

**Central Reclamation, Phase III  
Quarterly EM&A Report No. 23  
(February 2009 through April 2009)**



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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 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 23<sup>rd</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> February 2009 to 30<sup>th</sup> April 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.

35 exceedances in noise level were recorded at the City Hall monitoring station during February 2009 of the reporting period. Based on the observation and Contractor record, drilling and sheet piling activities were being undertaken in the works area of the former Queen's Pier during the monitoring period. Therefore, the exceedances may have been attributed to the Project works, possibly due to the concurrent operation of both the drilling and sheet piling activities.

ET communicated exceedances to the Contractor representative accordingly and it was suggested that the Contractor schedule the construction activities at the former Queen's Pier carefully and that concurrent operation of both the drilling and sheet piling activities should be avoided. Following three such notifications, a meeting was scheduled and held on 2nd March 2009 at 14:00 with ET, Contractor representative, RE and IEC in attendance where the noise exceedances were discussed along with further mitigation measures.

Further mitigation measures were carried out, whereby the Contractor representative provided guidelines to frontline staff to continue with previous guidelines and to also stagger lunch breaks to avoid such exceedances. Furthermore, additional noise mats were installed at existing noise barrier. A review of noise data from 14:05 on 27<sup>th</sup> February to 5th March 2009 showed that no further noise exceedance occurred.

## **Executive Summary**

On 23rd February 2009, there were maintenance works on the box containing the sound level meter. As such, the noise exceedances on this day are considered to be attributed to the maintenance works rather than the project works.

Water quality exceedances were recorded on 30 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.

### ***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:

#### **5<sup>th</sup> February 2009**

A stockpile was observed without cover near P2 roads work area in IRAE. The contractor was reminded to cover stockpiles when unused.

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

N.A.

#### **19<sup>th</sup> February 2009**

N.A.

#### **26<sup>th</sup> February 2009**

- Dark smoke emission was observed from the air compressor in the FRAW works area. The Contractor was reminded to maintain and inspect equipment appropriately to prevent smoke emission.
- Muddy water was found on the caisson surface near the mouth of Culvert J and brownish water was also observed near the mouth of Culvert J. The investigation revealed that the muddy water was due to the unloading of materials from the barge during the morning of 26<sup>th</sup> February 2009. The Contractor was reminded to prevent material leakage during barge unloading.

#### **5<sup>th</sup> March 2009**

N.A.

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

- Rubbish was trapped by the silt curtain in the culvert F. The Contractor was reminded to collect rubbish at culvert F regularly.
- The additional silt curtains installed at the sea opening in FRAW were not installed appropriately. The Contractor was reminded to install and maintain the additional silt curtains at the sea opening in FRAW appropriately to ensure efficient functioning.

#### **20<sup>th</sup> March 2009**

N.A.

#### **26<sup>th</sup> March 2009**

N.A.

#### **2<sup>nd</sup> April 2009**

**Executive Summary**

- A patch of contaminated soil was observed in the work area of CR16 due to relocation of a generator. The Contractor was reminded to collect and dispose of the contaminated soil as chemical waste.
- Drums containing chemicals were stored without drip trays in the works area of Tun Wo Lane. In addition, runoff (of water which was clear at the time) was discharged without the use of a sediment tank. The Contractor was reminded to provide drip trays for temporary chemical storage in the works area and also to provide sediment tanks for discharge from the works area. The Contractor stopped the works at Tun Wo Lane in order for implementation of a sediment tank.
- Silt was observed on the public road at the site entrance on Man Yiu Street. The Contractor was reminded to ensure that all vehicles leaving the site should utilise the wheel washing facility appropriately.

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

- Some general refuse including wood material was observed in the works area at IRAE. The Contractor was reminded to collect refuse regularly and to ensure site tidiness.
- A container of unidentifiable liquid was found near the access road of IRAE. The Contractor was reminded to treat and dispose of the container of unidentifiable liquid as chemical waste.
- Muddy water was observed upstream of Culvert F which may be caused by the excavation work in the region. However, no muddy discharge was observed at the mouth of culvert F at Victoria Harbour. The Contractor was reminded to prevent muddy discharge from the site and to provide enough silt curtains in the culvert for precaution.

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

Muddy water was observed at Victoria Harbour near Pumping Station 7.1. This was observed on the outside of the site boundary, exterior to the silt curtain on the mouth of culvert F. However, no muddy water was observed on the inside of the site boundary, interior to the silt curtain. The source of the muddy water was unidentifiable after investigation by the Contractor, IEC and ET during the inspection, and had disappeared before the end of the inspection. The Contractor was reminded to closely monitor the situation and to ensure that no muddy water is discharged to Victoria Harbour from the site. The Contractor has arranged frontline staff for such monitoring.

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

Dark smoke emission was observed from the air-compressor in the FRAW works area. The Contractor was reminded to maintain and inspect equipment appropriately to prevent dark smoke emission

**30<sup>th</sup> April 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 23<sup>rd</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> February 2009 to 30<sup>th</sup> April 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;
- Installation of seawall blocks in FRAE & FRAW;
- Construction of cantilever slab at caisson;
- Piling for Culvert F;
- Sheet piling, Excavation and Structural works 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 ;

**Introduction**

- Precasting for Culvert K, seawall blocks and retaining wall (offsite);
- Installation of cooling water mains for Tamar Development Project at IRAE;
- 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.

*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.

35 exceedances in noise level were recorded at the City Hall monitoring station during February 2009 of the reporting period. Based on the observation and Contractor record, drilling and sheet piling activities were being undertaken in the works area of the former Queen’s Pier during the monitoring period. Therefore, the exceedances may have been attributed to the Project works, possibly due to the concurrent operation of both the drilling and sheet piling activities.

ET communicated exceedances to the Contractor representative accordingly and it was suggested that the Contractor schedule the construction activities at the former

Queen’s Pier carefully and that concurrent operation of both the drilling and sheet piling activities should be avoided. Following three such notifications, a meeting was scheduled and held on 2nd March 2009 at 14:00 with ET, Contractor representative, RE and IEC in attendance where the noise exceedances were discussed along with further mitigation measures.

Further mitigation measures were carried out, whereby the Contractor representative provided guidelines to frontline staff to continue with previous guidelines and to also stagger lunch breaks to avoid such exceedances. Furthermore, additional noise mats were installed at existing noise barrier. A review of noise data from 14:05 on 27<sup>th</sup> February to 5<sup>th</sup> March 2009 showed that no further noise exceedance occurred.

On 23rd February 2009, there were maintenance works on the box containing the sound level meter. As such, the noise exceedances on this day are considered to be attributed to the maintenance works rather than the project works.

Water quality exceedances were recorded on 30 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 February 2009 to April 2009**

Date	Tide	Parameter	Exceedance	Station
<b>Water Quality Monitoring in Accordance with EM&amp;A Manual</b>				
2 <sup>nd</sup> February 2009	Mid-Ebb	SS	AL	M1A
9 <sup>th</sup> February 2009	Mid-Ebb	SS	AL	M6
11 <sup>th</sup> February 2009	Mid-Ebb	SS	LL	M11

Date	Tide	Parameter	Exceedance	Station
	Mid-Flood	SS	AL	M1A, M3_M5A and M11
13 <sup>th</sup> February 2009	Mid-Ebb	SS	AL	M5B
	Mid-Flood	SS	AL	M1A, M5N, M6, M11 and M12
			LL	M12
16 <sup>th</sup> February 2009	Mid-Flood	SS	AL	M1A and M11
20 <sup>th</sup> February 2009	Mid-Ebb	SS	AL	M5B
			LL	M3_M5A
	Mid-Flood	SS	AL	M3_M5A
23 <sup>rd</sup> February 2009	Mid-Ebb	SS	AL	M3_M5A, M5B and M6
			LL	M12
	Mid-Flood	DO	AL	M1A and M5B
25 <sup>th</sup> February 2009	Mid-Ebb	DO	AL	M1A, M6 and M12
		SS	AL	M1A, M6 and M11
	Mid-Flood	DO	AL	M6 and M12
27 <sup>th</sup> February 2009	Mid-Ebb	DO	AL	M1A, M6 and M12
		SS	AL	M1A and M3_M5A
			LL	M5B and M11
	Mid-Flood	DO	AL	M6 and M12
		SS	AL	M11
4 <sup>th</sup> March 2009	Mid-Flood	DO	AL	M6
11 <sup>th</sup> March 2009	Mid-Ebb	SS	AL	M11 and M12
	Mid-Flood	SS	AL	M3_M5A and M5B
13 <sup>th</sup> March 2009	Mid-Ebb	SS	AL	M8 and M11
			LL	M1A
	Mid-Flood	SS	AL	M10 and M5B
			LL	M3_M5A and M11
16 <sup>th</sup> March 2009	Mid-Ebb	SS	AL	M11
18 <sup>th</sup> March 2009	Mid-Flood	DO	AL	M3_M5A, M5B, M6 and M12
20 <sup>th</sup> March 2009	Mid-Ebb	DO	AL	M4B
	Mid-Flood	DO	AL	M6
23 <sup>rd</sup> March 2009	Mid-Flood	DO	AL	M6
25 <sup>th</sup> March 2009	Mid-Flood	SS	AL	M5B
27 <sup>th</sup> March 2009	Mid-Flood	SS	AL	M5B
30 <sup>th</sup> March 2009	Mid-Ebb	SS	LL	M12
	Mid-Flood	SS	LL	M12
1 <sup>st</sup> April 2009	Mid-Ebb	SS	AL	M3_M5A
6 <sup>th</sup> April 2009	Mid-Ebb	DO	AL	M6
		SS	AL	M1A, M3_M5A and M5B
	Mid-Flood	DO	AL	M6
8 <sup>th</sup> April 2009	Mid-Ebb	DO	AL	M1A, M2A, M3_M5A, M5B and M6
		SS	LL	M1A
	Mid-Flood	SS	AL	M10

Date	Tide	Parameter	Exceedance	Station
10 <sup>th</sup> April 2009	Mid-Flood	SS	AL	M1A, M3_M5A, M5B and M11
14 <sup>th</sup> April 2009	Mid-Ebb	SS	AL	M11
	Mid-Flood	DO	AL	M2A
16 <sup>th</sup> April 2009	Mid-Flood	DO	AL	M1A, M2A, M3_M5A, M4B, M5B, M6, M11 and M12
18 <sup>th</sup> April 2009	Mid-Flood	DO	AL	M6
21 <sup>st</sup> April 2009	Mid-Ebb	DO	AL	M6
23 <sup>rd</sup> April 2009	Mid-Ebb	SS	AL	M1A
25 <sup>th</sup> April 2009	Mid-Ebb	DO	AL	M2A, M3_M5A, M4B and M5B
	Mid-Flood	DO	AL	M2A, M3_M5A, M5B, M6 and M12
27 <sup>th</sup> April 2009	Mid-Flood	DO	AL	M6

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 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 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 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.

35 exceedances in noise level were recorded at the City Hall monitoring station during February 2009 of the reporting period. Based on the observation and Contractor record, drilling and sheet piling activities were being undertaken in the works area of the former Queen's Pier during the monitoring period. Therefore, the exceedances may have been attributed to the Project works, possibly due to the concurrent operation of both the drilling and sheet piling activities.

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**Conclusion**

*Not Used*

