Central Reclamation, Phase III
Quarterly EM&A Report No. 8
(May through July 2005)

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Central Reclamation, Phase III
Quarterly EM&A Report No. 8
May through July 2005

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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 eighth 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 2005 to 31 July 2005.

Environmental Monitoring and Audit Progress

Air, Noise and water quality monitoring was conducted during this quarter. Weekly environmental site inspections were also conducted during the reporting quarter.

Exceedances of Action and Limit Levels

No air quality exceedances were recorded during the reporting period.

Continuous noise monitoring was carried out during the reporting period and noise exceedances were recorded May (Total 13 days), June (Total 7) and July (Total 2) 2005. The exceedances were investigated and were found not to be attributed to the project works but rather to Hong Kong Electric's Contractors who where laying a below ground cable directly in front of City Hall.

Elevated SS levels were recorded in May (Total 1 Day), June (Total 5) and July (Total 3). Elevated DO levels were recorded in May (Total 5 Days), June (Total 9) and July (Total 6). For both parameters these exceedances were not found to be attributable to project works but rather natural variation in water quality across the site and beyond.

Precautionary mitigation measures implemented during the quarter included the creation of bund along vulnerable edges of the reclamation to reduce run-off; the provision of catch pits to retain run-off and settlement tanks to settle out SS before discharge.

Complaint Log

In May one noise and one dark smoke complain was received, both were resolved. In June, a water quality complaint was received from the PLA and also from ArchSD concerning the quality of their intake waters. These complains are currently under further investigation and discussion.

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. However, two non-compliances were issued for site drainage during the quarter. The Contractor has implemented some measures to control site drainage but the ER and ET require more detailed plans of their proposed drainage controls in order to be satisfied of their adequacy to handle heavy rainfalls experienced in Hong Kong.

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 28 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:

- Architectural works for Pier 7;
- Piling work and preparation work for concreting at Public Pier West;
- Pile cap and beam construction at Pier 8;
- Cooling water main construction at Lung Wui Road;
- Sand filling and rock filling works at IRAE;
- Central Terminal Building (CTB) superstructure and sub-structure works;
- Seawall construction at IRAE;
- In-situ work to caisson and pumping stations at IRAE;
- Temporary seawall construction at IRAE;
- Temporary diversion of Culvert J;
- Deep compaction works on IRAE;
- Piling works for Man Yiu Street Footbridge;

- Excavation to bored piling at Eastern Seawall;
- Maintenance and necessary repair works 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 is installed around the grab dredger when used.

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

Air quality monitoring commenced on 21 April 2005 at Central Barrack. Monitoring was not conducted at the City Hall monitoring station because exterior renovation works were undertaken by City Hall at the elevated walkway area. Air quality monitoring at the City Hall monitoring station will commence once the exterior renovation works are completed. The graphical plot of air quality monitoring results is provided in ***Annex F***.

3.4 Noise Quality Monitoring Results

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

3.5 Water Quality Monitoring Results

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

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 quarter were mainly related to reclamation, buildings and infrastructure works, the landscape and visual impacts are considered to be minimal.

4. ENVIRONMENTAL COMPLAINT AND NON-COMPLIANCE

4.1 Environmental Exceedances

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

Noise exceedances were recorded on the 1, 4, 5, 7, 9, 11, 12, 13, 17, 18, 19, 20, 25 and 27 May 2005; 16, 17, 18, 20, 27, 29 and 30 June 2005; and the 8 and 21 July 2005. For May and June noise exceedances were found to be due to Hong Kong electric's Contractor installation of underground power cables in front of City Hall. In July 2005, most of this work had been completed with the exception of repair works to the road surface using electric hammers.

Elevated levels of DO and SS were found during the reporting period, particularly at the seawater intake stations along the coast.

Elevated SS levels were recorded on 9 of May 2005 at stations M4A and M5, both just exceeding the Action Level (AL) of 10 and 12 mg/l respectively. There appears to have been some elevation of suspended solids levels all along the seawall at stations M2, M3, M4A and M5 on the 9 May but levels dropped off on subsequent sampling events.

DO levels recorded on the 4 (M1, M2 & M3), 9 (M3), 20 (M2, M3 &M4), 25 (M3), 30 (M4A) May 2005 during the ebb tide and levels recorded on the 13 (M1. M2, M3), 20 (M2, M3, M4A, M5 & M6) and 30 (M3 & M6) May 2005 during the flood tide, at the intake stations, exceeded the AL for DO.

Elevated SS levels were recorded on 1 (M4A), 6 (M3, M4A, M6 & M12), 8 (M2 & M3), 17 (M5), and 24 (M1, M2, M4A and M5) June 2005.

Reduced DO levels were recorded on the 1 (M1, M2, M3, M4A, M6 & M11), 3 (M1, M3, M4A, M6 & M11), 6 (M1, M2, M3, M4A, M5, M6, M11 & M12), 8 (M1, M2, M3, M4A, M5 & M12), 10 (M1 to M12 inclusive), 13 (M1 to M12 inclusive), 15 (M1, M2, M3, M4A & M11), 22 (M6), 24 (M3), 27 (M3, M4A, M5 & M6) June 2005.

Exceedances of the AL at M8 and M10 were observed for DO on the 4, 6, 11, 18, and 22 July 2005. For stations close to the seawall exceedances of the AL at M2, M3, M4A, M6 and M12 on the 22 July 2005 and at M2 and M4A on the 25 July 2005 were observed. SS levels exceeded the AL at M3, M6 and M11 on the 22 July 2005, at M4A on the 25 July 2005 and 27 July 2005.

A statistical analysis (***Annex I***) of the monitoring results generally found the quarterly mean is significantly less than 1.3 times of the ambient mean recorded during the baseline period. This indicates that although Project related exceedances of SS AL/LL levels were recorded during the reporting period, the Project construction works generally did not cause any adverse impact on SS levels during the reporting period with respect to the baseline condition.

None of the observed exceedances were found to be directly attributed to site works, as most of the major marine works have been completed, the remaining

marine works undertaken during the period such as placement of rock armour and bore piling for the western seawall of FRAE did not result in significant disturbance to the seabed or creating of excessive suspended solids. For the most part there was minimal run-off of silty waters from the site, however, during June, heavy rainfall was experienced and some run-off of silty water was identified. However, the quantities observed were not considered large enough to have a significant effect on the intake stations water quality. In the month of June and July, increasingly strong thermoclyne and haloclyne was observed developing in the open water stations C1, C2, M7 to M10. This is a result of the increased summer solar radiation warming the surface waters and the increased influx of fresh water into the area. Thermoclynes and Haloclynes result in a breakdown of the normal mixing of the water column and often result in DO depletion in lower waters. This phenomenon is a natural event in Hong Kong.

While none of the exceedances were attributed to project works, the Contractor has, however, been instructed to improve the effectiveness of site drainage works to prevent any discharge of silty waters. The ER, ET are working with the Contractor towards implementing a comprehensive drainage management plan for the site to guard against discharges of silty water into Victoria Harbour during rainy weather.

4.2 Non Compliance

After the 23 of June and 7 of July 2005 Weekly Site inspections, a non compliance was issued to the Contractor regarding the adequacy of their site drainage control measures. At various points across the site discharge of silty waters were observed.

The Contractor has been requested to put in place a Drainage Management Plan to control all discharges from the site. To date the contractor submitted their Drainage Management Plan on the 13 July 2005, however, this was not considered adequate to fully address all drainage concerns and the ET sent a list of comments to the Contractor, via the ER for their response. To date no response to the ET comments has been received by the ER from the Contractor.

However, the Contractor has gone some way to rectify drainage inadequacies by installing higher more secure bunds around the waters edge, constructing catch pits to retain site drainage and provided a separate catch pit for wheel washing facilities.

4.3 Summary of Actions Taken by the Contractor

The Contractor has implemented the following measures to reduce the risk of SS discharge into the marine environment:

- Provision of concrete bunds to replace previous earth and sand bag bunds, this has so far prevented discharges of silty water around area CR3 south of IRAW;
- Provided catch pits at locations around the site to collect and store run-off, this has gone some way to retain site drainage and reduce the discharge of silty waters;
- Provided catch pits to collect spill over from wheel washing facilities, reducing washout into the reclamation and enabling the settlement of silt before discharge of the spill over waters;

- Improved maintenance and upkeep of remaining sandbags, however, there are still cases where poor maintenance of sand bags may result in the discharge of silty waters into Victoria Harbour. Contractor has been required to replace sandbags with concrete bunds when appropriate;
- Decrease the speed of marine vessels entering IRAE to reduce the effect of the propeller wash; and
- Some areas of the site require further drainage control measures such as in front of Pier 8 on IRAW, the Contractor is aware of this and making progress to provide workable measures to prevent discharge of silty waters.

4.4 Environmental Enquiries

No environmental enquiries were received during the reporting quarter.

4.5 Environmental Complaints and Prosecutions

In May one noise and one dark smoke complain was received.

A member of the public noticed that the tower crane on IRAW was in operation during a public holiday and queried whether the Contractor was in possession of a Construction Noise Permit (CNP) for their operation during a Public Holiday. It was confirmed that the Contractor was in possession of CNP No. GW-RS0170-05, which permits operation of the said tower cranes at the time of the complaint.

A member of the public made a complaint concerning dark smoke being emitted from a vessel being used onsite. An investigation of the complaint determined that the dark smoke was emitted from a Pelican Barge transferring sand material at IRAE. The Pelican Barge was prohibited from working in CRIII until no excessive dark smoke is emitted from the engine.

In June, a water quality complaint was received from the PLA and also from ArchSD concerning the quality of their intake waters.

The PLA via China Overseas Property Ltd, complained of the quality of their cooling water intake at Station M4A. Damage to the silt screen protecting the PLAs intake was identified. A replacement silt screen was attached in mid June by the Contractor, in addition a further silt screen layer was added to increase protection and a net installed over the top of the intake to exclude rubbish. The case is currently under further discussion with the PLA, CEDD, the ER, the ET and the Contractor.

ArchSD advised CEDD at the end of June 2005 that the water quality from their intake located at Intake Station M5 had been experiencing reduced water quality over the last six months. An initial investigation was carried out of the monitoring data for Intake Station M5 and no overall decline in water quality was identified with the exception of six spikes in suspended solids concentration in 2005. An investigation identified four of the spikes were due to filling activities at IRAE (now finished) and two to discharges from Culvert L. The ET will meet with ArchSD to discuss their case and take samples of their intake water for analysis.

There were no new complaints in July 2005.

4.6 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 2005	Noise	Query over Contractors noise permit to operate during public holiday, Contract held appropriate permits. No action required.	Contractor, ET, IEC and ET.	N/A
	Dark Smoke	Complaint to EPD from member of public, dark smoke emitted from pelican barge. Barge was excluded from working onsite until problem solved.	EPD, Contractor, ER, IEC and ET	To date barge still excluded from site.
June 2005	Water	PLA made complaint concerning quality of intake water at Station M4A. Repaired silt screen.	PLA, CEDD, Contractor,, ER, IEC, ET	Case is currently undergoing further discussion with PLA.
	Water	ArchDS made complaint concerning quality of intake water at Station M5, initial investigation did not show elevated Suspended Solid levels.	ArchDS, CEDD, Contractor,, ER, IEC, ET	ER and ET will meet with ArchDS to further understand problem and take water samples at their water processing plant.

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

5. CONCLUSION

Air quality measurements were within the AL for TSP indicating that the project was not having an adverse impact on local air quality.

Noise exceedances were recorded in May, June and July, these exceedances were attributed to Hong Kong Electric's Contractor installing underground power cables in front of City Hall, which is directly in front of the noise monitoring location.

The water quality within the project area was found to be generally good during the reporting period. However, elevated DO and SS levels were recorded on a number of occasions. Investigations indicated that the exceedances were not due to project activities but more reflective of general water quality conditions in the area during the warm and wet summer months.

During environmental site inspections conducted during the reporting quarter, two non-compliances were noted for site drainage. The Contractor is in the process of rectifying these non-compliances by taking concrete steps on site. However, the Contractor is as yet to submit suitable construction drainage plans for the site.

No prosecutions were received during the reporting quarter.

In May one noise and one dark smoke complaint was received, which were resolved. In June, a water quality complaint was received from the PLA and also from ArchSD concerning the quality of their intake waters. These complaints are currently being further investigated.