

**Central Reclamation, Phase III
Quarterly EM&A Report No. 20
(May 2008 through July 2008)**

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Abbreviations & Acronyms

ACL	Atkins China Limited
AL	Action Level
CEDD	Civil Engineering and Development Department
CRIII	Central Reclamation Phase III
DO	Dissolved Oxygen
EIA	Environmental Impact Assessment
EIAO	Environmental Impact Assessment Ordinance
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
LL	Limit Level
PLA	People's Liberation Army Forces Hong Kong
TDD	Territory Development Department
TSP	Total Suspended Particulates
SS	Suspended Solids
WMP	Waste Management Plan

Not Used

Executive Summary

The Central Reclamation Phase III (CRIII) Works, Contract No. HK 12/02, was awarded to Leighton China State Van Oord Joint Venture (LCSVO-JV) by the Civil Engineering and Development Department (CEDD). (Previously called the Territory Development Department before merger with the Civil Engineering Department on 1st July 2004.)

The works under the Contract HK 12/02 commenced on 28th February 2003. Contract HK 16/03 for the CRIII Hinterland Drainage Improvement Works was awarded to Wang Kee Construction Co. Ltd., and works for this contract commenced on 17th December 2003.

Atkins China Limited (ACL) has been commissioned by CEDD as the Environmental Team (ET) to undertake the Environmental Monitoring and Audit (EM&A) programme described in the approved EM&A Manual for the CRIII Project.

This is the 20th 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 1st May 2008 to 31st July 2008.

Environmental Monitoring and Audit Progress

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

Exceedance of Action and Limit Levels

No exceedance in TSP level was recorded at the two monitoring stations during this reporting quarter.

Two exceedances of noise were recorded at the City Hall monitoring station on 26th July 2008. The exceedances may have been attributed to the Project works, possibly due to the concurrent operation of the backhoe and the sheet piling activity. The Contractor was advised to schedule the works at the former Queen's Pier carefully such that the backhoe operation and the sheeting piling activity will not be undertaken concurrently.

Water quality exceedances were recorded on 35 sampling days in this reporting quarter. The exceedances have been investigated and the exceedances of Action/Limit Level for SS occurred on 8 sampling days (5th, 13th, 17th, 19th, 21st and 23rd May, 2nd and 3rd June 2008) were considered to be potentially attributed to the Project as well as other external factors. All exceedances of Action/Limit Level for DO were considered to have been not related to the Project works.

Complaint Log

There were no complaints received in relation to environment impact during this reporting quarter.

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. Minor deficiencies noted during the site inspections were rectified by the Contractor upon receipt of notification. The observation and finding as below:

29th May 2008

The silt curtain at the small seawall gap (on the side facing Victoria Harbour) was seen to be slackened off at one end. The Contractor was reminded to fix the silt curtain properly.

19th June 2008

Fuel drums without drip tray were found near mobile crane at FRAW. The Contractor was reminded to provide drip tray for fuel drums if they need to be temporarily stored in the working areas. Fuel drums were observed stored in the chemical storage area during the site inspection on 26th June 2008.

17th July 2008

Large amount of scum was observed floating in Culvert J (especially near the upstream) during the site inspection. Discharge from the site to Culvert J was clear as seen and no specific scummy condition of the discharge from the site was observed thus it was considered not related to the Project. A follow-up inspection was undertaken on 18th July 2008 (09:30) regarding the scum condition at Culvert J. No scum was seen at the upstream of Culvert J (discharge outfall of the hinterland) and most of scum had dissipated. No scum was seen at Culvert J during the site inspection on 24th July 2008.

24th July 2008

One end of silt curtains at the South-East corner of FRAE was seen to be slackening off. Some muddy water was seen to diffuse out from the gap between silt curtain and seawall. The Contractor made the silt curtain tight before the end of site inspection. The Contractor was reminded to check the silt curtain regularly and ensure work well. The Contractor has installed an additional silt curtain at the South-East Corner of FRAE to prevent the dispersal of suspended solids.

A part of access roads in the site area (near Queens Pier') was observed dry. The Contractor was reminded to keep watering to prevent the dust emission from the road. No dusty roads were seen during the inspection on 31st July 2008

1. INTRODUCTION

1.1 Basic Project Information

The Main Works Contract HK 12/02 for CRIII commenced on 28th February 2003 and was awarded to Leighton-China State-Van Oord Joint Venture (LCSVO-JV) 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.

This is the 20th 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 1st May 2008 to 31st July 2008.

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 CEDD as the Environmental Team (ET) to undertake the Environmental Monitoring and Audit (EM&A) programme described in the approved EM&A Manual and required under Clause 4 of the Variation of Further Environmental Permit (No. EP-01/122/2003/A) issued to Leighton-China State-Van Oord Joint Venture in December 2007 for the CRIII Project. A variation of the Further Environmental Permit for the Project (EP-01/122/2003/B) was granted on 26th May 2008. This was then superseded by another variation of Further Environmental Permit for the Project (No. EP-01/122/2003/C) granted on 17th July 2008. The CRIII Project Organisation is shown 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 this reporting quarter include:

- Rockfilling and geotextile layer behind the seawall in FRAW;
- Type A filling in FRAW;
- Deep Compaction in FRAW
- Rockfilling behind the seawalls in FRAE;
- Structural works for Public Pier East (Pier No.10);
- Insitu works for Pumping Stations P6.1 and P7.1
- Diaphragm wall and barrette excavation and construction for the MTRC 40 metre EOT;
- Excavation of temporary drainage channel at the former Star Ferry;
- Remedial and outstanding works at and around Piers 7 & 8, Public Pier West and the CTB;
- Remedial and outstanding works at MYS Footbridge;
- General filling works above +2.5 mPD in IRAE;
- Construction of storm and foul drainage and gullies in hinterlands for Road P2,

Introduction

Road D7, Road D8 and Road D9 and adjacent to the GPO;

- Structural works, sheet-piling and excavation for Road P2 Underpass;
- Roadworks along Lung Wui Road and Tim Wa Avenue (Road) D8;
- Structural works for Culvert K extension – bays 2 to 3;
- Sheet-piling and excavation for Culvert K extension – bays 4 to 6; and
- Modification works to cooling main connections.

2. EM&A REQUIREMENTS

2.1 Summary of Impact EM&A Requirements

The EM&A programme requires environmental monitoring for air quality, noise, waster 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.	16 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

Additional impact water quality monitoring is required for the marine filling works using "Type A Fill" at FRAW as per Condition 3.3 of EP No. EP-01/122/2003/A, No. EP-01/122/2003/B and No. EP-01/122/2003/C. Monitoring parameters include SS, in situ measurements for DO, temperature, turbidity and salinity at 9, 8, and 4 monitoring stations, respectively. The additional water quality monitoring is conducted by the Contractor and the monitoring results are reported in the EM&A monthly report in accordance with the Additional Water Quality Monitoring Programme certified by the ET and verified by the IEC.

2.2 Environmental Quality Performance Limits

Environmental Quality Performance Limits for air quality, 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 quality, 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.

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

The graphical plot of air quality monitoring results for this reporting quarter is provided in **Annex F**. The measurement was cancelled due to heavy rain on 6th June 2008. (Amber rainstorm warning was issued at 13:20)

3.4 Noise Quality Monitoring Results

The graphical plot of noise monitoring results for this reporting quarter is provided in **Annex G**. Measurements between 24th June and 2nd July 2008 were cancelled due to lack of power supply during the E&M works undertaken at the City Hall. The power supply could not be repaired immediately due to inclement weather condition (heavy rainfall).

3.5 Water Quality Monitoring Results

The graphical plot of water quality monitoring results for this reporting 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 this reporting quarter.

3.7 Landscape and Visual Audit

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

Not Used

4. ENVIRONMENTAL COMPLAINT AND NON-COMPLIANCE

4.1 Environmental Exceedances

No exceedance in TSP level was recorded at the two monitoring stations during this reporting quarter.

Two exceedances of noise were recorded at the City Hall monitoring station on 26th July 2008. The exceedances may have been attributed to the Project works, possibly due to the concurrent operation of both the backhoe and the sheeting piling activity. The Contractor was advised to schedule the works at the former Queen’s Pier carefully such that the backhoe operation and the sheeting piling activity will not be undertaken concurrently. The Contractor had rescheduled their works at the former Queen’s Pier to avoid concurrent operation of the backhoe and vibrating hammer on 2nd August 2008.

Exceedances of water quality were recorded on 35 sampling days in this reporting quarter. Exceedances of the Action/Limit Level for DO were recorded on 29 of the sampling days and none were considered to be related to the Project works. Exceedances of the Action Level for SS were recorded on 7 of the sampling days. Exceedances of the Limit Level for SS were recorded on 3 of the sampling days. Exceedances of the Action and Limit Level for SS of sampling conducted by the Contractor were recorded on 13 of the sampling days. The exceedances have been investigated and the exceedances of 8 sampling days (5th, 13th, 17th, 19th, 21st and 23rd May, 2nd and 3rd June 2008) were considered to be potentially attributed to the project as well as other external factors. The water quality exceedances during this reporting quarter is summarised in Table 4.1.

Table 4.1 - Summary Water Quality Exceedances from May 2008 to July April 2008

Date	Tide	Parameter	Exceedance	Station
Water Quality Monitoring in Accordance with EM&A Manual				
2 nd May 2008	Mid-ebb	DO	AL	M1A, M2A, M3_M5A, M4B, M5B, M6, M11 and M12
	Mid-flood	DO	AL	M1A, M2A, M3_M5A, M4B, M5B, M6, M11 and M12
5 th May 2008	Mid-ebb	DO	AL	M1A, M2A, M3_M5A, M4B, M5B, M6, M11 and M12
	Mid-flood	DO	AL	M6
	Mid-ebb	SS	AL	M1A, M6, M8, M11 and M12
	Mid-flood	SS	AL	M3_M5A, M5B and M6
	Mid-flood	SS	LL	M1A and M11
7 th May 2008	Mid-flood	DO	AL	M6
	Mid-ebb	SS	AL	M1A, M3_M5A and M11
			LL	M6 and M12
	Mid-flood	SS	AL	M3_M5AA, M5B and M10
LL			M1A, M6, M11 and M12	
9 th May 2008	Mid-flood	SS	LL	M11
15 th May 2008	Mid-flood	DO	AL	M6
	Mid-ebb	SS	AL	M1A
17 th May 2008	Mid-ebb	DO	AL	M2A, M3_M5A, M4B, M5B, M6 and M12
	Mid-flood	DO	AL	M1A, M2A, M3_M5A, M4B, M5B, M6, M11 and M12
	Mid-ebb	SS	AL	M6A
	Mid-flood	SS	AL	M1A, M3_M5A and M5B

Date	Tide	Parameter	Exceedance	Station
19 th May 2008	Mid-ebb	DO	AL	M2A, M3_M5A, M4B and M5B
	Mid-flood	SS	AL	M1A
21 st May 2008	Mid-ebb	DO	AL	M1A and M11
	Mid-ebb	SS	AL	M6
	Mid-flood	SS	LL	M6
23 rd May 2008	Mid-ebb	DO	AL	M1A, M2A, M3_M5A, M4B, M5B, M6, M11 and M12
	Mid-flood	DO	AL	M6 and M12
26 th May 2008	Mid-flood	DO	AL	M1A, M2A, M3_M5A, M4B, M5B and M11
30 th May 2008	Mid-flood	DO	AL	M1A, M3_M5A, M5B, M6, M11 and M12
4 th June 2008	Mid-ebb	DO	AL	M1A, M3_M5A, M5B and M12
	Mid-flood	DO	AL	M1A, M2A, M3_M5A, M4B, M5B, M6, M11 and M12
6 th June 2008	Mid-ebb	DO	AL	M4B, M10 and M12
	Mid-flood	DO	AL	M6 and M12
14 th June 2008	Mid-ebb	DO	AL	M10(bottom depth)
	Mid-flood	DO	AL	M4B
16 th June 2008	Mid-ebb	DO	AL	M8(bottom depth) and M10(bottom depth)
	Mid-flood	DO	AL	M2A, M4B, M8(bottom depth), M10(bottom depth)
20 th June 2008	Mid-ebb	DO	AL	M8 and M10(bottom depth)
	Mid-flood	DO	AL	M2A, M3_M5A, M5B, M6, M11 and M12
		DO	LL	M1A and M4B
23 rd June 2008	Mid-flood	DO	AL	M2A, M3_M5A, M4B and M5B
30 th June 2008	Mid-ebb	DO	AL	M2A, M4B, M5B and M11
	Mid-flood	DO	AL	M1A, M2A, M3_M5A, M4B, M5B, M6, M11 and M12
2 nd July 2008	Mid-flood	DO	AL	M6
5 th July 2008	Mid-flood	DO	AL	M1A, M2A, M3_M5A, M4B, M5B, M6, M10(B), M11 and M12
7 th July 2008	Mid-flood	DO	AL	M1A, M2A, M3_M5A, M4B, M5B, M6, M11 and M12
9 th July 2008	Mid-ebb	DO	AL	M2A, M3_M5A, M4B, M6, M11 and M12
	Mid-flood	DO	AL	M1A, M2A, M3_M5A, M4B, M6, M10(S&M), M11 and M12
			LL	M5B
11 th July 2008	Mid-flood	DO	AL	M1A, M2A, M3_M5A, M4B, M5B, M6, M8(B), M11 and M12
14 th July 2008	Mid-ebb	DO	AL	M3_M5A, M8(S/M)
			LL	M8(B) and M10(B)
	Mid-flood	DO	AL	M1A, M6, M8(B), M10(B), M11 and M12
16 th July 2008	Mid-ebb	DO	AL	M2A, M4B, and M8(S&M)
			LL	M8(B) and M10(B)
	Mid-flood	DO	AL	M4B and M10(B)
18 th July 2008	Mid-ebb	DO	AL	M8(B) and M10(B)
21 st July 2008	Mid-flood	DO	AL	M1A, M2A, M3_M5A, M4B, M5B, M6, M11 and M12
23 rd July 2008	Mid-flood	DO	AL	M1A
25 th July 2008	Mid-flood	DO	AL	M2A
30 th July 2008	Mid-ebb	DO	AL	M4B
	Mid-flood	DO	AL	M6

Date	Tide	Parameter	Exceedance	Station
Additional Water Quality Monitoring for "Type A fill" Filling Works Conducted by the Contractor				
2 nd May 2008	Mid-flood	SS	LL	Combined marine impact monitoring station (AM1-AM3)
5 th May 2008	Mid-ebb & Mid-flood	SS	LL	Combined marine impact monitoring station (AM1-AM3)
7 th May 2008	Mid-ebb & Mid-flood	SS	LL	Combined marine impact monitoring station (AM1-AM3)
9 th May 2008	Mid-ebb & Mid-flood	SS	LL	Combined marine impact monitoring station (AM1-AM3)
13 th May 2008	Mid-ebb	SS	LL	Combined marine impact monitoring station (AM1-AM3)
17 th May 2008	Mid-flood	SS	LL	Combined marine impact monitoring station (AM1-AM3)
19 th May 2008	Mid-ebb & Mid-flood	SS	LL	Combined marine impact monitoring station (AM1-AM3)
21 st May 2008	Mid-ebb	SS	LL	Combined marine impact monitoring station (AM1-AM3)
23 rd May 2008	Mid-ebb & Mid-flood	SS	AL, LL	Combined marine impact monitoring station (AM1-AM3)
2 nd June 2008	Afternoon Session & Mid-flood	SS	AL, LL	Combined marine impact monitoring station (AM1-AM3)
3 rd June 2008	Mid-flood	SS	LL	Combined marine impact monitoring station (AM1-AM3)
5 th June 2008	Afternoon Session	SS	LL	Combined marine impact monitoring station (AM1-AM3)
13 th June 2008	Mid-ebb & Mid-flood	SS	LL	Combined marine impact monitoring station (AM1-AM3)

A statistical analysis (presented in **Annex D**) of the suspended solids monitoring results found that the quarterly mean is significantly less than 1.3 times of the ambient mean recorded during the baseline period. This indicates that the Project construction works did not cause adverse impacts during the reporting period with respect to the baseline condition.

4.2 Non-Compliance

No non-compliance with regard to site environmental audit was recorded during the reporting period.

4.3 Summary of Actions Taken by the Contractor

The Contractor has implemented the following measures to prevent air and water quality impacts:

- Contractor has implemented their Drainage Management Plan to Control Site Run-off for the wet season – actions completed and underway include: repair and improvement of existing bunds/sandbags on the edge of the reclamation; installation of additional bunds; compaction of soil surface and pathing where possible to prevent erosion, creation of drainage channels and soak pits.
- Provision a single *WetSep* flocculation based water treatment plant and additional settlement tanks to remove suspended solids from discharge waters;
- Provision of catch pits to collect spill over from wheel washing facilities; increased frequency of cleaning of catch-pits;

- Water browsing of haul roads and other areas of the site and covering of stockpiles.

4.4 Environmental Enquiries

No environmental enquiries were received during this reporting quarter.

4.5 Environmental Complaints and Prosecutions

No environmental complaints were received during this reporting quarter.

4.6 Record of Environmental Complaints and Summons & Prosecutions

There was no record of environmental complaints during this reporting quarter.

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

5. CONCLUSION

During the environmental site inspections conducted within this reporting quarter, no non-compliances were noted and no prosecutions were received during this reporting quarter.

No exceedance in TSP level was recorded at the two monitoring stations during this reporting quarter.

Two exceedances of noise were recorded at the City Hall monitoring station on 26th July 2008. The exceedances may have been attributed to the Project works, possibly due to the concurrent operation of both the backhoe and the sheeting piling activity. The Contractor was advised to schedule the works at the former Queen's Pier carefully such that the backhoe operation and the sheeting piling activity will not be undertaken concurrently. The Contractor had rescheduled their works at the former Queen's Pier to avoid concurrent operation of the backhoe and vibrating hammer on 2nd August 2008.

Water quality exceedances were recorded on 35 sampling days in this reporting quarter. The exceedances have been investigated and the exceedances of Action/Limit Level for SS occurred on 8 sampling days (5th, 13th, 17th, 19th, 21st and 23rd May, 2nd and 3rd June 2008) were considered to be potentially attributed to the project as well as other external factors. All exceedances of Action/Limit Level for DO were considered to have been not related to the Project works.