevant Standard or Requirement | Implementation Stages | | | Status * |
|---------------|-----------------------|---|---|----------------------|----------------------------------|-----------------------|---|---|----------|
| | | | | | | D | C | O | |
| 12.6 | 8.1 | Excavated material in trucks shall be covered by tarpaulins to reduce the potential for spillage and dust generation. | All areas / throughout construction period | Contractor | TMEIA | | Y | | ✓ |
| 12.6 | 8.1 | Wheel washing facilities shall be used by all trucks leaving the site to prevent transfer of mud onto public roads. | All areas / throughout construction period | Contractor | TMEIA | | Y | | ✓ |
| 12.6 | 8.1 | Dredged marine mud shall be disposed of in a gazetted marine disposal ground under the requirements of the Dumping at Seas Ordinance. | Reclamation areas / throughout dredging works | Contractor | TMEIA | | Y | | ✓ |
| 12.6 | 8.1 | Standard formwork or pre-fabrication should be used as far as practicable so as to minimise the C&D materials arising. The use of more durable formwork/plastic facing for construction works should be considered. The use of wooden hoardings should be avoided and metal hoarding should be used to facilitate recycling. Purchasing of construction materials should avoid over-ordering and wastage. | All areas / throughout construction period | Contractor | TMEIA | | Y | | ✓ |
| 12.6 | 8.1 | The Contractor should recycle as many C&D materials (this is a waste section) as possible on-site. The public fill and C&D waste should be segregated and stored in separate containers or skips to facilitate the reuse or recycling of materials and proper disposal. Where practicable, the concrete and masonry should be crushed and used as fill materials. Steel reinforcement bar should be collected for use by scrap steel mills. Different areas of the sites should be considered for segregation and storage activities. | All areas / throughout construction period | Contractor | TMEIA | | Y | | ✓ |
| 12.6 | 8.1 | All falsework will be steel instead of wood. | All areas / throughout construction period | Contractor | TMEIA | | Y | | ✓ |
| 12.6 | 8.1 | Chemical waste producers should register with the EPD. Chemical waste should be handled in accordance with the Code of Practice on the Packaging, Handling and Storage of Chemical Wastes as follows: f suitable for the substance to be held, | All areas / throughout construction period | Contractor | TMEIA | | Y | | <> |

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

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

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

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

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

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

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

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

*** Remarks:**

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

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

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

Appendix D

Summary of Action and Limit Levels

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

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

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

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

Notes:

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

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

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

Appendix E

Copies of Calibration
Certificates for Air
Quality Monitoring

High-Volume TSP Sampler
5-Point Calibration Record

Location : ASR 5
 Calibrated by : P.F.Yeung
 Date : 09/10/2018

Sampler

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

Calibration Orifice and Standard Calibration Relationship

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

Standard Condition

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

Calibration Condition

Pa (hpa) : 1015
 Ta(K) : 298

| Resistance Plate | dH [green liquid] (inch water) | Z | X=Qstd (cubic meter/min) | IC (chart) | Y (corrected) |
|------------------|-----------------------------------|-------|-----------------------------|---------------|------------------|
| 1 18 holes | 10.8 | 3.290 | 1.610 | 54 | 54.05 |
| 2 13 holes | 9.0 | 3.003 | 1.470 | 50 | 50.05 |
| 3 10 holes | 6.8 | 2.610 | 1.279 | 45 | 45.04 |
| 4 7 holes | 4.4 | 2.100 | 1.030 | 37 | 37.04 |
| 5 5 holes | 2.4 | 1.551 | 0.762 | 27 | 27.03 |

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

Sampler Calibration Relationship (Linear Regression)

Slope(m): 31.657 Intercept(b): 3.704 Correlation Coefficient(r): 0.9975

Checked by: Magnum Fan

Date: 12/10/2018

High-Volume TSP Sampler
5-Point Calibration Record

Location : ASR10
 Calibrated by : P.F.Yeung
 Date : 09/10/2018

Sampler

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

Calibration Orifice and Standard Calibration Relationship

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

Standard Condition

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

Calibration Condition

Pa (hpa) : 1015
 Ta(K) : 298

| Resistance Plate | dH [green liquid] (inch water) | Z | X=Qstd (cubic meter/min) | IC (chart) | Y (corrected) |
|------------------|-----------------------------------|-------|-----------------------------|---------------|------------------|
| 1 18 holes | 10.2 | 3.197 | 1.564 | 52 | 52.05 |
| 2 13 holes | 8.6 | 2.935 | 1.437 | 48 | 48.05 |
| 3 10 holes | 6.2 | 2.492 | 1.221 | 44 | 44.04 |
| 4 7 holes | 4.2 | 2.051 | 1.006 | 38 | 38.04 |
| 5 5 holes | 2.6 | 1.614 | 0.793 | 30 | 30.03 |

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

Sampler Calibration Relationship (Linear Regression)

Slope(m): 27.443 Intercept(b): 9.391 Correlation Coefficient(r): 0.9928

Checked by: Magnum Fan

Date: 12/10/2018

High-Volume TSP Sampler
5-Point Calibration Record

Location : AQMS1
 Calibrated by : P.F.Yeung
 Date : 09/10/2018

Sampler

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

Calibration Orifice and Standard Calibration Relationship

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

Standard Condition

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

Calibration Condition

Pa (hpa) : 1015
 Ta(K) : 298

| Resistance Plate | dH [green liquid] (inch water) | Z | X=Qstd (cubic meter/min) | IC (chart) | Y (corrected) |
|------------------|-----------------------------------|-------|-----------------------------|---------------|------------------|
| 1 18 holes | 11.6 | 3.409 | 1.668 | 54 | 54.05 |
| 2 13 holes | 9.0 | 3.003 | 1.470 | 49 | 49.05 |
| 3 10 holes | 6.7 | 2.591 | 1.269 | 43 | 43.04 |
| 4 7 holes | 4.6 | 2.147 | 1.053 | 35 | 35.03 |
| 5 5 holes | 2.5 | 1.583 | 0.778 | 27 | 27.03 |

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

Sampler Calibration Relationship (Linear Regression)

Slope(m): 31.016 Intercept(b): 2.949 Correlation Coefficient(r): 0.9984

Checked by: Magnum Fan

Date: 12/10/2018

High-Volume TSP Sampler
5-Point Calibration Record

Location : ASR 1
 Calibrated by : P.F.Yeung
 Date : 09/10/2018

Sampler

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

Calibration Orifice and Standard Calibration Relationship

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

Standard Condition

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

Calibration Condition

Pa (hpa) : 1015
 Ta(K) : 298

| Resistance Plate | dH [green liquid] (inch water) | Z | X=Qstd (cubic meter/min) | IC (chart) | Y (corrected) |
|------------------|-----------------------------------|-------|-----------------------------|---------------|------------------|
| 1 18 holes | 11.5 | 3.395 | 1.661 | 54 | 54.05 |
| 2 13 holes | 9.0 | 3.003 | 1.470 | 49 | 49.05 |
| 3 10 holes | 6.8 | 2.610 | 1.279 | 43 | 43.04 |
| 4 7 holes | 4.5 | 2.123 | 1.041 | 38 | 38.04 |
| 5 5 holes | 2.7 | 1.645 | 0.808 | 30 | 30.03 |

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

Sampler Calibration Relationship (Linear Regression)

Slope(m): 27.681 Intercept(b): 8.194 Correlation Coefficient(r): 0.9977

Checked by: Magnum Fan

Date: 12/10/2018

High-Volume TSP Sampler
5-Point Calibration Record

Location : ASR 6
 Calibrated by : P.F.Yeung
 Date : 09/10/2018

Sampler

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

Calibration Orifice and Standard Calibration Relationship

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

Standard Condition

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

Calibration Condition

Pa (hpa) : 1015
 Ta(K) : 298

| Resistance Plate | dH [green liquid] (inch water) | Z | X=Qstd (cubic meter/min) | IC (chart) | Y (corrected) |
|------------------|-----------------------------------|-------|-----------------------------|---------------|------------------|
| 1 18 holes | 12.0 | 3.468 | 1.696 | 52 | 52.05 |
| 2 13 holes | 10.2 | 3.197 | 1.564 | 47 | 47.04 |
| 3 10 holes | 7.6 | 2.760 | 1.351 | 42 | 42.04 |
| 4 7 holes | 4.6 | 2.147 | 1.053 | 36 | 36.04 |
| 5 5 holes | 2.5 | 1.583 | 0.778 | 25 | 25.02 |

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

Sampler Calibration Relationship (Linear Regression)

Slope(m): 27.670 Intercept(b): 4.787 Correlation Coefficient(r): 0.9916

Checked by: Magnum Fan

Date: 12/10/2018

High-Volume TSP Sampler
5-Point Calibration Record

Location : ASR 5
 Calibrated by : P.F.Yeung
 Date : 09/12/2018

Sampler

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

Calibration Orifice and Standard Calibration Relationship

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

Standard Condition

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

Calibration Condition

Pa (hpa) : 1021
 Ta(K) : 289

| Resistance Plate | dH [green liquid] (inch water) | Z | X=Qstd (cubic meter/min) | IC (chart) | Y (corrected) |
|------------------|-----------------------------------|-------|-----------------------------|---------------|------------------|
| 1 18 holes | 12.0 | 3.531 | 1.727 | 55 | 56.07 |
| 2 13 holes | 9.3 | 3.109 | 1.521 | 50 | 50.97 |
| 3 10 holes | 7.6 | 2.810 | 1.376 | 45 | 45.88 |
| 4 7 holes | 4.9 | 2.257 | 1.106 | 37 | 37.72 |
| 5 5 holes | 3.2 | 1.824 | 0.895 | 29 | 29.56 |

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

Sampler Calibration Relationship (Linear Regression)

Slope(m): 31.906 Intercept(b): 1.755 Correlation Coefficient(r): 0.9976

Checked by: Magnum Fan

Date: 11/12/2018

High-Volume TSP Sampler
5-Point Calibration Record

Location : ASR10
 Calibrated by : P.F.Yeung
 Date : 09/12/2018

Sampler

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

Calibration Orifice and Standard Calibration Relationship

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

Standard Condition

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

Calibration Condition

Pa (hpa) : 1021
 Ta(K) : 289

| Resistance Plate | dH [green liquid] (inch water) | Z | X=Qstd (cubic meter/min) | IC (chart) | Y (corrected) |
|------------------|-----------------------------------|-------|-----------------------------|---------------|------------------|
| 1 18 holes | 10.6 | 3.319 | 1.624 | 54 | 55.05 |
| 2 13 holes | 8.7 | 3.007 | 1.472 | 50 | 50.97 |
| 3 10 holes | 6.4 | 2.579 | 1.263 | 46 | 46.89 |
| 4 7 holes | 4.2 | 2.089 | 1.025 | 38 | 38.74 |
| 5 5 holes | 2.3 | 1.546 | 0.760 | 32 | 32.62 |

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

Sampler Calibration Relationship (Linear Regression)

Slope(m): 26.306 Intercept(b): 12.533 Correlation Coefficient(r): 0.9971

Checked by: Magnum Fan

Date: 11/12/2018

High-Volume TSP Sampler
5-Point Calibration Record

Location : AQMS1
 Calibrated by : P.F.Yeung
 Date : 09/12/2018

Sampler

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

Calibration Orifice and Standard Calibration Relationship

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

Standard Condition

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

Calibration Condition

Pa (hpa) : 1021
 Ta(K) : 289

| Resistance Plate | dH [green liquid] (inch water) | Z | X=Qstd (cubic meter/min) | IC (chart) | Y (corrected) |
|------------------|-----------------------------------|-------|-----------------------------|---------------|------------------|
| 1 18 holes | 12.8 | 3.647 | 1.784 | 50 | 50.97 |
| 2 13 holes | 9.6 | 3.159 | 1.546 | 45 | 45.88 |
| 3 10 holes | 7.5 | 2.792 | 1.367 | 40 | 40.78 |
| 4 7 holes | 4.8 | 2.234 | 1.095 | 34 | 34.66 |
| 5 5 holes | 2.8 | 1.706 | 0.838 | 28 | 28.54 |

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

Sampler Calibration Relationship (Linear Regression)

Slope(m): 23.896 Intercept(b): 8.483 Correlation Coefficient(r): 0.9984

Checked by: Magnum Fan

Date: 11/12/2018

High-Volume TSP Sampler
5-Point Calibration Record

Location : ASR 1
 Calibrated by : P.F.Yeung
 Date : 09/12/2018

Sampler

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

Calibration Orifice and Standard Calibration Relationship

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

Standard Condition

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

Calibration Condition

Pa (hpa) : 1021
 Ta(K) : 289

| Resistance Plate | dH [green liquid] (inch water) | Z | X=Qstd (cubic meter/min) | IC (chart) | Y (corrected) |
|------------------|-----------------------------------|-------|-----------------------------|---------------|------------------|
| 1 18 holes | 13.2 | 3.704 | 1.811 | 58 | 59.13 |
| 2 13 holes | 9.4 | 3.126 | 1.530 | 52 | 53.01 |
| 3 10 holes | 7.6 | 2.810 | 1.376 | 47 | 47.91 |
| 4 7 holes | 4.8 | 2.234 | 1.095 | 40 | 40.78 |
| 5 5 holes | 3.0 | 1.766 | 0.867 | 33 | 33.64 |

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

Sampler Calibration Relationship (Linear Regression)

Slope(m): 27.123 Intercept(b): 10.663 Correlation Coefficient(r): 0.9980

Checked by: Magnum Fan

Date: 11/12/2018

High-Volume TSP Sampler
5-Point Calibration Record

Location : ASR 6
 Calibrated by : P.F.Yeung
 Date : 09/12/2018

Sampler

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

Calibration Orifice and Standard Calibration Relationship

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

Standard Condition

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

Calibration Condition

Pa (hpa) : 1021
 Ta(K) : 289

| Resistance Plate | dH [green liquid] (inch water) | Z | X=Qstd (cubic meter/min) | IC (chart) | Y (corrected) |
|------------------|-----------------------------------|-------|-----------------------------|---------------|------------------|
| 1 18 holes | 12.5 | 3.604 | 1.763 | 60 | 61.17 |
| 2 13 holes | 10.2 | 3.256 | 1.593 | 53 | 54.03 |
| 3 10 holes | 6.7 | 2.639 | 1.292 | 46 | 46.89 |
| 4 7 holes | 4.8 | 2.234 | 1.095 | 38 | 38.74 |
| 5 5 holes | 3.0 | 1.766 | 0.867 | 30 | 30.58 |

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

Sampler Calibration Relationship (Linear Regression)

Slope(m): 33.190 Intercept(b): 2.403 Correlation Coefficient(r): 0.9961

Checked by: Magnum Fan

Date: 11/12/2018



| |
|-----------------------|
| RECALIBRATION |
| DUE DATE: |
| March 19, 2019 |

Certificate of Calibration

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

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

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

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

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

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



輝創工程有限公司

Sun Creation Engineering Limited
Calibration & Testing Laboratory

Certificate of Calibration 校正證書

Certificate No. : C184960
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC18-1761) Date of Receipt / 收件日期 : 23 August 2018

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

TEST CONDITIONS / 測試條件

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

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 5 September 2018

TEST RESULTS / 測試結果

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

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

Tested By
測試

:

T L Shek
Assistant Engineer

Certified By
核證

:

H C Chan
Engineer

Date of Issue
簽發日期

:

6 September 2018

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

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

Sun Creation Engineering Limited – Calibration & Testing Laboratory

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

輝創工程有限公司 — 校正及檢測實驗室

c/o 香港新界屯門興安里一號四樓

Tel/電話: (852) 2927 2606

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E-mail/電郵: callab@suncreation.com

Website/網址: www.suncreation.com



輝創工程有限公司

Sun Creation Engineering Limited

Calibration & Testing Laboratory

Certificate of Calibration 校正證書

Certificate No. : C184960

證書編號

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

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

4. Test procedure : MA130N.

5. Results :

Air Velocity

| Applied Value (m/s) | UUT Reading (m/s) | Measured Correction | | |
|---------------------|-------------------|---------------------|----------------------------|-----------------|
| | | Value (m/s) | Measurement Uncertainty | |
| | | | Expanded Uncertainty (m/s) | Coverage Factor |
| 2.0 | 1.7 | +0.3 | 0.2 | 2.0 |
| 4.0 | 3.8 | +0.2 | 0.3 | 2.0 |
| 6.0 | 5.8 | +0.2 | 0.3 | 2.0 |
| 8.0 | 7.9 | +0.1 | 0.3 | 2.0 |
| 10.0 | 10.0 | 0.0 | 0.4 | 2.0 |

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

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

Note :

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

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

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

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

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Tel/電話: (852) 2927 2606

Fax/傳真: (852) 2744 8986

E-mail/電郵: callab@suncreation.com

Website/網址: www.suncreation.com

ENVIROTECH SERVICES CO.

Calibration Report of Wind Meter

Date of Calibration : 30 September 2018

Brand of Test Meter: Davis

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

Location : Roof of Tuen Mun Firestation

Procedures :

- 1. Wind Still Test: The wind speed sensor was hold by hand until it keep still
- 2.Wind Speed Test: The wind meter was on-site calibrated against the Anemometer
- 3.Wind Direction Test : The wind meter was on-site calibrated against the marine compass at four directions

Results:

Wind Still Test

| Wind Speed (m/s) |
|------------------|
| 0.00 |

Wind Speed Test

| Davis (m/s) | Anemometer (m/s) |
|-------------|------------------|
| 1.6 | 1.4 |
| 3.2 | 2.7 |
| 4.8 | 4.1 |

Wind Direction Test

| Davis (o) | Marine Compass (o) |
|-----------|--------------------|
| 270 | 270 |
| 359 | 0 |
| 89 | 90 |
| 181 | 180 |

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

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

Appendix F

EM&A Monitoring Schedules

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

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

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

**HY/2012/08 - Tuen Mun - Chek Lap Kok Link
Northern Connection Sub-sea Tunnel Section
Tentative Air Quality Impact Monitoring Schedule - January 2019**

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

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

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

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

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

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

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

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

Appendix G

Impact Air Quality Monitoring Results

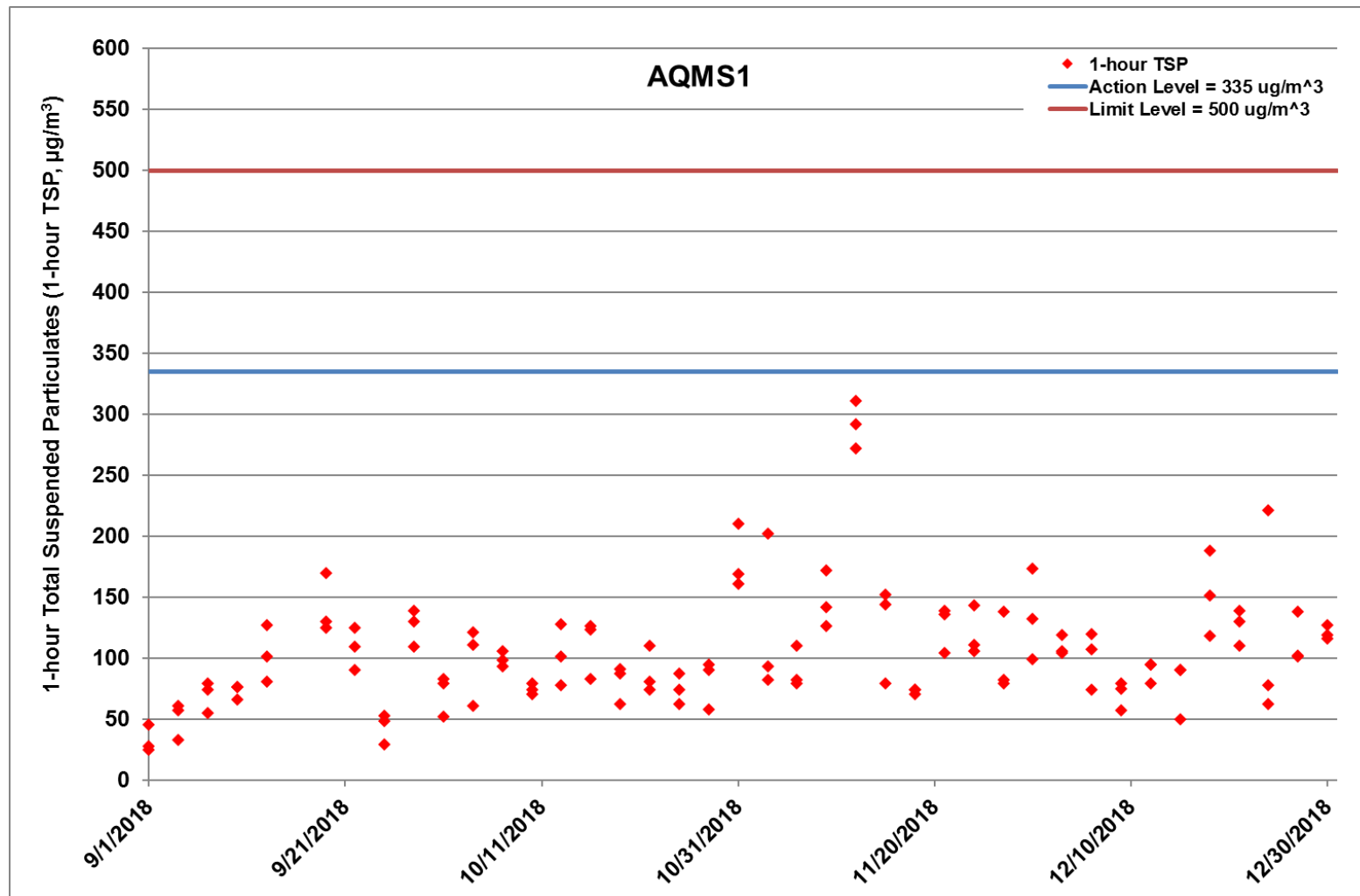


Figure G.1 Impact Monitoring – 1-hour Total Suspended Particulates ($\mu\text{g}/\text{m}^3$) at AQMS1 between 1 September 2018 and 31 December 2018 during impact monitoring period. The weather conditions during the monitoring period varied from sunny to cloudy. Major land-based construction activities included: Bulk Excavation, TBM Tunnel Works (1/9/2018 – 31/12/2018)

Ref: 0212330_Impact AQM graphs_December 2018_REV a.xlsx



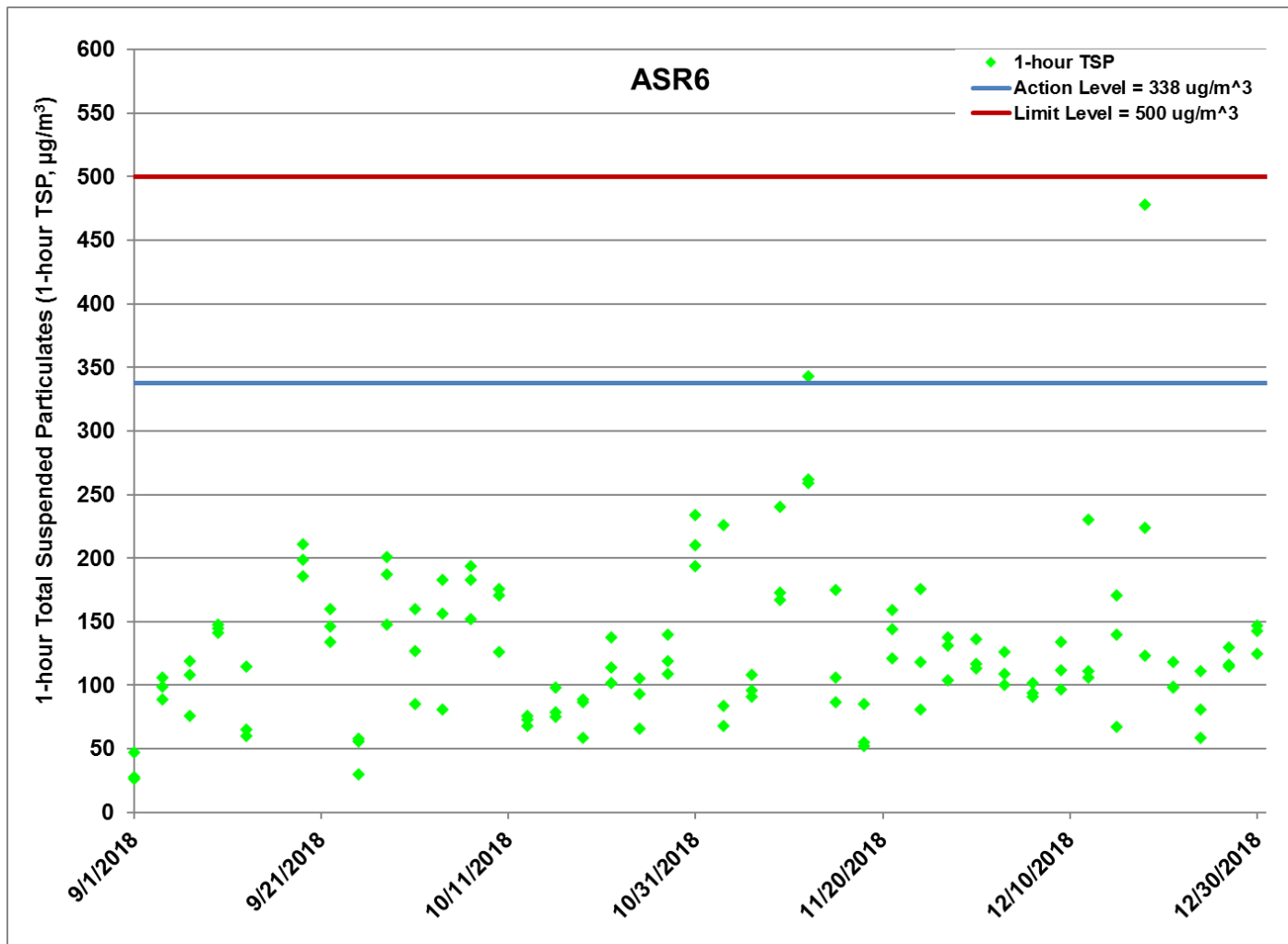


Figure G.2 Impact Monitoring – 1-hour Total Suspended Particulates ($\mu\text{g}/\text{m}^3$) at ASR6 between 1 September 2018 and 31 December 2018 during impact monitoring period. The weather conditions during the monitoring period varied from sunny to cloudy. Major land-based construction activities included: Bulk Excavation, TBM Tunnel Works (1/9/2018 – 31/12/2018)

Ref: 0212330_Impact AQM graphs_December 2018_REV a.xlsx



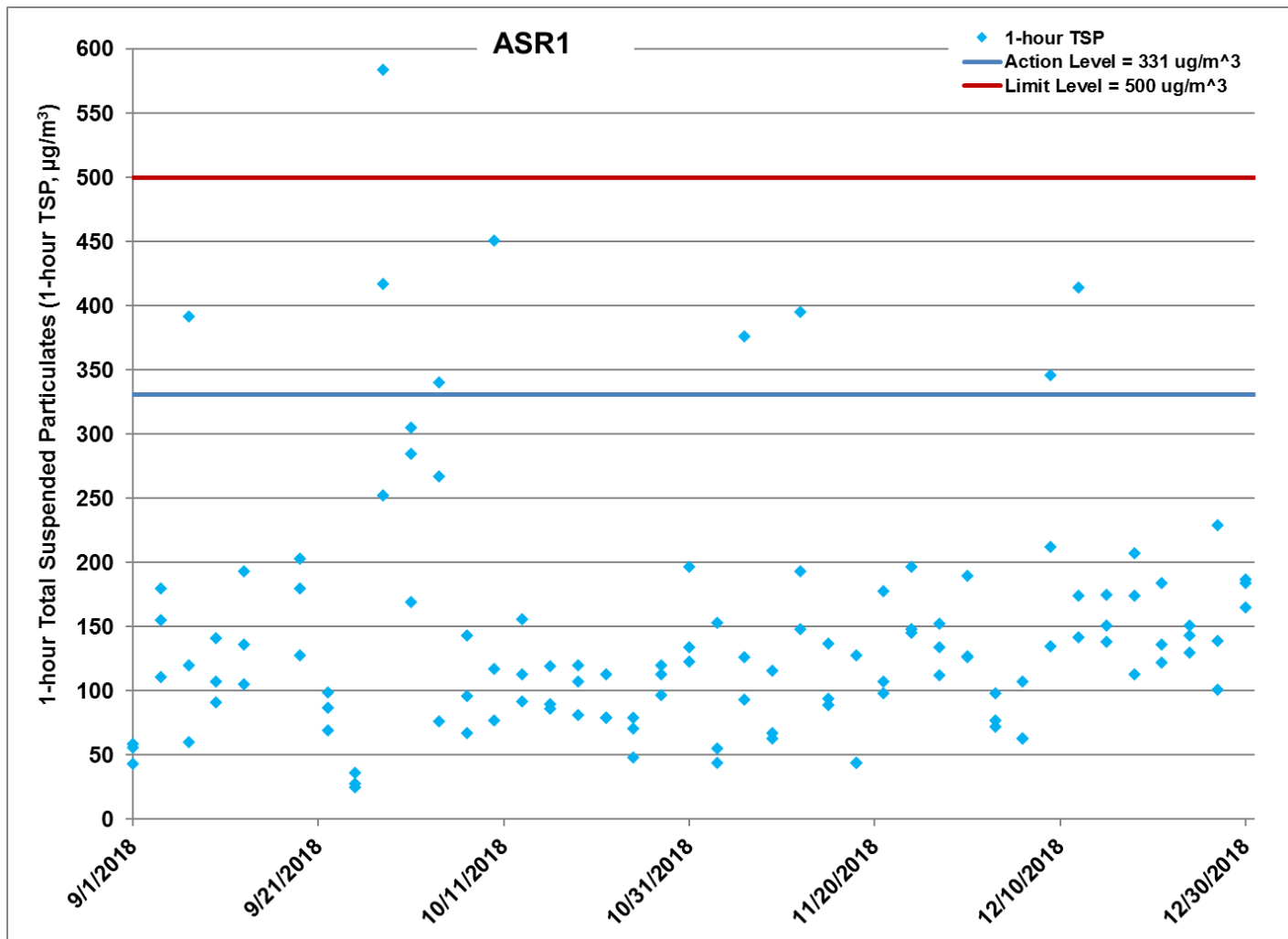


Figure G.3 Impact Monitoring – 1-hour Total Suspended Particulates ($\mu\text{g}/\text{m}^3$) at ASR1 between 1 September 2018 and 31 December 2018 during impact monitoring period. The weather conditions during the monitoring period varied from sunny to cloudy. Major land-based construction activities included: Bulk Excavation, TBM Tunnel Works (1/9/2018 – 31/12/2018)

Ref: 0212330_Impact AQM graphs_December 2018_REV a.xlsx



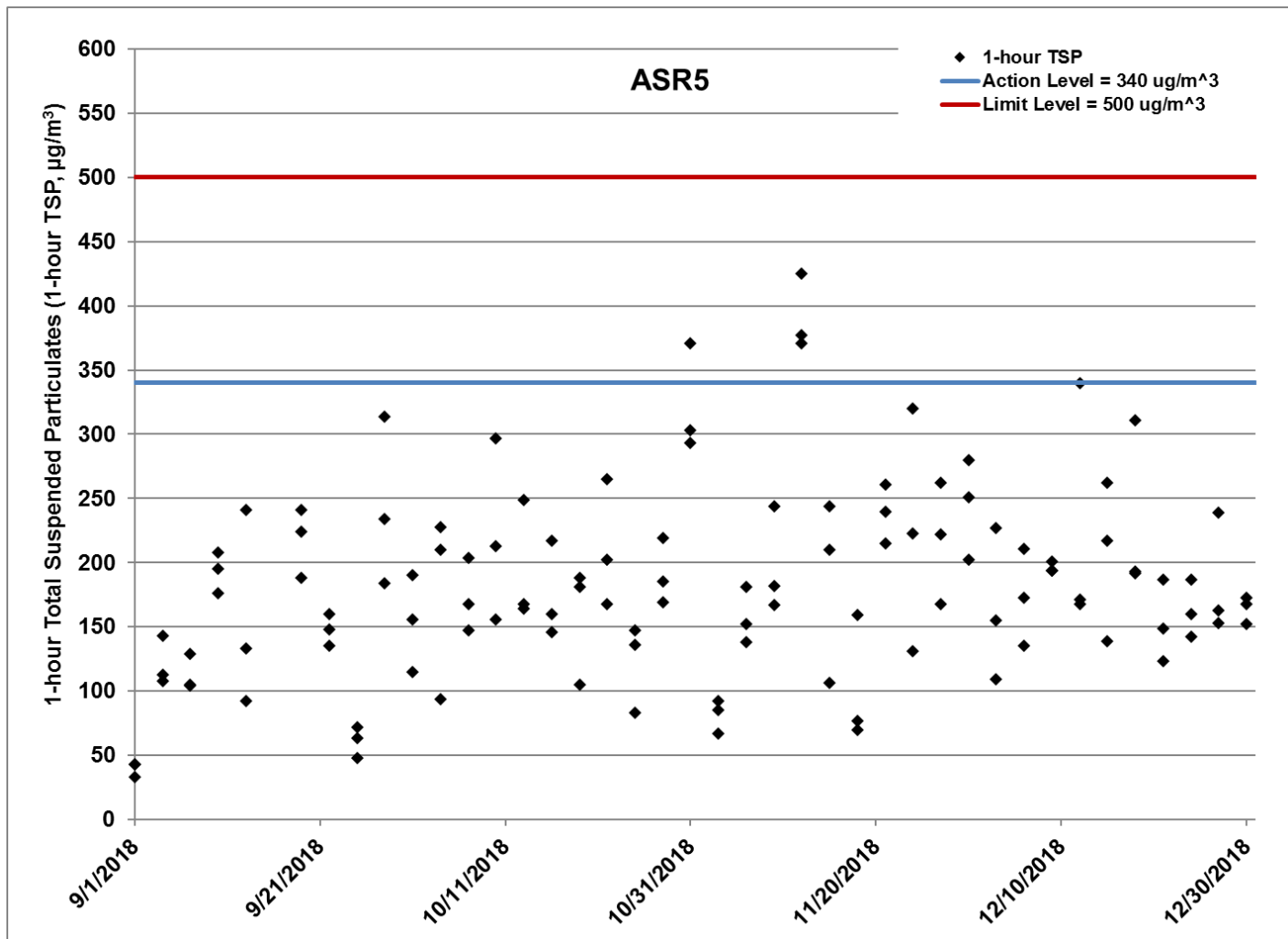


Figure G.4 Impact Monitoring – 1-hour Total Suspended Particulates (µg/m³) at ASR5 between 1 September 2018 and 31 December 2018 during impact monitoring period. The weather conditions during the monitoring period varied from sunny to cloudy. Major land-based construction activities included: Bulk Excavation, TBM Tunnel Works (1/9/2018 – 31/12/2018)

Ref: 0212330_Impact AQM graphs_December 2018_REV a.xlsx



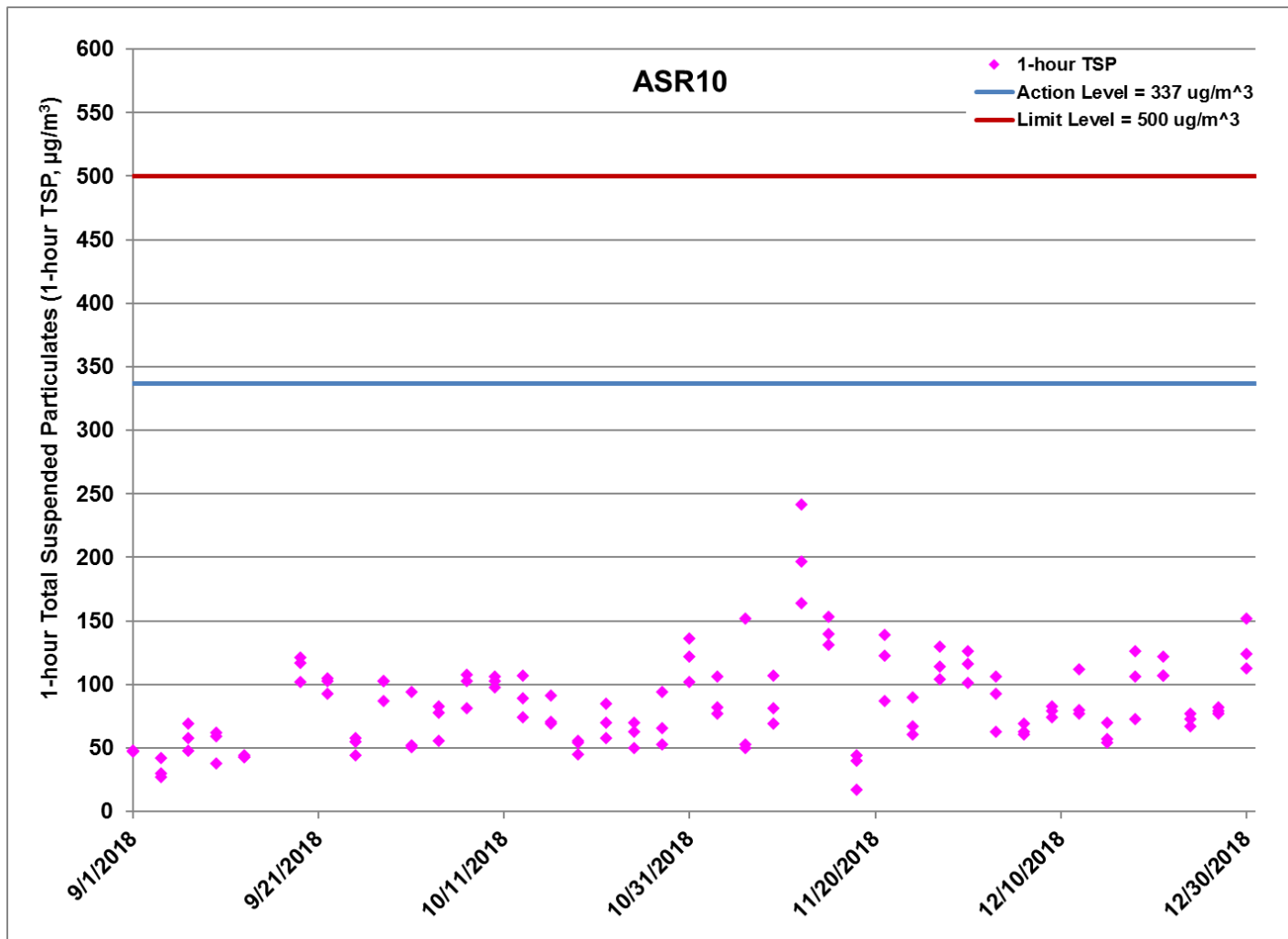


Figure G.5 Impact Monitoring – 1-hour Total Suspended Particulates ($\mu\text{g}/\text{m}^3$) at ASR10 between 1 September 2018 and 31 December 2018 during impact monitoring period. The weather conditions during the monitoring period varied from sunny to cloudy. Major land-based construction activities included: Bulk Excavation, TBM Tunnel Works (1/9/2018 – 31/12/2018)

Ref: 0212330_Impact AQM graphs_December 2018_REV a.xlsx



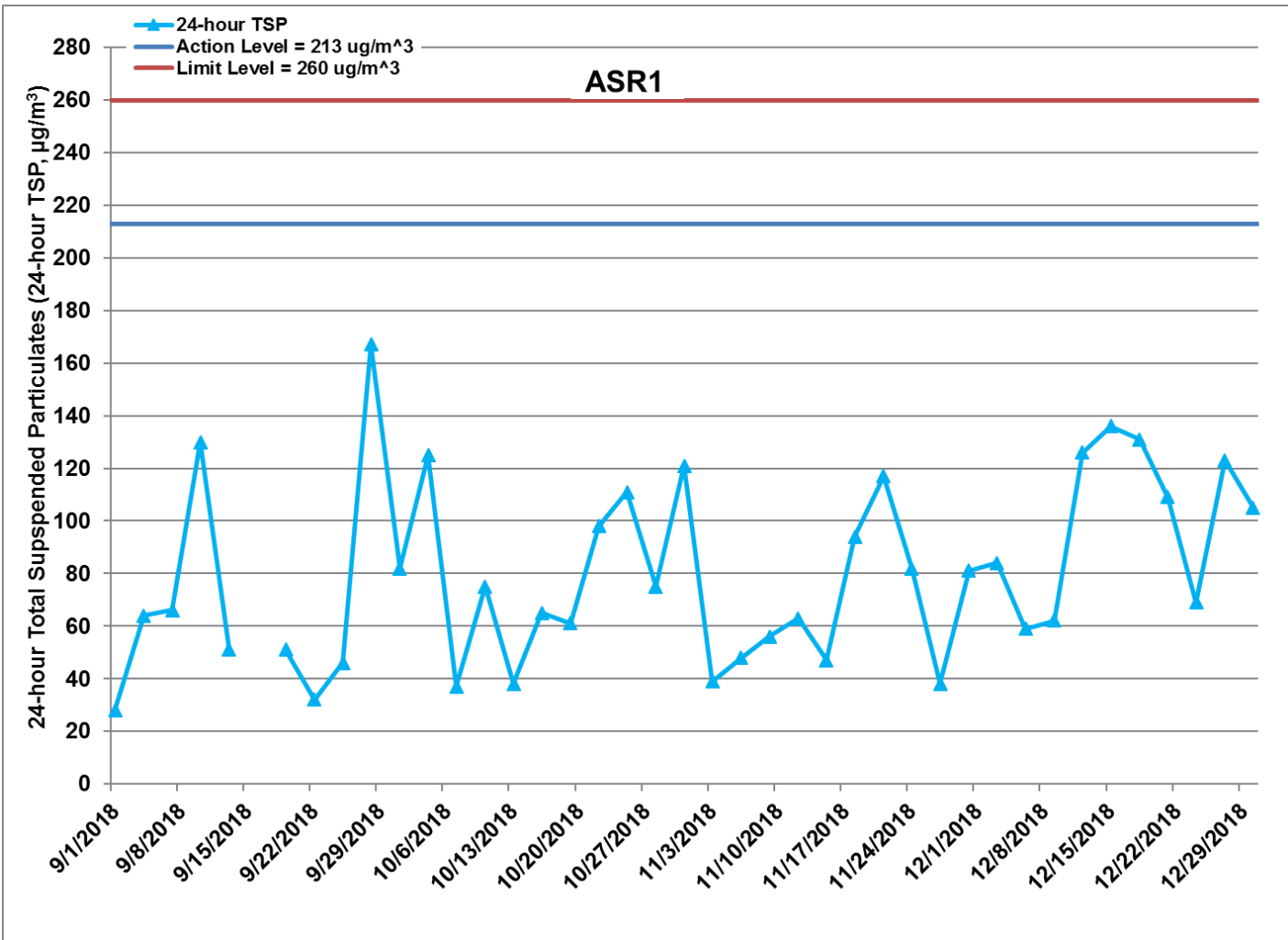


Figure G.6 Impact Monitoring – 24-hour Total Suspended Particulates ($\mu\text{g}/\text{m}^3$) at ASR1 between 1 September 2018 and 31 December 2018 during impact monitoring period. The weather conditions during the monitoring period varied from sunny to cloudy. Major land-based construction activities included: Bulk Excavation, TBM Tunnel Works (1/9/2018 – 31/12/2018)

Ref: 0212330_Impact AQM graphs_December 2018_REV a.xlsx



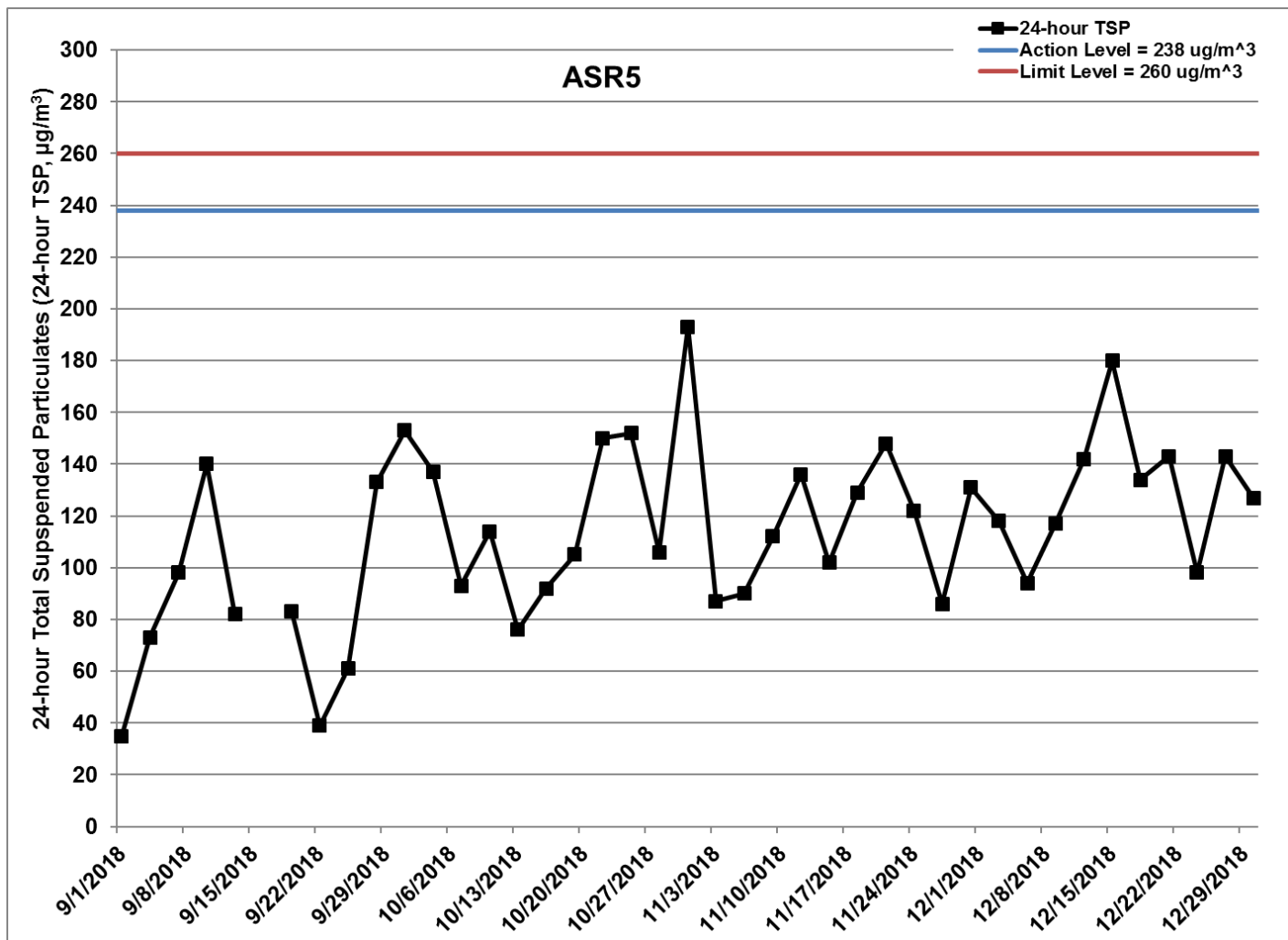


Figure G.7 Impact Monitoring – 24-hour Total Suspended Particulates ($\mu\text{g}/\text{m}^3$) at ASR5 between 1 September 2018 and 31 December 2018 during impact monitoring period. The weather conditions during the monitoring period varied from sunny to cloudy. Major land-based construction activities included: Bulk Excavation, TBM Tunnel Works (1/9/2018 – 31/12/2018)

Ref: 0212330_Impact AQM graphs_December 2018_REV a.xlsx



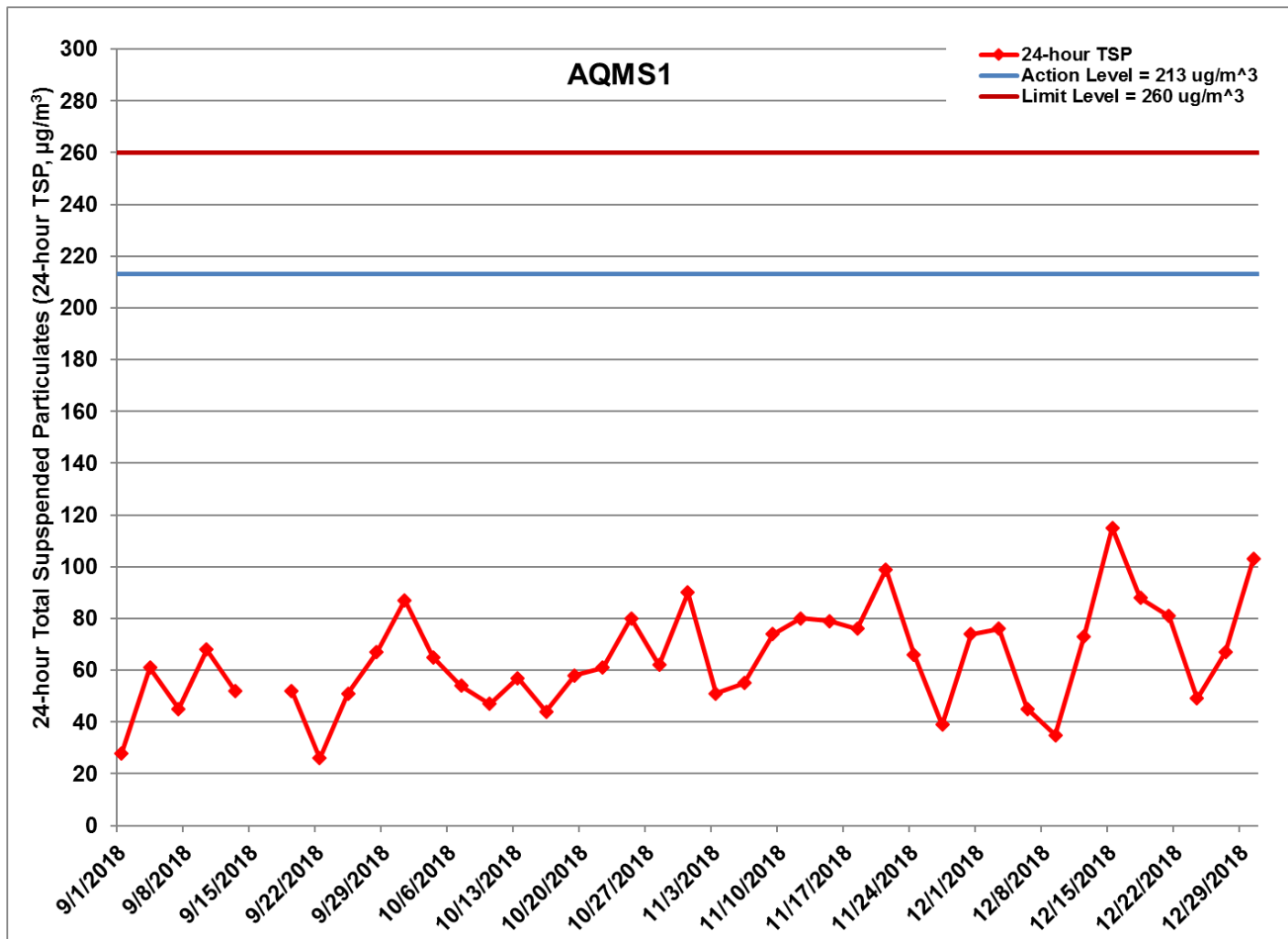


Figure G.8 Impact Monitoring - 24-hour Total Suspended Particulates ($\mu\text{g}/\text{m}^3$) at AQMS1 between 1 September 2018 and 31 December 2018 during impact monitoring period. The weather conditions during the monitoring period varied from sunny to cloudy. Major land-based construction activities included: Bulk Excavation, TBM Tunnel Works (1/9/2018 - 31/12/2018)

Ref: 0212330_Impact AQM graphs_December 2018_REV a.xlsx



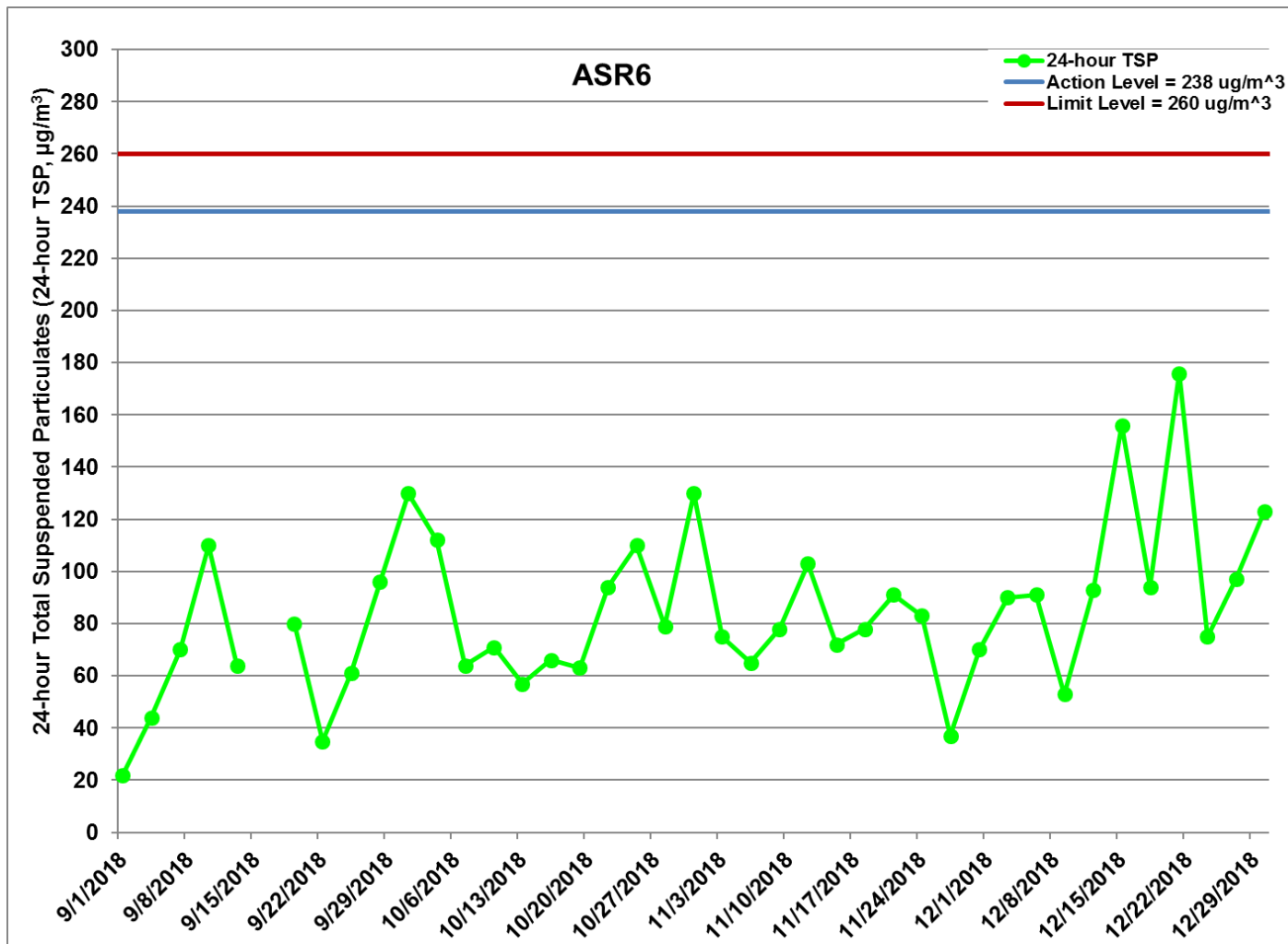


Figure G.9 Impact Monitoring – 24-hour Total Suspended Particulates ($\mu\text{g}/\text{m}^3$) at ASR6 between 1 September 2018 and 31 December 2018 during impact monitoring period. The weather conditions during the monitoring period varied from sunny to cloudy. Major land-based construction activities included: Bulk Excavation, TBM Tunnel Works (1/9/2018 – 31/12/2018)

Ref: 0212330_Impact AQM graphs_December 2018_REV a.xlsx



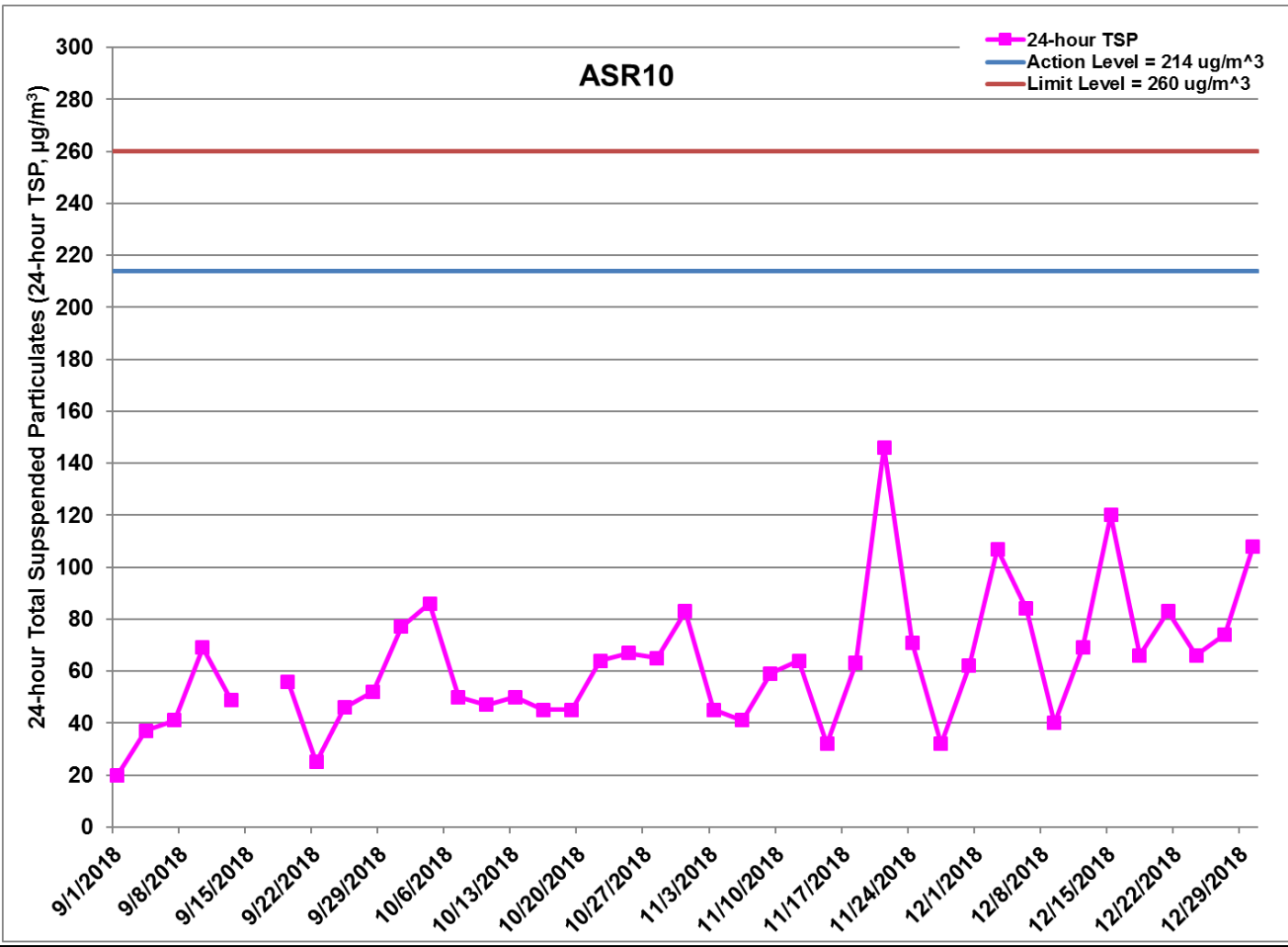


Figure G.10 Impact Monitoring - 24-hour Total Suspended Particulates ($\mu\text{g}/\text{m}^3$) at ASR10 between 1 September 2018 and 31 December 2018 during impact monitoring period. The weather conditions during the monitoring period varied from sunny to cloudy. Major land-based construction activities included: Bulk Excavation, TBM Tunnel Works (1/9/2018 - 31/12/2018)

Ref: 0212330_Impact AQM graphs_December 2018_REV a.xlsx



| Project | Works | Date | Station | Weather | Start time | Parameters | Results | units |
|---------|------------|------------|---------|---------|------------|------------|---------|-------|
| TMCLKL | HY/2012/08 | 2018-12-03 | AQMS1 | Sunny | 13:58 | 1-hour TSP | 119 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-03 | AQMS1 | Sunny | 15:00 | 1-hour TSP | 104 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-03 | AQMS1 | Sunny | 16:02 | 1-hour TSP | 106 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-03 | ASR1 | Sunny | 13:46 | 1-hour TSP | 98 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-03 | ASR1 | Sunny | 14:48 | 1-hour TSP | 77 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-03 | ASR1 | Sunny | 15:50 | 1-hour TSP | 72 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-03 | ASR10 | Sunny | 13:14 | 1-hour TSP | 106 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-03 | ASR10 | Sunny | 14:16 | 1-hour TSP | 63 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-03 | ASR10 | Sunny | 15:18 | 1-hour TSP | 93 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-03 | ASR5 | Sunny | 13:35 | 1-hour TSP | 227 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-03 | ASR5 | Sunny | 14:57 | 1-hour TSP | 155 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-03 | ASR5 | Sunny | 15:39 | 1-hour TSP | 109 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-03 | ASR6 | Sunny | 13:24 | 1-hour TSP | 126 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-03 | ASR6 | Sunny | 14:26 | 1-hour TSP | 100 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-03 | ASR6 | Sunny | 15:28 | 1-hour TSP | 109 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-06 | AQMS1 | Cloudy | 13:50 | 1-hour TSP | 107 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-06 | AQMS1 | Cloudy | 14:52 | 1-hour TSP | 120 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-06 | AQMS1 | Cloudy | 15:54 | 1-hour TSP | 74 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-06 | ASR1 | Cloudy | 13:39 | 1-hour TSP | 107 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-06 | ASR1 | Cloudy | 14:41 | 1-hour TSP | 63 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-06 | ASR1 | Cloudy | 15:43 | 1-hour TSP | 63 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-06 | ASR10 | Cloudy | 13:04 | 1-hour TSP | 63 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-06 | ASR10 | Cloudy | 13:36 | 1-hour TSP | 61 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-06 | ASR10 | Cloudy | 14:38 | 1-hour TSP | 69 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-06 | ASR5 | Cloudy | 13:26 | 1-hour TSP | 211 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-06 | ASR5 | Cloudy | 14:28 | 1-hour TSP | 135 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-06 | ASR5 | Cloudy | 15:30 | 1-hour TSP | 173 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-06 | ASR6 | Cloudy | 13:15 | 1-hour TSP | 102 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-06 | ASR6 | Cloudy | 14:17 | 1-hour TSP | 94 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-06 | ASR6 | Cloudy | 15:19 | 1-hour TSP | 91 | ug/m3 |

| Project | Works | Date | Station | Weather | Start time | Parameters | Results | units |
|---------|------------|------------|---------|---------|------------|------------|---------|-------|
| TMCLKL | HY/2012/08 | 2018-12-09 | AQMS1 | Cloudy | 08:52 | 1-hour TSP | 79 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-09 | AQMS1 | Cloudy | 09:54 | 1-hour TSP | 57 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-09 | AQMS1 | Cloudy | 10:56 | 1-hour TSP | 75 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-09 | ASR1 | Cloudy | 08:40 | 1-hour TSP | 135 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-09 | ASR1 | Cloudy | 09:42 | 1-hour TSP | 212 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-09 | ASR1 | Cloudy | 10:44 | 1-hour TSP | 346 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-09 | ASR10 | Cloudy | 08:05 | 1-hour TSP | 74 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-09 | ASR10 | Cloudy | 09:07 | 1-hour TSP | 79 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-09 | ASR10 | Cloudy | 10:09 | 1-hour TSP | 83 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-09 | ASR5 | Cloudy | 08:28 | 1-hour TSP | 201 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-09 | ASR5 | Cloudy | 09:30 | 1-hour TSP | 194 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-09 | ASR5 | Cloudy | 10:32 | 1-hour TSP | 194 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-09 | ASR6 | Cloudy | 08:16 | 1-hour TSP | 134 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-09 | ASR6 | Cloudy | 09:18 | 1-hour TSP | 97 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-09 | ASR6 | Cloudy | 10:20 | 1-hour TSP | 112 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-12 | AQMS1 | Cloudy | 13:41 | 1-hour TSP | 95 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-12 | AQMS1 | Cloudy | 14:43 | 1-hour TSP | 79 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-12 | AQMS1 | Cloudy | 15:45 | 1-hour TSP | 95 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-12 | ASR1 | Cloudy | 13:31 | 1-hour TSP | 414 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-12 | ASR1 | Cloudy | 14:33 | 1-hour TSP | 174 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-12 | ASR1 | Cloudy | 15:35 | 1-hour TSP | 142 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-12 | ASR10 | Cloudy | 13:00 | 1-hour TSP | 112 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-12 | ASR10 | Cloudy | 14:02 | 1-hour TSP | 77 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-12 | ASR10 | Cloudy | 15:04 | 1-hour TSP | 80 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-12 | ASR5 | Cloudy | 13:20 | 1-hour TSP | 340 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-12 | ASR5 | Cloudy | 14:22 | 1-hour TSP | 171 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-12 | ASR5 | Cloudy | 15:24 | 1-hour TSP | 168 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-12 | ASR6 | Cloudy | 13:10 | 1-hour TSP | 230 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-12 | ASR6 | Cloudy | 14:12 | 1-hour TSP | 111 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-12 | ASR6 | Cloudy | 15:14 | 1-hour TSP | 106 | ug/m3 |

| Project | Works | Date | Station | Weather | Start time | Parameters | Results | units |
|---------|------------|------------|---------|---------|------------|------------|---------|-------|
| TMCLKL | HY/2012/08 | 2018-12-15 | AQMS1 | Sunny | 08:46 | 1-hour TSP | 50 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-15 | AQMS1 | Sunny | 09:48 | 1-hour TSP | 90 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-15 | AQMS1 | Sunny | 10:50 | 1-hour TSP | 90 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-15 | ASR1 | Sunny | 08:34 | 1-hour TSP | 151 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-15 | ASR1 | Sunny | 09:36 | 1-hour TSP | 175 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-15 | ASR1 | Sunny | 10:38 | 1-hour TSP | 138 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-15 | ASR10 | Sunny | 08:00 | 1-hour TSP | 57 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-15 | ASR10 | Sunny | 09:02 | 1-hour TSP | 70 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-15 | ASR10 | Sunny | 10:04 | 1-hour TSP | 54 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-15 | ASR5 | Sunny | 08:22 | 1-hour TSP | 139 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-15 | ASR5 | Sunny | 09:24 | 1-hour TSP | 262 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-15 | ASR5 | Sunny | 10:26 | 1-hour TSP | 217 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-15 | ASR6 | Sunny | 08:11 | 1-hour TSP | 67 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-15 | ASR6 | Sunny | 09:13 | 1-hour TSP | 140 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-15 | ASR6 | Sunny | 10:15 | 1-hour TSP | 171 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-18 | AQMS1 | Sunny | 13:49 | 1-hour TSP | 118 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-18 | AQMS1 | Sunny | 14:51 | 1-hour TSP | 188 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-18 | AQMS1 | Sunny | 15:53 | 1-hour TSP | 151 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-18 | ASR1 | Sunny | 13:37 | 1-hour TSP | 207 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-18 | ASR1 | Sunny | 14:39 | 1-hour TSP | 113 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-18 | ASR1 | Sunny | 15:41 | 1-hour TSP | 174 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-18 | ASR10 | Sunny | 13:03 | 1-hour TSP | 126 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-18 | ASR10 | Sunny | 14:05 | 1-hour TSP | 73 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-18 | ASR10 | Sunny | 15:07 | 1-hour TSP | 106 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-18 | ASR5 | Sunny | 13:26 | 1-hour TSP | 311 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-18 | ASR5 | Sunny | 14:30 | 1-hour TSP | 193 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-18 | ASR5 | Sunny | 15:32 | 1-hour TSP | 192 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-18 | ASR6 | Sunny | 13:14 | 1-hour TSP | 224 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-18 | ASR6 | Sunny | 14:16 | 1-hour TSP | 478 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-18 | ASR6 | Sunny | 15:18 | 1-hour TSP | 123 | ug/m3 |

| Project | Works | Date | Station | Weather | Start time | Parameters | Results | units |
|---------|------------|------------|---------|---------|------------|------------|---------|-------|
| TMCLKL | HY/2012/08 | 2018-12-21 | AQMS1 | Sunny | 13:51 | 1-hour TSP | 110 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-21 | AQMS1 | Sunny | 14:53 | 1-hour TSP | 130 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-21 | AQMS1 | Sunny | 15:55 | 1-hour TSP | 139 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-21 | ASR1 | Sunny | 13:40 | 1-hour TSP | 184 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-21 | ASR1 | Sunny | 14:42 | 1-hour TSP | 122 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-21 | ASR1 | Sunny | 15:44 | 1-hour TSP | 136 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-21 | ASR10 | Sunny | 13:06 | 1-hour TSP | 107 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-21 | ASR10 | Sunny | 14:08 | 1-hour TSP | 107 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-21 | ASR10 | Sunny | 15:10 | 1-hour TSP | 122 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-21 | ASR5 | Sunny | 13:27 | 1-hour TSP | 187 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-21 | ASR5 | Sunny | 14:29 | 1-hour TSP | 123 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-21 | ASR5 | Sunny | 15:31 | 1-hour TSP | 149 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-21 | ASR6 | Sunny | 13:17 | 1-hour TSP | 118 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-21 | ASR6 | Sunny | 14:19 | 1-hour TSP | 99 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-21 | ASR6 | Sunny | 15:21 | 1-hour TSP | 98 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-24 | AQMS1 | Cloudy | 14:06 | 1-hour TSP | 78 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-24 | AQMS1 | Cloudy | 15:08 | 1-hour TSP | 62 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-24 | AQMS1 | Cloudy | 16:10 | 1-hour TSP | 221 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-24 | ASR1 | Cloudy | 13:55 | 1-hour TSP | 151 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-24 | ASR1 | Cloudy | 14:57 | 1-hour TSP | 130 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-24 | ASR1 | Cloudy | 15:59 | 1-hour TSP | 143 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-24 | ASR10 | Cloudy | 13:20 | 1-hour TSP | 77 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-24 | ASR10 | Cloudy | 14:22 | 1-hour TSP | 73 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-24 | ASR10 | Cloudy | 15:24 | 1-hour TSP | 67 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-24 | ASR5 | Cloudy | 13:43 | 1-hour TSP | 142 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-24 | ASR5 | Cloudy | 14:45 | 1-hour TSP | 187 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-24 | ASR5 | Cloudy | 15:47 | 1-hour TSP | 160 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-24 | ASR6 | Cloudy | 13:32 | 1-hour TSP | 59 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-24 | ASR6 | Cloudy | 14:34 | 1-hour TSP | 111 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-24 | ASR6 | Cloudy | 15:36 | 1-hour TSP | 81 | ug/m3 |

| Project | Works | Date | Station | Weather | Start time | Parameters | Results | units |
|---------|------------|------------|---------|---------|------------|------------|---------|-------|
| TMCLKL | HY/2012/08 | 2018-12-27 | AQMS1 | Sunny | 14:14 | 1-hour TSP | 101 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-27 | AQMS1 | Sunny | 15:16 | 1-hour TSP | 138 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-27 | AQMS1 | Sunny | 16:18 | 1-hour TSP | 102 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-27 | ASR1 | Sunny | 14:02 | 1-hour TSP | 139 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-27 | ASR1 | Sunny | 15:04 | 1-hour TSP | 229 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-27 | ASR1 | Sunny | 16:06 | 1-hour TSP | 101 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-27 | ASR10 | Sunny | 13:30 | 1-hour TSP | 82 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-27 | ASR10 | Sunny | 14:32 | 1-hour TSP | 79 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-27 | ASR10 | Sunny | 15:34 | 1-hour TSP | 77 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-27 | ASR5 | Sunny | 13:51 | 1-hour TSP | 163 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-27 | ASR5 | Sunny | 14:53 | 1-hour TSP | 239 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-27 | ASR5 | Sunny | 15:55 | 1-hour TSP | 153 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-27 | ASR6 | Sunny | 13:40 | 1-hour TSP | 115 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-27 | ASR6 | Sunny | 14:42 | 1-hour TSP | 130 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-27 | ASR6 | Sunny | 15:44 | 1-hour TSP | 116 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-30 | AQMS1 | Cloudy | 13:45 | 1-hour TSP | 127 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-30 | AQMS1 | Cloudy | 14:47 | 1-hour TSP | 119 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-30 | AQMS1 | Cloudy | 15:49 | 1-hour TSP | 116 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-30 | ASR1 | Cloudy | 13:33 | 1-hour TSP | 165 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-30 | ASR1 | Cloudy | 14:35 | 1-hour TSP | 187 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-30 | ASR1 | Cloudy | 15:37 | 1-hour TSP | 184 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-30 | ASR10 | Cloudy | 13:00 | 1-hour TSP | 152 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-30 | ASR10 | Cloudy | 14:02 | 1-hour TSP | 113 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-30 | ASR10 | Cloudy | 15:04 | 1-hour TSP | 124 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-30 | ASR5 | Cloudy | 13:22 | 1-hour TSP | 152 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-30 | ASR5 | Cloudy | 14:24 | 1-hour TSP | 173 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-30 | ASR5 | Cloudy | 15:26 | 1-hour TSP | 168 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-30 | ASR6 | Cloudy | 13:10 | 1-hour TSP | 147 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-30 | ASR6 | Cloudy | 14:12 | 1-hour TSP | 125 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-30 | ASR6 | Cloudy | 15:14 | 1-hour TSP | 143 | ug/m3 |

| Project | Works | Date | Station | Weather | Start time | Parameters | Results | units |
|---------|------------|------------|---------|---------|------------|-------------|---------|-------|
| TMCLKL | HY/2012/08 | 2018-12-03 | AQMS1 | Sunny | 17:04 | 24-hour TSP | 76 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-03 | ASR1 | Sunny | 16:52 | 24-hour TSP | 84 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-03 | ASR10 | Sunny | 16:20 | 24-hour TSP | 107 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-03 | ASR5 | Sunny | 16:41 | 24-hour TSP | 118 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-03 | ASR6 | Sunny | 16:30 | 24-hour TSP | 90 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-06 | AQMS1 | Cloudy | 16:56 | 24-hour TSP | 45 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-06 | ASR1 | Cloudy | 16:45 | 24-hour TSP | 59 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-06 | ASR10 | Cloudy | 15:40 | 24-hour TSP | 84 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-06 | ASR5 | Cloudy | 16:32 | 24-hour TSP | 94 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-06 | ASR6 | Cloudy | 16:21 | 24-hour TSP | 91 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-09 | AQMS1 | Cloudy | 11:58 | 24-hour TSP | 35 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-09 | ASR1 | Cloudy | 11:46 | 24-hour TSP | 62 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-09 | ASR10 | Cloudy | 11:09 | 24-hour TSP | 40 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-09 | ASR5 | Cloudy | 11:34 | 24-hour TSP | 117 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-09 | ASR6 | Cloudy | 11:22 | 24-hour TSP | 53 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-12 | AQMS1 | Cloudy | 16:47 | 24-hour TSP | 73 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-12 | ASR1 | Cloudy | 16:27 | 24-hour TSP | 126 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-12 | ASR10 | Cloudy | 16:06 | 24-hour TSP | 69 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-12 | ASR5 | Cloudy | 16:26 | 24-hour TSP | 142 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-12 | ASR6 | Cloudy | 16:16 | 24-hour TSP | 93 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-15 | AQMS1 | Sunny | 11:52 | 24-hour TSP | 115 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-15 | ASR1 | Sunny | 11:40 | 24-hour TSP | 136 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-15 | ASR10 | Sunny | 11:06 | 24-hour TSP | 120 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-15 | ASR5 | Sunny | 11:28 | 24-hour TSP | 180 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-15 | ASR6 | Sunny | 11:17 | 24-hour TSP | 156 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-18 | AQMS1 | Sunny | 16:55 | 24-hour TSP | 88 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-18 | ASR1 | Sunny | 16:43 | 24-hour TSP | 131 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-18 | ASR10 | Sunny | 16:09 | 24-hour TSP | 66 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-18 | ASR5 | Sunny | 16:34 | 24-hour TSP | 134 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-18 | ASR6 | Sunny | 16:20 | 24-hour TSP | 94 | ug/m3 |

| Project | Works | Date | Station | Weather | Start time | Parameters | Results | units |
|---------|------------|------------|---------|---------|------------|-------------|---------|-------|
| TMCLKL | HY/2012/08 | 2018-12-21 | AQMS1 | Sunny | 16:57 | 24-hour TSP | 81 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-21 | ASR1 | Sunny | 16:46 | 24-hour TSP | 109 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-21 | ASR10 | Sunny | 16:12 | 24-hour TSP | 83 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-21 | ASR5 | Sunny | 16:33 | 24-hour TSP | 143 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-21 | ASR6 | Sunny | 16:23 | 24-hour TSP | 176 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-24 | AQMS1 | Cloudy | 17:12 | 24-hour TSP | 49 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-24 | ASR1 | Cloudy | 17:01 | 24-hour TSP | 69 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-24 | ASR10 | Cloudy | 16:26 | 24-hour TSP | 66 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-24 | ASR5 | Cloudy | 16:49 | 24-hour TSP | 98 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-24 | ASR6 | Cloudy | 16:38 | 24-hour TSP | 75 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-27 | AQMS1 | Sunny | 17:20 | 24-hour TSP | 67 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-27 | ASR1 | Sunny | 17:08 | 24-hour TSP | 123 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-27 | ASR10 | Sunny | 16:36 | 24-hour TSP | 74 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-27 | ASR5 | Sunny | 16:57 | 24-hour TSP | 143 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-27 | ASR6 | Sunny | 16:46 | 24-hour TSP | 97 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-30 | AQMS1 | Sunny | 16:51 | 24-hour TSP | 103 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-30 | ASR1 | Sunny | 16:39 | 24-hour TSP | 105 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-30 | ASR10 | Sunny | 16:06 | 24-hour TSP | 108 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-30 | ASR5 | Sunny | 16:28 | 24-hour TSP | 127 | ug/m3 |
| TMCLKL | HY/2012/08 | 2018-12-30 | ASR6 | Sunny | 16:16 | 24-hour TSP | 123 | 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) |
|------------------------|---------------------|------------------------------------|--|
| 18/12/03 | 0:00 | 0.4 | 66 |
| 18/12/03 | 1:00 | 0.4 | 52 |
| 18/12/03 | 2:00 | 0.9 | 32 |
| 18/12/03 | 3:00 | 0.9 | 54 |
| 18/12/03 | 4:00 | 0.4 | 52 |
| 18/12/03 | 5:00 | 0.9 | 92 |
| 18/12/03 | 6:00 | 0.9 | 99 |
| 18/12/03 | 7:00 | 0.9 | 39 |
| 18/12/03 | 8:00 | 1.3 | 79 |
| 18/12/03 | 9:00 | 1.8 | 123 |
| 18/12/03 | 10:00 | 1.3 | 94 |
| 18/12/03 | 11:00 | 2.2 | 105 |
| 18/12/03 | 12:00 | 2.2 | 120 |
| 18/12/03 | 13:00 | 2.2 | 123 |
| 18/12/03 | 14:00 | 1.3 | 131 |
| 18/12/03 | 15:00 | 1.3 | 82 |
| 18/12/03 | 16:00 | 0.9 | 99 |
| 18/12/03 | 17:00 | 1.3 | 79 |
| 18/12/03 | 18:00 | 1.3 | 58 |
| 18/12/03 | 19:00 | 1.8 | 83 |
| 18/12/03 | 20:00 | 1.3 | 90 |
| 18/12/03 | 21:00 | 0.9 | 97 |
| 18/12/03 | 22:00 | 0.9 | 81 |
| 18/12/03 | 23:00 | 0.4 | 92 |
| 18/12/04 | 0:00 | 0.9 | 98 |
| 18/12/04 | 1:00 | 0.1 | 83 |
| 18/12/04 | 2:00 | 0.1 | 95 |
| 18/12/04 | 3:00 | 0.1 | 74 |
| 18/12/04 | 4:00 | 0.1 | 101 |
| 18/12/04 | 5:00 | 0.2 | 96 |
| 18/12/04 | 6:00 | 0.1 | 65 |
| 18/12/04 | 7:00 | 0.1 | 70 |
| 18/12/04 | 8:00 | 0.9 | 82 |
| 18/12/04 | 9:00 | 0.9 | 149 |
| 18/12/04 | 10:00 | 0.9 | 164 |
| 18/12/04 | 11:00 | 1.3 | 226 |
| 18/12/04 | 12:00 | 0.9 | 121 |
| 18/12/04 | 13:00 | 1.3 | 113 |
| 18/12/04 | 14:00 | 1.8 | 201 |
| 18/12/04 | 15:00 | 1.3 | 231 |
| 18/12/04 | 16:00 | 0.9 | 254 |
| 18/12/04 | 17:00 | 0.9 | 271 |
| 18/12/04 | 18:00 | 0.4 | 278 |
| 18/12/04 | 19:00 | 0.1 | 267 |
| 18/12/04 | 20:00 | 0.1 | 344 |
| 18/12/04 | 21:00 | 0.1 | 340 |
| 18/12/04 | 22:00 | 0.1 | 321 |
| 18/12/04 | 23:00 | 0.1 | 315 |
| 18/12/06 | 0:00 | 2.7 | 91 |
| 18/12/06 | 1:00 | 3.1 | 87 |
| 18/12/06 | 2:00 | 3.1 | 79 |
| 18/12/06 | 3:00 | 2.7 | 62 |
| 18/12/06 | 4:00 | 2.7 | 79 |
| 18/12/06 | 5:00 | 1.8 | 76 |
| 18/12/06 | 6:00 | 2.2 | 67 |

| 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) |
| 18/12/06 | 7:00 | 2.2 | 88 |
| 18/12/06 | 8:00 | 2.2 | 101 |
| 18/12/06 | 9:00 | 1.3 | 118 |
| 18/12/06 | 10:00 | 1.8 | 98 |
| 18/12/06 | 11:00 | 1.8 | 129 |
| 18/12/06 | 12:00 | 1.3 | 141 |
| 18/12/06 | 13:00 | 0.9 | 124 |
| 18/12/06 | 14:00 | 1.3 | 144 |
| 18/12/06 | 15:00 | 1.8 | 122 |
| 18/12/06 | 16:00 | 0.9 | 81 |
| 18/12/06 | 17:00 | 0.9 | 81 |
| 18/12/06 | 18:00 | 0.9 | 91 |
| 18/12/06 | 19:00 | 0.9 | 101 |
| 18/12/06 | 20:00 | 1.3 | 79 |
| 18/12/06 | 21:00 | 1.3 | 75 |
| 18/12/06 | 22:00 | 0.4 | 67 |
| 18/12/06 | 23:00 | 0 | - |
| 18/12/07 | 0:00 | 0.4 | 71 |
| 18/12/07 | 1:00 | 0.1 | 54 |
| 18/12/07 | 2:00 | 0.2 | 143 |
| 18/12/07 | 3:00 | 0.1 | 131 |
| 18/12/07 | 4:00 | 0.1 | 204 |
| 18/12/07 | 5:00 | 0.9 | 285 |
| 18/12/07 | 6:00 | 1.8 | 311 |
| 18/12/07 | 7:00 | 0.4 | 18 |
| 18/12/07 | 8:00 | 0.4 | 12 |
| 18/12/07 | 9:00 | 0.4 | 337 |
| 18/12/07 | 10:00 | 0.9 | 35 |
| 18/12/07 | 11:00 | 1.3 | 56 |
| 18/12/07 | 12:00 | 1.3 | 20 |
| 18/12/07 | 13:00 | 1.8 | 14 |
| 18/12/07 | 14:00 | 2.7 | 38 |
| 18/12/07 | 15:00 | 2.7 | 48 |
| 18/12/07 | 16:00 | 2.7 | 13 |
| 18/12/07 | 17:00 | 2.7 | 40 |
| 18/12/07 | 18:00 | 2.2 | 54 |
| 18/12/07 | 19:00 | 2.2 | 52 |
| 18/12/07 | 20:00 | 2.2 | 28 |
| 18/12/07 | 21:00 | 3.1 | 31 |
| 18/12/07 | 22:00 | 2.7 | 33 |
| 18/12/07 | 23:00 | 2.2 | 50 |
| 18/12/09 | 0:00 | 2.7 | 21 |
| 18/12/09 | 1:00 | 3.1 | 34 |
| 18/12/09 | 2:00 | 2.2 | 55 |
| 18/12/09 | 3:00 | 2.2 | 39 |
| 18/12/09 | 4:00 | 1.3 | 18 |
| 18/12/09 | 5:00 | 1.3 | 56 |
| 18/12/09 | 6:00 | 1.8 | 56 |
| 18/12/09 | 7:00 | 1.8 | 38 |
| 18/12/09 | 8:00 | 2.2 | 36 |
| 18/12/09 | 9:00 | 2.7 | 14 |
| 18/12/09 | 10:00 | 1.8 | 32 |
| 18/12/09 | 11:00 | 0.9 | 43 |
| 18/12/09 | 12:00 | 0.9 | 41 |
| 18/12/09 | 13:00 | 1.3 | 348 |

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) |
|------------------------|---------------------|------------------------------------|--|
| 18/12/09 | 14:00 | 2.2 | 331 |
| 18/12/09 | 15:00 | 3.1 | 326 |
| 18/12/09 | 16:00 | 1.8 | 330 |
| 18/12/09 | 17:00 | 1.3 | 13 |
| 18/12/09 | 18:00 | 1.3 | 4 |
| 18/12/09 | 19:00 | 1.8 | 18 |
| 18/12/09 | 20:00 | 1.8 | 53 |
| 18/12/09 | 21:00 | 0.9 | 336 |
| 18/12/09 | 22:00 | 1.3 | 27 |
| 18/12/09 | 23:00 | 1.3 | 44 |
| 18/12/10 | 0:00 | 1.3 | 28 |
| 18/12/10 | 1:00 | 1.3 | 17 |
| 18/12/10 | 2:00 | 1.3 | 14 |
| 18/12/10 | 3:00 | 1.3 | 347 |
| 18/12/10 | 4:00 | 2.7 | 344 |
| 18/12/10 | 5:00 | 2.2 | 346 |
| 18/12/10 | 6:00 | 2.2 | 12 |
| 18/12/10 | 7:00 | 2.7 | 21 |
| 18/12/10 | 8:00 | 2.2 | 48 |
| 18/12/10 | 9:00 | 1.8 | 40 |
| 18/12/10 | 10:00 | 1.8 | 49 |
| 18/12/10 | 11:00 | 1.8 | 120 |
| 18/12/10 | 12:00 | 1.3 | 51 |
| 18/12/10 | 13:00 | 1.3 | 333 |
| 18/12/10 | 14:00 | 0.4 | 67 |
| 18/12/10 | 15:00 | 0.9 | 306 |
| 18/12/10 | 16:00 | 0.4 | 327 |
| 18/12/10 | 17:00 | 0.9 | 293 |
| 18/12/10 | 18:00 | 0.9 | 298 |
| 18/12/10 | 19:00 | 0.9 | 82 |
| 18/12/10 | 20:00 | 0.4 | 284 |
| 18/12/10 | 21:00 | 0.1 | 103 |
| 18/12/10 | 22:00 | 0.9 | 336 |
| 18/12/10 | 23:00 | 0.4 | 315 |
| 18/12/12 | 0:00 | 1.8 | 313 |
| 18/12/12 | 1:00 | 1.8 | 282 |
| 18/12/12 | 2:00 | 1.8 | 297 |
| 18/12/12 | 3:00 | 1.8 | 306 |
| 18/12/12 | 4:00 | 1.8 | 316 |
| 18/12/12 | 5:00 | 0.9 | 348 |
| 18/12/12 | 6:00 | 1.3 | 281 |
| 18/12/12 | 7:00 | 1.3 | 55 |
| 18/12/12 | 8:00 | 1.8 | 295 |
| 18/12/12 | 9:00 | 1.3 | 298 |
| 18/12/12 | 10:00 | 1.8 | 19 |
| 18/12/12 | 11:00 | 1.3 | 344 |
| 18/12/12 | 12:00 | 0.9 | 321 |
| 18/12/12 | 13:00 | 1.3 | 347 |
| 18/12/12 | 14:00 | 2.2 | 304 |
| 18/12/12 | 15:00 | 1.3 | 306 |
| 18/12/12 | 16:00 | 1.8 | 322 |
| 18/12/12 | 17:00 | 1.8 | 303 |
| 18/12/12 | 18:00 | 0.9 | 289 |
| 18/12/12 | 19:00 | 0.9 | 327 |
| 18/12/12 | 20:00 | 1.3 | 3 |

| 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) |
| 18/12/12 | 21:00 | 0.9 | 260 |
| 18/12/12 | 22:00 | 1.8 | 18 |
| 18/12/12 | 23:00 | 1.8 | 40 |
| 18/12/13 | 0:00 | 2.2 | 48 |
| 18/12/13 | 1:00 | 2.2 | 23 |
| 18/12/13 | 2:00 | 2.7 | 22 |
| 18/12/13 | 3:00 | 2.2 | 30 |
| 18/12/13 | 4:00 | 2.2 | 52 |
| 18/12/13 | 5:00 | 1.8 | 14 |
| 18/12/13 | 6:00 | 1.8 | 51 |
| 18/12/13 | 7:00 | 1.8 | 38 |
| 18/12/13 | 8:00 | 2.2 | 19 |
| 18/12/13 | 9:00 | 2.7 | 42 |
| 18/12/13 | 10:00 | 3.1 | 38 |
| 18/12/13 | 11:00 | 2.7 | 56 |
| 18/12/13 | 12:00 | 2.2 | 335 |
| 18/12/13 | 13:00 | 2.2 | 342 |
| 18/12/13 | 14:00 | 2.7 | 323 |
| 18/12/13 | 15:00 | 2.7 | 317 |
| 18/12/13 | 16:00 | 1.8 | 317 |
| 18/12/13 | 17:00 | 2.2 | 308 |
| 18/12/13 | 18:00 | 0.9 | 298 |
| 18/12/13 | 19:00 | 0.9 | 29 |
| 18/12/13 | 20:00 | 1.8 | 35 |
| 18/12/13 | 21:00 | 1.8 | 40 |
| 18/12/13 | 22:00 | 2.2 | 26 |
| 18/12/13 | 23:00 | 2.2 | 41 |
| 18/12/15 | 0:00 | 1.3 | 11 |
| 18/12/15 | 1:00 | 1.8 | 16 |
| 18/12/15 | 2:00 | 0.9 | 30 |
| 18/12/15 | 3:00 | 1.3 | 35 |
| 18/12/15 | 4:00 | 1.8 | 37 |
| 18/12/15 | 5:00 | 0.9 | 71 |
| 18/12/15 | 6:00 | 0.4 | 92 |
| 18/12/15 | 7:00 | 0.9 | 75 |
| 18/12/15 | 8:00 | 1.3 | 310 |
| 18/12/15 | 9:00 | 1.8 | 18 |
| 18/12/15 | 10:00 | 2.2 | 41 |
| 18/12/15 | 11:00 | 2.2 | 44 |
| 18/12/15 | 12:00 | 1.3 | 220 |
| 18/12/15 | 13:00 | 1.8 | 267 |
| 18/12/15 | 14:00 | 1.8 | 288 |
| 18/12/15 | 15:00 | 1.3 | 289 |
| 18/12/15 | 16:00 | 1.8 | 321 |
| 18/12/15 | 17:00 | 1.3 | 315 |
| 18/12/15 | 18:00 | 1.3 | 320 |
| 18/12/15 | 19:00 | 1.3 | 321 |
| 18/12/15 | 20:00 | 0.4 | 332 |
| 18/12/15 | 21:00 | 0 | - |
| 18/12/15 | 22:00 | 0 | - |
| 18/12/15 | 23:00 | 0.4 | 328 |
| 18/12/16 | 0:00 | 0.4 | 334 |
| 18/12/16 | 1:00 | 1.8 | 344 |
| 18/12/16 | 2:00 | 2.2 | 314 |
| 18/12/16 | 3:00 | 1.3 | 284 |

| 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) |
| 18/12/16 | 4:00 | 1.8 | 296 |
| 18/12/16 | 5:00 | 1.8 | 307 |
| 18/12/16 | 6:00 | 0.9 | 292 |
| 18/12/16 | 7:00 | 1.3 | 278 |
| 18/12/16 | 8:00 | 1.3 | 296 |
| 18/12/16 | 9:00 | 0.9 | 265 |
| 18/12/16 | 10:00 | 0.9 | 281 |
| 18/12/16 | 11:00 | 0.4 | 131 |
| 18/12/16 | 12:00 | 1.3 | 314 |
| 18/12/16 | 13:00 | 1.8 | 314 |
| 18/12/16 | 14:00 | 2.2 | 297 |
| 18/12/16 | 15:00 | 1.3 | 284 |
| 18/12/16 | 16:00 | 0.9 | 289 |
| 18/12/16 | 17:00 | 0.9 | 294 |
| 18/12/16 | 18:00 | 0.9 | 337 |
| 18/12/16 | 19:00 | 1.8 | 257 |
| 18/12/16 | 20:00 | 1.3 | 195 |
| 18/12/16 | 21:00 | 1.3 | 201 |
| 18/12/16 | 22:00 | 1.3 | 295 |
| 18/12/16 | 23:00 | 1.3 | 303 |
| 18/12/18 | 0:00 | 1.3 | 339 |
| 18/12/18 | 1:00 | 0.9 | 335 |
| 18/12/18 | 2:00 | 0.4 | 50 |
| 18/12/18 | 3:00 | 0.9 | 335 |
| 18/12/18 | 4:00 | 0.9 | 56 |
| 18/12/18 | 5:00 | 0.4 | 81 |
| 18/12/18 | 6:00 | 0.9 | 81 |
| 18/12/18 | 7:00 | 0.9 | 99 |
| 18/12/18 | 8:00 | 1.3 | 83 |
| 18/12/18 | 9:00 | 1.3 | 86 |
| 18/12/18 | 10:00 | 1.3 | 35 |
| 18/12/18 | 11:00 | 1.8 | 31 |
| 18/12/18 | 12:00 | 1.3 | 130 |
| 18/12/18 | 13:00 | 3.1 | 140 |
| 18/12/18 | 14:00 | 3.6 | 103 |
| 18/12/18 | 15:00 | 3.1 | 114 |
| 18/12/18 | 16:00 | 4 | 132 |
| 18/12/18 | 17:00 | 4 | 110 |
| 18/12/18 | 18:00 | 2.7 | 84 |
| 18/12/18 | 19:00 | 2.2 | 101 |
| 18/12/18 | 20:00 | 1.8 | 36 |
| 18/12/18 | 21:00 | 1.8 | 34 |
| 18/12/18 | 22:00 | 1.8 | 43 |
| 18/12/18 | 23:00 | 1.8 | 49 |
| 18/12/19 | 0:00 | 1.8 | 39 |
| 18/12/19 | 1:00 | 2.2 | 57 |
| 18/12/19 | 2:00 | 1.3 | 85 |
| 18/12/19 | 3:00 | 0.9 | 86 |
| 18/12/19 | 4:00 | 0 | - |
| 18/12/19 | 5:00 | 0.4 | 82 |
| 18/12/19 | 6:00 | 0.9 | 88 |
| 18/12/19 | 7:00 | 1.3 | 90 |
| 18/12/19 | 8:00 | 1.8 | 83 |
| 18/12/19 | 9:00 | 2.7 | 89 |
| 18/12/19 | 10:00 | 4 | 95 |
| 18/12/19 | 11:00 | 4 | 87 |

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) |
|------------------------|---------------------|------------------------------------|--|
| 18/12/19 | 12:00 | 3.6 | 81 |
| 18/12/19 | 13:00 | 4 | 105 |
| 18/12/19 | 14:00 | 4 | 103 |
| 18/12/19 | 15:00 | 3.6 | 122 |
| 18/12/19 | 16:00 | 2.7 | 91 |
| 18/12/19 | 17:00 | 1.8 | 80 |
| 18/12/19 | 18:00 | 2.2 | 98 |
| 18/12/19 | 19:00 | 2.7 | 113 |
| 18/12/19 | 20:00 | 2.2 | 89 |
| 18/12/19 | 21:00 | 2.7 | 94 |
| 18/12/19 | 22:00 | 2.2 | 100 |
| 18/12/19 | 23:00 | 2.2 | 107 |
| 18/12/21 | 0:00 | 1.3 | 91 |
| 18/12/21 | 1:00 | 1.8 | 94 |
| 18/12/21 | 2:00 | 1.3 | 69 |
| 18/12/21 | 3:00 | 1.3 | 88 |
| 18/12/21 | 4:00 | 1.8 | 94 |
| 18/12/21 | 5:00 | 1.3 | 99 |
| 18/12/21 | 6:00 | 0.9 | 72 |
| 18/12/21 | 7:00 | 0.9 | 57 |
| 18/12/21 | 8:00 | 1.3 | 83 |
| 18/12/21 | 9:00 | 1.8 | 95 |
| 18/12/21 | 10:00 | 1.8 | 95 |
| 18/12/21 | 11:00 | 2.7 | 82 |
| 18/12/21 | 12:00 | 2.2 | 93 |
| 18/12/21 | 13:00 | 2.7 | 102 |
| 18/12/21 | 14:00 | 3.6 | 138 |
| 18/12/21 | 15:00 | 3.1 | 88 |
| 18/12/21 | 16:00 | 4 | 92 |
| 18/12/21 | 17:00 | 4 | 119 |
| 18/12/21 | 18:00 | 4.5 | 106 |
| 18/12/21 | 19:00 | 4 | 100 |
| 18/12/21 | 20:00 | 4 | 85 |
| 18/12/21 | 21:00 | 4 | 88 |
| 18/12/21 | 22:00 | 4 | 98 |
| 18/12/21 | 23:00 | 3.6 | 95 |
| 18/12/22 | 0:00 | 3.6 | 93 |
| 18/12/22 | 1:00 | 2.2 | 93 |
| 18/12/22 | 2:00 | 2.2 | 74 |
| 18/12/22 | 3:00 | 3.1 | 83 |
| 18/12/22 | 4:00 | 2.7 | 95 |
| 18/12/22 | 5:00 | 1.8 | 81 |
| 18/12/22 | 6:00 | 1.3 | 86 |
| 18/12/22 | 7:00 | 0.9 | 92 |
| 18/12/22 | 8:00 | 1.3 | 91 |
| 18/12/22 | 9:00 | 1.8 | 98 |
| 18/12/22 | 10:00 | 1.3 | 174 |
| 18/12/22 | 11:00 | 1.3 | 234 |
| 18/12/22 | 12:00 | 2.2 | 234 |
| 18/12/22 | 13:00 | 1.8 | 202 |
| 18/12/22 | 14:00 | 2.2 | 209 |
| 18/12/22 | 15:00 | 1.8 | 200 |
| 18/12/22 | 16:00 | 1.3 | 235 |
| 18/12/22 | 17:00 | 0.9 | 78 |
| 18/12/22 | 18:00 | 1.8 | 66 |
| 18/12/22 | 19:00 | 1.3 | 63 |
| 18/12/22 | 20:00 | 1.3 | 73 |

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) |
|------------------------|---------------------|------------------------------------|--|
| 18/12/22 | 21:00 | 1.3 | 68 |
| 18/12/22 | 22:00 | 1.3 | 90 |
| 18/12/22 | 23:00 | 0.9 | 101 |
| 18/12/24 | 0:00 | 0.4 | 107 |
| 18/12/24 | 1:00 | 1.8 | 52 |
| 18/12/24 | 2:00 | 2.2 | 49 |
| 18/12/24 | 3:00 | 2.2 | 52 |
| 18/12/24 | 4:00 | 2.2 | 43 |
| 18/12/24 | 5:00 | 2.7 | 45 |
| 18/12/24 | 6:00 | 2.7 | 40 |
| 18/12/24 | 7:00 | 2.7 | 45 |
| 18/12/24 | 8:00 | 2.2 | 47 |
| 18/12/24 | 9:00 | 1.8 | 36 |
| 18/12/24 | 10:00 | 2.7 | 48 |
| 18/12/24 | 11:00 | 2.2 | 51 |
| 18/12/24 | 12:00 | 2.2 | 50 |
| 18/12/24 | 13:00 | 1.8 | 54 |
| 18/12/24 | 14:00 | 1.3 | 45 |
| 18/12/24 | 15:00 | 1.8 | 36 |
| 18/12/24 | 16:00 | 1.8 | 47 |
| 18/12/24 | 17:00 | 0.9 | 56 |
| 18/12/24 | 18:00 | 0.9 | 17 |
| 18/12/24 | 19:00 | 0.9 | 55 |
| 18/12/24 | 20:00 | 0.4 | 90 |
| 18/12/24 | 21:00 | 0 | - |
| 18/12/24 | 22:00 | 0 | - |
| 18/12/24 | 23:00 | 0.4 | 49 |
| 18/12/25 | 0:00 | 0.4 | 35 |
| 18/12/25 | 1:00 | 0.9 | 42 |
| 18/12/25 | 2:00 | 0.9 | 36 |
| 18/12/25 | 3:00 | 0.9 | 43 |
| 18/12/25 | 4:00 | 0.9 | 12 |
| 18/12/25 | 5:00 | 0.9 | 49 |
| 18/12/25 | 6:00 | 0.9 | 43 |
| 18/12/25 | 7:00 | 0.9 | 37 |
| 18/12/25 | 8:00 | 0.9 | 56 |
| 18/12/25 | 9:00 | 1.3 | 43 |
| 18/12/25 | 10:00 | 1.3 | 36 |
| 18/12/25 | 11:00 | 1.3 | 56 |
| 18/12/25 | 12:00 | 0.9 | 47 |
| 18/12/25 | 13:00 | 0.4 | 49 |
| 18/12/25 | 14:00 | 0.9 | 34 |
| 18/12/25 | 15:00 | 0.9 | 43 |
| 18/12/25 | 16:00 | 0.9 | 27 |
| 18/12/25 | 17:00 | 0.4 | 229 |
| 18/12/25 | 18:00 | 0 | - |
| 18/12/25 | 19:00 | 0.4 | 323 |
| 18/12/25 | 20:00 | 0 | - |
| 18/12/25 | 21:00 | 0 | - |
| 18/12/25 | 22:00 | 0 | - |
| 18/12/25 | 23:00 | 0 | - |
| 18/12/27 | 0:00 | 0 | - |
| 18/12/27 | 1:00 | 0 | - |
| 18/12/27 | 2:00 | 0 | - |
| 18/12/27 | 3:00 | 0.4 | 79 |
| 18/12/27 | 4:00 | 1.3 | 43 |
| 18/12/27 | 5:00 | 1.8 | 36 |

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) |
|------------------------|---------------------|------------------------------------|--|
| 18/12/27 | 6:00 | 1.8 | 12 |
| 18/12/27 | 7:00 | 2.7 | 29 |
| 18/12/27 | 8:00 | 3.1 | 29 |
| 18/12/27 | 9:00 | 2.7 | 53 |
| 18/12/27 | 10:00 | 2.2 | 30 |
| 18/12/27 | 11:00 | 1.8 | 32 |
| 18/12/27 | 12:00 | 1.3 | 19 |
| 18/12/27 | 13:00 | 1.3 | 33 |
| 18/12/27 | 14:00 | 0.9 | 99 |
| 18/12/27 | 15:00 | 1.3 | 274 |
| 18/12/27 | 16:00 | 0.4 | 295 |
| 18/12/27 | 17:00 | 0.9 | 129 |
| 18/12/27 | 18:00 | 1.8 | 45 |
| 18/12/27 | 19:00 | 1.8 | 23 |
| 18/12/27 | 20:00 | 1.8 | 41 |
| 18/12/27 | 21:00 | 1.8 | 26 |
| 18/12/27 | 22:00 | 1.3 | 29 |
| 18/12/27 | 23:00 | 1.8 | 51 |
| 18/12/28 | 0:00 | 1.8 | 49 |
| 18/12/28 | 1:00 | 1.8 | 40 |
| 18/12/28 | 2:00 | 2.2 | 22 |
| 18/12/28 | 3:00 | 2.2 | 42 |
| 18/12/28 | 4:00 | 2.7 | 14 |
| 18/12/28 | 5:00 | 2.7 | 51 |
| 18/12/28 | 6:00 | 2.7 | 40 |
| 18/12/28 | 7:00 | 3.6 | 56 |
| 18/12/28 | 8:00 | 2.7 | 34 |
| 18/12/28 | 9:00 | 2.7 | 24 |
| 18/12/28 | 10:00 | 2.7 | 29 |
| 18/12/28 | 11:00 | 2.2 | 328 |
| 18/12/28 | 12:00 | 1.8 | 12 |
| 18/12/28 | 13:00 | 2.2 | 20 |
| 18/12/28 | 14:00 | 2.7 | 346 |
| 18/12/28 | 15:00 | 2.2 | 36 |
| 18/12/28 | 16:00 | 2.2 | 15 |
| 18/12/28 | 17:00 | 2.7 | 29 |
| 18/12/28 | 18:00 | 3.1 | 25 |
| 18/12/28 | 19:00 | 3.1 | 21 |
| 18/12/28 | 20:00 | 3.1 | 18 |
| 18/12/28 | 21:00 | 3.1 | 24 |
| 18/12/28 | 22:00 | 3.1 | 24 |
| 18/12/28 | 23:00 | 2.7 | 40 |
| 18/12/30 | 0:00 | 2.2 | 26 |
| 18/12/30 | 1:00 | 2.2 | 20 |
| 18/12/30 | 2:00 | 3.1 | 52 |
| 18/12/30 | 3:00 | 3.1 | 38 |
| 18/12/30 | 4:00 | 3.1 | 39 |
| 18/12/30 | 5:00 | 2.7 | 42 |
| 18/12/30 | 6:00 | 2.7 | 24 |
| 18/12/30 | 7:00 | 2.7 | 17 |
| 18/12/30 | 8:00 | 2.2 | 11 |
| 18/12/30 | 9:00 | 3.6 | 15 |
| 18/12/30 | 10:00 | 4 | 44 |
| 18/12/30 | 11:00 | 1.8 | 14 |
| 18/12/30 | 12:00 | 3.1 | 36 |
| 18/12/30 | 13:00 | 2.2 | 39 |
| 18/12/30 | 14:00 | 2.7 | 335 |

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) |
|------------------------|---------------------|------------------------------------|--|
| 18/12/30 | 15:00 | 2.7 | 326 |
| 18/12/30 | 16:00 | 2.2 | 313 |
| 18/12/30 | 17:00 | 1.8 | 313 |
| 18/12/30 | 18:00 | 1.3 | 298 |
| 18/12/30 | 19:00 | 1.8 | 330 |
| 18/12/30 | 20:00 | 1.3 | 326 |
| 18/12/30 | 21:00 | 1.3 | 321 |
| 18/12/30 | 22:00 | 1.3 | 317 |
| 18/12/30 | 23:00 | 0.9 | 286 |
| 18/12/31 | 0:00 | 0.9 | 330 |
| 18/12/31 | 1:00 | 0.9 | 91 |
| 18/12/31 | 2:00 | 0.9 | 293 |
| 18/12/31 | 3:00 | 1.3 | 312 |
| 18/12/31 | 4:00 | 1.3 | 293 |
| 18/12/31 | 5:00 | 1.8 | 301 |
| 18/12/31 | 6:00 | 1.3 | 308 |
| 18/12/31 | 7:00 | 1.3 | 282 |
| 18/12/31 | 8:00 | 1.8 | 322 |
| 18/12/31 | 9:00 | 2.2 | 317 |
| 18/12/31 | 10:00 | 2.7 | 305 |
| 18/12/31 | 11:00 | 2.7 | 308 |
| 18/12/31 | 12:00 | 2.7 | 317 |
| 18/12/31 | 13:00 | 3.1 | 329 |
| 18/12/31 | 14:00 | 3.1 | 316 |
| 18/12/31 | 15:00 | 3.1 | 313 |
| 18/12/31 | 16:00 | 2.7 | 332 |
| 18/12/31 | 17:00 | 2.2 | 305 |
| 18/12/31 | 18:00 | 1.8 | 285 |
| 18/12/31 | 19:00 | 1.8 | 283 |
| 18/12/31 | 20:00 | 1.3 | 283 |
| 18/12/31 | 21:00 | 1.3 | 295 |
| 18/12/31 | 22:00 | 0.9 | 295 |
| 18/12/31 | 23:00 | 1.3 | 301 |

Appendix I

Impact Dolphin Monitoring Survey

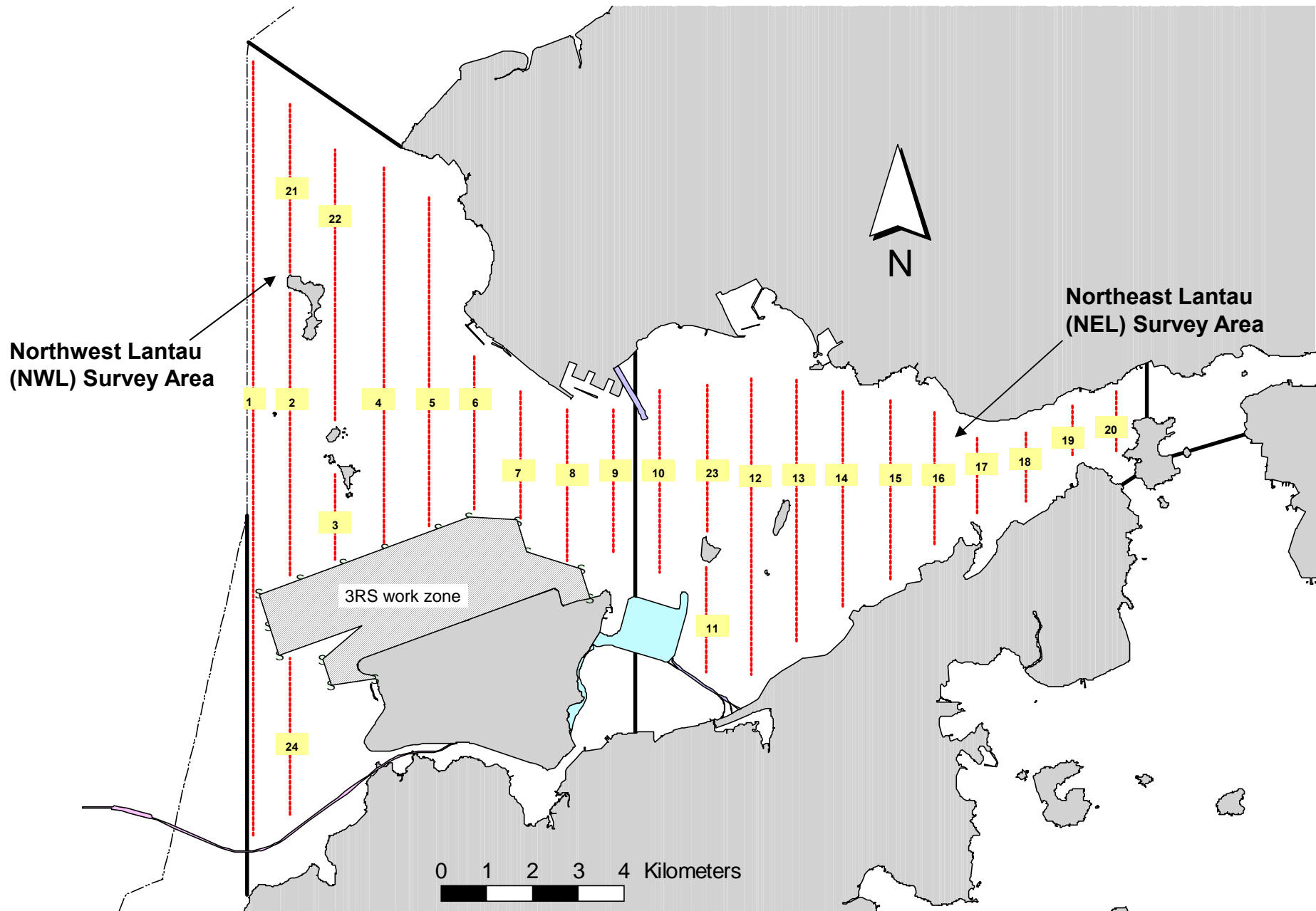


Figure 1. Transect Line Layout in Northwest and Northeast Lantau Survey Areas

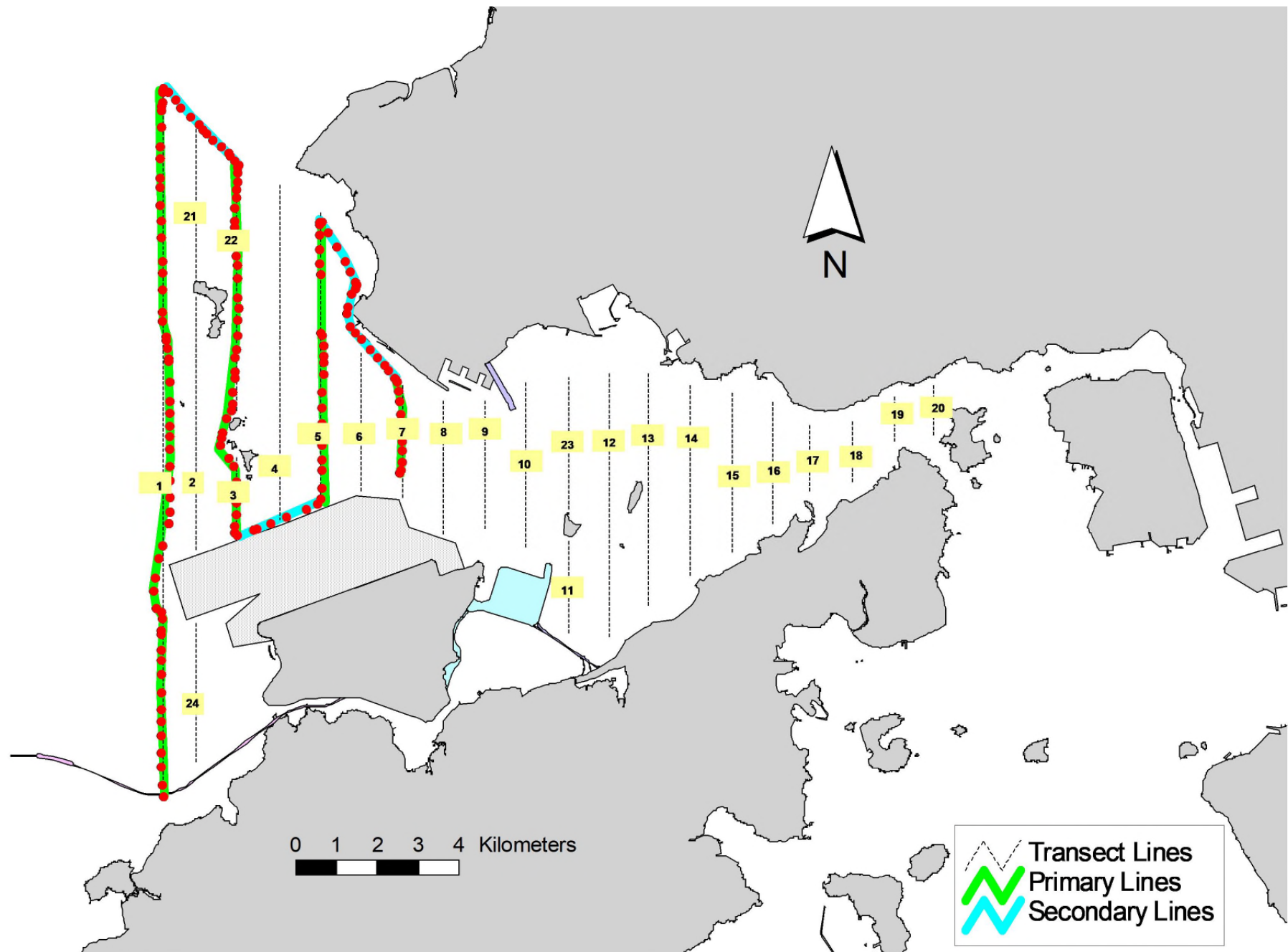


Figure 2. Survey Route on December 3rd, 2018 (from HKLR03 project)

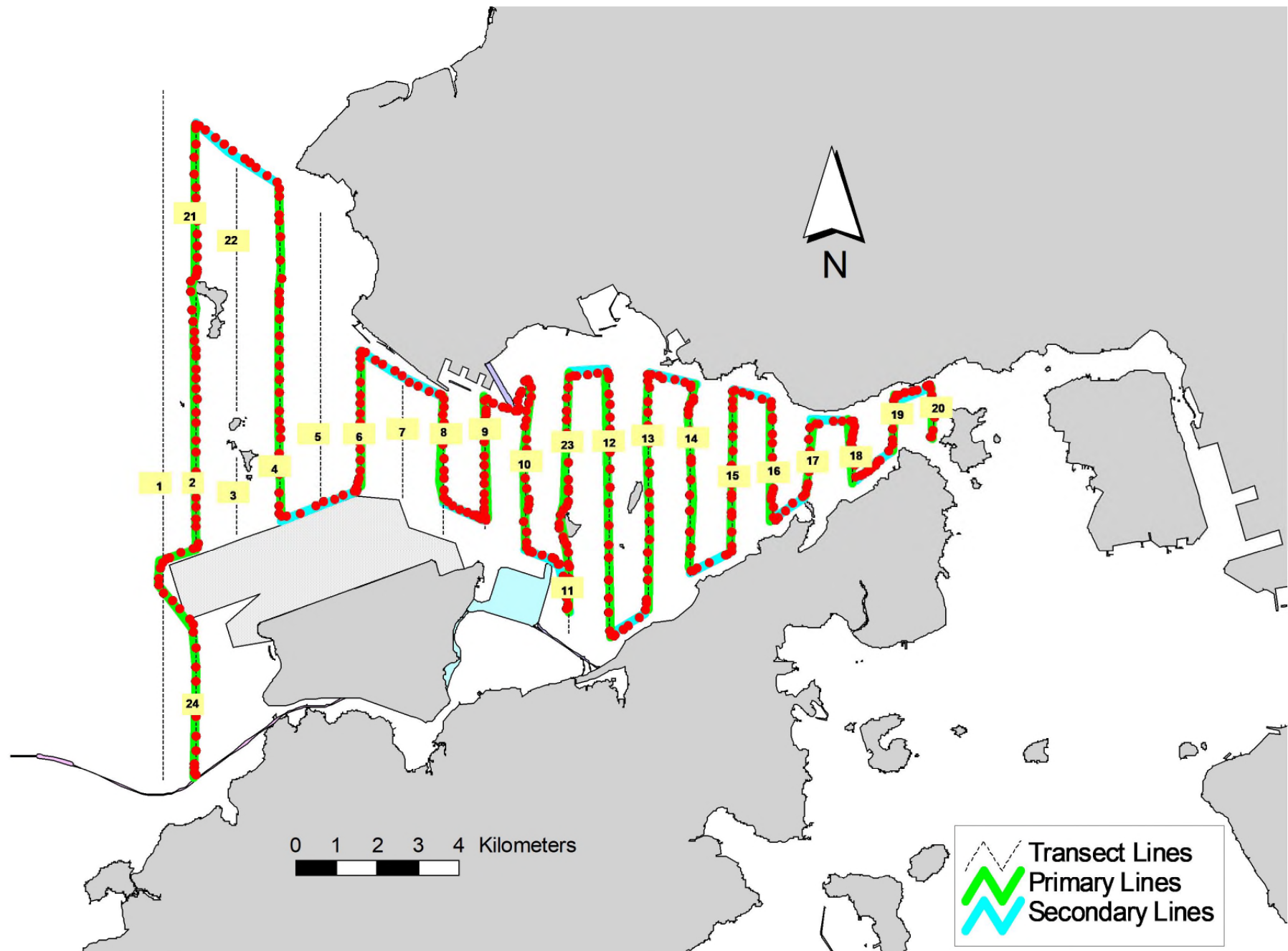


Figure 3. Survey Route on December 5th, 2018 (from HKLR03 project)

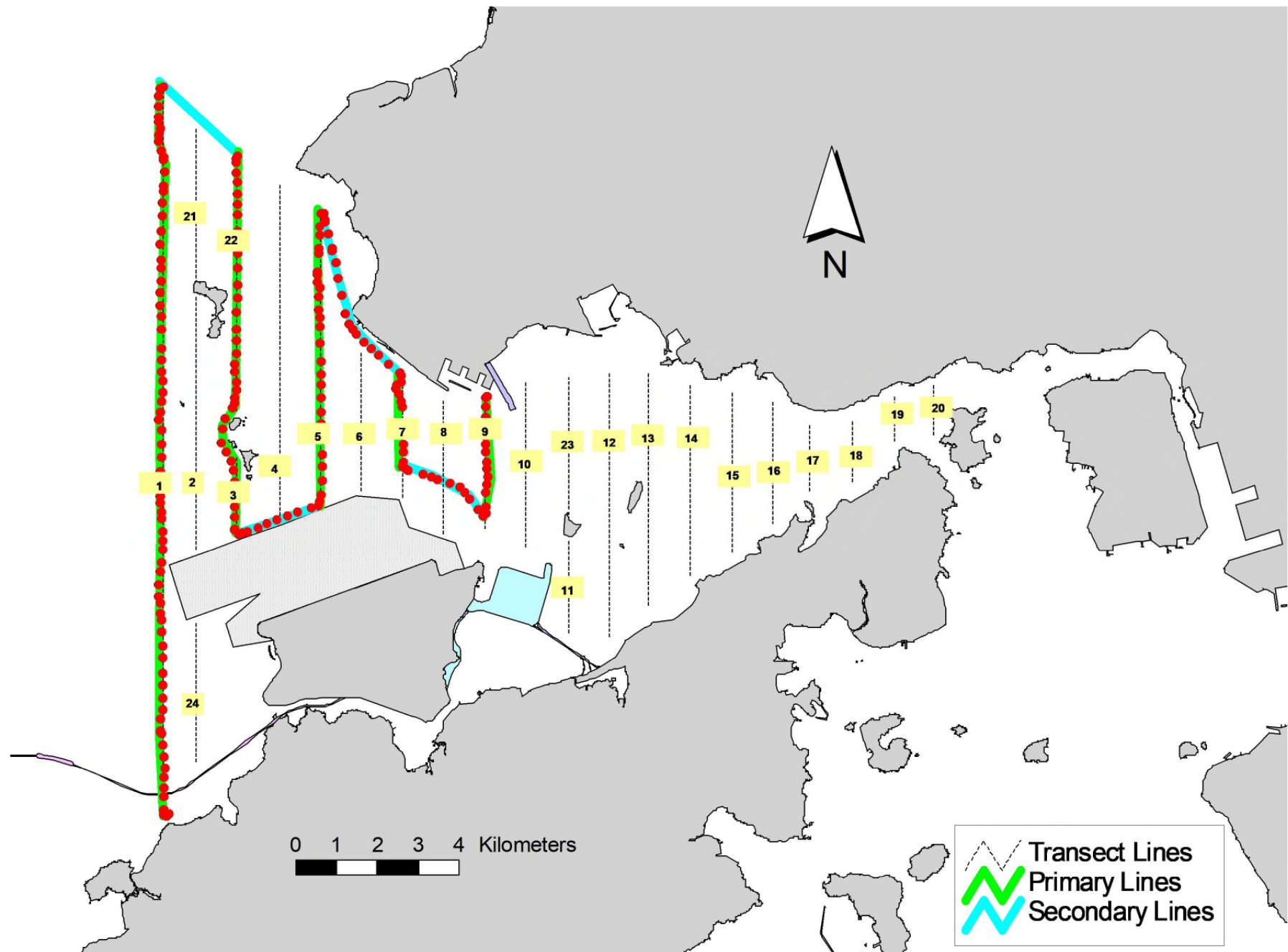


Figure 4. Survey Route on December 10th, 2018 (from HKLR03 project)

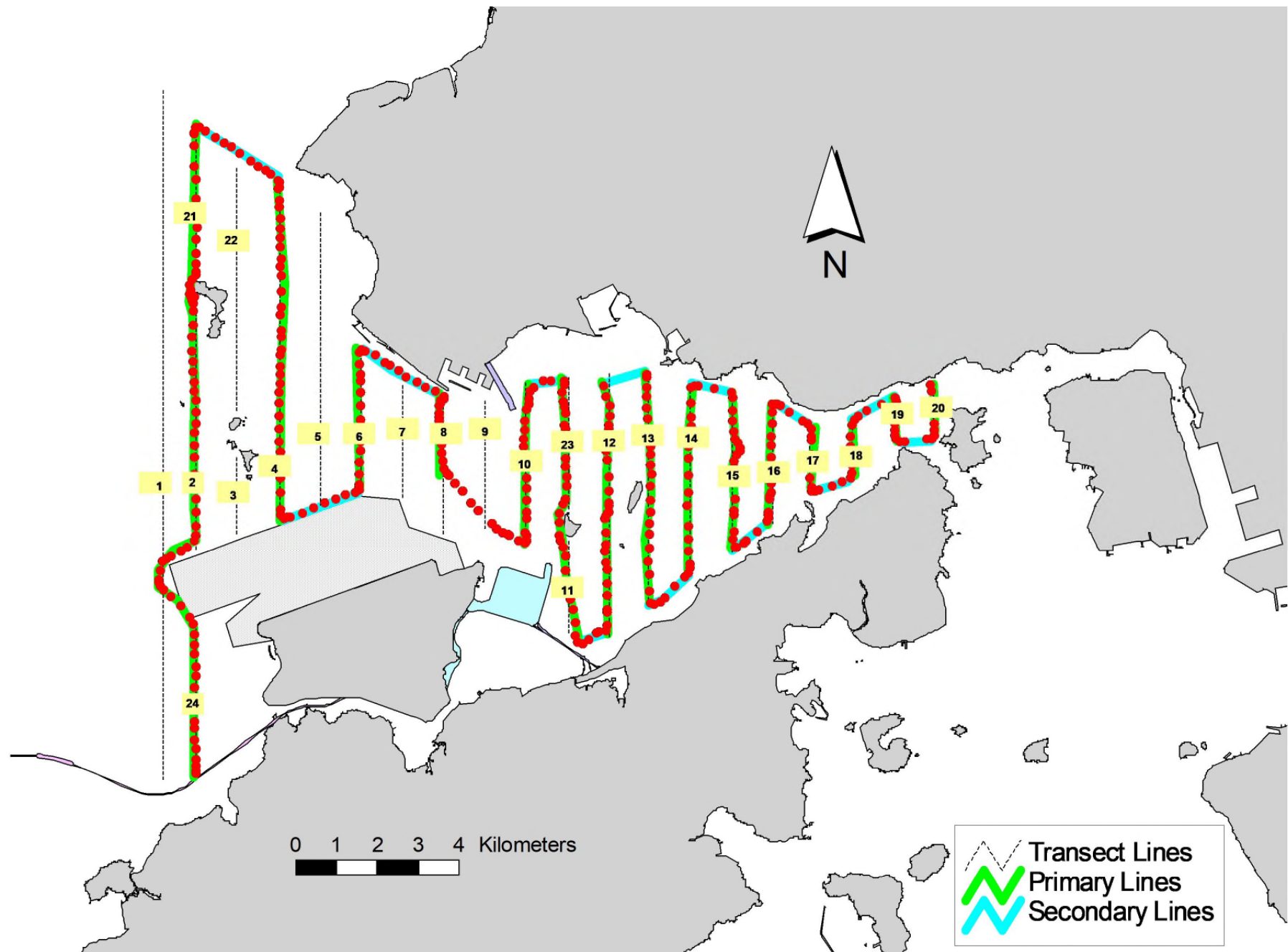


Figure 5. Survey Route on December 12th, 2018 (from HKLR03 project)

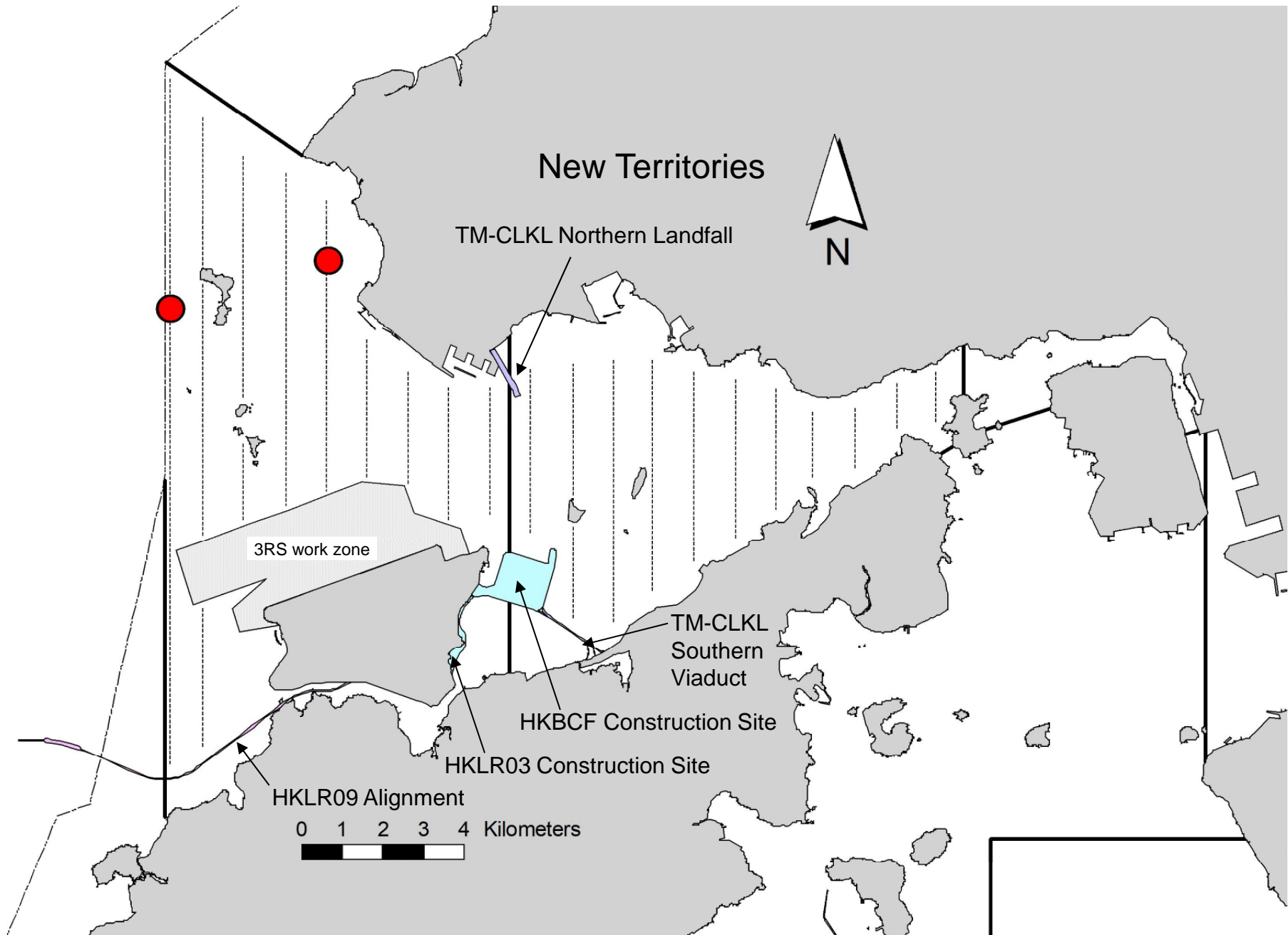


Figure 6. Distribution of Chinese White Dolphin Sightings during December 2018 HKLR03 Monitoring Surveys

Appendix I. HKLR03 Survey Effort Database (December 2018)

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

| DATE | AREA | BEAU | EFFORT | SEASON | VESSEL | TYPE | P/S |
|-----------|-----------|------|--------|--------|---------------|------|-----|
| 3-Dec-18 | NW LANTAU | 2 | 27.00 | WINTER | STANDARD36826 | HKLR | P |
| 3-Dec-18 | NW LANTAU | 3 | 4.18 | WINTER | STANDARD36826 | HKLR | P |
| 3-Dec-18 | NW LANTAU | 2 | 10.68 | WINTER | STANDARD36826 | HKLR | S |
| 5-Dec-18 | NW LANTAU | 3 | 19.43 | WINTER | STANDARD36826 | HKLR | P |
| 5-Dec-18 | NW LANTAU | 4 | 9.90 | WINTER | STANDARD36826 | HKLR | P |
| 5-Dec-18 | NW LANTAU | 3 | 6.57 | WINTER | STANDARD36826 | HKLR | S |
| 5-Dec-18 | NW LANTAU | 4 | 4.30 | WINTER | STANDARD36826 | HKLR | S |
| 5-Dec-18 | NE LANTAU | 2 | 8.60 | WINTER | STANDARD36826 | HKLR | P |
| 5-Dec-18 | NE LANTAU | 3 | 26.18 | WINTER | STANDARD36826 | HKLR | P |
| 5-Dec-18 | NE LANTAU | 4 | 1.10 | WINTER | STANDARD36826 | HKLR | P |
| 5-Dec-18 | NE LANTAU | 2 | 6.60 | WINTER | STANDARD36826 | HKLR | S |
| 5-Dec-18 | NE LANTAU | 3 | 6.22 | WINTER | STANDARD36826 | HKLR | S |
| 10-Dec-18 | NW LANTAU | 2 | 13.34 | WINTER | STANDARD36826 | HKLR | P |
| 10-Dec-18 | NW LANTAU | 3 | 22.85 | WINTER | STANDARD36826 | HKLR | P |
| 10-Dec-18 | NW LANTAU | 2 | 8.98 | WINTER | STANDARD36826 | HKLR | S |
| 10-Dec-18 | NW LANTAU | 3 | 1.73 | WINTER | STANDARD36826 | HKLR | S |
| 12-Dec-18 | NW LANTAU | 2 | 7.60 | WINTER | STANDARD36826 | HKLR | P |
| 12-Dec-18 | NW LANTAU | 3 | 10.12 | WINTER | STANDARD36826 | HKLR | P |
| 12-Dec-18 | NW LANTAU | 4 | 7.55 | WINTER | STANDARD36826 | HKLR | P |
| 12-Dec-18 | NW LANTAU | 2 | 2.10 | WINTER | STANDARD36826 | HKLR | S |
| 12-Dec-18 | NW LANTAU | 3 | 6.10 | WINTER | STANDARD36826 | HKLR | S |
| 12-Dec-18 | NW LANTAU | 4 | 2.53 | WINTER | STANDARD36826 | HKLR | S |
| 12-Dec-18 | NE LANTAU | 2 | 33.02 | WINTER | STANDARD36826 | HKLR | P |
| 12-Dec-18 | NE LANTAU | 3 | 2.59 | WINTER | STANDARD36826 | HKLR | P |
| 12-Dec-18 | NE LANTAU | 2 | 12.69 | WINTER | STANDARD36826 | HKLR | S |

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

(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 |
|----------|-------|------|--------|-----------|------|-----|--------|------|----------|---------|--------|-------------|-----|
| 3-Dec-18 | 1 | 1046 | 5 | NW LANTAU | 2 | 821 | ON | HKLR | 827178 | 808517 | WINTER | NONE | P |
| 3-Dec-18 | 2 | 1247 | 1 | NW LANTAU | 3 | 962 | ON | HKLR | 826056 | 804663 | WINTER | NONE | P |

Appendix III. Individual dolphins identified during HKLR03 monitoring surveys in (December 2018)

| ID# | DATE | STG# | AREA |
|------------|-------------|-------------|-------------|
| CH34 | 03/12/18 | 1 | NW LANTAU |
| NL182 | 03/12/18 | 1 | NW LANTAU |
| NL202 | 03/12/18 | 2 | NW LANTAU |



Appendix IV. Photographs of Identified Individual Dolphins in December 2018 (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. Identify the source. | 1. Check monitoring data submitted by the ET. | 1. Confirm receipt of notification of failure in writing. | 1. Rectify any unacceptable practice | |
| 2. Repeat measurement to confirm finding. If two consecutive measurements exceed Action Level, the exceedance is then confirmed. | 2. Check the Contractor's working method. | 2. Notify the Contractor. | 2. Amend working methods if appropriate | |
| 3. Inform the IEC and the SOR. | 3. If the exceedance is confirmed to be Project related after investigation, discuss with the ET and the Contractor on possible remedial measures. | 3. Ensure remedial measures properly implemented. | 3. If the exceedance is confirmed to be Project related, submit proposals for remedial actions to IEC within 3 working days of notification | |
| 4. Investigate the cause of exceedance and check Contractor's working procedures to determine possible mitigation to be implemented. | 4. Advise the SOR on the effectiveness of the proposed remedial measures. | | 4. Implement the agreed proposals | |
| 5. If the exceedance is confirmed to be Project related after investigation, increase monitoring frequency to daily. | 5. Supervise implementation of remedial measures. | | 5. Amend proposal if appropriate | |
| 6. Discuss with the IEC and the Contractor on remedial actions required. | | | | |
| 7. If exceedance continues, arrange meeting with the IEC and the SOR. | | | | |
| 8. If exceedance stops, cease additional monitoring. | | | | |

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

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

Event / Action Plan for Impact Dolphin Monitoring

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

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

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

Appendix K

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

Table K1 *Cumulative Statistics on Exceedances*

| Parameters | Level of Exceedance | Total No. recorded in this reporting month | Total No. recorded since project commencement |
|---------------------------|---------------------|--|---|
| 1-hr TSP | Action | 3 | 82 |
| | Limit | 0 | 5 |
| 24-hr TSP | Action | 0 | 8 |
| | Limit | 0 | 4 |
| Water Quality | Action | 0 | 20 |
| | Limit | 0 | 1 |
| Impact Dolphin Monitoring | Action | 0 | 11 |
| | Limit | 0 | 14 |

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

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

**Email
message**

**Environmental
Resources
Management**

To Ramboll Hong Kong, Limited (ENPO)

From ERM- Hong Kong, Limited

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

Subject Notification of Exceedance for Air Quality
Impact Monitoring

Date 14 December 2018

2507, 25/F One Harbourfront
18 Tak Fung Street
Hunghom, Kowloon
Hong Kong
Telephone: (852) 2271 3000
Facsimile: (852) 2723 5660



ERM

Dear Sir or Madam,

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

0212330_9December2018_1hrTSP_Station ASR1

One Action Level Exceedance was recorded on 9 December 2018.

Regards,

A handwritten signature in black ink that reads "Jasmine".

Dr Jasmine Ng
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.



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_9December2018_1hrTSP_Station ASR1 [Total No. of Exceedances = 1] | |
| Date | 9 December 2018 (Measured) 14 December 2018 (Laboratory results received by ERM) | |
| Monitoring Station | ASR1, ASR5, ASR6, ASR10 and AQMS1 | |
| Parameter(s) with Exceedance(s) | 1-hr TSP | |
| Action Levels | 24-hr TSP ($\mu\text{g}/\text{m}^3$) | ASR1 = 213 ASR5 = 238 AQMS1 = 213 ASR6 = 238 ASR10 = 214 |
| | 1-hr TSP ($\mu\text{g}/\text{m}^3$) | ASR1 = 331 ASR5 = 340 AQMS1 = 335 ASR6 = 338 ASR10 = 337 |
| Limit Levels | 1-hr TSP ($\mu\text{g}/\text{m}^3$) | 500 |
| | 24-hr TSP ($\mu\text{g}/\text{m}^3$) | 260 |
| Measured Levels | Action Level Exceedance for 1-hr TSP is observed at ASR1 (346 $\mu\text{g}/\text{m}^3$) during 1044 - 1144 hrs. | |
| Works Undertaken (at the time of monitoring event) | On 9 December 2018, no construction works was carried out on site. | |
| Possible Reason for Action or Limit Level Exceedance(s) | <p>The exceedance is unlikely to be due to this Contract, in view of the following:</p> <ul style="list-style-type: none"> According to the construction information provided by the Contractor, no construction works was carried out on site on 9 December 2018. The Contractor has implemented the required mitigation measures as per the EP, approved EIA and Updated EM&A Manual (e.g. water spraying on exposed soil within the site and associated works areas; exposed soil covered by tarpaulin sheets). The exceedance is unlikely to be due to this Contract as dust suppression measures were implemented properly on site. Water spraying was applied on site to prevent dust. <p>Based on the above, the exceedances are unlikely to be due to this Contract.</p> | |

| | |
|-----------------------------------|--|
| Actions Taken/ To Be Taken | <p>According to the construction information provided by the Contractor, no construction works was carried out on 9 December 2018. Dust suppression measures were properly implemented. Water spraying was applied to prevent dust. Photo record is provided in Annex A. Photos taken during AQM are also provided.</p> <p>The Contractor has been reminded to implement 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 sprinklers for water spraying, covering the materials having the potential to create dust by clean tarpaulin, use of water truck and watering on all exposed soil within the site) throughout the construction period.</p> |
| Remarks | <p>The monitoring results, wind data, and the locations of air quality monitoring stations are attached.</p> |



Annex A Photos provided by the Contractor

*Note: Photos taken on 9/12/2018



Water truck was used for dust control. (Works Area Portion N-C)



Water spraying was applied on the main haul road. (Works Area Portion N-C)



Annex A Photos provided by the Contractor

*Note: Photos taken on 9/12/2018



Water spraying was applied on the main haul road. (Works Area Portion N-A)



Dusty material was covered by tarpaulin sheets. (Works Area Portion N-A)



Annex A Photos taken during AQM

*Note: Photos taken on 9/12/2018



ASR1



ASR1

Air quality monitoring results on 9/12/2018

| Project | Works | Date | Station | Weather | Start time | Parameters | Results | Unit |
|---------|------------|-----------|---------|---------|------------|-------------|---------|-------|
| TMCLKL | HY/2012/08 | 9/12/2018 | AQMS1 | Cloudy | 8:52 | 1-hour TSP | 79 | ug/m3 |
| TMCLKL | HY/2012/08 | 9/12/2018 | AQMS1 | Cloudy | 9:54 | 1-hour TSP | 57 | ug/m3 |
| TMCLKL | HY/2012/08 | 9/12/2018 | AQMS1 | Cloudy | 10:56 | 1-hour TSP | 75 | ug/m3 |
| TMCLKL | HY/2012/08 | 9/12/2018 | ASR1 | Cloudy | 8:40 | 1-hour TSP | 135 | ug/m3 |
| TMCLKL | HY/2012/08 | 9/12/2018 | ASR1 | Cloudy | 9:42 | 1-hour TSP | 212 | ug/m3 |
| TMCLKL | HY/2012/08 | 9/12/2018 | ASR1 | Cloudy | 10:44 | 1-hour TSP | 346 | ug/m3 |
| TMCLKL | HY/2012/08 | 9/12/2018 | ASR10 | Cloudy | 8:05 | 1-hour TSP | 74 | ug/m3 |
| TMCLKL | HY/2012/08 | 9/12/2018 | ASR10 | Cloudy | 9:07 | 1-hour TSP | 79 | ug/m3 |
| TMCLKL | HY/2012/08 | 9/12/2018 | ASR10 | Cloudy | 10:09 | 1-hour TSP | 83 | ug/m3 |
| TMCLKL | HY/2012/08 | 9/12/2018 | ASR5 | Cloudy | 8:28 | 1-hour TSP | 201 | ug/m3 |
| TMCLKL | HY/2012/08 | 9/12/2018 | ASR5 | Cloudy | 9:30 | 1-hour TSP | 194 | ug/m3 |
| TMCLKL | HY/2012/08 | 9/12/2018 | ASR5 | Cloudy | 10:32 | 1-hour TSP | 194 | ug/m3 |
| TMCLKL | HY/2012/08 | 9/12/2018 | ASR6 | Cloudy | 8:16 | 1-hour TSP | 134 | ug/m3 |
| TMCLKL | HY/2012/08 | 9/12/2018 | ASR6 | Cloudy | 9:18 | 1-hour TSP | 97 | ug/m3 |
| TMCLKL | HY/2012/08 | 9/12/2018 | ASR6 | Cloudy | 10:20 | 1-hour TSP | 112 | ug/m3 |
| TMCLKL | HY/2012/08 | 9/12/2018 | AQMS1 | Cloudy | 11:58 | 24-hour TSP | 35 | ug/m3 |
| TMCLKL | HY/2012/08 | 9/12/2018 | ASR1 | Cloudy | 11:46 | 24-hour TSP | 62 | ug/m3 |
| TMCLKL | HY/2012/08 | 9/12/2018 | ASR10 | Cloudy | 11:09 | 24-hour TSP | 40 | ug/m3 |
| TMCLKL | HY/2012/08 | 9/12/2018 | ASR5 | Cloudy | 11:34 | 24-hour TSP | 117 | ug/m3 |
| TMCLKL | HY/2012/08 | 9/12/2018 | ASR6 | Cloudy | 11:22 | 24-hour TSP | 53 | ug/m3 |

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) |
|------------------------|---------------------|------------------------------------|--|
| 18/12/09 | 0:00 | 2.7 | 21 |
| 18/12/09 | 1:00 | 3.1 | 34 |
| 18/12/09 | 2:00 | 2.2 | 55 |
| 18/12/09 | 3:00 | 2.2 | 39 |
| 18/12/09 | 4:00 | 1.3 | 18 |
| 18/12/09 | 5:00 | 1.3 | 56 |
| 18/12/09 | 6:00 | 1.8 | 56 |
| 18/12/09 | 7:00 | 1.8 | 38 |
| 18/12/09 | 8:00 | 2.2 | 36 |
| 18/12/09 | 9:00 | 2.7 | 14 |
| 18/12/09 | 10:00 | 1.8 | 32 |
| 18/12/09 | 11:00 | 0.9 | 43 |
| 18/12/09 | 12:00 | 0.9 | 41 |
| 18/12/09 | 13:00 | 1.3 | 348 |
| 18/12/09 | 14:00 | 2.2 | 331 |
| 18/12/09 | 15:00 | 3.1 | 326 |
| 18/12/09 | 16:00 | 1.8 | 330 |
| 18/12/09 | 17:00 | 1.3 | 13 |
| 18/12/09 | 18:00 | 1.3 | 4 |
| 18/12/09 | 19:00 | 1.8 | 18 |
| 18/12/09 | 20:00 | 1.8 | 53 |
| 18/12/09 | 21:00 | 0.9 | 336 |
| 18/12/09 | 22:00 | 1.3 | 27 |
| 18/12/09 | 23:00 | 1.3 | 44 |

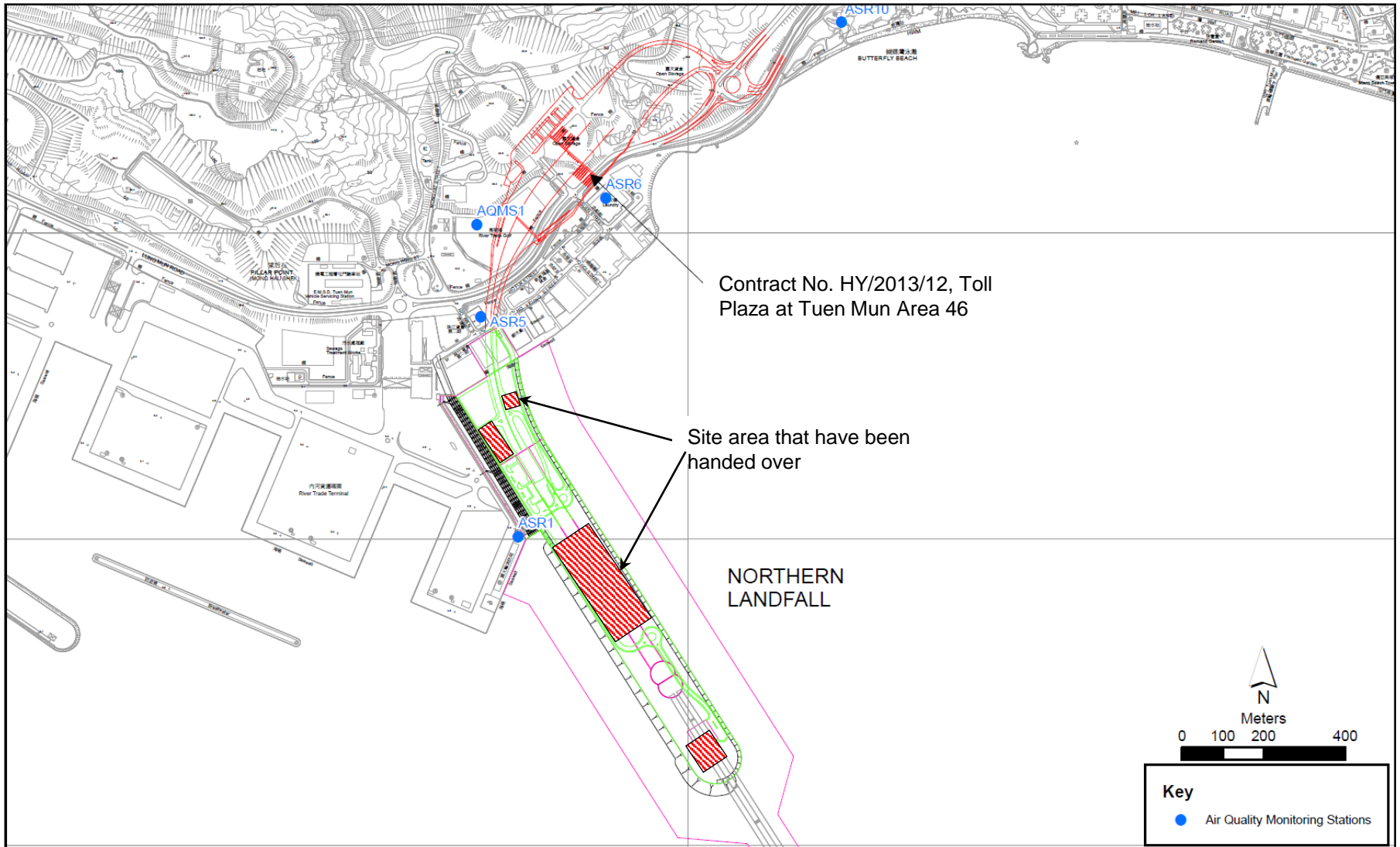


Figure 1

No construction works was carried out on 9 December 2018

Email
message

**Environmental
Resources
Management**

To Ramboll Hong Kong, Limited (ENPO)

From ERM- Hong Kong, Limited

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

Subject Notification of Exceedance for Air Quality
Impact Monitoring

Date 24 December 2018

2507, 25/F One Harbourfront
18 Tak Fung Street
Hunghom, Kowloon
Hong Kong
Telephone: (852) 2271 3000
Facsimile: (852) 2723 5660



ERM

Dear Sir or Madam,

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

0212330_12December2018_1hrTSP_Station ASR1

One Action Level Exceedance was recorded on 12 December 2018.

Regards,

A handwritten signature in black ink, appearing to read 'Jasmine'.

Dr Jasmine Ng
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_12December2018_1hrTSP_Station ASR1 [Total No. of Exceedances = 1] | |
| Date | 12 December 2018 (Measured) 24 December 2018 (Laboratory results received by ERM) | |
| Monitoring Station | ASR1, ASR5, ASR6, ASR10 and AQMS1 | |
| Parameter(s) with Exceedance(s) | 1-hr TSP | |
| Action Levels | 24-hr TSP ($\mu\text{g}/\text{m}^3$) | ASR1 = 213 ASR5 = 238 AQMS1 = 213 ASR6 = 238 ASR10 = 214 |
| | 1-hr TSP ($\mu\text{g}/\text{m}^3$) | ASR1 = 331 ASR5 = 340 AQMS1 = 335 ASR6 = 338 ASR10 = 337 |
| Limit Levels | 1-hr TSP ($\mu\text{g}/\text{m}^3$) | 500 |
| | 24-hr TSP ($\mu\text{g}/\text{m}^3$) | 260 |
| Measured Levels | Action Level Exceedance for 1-hr TSP is observed at ASR1 ($414 \mu\text{g}/\text{m}^3$) during 1331 - 1431 hrs. | |
| Works Undertaken (at the time of monitoring event) | On 12 December 2018, TBM tunnel works and surcharge removal was carried out at Portion N-C on the site. | |
| Possible Reason for Action or Limit Level Exceedance(s) | <p>The exceedance is unlikely to be due to this Contract, in view of the following:</p> <ul style="list-style-type: none"> • According to the construction information provided by the Contractor, the majority of construction works on 12 December 2018 was TBM tunnel works and surcharge removal. 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 on exposed soil within the site and associated works areas; exposed soil covered by tarpaulin sheets). • The exceedance is unlikely to be due to this Contract as dust suppression measures were implemented properly on site. Water spraying was applied on site to prevent dust. <p>Based on the above, the exceedances are unlikely to be due to this Contract.</p> | |

| | |
|-----------------------------------|--|
| Actions Taken/ To Be Taken | <p>According to the construction information provided by the Contractor, TBM tunnel works and surcharge removal was carried out on 12 December 2018. Dust suppression measures were properly implemented. Water spraying was applied to prevent dust. Photos are provided in Annex A. Photos taken during AQM are also provided in Annex A.</p> <p>The Contractor has been reminded to implement 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 sprinklers for water spraying, covering the materials having the potential to create dust by clean tarpaulin, use of water truck and watering on all exposed soil within the site) throughout the construction period.</p> |
| Remarks | <p>The monitoring results and the locations of air quality monitoring stations are attached.</p> |



Annex A Photos provided by the Contractor

*Note: Photos taken on 12/12/2018



Water truck was used for dust control during surcharge removal. (Works Area Portion N-C)



Water spraying was applied on the main haul road. (Works Area Portion N-C)



Annex A Photos taken during AQM

*Note: Photos taken on 12/12/2018



No significant dust impact was observed during AQM at ASR1.

| Air quality monitoring results on 12/12/2018 | | | | | | | | |
|--|------------|------------|---------|---------|------------|-------------|---------|-------|
| Project | Works | Date | Station | Weather | Start time | Parameters | Results | Unit |
| TMCLKL | HY/2012/08 | 12/12/2018 | AQMS1 | Cloudy | 13:41 | 1-hour TSP | 95 | ug/m3 |
| TMCLKL | HY/2012/08 | 12/12/2018 | AQMS1 | Cloudy | 14:43 | 1-hour TSP | 79 | ug/m3 |
| TMCLKL | HY/2012/08 | 12/12/2018 | AQMS1 | Cloudy | 15:45 | 1-hour TSP | 95 | ug/m3 |
| TMCLKL | HY/2012/08 | 12/12/2018 | ASR1 | Cloudy | 13:31 | 1-hour TSP | 414 | ug/m3 |
| TMCLKL | HY/2012/08 | 12/12/2018 | ASR1 | Cloudy | 14:33 | 1-hour TSP | 174 | ug/m3 |
| TMCLKL | HY/2012/08 | 12/12/2018 | ASR1 | Cloudy | 15:35 | 1-hour TSP | 142 | ug/m3 |
| TMCLKL | HY/2012/08 | 12/12/2018 | ASR10 | Cloudy | 13:00 | 1-hour TSP | 112 | ug/m3 |
| TMCLKL | HY/2012/08 | 12/12/2018 | ASR10 | Cloudy | 14:02 | 1-hour TSP | 77 | ug/m3 |
| TMCLKL | HY/2012/08 | 12/12/2018 | ASR10 | Cloudy | 15:04 | 1-hour TSP | 80 | ug/m3 |
| TMCLKL | HY/2012/08 | 12/12/2018 | ASR5 | Cloudy | 13:20 | 1-hour TSP | 340 | ug/m3 |
| TMCLKL | HY/2012/08 | 12/12/2018 | ASR5 | Cloudy | 14:22 | 1-hour TSP | 171 | ug/m3 |
| TMCLKL | HY/2012/08 | 12/12/2018 | ASR5 | Cloudy | 15:24 | 1-hour TSP | 168 | ug/m3 |
| TMCLKL | HY/2012/08 | 12/12/2018 | ASR6 | Cloudy | 13:10 | 1-hour TSP | 230 | ug/m3 |
| TMCLKL | HY/2012/08 | 12/12/2018 | ASR6 | Cloudy | 14:12 | 1-hour TSP | 111 | ug/m3 |
| TMCLKL | HY/2012/08 | 12/12/2018 | ASR6 | Cloudy | 15:14 | 1-hour TSP | 106 | ug/m3 |
| TMCLKL | HY/2012/08 | 12/12/2018 | AQMS1 | Cloudy | 16:47 | 24-hour TSP | 73 | ug/m3 |
| TMCLKL | HY/2012/08 | 12/12/2018 | ASR1 | Cloudy | 16:27 | 24-hour TSP | 126 | ug/m3 |
| TMCLKL | HY/2012/08 | 12/12/2018 | ASR10 | Cloudy | 16:06 | 24-hour TSP | 69 | ug/m3 |
| TMCLKL | HY/2012/08 | 12/12/2018 | ASR5 | Cloudy | 16:26 | 24-hour TSP | 142 | ug/m3 |
| TMCLKL | HY/2012/08 | 12/12/2018 | ASR6 | Cloudy | 16:16 | 24-hour TSP | 93 | ug/m3 |

| 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) |
| 18/12/12 | 0:00 | 1.8 | 313 |
| 18/12/12 | 1:00 | 1.8 | 282 |
| 18/12/12 | 2:00 | 1.8 | 297 |
| 18/12/12 | 3:00 | 1.8 | 306 |
| 18/12/12 | 4:00 | 1.8 | 316 |
| 18/12/12 | 5:00 | 0.9 | 348 |
| 18/12/12 | 6:00 | 1.3 | 281 |
| 18/12/12 | 7:00 | 1.3 | 55 |
| 18/12/12 | 8:00 | 1.8 | 295 |
| 18/12/12 | 9:00 | 1.3 | 298 |
| 18/12/12 | 10:00 | 1.8 | 19 |
| 18/12/12 | 11:00 | 1.3 | 344 |
| 18/12/12 | 12:00 | 0.9 | 321 |
| 18/12/12 | 13:00 | 1.3 | 347 |
| 18/12/12 | 14:00 | 2.2 | 304 |
| 18/12/12 | 15:00 | 1.3 | 306 |
| 18/12/12 | 16:00 | 1.8 | 322 |
| 18/12/12 | 17:00 | 1.8 | 303 |
| 18/12/12 | 18:00 | 0.9 | 289 |
| 18/12/12 | 19:00 | 0.9 | 327 |
| 18/12/12 | 20:00 | 1.3 | 3 |
| 18/12/12 | 21:00 | 0.9 | 260 |
| 18/12/12 | 22:00 | 1.8 | 18 |
| 18/12/12 | 23:00 | 1.8 | 40 |

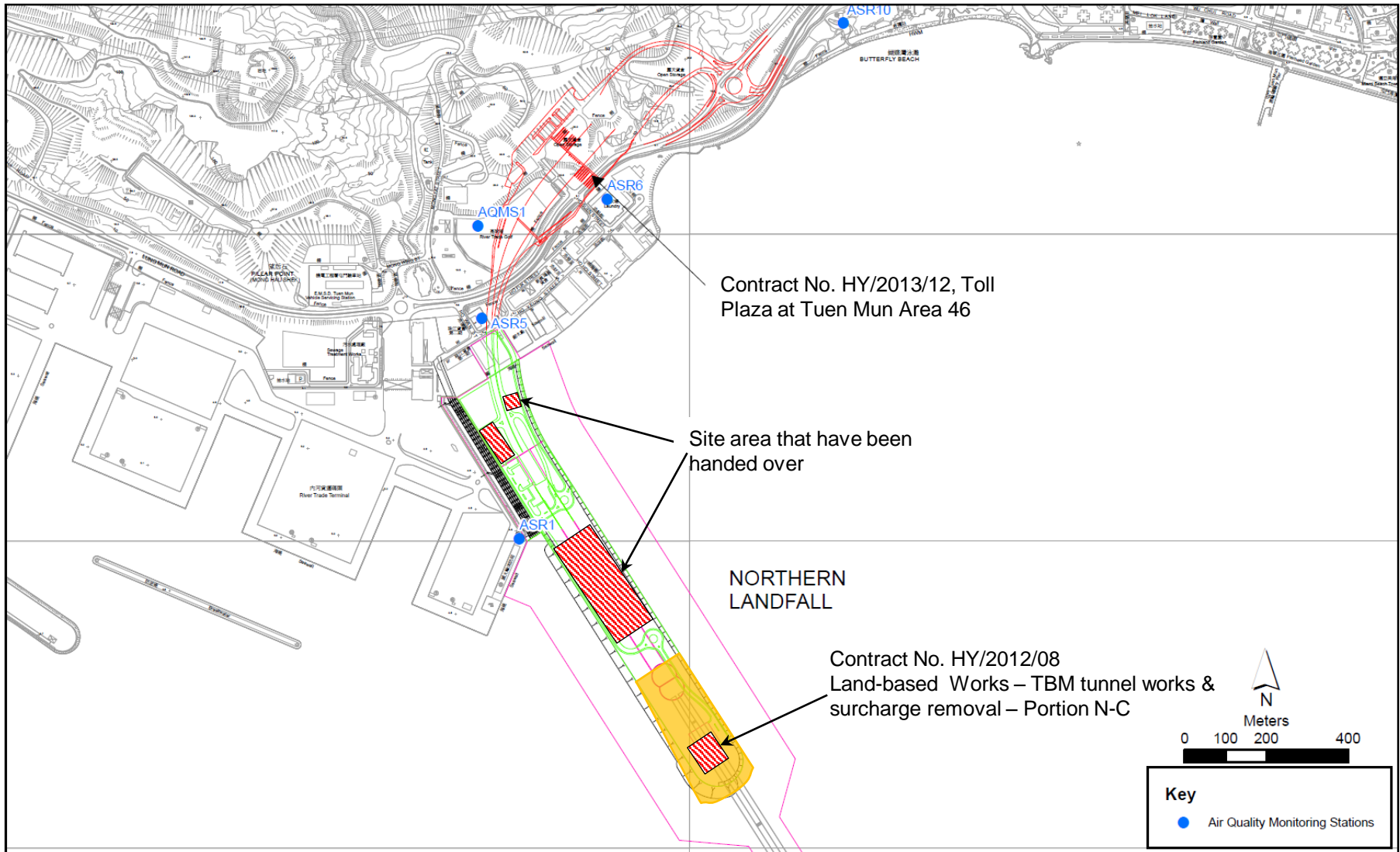


Figure 1

Indicative Construction Works Area on 12 December 2018

Email
message

**Environmental
Resources
Management**

To Ramboll Hong Kong, Limited (ENPO)

From ERM- Hong Kong, Limited

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

Subject Notification of Exceedance for Air Quality
Impact Monitoring

Date 28 December 2018

2507, 25/F One Harbourfront
18 Tak Fung Street
Hunghom, Kowloon
Hong Kong
Telephone: (852) 2271 3000
Facsimile: (852) 2723 5660



ERM

Dear Sir or Madam,

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

0212330_18December2018_1hrTSP_Station ASR6

One Action Level Exceedance was recorded on 18 December 2018.

Regards,

A handwritten signature in black ink, appearing to read 'Jasmine'.

Dr Jasmine Ng
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.



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_18December2018_1hrTSP_Station ASR6 [Total No. of Exceedances = 1] | |
| Date | 18 December 2018 (Measured) 26 December 2018 (Laboratory results received by ERM) | |
| Monitoring Station | ASR1, ASR5, ASR6, ASR10 and AQMS1 | |
| Parameter(s) with Exceedance(s) | 1-hr TSP | |
| Action Levels | 24-hr TSP ($\mu\text{g}/\text{m}^3$) | ASR1 = 213 ASR5 = 238 AQMS1 = 213 ASR6 = 238 ASR10 = 214 |
| | 1-hr TSP ($\mu\text{g}/\text{m}^3$) | ASR1 = 331 ASR5 = 340 AQMS1 = 335 ASR6 = 338 ASR10 = 337 |
| Limit Levels | 1-hr TSP ($\mu\text{g}/\text{m}^3$) | 500 |
| | 24-hr TSP ($\mu\text{g}/\text{m}^3$) | 260 |
| Measured Levels | Action Level Exceedance for 1-hr TSP is observed at ASR6 (478 $\mu\text{g}/\text{m}^3$) during 1416 - 1516 hrs. | |
| Works Undertaken (at the time of monitoring event) | On 18 December 2018, TBM tunnel works and surcharge removal was carried out at Portion N-C. | |
| Possible Reason for Action or Limit Level Exceedance(s) | <p>The exceedance is unlikely to be due to this Contract, in view of the following:</p> <ul style="list-style-type: none"> According to the construction information provided by the Contractor, the majority of construction works on 18 December 2018 was TBM tunnel works and surcharge removal. 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 on exposed soil within the site and associated works areas; exposed soil covered by tarpaulin sheets). The exceedance is unlikely to be due to this Contract as dust suppression measures were implemented properly on site. Water spraying was applied on site to prevent dust. <p>Based on the above, the exceedances are unlikely to be due to this Contract.</p> | |

| | |
|-----------------------------------|--|
| Actions Taken/ To Be Taken | <p>According to the construction information provided by the Contractor, TBM tunnel works and surcharge removal was carried out on 18 December 2018. Dust suppression measures were properly implemented. Water spraying was applied to prevent dust. Photos are provided in Annex A.</p> <p>The Contractor has been reminded to implement 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 sprinklers for water spraying, covering the materials having the potential to create dust by clean tarpaulin, use of water truck and watering on all exposed soil within the site) throughout the construction period.</p> |
| Remarks | <p>The monitoring results, wind data and the locations of air quality monitoring stations are attached.</p> |



Annex A Photos provided by the Contractor

*Note: Photos taken on 18/12/2018



Water spraying was applied on the main haul road. (Works Area Portion N-A)



Water spraying was applied on the main haul road. (Works Area Portion N-A)



Annex A Photos provided by the Contractor

*Note: Photos taken on 18/12/2018



Water spraying was applied on the main haul road. (Works Area Portion N-A)



Water spraying was applied on the main haul road. (Works Area Portion N-C)

| Air quality monitoring results on 18/12/2018 | | | | | | | | |
|--|------------|------------|---------|---------|------------|-------------|---------|-------|
| Project | Works | Date | Station | Weather | Start time | Parameters | Results | Unit |
| TMCLKL | HY/2012/08 | 18/12/2018 | AQMS1 | Sunny | 13:49 | 1-hour TSP | 118 | ug/m3 |
| TMCLKL | HY/2012/08 | 18/12/2018 | AQMS1 | Sunny | 14:51 | 1-hour TSP | 188 | ug/m3 |
| TMCLKL | HY/2012/08 | 18/12/2018 | AQMS1 | Sunny | 15:53 | 1-hour TSP | 151 | ug/m3 |
| TMCLKL | HY/2012/08 | 18/12/2018 | ASR1 | Sunny | 13:37 | 1-hour TSP | 207 | ug/m3 |
| TMCLKL | HY/2012/08 | 18/12/2018 | ASR1 | Sunny | 14:39 | 1-hour TSP | 113 | ug/m3 |
| TMCLKL | HY/2012/08 | 18/12/2018 | ASR1 | Sunny | 15:41 | 1-hour TSP | 174 | ug/m3 |
| TMCLKL | HY/2012/08 | 18/12/2018 | ASR10 | Sunny | 13:03 | 1-hour TSP | 126 | ug/m3 |
| TMCLKL | HY/2012/08 | 18/12/2018 | ASR10 | Sunny | 14:05 | 1-hour TSP | 73 | ug/m3 |
| TMCLKL | HY/2012/08 | 18/12/2018 | ASR10 | Sunny | 15:07 | 1-hour TSP | 106 | ug/m3 |
| TMCLKL | HY/2012/08 | 18/12/2018 | ASR5 | Sunny | 13:26 | 1-hour TSP | 311 | ug/m3 |
| TMCLKL | HY/2012/08 | 18/12/2018 | ASR5 | Sunny | 14:30 | 1-hour TSP | 193 | ug/m3 |
| TMCLKL | HY/2012/08 | 18/12/2018 | ASR5 | Sunny | 15:32 | 1-hour TSP | 192 | ug/m3 |
| TMCLKL | HY/2012/08 | 18/12/2018 | ASR6 | Sunny | 13:14 | 1-hour TSP | 224 | ug/m3 |
| TMCLKL | HY/2012/08 | 18/12/2018 | ASR6 | Sunny | 14:16 | 1-hour TSP | 478 | ug/m3 |
| TMCLKL | HY/2012/08 | 18/12/2018 | ASR6 | Sunny | 15:18 | 1-hour TSP | 123 | ug/m3 |
| TMCLKL | HY/2012/08 | 18/12/2018 | AQMS1 | Sunny | 16:55 | 24-hour TSP | 88 | ug/m3 |
| TMCLKL | HY/2012/08 | 18/12/2018 | ASR1 | Sunny | 16:43 | 24-hour TSP | 131 | ug/m3 |
| TMCLKL | HY/2012/08 | 18/12/2018 | ASR10 | Sunny | 16:09 | 24-hour TSP | 66 | ug/m3 |
| TMCLKL | HY/2012/08 | 18/12/2018 | ASR5 | Sunny | 16:34 | 24-hour TSP | 134 | ug/m3 |
| TMCLKL | HY/2012/08 | 18/12/2018 | ASR6 | Sunny | 16:20 | 24-hour TSP | 94 | ug/m3 |

| 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) |
| 18/12/18 | 0:00 | 1.3 | 339 |
| 18/12/18 | 1:00 | 0.9 | 335 |
| 18/12/18 | 2:00 | 0.4 | 50 |
| 18/12/18 | 3:00 | 0.9 | 335 |
| 18/12/18 | 4:00 | 0.9 | 56 |
| 18/12/18 | 5:00 | 0.4 | 81 |
| 18/12/18 | 6:00 | 0.9 | 81 |
| 18/12/18 | 7:00 | 0.9 | 99 |
| 18/12/18 | 8:00 | 1.3 | 83 |
| 18/12/18 | 9:00 | 1.3 | 86 |
| 18/12/18 | 10:00 | 1.3 | 35 |
| 18/12/18 | 11:00 | 1.8 | 31 |
| 18/12/18 | 12:00 | 1.3 | 130 |
| 18/12/18 | 13:00 | 3.1 | 140 |
| 18/12/18 | 14:00 | 3.6 | 103 |
| 18/12/18 | 15:00 | 3.1 | 114 |
| 18/12/18 | 16:00 | 4 | 132 |
| 18/12/18 | 17:00 | 4 | 110 |
| 18/12/18 | 18:00 | 2.7 | 84 |
| 18/12/18 | 19:00 | 2.2 | 101 |
| 18/12/18 | 20:00 | 1.8 | 36 |
| 18/12/18 | 21:00 | 1.8 | 34 |
| 18/12/18 | 22:00 | 1.8 | 43 |
| 18/12/18 | 23:00 | 1.8 | 49 |

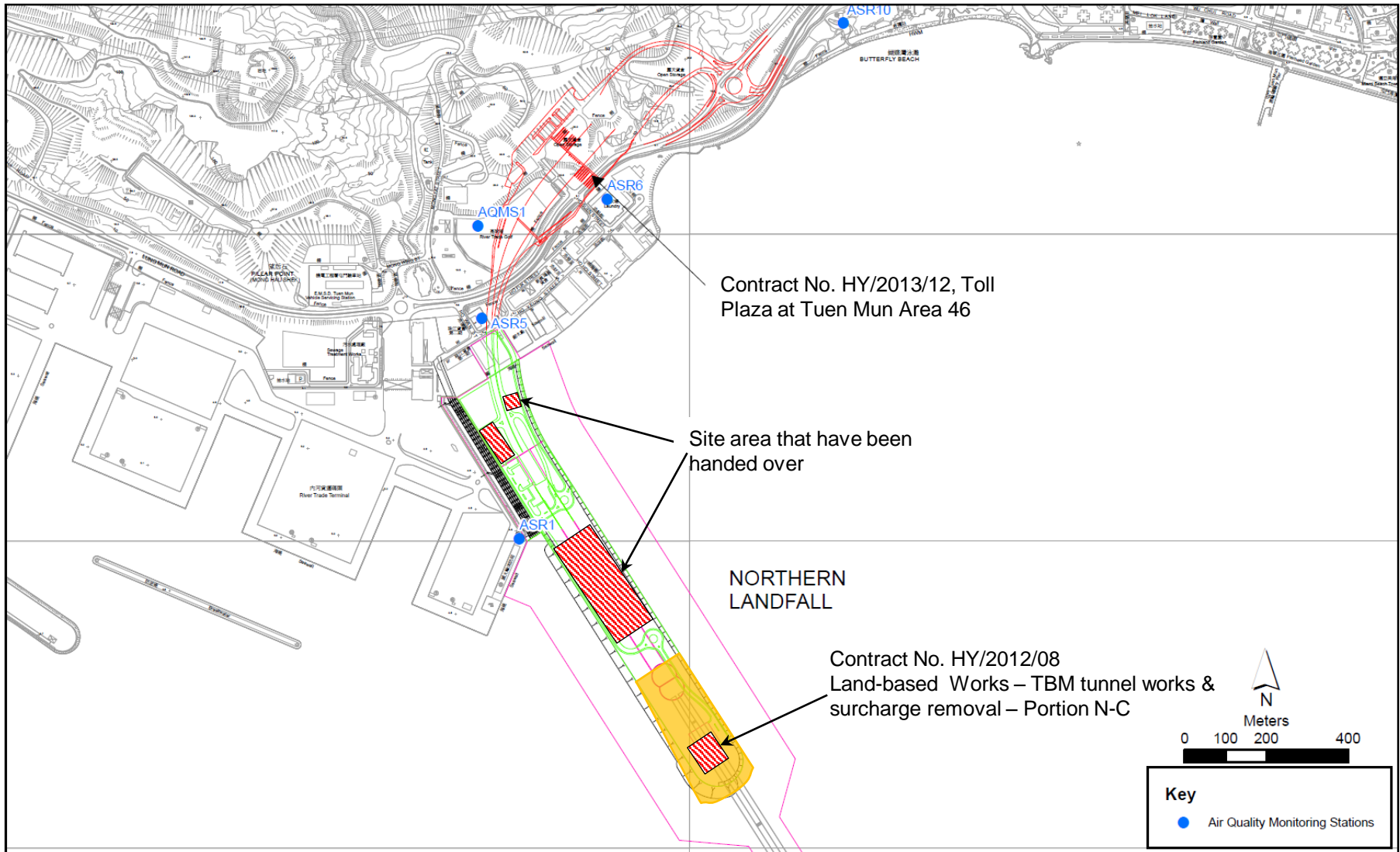


Figure 1

Indicative Construction Works Area on 18 December 2018

Appendix L

Waste Flow Table

Appendix D – Monthly Summary Waste Flow Table

Name of Department: HyD

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

Monthly Summary Waste Flow Table for December 2018 [to be submitted not later than the 15th day of each month following reporting month]

(All quantities shall be rounded off to 3 decimal places.)

| Month | Monthly Break-down of <u>Inert</u> Construction & Demolition Materials (i.e. Public Fill Materials) | | | | |
|--------------------------|---|---|-------------------------------|---------------------------------|-----------------------------------|
| | (a)=(b)+(c)+(d)+(e) Total Quantity Generated | (b) Hard Rock and Large Broken Concrete | (c) Reused in the Contract | (d) Reused in other Projects | (e) Disposed of as Public Fill |
| | (in '000 ton) | (in '000 ton) | (in '000 ton) | (in '000 ton) | (in '000 ton) |
| Sub-total, 2013-2017 | 1221.977 | 0.000 | 0.000 | 0.000 | 1221.977 |
| Jan-2018 | 7.165 | 0.000 | 0.000 | 0.000 | 7.165 |
| Feb-2018 | 1.762 | 0.000 | 0.000 | 0.000 | 1.762 |
| Mar-2018 | 66.457 | 0.000 | 0.000 | 62.274 | 4.183 |
| Apr-2018 | 123.942 | 0.000 | 0.000 | 50.648 | 73.294 |
| May-2018 | 127.964 | 0.000 | 0.000 | 62.822 | 65.142 |
| Jun-2018 | 102.987 | 0.000 | 0.000 | 55.385 | 47.602 |
| Half Year Sub-total | 430.277 | 0.000 | 0.000 | 231.129 | 199.148 |
| Jul-2018 | 43.768 | 0.000 | 0.000 | 0.000 | 43.768 |
| Aug-2018 | 57.809 | 0.000 | 0.000 | 40.722 | 17.087 |
| Sep-2018 | 39.763 | 0.000 | 0.000 | 11.276 | 28.487 |
| Oct-2018 | 108.689 | 0.000 | 20.471 | 79.694 | 28.342 |
| Nov-2018 | 155.310 | 0.000 | 25.702 | 116.028 | 13.580 |
| Dec-2018 | 146.997 | 0.000 | 30.581 | 106.520 | 9.896 |
| Project Total Quantities | 2224.407 | 0.000 | 76.754 | 585.369 | 1562.284 |

Actual Quantities of Non-inert Construction Waste Generated Monthly

| Month | Metals | | Paper/ cardboard packaging | | Plastics (see Note 3) | | Chemical Waste | | Others, e.g. General Refuse disposed at Landfill |
|--------------------------|-------------|----------|----------------------------|----------|--------------------------|----------|----------------|----------|--|
| | (in '000kg) | | (in '000kg) | | (in '000kg) | | (in '000kg) | | (in '000ton) |
| | generated | recycled | generated | recycled | generated | recycled | generated | Disposed | generated |
| Sub-total, 2013-2017 | 619.38 | 619.38 | 4.15 | 4.15 | 6.87 | 6.87 | 33.15 | 33.15 | 8.259 |
| Jan-2018 | 241.50 | 241.50 | 0.20 | 0.20 | 0.00 | 0.00 | 2.80 | 2.80 | 0.272 |
| Feb-2018 | 256.94 | 256.94 | 0.20 | 0.20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.258 |
| Mar-2018 | 229.36 | 229.36 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | 2.00 | 0.459 |
| Apr-2018 | 195.55 | 195.55 | 0.00 | 0.00 | 0.00 | 0.00 | 8.60 | 8.60 | 0.281 |
| May-2018 | 93.01 | 93.01 | 0.30 | 0.30 | 0.00 | 0.00 | 10.40 | 10.40 | 0.686 |
| Jun-2018 | 0.00 | 0.00 | 0.00 | 0.00 | 1.06 | 1.06 | 0.00 | 0.00 | 0.408 |
| Half Year Sub-total | 1016.36 | 1016.36 | 0.70 | 0.70 | 1.06 | 1.06 | 23.80 | 23.80 | 2.364 |
| Jul-2018 | 0.00 | 0.00 | 0.86 | 0.86 | 0.77 | 0.77 | 0.00 | 0.00 | 0.768 |
| Aug-2018 | 980.56 | 980.56 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | 2.00 | 0.749 |
| Sep-2018 | 838.04 | 838.04 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.445 |
| Oct-2018 | 2702.35 | 2702.35 | 1.02 | 1.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.437 |
| Nov-2018 | 394.69 | 394.69 | 0.00 | 0.00 | 0.00 | 0.00 | 1.40 | 1.40 | 0.448 |
| Dec-2018 | 212.44 | 212.44 | 1.01 | 1.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.519 |
| Project Total Quantities | 6763.82 | 6763.82 | 7.74 | 7.74 | 8.70 | 8.70 | 60.35 | 60.35 | 13.989 |

Forecast of Total Quantities of Construction and Demolition Materials to be Generated from the Contract*

| Total Quantity Generated | Hard Rock and Large Broken Concrete | Reused in the Contract | Reused in other Projects | Disposed of as Public Fill | Metals | Paper/ cardboard packaging | Plastics (see Note 3) | Chemical Waste | General Refuse disposed of at Landfill |
|--------------------------|-------------------------------------|------------------------|--------------------------|----------------------------|-------------|----------------------------|-----------------------|----------------|--|
| (in '000 ton) | (in '000 ton) | (in '000 ton) | (in '000 ton) | (in '000 ton) | (in '000kg) | (in '000kg) | (in '000kg) | (in '000kg) | (in '000 ton) |
| 2850.000 | 0.000 | 50.000 | 800.000 | 2000.000 | 7000.00 | 10.00 | 9.50 | 65.00 | 15.000 |

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