AECOM

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 Report for December 2012- February 2013

[05/2013]

	Name	Signature
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Version:	Rev. 0	Date: 14 May 2013

Disclaimer

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Ref.: HYDHZMBEEM00_0_0920L.13 14 May 2013

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

By Fax (3698 5999) and By Post

Attention: Mr. Michael Lo

Dear Mr. Lo,

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
Hong Kong – Zhuhai – Macao Bridge
Hong Kong Boundary Crossing Facilities – Reclamation Work
Quarterly Environmental Monitoring & Audit Report for December 2012 to February 2013

Reference is made to the Environmental Team's submission of the Quarterly Environmental Monitoring & Audit Report for December 2012 to February 2013 (letter ref. 60249820/C/RMKY13051401 dated 14 May 2013) copied to us by E-mail on 14 May 2013.

Please be informed that we have no adverse comment on the captioned report. The ET Leader and the relevant specialist(s) of the ET are reminded that our verification to your report does not release any of their obligation in the EM&A Manual under the applicable Environmental Permit(s) for this project, in particular on dolphin monitoring and checking on any change in density and distribution pattern of Chinese White Dolphin and recommending appropriate actions and mitigation measures.

Thank you very much for your kind attention and please do not hesitate to contact the undersigned should you have any queries.

Yours sincerely,

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. C M Wong	(By Fax: 2578 0413)

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EXECUTIVE SUMMARY

Contract No. HY/2010/02 – Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities – Reclamation Work (here below, known as "the Project") 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 16 Oct 2012 (EP-353/2009/E) and 8 December 2011 (EP-354/2009/A) (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 Project).

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

ENVIRON Hong Kong Ltd. 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 Project 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 2016. 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 Dec 2012 and 28 February 2013. As informed by the Contractor, major activities in the reporting quarter were:-

Marine-based Works
- Maintenance of Silt curtain
- Stone column installation
- Band drain installation trial
- Laying geo-textile
- Cellular structure installation

Land-based Works
- Maintenance works of Site Office at Works Area WA2
- Maintenance works of Public Works Regional Laboratory at Works Area WA3
- Sign board erection at Works Area WA2
- Geo-textile fabrication at Works Area WA2
- Stone column installation barges setup and their maintenance works at Works Area WA4
- Silt curtain fabrication at Works Area WA4

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	37 sessions
Impact dolphin monitoring	6 surveys
Joint Environmental site inspection	13 sessions

Breaches of Action and Limit Levels for Air Quality

No Action/Limit Level exceedance of 1-hour TSP results was recorded in the reporting quarter. However, one

(1) Action Level and two (2) Limit Level exceedance of 24-hour TSP results were recorded at monitoring location AMS3A in the reporting quarter. Investigation results show that both the Action and Limit Level exceedance of 24-hour TSP results were not project-related.

Breaches of Action and Limit Levels for Noise

No Action/Limit Level exceedance of impact noise monitoring was recorded in the reporting quarter.

Breaches of Action and Limit Levels for Water Quality

Sixteen (16) Action Level exceedances were recorded at measured suspended solids (SS) values (in mg/L) in the reporting quarter. Investigation result show that the exceedances were not due to the Project works.

Triggering of Event and Action Plan for Impact Dolphin Monitoring

No triggering of Event and Action Plan for impact dolphin monitoring was noted in the reporting quarter.

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. Reference is made to ET's proposal of the omission of air monitoring station (AMS 6) dated on 1 November 2012 and EPD's letter dated on 19 November 2012 regarding the conditional approval of the proposed omission of air monitoring station (AMS 6) for Contract No. HY/2010/02. The aforesaid omission of Monitoring Station AMS6 was effective since 19 November 2012.

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

Two (2) environmental complaints were received in the reporting quarter.

No notification of summons and successful prosecution was received in the reporting quarter.

1 INTRODUCTION

1.1 Background

1.1.1 Contract No. HY/2010/02 – Hong Kong-Zhuhai-Macao Bridge Hong Kog Boundary Crossing Facilities – Reclamation Work (here below, known as "the Project") mainly comprises seawall construction and 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) and October 2012 (EP-353/2009/E). 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).

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 16 October 2012 (EP-353/2009/E) and 8 December 2011 (EP-354/2009/A) (for TMCLKL Southern Landfall Reclamation only).

1.1.5 A Project Specific EM&A Manual, which included all project-relation contents from the original EM&A Manuals for the Project, 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 Project).

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

1.1.8 ENVIRON Hong Kong Ltd. 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 Project 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 2016.

1.1.11 According to the Project 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 Project commenced on 12 March 2012.

1.2 Scope of Report

1.2.1 This is the Forth 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 Project from 1 December 2012 and 28 February 2013.

1.3 Project Organization

1.3.1 The project 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	2528 3031	2668 3970
IEC / ENPO (ENVIRON Hong Kong Limited)	Independent Environmental Checker	Raymond Dai	3743 0788	3548 6988
	Environmental Project Office Leader	Y.H. Hui	3743 0788	3548 6988
Contractor (China Harbour Engineering Company Limited)	General Manager (S&E)	Daniel Leung	3157 1086	2578 0413
	Environmental Officer	C. M. Wong	3157 1086	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-based Works
- Maintenance of Silt curtain
- Stone column installation
- Band drain installation trial
- Laying geo-textile
- Cellular structure installation

Land-based Works
- Maintenance works of Site Office at Works Area WA2
- Maintenance works of Public Works Regional Laboratory at Works Area WA3
- Sign board erection at Works Area WA2
- Geo-textile fabrication at Works Area WA2
- Stone column installation barges setup and their maintenance works at Works Area WA4
- Silt curtain fabrication at Works Area WA4

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 Project 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 Project 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 Project 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 Project 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 (AMS3A) 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 Project Specific EM&A Manual. However, for monitoring location NMS3 (Ho Yu College), as proposed in the Project 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 (NMS3A) 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.

2.1.4 In accordance with the Project 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 Project 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/E and EP-354/2009/A) (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 Project 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, AMS3A, AMS6 and AMS7).

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

3.1.4 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		
		Dec 12	Jan 13	Feb 13
1-hr TSP	AMS2	18	15	15
	AMS3A	18	15	15
	AMS7	18	15	15
24-hr TSP	AMS2	6	5	5
	AMS3A	6	5	5
	AMS7	6	5	5

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

Monitoring Parameter	Location	Level of Exceedance	Level of Exceedance		
			Dec 12	Jan 13	Feb 13
1-hr TSP	AMS2	Action	0	0	0
		Limit	0	0	0
	AMS3A	Action	0	0	0
		Limit	0	0	0
	AMS7	Action	0	0	0
		Limit	0	0	0
		Total	***0***	***0***	***0***
24-hr TSP	AMS2	Action	0	0	0
		Limit	0	0	0
	AMS3A	Action	0	0	1
		Limit	1	0	1
	AMS7	Action	0	0	0
		Limit	0	0	0
		Total	***1***	***0***	***2***

3.1.5 All impact 1-hour TSP monitoring results at all monitoring locations were below the Action and Limit Levels in the reporting quarter.

3.1.6 However, one (1) Action Level and Two (2) Limit Level exceedance of 24-hour TSP results were recorded at monitoring location AMS3A in the reporting quarter. Investigation results show that both the Action and Limit Level exceedance of 24-hour TSP results were not project-related.

3.1.7 One (1) 24-hour TSP result exceeded the Limit Level on 13 Dec 2012 at monitoring station AMS3A in the reporting quarter.

3.1.7.1 According to information provided by the Contractor and on-site observations, installing sand bags and stitching geotextile were the major land-based construction activity being undertaken at Works Area WA2 during the monitoring period.

3.1.7.2 Similar construction activities were carried out on 12 &13 Dec 2012 and 18 & 19 Dec 12 but no exceedance was recorded on 18 & 19 Dec 12.

3.1.7.3 Functional checking on HVS at AMS3A was done. Air flow of the HVS was checked and the flow was steady during the 24-hr TSP sampling at AMS3A. The filter paper was re-weighted by the assigned HOKLAS laboratory and the result was reconfirmed.

3.1.7.4 Construction activities, like sheet piling and percussive piling, were carrying out by nearby private development project during the course of monitoring, which are close to the monitoring station AMS3A. Meanwhile, exposed soil surfaces were observed at those construction sites of nearby private development project (Please refer to the attached maps and photos for illustration).

3.1.7.5 As refer to the wind data collected at wind station at Works Area WA2 during the monitoring period on 12 Dec 2012 and 13 Dec 2012 (as attached), east-southeast wind was prevailing during the monitoring period. Construction works carried out at construction sites of nearby private development project may contribute to the measured dust levels at the monitoring station AMS3A.

3.1.7.6 The 1-hr TSP values recorded at AMS3A on 13 Dec 2012, which are within the monitoring period of the 24-hr TSP, were 76 g/m^3, 78 g/m^3 and 80 g/m^3 respectively. All measured values are well below the Action and Limit Levels.

3.1.7.7 The measured 24-hr TSP values recorded at AMS2 and AMS7 (which are closer to the marine-based works areas) on the same monitoring date were 57 g/m^3 and 57 g/m^3 respectively, which are below the Action and Limit Levels.

3.1.7.8 The following dust mitigation measures have been implemented by the Contractor:

- Main haul road in Works Area WA2 were concrete paved.
- Vehicle washing facility was provided at vehicle exit points, and vehicle was washed to remove any dusty materials from its body and wheels before leaving.
- Measures for preventing fugitive dust emission are provided, e.g. watering and tarpaulin covers.

3.1.7.9 The dust exceedance was therefore considered not to be due to the Project works. Nevertheless, the Contractor was recommended to continue implementing existing dust mitigation measures.

3.1.8 One (1) 24-hour TSP result exceeded the Limit Level on 8 Feb 2013 at monitoring station AMS3A.

3.1.8.1 According to information provided by the Contractor, land-based construction activity installation of sand bags and band drain material sampling were being undertaken at Works Area WA2 during the monitoring period.

3.1.8.2 Functional checking on HVS at AMS3A was done. Air flow of the HVS was checked and the flow was steady during the 24-hr TSP sampling at AMS3A. The filter paper was re-weighted by the assigned HOKLAS laboratory and the result was reconfirmed.

3.1.8.3 1hr-TSP and 24 hr-TSP monitoring was conducted at AMS3A on 02 and 14 Feb 13, but all measured values recorded on 02 and 14 Feb 13 are well below the Action and Limit Levels.

3.1.8.4 Construction activities, like sheet piling and percussive piling, were carrying out by nearby private development project during the course of monitoring, which are close to the monitoring station AMS3A. Meanwhile, exposed soil surfaces were observed at those construction sites of nearby private development project (Please refer to the attached maps and photos for illustration).

3.1.8.5 As refer to the wind data collected at wind station at Works Area WA2 during the monitoring period on 7 and 8 Feb 13 (as attached) southeast winds was prevailing during the monitoring period. Construction works carried out at construction sites of nearby private development project may contribute to the measured dust levels at the monitoring station AMS3A.

3.1.8.6 The 1-hr TSP values recorded at AMS3A on 26 Feb 2013, which are within the monitoring period of the 24-hr TSP, were 84 /m3, 84 /m3 and 83 /m3 respectively. All measured values are well below the Action and Limit Levels.

3.1.8.7 The measured 24-hr TSP values recorded at AMS2 and AMS7 (which are closer to the marine-based works areas) on the same monitoring date were 37 g/m3 and 49 /m3 respectively, which are below the Action and Limit Levels.

3.1.8.8 As informed by the Contractor, the following dust mitigation measures have been implemented at WA2:

- Main haul road in Works Area WA2 were concrete paved.
- Vehicle washing facility was provided at vehicle exit points, and vehicle was washed to remove any dusty materials from its body and wheels before leaving.
- Measures for preventing fugitive dust emission are provided, e.g. watering and tarpaulin covers.

3.1.8.9 The dust exceedance was therefore considered not to be due to the Project works.

3.1.8.10 The Contractor was recommended to continue implementing existing dust mitigation measures.

3.1.9 One (1) 24-hour TSP result exceeded the action Level on 26 Feb 2013 at monitoring station AMS3A.

3.1.9.1 According to information provided by the Contractor, land-based construction activity installation of sand bags and band drain material sampling were being undertaken at Works Area WA2 during the monitoring period.

3.1.9.2 Functional checking on HVS at AMS3A was done. Air flow of the HVS was checked and the flow was steady during the 24-hr TSP sampling at AMS3A. The filter paper was re-weighted by the assigned HOKLAS laboratory and the result was reconfirmed.

3.1.9.3 1hr-TSP and 24hr-TSP monitoring was conducted at AMS3A on 2, 14 and 20 Feb 13, but all measured values recorded on 2, 14 and 20 Feb 13 are well below the Action and Limit Levels.

3.1.9.4 Construction activities, like sheet piling and percussive piling, were carrying out by nearby private development project during the course of monitoring, which are close to the monitoring station AMS3A but beyond the site boundary of Works Area WA2. Exposed soil surfaces were observed at those construction sites of nearby private development project (Please refer to the attached maps and photos for illustration).

3.1.9.5 As refer to the wind data collected at wind station at Works Area WA2 during the monitoring period on 25 and 26 Feb 13 (as attached) east south east wind was prevailing during the monitoring period. Construction works carried out at construction sites of nearby private development project may contribute to the measured dust levels at the monitoring station AMS3A.

3.1.9.6 The 1-hr TSP values recorded at AMS3A on 26 Feb 2013, which are within the monitoring period of the 24-hr TSP, were 92 g/m3, 92 g/m3 and 90 g/m3 respectively. All measured values are well below the Action and Limit Levels.

3.1.9.7 The measured 24-hr TSP values recorded at AMS2 and AMS7 (which are closer to the marine-based works areas) on the same monitoring date were 64 g/m3 and 90 g/m3 respectively, which are below the Action and Limit Levels.

3.1.9.8 The following dust mitigation measures have been implemented at Works Area WA2:

- Works Area WA2's surface was hard-paved, compacted or hydro-seeded
- Vehicle washing facility was provided at vehicle exit points,
- Measures for preventing fugitive dust emission are provided, e.g. tarpaulin covers.

3.1.9.9 The dust exceedance was therefore considered not to be due to the Project works.

3.1.9.10 The Contractor was recommended to continue implementing existing dust mitigation measures.

3.1.10 The graphical plots of the impact air quality monitoring results are provided in Appendix E. No specific trend of the monitoring results or existence of persistent pollution source was noted.

3.2 Noise Monitoring

3.2.1 Impact noise monitoring was conducted at the 2 monitoring stations (NMS2 and NMS3A) 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 Major noise sources during the noise monitoring included construction activities of the Project and nearby traffic noise.

3.2.4 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		
		Dec 12	Jan 13	Feb 13
	NMS2	4	5	4
	NMS3A	4	5	4

Table 3.4 Summary of Number of Monitoring Exceedances for Impact Noise

Monitoring Parameter	Location	Level of Exceedance	Level of Exceedance		
			Dec 12	Jan 13	Feb 13
	NMS2	Action	0	0	0
		Limit	0	0	0
	NMS3A	Action	0	0	0
		Limit	0	0	0
		Total	***0***	***0***	***0***

3.2.5 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.

3.3 Water Quality Monitoring

3.3.1 Impact water quality monitoring was conducted 3 times per week during mid-ebb and mid-flood tides at 21 water monitoring stations (9 Impact Stations, 7 Sensitive Receiver Stations and 5 Control/Far Field Stations).

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

3.3.3 Sixteen (16) Action Level exceedances were recorded at measured suspended solids (SS) values (in mg/L) in the reporting quarter. Investigation result show that the exceedances were not due to the Project works. Investigation results show that the exceedances were not due to the Project works. Number of exceedances recorded in the reporting quarter at each impact station is summarized in Table 3.5

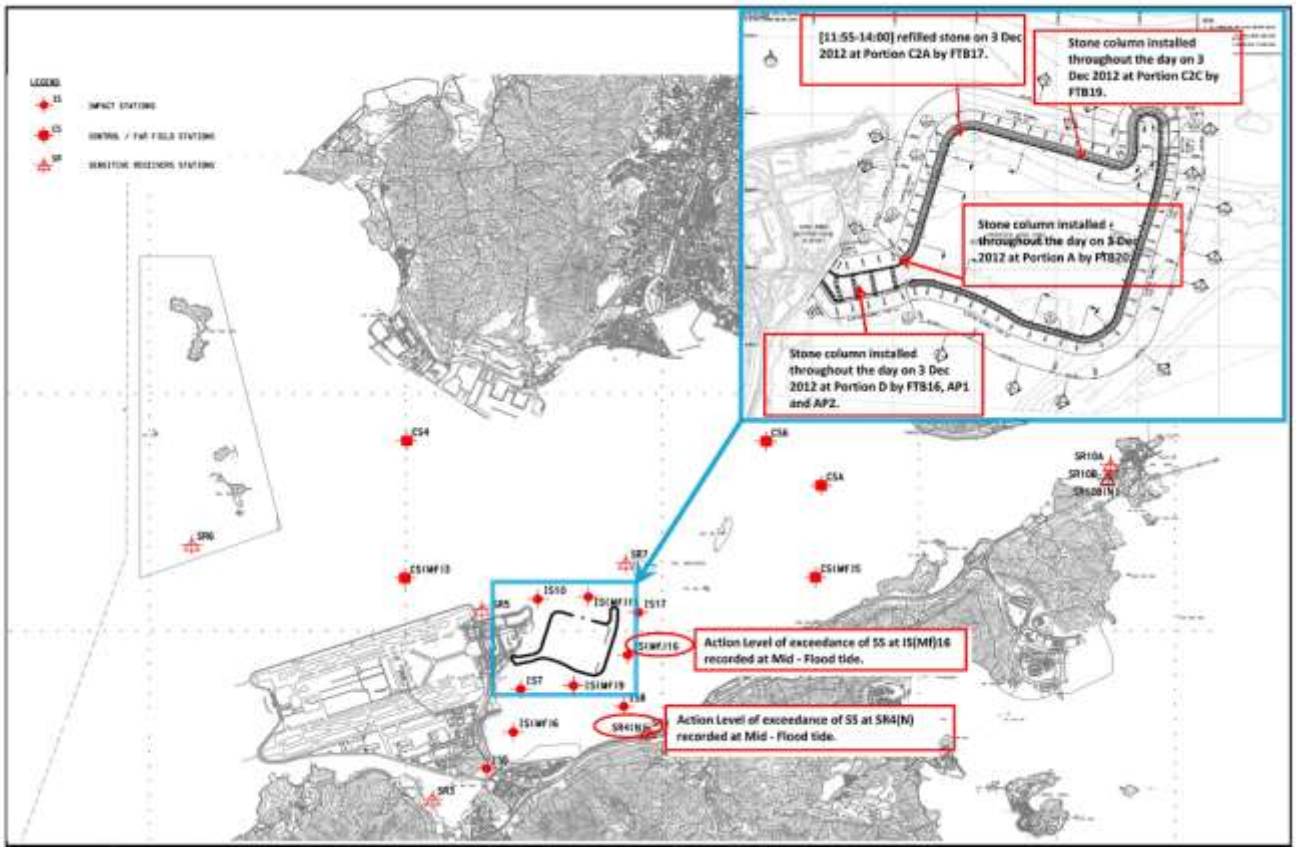
Table 3.5 Summary of Water Quality Exceedances in Sep-Nov 2012

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	**2 (5 and10 Dec, 12)**	**2 (5 and 14 Dec, 12)**	**2**	**2**
	Limit	0	0	0	0	0	0	0	0	0	0
IS7	Action	0	0	0	0	0	0	**1 (10 Dec, 12)**	0	**1**	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		0	0
	Limit	0	0	0	0	0	0	0	0	0	0
IS10	Action	0	0	0	0	0	0	0	**1 (2 Jan, 13)**	0	**1**
	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	**2 (3 Dec 12 &4 Jan13)**	0	**2**
	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	**1 (10 Dec, 12)**	0	**1**
	Limit	0	0	0	0	0	0	0	0	0	0
SR4(N)	Action	0	0	0	0	0	0	0	**1 (3 Dec, 12)**	0	**1**
	Limit	0	0	0	0	0	0	0	0	0	0
SR5	Action	0	0	0	0	0	0	0	**4 (5 & 10 Dec, 12 and 11 & 30 Jan, 13)**	0	**4**
	Limit	0	0	0	0	0	0	0	0	0	0

Station	Exceedance Level	DO (S&M)		DO (Bottom)		Turbidity		**SS**		**Total**	
		Ebb	Flood	Ebb	Flood	Ebb	Flood	**Ebb**	**Flood**	**Ebb**	**Flood**
SR6	Action	0	0	0	0	0	0	0	**2 (2 and 14 Jan, 13)**	0	**2**
	Limit	0	0	0	0	0	0	0	0	0	0
SR7	Action	0	0	0	0	0	0	0	0	0	0
	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	0	**16 (3, 5, 10 & 14 Dec 2012; 2, 4, 11, 14 & 30 Jan 2013)**	
	Limit	0	0	0	0	0	0	0	0	0	

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

3.3.4 Two (2) Action Level exceedances at measured Suspended Solids (mg/L) where recorded on 3 Dec 2012 during mid-flood tide at monitoring station IS(Mf)16 and SR4 (N). For Action Level exceedances at measured Suspended Solids (mg/L), 26.1 mg/L and 26.7 mg/L were recorded at Monitoring Station IS(Mf)16 and SR4 (N) respectively.



3.3.4.1 For the exceedances recorded at IS(Mf)16 and SR4 (N), it was found that Stone column installation was carried out throughout the day at Portion D by FTB 16, AP1 and AP2, at Portion A by FTB20, at Portion C2A by FTB17 and Portion C2C by FTB19 on 3 Dec 2012. Location plan showing the locations of the mentioned works is shown below:

3.3.4.2 Suspended solids values recorded at Impact Stations closer to the works are (e.g. IS(Mf)9, IS7 and IS8) all below the Action and Limit Level during the same tide on the same day.

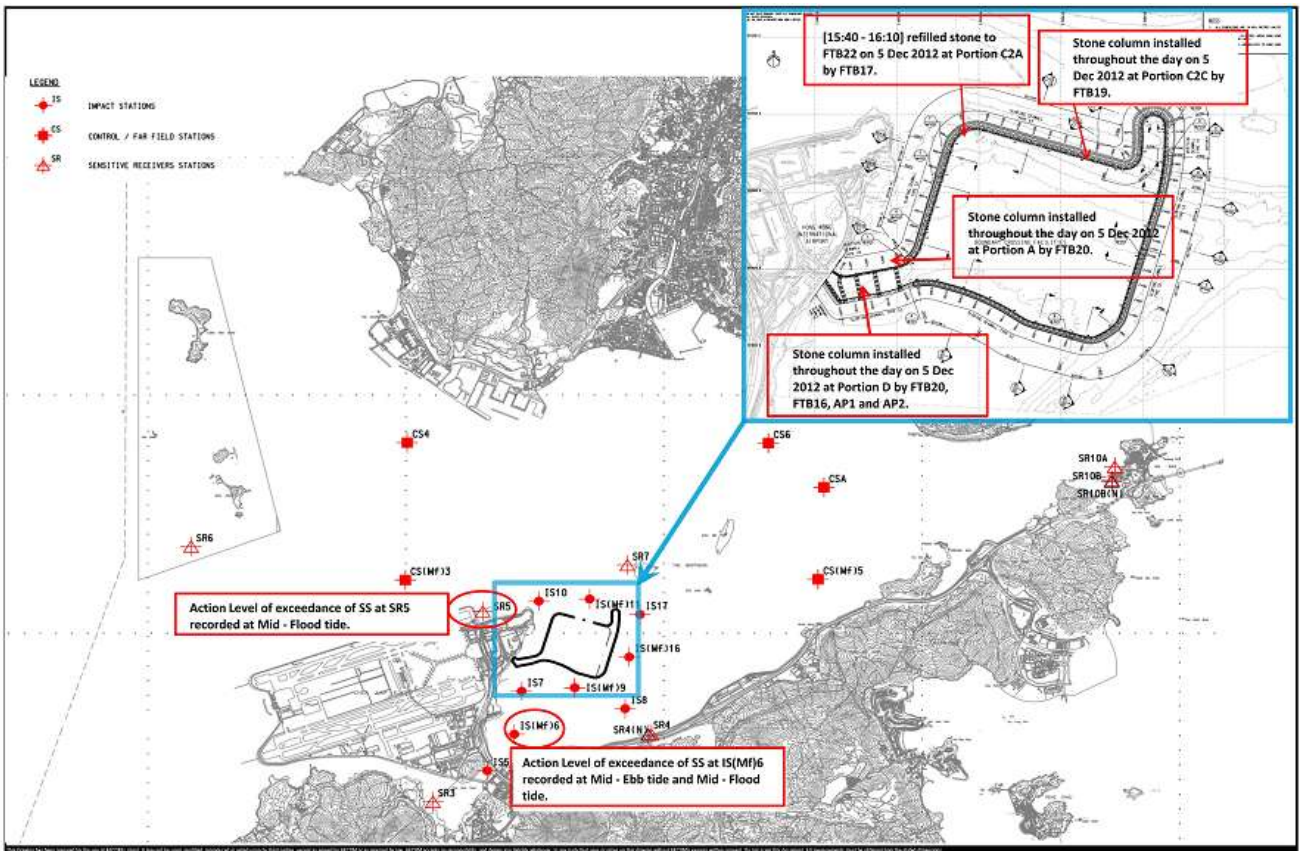
3.3.4.3 The exceedances were recorded during flood tide in which the direction of the flow was flowing from east to west and monitoring stations IS(Mf)16 and SR4(N) is located at the east side of the Project boundary, therefore it is unlikely that the exceedances recorded were contributed by Project works.

3.3.4.4 The monitoring sites IS(Mf)16 and SR4 were upstream of and far away from Portion D, C2A and C2C where works were carried out during flood tide.

3.3.4.5 The exceedances were likely due to local effects in the vicinity of IS(Mf)16 & SR4(N).

3.3.4.6 The exceedances were considered as non-Project related.

3.3.5 Three (3) where recorded on 05 Dec 2012 during mid-ebb tide at Impact Station IS(Mf)6 and during mid-flood tide at monitoring station IS(Mf)6 and SR5. For Action Level exceedances at measured Suspended Solids (mg/L), 26.6 mg/L, 25.4 mg/L and 24.3 mg/L were recorded at Impact Station IS(Mf)6 during mid-ebb tide, IS(Mf)6 during mid-flood tide and SR5 during mid-flood respectively.



3.3.5.1 For Action Level Exceedances recorded at Impact Station IS(Mf)6 during mid-ebb tide, IS(Mf)6 during mid-flood tide and SR5 during mid-flood on 5 Dec 2012, stone column installation was carried out throughout the day at Portion D by FTB 16, AP1 and AP2, at Portion A by FTB20, at Portion C2A by FTB17 and Portion C2C by FTB19.

3.3.5.2 Suspended Solids values recorded at Impact Station IS(Mf)9 and IS7 which are closer to the works than monitoring station IS(Mf)6 are all below the Action and Limit Level during the same tide on the same day.

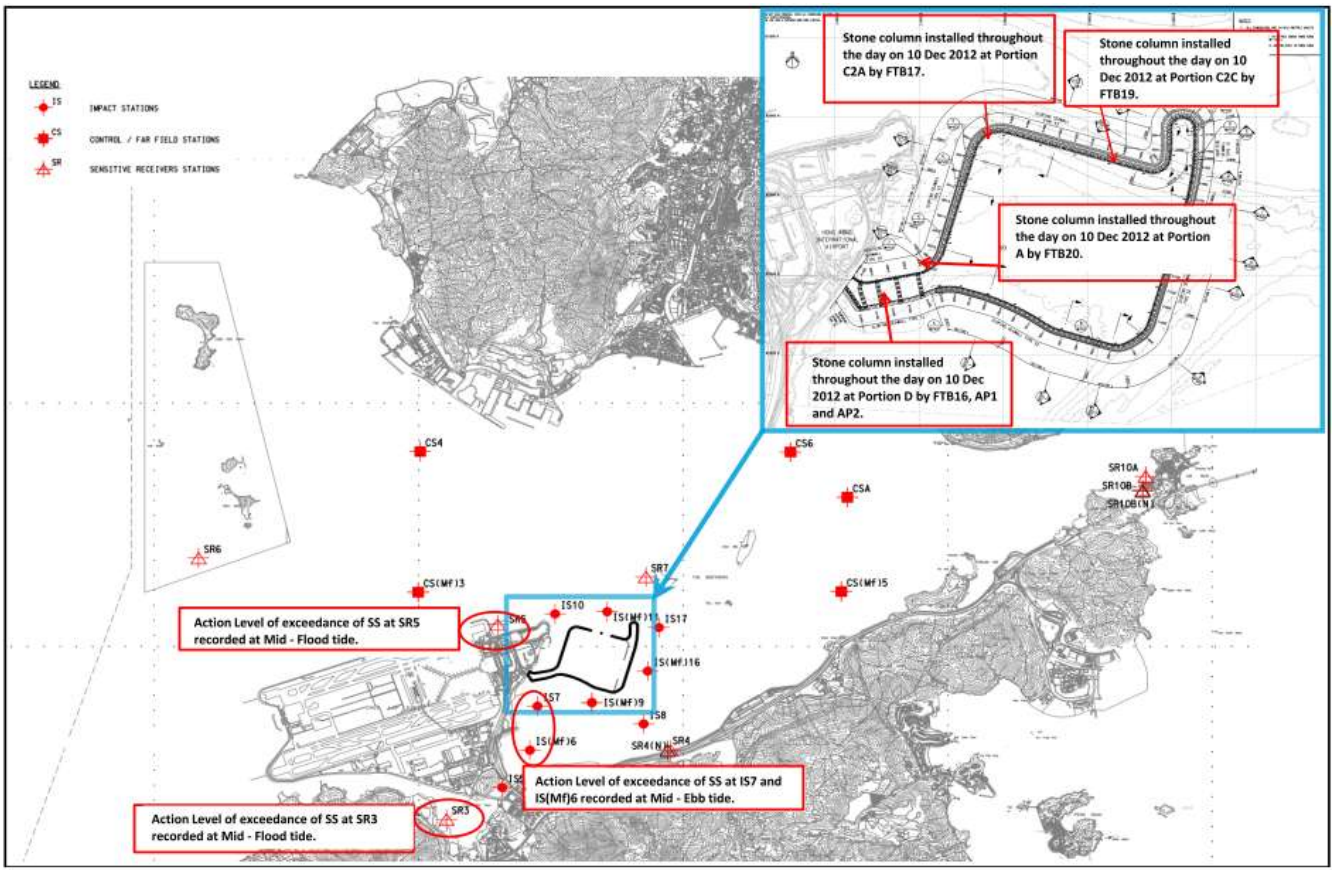
3.3.5.3 Suspended Solids value recorded at Impact Station IS10 which is closer to the works than monitoring station SR5 is below the Action and Limit Level during the same tide on the same day.

3.3.5.4 Same type of works was carried out at the same location on 3 and 7 Dec 12 but Suspended Solids values recorded at IS(Mf)6 & SR5 on 3 and 7 Dec 12 are all below the Action and Limit Level during the same tide on the same day.

3.3.5.5 The exceedances were likely due to local effects in the vicinity of IS(Mf)6 & SR5.

3.3.5.6 The exceedances were considered as Non-Project Related.

3.3.6 Four (4) where recorded on 10th Dec 2012 during mid-ebb tide at Impact Station IS(Mf)6 and IS7 and during mid-flood tide at monitoring station SR3 and SR5. For Action Level exceedances at measured Suspended Solids (mg/L), 31mg/L, 31.8mg/L, 27.3mg/L and 32.2 mg/L were recorded during mid-ebb tide at Impact Station IS(Mf)6 and IS7 and during mid-flood tide at monitoring station SR3 and SR5.



3.3.6.1 For Action Level Exceedances of SS at during mid-ebb tide at Impact Station IS(Mf)6 and IS7 and during mid-flood tide at monitoring station SR3 and SR5 recorded on 10 Dec 2012, Stone column installation was carried out throughout the day at Portion D by FTB 16, AP1 and AP2, at Portion A by FTB20, at Portion C2A by FTB17 and Portion C2C by FTB19 .

3.3.6.2 Suspended solids values recorded at Impact Station IS(Mf) 9 and IS 8 located downstream of IS7 and IS(Mf)6 during Mid-Ebb tide were below the Action and Limit Level during the same tide on the same day.

3.3.6.3 Same type of works was carried out at the same locations on 7 and 12 Dec 12 but Suspended Solids values recorded at IS(Mf)6, IS7, SR3 and SR5 on 7 and 12 Dec 12 are all below the Action and Limit Level during the same tide on the these days.

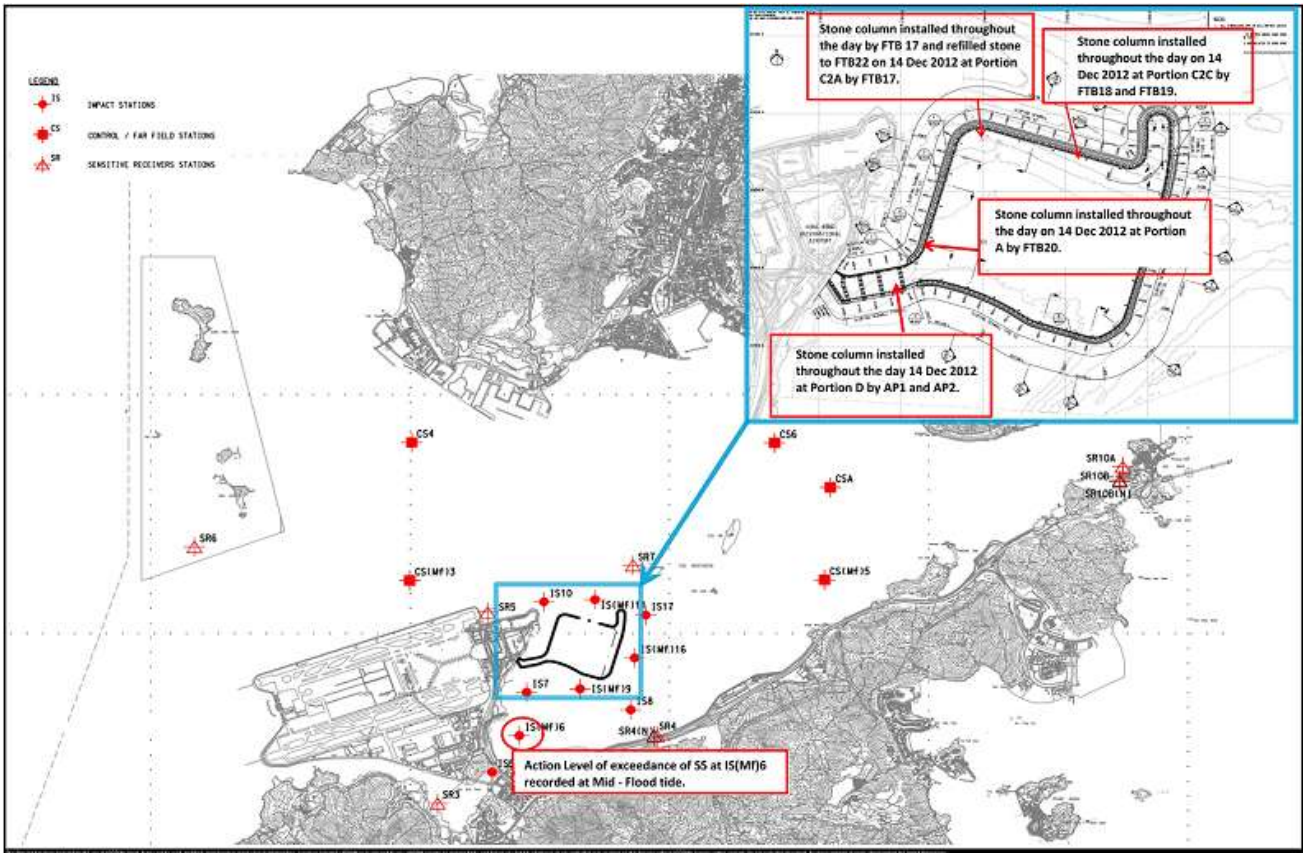
3.3.6.4 Suspended Solids values recorded at Impact Station IS10 located closer to the Project site boundary than SR5 was below the Action and Limit Level during the same tide and on the same day.

3.3.6.5 Suspended Solids values recorded at IS7, IS(Mf)6 and IS5 located closer to the Project site boundary than SR3 were below the Action and Limit Level during the same tide and on the same day.

3.3.6.6 The exceedances were likely due to local effects in the vicinity of IS(Mf)6, IS7, SR3 and SR5.

3.3.6.7 The exceedances were considered as Non-Project Related.

3.3.7 One (1) where recorded on 14 Dec 2012 during mid-ebb tide at Impact Station IS(Mf) 6. For Action Level exceedances at measured Suspended Solids (mg/L), 27.7mg/L was recorded at Impact Station IS(Mf)6.



3.3.7.1 For Action Level Exceedance of SS at IS(Mf)6 at Mid-Flood tide on 14 December 2012 Stone column installation was carried out throughout the day at Portion D by AP1 and AP2, at Portion A by FTB20, at Portion C2A by FTB17 and Portion C2C by FTB19 and FTB18.

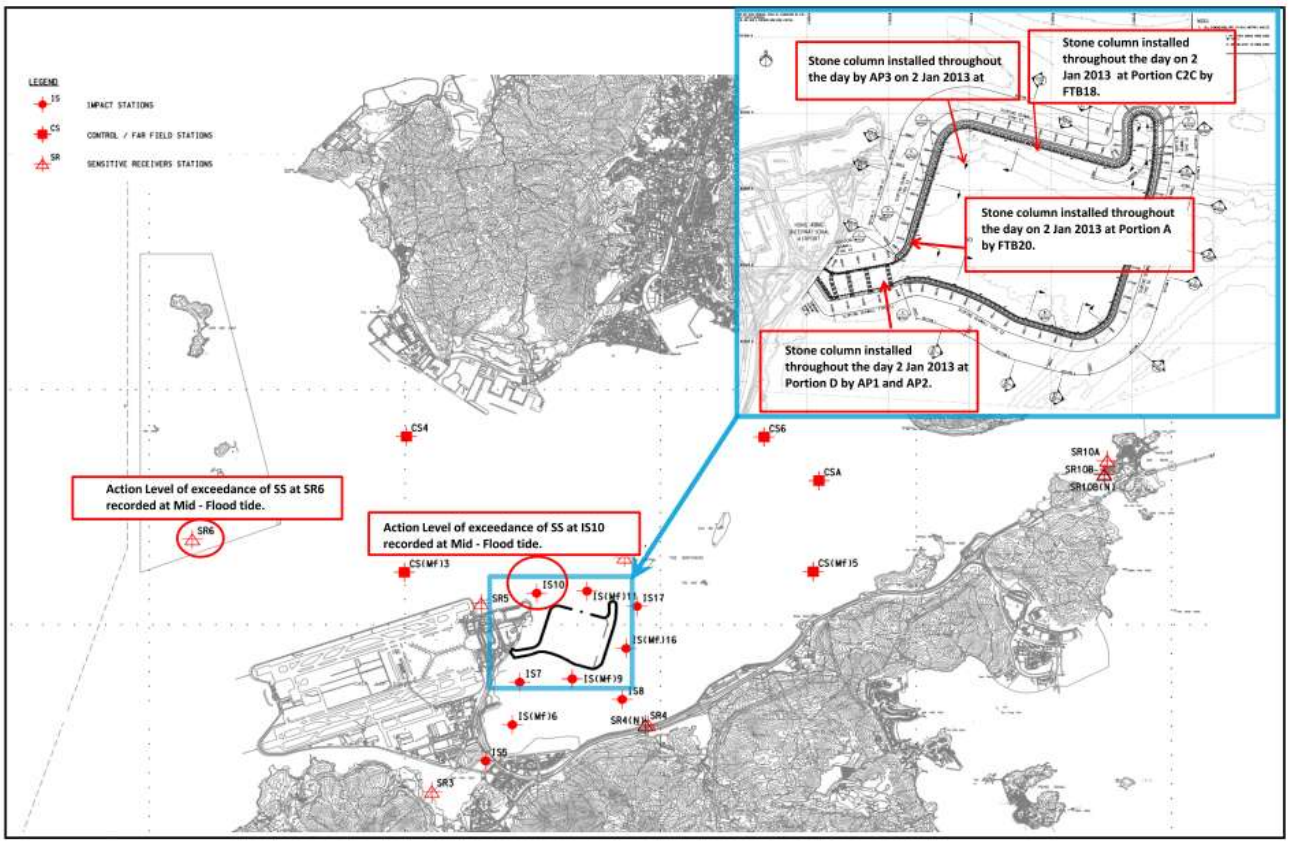
3.3.7.2 Suspended Solids values recorded at Impact Station IS(Mf)9 and IS7 which are closer to the works than monitoring station IS(Mf)6 are all below the Action and Limit Level during the same tide on the same day.

3.3.7.3 Same type of works were carried out at the same location on 12 and 17 Dec 12 but Suspended Solids values recorded at IS(Mf)6 on 12 and 17 Dec 12 are all below the Action and Limit Level during the same tide on the same day.

3.3.7.4 The exceedance was likely due to local effects in the vicinity of IS(Mf)6.

3.3.7.5 The exceedance was considered as Non-Project Related.

3.3.8 Two (2) Acton Level exceedances at measured Suspended Solids (mg/L) were recorded on 02 Jan 2013 during mid-flood tide at monitoring station IS10 and SR6. For Action Level exceedances at measured Suspended Solids (mg/L), 28.2 mg/L and 25.7 mg/L were recorded at Monitoring Station IS10 and SR6 respectively.



3.3.8.1 For the exceedances recorded at IS10 and SR6, it was found that Stone column installation was carried out throughout the day at Portion D by AP1 and AP2, at Portion A by FTB20, at Portion A by AP3 and Portion C2C by FTB18.

3.3.8.2 Same type of works were carried out at the same location on 31 Dec 12 and 4 Jan 13 but Suspended Solids values recorded at IS10 and SR6 on 31 Dec 12 and 4 Jan 13 are all below the Action and Limit Level during the same tide on the same day.

3.3.8.3 Suspended solids values recorded at Impact Stations IS(Mf)11 which is closer to the works area than Impact Station IS10 were below the action and limit level.

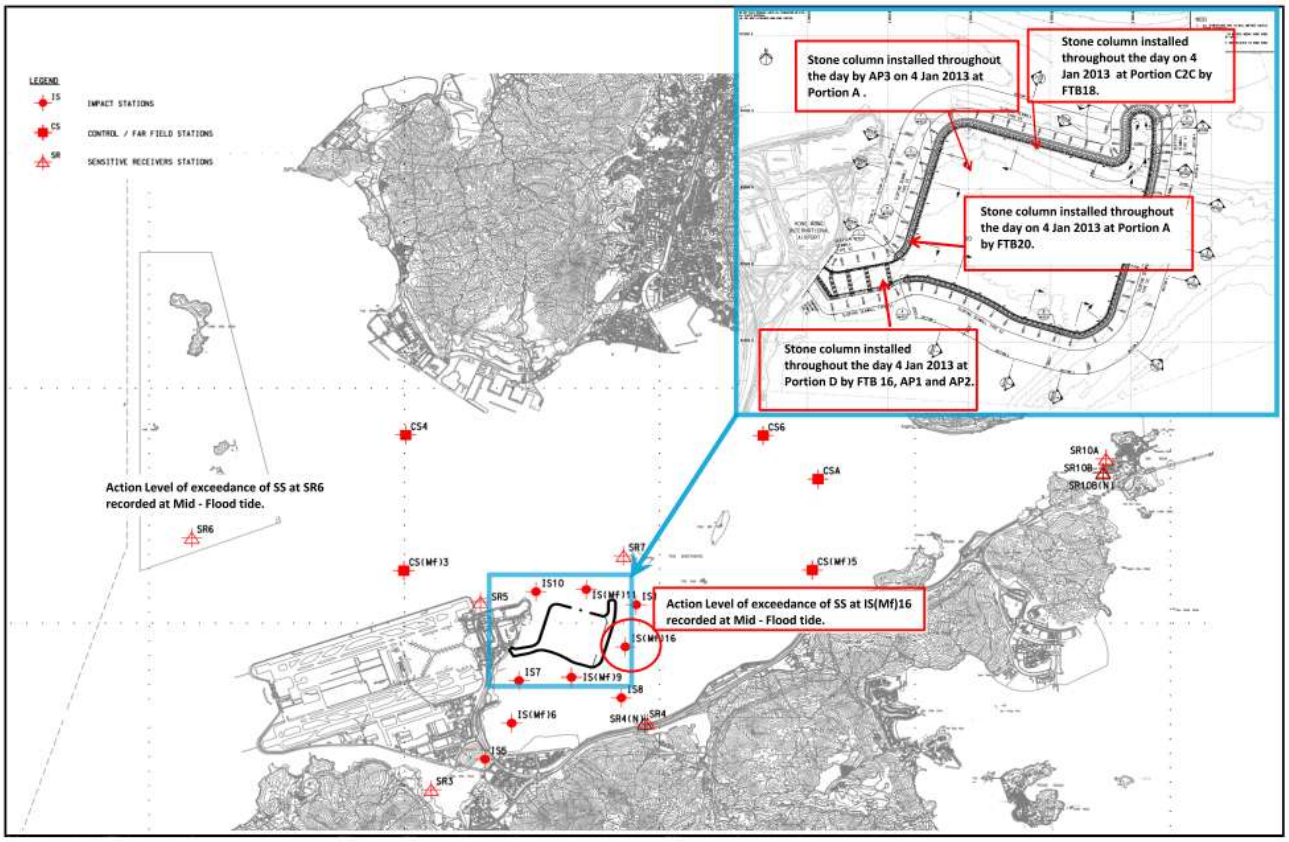
3.3.8.4 Suspended solids values recorded at Impact Stations SR5 and CS(Mf)3 located downstream of monitoring station IS10 during mid-flood tide was below the action and limit level.

3.3.8.5 Suspended Suspended solids values recorded at Impact Stations SR5 and CS(Mf)3 which are closer to the works area than SR 6 were below the action and limit level.

3.3.8.6 The exceedances were likely due to local effects in the vicinity of IS10 and SR6.

3.3.8.7 The exceedances were considered as non-Project related.

3.3.9 One (1) Acton Level exceedance at measured Suspended Solids (mg/L) was recorded on 04 Jan 2013 during mid-flood tide at Impact Station IS(Mf)16. For the Action Level exceedance of measured Suspended Solids (mg/L), 23.9 mg/L was recorded at Impact Station IS(Mf)16 during mid-flood tide.



3.3.9.1 For Action Level Exceedance recorded at Impact Station IS(Mf)16 during mid-flood tide, stone column installation was carried out throughout the day at Portion D by FTB 16, AP1 and AP2, at Portion A by FTB20, at Portion A by AP3 and Portion C2C by FTB18.

3.3.9.2 Suspended Solids values recorded at Impact Station IS(Mf)9 and IS7 which are closer to the works than monitoring station IS(Mf)6 are all below the Action and Limit Level during the same tide on the same day.

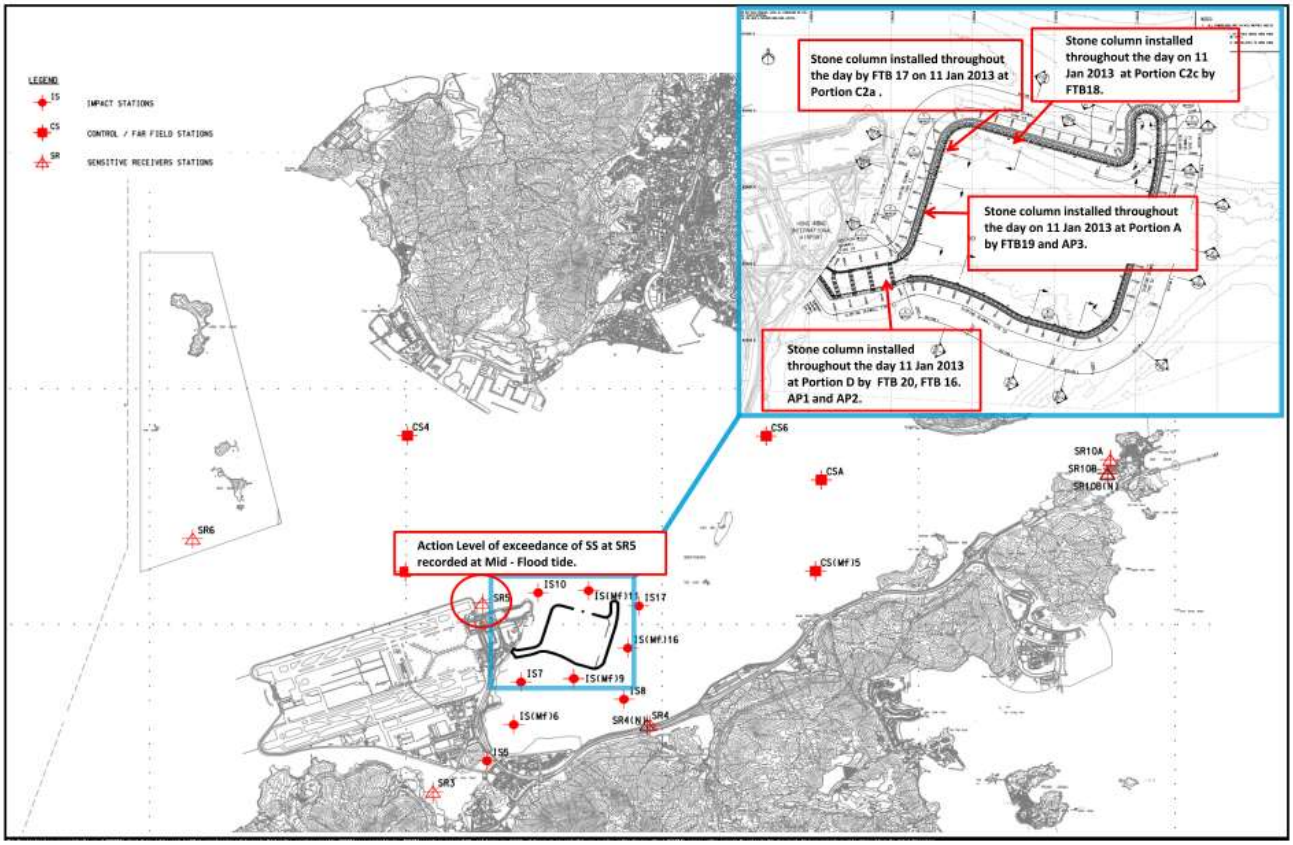
3.3.9.3 Impact Stations IS10 and IS(Mf)11 which are considered downstream and closer to the works than Impact Station IS(Mf)16. Since the Suspended Solids values recorded at IS10 and IS(Mf)11 are all below the Action and Limit Level during same tide on the same day. The water quality noted at downstream of active works were not adversely affected by active works. Hence it is considered that the exceedance recorded at IS(Mf)16 located upstream of active works are not related to the Project.

3.3.9.4 IS(Mf)16 is considered upstream of Partion D, A and C2C where work was carried out during mid flood tide.

3.3.9.5 The exceedance was likely due to local effects in the vicinity of IS(Mf)16.

3.3.9.6 The exceedance was considered as Non-Project Related.

3.3.10 One (1) Acton Level exceedance at measured Suspended Solids (mg/L) was recorded on 11 Jan 2013 at monitoring station SR5 during mid-flood tide. For Action Level exceedance of measured Suspended Solids (mg/L), 30.1 mg/L were recorded at monitoring station SR5 during mid-flood tide.



3.3.10.1 For Action Level Exceedance of SS recorded at monitoring station SR5 during mid-flood tide at monitoring station SR5 recorded on 11 Jan 2013, stone column installation was carried out throughout the day at Portion D by FTB16, FTB20, AP1 and AP2, at Portion A by FTB19 and AP3, at Portion C2A by FTB17 and Portion C2c by FTB18.

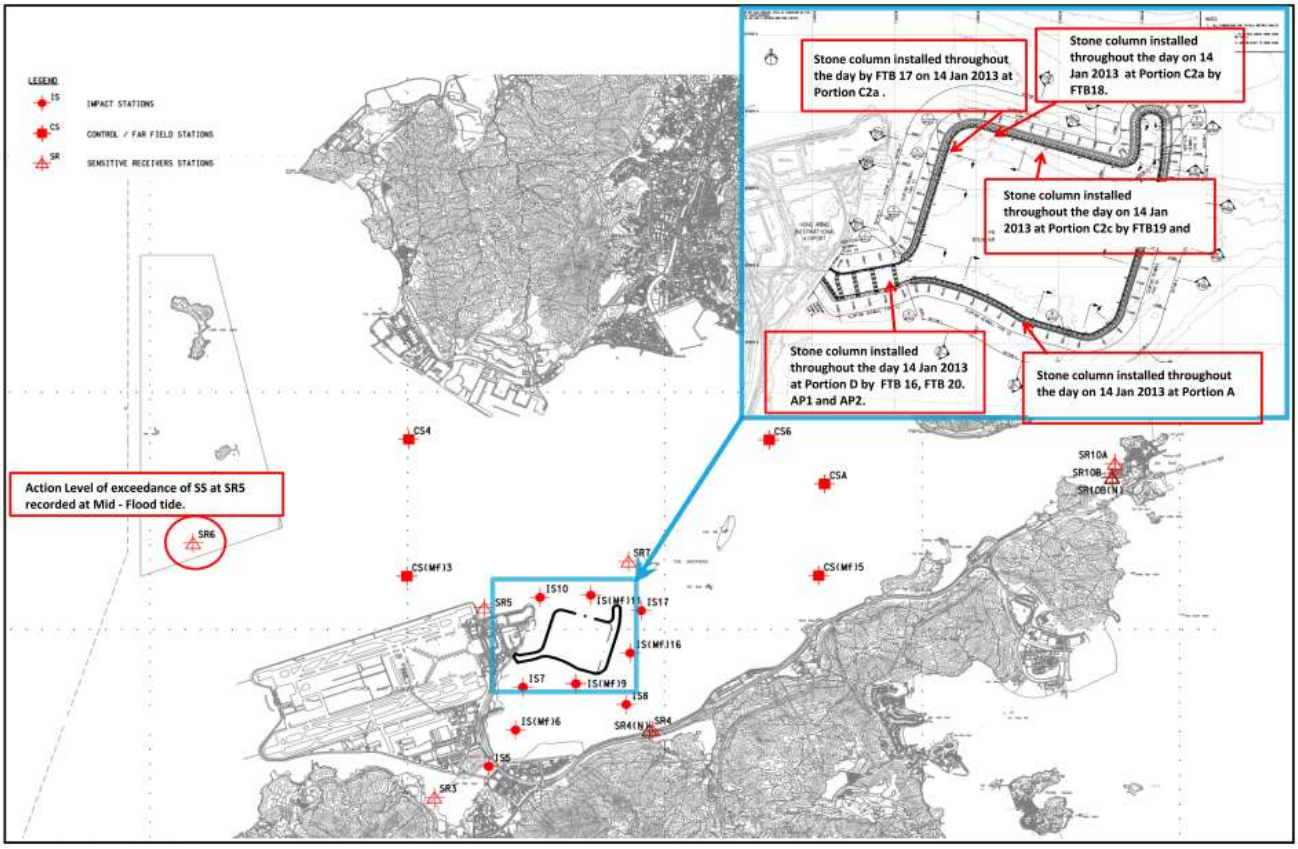
3.3.10.2 Impact Stations IS10 and IS(Mf)11 which are considered downstream and closer to the works than Impact Station SR5. Since the Suspended Solids values recorded at IS10 and IS(Mf)11 are all below the Action and Limit Level during same tide on the same day. The water quality noted at downstream of and closer to active works were not adversely affected by active works.Hence it is considered that the exceedance recorded at SR5 are not related to the Project.

3.3.10.3 Same type of works was carried out at almost the same location on 9 and 14 January13 but Suspended Solids values recorded at SR5 on 9 and 14 January 13 are all below the Action and Limit Level during the same tide on the same day.

3.3.10.4 The exceedance was likely due to local effects in the vicinity of SR5.

3.3.10.5 The exceedance was considered as Non-Project Related.

3.3.11 One (1) action Level exceedance at measured Suspended Solids (mg/L) was recorded on 14 Jan 2013 at monitoring station SR6 during mid-flood tide. For Action Level exceedance of measured Suspended Solids (mg/L), 33.8 mg/L were recorded at monitoring station SR5 during mid-flood tide.



3.3.11.1 For Action Level Exceedance of SS at IS(Mf)6 at Mid-Flood tide recorded on 14 Jan 2013 at monitoring station SR6 during mid-flood tide, s tone column installation was carried out throughout the day at Portion D by FTB 16, FTB20, AP1 and AP2, at Portion A by FTB19 and AP3, at Portion C2A by FTB17 and Portion C2c by FTB18.

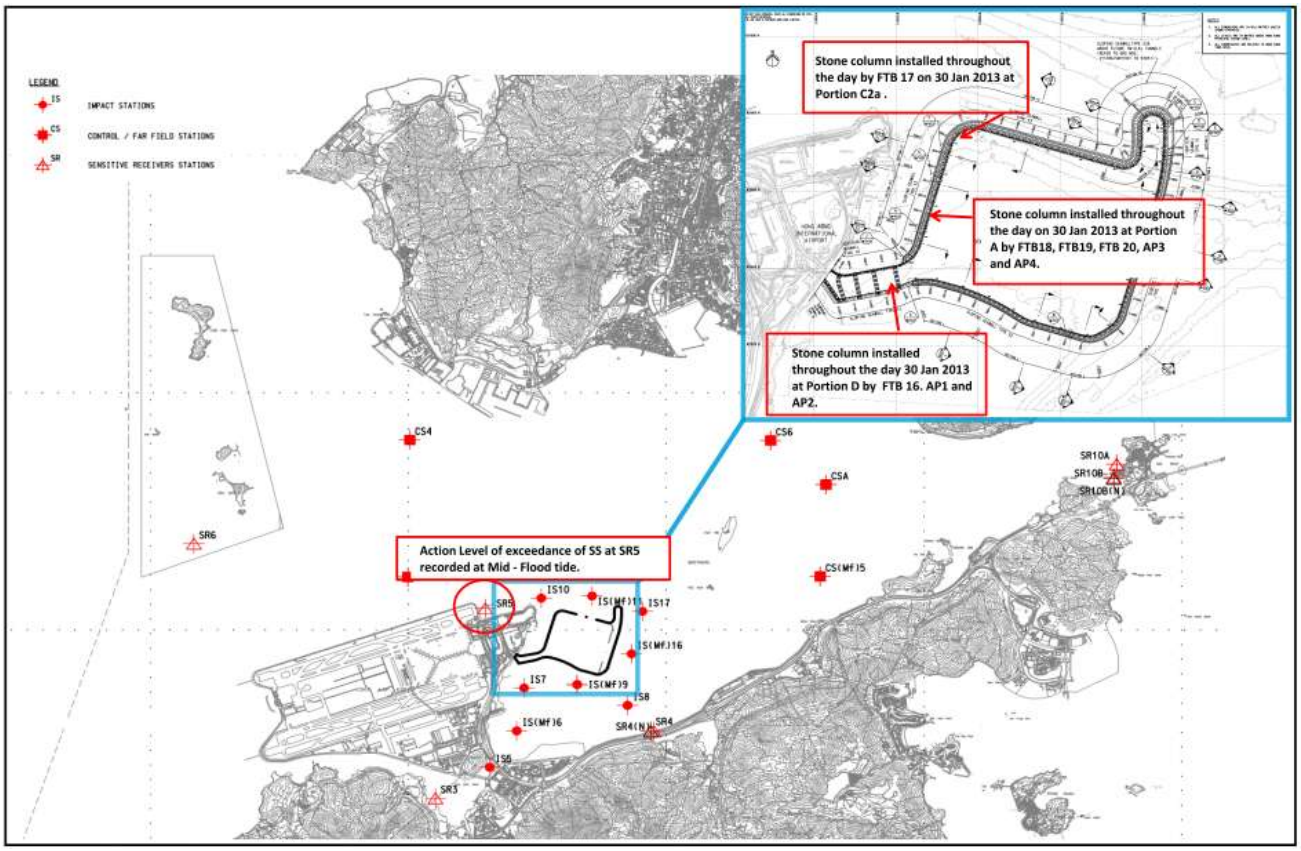
3.3.11.2 Impact Stations IS10, IS(Mf)11, SR5 and CS(Mf)3 which are considered downstream and closer to active works than Monitoring Station SR6. Since the Suspended Solids values recorded at IS10, IS(Mf)11, SR5 and CS(Mf)3 are all below the Action and Limit Level during same tide on the same day. The water quality noted at downstream of and closer to active works were not adversely affected by active works. Hence it is considered that the exceedance recorded at SR6 is not related to the Project.

3.3.11.3 Same type of works was carried out at almost the same location on 11 and 16 January13 but Suspended Solids values recorded at SR6 on 11 and 16 January 13 are all below the Action and Limit Level during the same tide on the same day.

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

3.3.11.5 The exceedance was considered as Non-Project Related.

3.3.12 One (1) action Level exceedance at measured Suspended Solids (mg/L) was recorded on 30 Jan 2013 at monitoring station SR5 during mid-flood tide. For Action Level exceedance of measured Suspended Solids (mg/L), 30.1 mg/L were recorded at monitoring station SR5 during mid-flood tide.



3.3.12.1 For Action Level Exceedance of SS recorded at Mid-Flood tide on 30 Jan 2013 at monitoring station SR5, Stone column installation was carried out throughout the day at Portion D by FTB 16, AP1 and AP2, at Portion A by FTB 18, FTB19, FTB20, AP3 and AP4, at Portion C2A by FTB17.

3.3.12.2 Impact Stations IS10 and IS(Mf)11 which are considered downstream and closer to the works than Impact Station SR5. Since the Suspended Solids values recorded at IS10 and IS(Mf)11 are all below the Action and Limit Level during same tide on the same day. The water quality noted at downstream of and closer to active works were not adversely affected by active works. Hence it is considered that the exceedance recorded at SR5 is not related to the Project.

3.3.12.3 Same type of works was carried out at almost the same location on 28 Jan13 and 01 Feb13 but Suspended Solids values recorded at SR5 on 28 Jan13 and 01 Feb13 are all below the Action and Limit Level during the same tide on the same day.

3.3.12.4 The exceedance was likely due to local effects in the vicinity of SR5.

3.3.12.5 The exceedance was considered as Non-Project Related.

3.3.12.6 The floating type silt curtains were provided around the whole works area. However, integrity checking record of 30 Jan 13 shows that defects were found at parts of the floating type silt curtains. The Contractor was reminded to swiftly rectify the perimeter silt curtain in particular the portions which defects were observed to ensure the sediment plume generated by construction activities could be prevented from discharging to areas outside the site boundary.

3.3.12.7 As informed by the Contractor, maintenance work of the silt curtain was carried out on a daily basis except Sunday.

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

3.4 Dolphin Monitoring

3.4.1 In accordance with the Project 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 Dec 2012- Feb 2013

Number of Impact Surveys Completed^	6
Survey Distance Travelled under Favourable On- Effort Condition	657.0km
Number of Sightings	50 sightings (34 sightings are ”on effort” (which are all under favourable condition), 16 “sightings are opportunistic”)
Number of dolphin individual sighted	161 individuals (the best estimated group size)
Dolphin Encounter Rate	NEL: 5.7% NWL: 9.5%
Dolphin Group Size (for both NEL and NWL)	Average of 3.2±2.8(SD) Varied from 1-17 individuals
Most Often frequent dolphin sighting area	NWL: Sha Chau and Lung Kwu Chau Marine Park area and adjacent, eastern waters and northeast of the airport platform. NEL: Area to the east of the Brothers Islands.

Remarks:

^ Completion of line transect survey of NEL and NWL survey area once was counted as one complete survey.

3.4.5 No triggering of Event and Action Plan for impact dolphin monitoring was noted in the reporting quarter.

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

3.4.7 It is noted that preparation works for other projects started in January 2013 and as such, there is increased boat traffic and underwater works in the southern sector of NWL.

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 No adverse observation was identified in the in the reporting Quarter.

Noise

3.5.4 Air compressors on barge Sun Moon Kee were observed without valid noise emission label. The contractor was reminded to fit air compressors with valid noise emission label prior to operation. (Reminder)

Water Quality

3.5.5 Silt curtain installed for stone column installation works on barge FTB18 was found damaged. The Contractor was reminded to keep monitor and well maintain of the silt curtain more frequently to ensure the silt curtain are fully functional. The damaged silt curtain found on barge FTB18 was fixed in the reporting quarter. (Closed)

3.5.6 Defects noticed at parts of the perimeter silt curtain at portions E1, C2a. C2c were observed and under maintenance. The Contractor was reminded to swiftly rectify the perimeter silt curtain in particular the portions where defects were observed to ensure the sediment plume generated by construction activities could be prevented from discharging to areas outside the site boundary. The adverse situation was rectified by the Contactor in March 2013. (Closed)

3.5.7 It was noticed that a localised silt curtain was readily adjacent to Barge AP4 but was not deployed to enclose the active stone column installation at Portion A. The Contractor rectified the situation by enclosing the active stone column installation with localised silt curtain in the reporting quarter. (Closed)

Chemical and Waste Management

3.5.8 Oil drum was found improperly stored at FTB24, FTB18, FTB16, FTB19, SHB208, Sun Moon Kee. The Contractor rectified the situation by removing the oil drums from the area without bunding and/or relocating the oil drum inside the bunded area to prevent oil leakage (Closed).

3.5.9 Oil drums were provided with bundnig n barge Sang Hang Qi 7and the Contractor properly labelled the oil drum on barge Sang Hang Qi 7 and barge Sang Hang Bo 205 to enclose the oil drums stored within works areas to retain any leaked oil within the reporting quarter (Closed).

3.5.10 Oil drums were found without proper labelling at barge Ever Shine. The Contractor was advised to label all oil drums properly and oil drums were provided with proper labelling at barge Ever Shine within the reporting quarter (Closed).

3.5.11 Bucket of waste water was found near at a location without bunding/drip tray on Sang Han Bo 209. The Contractor immediately rectified the situation by relocated the bucket of waste water inside the bunded area to prevent potential waste water runoff into nearby water system. The Contractor was reminded to place buckets of waste water inside bunded area on barge (reminder).

3.5.12 The oil stain found near the power pack on barge Sang Hang Qi 7 and Sang Hang Bo 210, underneath a pack of cable and on the floor of barge Fai Yue 3228 and near a vibration clamp on barge Fai Yue 3228 were cleared and the absorbents were treated as chemical wastes. Mitigation measure such as tarpaulin sheet was placed underneath a pack of cable and on the floor of barge Fai Yue 3228 to retain any potential oil leakage. (Closed).

3.5.13 The Contractor provided mitigation measure such as tarpaulin sheet and bunding to retain potential leaked oil near the machine on barge Sun Moon Kee to power pack on Sang Hang Bo 205 to retain leaked oil respectively within the reporting quarter (Closed).

3.5.14 Gap was observed between barge surface and the bunding on barge Sun Moon Kee. The Contractor was reminded to seal the gap to prevent oil leakage. Gaps between barge surface and the bunding on barge Sun Moon Kee were sealed within the reporting quarter (Closed).

3.5.15 Uncovered open holes in the bundings and drip trays were found on barge FTB18 and on barge Sun Moon Kee. Oil leakage was found on barge Sun Moon Kee leaked through a bunding. The leaked oil was immediately cleared by the Contractor using absorbents and the Contractor was reminded to dispose the absorbents as chemical waste. The Contractor was reminded to seal/cover the open holes properly to prevent oil leakage. Open holes in the bundings and drip trays found on barge FTB18 were covered in the reporting quarter (Closed)

3.5.16 Incident of oil spillage was observed on barge FTB 20. The spilled oil was immediately cleared by the Contractor using spill kit and the Contractor was reminded to dispose the absorbents as chemical waste. The Contractor was reminded to maintain proper oil spill cleanup procedure for oil spillage (Reminder).

3.5.17 Oil was found accumulated inside the drip tray on barge FTB20. The Contractor rectified the situation by clearing the waste oil inside the drip tray, the Contractor is reminded to dispose the waste oil as chemical waste. (Reminder)

3.5.18 Water was observed dripping from the pipe connected to the air conditioner. The Contractor provided mitigation measures by placing a bucket to collect water that dripped from the air conditioner. (Closed)

3.5.19 Stagnant water accumulated inside the car tire on barge Sang Han Bo 205 and inside the drip tray on barge Sang Han Bo 210 were observed. The Contractor was reminded to clear the water or open a hole on the tire on Sang Han Bo 205 to prevent mosquito breeding and to clear the water accumulated inside the drip tray on barge Sang Han Bo 210 respectively. Stagnant water accumulated inside the wheel tire on barge Sang Han Bo 205 and inside the drip tray on barge Sang Han Bo 210 were removed in the reporting quarter. (Closed)

3.5.20 Garbages accumulated on barge Kiu Chi was observed and food waste was observed left outside of the bin on barge SHB 402. The Contractor was remineded to clear up the garbages/food waste frequently to keep site clean and tidy. Garbages accumulated on barge Kiu Chi was cleared in the reporting quarter. (Closed)

3.5.21 Although the content of the stockpile on barge Fu Tat was dampened, however, the Contractor was reminded to dampen the stockpile frequently to suppress fugitive dust generated. (Reminder)

Landscape and Visual Impact

3.5.22 No adverse observation was identified in the reporting quarter.

Others

3.5.23 No adverse observation was identified in the reporting quarter.

3.5.24 The Contractor has rectified most of the observations as identified during environmental site inspection in the reporting quarter. 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, 190,414.9 m^3 of imported fill were imported for the Project use in the reporting quarter. 4,000kg of chemical waste were generated and disposed of in the reporting quarter. 71.5 tonnes of general refuse were generated and disposed of in the reporting quarter. 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 Defects were noticed at parts of the perimeter silt curtain at portions E1, C2a. C2c and those defective parts are yet to be rectified. Although maintenance works were noted during site inspections and on the records provided by the Contractor. However, there is still parts of the silt curtain were found defective in the reporting quarter therefore the Contractor was reminded again to swiftly complete the rectification works of the perimeter silt curtain in particular the portions where defects were observed to ensure the sediment plume generated by construction activities could be prevented from discharging to areas outside the site boundary. Meanwhile, ET followed up the situation and closely monitored the progress of the maintenance work and reported the progress accordingly during the reporting quarter.

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

5.1.3 A summary of the Implementation Schedule of Environmental Mitigation Measures (EMIS) is presented in Appendix C. Most of the recommended mitigation measures. 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.

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

5.1.5 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 checking were conducted by the experienced MMOs within the works area to ensure no dolphin was trapped by the enclosed silt curtain systems. Any dolphin spotted within the enclosed silt curtain systems was reported and recorded. Relevant procedures were followed and measures were well implemented. Silt curtain systems were also inspected timely in accordance to the submitted plan. All inspection records were kept properly.

5.1.6 Acoustic decoupling measures on noisy plants on construction vessels were checked regularly and these measures were well implemented.

5.1.7 As informed by the Contractor, insufficient mitigation measures were noted during a joint site inspection with the representative of the Contractor and the Resident Engineer in the after from 14:30 to 16:00 of 28 Jan 2013.

5.1.8 It was noticed that part of the demarcation for Zone F was missing; being contrary to the other condition 3.d.16 of the above CNP. In addition , Some generators and air compressors on barge FTB-16 in Zone S4 were not completely screened by the acoustic baffles and parts of those powered mechanical equipment (PME) were visible from Hong Kong SkyCity Marriott Hotel (noise sensitive receiver); being contrary to other condition of the CNP. It is understood that the set up of acoustic baffles for FTB-20 in Zone S5 was identical to FTB-16 in Zone S4. Therefore the Contractor was advised to inspect and rectify (if necessary) the acoustic baffles so as to comply with other condition 3.d.13 of the CNP.

5.1.9 The Contractor was reminded to carry out necessary actions to rectify the above deficiencies and the Contractor was reminded not to operate those PME during restricted hours without compliance with the CNP conditions.

5.1.10 As informed by the Contractor on 9 February 2013, the deficiencies were rectified. 7 nos. of demarcation (were no more visible) for Zone F have been re-deployed.

5.1.11 Extra noise barriers were installed onto barge FTB-16 in Zone S4 and FTB-20 in S5. generators and air compressors on barge FTB-16 in Zone S4 and FTB-20 in S5 were completely screened by the

acoustic baffles and parts of those powered mechanical equipment (PME) were no more visible from Hong Kong SkyCity Marriott Hotel (noise sensitive receiver).

5.1.12 The Contractor was reminded to strictly comply with the condition of the CNP.

6 SUMMARY OF EXCEEDANCES OF THE ENVIRONMENTAL QUALITY PERFORMANCE LIMIT

6.1 Summary of Exceedances of the Environmental Quality Performance Limit

6.1.1 No Action/Limit Level exceedance of 1-hour TSP results was recorded in the reporting quarter. However, one (1) Action Level and Two (2) Limit Level exceedance of 24-hour TSP results were recorded at monitoring location AMS3A in the reporting quarter. Investigation results show that both the Action and Limit Level exceedance of 24-hour TSP results were not project-related.

6.1.2 For impact noise monitoring, No Action/Limit Level exceedance of impact noise monitoring was recorded in the reporting quarter.

6.1.3 For impact water monitoring, sixteen (16) Action Level exceedances were recorded at measured suspended solids (SS) values (in mg/L) in the reporting quarter. Investigation result show that the exceedances were not due to the Project works.

6.1.4 Cumulative statistics on exceedances is provided in Appendix J.

7 SUMMARY OF COMPLAINTS, NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

7.1 Summary of Environmental Compliants, Notification of Summons and Successful Prosecutions

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

7.1.2 EPD referred a complaint from a complainant on 18 Jan 2013 who advised that turbid water and concrete/cement was arising from the Hong Kong-Zhuhai-Macao Bridge Hong Kong Projects to marine water. The source of turbid water and concrete/cement was not specified by the complainant.

7.1.2.1 As informed by the Contractor (China Harbour Engineering Company Ltd.), stone column construction was being carried out on 14 -18 Jan 13 at the Portions B, D, C2a, C2c and E2 of the Hong Kong Boundary Crossing Facilities (HKBCF) reclamation works (the location of each Portion is shown in Figure 1 – layout map of the HKBCF reclamation works). Silt curtain integrity checking records of 14-18 Jan 13 show that defects were found at parts of the perimeter silt curtain.

7.1.2.2 As informed by the Contractor, rectification measures such as maintenance work of the silt curtain was carried out on a daily basis from 14 to 31 Jan 13 (except 16, 20 and 27 Jan 13) and the tentative date for completion of the maintenance of the silt curtain will be on or before 21 Feb13.

7.1.2.3 As informed by the Contractor, preventive actions such as daily inspection of silt curtain were carried out to review the adequacy and effectiveness of the silt curtain and there were no incidents of onsite leakage of turbid water and/or concrete/cement arising from project from 14 to18 Jan 13.

7.1.2.4 With reference to the available monitoring records no silt plumes or turbid water were observed during impact water quality monitoring on 14 – 31 Jan 13. Moreover there were no exceedances of turbidity level recorded in Jan 13. Although 5 results of depth averaged measured Suspended Solids (SS) levels exceeded the action level, these exceedances were not considered being caused by the project after investigation.

7.1.2.5 Therefore in accordance with the abovementioned observations, it could not be concluded whether the complaint was considered as project related or not. However the Contractor was reminded to implement necessary mitigation measures.

7.1.2.6 Follow up site inspections were conducted on 24 and 31 Jan 13, please refer to “Follow Up Site Visit” for details of findings.

- Defect of localised silt curtain was observed during the Site Inspection Audit conducted on barge FTB-18 on 10 Jan 13. According to the photo record provided by the Contractor, these defect was rectified by the Contractor before the Site Inspection Audit conducted on 24 Jan 13.
- During the joint site inspection with the representatives of the Contractor and Residential Engineer on 31 Jan 13, it was noticed that a localised silt curtain was readily adjacent to Barge AP4 but was not deployed to enclose the active stone column installation at Portion A. However the Contractor rectified the situation by providing the localised silt curtain to the active stone column installation on the same day.
- Defects were noticed at parts of the perimeter silt curtain at portions E1 and C2c. The Contractor was reminded to swiftly rectify the perimeter silt curtain in particular the portions where defects were observed to ensure the sediment plume generated by construction activities could be prevented from discharging to areas outside the site boundary.

7.1.2.7 The Contractor was reminded to implement mitigation measures as stated below:

- The Contractor was reminded to carry out regular inspection of the deployed silt curtains to review the integrity and effectiveness of the perimeter silt curtains deployed at the boundary of HKBCF and the localised silt curtain deployed during active stone column installation.

- The Contractor was reminded to swiftly rectify the perimeter silt curtain in particular the portions which defects were observed to ensure the sediment plume generated by construction activities could be prevented from discharging to areas outside the site boundary.
- The Contractor was reminded to reinforce the provision of localised silt curtain to all stone column vessels to ensure the sediment plume generated by construction activities could be prevented from discharging to areas outside the site boundary.

7.1.3 One (1) complaint was referred to the HyD by the Islands District Council (IDC) on the 6 February 2013 regarding a resident from Phase 1 Caribbean Coast who complained the nuisance brought by construction along Ying Hei Road, Tung Chung. Complaint investigation was conducted by the HyD and written reply were subsequently given to IDC by HyD on 4 March 13. The investigation results show that the complaint was non-project related.

7.1.3.1 In summary, the follow environmental issues were noted by the complainant:

- Insects (including cockroaches) were found inside the flats which are facing the construction sites.
- Leisure area next the Ying Hei Road was adversely affected.
- Workers coming from the construction sites made area nearby the bus stops at Caribbean Coast very dirty by throwing debris and cigarette or cigarette ash.
- Pilling was carried out outside the permitted hours.

7.1.3.2 Complaint investigation was conducted by the HyD and written reply were subsequently given to IDC by HyD on 4 March 13.

7.1.3.3 Investigation result shows that the site under Contract No. HY/2010/02 was used for accommodating site offices of the Contract and therefore there have been neither piling works carried out within the site, nor deployment of dump trucks to it.

7.1.3.4 Majority of the construction works under the Contract are being carried out far away at the water off northeast of the HKIA.

7.1.3.5 Moreover, investigation result indicates that the site and the access road (paved with concrete) to the site have been maintained in a clean and tidy condition.

7.1.3.6 Furthermore, the contractor has arranged shuttle buses for workers of this Contract to travel to and from the site offices to reduce their interference with the local community.

7.1.3.7 Nevertheless, the Contractor was reminded by HyD to continue to keep the site and its nearby area clean and tidy.

7.1.3.8 The investigation results show that the complaint was non-project related.

7.1.4 No notification of summons and prosecution was received in the reporting quarter.

7.1.5 Statistics on complaints, notifications of summons and successful prosecutions are summarized in Appendix J.

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.

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.
- Better scheduling of construction works to minimize noise nuisance.

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.

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 For air quality monitoring, no Action/Limit Level exceedance of 1-hour TSP results was recorded in the reporting quarter. However, one (1) Action Level and Two (2) Limit Level exceedance of 24-hour TSP results were recorded at monitoring location AMS3A in the reporting quarter. Investigation results show that both the Action and Limit Level exceedance of 24-hour TSP results were not project-related.

8.3.3 For impact noise monitoring, no Action and Limit Level exceedance was recorded at all monitoring stations in the reporting period.

8.3.4 For impact water quality monitoring, sixteen (16) Action Level exceedances were recorded at measured suspended solids (SS) values (in mg/L) in the reporting quarter. Investigation result show that the exceedances were not due to the Project works.

8.3.5 No triggering of Event and Action Plan for impact dolphin monitoring was noted in the reporting quarter.

8.3.6 Environmental site inspection was carried out thirteen 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 Two (2) environmental complaints were received in the reporting quarter.

8.3.8 No notification of summons and successful 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, except inability of setting up and carrying out impact air quality monitoring at AMS6 (Dragonair/CNAC (Group) Building) were noted. Liaison with relevant parties for permission on access to the premise for setting up and carrying out impact air quality monitoring works at AMS6 was continued until 19 November 2012. Reference is made to ET's proposal of the omission of air monitoring station (AMS 6) dated on 1 November 2012 and EPD's letter dated on 19 November 2012 regarding the conditional approval of the proposed omission of air monitoring station (AMS 6) for Contract No. HY/2010/02. The aforesaid omission of Monitoring Station AMS6 will be effective since 19 November 2012.

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.