

**Central Reclamation, Phase III  
Quarterly EM&A Report No. 24  
(May 2009 through July 2009)**



	<b>Page</b>
<b>1. Introduction.....</b>	<b>1</b>
1.1 Basic Project Information.....	1
1.2 Project Organisation and Management Structure .....	1
1.3 Works Undertaken .....	1
<b>2. EM&amp;A Requirements.....</b>	<b>3</b>
2.1 Summary of Impact EM&A Requirements .....	3
2.2 Environmental Quality Performance Limits.....	3
2.3 Event Action Plan .....	4
<b>3. Environmental Status.....</b>	<b>5</b>
3.1 Implementation of Environmental Measures .....	5
3.2 Environmental Monitoring Locations .....	5
3.3 Air Quality Monitoring Results.....	5
3.4 Noise Quality Monitoring Results.....	5
3.5 Water Quality Monitoring Results .....	5
3.6 Solid and Liquid Waste Management Status .....	5
3.7 Landscape and Visual Audit .....	5
<b>4. Environmental Complaint and Non-Compliance .....</b>	<b>7</b>
4.1 Environmental Exceedances.....	7
4.2 Non-Compliance.....	9
4.3 Summary of Actions Taken by the Contractor.....	9
4.4 Environmental Enquiries.....	9
4.5 Environmental Complaints and Prosecutions .....	10
4.6 Record of Environmental Complaints and Summons & Prosecutions.....	10
<b>5. Conclusion .....</b>	<b>11</b>

**Contents**

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**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 Air Quality Monitoring Results
Annex G	Graphical Representation of Noise Quality Monitoring Results
Annex H	Graphical Representation of Water Quality Monitoring Results
Annex I	Quarterly Assessment of Construction Impacts on Suspended Solids

**List of Tables**

Table 2.1 - Summary of Impact EM&A Requirements .....	3
Table 4.1 - Summary Water Quality Exceedances from May 2009 to July 2009 .....	7

### **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

## **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 1<sup>st</sup> July 2004.)

The works under the Contract HK 12/02 commenced on 28<sup>th</sup> 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 17<sup>th</sup> 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 24<sup>th</sup> 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<sup>st</sup> May 2009 to 31<sup>st</sup> July 2009.

### ***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.

No exceedance in noise level was recorded at the City Hall monitoring station during this reporting quarter.

Water quality exceedances were recorded on 34 sampling days in this reporting quarter. All exceedances have been investigated. All exceedances of Action/Limit Level for DO were considered to have not been related to the Project works. All exceedances of Action/Limit Level for SS were considered to have not been 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.

### ***Environmental Observations***

During the 12<sup>th</sup> May 2009 environmental site inspection, EPD communicated with the ET and IEC that a report of muddy water near the works area of FRAE was received on 28<sup>th</sup> April 2009. The report was relayed to the Contractor on 28<sup>th</sup> April 2009.

After investigation by the Contractor, it was reported that the muddy water was due to a very high tide on the day (+2.4 mPD) which was higher than the concrete blocks, resulting in the detachment of some existing silt curtains and subsequent seepage of muddy water. An additional new curtain to enclose the seepage was being installed at the time of the observation, however the new curtain was not long enough to enclose the area. Further to this, an additional section of silt curtain was added on the same day (28<sup>th</sup> April 09), providing appropriate enclosure of seepage. The area was monitored closely by the Contractor with no further issues noted

### ***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 observations and findings are outlined below:

#### **7<sup>th</sup> May 2009**

The access roads in IRAE and FRAW were observed dry with dust. The Contractor arranged for site staff to water the access roads appropriately.

Muddy water was observed near the mouth of culvert F. The source was identified as the piling activity in the works area of FRAW. Sediment was released from the seabed due to the piling works which could not be trapped by the silt curtain. The piling activity was stopped by the Site Supervisor immediately after such observation. The Contractor suspended the related works until the issue was resolved.

#### **12<sup>th</sup> May 2009**

During the 12<sup>th</sup> May 2009 environmental site inspection, EPD communicated with the ET and IEC that a report of muddy water near the works area of FRAE was received on 28<sup>th</sup> April 2009. The report was relayed to the Contractor on 28<sup>th</sup> April 2009.

After investigation by the Contractor, it was reported that the muddy water was due to a very high tide on the day (+2.4 mPD) which was higher than the concrete blocks, resulting in the detachment of some existing silt curtains and subsequent seepage of muddy water. An additional new curtain to enclose the seepage was being installed at the time of the observation, however the new curtain was not long enough to enclose the area. Further to this, an additional section of silt curtain was added on the same day (28<sup>th</sup> April 09), providing appropriate enclosure of seepage. The area was monitored closely by the Contractor with no further issues noted.

#### **21<sup>st</sup> May 2009**

N.A.

**Executive Summary**

**27<sup>th</sup> May 2009**

N.A.

**4<sup>th</sup> June 2009**

The refuse skip was observed full (with flies in the vicinity) at the FRAE works area. The Contractor was reminded to ensure the refuse skip is cleared regularly and to ensure the surrounding area is clean.

A container of unidentifiable chemicals was placed on the ground without a drip tray near the refuse skip at the FRAE works area. The Contractor was reminded to store the container of unidentifiable chemicals in the chemical storage area appropriately.

**11<sup>th</sup> June 2009**

N.A.

**18<sup>th</sup> June 2009**

N.A.

**25<sup>th</sup> June 2009**

N.A.

**2<sup>nd</sup> July 2009**

N.A.

**9<sup>th</sup> July 2009**

N.A.

**16<sup>th</sup> July 2009**

N.A.

**23<sup>rd</sup> July 2009**

The silt curtains at culvert F were detached (due to recent typhoon). The Contractor was reminded to repair or replace the silt-curtain at culvert F as soon as possible and to ensure continuous maintenance.

**30<sup>th</sup> July 2009**

N.A.

## **1. INTRODUCTION**

### **1.1 Basic Project Information**

The Main Works Contract HK 12/02 for CRIII commenced on 28<sup>th</sup> 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 24<sup>th</sup> 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<sup>st</sup> May 2009 to 31<sup>st</sup> July 2009.

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 26<sup>th</sup> May 2008. This was then superseded by another variation of Further Environmental Permit for the Project (No. EP-01/122/2003/C) granted on 17<sup>th</sup> 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:

- Type A filling in FRAW and FRAE above +2.5mPD;
- Surcharging in FRAW and FRAE;
- Rockfilling behind the seawalls in FRAE;
- Construction of cantilever slab at caisson;
- Piling for Culvert F;
- Sheet piling, Excavation, Structural works and backfilling for Culvert F;
- Structural works for Public Pier East (Pier No.10);
- Structural works for the MTRC 40 metre EOT;
- General filling works above +2.5 mPD in IRAE;
- Construction of storm and foul drainage and gullies in hinterlands for Road P2, Road D7, Road D8 and Road D9 and adjacent to the GPO;
- Roadworks along Lung Wui Road, Tim Wa Avenue (Road D8) and Road P2;
- Excavation and structural works for Culvert K extension;
- Precasting for Culvert K, seawall blocks and retaining wall (offsite);

## **Introduction**

- Installation of cooling water mains for Tamar Development Project at IRAE;
- Construction of staircase structure of Man Yiu Street Footbridge;
- Site investigation and diaphragm walling for CRIII Protection Works.

## 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 <sub>10</sub> , L <sub>90</sub> .	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

### 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**.

#### **3.4 Noise Quality Monitoring Results**

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

#### **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.

#### 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.

No exceedance in noise level was recorded at City Hall monitoring stations during this reporting quarter.

Water quality exceedances were recorded on 34 sampling days in this reporting quarter. All exceedances have been investigated. All exceedances of Action/Limit Level for DO were considered to have not been related to the Project works. All exceedances of Action/Limit Level for SS were considered to have not been related to the Project works.

The water quality exceedances during this reporting quarter are summarised in Table 4.1.

**Table 4.1 - Summary Water Quality Exceedances from May 2009 to July 2009**

Date	Tide	Parameter	Exceedance	Station
<b>Water Quality Monitoring in Accordance with EM&amp;A Manual</b>				
6 <sup>th</sup> May 2009	Mid-Ebb	SS	LL	M10
	Mid-Flood	SS	AL	M6, M8, M10 and M11
			LL	M12
11 <sup>th</sup> May 2009	Mid-Ebb	SS	AL	M1A and M11
	Mid-Flood	SS	AL	M6
13 <sup>th</sup> May 2009	Mid-Flood	DO	AL	M6
15 <sup>th</sup> May 2009	Mid-Flood	DO	AL	M2A, M3_M5A and M4B
18 <sup>th</sup> May 2009	Mid-Ebb	DO	AL	M2A, M3_M5A, M4B, M5B and M11
	Mid-Flood	DO	AL	M1A and M11
20 <sup>th</sup> May 2009	Mid-Ebb	DO	AL	M2A and M4B
	Mid-Flood	DO	AL	M2A and M4B
22 <sup>nd</sup> May 2009	Mid-Flood	DO	AL	M3_M5A, M4B, M5B, M6 and M12
		SS	AL	M5B
25 <sup>th</sup> May 2009	Mid-Ebb	DO	AL	M2A, M4B and M5B
	Mid-Flood	DO	AL	M1A, M2A, M3_M5A, M4B, M5B, M6, M11 and M12
27 <sup>th</sup> May 2009	Mid-Ebb	DO	AL	M1A and M6
	Mid-Flood	DO	AL	M2A, M6 and M12
1 <sup>st</sup> June 2009	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 and M11
3 <sup>rd</sup> June 2009	Mid-Flood	DO	AL	M5B and M6
10 <sup>th</sup> June 2009	Mid-Flood	DO	AL	M2A, M3_M5A, M4B, M5B and M6
12 <sup>th</sup> June 2009	Mid-Ebb	DO	AL	M1A, M6, M10(S/M) and M12

Date	Tide	Parameter	Exceedance	Station
	Mid-Flood	DO	AL	M1A, M2A, M3_M5A, M4B, M5B, M6, M8(S/M), M10(S/M), M11 and M12
15 <sup>th</sup> June 2009	Mid-Flood	DO	AL	M1A, M2A, M3_M5A, M4B, M5B and M11
		SS	AL	M6
17 <sup>th</sup> June 2009	Mid-Flood	DO	AL	M1A, M2A and M4B
		SS	LL	M12
19 <sup>th</sup> June 2009	Mid-Ebb	DO	AL	M8(B) and M10(B)
	Mid-Flood	DO	AL	M1A, M2A, M4B, M6, M8(B) and M10(B)
22 <sup>nd</sup> June 2009	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
24 <sup>th</sup> June 2009	Mid-Ebb	DO	AL	M1A, M2A, M3_M5A, M4B, M5B, M6, M8(S/M), M10(S/M), M11 and M12
	Mid-Flood	DO	AL	M1A, M2A, M3_M5A, M4B, M5B, M8(S/M), M10(S/M), M11 and M12
LL			M6	
26 <sup>th</sup> June 2009	Mid-Ebb	DO	AL	M1A, M2A, M3_M5A, M4B, M5B, M6, M11 and M12
	Mid-Flood	DO	AL	M1A, M2A, M3_M5A, M4B, M5B, M8(S/M), M11 and M12
LL			M6	
30 <sup>th</sup> June 2009	Mid-Flood	DO	AL	M2A, M3_M5A, M4B, M5B, M6, M12
2 <sup>nd</sup> July 2009	Mid-Ebb	DO	AL	M8(B) and M10(B)
4 <sup>th</sup> July 2009	Mid-Flood	DO	AL	M2A, M4B, M6 and M12
6 <sup>th</sup> July 2009	Mid-Ebb	DO	AL	M1A, M2A, M3_M5A, M4B, M5B, M6, M8(B), M10(B), M10(S/M), M11 and M12
	Mid-Flood	DO	AL	M1A, M5B, M6, M8(B), M10(B), M10(S/M) and M12
8 <sup>th</sup> July 2009	Mid-Flood	DO	AL	M1A, M3_M5A, M5B, M6, M11 and M12
10 <sup>th</sup> July 2009	Mid-Flood	DO	AL	M2A and M12
13 <sup>th</sup> July 2009	Mid-Ebb	DO	AL	M1A, M2A, M3_M5A, M4B, M5B, M11 and M12
	Mid-Flood	DO	AL	M1A, M2A, M3_M5A, M4B, M5B, M6, M11 and M12
15 <sup>th</sup> July 2009	Mid-Flood	DO	AL	M2A, M3_M5A, M4B and M5B
17 <sup>th</sup> July 2009	Mid-Flood	DO	AL	M1A, M2A, M3_M5A, M4B, M5B, M6, M11 and M12
20 <sup>th</sup> July 2009	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
22 <sup>nd</sup> July 2009	Mid-Ebb	DO	AL	M1A, M2A, M3_M5A, M4B, M5B, M6, M11 and M12
	Mid-Flood	DO	AL	M1A, M2A, M4B and M11
24 <sup>th</sup> July 2009	Mid-Ebb	DO	AL	M12
	Mid-Flood	DO	AL	M1A, M2A, M3_M5A, M4B, M5B, M6, M11 and M12
27 <sup>th</sup> July 2009	Mid-Flood	DO	AL	M1A, M2A, M3_M5A, M4B, M5B, M6, M11 and M12
29 <sup>th</sup> July 2009	Mid-Ebb	DO	AL	M10(B)
	Mid-Flood	DO	AL	M2A and M4B
31 <sup>st</sup> July 2009	Mid-Ebb	DO	AL	M8(B)
	Mid-Flood	DO	AL	M6, M8(B) and M10(B)

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 paths where possible to prevent erosion, creation of drainage channels and soak pits;
- Provision of additional settlement tanks to remove suspended solids from discharge waters;
- Provision of catch pits to collect spill over from wheel washing facilities and increased frequency of cleaning of catch-pits; and
- 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 Environmental Observations**

During the 12<sup>th</sup> May 2009 environmental site inspection, EPD communicated with the ET and IEC that a report of muddy water near the works area of FRAE was received on 28<sup>th</sup> April 2009. The report was relayed to the Contractor on 28<sup>th</sup> April 2009.

After investigation by the Contractor, it was reported that the muddy water was due to a very high tide on the day (+2.4 mPD) which was higher than the concrete blocks, resulting in the detachment of some existing silt curtains and subsequent seepage of muddy water. An additional new curtain to enclose the seepage was being installed at the time of the observation, however the new curtain was not long enough to enclose the area. Further to this, an additional section of silt curtain was added on the same day (28<sup>th</sup> April 09), providing appropriate enclosure of seepage. The area was monitored closely by the Contractor with no further issues noted

#### **4.7 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.

No exceedance in noise level was recorded at City Hall monitoring station during this report quarter.

Water quality exceedances were recorded on 34 sampling days in this reporting quarter. All exceedances have been investigated. All exceedances of Action/Limit Level for DO were considered to have not been related to the Project works. All exceedances of Action/Limit Level for SS were considered to have not been related to the Project works.