

**Central Reclamation, Phase III  
Quarterly EM&A Report No. 15  
(February 2007 through April 2007)**







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|          |  |
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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**

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 July 2004.)

The works under the Contract HK 12/02 commenced on 28 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 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 15<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 February 2007 to 30 April 2007.

**Environmental Monitoring and Audit Progress**

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

**Exceedance of Action and Limit Levels**

In February 2006 and April 2007:

No exceedance in TSP level was recorded at the monitoring station during the sampling period.

Noise exceedances were recorded on the 9 and 19 February 2007.

Water quality exceedances for this quarter are tabulated below: -

| Date      | Tide      | Parameter | Exceedance | Station                          |
|-----------|-----------|-----------|------------|----------------------------------|
| 14-Feb-07 | Mid-Flood | DO        | AL         | M6                               |
| 23-Feb-07 | Mid-Ebb   | SS        | LL         | M1A                              |
|           | Mid-Flood | DO        | AL         | M10(B)                           |
| 26-Feb-07 | Mid-Flood | DO        | AL         | M6                               |
| 5-Mar-07  | Mid-Flood | SS        | AL         | M12                              |
| 07-Mar-07 | Mid-Ebb   | DO        | AL         | M4A,M5,M6                        |
|           | Mid-Flood | DO        | AL         | M4A, M5                          |
| 09-Mar-07 | Mid-Ebb   | DO        | AL         | M1A,M3,M4A,M5,M6 and M12         |
|           | Mid-Flood | DO        | AL         | M1A,M2A,M3,M4A,M6,M11 and M12    |
| 16-Mar-07 | Mid-Ebb   | DO        | AL         | M2A,M3,M4A and M5                |
|           | Mid-Flood | DO        | AL         | M1A,M2A,M3,M4A,M5,M6,M11 and M12 |

**Executive Summary**

|           |           |    |    |  |
|-----------|-----------|----|----|--|
| 19-Mar-07 | Mid-Flood | DO | AL | M6   |
| 21-Mar-07 | Mid-Flood | SS | AL | M6   |
| 26-Mar-07 | Mid-Ebb   | DO | AL | M4A and M5                                     |
|           | Mid-Flood | DO | AL | M5,M6 and M12                                  |
| 28-Mar-07 | Mid-Ebb   | DO | AL | M6 and M12                                     |
|           | Mid-Flood | DO | AL | M3,M4A,M5 and M6                               |
| 30-Mar-07 | Mid-Ebb   | DO | AL | M4A,M5,M6 and M12                              |
| 2-Apr-07  | Mid-Ebb   | DO | AL | M3, M4A, M5, M6 and M12                        |
| 06-Apr-07 | Mid-Ebb   | DO | AL | M2A, M3, M4A, M5 and M12                       |
|           | Mid-Flood | DO | AL | M1A, M2A, M3, M4A, M5, M6 and M12.             |
| 09-Apr-07 | Mid-Ebb   | DO | AL | M3, M4A, M5 and M12                            |
|           | Mid-Flood | DO | AL | M1A, M2A, M3, M4A, M5, M6, M11 and M12         |
| 11-Apr-07 | Mid-Flood | DO | AL | M3, M4A, M5, M6 and M12                        |
| 13-Apr-07 | Mid-Ebb   | DO | AL | M1A, M2A, M3, M4A, M5, M6, M11 and M12         |
|           | Mid-Flood | DO | AL | M1A, M2A, M3, M4A, M5, M6, M11 & M12           |
| 16-Apr-07 | Mid-Ebb   | DO | AL | M3 and M4A                                     |
|           |           |    | LL | M5   |
|           |           | SS | AL | M10  |
|           | Mid-Flood | DO | AL | M3, M5 and M6                                  |
| 18-Apr-07 | Mid-Flood | DO | AL | M3   |
| 20-Apr-07 | Mid-Ebb   | DO | AL | M3 and M6                                      |
|           | Mid-Flood | DO | AL | M3 and M4A                                     |
| 23-Apr-07 | Mid-Ebb   | DO | AL | M3   |
|           | Mid-Flood | DO | AL | M1A, M3, M4A, M5B, M6 and M12                  |
| 25-Apr-07 | Mid-Ebb   | DO | AL | M2A, M3, M3_M5A, M4A, M5B, M6, M11and M12      |
|           | Mid-Flood | DO | AL | M1A, M2A, M3, M3_M5A, M4A, M5B, M6, M11and M12 |
| 27-Apr-07 | Mid-Ebb   | DO | AL | M1A, M3, M4A, M6 and M8(S/M)                   |
|           | Mid-Flood | DO | AL | M3   |
| 30-Apr-07 | Mid-Ebb   | DO | AL | M2A, M3, M3_M5A, M4A and M6                    |
|           | Mid-Flood | DO | AL | M2A, M3, M3_M5A, M4A, M5B, M6 and M12          |

**Complaint Log**

There were no complaints received in relation to environment impact during the reporting period.

**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.



## **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 15<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 February 2007 to 30 April 2007.

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 Further Environmental Permit (No. FEP-01/122/2003) issued to Leighton-China State-Van Oord Joint Venture in May 2005 for the CRIII Project. An Independent Environmental Checker (IEC) has been employed to audit the EM&A programme.

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 the quarter included:

- Dredging in FRAW and in FRAE
- Rockfilling for the seawall mound in FRAW
- Piling for Public Pier East (Pier No. 10)
- Site Investigation in FRAW
- Remedial and outstanding works at and around Piers 7 & 8 and the CTB;
- Remedial and outstanding works at Public Pier West;
- Testing and Commissioning and the trial run of Pump Station P9.1;
- MYS Footbridge –Finishing Works;
- General filling works above +2.5 mPD in IRAE;
- Construction of storm and foul drainage in hinterlands for Road P2, Road D7, Road D8 and Road D9;
- Structural works for Culvert J extension in IRAE;
- Excavation for PLA cooling water intake in IRAE and;
- Temporary works and excavation for Road P2 Underpass.
- Site Investigation for the Construction of Culvert K.

*Not Used*

**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**

| <b>Parameters</b>              | <b>Descriptions</b>   | <b>Locations</b>                               | <b>Frequencies</b>                         | <b>Duration</b>   |
|--------------------------------|---|--|--|---|
| <i>TSP</i>                     | <i>24-Hour TSP</i>  | <i>2 Locations</i>                             | <i>Once every 6 days</i>                   | <i>During dust generating construction works</i>                            |
|                                | <i>1-Hour TSP</i>   | <i>2 Locations</i>                             | <i>Three times in every 6 days</i>         | <i>During dust generating construction works</i>                            |
| <i>Noise</i>                   | <i>Leq (30 mins), L<sub>10</sub>, L<sub>90</sub>,</i>                                 | <i>1 Location</i>                              | <i>Continuous measurements</i>             | <i>Two weeks before Construction and During Construction</i>                |
| <i>Water Quality</i>           | <i>Dissolved Oxygen;<br/>Salinity;<br/>Temp;<br/>Suspended Solids;<br/>Turbidity.</i> | <i>16 Locations</i>                            | <i>3 times a week, Mid-ebb/flood tides</i> | <i>During Marine Works and for 4 weeks after completion of Marine Works</i> |
| <i>Waste</i>                   | <i>On-Site Waste Audit</i>  | <i>Active Work Sites</i>                       | <i>Periodically</i>                        | <i>During Construction</i>  |
|                                | <i>On-Site Waste Inspection</i>   |  |  |   |
| <i>Landscape and Visual</i>    | <i>Audits to ensure effective implementation of mitigation measures</i>               |  |  | <i>During Construction</i>  |
| <i>General Site Conditions</i> | <i>Environmental Site Inspection</i>  | <i>Works areas and areas affected by works</i> | <i>Periodically</i>                        | <i>During Construction</i>  |

## **2.2 Environmental Quality Performance Limits**

Environmental Quality Performance Limits for air, 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.

#### **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 is provided in **Annex F**.

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

There have been periods of failure of the noise meter in the middle of the month. 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.

*Not Used*

**4. ENVIRONMENTAL COMPLAINT AND NON-COMPLIANCE**

**4.1 Environmental Exceedances**

In February 2007 and April 2007:

No exceedances in 1-hour and 24-hours TSP was recorded at the City Hall monitoring station during the reporting period.

Noise exceedances were recorded on the 9 and 19 February 2007 at the City Hall monitoring station. On 9 February 2007, the noise exceedance was caused by ground works involving hand-held breakers carried out by EMSD in front of the city hall. On 19 February 2007, there were no construction activities carried out at CR3 during the Chinese New Year holiday and hence the exceedance was not works related.

Water quality exceedances for the quarter are given below: -

| Date      | Tide      | Parameter | Exceedance | Station                                |
|-----------|-----------|-----------|------------|--|
| 14-Feb-07 | Mid-Flood | DO        | AL         | M6                                     |
| 23-Feb-07 | Mid-Ebb   | SS        | LL         | M1A                                    |
|           | Mid-Flood | DO        | AL         | M10(B)                                 |
| 26-Feb-07 | Mid-Flood | DO        | AL         | M6                                     |
| 5-Mar-07  | Mid-Flood | SS        | AL         | M12                                    |
| 07-Mar-07 | Mid-Ebb   | DO        | AL         | M4A,M5,M6                              |
|           | Mid-Flood | DO        | AL         | M4A, M5                                |
| 09-Mar-07 | Mid-Ebb   | DO        | AL         | M1A,M3,M4A,M5,M6 and M12               |
|           | Mid-Flood | DO        | AL         | M1A,M2A,M3,M4A,M6,M11 and M12          |
| 16-Mar-07 | Mid-Ebb   | DO        | AL         | M2A,M3,M4A and M5                      |
|           | Mid-Flood | DO        | AL         | M1A,M2A,M3,M4A,M5,M6,M11 and M12       |
| 19-Mar-07 | Mid-Flood | DO        | AL         | M6                                     |
| 21-Mar-07 | Mid-Flood | SS        | AL         | M6                                     |
| 26-Mar-07 | Mid-Ebb   | DO        | AL         | M4A and M5                             |
|           | Mid-Flood | DO        | AL         | M5,M6 and M12                          |
| 28-Mar-07 | Mid-Ebb   | DO        | AL         | M6 and M12                             |
|           | Mid-Flood | DO        | AL         | M3,M4A,M5 and M6                       |
| 30-Mar-07 | Mid-Ebb   | DO        | AL         | M4A,M5,M6 and M12                      |
| 2-Apr-07  | Mid-Ebb   | DO        | AL         | M3, M4A, M5, M6 and M12                |
| 06-Apr-07 | Mid-Ebb   | DO        | AL         | M2A, M3, M4A, M5 and M12               |
|           | Mid-Flood | DO        | AL         | M1A, M2A, M3, M4A, M5, M6 and M12.     |
| 09-Apr-07 | Mid-Ebb   | DO        | AL         | M3, M4A, M5 and M12                    |
|           | Mid-Flood | DO        | AL         | M1A, M2A, M3, M4A, M5, M6, M11 and M12 |
| 11-Apr-07 | Mid-Flood | DO        | AL         | M3, M4A, M5, M6 and M12                |
| 13-Apr-07 | Mid-Ebb   | DO        | AL         | M1A, M2A, M3, M4A, M5, M6, M11 and M12 |
|           | Mid-Flood | DO        | AL         | M1A, M2A, M3, M4A, M5, M6, M11 & M12   |
| 16-Apr-07 | Mid-Ebb   | DO        | AL         | M3 and M4A                             |
|           |           | LL        | LL         | M5                                     |
|           | SS        | AL        | M10        |  |

|           |           |    |    |  |
|-----------|-----------|----|----|--|
| 18-Apr-07 | Mid-Flood | DO | AL | M3, M5 and M6                                  |
|           | Mid-Flood | DO | AL | M3   |
| 20-Apr-07 | Mid-Ebb   | DO | AL | M3 and M6                                      |
|           | Mid-Flood | DO | AL | M3 and M4A                                     |
| 23-Apr-07 | Mid-Ebb   | DO | AL | M3   |
|           | Mid-Flood | DO | AL | M1A, M3, M4A, M5B, M6 and M12                  |
| 25-Apr-07 | Mid-Ebb   | DO | AL | M2A, M3, M3_M5A, M4A, M5B, M6, M11and M12      |
|           | Mid-Flood | DO | AL | M1A, M2A, M3, M3_M5A, M4A, M5B, M6, M11and M12 |
| 27-Apr-07 | Mid-Ebb   | DO | AL | M1A, M3, M4A, M6 and M8(S/M)                   |
|           | Mid-Flood | DO | AL | M3   |
| 30-Apr-07 | Mid-Ebb   | DO | AL | M2A, M3, M3_M5A, M4A and M6                    |
|           | Mid-Flood | DO | AL | M2A, M3, M3_M5A, M4A, M5B, M6 and M12          |

Exceedances of the AL for DO were observed on the 14, 23, 26-Feb 2007, 7, 9, 16, 19, 26, 28, 30-Mar 2007, 2, 6, 9, 11, 13, 16, 18, 20, 23, 25, 27 and 30-Apr 2007. Exceedances of the LL for DO were observed on the 16-Apr 2007. All exceedances observed were not expected to have been directly related to project works as no marine works nor run-off from the site were observed during the days. The exceedances could be attributed to natural variation in ambient conditions rather than the project works.

Exceedances of the AL for SS were observed at M1A (on 23-Feb 2007), M6 (on 21-Mar 2007), M10 (on 16-Apr 2007) and M12 (on 5-Mar 2007).

## 4.2 Non-Compliance

No environmental no-compliances were reported in the quarter.

## 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 the reporting quarter.

#### **4.5 Environmental Complaints and Prosecutions**

No environmental complaints were received during the reporting quarter.

#### **4.6 Record of Environmental Complaints and Summons & Prosecutions**

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

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

*Not Used*

## **5. CONCLUSION**

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

No exceedances in 1-hour and 24-hours TSP were recorded at the City Hall monitoring station during the reporting period.

Noise exceedances were recorded on the 9 and 19 February 2007 at the City Hall monitoring station. On 9 February 2007, the noise exceedance was caused by ground works involving hand-held breakers carried out by EMSD in front of the city hall. On 19 February 2007, there were no construction activities carried out at CR3 during the Chinese New Year holiday and hence the exceedance was not works related.

Exceedances of the AL for DO were observed on the 14, 23, 26-Feb 2007, 7, 9, 16, 19, 26, 28, 30-Mar 2007, 2, 6, 9, 11, 13, 16, 18, 20, 23, 25, 27 and 30-Apr 2007. Exceedances of the LL for DO were observed on the 16-Apr 2007. All exceedances observed were not expected to have been directly related to project works as no marine works nor run-off from the site were observed during the days. The exceedances could be attributed to natural variation in ambient conditions rather than the project works.

Exceedances of the SS were observed at M1A (on 23-Feb 2007), M6 (on 21-Mar 2007), M10 (on 16-Apr 2007) and M12 (on 5-Mar 2007). All exceedances were not considered to have been related to project works.



***Annex A***

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***Project Organisation/  
Contact Information***



***Annex B***

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***Quality Performance Limits for  
Air, Noise and Water Quality***



***Annex C***

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***Event Action Plans for  
Air, Noise and Water Quality***



***Annex D***

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***Monitoring Stations Locations***



***Annex E***

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***Contractor's Work Programme***



***Annex F***

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***Graphical Representation of  
Air Quality Monitoring Results***



***Annex G***

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***Graphical Representation of  
Noise Monitoring Results***



***Annex H***

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***Graphical Representation of  
Water Quality Monitoring Results***