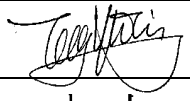
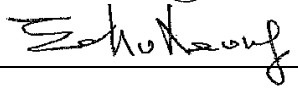
**China Harbour Engineering Company Limited**

Contract No. HY/2010/02

# Hong Kong – Zhuhai – Macao Bridge Hong Kong Boundary Crossing Facilities – Reclamation Works

## Quarterly EM&A Summary Report for September 2015 – November 2015

[05/2016]

| | Name | Signature |
|---|---|---|
| Prepared & Checked: | Y T Tang |  |
| Reviewed, Approved and Certified: | Echo Leong (ETL) |  |

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RAMBOLL ENVIRON

Ref.: HYDHZMBEEM00_0_4222L.16

30 May 2016

By Fax (3698 5999) and By Post

Ove Arup & Partners
Chief Resident Engineer's Office
5 Ying Hei Road, Tung Chung, Lantau
Hong Kong

Attention: Mr. Paul Appleton

Dear Sir,

**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/2010/02 – HZMB HKBCF – Reclamation Works**
**Quarterly EM&A Report for September 2015 to November 2015**

Reference is made to the Environmental Team's submission of the Quarterly Environmental Monitoring & Audit Report for September 2015 to November 2015 certified by the ET Leader (ET's ref.: "60249820/C/RMKY16053001" dated 30 May 2016) and provided to us via e-mail on 30 May 2016.

We are pleased to inform you that we have no adverse comment on the captioned Quarterly Environmental Monitoring & Audit Report for September 2015 to November 2015.

Please be reminded that our verification to your report does not release any of your obligations in the EM&A Manual under the applicable Environmental Permit(s) for this Project.

Thank you very much for your attention and please feel free to contact the undersigned should you require further information.

Yours faithfully,
For and on behalf of
Ramboll Environ Hong Kong Limited

Raymond Dai
Independent Environmental Checker

| | | | |
|---|---|---|---|
| c.c. | HyD | Mr. Matthew Fung | (By Fax: 3188 6614) |
| | HyD | Mr. Wai-Ping Lee | (By Fax: 3188 6614) |
| | AECOM | Ms. Echo Leong | (By Fax: 2317 7609) |
| | CHEC | Mr. Lim Kim Chuan | (By Fax: 2578 0413) |

Internal: DY, YH, CL, ENPO Site

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Ramboll Environ Hong Kong Limited 英環香港有限公司
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# EXECUTIVE SUMMARY

Contract No. HY/2010/02 – Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities – Reclamation Works (here below, known as "the Contract") mainly comprises reclamation at the northeast of the Hong Kong International Airport of an area of about 130-hectare for the construction of an artificial island for the development of the Hong Kong Boundary Crossing Facilities (HKBCF), and about 19-hectare for the southern landfall of the Tuen Mun - Chek Lap Kok Link (TMCLKL). It is a designated Project and is governed by the current permits for the Project, i.e. the amended Environmental Permits (EPs) issued on 11 April 2016 (EP-353/2009/K) and 13 March 2015 (EP-354/2009/D) (for TMCLKL Southern Landfall Reclamation only).

Ove Arup & Partners Hong Kong Limited (Arup) was appointed by Highways Department (HyD) as the consultants for the design and construction assignment for the Project's reclamation works (i.e. the Engineer for the Contract).

China Harbour Engineering Company Limited (CHEC) was awarded by HyD as the Contractor to undertake the construction work of the Contract.

Ramboll Environ Hong Kong Limited. was employed by HyD as the Independent Environmental Checker (IEC) and Environmental Project Office (ENPO) for the Project.

AECOM Asia Co. Ltd. (AECOM) was appointed by CHEC to undertake the role of Environmental Team for the Contract for carrying out the environmental monitoring and audit (EM&A) works.

The construction phase of the Project under the EPs was commenced on 12 March 2012 and will be tentatively completed by early Year 2017. The EM&A programme, including air quality, noise, water quality and dolphin monitoring and environmental site inspections, was commenced on 12 March 2012.

This report documents the findings of EM&A works conducted in the period between 1 September 2015 and 30 November 2015. As informed by the Contractor, major activities in the reporting quarter were:-

***Marine-base***

- Rock fill
- Marine fill
- Maintenance of silt curtain & silt screen at sea water intake of HKIA
- Rubble Mound Seawall

***Land-base***

- Earthwork fill
- Surcharge removal & laying
- Deep Cement Mixing
- Removal of Temporary Seawall
- Vertical Band Drains
- Installations of Precast Culverts except sloping outfalls
- Geotechnical Instrumentation Works
- Maintenance works of Site Office at Works Area WA2
- Maintenance works of Public Works Regional Laboratory at Works Area WA3
- Maintenance of Temporary Marine Access at Works Area WA2

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

| | |
|---|---|
| 24-hour Total Suspended Particulates (TSP) monitoring | 16 sessions |
| 1-hour TSP monitoring | 16 sessions |
| Noise monitoring | 13 sessions |
| Impact water quality monitoring | 39 sessions |
| Impact dolphin monitoring | 6 surveys |
| Joint Environmental site inspection | 13 sessions |

**Breaches of Action and Limit Levels for Air Quality**

All 1-Hour TSP and 24-Hour TSP results were below the Action and Limit Level in the reporting quarter.

**Breaches of Action and Limit Levels for Noise**

For construction noise, no exceedance was recorded at all monitoring stations in the reporting quarter.

**Breaches of Action and Limit Levels for Water Quality**

For water quality, one (1) Action Level Exceedance of SS at SR7 during flood tide was recorded on 30 September 2015. After investigation, there is no adequate information to conclude the recorded exceedance is related to this Contract. No Action and Limit Level exceedance was recorded on other monitoring date in the reporting month September 2015; one (1) Action Level Exceedance of SS at SR6 during flood tide was recorded on 2 October 2015. After investigation, there is no adequate information to conclude the recorded exceedance is related to this Contract. No Action and Limit Level exceedance was recorded on other monitoring date in the reporting month October 2015; one (1) Action Level Exceedance of SS at IS(Mf)9 during flood tide was recorded on 6 Nov 2015. After investigation, there is no adequate information to conclude the recorded exceedance is related to this Contract. No Action and Limit Level exceedance was recorded on other monitoring date in the reporting month November 2015.

**Breaches of Action and Limit Levels for Impact Dolphin Monitoring**

One (1) Limit Level exceedance of dolphin monitoring was recorded in the reporting quarter. After investigation, it was concluded that the HZMB works is one of the contributing factors affecting the dolphins. It was also concluded the contribution of impacts due to the HZMB works as a whole (or individual marine contracts) cannot be quantified nor separate from the other stress factors. Event Action Plan for Impact Dolphin Monitoring was triggered. For detail of investigation, please refer to appendix L.

**Implementation Status and Review of Environmental Mitigation Measures**

Most of the recommended mitigation measures, as included in the EM&A programme, were implemented properly in the reporting quarter.

The recommended environmental mitigation measures effectively minimize the potential environmental impacts from the Project. The EM&A programme effectively monitored the environmental impacts from the construction activities and ensure the proper implementation of mitigation measures. No particular recommendation was advised for the improvement of the programme.

Moreover, regular review and checking on the construction methodologies, working processes and plants were carried out to ensure the environmental impacts were kept minimal and recommended environmental mitigation measures were implemented effectively.

**Complaint, Notification of Summons and Successful Prosecution**

A complainant who lives at 1 Sky City Road East, Hong Kong SkyCity Marriott Hotel, Hong Kong International Airport, Lantau, Hong Kong complained to EPD's hotline on 23 October 2015 that loud noise were generated by HZMB artificial island construction site of China Harbour Engineering Company Ltd adjacent to the premises approximately between 10pm to 12am, during recent weekdays and Saturday. In addition, loud noise and dark smoke were noted on the construction site of HZMB artificial island during Sunday and public holiday. The complainant questioned whether the Contractor was allowed to conduct construction work during Sunday and public holiday. The complaint was referred by EPD to the project team of Contract No. HY/2010/02 to follow up on 23 October 2015. After investigation, with referred to the available information, it is unable to determine whether the night time noise complaint and the concerned dark smoke are related to this Contract.

No notification of summons or prosecution was received in the reporting period

# 1 INTRODUCTION

## 1.1 Background

1.1.1 Contract No. HY/2010/02 – Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities – Reclamation Works (here below, known as "the Contract") mainly comprises reclamation at the northeast of the Hong Kong International Airport of an area of about 130-hectare for the construction of an artificial island for the development of the Hong Kong Boundary Crossing Facilities (HKBCF), and about 19-hectare for the southern landfall of the Tuen Mun - Chek Lap Kok Link (TMCLKL).

1.1.2 The environmental impact assessment (EIA) reports (Hong Kong – Zhuhai – Macao Bridge Hong Kong Boundary Crossing Facilities – EIA Report (Register No. AEIAR-145/2009) (HKBCFEIA) and Tuen Mun – Chek Lap Kok Link – EIA Report (Register No. AEIAR-146/2009) (TMCLKLEIA), and their environmental monitoring and audit (EM&A) Manuals (original EM&A Manuals), for the Project were approved by Environmental Protection Department (EPD) in October 2009.

1.1.3 EPD subsequently issued the Environmental Permit (EP) for HKBCF in November 2009 (EP-353/2009) and the Variation of Environmental Permit (VEP) in June 2010 (EP-353/2009/A), November 2010 (EP-353/2009/B), November 2011 (EP-353/2009/C), March 2012 (EP-353/2009/D), October 2012 (EP-353/2009/E), April 2013 (EP-353/2009/F), August 2013 (EP-353/2009/G), January 2015 (EP-353/2009/H), July 2015 (EP-353/2009/I), February 2016 (EP-353/2009/J) and April 2016 (EP-353/2009/K). Similarly, EPD issued the Environmental Permit (EP) for TMCLKL in November 2009 (EP-354/2009) and the Variation of Environmental Permit (VEP) in December 2010 (EP-354/2009/A), January 2014 (EP-354/2009/B), December 2014 (EP-354/2009/C) and March 2015 (EP-354/2009/D).

1.1.4 The Project is a designated Project and is governed by the current permits for the Project, i.e. the amended EPs issued on 11 April 2016 (EP-353/2009/K) and 13 March 2015 (EP-354/2009/D) (for TMCLKL Southern Landfall Reclamation only).

1.1.5 A Contract Specific EM&A Manual, which included all Contract -relation contents from the original EM&A Manuals for the Contract, was issued in May 2012.

1.1.6 Ove Arup & Partners Hong Kong Limited (Arup) was appointed by Highways Department (HyD) as the consultants for the design and construction assignment for the Project's reclamation works (i.e. the Engineer for the Contract).

1.1.7 China Harbour Engineering Company Limited (CHEC) was awarded by HyD as the Contractor to undertake the construction work of the Contract.

1.1.8 Ramboll Environ Hong Kong Limited. was employed by HyD as the Independent Environmental Checker (IEC) and Environmental Project Office (ENPO) for the Project.

1.1.9 AECOM Asia Co. Ltd. (AECOM) was appointed by CHEC to undertake the role of Environmental Team for the Contract for carrying out the EM&A works.

1.1.10 The construction phase of the Project under the EPs was commenced on 12 March 2012 and will be tentatively completed by early Year 2017.

1.1.11 According to the Contract Specific EM&A Manual, there is a need of an EM&A programme including air quality, noise, water quality and dolphin monitoring and environmental site inspections. The EM&A programme of the Contract commenced on 12 March 2012.

## 1.2 Scope of Report

1.2.1 This is the fifteen quarterly EM&A Report under the Contract No. HY/2010/02 Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities – Reclamation Works. This report presents a summary of the environmental monitoring and audit works, list of activities and mitigation measures proposed by the ET for the Contract from 1 September 2015 to 30 November 2015.

## 1.3 Contract Organization

1.3.1 The Contract organization structure is shown in Appendix A. The key personnel contact names and numbers are summarized in Table 1.1.

**Table 1.1 Contact Information of Key Personnel**

| Party | Position | Name | Telephone | Fax |
|---|---|---|---|---|
| **Engineer's Representative (ER)** (Ove Arup & Partners Hong Kong Limited) | Chief Resident Engineer | Roger Marechal (Effective between 1 – 15 September 2015) | 3698 5700 | 2698 5999 |
| **Engineer's Representative (ER)** (Ove Arup & Partners Hong Kong Limited) | Chief Resident Engineer | Paul Appleton (Effective 16 September 2015 onward) | 3698 5889 | 2698 5999 |
| **IEC / ENPO** (Ramboll Environ Hong Kong Limited) | Independent Environmental Checker | Raymond Dai | 3465 2888 | 3465 2899 |
| | Environmental Project Office Leader | Y. H. Hui | 3547 2133 | 3465 2899 |
| **Contractor** (China Harbour Engineering Company Limited) | Environmental Officer | Louie Chan | 36932254 | 2578 0413 |
| | 24-hour Hotline | Alan C.C. Yeung | 9448 0325 | -- |
| **ET** (AECOM Asia Company Limited) | ET Leader | Echo Leong | 3922 9280 | 2317 7609 |

## 1.4 Summary of Construction Works

1.4.1 The construction phase of the Project under the EP commenced on 12 March 2012.

1.4.2 As informed by the Contractor, details of the major works carried out in the reporting quarter are listed below:-

***Marine-base***

- Rock fill
- Marine fill
- Maintenance of silt curtain & silt screen at sea water intake of HKIA
- Rubble Mound Seawall

***Land-base***

- Earthwork fill
- Surcharge removal & laying
- Deep Cement Mixing
- Removal of Temporary Seawall
- Vertical Band Drains
- Installations of Precast Culverts except sloping outfalls
- Geotechnical Instrumentation Works
- Maintenance works of Site Office at Works Area WA2
- Maintenance works of Public Works Regional Laboratory at Works Area WA3
- Maintenance of Temporary Marine Access at Works Area WA2

1.4.3 The 3-month rolling construction programme of the Project is shown in Appendix B.

1.4.4 The general layout plan of the Contract site showing the detailed works areas is shown in Figure 1.

1.4.5 The environmental mitigation measures implementation schedule are presented in Appendix C.

# 2 SUMMARY OF EM&A PROGRAMME REQUIREMENTS

## 2.1 Monitoring Parameters

2.1.1 The Contract Specific EM&A Manual designated 4 air quality monitoring stations, 2 noise monitoring stations, 21 water monitoring stations (9 Impact Stations, 7 Sensitive Receiver Stations and 5 Control/Far Field Stations) to monitor environmental impacts on air quality, noise and water quality respectively. Pre-set and fixed transect line vessel based dolphin survey was required in two AFCD designated areas (Northeast and Northwest Lantau survey areas). The impact dolphin monitoring at each survey area should be conducted twice per month.

2.1.2 For impact air quality monitoring, monitoring locations AMS2 (Tung Chung Development Pier) and AMS7 (Hong Kong SkyCity Marriott Hotel) were set up at the proposed locations in accordance with Contract Specific EM&A Manual. The conditional omission of Monitoring Station AMS6 was effective since 19 November 2012. For monitoring location AMS3 (Ho Yu College), as proposed in the Contract Specific EM&A Manual, approval for carrying out impact monitoring could not be obtained from the principal of the school. Permission on setting up and carrying out impact monitoring works at nearby sensitive receivers, like Caribbean Coast and Coastal Skyline, was also sought. However, approvals for carrying out impact monitoring works within their premises were not obtained. Impact air quality monitoring was conducted at site boundary of the site office area in Works Area WA2 (AMS3B) respectively. Same baseline and Action Level for air quality, as derived from the baseline monitoring data recorded at Ho Yu College, was adopted for this alternative air quality location.

2.1.3 For impact noise monitoring, monitoring locations NMS2 (Seaview Crescent Tower 1) was set up at the proposed locations in accordance with Contract Specific EM&A Manual. However, for monitoring location NMS3 (Ho Yu College), as proposed in the Contract Specific EM&A Manual, approval for carrying out impact monitoring could not be obtained from the principal of the school. Permission on setting up and carrying out impact monitoring works at nearby sensitive receivers, like Caribbean Coast and Coastal Skyline, was also sought. However, approvals for carrying out impact monitoring works within their premises were not obtained. Impact noise monitoring was conducted at site boundary of the site office area in Works Area WA2 (NMS3B) respectively. Same baseline noise level, as derived from the baseline monitoring data recorded at Ho Yu College was adopted for this alternative noise monitoring location. Reference is made to ET's proposal of relocation of air quality monitoring station (AMS7) dated on 2 February 2015, with no further comment received from IEC on 2 February 2015 and no objection received from EPD on 5 February 2015, the impact air quality monitoring station AMS7 (Hong Kong SkyCity Marriott Hotel) has been relocated to AMS7A (Chu Kong Air-Sea Union Transportation Company Limited) on 3 February 2015. Action Level for air quality, as derived from the baseline monitoring data recorded at Hong Kong SkyCity Marriott Hotel, was adopted for this alternative air quality location.

2.1.4 In accordance with the Contract Specific EM&A Manual, twenty-one stations were designated for impact water quality monitoring. The nine Impact Stations (IS) were chosen on the basis of their proximity to the reclamation and thus the greatest potential for water quality impacts, the seven Sensitive Receiver Stations (SR) were chosen as they are close to the key sensitive receives and the five Control/ Far Field Stations (CS) were chosen to facilitate comparison of the water quality of the IS stations with less influence by the Project/ ambient water quality conditions.

2.1.5 Due to safety concern and topographical condition of the original locations of SR4 and SR10B, alternative impact water quality monitoring stations, naming as SR4(N) and SR10B(N), were adopted, which are situated in vicinity of the original impact water quality monitoring stations (SR4 and SR10B) and could be reachable. Same baseline and Action Level for water quality, as derived from the baseline monitoring data recorded, were adopted for these alternative impact water quality monitoring stations.

2.1.6 The monitoring locations used during the reporting quarter are depicted in Figures 2, 3 and 4 respectively.

2.1.7 The Contract Specific EM&A Manual also required environmental site inspections for air quality, noise, water quality, chemical, waste management, marine ecology and landscape and visual impact.

## 2.2 Environmental Quality Performance (Action/Limit Levels)

2.2.1 The environmental quality performance limits (i.e. Action and/or Limit Levels) of air and water quality monitoring were derived from the baseline air and water quality monitoring results at the respective monitoring stations, while the environmental quality performance limits of noise monitoring were defined in the EM&A Manual.

2.2.2 The environmental quality performance limits of air quality, noise and water monitoring are given in Appendix D.

## 2.3 Environmental Mitigation Measures

2.3.1 Relevant environmental mitigation measures were stipulated in the Particular Specification and EPs (EP-353/2009/K and EP-354/2009/D) (for TMCLKL Southern Landfall Reclamation only) for the Contractor to adopt. A list of environmental mitigation measures and their implementation statuses are given in Appendix C.

# 3 MONITORING RESULTS

## 3.1 Air Quality Monitoring

3.1.1 In accordance with the Contract Specific EM&A Manual, impact 1-hour Total Suspended Particulates (TSP) monitoring was conducted for at least three times every 6 days, while impact 24-hour TSP monitoring was carried out for at least once every 6 days at the 4 monitoring stations (AMS2, AMS3B, AMS6 and AMS7A).

3.1.2 The monitoring locations for impact air quality monitoring are depicted in Figure 2. However, for AMS6 (Dragonair/CNAC (Group) Building), permission on setting up and carrying out impact monitoring works was sought, however, access to the premise has not been granted yet on this report issuing date.

3.1.3 Reference is made to ET's proposal of relocation of air quality monitoring station (AMS7A) dated on 2 February 2015, with no further comment received from IEC on 2 February 2015 and no objection received from EPD on 5 February 2015, the impact air quality monitoring station AMS7 (Hong Kong SkyCity Marriott Hotel) has been relocated to AMS7A (Chu Kong Air-Sea Union Transportation Company Limited) on 3 February 2015. Action Level for air quality, as derived from the baseline monitoring data recorded at Hong Kong SkyCity Marriott Hotel, was adopted for this alternative air quality location.

3.1.4 The weather was mostly fine and sunny, with occasional cloudy in the reporting quarter. The major dust source in the reporting quarter included construction activities from the Contract, as well as nearby traffic emissions.

3.1.5 The number of monitoring events and exceedances recorded in each month of the reporting quarter are presented in Table 3.1 and Table 3.2 respectively.

**Table 3.1 Summary of Number of Monitoring Events for 1-hr & 24-hr TSP Concentration**

| Monitoring Parameter | Location | No. of monitoring events | | |
|---|---|---|---|---|
| | | September 15 | October 15 | November 15 |
| 1-hr TSP | AMS2 | 18 | 15 | 15 |
| | AMS3B | 18 | 15 | 15 |
| | AMS7A | 18 | 15 | 15 |
| 24-hr TSP | AMS2 | 6 | 5 | 5 |
| | AMS3B | 6 | 5 | 5 |
| | AMS7A | 6 | 5 | 5 |

**Table 3.2 Summary of Number of Exceedances for 1-hr & 24-hr TSP Monitoring**

| Monitoring Parameter | Location | Level of Exceedance | Numbers of Exceedance | | |
|---|---|---|---|---|---|
| | | | September 15 | October 15 | November 15 |
| 1-hr TSP | AMS2 | Action | 0 | 0 | 0 |
| | | Limit | 0 | 0 | 0 |
| | AMS3B | Action | 0 | 0 | 0 |
| | | Limit | 0 | 0 | 0 |
| | AMS7A | Action | 0 | 0 | 0 |
| | | Limit | 0 | 0 | 0 |
| | | ***Total*** | ***0*** | ***0*** | ***0*** |
| 24-hr TSP | AMS2 | Action | 0 | 0 | 0 |
| | | Limit | 0 | 0 | 0 |
| | AMS3B | Action | ***0*** | 0 | 0 |
| | | Limit | 0 | 0 | 0 |
| | AMS7A | Action | 0 | 0 | 0 |
| | | Limit | 0 | 0 | 0 |
| | | ***Total*** | ***0*** | ***0*** | ***0*** |

3.1.6 All 24-Hour TSP and 1-Hour TSP results were below the Action and Limit Level in the reporting quarter.

3.1.7 The event action plan is annexed in Appendix K.

3.1.8 Meteorological information collected from the wind station during the monitoring periods on the monitoring dates, as shown in Figure 2, including wind speed and wind direction, is annexed in Appendix H of monthly EM&A report September 2015, October 2015 and November 2015 respectively.

## 3.2 Noise Monitoring

3.2.1 Impact noise monitoring was conducted at the 2 monitoring stations (NMS2 and NMS3B) for at least once per week during 07:00 – 19:00 in the reporting quarter.

3.2.2 The monitoring locations used during the reporting quarter are depicted in Figure 2.

3.2.3 No Action or Limit Level Exceedance of construction noise was recorded in the reporting quarter.

3.2.4 Major noise sources during the noise monitoring included construction activities of the Project and nearby traffic noise.

3.2.5 The number of impact noise monitoring events and exceedances are summarized in Table 3.3 and Table 3.4 respectively.

**Table 3.3 Summary of Number of Monitoring Events for Impact Noise**

| Monitoring Parameter | Location | No. of monitoring events | | |
|---|---|---|---|---|
| | | September 15 | October 15 | November 15 |
| | NMS2 | 5 | 4 | 4 |
| | NMS3B | 5 | 4 | 4 |

**Table 3.4 Summary of Number of Monitoring Exceedances for Impact Noise**

| Monitoring Parameter | Location | Level of Exceedance | Level of Exceedance | | |
|---|---|---|---|---|---|
| | | | September 15 | October 15 | November 15 |
| | NMS2 | Action | 0 | 0 | 0 |
| | | Limit | 0 | 0 | 0 |
| | NMS3B | Action | 0 | 0 | 0 |
| | | Limit | 0 | 0 | 0 |
| | | ***Total*** | ***0*** | ***0*** | ***0*** |

3.2.6 The graphical plots of the trends of the monitoring results are provided in Appendix F. No specific trend of the monitoring results or existence of persistent pollution source was noted.

3.2.7 The event action plan is annexed in Appendix K.

### 3.3 Water Quality Monitoring

3.3.1 The monitoring locations used during the reporting quarter are depicted in Figure 3.

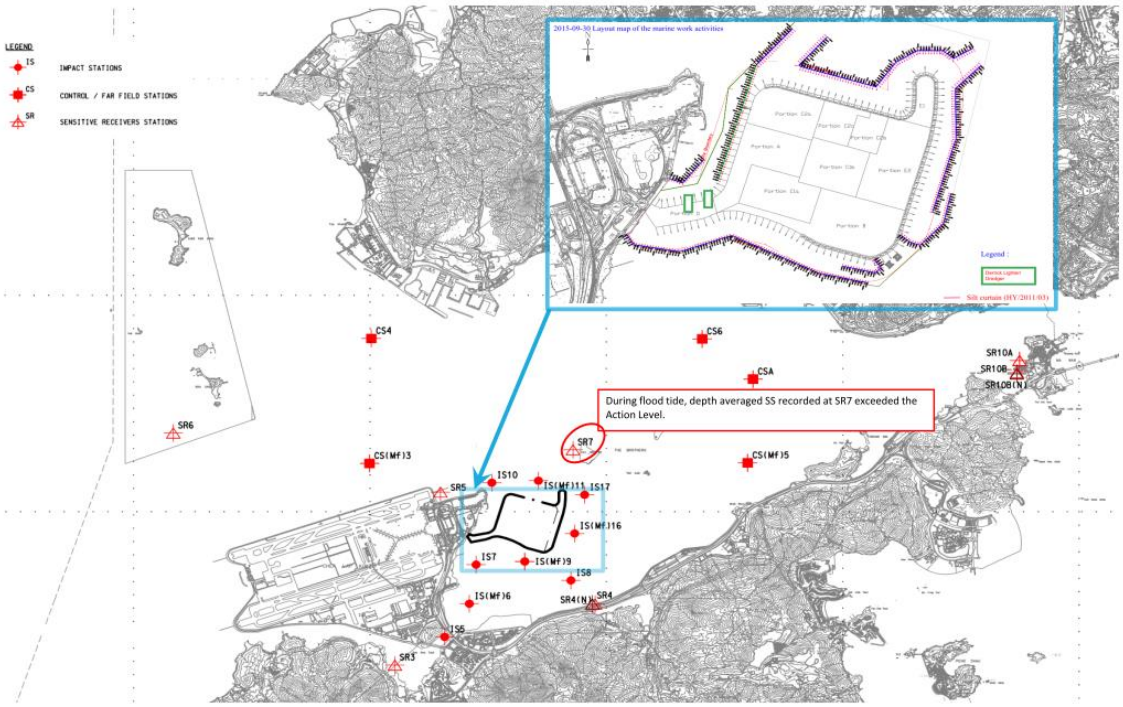
**Table 3.5 Summary of Water Quality Exceedances in September 2015 – November 2015**

| Station | Exceedance Level | DO (S&M) | | DO (Bottom) | | Turbidity | | SS | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Ebb | Flood | Ebb | Flood | Ebb | Flood | Ebb | Flood | Ebb | Flood |
| IS5 | Action | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Limit | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| IS(Mf)6 | Action | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Limit | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| IS7 | Action | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Limit | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| IS8 | Action | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Limit | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| IS(Mf)9 | Action | 0 | 0 | 0 | 0 | 0 | 0 | 0 | (1) 6 Nov 15 | 0 | (1) 6 Nov 15 |
| | Limit | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| IS10 | Action | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Limit | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| IS(Mf)11 | Action | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Limit | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| IS(Mf)16 | Action | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Limit | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| IS17 | Action | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Limit | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SR3 | Action | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Limit | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SR4(N) | Action | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Limit | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SR5 | Action | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Limit | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SR6 | Action | 0 | 0 | 0 | 0 | 0 | 0 | 0 | (1 ) 2 Oct 2015 | 0 | (1 ) 2 Oct 2015 |
| | Limit | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SR7 | Action | 0 | 0 | 0 | 0 | 0 | 0 | 0 | (1 ) 30 Sept 2015 | 0 | (1 ) 30 Sept 2015 |
| | Limit | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SR10A | Action | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Limit | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SR10B (N) | Action | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Limit | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Total** | **Action** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **3** | **3** | |
| | **Limit** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |

Note: S: Surface;
M: Mid-depth;

3.3.2 For water quality, one (1) Action Level Exceedance of SS at SR7 during flood tide was recorded on 30 September 2015.

3.3.2.1 Layout map below shows that vessel activities were carried out at Portion D by vessels during flood tide but no marine based construction work was conducted at north part of the HKBCF reclamation works on 30 September 2015:



3.3.2.2 Exceedance recorded at SR7 during mid-flood tide is unlikely due to marine based construction activities of the Project:

3.3.2.3 With reference to the silt curtain checking record of 30 September 2015, defects such as missing segment or disconnection of the perimeter silt curtain were not observed at north part of the perimeter silt curtain.

3.3.2.4 With referred to the attached layout map, no marine based construction work was conducted at north part of the HKBCF reclamation works on 30 September 2015 and no silt plume was observed to flow from the inside of the perimeter silt curtain to the outside of the perimeter silt curtain when monitoring was conducted during flood tide.

3.3.2.5 Photo record which shows the sea condition at north part of the HKBCF reclamation works during flood tide on 30 September 2015.


3.3.2.6 Also, turbidity level recorded at IS(Mf)11, IS10, IS17 and SR7 were 10.6(NTU), 14.5(NTU), 15.8(NTU) and 9.9(NTU) respectively; Suspended solids level recorded at IS(Mf)11, IS10 and IS17 were 14.2 mg/L, 16 mg/L and 8.3 mg/L respectively, which were all below the action and limit level. This indicates the turbidity level at or near SR7 and Suspended Solids level near SR7 was not adversely affected.

3.3.2.7 Impact water quality monitoring stataions IS(Mf)11, IS10 and IS17 are located relatively closer to the construction site of HKBCF reclamation works but no IWQM exceedance was recorded on 30 September 2015 during flood tide. This indicates that the SS exceedance recorded at SR7 on 30 September 2015 during flood tide was unlikely due to activities of HKBCF reclamation works.

3.3.2.8 The exceedance was likely due to local effects in the vicinity of SR7.

3.3.2.9 After investigation, there is no adequate information to conclude the recorded exceedance is related to this Contract.

3.3.2.10 Action taken under the action plan:

1. Not applicable as SS was not measured *in situ*;
2. After considering the above mentioned investigation results, it appears that it was unlikely that the SS exceedances were attributed to active construction activities of this Contract;
3. IEC, contractor and ER were informed via email;
4. Monitoring data, all plant, equipment and Contractor's working methods were checked;
5. Since it is considered that the SS exceedance is unlikely to be project related, as such, actions 5-7 under the EAP are not considered applicable.

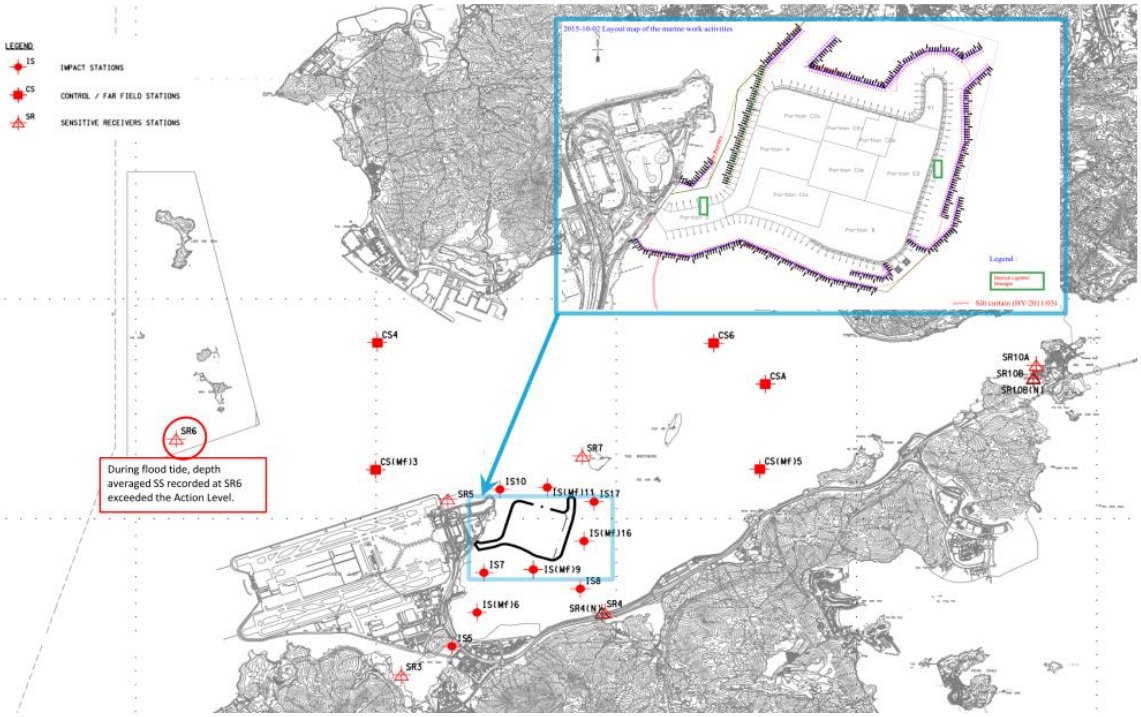
3.3.2.11 The exceedences noted were of a localised nature and in the north of HKBCF (on 30 September 2015), the north of the Brothers Island, at NEL. Short duration local increased sedimentation is not anticipated to affect the dolphins which may have occurred in the western reached of NWL.

3.3.2.12 Nevertheless, the Contractor was reminded to ensure provision of ongoing maintenance to the silt curtains and to carry out maintenance work once defects were found.

3.3.2.13 Maintenance work of the silt curtain was carried out by the Contractor on a daily basis except Sunday and public holiday

3.3.3 For water quality, one (1) Action Level Exceedance of SS at SR6 during flood tide was recorded on 02 October 2015.

3.3.3.1 Layout map below shows that vessel activities were carried out out on 2 October 2015. One derrick/dredger was at Portion D and one derrick/dredger was outside Portion E2 during flood tide on 2 October 2015.




3.3.3.2 Exceedance recorded at SR6 during mid-flood tide is unlikely due to marine based construction activities of the Project:

3.3.3.3 With reference to the silt curtain checking record of 02 October 2015, defects such as missing segment or disconnection of the perimeter silt curtain were not observed at north part of the perimeter silt curtain.

3.3.3.4 With referred to the above layout map, no marine based construction work was conducted at north part of the HKBCF reclamation works on 02 October 2015 and no silt plume was observed to flow from the inside of the perimeter silt curtain to the outside of the perimeter silt curtain when monitoring was conducted during flood tide.

3.3.3.5 Photo record which shows the sea condition at north part of the HKBCF reclamation works during flood tide on 02 October 2015


3.3.3.6 Monitoring Stations IS10, IS(Mf)16, IS(Mf)11, IS17 & SR5 and controal station CS(Mf)3 which are considered downstream and/or closer to active works than Monitoring Station SR6. Since the Suspended Solids values recorded at IS10, IS(Mf)11, SR5 and CS(Mf)3 are all below the Action and Limit Level during same tide on the same day. This indicates that the water quality at downstream of and/or closer to active works were not adversely affected by active works. As such, it is considered that the exceedance recorded at SR6 is not related to the Project.

3.3.3.7 The monitoring site SR6 is relatively far away from Portion D and E2 where works were carried out.

3.3.3.8 Turbidity level and suspended solids level recorded at CS(Mf)3 were 20.1 (NTU) and 29.4 mg/L respectively which were slightly higher than the turbidity level (19.2 NTU) and suspended solids (24mg/L) level recorded at SR6. However, turbidity level recorded at IS(Mf)11, IS10, IS17, SR5 and IS(Mf)16 were 15.8(NTU), 16.2(NTU), 11.4(NTU), 19.5(NTU) and 15.7(NTU) respectively; Suspended solids level recorded at IS(Mf)11, IS10, IS17, SR5 and IS(Mf)16 were 8.7 mg/L, 23.1 mg/L, 5.9 mg/L, 12.2 mg/L and 5.5 mg/L respectively, which were all below the action and limit level. This indicates the turbidity and suspended solids level at monitoring stations relatively closer to active works than sensitive receiver station SR6 and control station CS(Mf)3 were not adversely affected.

3.3.3.9 The exceedance was likely due to local effects in the vicinity of SR6.

3.3.3.10 Action taken under the action plan:

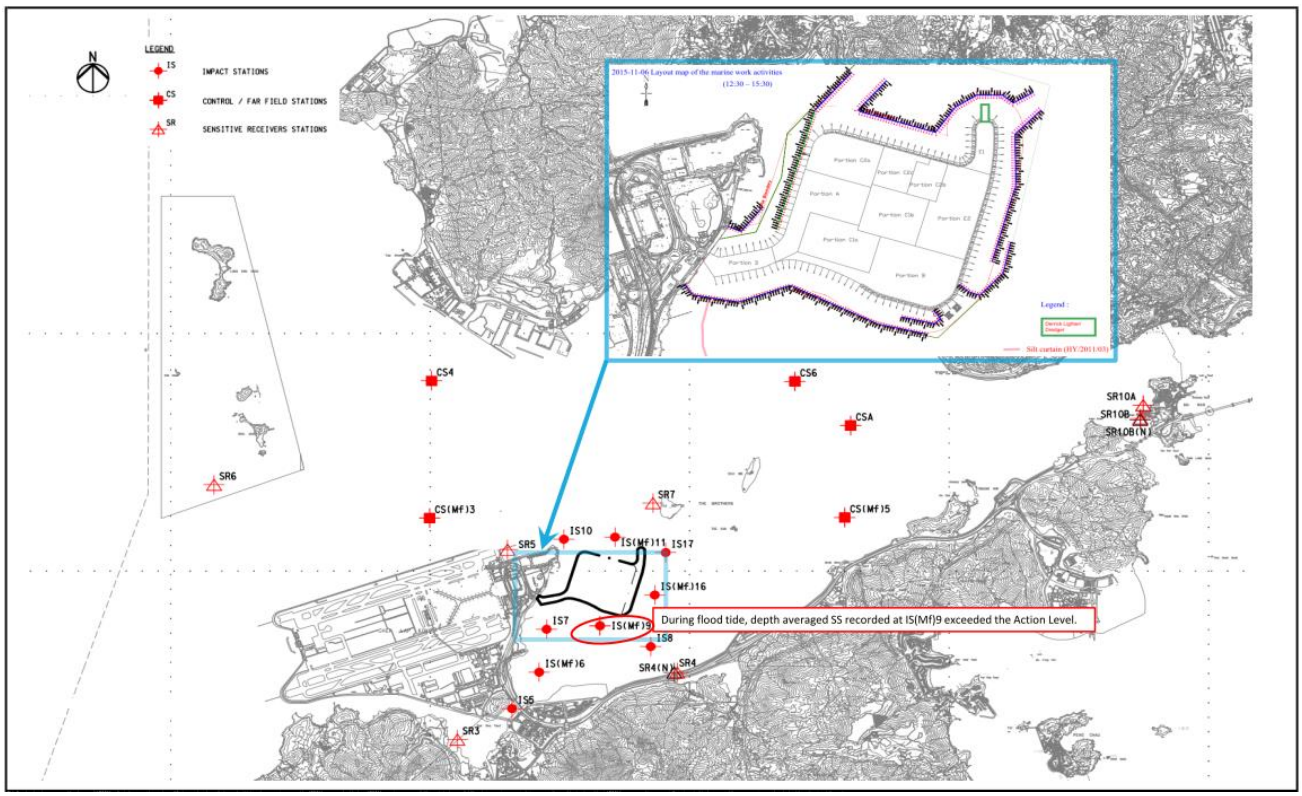
1. Not applicable as SS was not measured *in situ*;
2. After considering the above mentioned investigation results, it appears that it was unlikely that the SS exceedances were attributed to active construction activities of this Contract;
3. IEC, contractor and ER were informed via email;
4. Monitoring data, all plant, equipment and Contractor's working methods were checked;
5. Since it is considered that the SS exceedance is unlikely to be project related, as such, actions 5-7 under the EAP are not considered applicable.

3.3.3.11 Nevertheless, the Contractor was reminded to ensure provision of ongoing maintenance to the silt curtains and to carry out maintenance work once defects were found.

3.3.3.12 Maintenance work of the silt curtain was carried out by the Contractor on a daily basis except Sunday and public holiday.

3.3.4 For water quality, one (1) Action Level Exceedance of SS at IS(Mf)9 during flood tide was recorded on 6 November 2015.

3.3.4.1 Layout map below shows that the construction activities conducted during flood tide on 6 November 2015, derrick lighter or dredger was working at north of HKBCF reclamation works which was far away from where IS(Mf)9 is located, therefore the construction activities was considered unlikely to cause the SS exceedances recorded at IS(Mf)9 during mid-flood tide.




3.3.4.2 Exceedance recorded at IS(Mf)9 during mid-flood tide is unlikely due to marine based construction activities of the Project:

3.3.4.3 With reference to the silt curtain checking record, defects such as disconnection of the silt curtain was not observed at south part of the perimeter silt curtain which are close to the IS(Mf)9.

3.3.4.4 Furthermore, no filling activities was observed in progress at the sea area south to HKBCF reclamation works and no silt plume was observed to flow from the inside of the perimeter silt curtain to the outside of the perimeter silt curtain when monitoring was conducted at IS(Mf)9. Also refer to the attached photo record taken at sea area located south of HKBCF reclamation works on 6 November 2015 for reference of sea condition on 6 November 2015, which shows that no silt plume was observed.

3.3.4.5 Photo record which shows the sea condition at southern part of the HKBCF reclamation works on 06 November 2015. No silt plume was observed.



3.3.4.6 The turbidity data obtained from monitoring station IS7 and IS(Mf)9, IS8 and IS(Mf)6 which located at/near the vicinity of sea area at south of HKBCF reclamation works, did not exceed the action and limit level. This indicates the turbidity level at/near IS(Mf)9 was not adversely affected.

3.3.4.7 As such, the exceedance was likely due to local effects in the vicinity of IS(Mf)9.

3.3.4.8 Action taken under the action plan:

1. Not applicable as SS was not measured *in situ*;
2. After considering the above mentioned investigation results, it appears that it was unlikely that the SS exceedances were attributed to active construction activities of this Contract;
3. IEC, contractor and ER were informed via email;
4. Monitoring data, all plant, equipment and Contractor's working methods were checked;
5. Since it is considered that the SS exceedance is unlikely to be project related, as such, actions 5-7 under the EAP are not considered applicable.

3.3.4.9 Nevertheless, the Contractor was reminded to ensure provision of ongoing maintenance to the silt curtains and to carry out maintenance work once defects were found.

3.3.4.10 Maintenance work of the silt curtain was carried out by the Contractor on a daily basis except Sunday and public holiday.

3.3.5 The event action plan is annexed in Appendix K.

### 3.4 Dolphin Monitoring

3.4.1 In accordance with the Contract Specific EM&A Manual, pre-set and fixed transect line vessel based dolphin survey was required in two AFCD designated areas (Northeast Lantau (NEL) and Northwest Lantau (NWL) survey areas). The impact dolphin monitoring at each survey area should be conducted twice per month.

3.4.2 The impact dolphin monitoring conducted is vessel-based and combines line-transect and photo-ID methodology, which have adopted similar survey methodologies as that adopted during baseline monitoring to facilitate comparisons between datasets.

3.4.3 The layout map of impact dolphin monitoring have been provided by AFCD and is shown in Figure 4.

3.4.4 The effort summary and sighting details during the reporting quarter are shown in the Appendix H. A summary of key findings of the dolphin surveys completed during the reporting quarter is shown below:

**Table 3.6 Summary of Key Dolphin Survey Findings in September 2015 – November 2015**

| | |
|---|---|
| Number of Impact Surveys Completed^ | 6 |
| Survey Distance Travelled under Favourable On- Effort Condition | 650.7km |
| Number of Sightings | 13 sightings (7 sightings are ”on effort” (which are all under favourable condition), 6 sightings are “opportunistic”) |
| Number of dolphin individual sighted | 36 individuals (the best estimated group size) |
| Dolphin Encounter Rate# | NEL: 0<br>NWL: 1.7 |
| Dolphin Group Size | Average of NEL: 0<br>Average of NWL: 2.8<br>Varied from 1-6 individuals |
| Most Often frequent dolphin sighting area | Northern Sha Chau and Lung Kwu Chau Marine Park, the western limit of NWL and Tai O area. |

Remarks:
^ Completion of line transect survey of NEL and NWL survey area once was counted as one complete survey.
# Dolphin Encounter Rate = (Sum of 1st 2nd, 3rd month’s total sighting/ Sum of 1st , 2nd, 3rd month’s total effort)*100km (encounter rates are calculated using on effort sightings made under favourable conditions only.)

3.4.5 One (1) Limit Level exceedance of dolphin monitoring was recorded in the reporting quarter. After investigation, it was concluded that the HZMB works is one of the contributing factors affecting the dolphins. It was also concluded the contribution of impacts due to the HZMB works as a whole (or individual marine contracts) cannot be quantified nor separate from the other stress factors. Event Action Plan for Impact Dolphin Monitoring was triggered. For detail of investigation, please refer to appendix L.

**Table 3.7 Summary of STG and ANI encounter rates in September 2015 – November 2015**

| | NEL | NWL | Level Exceeded |
|---|---|---|---|
| STG* | 0 | 1.9 | Limit |
| ANI** | 0 | 3.8 | |

*Quarterly Average Encounter Rate of Number of Dolphin Sightings (STG) presents averaged encounter rates of the three monitored months in terms of groups per 100km per survey event.
STG Encounter rate = (Average of (total number sighting/total effort) of 1st and 2nd completed survey# of 1st month+ Average of (total number sighting/total effort) of 1st and 2nd completed survey# of 2nd month + Average of (total number sighting/total effort) of 1st and 2nd completed survey# of 3rd month)/3*100km
**Quarterly Average Encounter Rate of Total Number of Dolphins (ANI) presents averaged encounter rates of the three monitored months in terms of individuals per 100km per survey event.
ANI Encounter rate = (Average of (total number of Individual/total effort) of 1st and 2nd completed survey# of 1st month+ Average of (total number of Individual/total effort) of 1st and 2nd completed survey# of 2nd month + Average of (total number of Individual/total effort) of 1st and 2nd completed survey# of 3rd month +)/3*100km

3.4.6 Details of the comparison and analysis methodology and their findings and discussions are annexed in Appendix H.

## 3.5 Environmental Site Inspection and Audit

3.5.1 Site Inspections were carried out on a weekly basis to monitor the implementation of proper environmental pollution control and mitigation measures for the Project. In the reporting quarter, 13 site inspections were carried out. Recommendations on remedial actions were given to the Contractors for the deficiencies identified during the site audits.

3.5.2 Particular observations during the site inspections are described below:

***Air Quality***

3.5.3 The Contractor was reminded to continue to provide sufficient dust control to prevent generation of fugitive dust. (Reminder)

3.5.4 Fugitive dust was observed when vehicle was drove pass the road, during grout production process and during rock filling process. The Contractor was reminded to provide sufficient dust control to prevent generation of fugitive dust. The Contractor subsequently provided dust control measures to the area. (Closed)

3.5.5 Dark smoke emission was observed from plant/equipment of derrick barge and pelican barge and on at Portion E1, the Contractor was advised to provide measures to avoid emission of dark smoke. The Contractor subsequently provided measures to avoid emission of dark smoke. (Closed)

***Noise***

3.5.6 No relevant adverse impact was observed in the reporting quarter.

***Water Quality***

3.5.7 A deformed drip tray was observed on site. The Contractor was reminded to provide drip tray which can effectively contain potential leakage of oil. The Contractor subsequently provided drip tray without defect. (Closed)

3.5.8 Gaps between vehicle accesses were observed on the landing barge near Portion E1. The Contractor was reminded to provide measure to prevent potential runoff on the landing barge. (Reminder)

3.5.9 Material was observed stockpiled on cells at Portion E1 and near Portion C2a. The Contractor was reminded to provide preventative measures to the works process to prevent runoff. The Contractor subsequently removed the material from Portion E1. (Closed)

3.5.10 Delivery pipe of floating grout production facilities was observed not fully enclosed. The Contractor was reminded to ensure full enclosure and prevent any potential runoff. The Contractor subsequently provided full enclosure to delivery pipes of the grout production facilities. (Closed)

3.5.11 Disconnection of secondary protective pipe was observed, the Contractor was reminded provide effective measures to avoid any wastewater discharged from the grouting production process or domestic sewage to the sea. The Contractor subsequently provided maintenance to the disconnected pipes. (Closed)

3.5.12 Pipes were observed at Portion E1, the Contractor was reminded to provide preventive measures and avoid potential release of turbid water. (Reminder)

3.5.13 The Contractor was reminded to provide preventive measures, such as liner and bunding, for the stockpile of excavated materials at Portion C2a and C2b. (Reminder)

3.5.14 Runoff was observed onsite and silt plume was observed by at the sea area by the seawall near Portion C2a. The Contractor was advised to provide control measures to prevent runoff. The Contractor subsequently provided measures to prevent runoff. (Closed)

3.5.15 Turbid water was observed at Portion E1, the Contractor was reminded to prevent runoff of turbid water. The Contractor subsequently provided measures to prevent runoff of turbid water. (Closed)

3.5.16 Silt curtain was observed temporarily disconnected during maintenance. The Contractor was reminded the silt curtain should be reinstated after maintenance is completed. The Contractor subsequently collect the silt curtain. (Reminder)

***Chemical and Waste Management***

3.5.17 The Contractor was reminded to remove the water mixture which accumulated inside the drip trays at Portion C2a and dispose of as chemical waste properly. The Contractor subsequently removed the water mixture inside drip tray. (Closed)

3.5.18 It was observed that sand was loaded inside drip trays. The Contractor was reminded to clear the sand inside drip tray. The Contractor subsequently cleared the sand inside drip tray. (Closed)

3.5.19 It was observed that water and oil mixture accumulated inside drip tray at Portion E2. The Contractor was reminded to clear the sand inside drip tray. The Contractor subsequently cleared the water and oil mixture accumulated inside drip tray. (Closed)

3.5.20 Bags of inert waste were observed on site, the Contractor was reminded to collect and dispose them of properly and regularly. (Reminder)

3.5.21 General refuses were observed at Portion D and Portion E. The Contractor was reminded to regular collect and dispose of the general refuses on site to keep the site clean and tidy. The Contractor subsequently collected and removed the general refuses at Portion D. (Closed)

3.5.22 Oil drum were observed without drip tray on barge GD852, the Contractor was reminded to provide drip tray to oil drums. The oil drums were subsequently removed by the Contractor. (Closed)

3.5.23 A generator was observed without drip tray, the Contractor was reminded to provide drip tray to generator. The Contractor subsequently provided drip tray to generator. (Closed)

***Landscape and Visual Impact***

3.5.24 No relevant adverse impact was observed in the reporting quarter.

***Others***

3.5.25 Rectifications of remaining identified items are undergoing by the Contractor. Follow-up inspections on the status on provision of mitigation measures will be conducted to ensure all identified items are mitigated properly.

# 4 ADVICE ON THE SOLID AND LIQUID WASTE MANAGEMENT STATUS

## 4.1 Summary of Solid and Liquid Waste Management

4.1.1 The Contractor registered as a chemical waste producer for this project. Sufficient numbers of receptacles were available for general refuse collection and sorting.

4.1.2 As advised by the Contractor, 142,892$m^3$ of fill were imported for the Project use in the reporting period. 672kg of paper/cardboard packaging and 221$m^3$ of general refuse were generated and disposed of in the reporting period. Monthly summary of waste flow table is detailed in Appendix I.

4.1.3 The Contractor is advised to properly maintain on site C&D materials and wastes 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 is reminded to properly maintain the site tidiness and dispose of the wastes accumulated on site regularly and properly.

4.1.4 The Contractor is reminded that chemical waste containers should be properly treated and stored 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.

# 5 IMPLEMENTATION STATUS OF ENVIRONMENTAL MITIGATION MEASURES

## 5.1 Implementation Status of Environmental Mitigation Measures

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

5.1.2 A summary of the Implementation Schedule of Environmental Mitigation Measures (EMIS) is presented in Appendix C. Most of the recommended mitigation measures are being upheld. Moreover, regular review and checking on the construction methodologies, working processes and plants were carried out to ensure the environmental impacts were kept minimal and recommended environmental mitigation measures were implemented effectively.

5.1.3 Training of marine travel route for marine vessels operator was given to relevant staff and relevant records were kept properly.

5.1.4 Regarding the implementation of dolphin monitoring and protection measures (i.e. implementation of Dolphin Watching Plan, Dolphin Exclusion Zone and Silt Curtain integrity Check), regular checks were conducted by experienced MMOs within the works area to ensure that no dolphins were trapped by the silt curtain area. There were no dolphins spotted within the silt curtain during this quarter. The relevant procedures were followed and all measures were well implemented. The silt curtains were also inspected in accordance to the submitted plan.

5.1.5 Acoustic decoupling measures on noisy plants on construction vessels were checked regularly and the Contractor was reminded to ensure provision of ongoing maintenance to noisy plants and to carry out improvement work once insufficient acoustic decoupling measures were found.

5.1.6 As informed by the Contractor, an area of Portion B has been handed over to other Contract and the perimeter silt curtain near this area of Portion B has been rearranged on 31 July 2015 for berthing another Contractor's vessels (which do not belong to this Contract). IEC/ENPO was informed on 5 Aug 2015 immediately after ET's review. IEC/ENPO provided further comments on 1 September 2015, ET responded 2 September 2015 with notification letter ref.:60249820/rmky15090201. IEC/ENPO expressed no further comment via letter ref.: HYDHZMBEEM00_0_03351L.15 on 8 September 2015 for the removal of section of perimeter silt curtain near Portion B of HKBCF. EPD replied on 24 September 2015 via memo (39) in Ax(1) to EP2/G/A/146 pt.8 and reminded HyD that if grouting trial is undertaken, to adhere to the VEP requirement and undertake the necessary.

5.1.7 Frequency of watering per day on exposed soil was checked; with reference to the record provided by the Contract, watering was conducted at least 8 times per day on reclaimed land. The frequency of watering is the mainly refer to water truck. Sprinklers are only served to strengthen dust control measure for busy traffic at the entrance of Portion D. As informed by the Contractor, during the mal-function period of sprinkler, water truck will enhance watering at such area. The Contractor was reminded to ensure provision of watering of at least 8 times per day on all exposed soil within the

# 6 SUMMARY OF EXCEEDANCES OF THE ENVIRONMENTAL QUALITY PERFORMANCE LIMIT

## 6.1 Summary of Exceedances of the Environmental Quality Performance Limit

6.1.1 All 1-Hour TSP and 24-Hour TSP results were below the Action and Limit Level in the reporting quarter.

6.1.2 For construction noise, no exceedance was recorded at all monitoring stations in the reporting quarter.

6.1.3 For water quality, one (1) Action Level Exceedance of SS at SR7 during flood tide was recorded on 30 September 2015. After investigation, there is no adequate information to conclude the recorded exceedance is related to this Contract. No Action and Limit Level exceedance was recorded on other monitoring date in the reporting month September 2015; one (1) Action Level Exceedance of SS at SR6 during flood tide was recorded on 2 October 2015. After investigation, there is no adequate information to conclude the recorded exceedance is related to this Contract. No Action and Limit Level exceedance was recorded on other monitoring date in the reporting month October 2015; one (1) Action Level Exceedance of SS at IS(Mf)9 during flood tide was recorded on 6 Nov 2015. After investigation, there is no adequate information to conclude the recorded exceedance is related to this Contract. No Action and Limit Level exceedance was recorded on other monitoring date in the reporting month November 2015.

6.1.4 One (1) Limit Level exceedance of dolphin monitoring was recorded in the reporting quarter. After investigation, it was concluded that the HZMB works is one of the contributing factors affecting the dolphins. It was also concluded the contribution of impacts due to the HZMB works as a whole (or individual marine contracts) cannot be quantified nor separate from the other stress factors. Event Action Plan for Impact Dolphin Monitoring was triggered. For detail of investigation, please refer to appendix L.

6.1.5 A complainant who lives at 1 Sky City Road East, Hong Kong SkyCity Marriott Hotel, Hong Kong International Airport, Lantau, Hong Kong complained to EPD's hotline on 23 October 2015 that loud noise were generated by HZMB artificial island construction site of China Harbour Engineering Company Ltd adjacent to the premises approximately between 10pm to 12am, during recent weekdays and Saturday. In addition, loud noise and dark smoke were noted on the construction site of HZMB artificial island during Sunday and public holiday. The complainant questioned whether the Contractor was allowed to conduct construction work during Sunday and public holiday. The complaint was referred by EPD to the project team of Contract No. HY/2010/02 to follow up on 23 October 2015. After investigation, with referred to the available information, it is unable to determine whether the night time noise complaint and the concerned dark smoke are related to this Contract.

6.1.6 Cumulative statistics on exceedances is provided in Appendix J.

# 7 SUMMARY OF COMPLAINTS, NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

## 7.1 Summary of Environmental Complaints, Notification of Summons and Successful Prosecutions

7.1.1 The Environmental Complaint Handling Procedure is annexed in Figure 5.

7.1.2 A complainant who lives at 1 Sky City Road East, Hong Kong SkyCity Marriott Hotel, Hong Kong International Airport, Lantau, Hong Kong complained to EPD's hotline on 23 October 2015 that loud noise were generated by HZMB artificial island construction site of China Harbour Engineering Company Ltd adjacent to the premises approximately between 10pm to 12am, during recent weekdays and Saturday. In addition, loud noise and dark smoke were noted on the construction site of HZMB artificial island during Sunday and public holiday. The complainant questioned whether the Contractor was allowed to conduct construction work during Sunday and public holiday. The complaint was referred by EPD to the project team of Contract No. HY/2010/02 to follow up on 23 October 2015.

7.1.2.1 Investigation Actions for part of the complaint which is related to noise:

- Relevant CNPs applicable and valid for this Contract were reviewed.
- CNP compliance checking record from 1 to 23 October 2015 provided by the Contractor has been reviewed; please see the following for details of investigation results.
- Although sufficient details of the noise problem (such as exact date and location) were not provided by the complainant, the construction activities conducted from 1- 23 October 2015 were checked.

7.1.2.2 Investigation and Findings for part of the complaint which is related to noise:

- For information such as i) CNP No.; ii) works location specified under the CNP; iii) the numbers and types of PME allowed to use under the CNP; iv) the working hours stated in the CNP, please refer to copy of CNP#GW-RS1046-15 and CNP# GW-RS0536-15 which could be accessed online: https://epic.epd.gov.hk/eForm/cnp/download.jsp?lang=eng
- Construction activities conducted between 1 – 23 October 2015 were reviewed. It is noted that deep cement mixing, box culvert works, removal of surcharge or installation of Hydraulic Band drain were all/partially in operation during restricted hours.
- However, compliance checking record from 1 to 23 October 2015 provided by the Contractor was reviewed and it shows that construction works were carried out in compliance with the CNP in force.

7.1.2.3 As such, with referred to the available information, it is unable to determine whether the night time noise complaint is related to this Contract.

7.1.2.4 Investigation Actions for part of the complaint which is related to air quality:

- Reviewed 1-hour TSP and 24-hours TSP monitoring data within the construction period 1 - 23 October 2015.
- Weekly site inspections jointly conducted by ET, RSS, the Contractor or IEC between 1 - 23 October 2015 and the observations made during this weekly site inspection were reviewed. Please see the following for details of investigation results.

7.1.2.5 Investigation and Findings for part of the complaint which is related to air quality:

- No impact air quality monitoring exceedance was recorded in October 2015 (also refer to attached Appendix G impact air quality monitoring data for reference.)
- Weekly site inspection was jointly conducted by ET, RSS and the Contractor on 2, 8, 22 October 2015 and by ET, RSS, the Contractor; and with ET, RSS, Contractor and IEC on 15 October 2015. During the weekly site inspections on 8 and 15 October 2015, dark smoke emission from barge was observed at North-eastern part of the HKBCF reclamation site which relatively far away from where the complainant resided. The duration of the dark smoke emissions were not more than the regulatory limit of emission for more than 6 minutes in any period of 4 hours or for more than 3 minutes continuously at

any one time. Nonetheless, the Contractor was reminded to prevent the emission of dark smoke and the Contractor subsequently provided measures to avoid emission of it.

- In addition, there is no sufficient information, such as photos provided by the complainant to make sure that the concerned dark smoke are related to this Contract.

7.1.2.6 With referred to the available information, it is unable to determine whether concerned dark smoke are related to this Contract.

7.1.2.7 Recommendations for the part of the complaint which is related to noise:

- The Contractor was reminded to continue to strictly follow with all terms and conditions of a valid CNP.

7.1.2.8 Recommendation for the part of the complaint which is related to air quality:

- The Contractor was reminded that all plant and equipment should be well maintained and in good condition and ensure dark smoke emission from plant/equipment is effectively avoided.

7.1.3 No notification of summons or prosecution was received in the reporting quarter.

7.1.4 Statistics on complaints, notifications of summons and successful prosecutions are summarized in Appendix N.

# 8 COMMENTS, RECOMMENDATIONS AND CONCLUSIONS

## 8.1 Comments on mitigation measures

8.1.1 According to the environmental site inspections performed in the reporting quarter, the following recommendations were provided:

***Air Quality Impact***

- All working plants and vessels on site should be regularly inspected and properly maintained to avoid dark smoke emission.
- All vehicles should be washed to remove any dusty materials before leaving the site.
- Haul roads should be sufficiently dampened to minimize fugitive dust generation.
- Wheel washing facilities should be properly maintained and reviewed to ensure properly functioning.
- Temporary exposed slopes and open stockpiles should be properly covered.
- Enclosure should be erected for cement debagging, batching and mixing operations.
- Water spraying should be provided to suppress fugitive dust for any dusty construction activity.
- Regular review and provide maintenance to dust control measures such as sprinkler system.

***Construction Noise Impact***

- Quieter powered mechanical equipment should be used as far as possible.
- Noisy operations should be oriented to a direction away from sensitive receivers as far as possible.
- Proper and effective noise control measures for operating equipment and machinery on-site should be provided, such as erection of movable noise barriers or enclosure for noisy plants. Closely check and replace the sound insulation materials regularly
- Vessels and equipment operating should be checked regularly and properly maintained.
- Noise Emission Label (NEL) shall be affixed to the air compressor and hand-held breaker operating within works area.
- Acoustic decoupling measures should be properly implemented for all existing and incoming construction vessels with continuous and regularly checking to ensure effective implementation of acoustic decoupling measures.

***Water Quality Impact***

- Regular review and maintenance of silt curtain systems, drainage systems and desilting facilities in order to make sure they are functioning effectively.
- Construction of seawall should be completed as early as possible.
- Regular inspect and review the loading process from barges to avoid splashing of material.
- Silt, debris and leaves accumulated at public drains, wheel washing bays and perimeter u-channels and desilting facilities should be cleaned up regularly.
- Silty effluent should be treated/ desilted before discharged. Untreated effluent should be prevented from entering public drain channel.

- Proper drainage channels/bunds should be provided at the site boundaries to collect/intercept the surface run-off from works areas.
- Exposed slopes and stockpiles should be covered up properly during rainstorm.

***Chemical and Waste Management***

- All types of wastes, both on land and floating in the sea, should be collected and sorted properly and disposed of timely and properly. They should be properly stored in designated areas within works areas temporarily.
- All chemical containers and oil drums should be properly stored and labelled.
- All plants and vehicles on site should be properly maintained to prevent oil leakage.
- All kinds of maintenance works should be carried out within roofed, paved and confined areas.
- All drain holes of the drip trays utilized within works areas should be properly plugged to avoid any oil and chemical waste leakage.
- Oil stains on soil surface and empty chemical containers should be cleared and disposed of as chemical waste.
- Regular review should be conducted for working barges and patrol boats to ensure sufficient measures and spill control kits were provided on working barges and patrol boats to avoid any spreading of leaked oil/chemicals.

***Landscape and Visual Impact***

- All existing, retained/transplanted trees at the works areas should be properly fenced off and regularly inspected.
- Control night-time lighting and glare by hooding all lights.

## 8.2 Recommendations on EM&A Programme

8.2.1 The impact monitoring programme for air quality, noise, water quality and dolphin ensured that any deterioration in environmental condition was readily detected and timely actions taken to rectify any non-compliance. Assessment and analysis of monitoring results collected demonstrated the environmental impacts of the Project. With implementation of recommended effective environmental mitigation measures, the Project's environmental impacts were considered as environmentally acceptable. The weekly environmental site inspections ensured that all the environmental mitigation measures recommended were effectively implemented.

8.2.2 The recommended environmental mitigation measures, as included in the EM&A programme, effectively minimize the potential environmental impacts from the Project. Also, the EM&A programme effectively monitored the environmental impacts from the construction activities and ensure the proper implementation of mitigation measures. No particular recommendation was advised for the improvement of the programme.

## 8.3 Conclusions

8.3.1 The construction phase and EM&A programme of the Project commenced on 12 March 2012.

8.3.2 All 1-Hour TSP and 24-Hour TSP results were below the Action and Limit Level in the reporting quarter.

8.3.3 For construction noise, no exceedance was recorded at all monitoring stations in the reporting quarter.

8.3.4 For water quality, one (1) Action Level Exceedance of SS at SR7 during flood tide was recorded on 30 September 2015. After investigation, there is no adequate information to conclude the recorded exceedance is related to this Contract. No Action and Limit Level exceedance was recorded on other monitoring date in the reporting month September 2015; one (1) Action Level Exceedance of SS at SR6 during flood tide was recorded on 2 October 2015. After investigation, there is no adequate information to conclude the recorded exceedance is related to this Contract. No Action and Limit Level exceedance was recorded on other monitoring date in the reporting month October 2015; one (1) Action Level Exceedance of SS at IS(Mf)9 during flood tide was recorded on 6 Nov 2015. After investigation, there is no adequate information to conclude the recorded exceedance is related to this Contract. No Action and Limit Level exceedance was recorded on other monitoring date in the reporting month November 2015.

8.3.5 One (1) Limit Level exceedance of dolphin monitoring was recorded in the reporting quarter. After investigation, it was concluded that the HZMB works is one of the contributing factors affecting the dolphins. It was also concluded the contribution of impacts due to the HZMB works as a whole (or individual marine contracts) cannot be quantified nor separate from the other stress factors. Event Action Plan for Impact Dolphin Monitoring was triggered. For detail of investigation, please refer to appendix L.

8.3.6 Environmental site inspection was carried out 13 times in the reporting quarter. Recommendations on remedial actions were given to the Contractors for the deficiencies identified during the site audits.

8.3.7 A complainant who lives at 1 Sky City Road East, Hong Kong SkyCity Marriott Hotel, Hong Kong International Airport, Lantau, Hong Kong complained to EPD's hotline on 23 October 2015 that loud noise were generated by HZMB artificial island construction site of China Harbour Engineering Company Ltd adjacent to the premises approximately between 10pm to 12am, during recent weekdays and Saturday. In addition, loud noise and dark smoke were noted on the construction site of HZMB artificial island during Sunday and public holiday. The complainant questioned whether the Contractor was allowed to conduct construction work during Sunday and public holiday. The complaint was referred by EPD to the project team of Contract No. HY/2010/02 to follow up on 23 October 2015. After investigation, with referred to the available information, it is unable to determine whether the night time noise complaint and the concerned dark smoke are related to this Contract.

8.3.8 No notification of summons or prosecution was received in the reporting quarter.

8.3.9 Apart from the above mentioned monitoring, most of the recommended mitigation measures, as included in the EM&A programme, were implemented properly in the reporting quarter.

8.3.10 The recommended environmental mitigation measures effectively minimize the potential environmental impacts from the Project. The EM&A programme effectively monitored the environmental impacts from the construction activities and ensure the proper implementation of mitigation measures. No particular recommendation was advised for the improvement of the programme.

8.3.11 Moreover, regular review and checking on the construction methodologies, working processes and plants were carried out to ensure the environmental impacts were kept minimal and recommended environmental mitigation measures were implemented effectively.