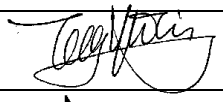
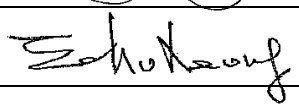
China Harbour Engineering Company Limited

Contract No. HY/2010/02

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

Quarterly EM&A Report for March 2012- May 2012

[11/2012]

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

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ENVIRON

Ref.: HYDHZMBEEM00_0_0504L.12 14 November 2012

Engineer's Representative
Ove Arup & Partners
Level 5, Festival Walk
80 Tat Chee Avenue
Kowloon Tong, Kowloon
Hong Kong

By Fax (2268 3970) 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 March to May 2012 (Rev. 1)

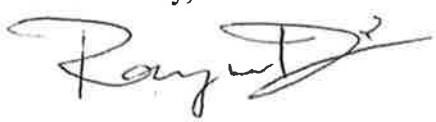
Reference is made to the Environmental Team's submission of the Quarterly Environmental Monitoring & Audit Report for March to May 2012 (Rev. 1) (letter ref. 60249820/C/RMKY12111403 dated 14 November 2012) copied to us by E-mail on 14 November 2012.

Please be informed that we have no adverse comment on the captioned report.

In addition, we would like to remind the Environmental Team Leader (ETL) to address comments made by relevant parties in a timely fashion and to ensure all environmental monitoring and audit data submitted are true, valid and correct.

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. Philip Lam	(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 7 March 2012 (EP-353/2009/D) 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 12 March 2012 and 31 May 2012. As informed by the Contractor, major activities in the reporting period were:-

Marine-based Works
- Cone penetration test;
- Geotextile laying and fabrication;
- Stone column installation trial;
- Silt curtain fabrication and deployment; and
- Stone blankets laying.

Land-based Works
- Site office erection and construction at Works Area WA2;
- Public Works Regional Laboratory erection and construction at Works Area WA3;
- Constructing site access at Works Area WA2 to Ying Hei Road, Tung Chung;
- Drainage works at Works Area WA2 and WA3;
- Geotextile and silt curtain fabrication at Works Area WA4; and
- Stone column installation barges setup and their maintenance works at Works Area WA4.

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

24-hour Total Suspended Particulates (TSP) monitoring	14sessions
1-hour TSP monitoring	14sessions
Noise monitoring	12sessions
Impact water quality monitoring	35sessions
Impact dolphin monitoring	4sessions
Joint Environmental site inspection	12 sessions

Breaches of Action and Limit Levels for Air Quality

No exceedance of Action and Limit Level was recorded for 1-hour TSP monitoring in the reporting quarter.

However, one (1) Limit Level exceedance was recorded for 24-hour TSP results in May 2012. Investigation results show that the exceedance was not due to the Project works.

Nevertheless, the Contractor was recommended to continue implementing existing dust mitigation measures.

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

Seven (7) Action/Limit level exceedances of water quality in total were recorded in the reporting quarter. One (1) Limit Level exceedance was recorded at measured suspended solids (SS) level in March 2012. Five (5) Action Level exceedances, where two (2) were recorded at measured turbidity level and three (3) were recorded at measured SS level, were recorded in April 2012. One (1) Action Level exceedance was recorded at measured dissolved oxygen at bottom layer in May 2012.

Investigation results show that the exceedances were not due to the Project works. Nevertheless, the Contractor was reminded to ensure provision of ongoing maintenance to the silt curtains.

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, except insufficient dolphin survey efforts due to inclement weather conditions in March and April 2012 and inability of setting up and carrying out impact air quality monitoring at AMS6 (Dragonair/CNAC (Group) Building) were noted. Supplementary dolphin surveys have been conducted during June and July 2012 to ensure that adequate survey efforts will be maintained. Liaison with relevant parties for permission on access to the premise for setting up and carrying out impact air quality monitoring works at AMS6 will be continued.

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

No Project related environmental complaint was 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) and March 2012 (EP-353/2009/D). 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 1.1.5 EPs issued on 7 March 2012 (EP-353/2009/D) 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 first 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 12 March 2012 to 31 May 2012

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	Michael Lo	2528 3031	2668 3970
IEC / **ENPO** (ENVIRON Hong Kong Limited)	Independent Environmental Checker	Raymond Dai	3743 0788	3548 6988
	Environmental Project Office Leader	Marcus Ip/ David Yeung	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	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 this reporting period are listed below:-

Marine-based Works
- Cone penetration test;
- Geotextile laying and fabrication;
- Stone column installation trial;
- Silt curtain fabrication and deployment; and
- Stone blankets laying.

Land-based Works
- Site office erection and construction at Works Area WA2;
- Public Works Regional Laboratory erection and construction at Works Area WA3;
- Constructing site access at Works Area WA2 to Ying Hei Road, Tung Chung;
- Drainage works at Works Area WA2 and WA3;
- Geotextile and silt curtain fabrication at Works Area WA4; and
- Stone column installation barges setup and their maintenance works 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. 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. Liaison with relevant parties for permission on access to the premise for setting up and carrying out impact air quality monitoring works at AMS6 will be continued. 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. Alternative impact water quality monitoring station SR5(N) was adopted, which is in vicinity of SR5 and could be reachable, for the period from 12 to 28 March 2012 due to safety concern and permitting requirement of Airport Approach Restricted Areas. 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 period 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/D 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 days in the reporting quarter. The major dust source in the reporting period 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		
		Mar 12	Apr 12	May 12
1-hr TSP	AMS2	9	18	15
	AMS3A	9	18	15
	AMS7	9	18	15
24-hr TSP	AMS2	3	6	5
	AMS3A	3	6	5
	AMS7	3	6	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		
			Mar 12	Apr 12	May 12
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	0
		Limit	0	0	1 (28 May 12)
	AMS7	Action	0	0	0
		Limit	0	0	0
		Total	***0***	***0***	***1 (28 May 12)***

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) Limit Level exceedance for the impact 24-hours TSP monitoring results was recorded at AMS3A in May 2012

According to information provided by the Contractor and on-site observations, construction of site offices (mainly interior works) was the major land-based construction activity being undertaken at Works Area WA2 during the monitoring period. As informed by the Contractor, geotextile laying, silt curtain deployment, stone column installation trial and stone blanket laying, were the major marine-based construction activities being undertaken during the monitoring period.

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.

Construction activities, like sheet piling and percussive piling, were carrying out in other Contracts during the course of monitoring, which are close to the monitoring station AMS3A. Meanwhile, exposed soil surfaces were observed at those construction sites nearby. As refer to the wind data collected at wind station at Works Area WA2 during the monitoring period on 28 May 2012, eastern wind was prevailing during the monitoring period. Construction works carried out at nearby construction sites may contribute to the measured dust levels at the monitoring station AMS3A.

The impact 1-hr TSP values recorded at AMS3A on 29 May 2012, which are within the monitoring period of the impact 24-hr TSP, were 85.8µg/m^3, 87.7µg/m^3 and 84.9µg/m^3 respectively. All measured values are well below the Action and Limit Levels.

The measured impact 24-hr TSP values recorded at AMS2 and AMS7 (which are closer to the marine-based works areas) on the same monitoring date were 40.5µg/m^3 and 45.3µg/m^3 respectively, which are below the Action and Limit Levels.

Moreover, the main haul roads in Works Area WA2 were concrete paved. Vehicle washing facility was also provided at vehicle exit points, and vehicle was washed to remove any dusty materials from its body and wheels before leaving.

It is therefore considered that the Limit Level exceedance as non-Project related.

Nevertheless, the Contractor was recommended to continue implementing existing dust mitigation measures.

3.1.7 Please refer to the monthly EM&A report (May 2012 Version 0) accordingly for the details of the captioned exceedances.

3.1.8 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 period 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		
		Mar12	Apr 12	May12
	NMS2	4	4	4
	NMS3A	4	4	4

Table 3.4 Summary of Number of Monitoring Exceedances for Impact Noise

Monitoring Parameter	Location	Level of Exceedance	Level of Exceedance		
			Mar 12	Apr 12	May 12
	NMS2	Action	0	0	0
		Limit	0	0	0
	NMS3A	Action	0	0	0
		Limit	0	0	0
		Total	***0***	***0***	***0***

3.2.1 All measured impact noise levels were below the Limit level. According to the information provided by the Contractor, no Action Level exceedance was recorded for impact noise since no noise related complaint was received in the reporting quarter.

3.2.2 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 period are depicted in Figure 3.

3.3.3 Exceedances were recorded for at the measured suspended solids (SS), turbidity and dissolved oxygen at bottom layer in the reporting quarter. Number of exceedances recorded in the reporting quarter at each impact station are summarised in Table 3.5.

Table 3.5 Summary of Water Quality Exceedances in Mar-May 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	1 **(23 Apr 12)**	0	1 **(23 Apr 12)**	0	2 **(23 Apr 12)**
	Limit	0	0	0	0	0	0	0	0	0	0
IS7	Action	0	0	0	0	0	1 **(23 Apr 12)**	0	1 **(23 Apr 12)**	0	2 **(23 Apr 12)**
	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	0
	Limit	0	0	0	0	0	0	0	0	0	0
IS10	Action	0	0	0	0	0	0	0	1 **(9 Apr 12)**	0	1 **(9 Apr 12)**
	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	1 **(21 May 12)**	0	0	0	0	0	1 **(21 May 12)**	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[1]	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	0	0	0
	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	1 **(12 Mar 12)**	0	1 **(12 Mar 12)**	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	1 **(21 May 12)**	0	0	2 **(23 Apr 12)**	0	3 **(9, 23 Apr 12)**	6 **(9,23 Apr 12; 21 May12)**	
	Limit	0	0	0	0	0	0	1 **(12 Mar 12)**	0	1 **(12 Mar 12)**	

Note: S: Surface;
M: Mid-depth;
[1]: Due to safety concern and presence of Airport Approach Restricted Areas, alternative impact water quality monitoring station SR5(N) was adopted, which is in vicinity of SR5 and could be reachable, for the period from 12 to 28 March 2012.

3.3.4 One (1) Limit Level exceedance was recorded at measured SS level on 12 March 2012. Investigation works show that only preparation works, like geotextile laying and stone blanket laying, which are not likely to cause water quality impact, were carried out on the monitoring date. Turbidity levels recorded at SR7 and all other impact stations (stations closer to the Project site) were below the Action and Limit Levels. SS levels recorded at all other impact stations (stations closer to the Project site) were lower than those recorded at SR7, which suggested that exceedance at SR7 was not due to the Project works. The exceedance was considered as non-Project related.

Five (5) Action Level exceedances, where one (1) was recorded at measured SS level on 9 April 2012, another two (2) were recorded at measured SS level on 23 April 2012 and two (2) was recorded at measured turbidity level on 23 April 2012, were recorded in April.

It was found that only preparation works, like geotextile laying and stone blanket laying, which are not likely to cause water quality impact, were carried out on 9 April 2012. Non-Project related trawling activities by fishing vessels were noted near the monitoring location IS10, which likely cause impact on ambient water quality. Turbidity and suspended solid levels recorded at IS10 on the next monitoring date (i.e. 11 April 2012), when there are similar preparation works at similar works areas carrying out, were well below the Action and Limit Levels.

Moreover, only stone blanket laying, which is not likely to cause water quality impact, was carrying out during the monitoring period at mid-flood tide on 23 April 2012. Cone penetration test and stone column trial were suspended at 17:00 and 14:00 respectively on 23 April 2012. Strong wind and rough sea condition was experienced during the monitoring period, which is likely to affect the ambient water quality in such shallow water condition. No silty plume was observed near area between the perimeter of the silt curtain and the monitoring point during the monitoring. Turbidity and SS levels recorded at IS(Mf)6 and IS7 on the previous monitoring date (i.e. 18 April 2012) during mid-flood tide, when there are same activities at works areas being carried out, were well below the Action and Limit Levels. It is considered that the Action Level exceedances as non-Project related.

One (1) Action Level exceedance was recorded at the measured DO at bottom layer in May. The Action Level exceedance was recorded on 21 May 2012 during mid-ebb tide at Impact Station IS17.

It was found that only stone blanket laying at Portion A and C2a and stone column trial (with silt curtain enclosed) at Portion A, which is not likely to cause water quality impact, were carrying out during the monitoring period. No silty plume was observed near area between the perimeter of the silt curtain and the monitoring point during the monitoring. Moreover, DO values recorded at bottom level at Impact Stations closer to the works area (i.e. IS7, IS10, IS(Mf)11) were all above the Action and Limit Level during the mid-ebb on the monitoring day. It is considered that the Action Level exceedance as non-Project related.

Nevertheless, the Contractor was reminded to ensure provision of ongoing maintenance to the silt curtains.

Please refer to the monthly EM&A report (March, April and May 2012 Version 0) accordingly for the details of the captioned exceedances.

3.3.5 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 (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 period 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 Mar-May 2012

Number of Impact Surveys Completed^	4 *
Planned Distance to Travel under On-Effort Condition	597.8km
Survey Distance Travelled under Favourable On- Effort Condition	368.4km *
Number of Sightings	20 sightings (12 sightings are ”on effort” (which are all under favourable condition), 8 “sightings are opportunistic”)
Number of dolphin individual sighted	64 individuals (the best estimated group size)
Dolphin Encounter Rate	NEL: 0% NWL: 5.7%
Dolphin Group Size (for both NEL and NWL)	Average of 3.2±2.9(SD) Varied from 1-12 individuals
Most Often frequent dolphin sighting area	Lung Kwu Chau and Sha Chau Marine Park eastern area and west of the airport platform #

Remarks:

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

* Due to inclement weather conditions in March and April 2012, which resulted in extended periods of rough weather in the surveyed waters, survey efforts conducted under this is condition had been less than original planned. Supplementary surveys have been conducted during June and July 2012 to ensure that adequate survey efforts will be maintained.

The most often frequent dolphin sighting area in NEL is not defined as there is only one sighting from NEL.

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 Also, the recommended mitigation measures, such as implementation of dolphin exclusion zone during deployment of perimeter silt curtain system, implementation of dolphin watching plan for enclosed areas after deployment of perimeter silt curtain system, controlling of vessel speed and travelling routes and provision of decoupling measures to compressors and other equipment on working vessels, which are in place to lessen direct impact from construction activities to individual dolphins, are currently being implemented consistently. (Please refer to Appendix C -EMIS for more mitigation measures).

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, 12 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 provide vehicle washing facility at Works Area WA3.

3.5.4 The Contractor was reminded to implement dust suppression measures, especially on water spraying on haul road, at Works Area WA3.

3.5.5 Bags of cement were found debagged at open area. The Contractor was reminded that de-bagging, batching and mixing process of cement should be carried out in an area sheltered on top and the 3 sides.

3.5.6 Soil stockpiles placed at Work Area WA4 were covered with tarpaulin sheet incompletely. The Contractor was reminded to cover up the soil stockpiles completely with tarpaulin sheet if no works was carrying out temporarily.

Noise

3.5.7 Noise Emission Labels (NELs) were found missing from the air compressors employed on barge FTP19 at Portion A. The Contractor was reminded to affix the NELs to the air compressor employed.

Water Quality

3.5.8 The Contractor was recommended to review the drainage system regularly and provide wastewater treatment facilities, especially for silty surface run-off during rainfall, if necessary, at Works Area WA3. Although concrete u-channels and sand bag bundings were provided at part of the site boundaries and provision of temporary drainage system was undergoing, The Contractor was recommended to provide sand bag bundings at the site boundaries temporarily prior to completion of u-channels.

3.5.9 Rubbish and accumulated rainwater was found inside the u-channel at Works Area WA4. The Contractor should clear up the rubbish and accumulated rainwater, especially after rainstorm.

3.5.10 Broken sand bags were observed at site boundary at Works Area WA4. The Contractor should remove and replace the broken sand bags.

3.5.11 Although it was rainy during the inspection, the Contractor was reminded to enhance the pumping system provided at U-channels at Work Area WA4 in order to avoid accumulation of run-off inside the channels.

Chemical and Waste Management

3.5.12 Floating wastes were observed within the silt curtain confined areas of the stone blanket installation works area in Portion A of the Site. The Contractor was reminded to clear the floating wastes within works areas regularly.

3.5.13 Oil drums were found stored improperly at FTP19 in Portion E1. The Contractor was reminded to provide drip trays to oil drum stored on site to retain any leaked oil if there is such case.

3.5.14 Accumulation of oily water and materials were observed inside the drip trays employed on barge FTP19 at Portion A. The Contractor was reminded to clear the materials and oily water. The oily mixture should be treated and disposed of as chemical waste.

3.5.15 It is noted that few trucks of construction wastes were not transferred to designated disposal ground. The Contractor was reminded to provide measures to ensure construction wastes were sorted, transferred and disposed of properly. Toolbox talks and trainings should be provided to workers and dump truck drivers on waste management issues.

3.5.16 Battery packs were found improperly placed on the barge Ever Shine 18 at Portion C2c, the Contractor was reminded to provide drip trays to the battery packs used on site to retain any leaked chemical, if there is such case.

Landscape and Visual Impact

3.5.17 No adverse observation was identified in the reporting quarter.

Others

3.5.18 No adverse observation was identified in the reporting quarter.

3.5.19 The Contractor has rectified all the observations as identified during environmental site inspection in the reporting quarter.

4 ADVICE ON THE SOLID AND LIQUID WASTE MANAGEMENT STATUS

4.1 Summary of Solid and Liquid Waste Management

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

4.1.2 As advised by the Contract, 382.66 tonnes of general refuse were generated and disposed of in the reporting period. 530 m^3 of rock fill was imported for the Project use in the reporting period. 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 Practise 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 necessary mitigation measures were implemented properly. Insufficient dolphin survey efforts due to inclement weather conditions in March and April 2012 and inability of setting up and carrying out impact air quality monitoring at AMS6 (Dragonair/CNAC (Group) Building) were noted in the reporting period. Supplementary dolphin surveys have been conducted during June and July 2012 to ensure that adequate survey efforts will be maintained. Liaison with relevant parties for permission on access to the premise for setting up and carrying out impact air quality monitoring works at AMS6 will be continued.

5.1.3 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 Regular marine travel route for marine vessels were implemented properly in accordance to the submitted plan 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.

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 impact 1-hour TSP monitoring results complied with the Action and Limit Levels in the reporting period. However, one (1) Limit Level exceedance was recorded for 24-hour TSP results recorded in May 2012. Investigation results show that the exceedance was not due to the Project works. Nevertheless, the Contractor was recommended to continue implementing existing dust mitigation measures.

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

6.1.3 Seven (7) Action/Limit level exceedances of water quality in total were recorded in the reporting quarter. One (1) Limit Level exceedance was recorded at measured suspended solids (SS) level in March 2012. Five (5) Action Level exceedances, where two (2) were recorded at measured turbidity level and three (3) were recorded at measured SS level, were recorded in April 2012. One (1) Action Level exceedance was recorded at measured dissolved oxygen at bottom layer in May 2012.

6.1.4 Investigation results show that the exceedances were not due to the Project works. Nevertheless, the Contractor was reminded to ensure provision of ongoing maintenance to the silt curtains.

6.1.5 Please refer to Section 3.1-3.3 and/or monthly EM&A report (March, April and May 2012 Version 0) accordingly for the details of the captioned exceedances.

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 Compliants, Notification of Summons and Successful Prosecutions

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

7.1.2 There was no Project related environmental complaint received in the reporting period.

7.1.3 No notification of summons and prosecution was received in the reporting period.

7.1.4 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.

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 Impact 1-hour TSP, 24-hour TSP, noise, water quality and dolphin monitoring were carried out in the reporting period.

8.3.3 All impact 1-hour TSP monitoring results complied with the Action and Limit Levels in the reporting period. However, one (1) Limit Level exceedance was recorded for 24-hour TSP results recorded in the reporting period. Investigation results show that the exceedance was not due to the Project works. Nevertheless, the Contractor was recommended to continue implementing existing dust mitigation measures.

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

8.3.5 Seven (7) Action or Limit Level exceedances were recorded at measured turbidity level, SS level and dissolved oxygen at bottom layer in the in the reporting quarter. Investigation works show that the exceedances were not due to the Project works. Nevertheless, the Contractor was reminded to ensure provision of ongoing maintenance to the silt curtains.

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

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

8.3.8 No Project related environmental complaint was received in the reporting period.

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

8.3.10 Apart from the abovementioned monitoring, most of the recommended mitigation measures, as included in the EM&A programme, were implemented properly in the reporting quarter, except insufficient dolphin survey efforts due to inclement weather conditions in March and April 2012 and inability of setting up and carrying out impact air quality monitoring at AMS6 (Dragonair/CNAC (Group) Building) were noted. Supplementary dolphin surveys have been conducted during June and July 2012 to ensure that adequate survey efforts will be maintained. Liaison with relevant parties for permission on access to the premise for setting up and carrying out impact air quality monitoring works at AMS6 will be continued.

8.3.11 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.

8.3.12 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.