

**Central Reclamation, Phase III
Quarterly EM&A Report No. 4
(May through July 2004)**

<i>Client</i>	Civil Engineering and Development Department Hong Kong Island and Islands Development Office		
<i>Project</i>	Supplementary Agreement No. 3 to Agreement No. CE 15/94 Central Reclamation, Phase III Design and Construction for the Minimum Option		
<i>Report No.</i>	3128-REP-183-00	<i>Copy No.</i>	
<i>Date of Issue</i>	10 August 2004	<i>File Ref.</i>	L:\S-proj\CR3\CR3.NEW\ 3128\Reports\0183.doc
<i>Report Title</i>	Central Reclamation, Phase III Quarterly EM&A Report No. 4 May through July 2004		
	<i>Name</i>	<i>Sign</i>	<i>Date</i>
<i>Prepared by :</i>	Albert Chan, ACL - Environmental Consultant		10 August 2004
<i>Reviewed by:</i>	Susana Bezy, ACL – ET Leader		10 August 2004
<i>Authorised by :</i>	Jon Varndell, ACL – Project Mgr		10 August 2004
<i>Distribution</i>			
<i>Copy No</i>	<i>Issue to</i>	<i>Attention</i>	<i>Corr. Ref.</i>
1	TDD	Mr H H Yeung	3128/M45/200/OC6328/al
2, 3	EPD	Mr M W Ho	3128/M45/200/OC6328/al
4	EPD (LCO)	Mr Samson Cheng	3128/M45/200/OC6328/al
5	Leighton-China State-Van Oord JV	Mr Malcolm Plummer	3128/M45/200/OC6328/al
6	CRIII Sites/PRE	Mr Douglas Miller	3128/M45/200/OC6328/al
7	Independent Checker (Environment)	Mr Bill Douglas	3128/M45/200/OC6328/al
8	Environmental Team Leader	Ms Susana Bezy	3128/M45/200/OC6328/al
9	Office Copy		

	Page
1. Introduction.....	1
1.1 Basic Project Information.....	1
1.2 Project Organisation and Management Structure.....	1
1.3 Works Undertaken.....	1
2. EM&A Requirements	2
2.1 Summary of Impact EM&A Requirements.....	2
2.2 Environmental Quality Performance Limits	3
2.3 Event Action Plan	3
3. Environmental Status	4
3.1 Implementation of Environmental Measures.....	4
3.2 Environmental Monitoring Locations.....	4
3.3 Air Quality Monitoring Results.....	4
3.4 Noise Quality Monitoring Results	4
3.5 Water Quality Monitoring Results	4
3.6 Solid and Liquid Waste Management Status	4
3.7 Landscape and Visual Audit.....	5
4. Environmental Enquiry, Complaint and Non-Compliance	6
4.1 Environmental Exceedances.....	6
4.2 Summary of Actions Taken for Non-Compliance.....	6
4.3 Environmental Enquiries	6
4.4 Environmental Complaints and Prosecutions.....	6
4.5 Record of Environmental Complaints and Summons & Prosecutions	7
5. Conclusion.....	8

List of Annexes

Annex A	Project Organisation/ Contact Information
Annex B	Quality Performance Limits for Air, Noise and Water Quality
Annex C	Event and Action Plans for Air, Noise and Water Quality
Annex D	Monitoring Stations Locations
Annex E	Contractor's Works Programme
Annex F	Graphical Representation of Noise Quality Monitoring Results
Annex G	Graphical Representation of Water Quality Monitoring Results
Annex H	IEC's Environmental Site Inspections Reports
Annex I	Quarterly Assessment of Construction Impacts on Suspended Solids

List of Tables

Table 2.1 - Summary of Impact EM&A Requirements	2
Table 4.1 - Summary of Complaints Received	7

ACL	Atkins China Limited
CEDD	Civil Engineering and Development Department
CRIII	Central Reclamation Phase III
EIA	Environmental Impact Assessment
EM&A	Environmental Monitoring and Audit
EPD	Environmental Protection Department
ER	Engineer’s Representatives
ET	Environmental Team
IEC	Independent Environmental Checker
LCSD	Leisure and Cultural Services Department
LCSVO-JV	Leighton-China State-Van Oord Joint Venture
TDD	Territory Development Department
TSP	Total Suspended Particulates

Executive Summary

Atkins China Limited (ACL) has been appointed by TDD (now called the Civil Engineering and Development Department (CEDD) after the merger of the Civil Engineering Department and the Territory Development Department on 1 July 2004) to implement the Environmental Monitoring and Audit (EM&A) programme that was identified in the EIA Report for the CRIII Project and is providing Environmental Team services during the duration of the construction works.

This is the fourth quarterly EM&A Report for the works specified in Section 1.3 of the CRIII EIA Report. This report summarises the monitoring results and audit findings of the EM&A program during the reporting period from 1 May to 31 July 2004.

Environmental Monitoring and Audit Progress

Noise and water quality monitoring was conducted during this quarter. Weekly environmental site inspections were also conducted during the reporting quarter. Joint site inspections with the IEC were also carried out on 27 May, 17 June and 29 July 2004. The IEC's environmental site inspection reports are included in ***Annex H***.

Exceedances of Action and Limit Levels

The noise monitoring carried out during this quarter did not find any exceedances that were attributable to the project works. Although the continuous monitoring data indicated several instances where the Leq (30 minutes) exceeded 75 dB(A) during the reporting quarter, investigations into these levels found that they were due to local noise conditions at the City Hall monitoring location and were not due to the project. Off-site inspections carried out by the IEC previously noted that City Hall is affected by various noise sources unrelated to the project. The IEC's observations noted that the main sources of noise near City Hall were from vehicle traffic and passer-by activities in the area.

Three environmental complaints with regard to construction noise were received between May and June 2004. Based on the investigations of the complaints, it was found that the noise generated from construction activities are within the acceptable noise level and have been found to be compliant with the CNP and Noise Control Ordinance (NCO).

From the analysis of water quality monitoring results collected during the reporting period, it was found that the exceedances of the Action and Limit Levels were generally not attributable to the project marine works. Although DO levels below the Action Level were observed at seawater intake and marine-based stations, investigations found that they were due to natural variation or changes in ambient conditions and not caused by the project marine works. It was noted that when the DO Action Level was exceeded at the marine-based stations the control stations recorded similarly low DO levels on several occasions.

The water quality monitoring results from the reporting quarter also showed, on a few occasions, elevated concentrations of SS above the Action and/or Limit Level at seawater intake stations. Investigations into these monitoring results found that SS levels were primarily attributed to discharge influences from outfalls located in proximity of seawater intake stations. Most of the high SS concentrations recorded were found to be due to localised conditions. High SS levels are often recorded at locations (stations M1 to M6) with outfalls and stormwater culverts that discharge directly into the harbour.

However, investigations into elevated SS levels on 3 days during late July 2004 found that the increase in SS may have been attributed to project marine works. Appropriate actions were undertaken in accordance with the Event and Action Plan for water quality and daily monitoring of SS was initiated. Subsequent monitoring results at the end of July showed that SS levels have reduced significantly and no further exceedances were recorded. An environmental meeting has been scheduled for early August to discuss the Contractor's present working practices.

Complaint Log

Two environmental complaints regarding construction noise were received in May 2004. The first complaint, received by EPD on 5 May 2004, was with regard to noise generated from marine piling near Two International Finance Centre (Two IFC). Upon receipt of the complaint, the environmental complaint handling procedures as stipulated in the EM&A Manual and the Environmental Site Inspection Procedure Report were followed. An investigation was conducted and on 19 May 2004, the ET and EPD measured noise levels at the outside area, third floor of Two IFC during a joint site inspection. Marine piling works were being undertaken at the time and the recorded noise levels were within the acceptable noise level.

Premier Management Services, on behalf of Two IFC, lodged the second complaint addressed to TDD (now called CEDD) on 20 May 2004. The complaint was referred to the ET and an investigation was carried out in accordance with the environmental complaint handling procedure. Based on the findings of the investigation, it was found that the daytime construction activities generating noise in the vicinity of Two IFC are: marine piling works near Pier No. 7; drilling works for pre-bored H piles near Pier No. 7; and superstructure works for Pier No. 7. The predominate noise generating activities are the marine piling works, which the Contractor has a valid Construction Noise Permit (CNP). Additional noise measurements were taken by the ET at the outside area, third floor of Two IFC during the marine piling works. The measured noise levels were within the acceptable noise level.

Another noise complaint concerning marine piling works was received from Premier Management Services of Two IFC on 4 June 2004. An investigation into the complaint found that the maximum noise level measured during marine piling works is below the statutory acceptable noise level (ANL). Further, general noise levels from marine piling and construction works measured outside Two IFC are below the noise standard of 75 dB(A) for daytime construction noise.

Based on the investigations of the complaints, it was found that the noise generated from construction activities are within the ANL and are compliant with the CNP and Noise Control Ordinance (NCO).

Notifications of Summons and Prosecutions

There were no notifications of summons or prosecutions received during this reporting quarter.

Site Inspection and Audit

Weekly environmental site inspections were carried out during this quarter. Any minor deficiencies noted during the site inspections were rectified by the Contractor upon receipt of notification.

1. INTRODUCTION

1.1 Basic Project Information

The Territory Development Department (TDD) (now called the Civil Engineering and Development Department (CEDD) after the merger of the Civil Engineering Department and the Territory Development Department on 1 July 2004) of the Hong Kong Special Administrative Region (HKSAR) is constructing the Central Reclamation Phase III project (CRIII).

The Main Works Contract HK 12/02 for CRIII commenced on 28th February 2003. Leighton China State Van Oord Joint Venture (LCSVO-JV) was awarded the Contract No. HK 12/02 for the construction of the CRIII Engineering Works. The main construction works that were identified in the EIA Report for the Project, requiring environmental monitoring and audit, have commenced.

The Contractor's works programme for the quarter is provided in **Annex E**.

1.2 Project Organisation and Management Structure

Atkins China Limited (ACL) has been commissioned by TDD (now called CEDD), the employer, to undertake the environmental monitoring and audit work for the project. ACL is also the Resident Engineers for the project and LCSVO-JV is the main contractor. An Independent Environmental Checker (IEC) has been employed to audit the EM&A programme. The contacts of key management are provided in **Annex A**.

1.3 Works Undertaken

The works undertaken in the project area requiring environmental monitoring and audit as identified in the EIA Report (not including Chai Wan Basin) during the quarter included:

- Dredging and rockfilling works at IRAW and IRAE;
- Marine piling at IRAW;
- Superstructure work at Pier No. 7;
- Pre-bored H-piling work for landside piling for the Central Terminal Building (CTB);
- Cooling water mains work at Lung Wui Road; and
- Maintenance and necessary repair work for seawater intake silt screens.

2. EM&A REQUIREMENTS

2.1 Summary of Impact EM&A Requirements

The EM&A programme requires environmental monitoring for air quality, noise, water quality, waste management and landscape and visual aspects as specified in the CRIII Project EIA. The EM&A requirements for each issue area are described in subsequent sections including:

- All required monitoring parameters;
- Action and Limit Levels; and
- Event-Action Plans.

A summary of impact EM&A requirements is presented in **Table 2-1**.

Table 2.1 - Summary of Impact EM&A Requirements

Parameters	Descriptions	Locations	Frequencies	Duration
TSP	24-Hour TSP	2 Locations	Once every 6 days	During dust generating construction works
	1-Hour TSP	2 Locations	Three times in every 6 days	During dust generating construction works
Noise	Leq (30 mins), L ₁₀ , L ₉₀ .	1 Location	Continuous measurements	Two weeks before Construction and During Construction
Water Quality	Dissolved Oxygen; Salinity; Temp; Suspended Solids; Turbidity.	14 Locations	3 times a week, Mid-ebb/flood tides	During Marine Works and for 4 weeks after completion of Marine Works
Waste	On-Site Waste Audit	Active Work Sites	Periodically	During Construction
	On-Site Waste Inspection			
Landscape and Visual	Audits to ensure effective implementation of mitigation measures			During Construction
General Site Conditions	Environmental Site Inspection	Works areas and areas affected by works	Periodically	During Construction

2.2 Environmental Quality Performance Limits

Environmental Quality Performance Limits for dust, noise and water quality have been established as part of the Baseline Monitoring Report and are provided in **Annex B**.

2.3 Event Action Plan

Event Action Plans for air, noise and water quality have been developed as part of the Baseline Monitoring Report and are provided in **Annex C**.

3. ENVIRONMENTAL STATUS

3.1 Implementation of Environmental Measures

The Contractor has implemented relevant mitigation measures listed in the EIA Report, EM&A Manual and Further Environmental Permit. Seawater intake silt screens have been installed prior to the start of the dredging works and a silt curtain attached to a floating steel frame has been installed around the grab dredger.

3.2 Environmental Monitoring Locations

Drawings showing the project area and locations of the monitoring stations are provided in **Annex D**.

3.3 Air Quality Monitoring Results

Once dust generating construction works as identified in the EIA have commenced, air quality monitoring will be undertaken and the results of air quality monitoring will be presented with graphical plots. In the interim, an ad-hoc 1-hour TSP measurement was undertaken at the PLA Central Barracks on 13 July 2004 to assess whether air quality monitoring is required at this stage of the project works. The measurement recorded an 1-hour TSP level of 126 $\mu\text{g}/\text{m}^3$, which is well below the average 1-hour TSP concentration recorded during baseline monitoring. Based on this information, there is no indication to suggest that significantly dusty construction activities with the potential to impact air quality are within range of the ASR at this stage.

3.4 Noise Quality Monitoring Results

The graphical plot of noise quality monitoring results for this quarter is provided in **Annex F**.

3.5 Water Quality Monitoring Results

The graphical plot of water quality monitoring results for this quarter is provided in **Annex G**. A statistical analysis (**Annex I**) of the monitoring results did not find any construction impacts on suspended solids (SS) at the project site. Although elevated levels of SS were found, particularly at the seawater intake stations (M1 to M6 and M11 and M12), these were investigated and were generally found not to be due to project works. The elevated SS levels were generally localised and occurred at seawater intake stations located near outfalls. Silty discharges from outfalls that are unrelated to the project works have been observed and documented in the reporting period. These discharges have been reported to the Environmental Protection Department (EPD) and are being investigated.

However, investigations into elevated SS levels recorded at 3 seawater intake stations on 3 sampling days in late July 2004 found that elevated levels may have been attributable to project works. Appropriate actions were undertaken in accordance with the Event and Action Plan and daily monitoring of SS was initiated. Further sampling noted that SS levels reduced significantly by the end of July 2004 and no further SS exceedances were recorded.

3.6 Solid and Liquid Waste Management Status

Solid and liquid waste management was implemented according to the Waste Management Plan during the reporting quarter.

3.7 Landscape and Visual Audit

As the works undertaken during the reporting month were mainly related to marine works, the landscape and visual impacts are considered to be minimal.

4. ENVIRONMENTAL ENQUIRY, COMPLAINT AND NON-COMPLIANCE

4.1 Environmental Exceedances

There were no exceedances of air and noise quality attributable to the project works found during the reporting quarter.

The exceedances of the SS Limit Level on 3 samplings days in late July 2004 may have been attributable to project marine works. Appropriate actions were undertaken in accordance with the Event and Action Plan for Water Quality and daily monitoring of SS was initiated. Further sampling noted that SS levels reduced significantly by the end of July 2004 and no further SS exceedances were recorded.

4.2 Summary of Actions Taken for Non-Compliance

The Event and Action Plan for Water Quality was undertaken immediately after investigations into the SS exceedances found that the increase in SS levels may have been due to project marine works. Daily monitoring of SS was initiated and an environmental meeting has been scheduled in early August to discuss the Contractor's current working practices.

4.3 Environmental Enquiries

An enquiry from Hongkong Land (HKL) concerning seawater quality and deterioration of plant equipment at their seawater pumping station was received in June 2004. HKL reported an increase in SS levels from their monthly seawater monitoring programme at their pumping station during the past nine months and claimed that this increase is caused by the dredging works of the CRIII project.

An investigation into HKL's enquiry was conducted and a comparison of the HKL and EM&A water quality monitoring results was undertaken. The comparison of SS concentrations shows a large discrepancy between the EM&A results and the HKL reported data. It was noted that HKL's reported SS levels were generally higher than the EM&A results. Further, dredging records from resident site staff showed that no dredging works were conducted on several of the sampling days in which HKL reported increased SS levels. Based on the findings of the investigation, there is no evidence to indicate that the deterioration of the HKL pumping station plant equipment is attributed to CRIII dredging works.

Another enquiry was received from Hongkong and Shanghai Banking Corporation (HSBC) regarding their concerns for rising seawater temperature in Victoria Harbour in June 2004. An investigation into HSBC's concerns for rising seawater temperature at their pumping station was conducted. The findings of the investigation indicate that the rise in seawater temperature at HSBC's intake is due to the rise in ambient levels throughout Hong Kong waters. There is no evidence to indicate that the project works is affecting the seawater temperature near HSBC's intake.

4.4 Environmental Complaints and Prosecutions

Two environmental complaints regarding construction noise were received in May 2004 and a similar complaint was received in June 2004. The complaints were with regard to noise generated from marine piling near Two International Finance Centre (Two IFC). Upon receipt of the complaints, the environmental complaint handling procedures as stipulated in the EM&A Manual and the Environmental Site Inspection Procedure Report were followed. Investigations

into the complaints found that the noise generated from project construction activities are within the acceptable noise level and have been found to be compliant with the CNP and Noise Control Ordinance (NCO).

4.5 Record of Environmental Complaints and Summons & Prosecutions

The following table summarises all the complaints attributable to project works received (both written and verbal) and the liaison/consultation undertaken, and the actions and follow-up procedures taken.

Table 4.1 - Summary of Complaints Received

Month/ Date of Complaint	Media	Complaint & Action	Liaison/ Consultation Taken	Follow-up Action
May 2004	Noise	2 construction noise complaints; investigated complaints	Contractor, EPD, IEC, RE, ET, TDD (CEDD)	Additional noise measurements with EPD
June 2004	Noise	1 construction noise complaint; investigated complaint	Contractor, EPD, IEC, RE, ET, TDD (CEDD)	Additional noise measurements
July 2004	N/A	None	N/A	N/A

There were no notifications of summons and prosecutions for the reporting quarter.

5. CONCLUSION

During the reporting quarter, exceedances of the water quality criteria were primarily found to be attributed to ambient water quality. The water quality within the project area was found to be generally good, but low DO levels have been recorded at seawater intake and marine-based stations. Investigations into the low DO levels found that they were not due to project works as control stations recorded similarly low levels.

However, elevated SS levels were recorded at 3 seawater intake stations on 3 sampling days in late July 2004. Investigations into these exceedances found that they may have been attributable to project works. Appropriate actions were undertaken in accordance with the Event and Action Plan and daily monitoring of SS was initiated. Further sampling noted that SS levels reduced significantly by the end of July 2004 and no further SS exceedances were recorded.

Although elevated SS levels were recorded at a few seawater intake stations, the results from the marine-based impact monitoring stations showed that offshore marine water quality was generally good. The marine-based stations established to monitor the overall impact of the reclamation activities on water quality in Victoria were shown to have similar results as the control stations, which are located outside the influence of project works. As such, the water quality monitoring results did not indicate that the marine works were adversely affecting water quality outside the works boundary in Victoria Harbour.

During environmental site inspections conducted during the reporting quarter, minor deficiencies were noted. However, the Contractor rectified all deficiencies after receipt of notification.

A total of three complaints regarding construction noise were received between May and June 2004. The environmental complaint handling procedure as stipulated in the EM&A Manual and the Environmental Site Inspection Procedure Report was undertaken immediately following the complaints. Investigations into the complaints found that the noise generated from project construction activities are within the acceptable noise level and have been found to be compliant with the CNP and Noise Control Ordinance (NCO).