

**Central Reclamation, Phase III
Environmental Monitoring & Audit
Monthly Report No. 12
July 2004**

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ACL	Atkins China Limited
CEDD	Civil Engineering and Development Department
CRIII	Central Reclamation Phase III
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
TDD	Territory Development Department
TSP	Total Suspended Particulates
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 Territory Development Department (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), Hong Kong Islands and Islands Development Office. 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 appointed by CEDD 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 (ET) services during the duration of the construction works.

This is the twelfth Monthly EM&A Report under the EIAO 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 programme during the reporting period from 1 to 31 July 2004.

Environmental Monitoring and Audit Progress

The monthly EM&A programme was undertaken in accordance with the EM&A Manual. A summary of the monitoring activities performed in this reporting month is listed below:

- Environmental site inspections were undertaken on 8, 15, 22 and 29 July 2004.
- Noise monitoring was performed continuously for 24 hours.
- Water quality monitoring was undertaken on the following days:
 - 2 July 2004
 - 5 July 2004
 - 7 July 2004
 - 9 July 2004
 - 12 July 2004
 - 14 July 2004
 - 19 July 2004
 - 21 July 2004
 - 23 July 2004
 - 26 July 2004
 - 28 July 2004
 - 30 July 2004
 - 31 July 2004 (Ad-hoc)

Exceedance of Action and Limit Levels

There was no environmental air quality monitoring required during the reporting period.

Continuous noise monitoring was carried out during the reporting period and no noise quality exceedances were recorded.

From the analysis of water quality monitoring results collected during the reporting period, it was found that the exceedances of the Action and Limit Levels were generally not attributable to the project marine works. Although DO levels below the Action Level were observed at seawater intake and marine-based stations, investigations found that they were due to natural variation or changes in ambient conditions and not caused by the project marine works. It was noted that when the DO Action Level was exceeded at the marine-based stations the control stations recorded similarly low DO levels.

The monitoring results from 23, 26 and 28 July 2004 showed elevated concentrations of SS at stations M4, M6 and M11. Investigations into these monitoring results found that the SS levels may have been attributed to project marine works and appropriate actions were undertaken in accordance with the Event and Action Plan for water quality. Daily monitoring of SS was initiated and the results on 30 and 31 July 2004 showed that SS levels have reduced significantly and no further exceedances were recorded. An environmental meeting has been scheduled for early August to discuss the Contractor's present working practices.

Complaint Log

No environmental complaints were received during the reporting period.

Notifications of Summons and Prosecutions

There were no notifications of summons or prosecutions received with regard to the environment during this reporting period.

Site Inspection and Audit

Environmental site inspections for the CRIII project works area were undertaken on 8, 15, 22 and 29 July 2004. No environmental non-conformance and deficiencies were observed during the site inspections.

Future Key Issues

Future Key Issues are as follows:

- Sand filling works
- Marine piling works
- Landside piling for the Central Terminal Building (CTB)
- Superstructure works for Pier No. 7
- Cooling water mains works at Lung Wui Road
- Demolition of existing concrete slab at the old heliport

1. INTRODUCTION

1.1 Basic Project Information

The Territory Development Department (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 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 28th 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. 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 TDD (now called CEDD) to undertake the environmental monitoring and audit work for the project in accordance with the Environmental Permit (EP No. EP-122/2002) issued to TDD on 7 March 2002. The CRIII Project Organisation is shown in **Annex A**.

This is the twelfth monthly EM&A Report under the EIAO, which presents the results of EM&A work conducted during the period from 1 to 31 July 2004, inclusive.

2. ENVIRONMENTAL STATUS

2.1 Works Undertaken

The works undertaken during the reporting month include marine piling, rock filling, sand filling, pre-bored H-piling work for the Central Terminal Building (CTB), landside cooling water mains work and maintenance and necessary repair work for seawater intake silt screens.

2.2 Environmental Permits

A summary of the status of all environmental permits, license, and/or notification to EPD for this project during the reporting period are presented in **Table 2.1**.

Table 2.1 - Summary of the Environmental License / Permit Status

Item	Item Description	Date of Application	Permit Status
1	LCSVO-JV submitted an Application for Renewal of Construction Noise Permit (PP-TS0002-04) for percussive piling near Pier 7, Central (Ref. H2189/U2c/8274/MP/DS/ST/ec).	20 July 2004	–
2	LCSVO-JV submitted a Test Report for Treated Effluent (Wastewater Discharge Licence No. EP880/W10/XX0192)	19 July 2004	–
3	LCSVO-JV submitted a notification for the Surrender of Wastewater Discharge Licence No. EP860/W10/XY0093 (Ref. H2189/U2c/8246/MP/DC/ST/ec)	19 July 2004	–
4	LCSVO-JV submitted an Application for a Permit to Dump Material (Contaminated Sediment) at Sea under the Dumping at Sea Ordinance (Ref. H2189/U2c/8083/MP/EY/ST/ec)	13 July 2004	–
5	LCSVO-JV submitted an Application for Renewal of Construction Noise Permit GW-TS0185-04 for the purpose of carrying out construction work other than percussive piling (Ref. H2189/U2c/7478/MP/EY/DS/ST/atm)	6 July 2004	–
6	LCSVO-JV submitted an Application for Renewal of Construction Noise Permit GW-TS0118-04 for the purpose of carrying out construction work other than percussive piling (Ref. H2189/U2c/7883/MP/EY/DS/ST/cm)	3 July 2004	–

2.3 Environmental Document Submission

A summary of the status of the submissions provided during the reporting month is presented in **Table 2.2**.

Table 2.2 - Summary of the Contractor's Environmental Related Document Submissions to the Engineer's Representatives (ER)

Item	Document Title	Version	Date of Submission to ER
1	Marine Dumping Permits (EP/MD/05-043)	-	30 July 2004
2	New Construction Noise Permit (GW-TS0318-04)	-	26 July 2004
3	New Construction Noise Permit (GW-TS0317-04)	-	23 July 2004
4	Wastewater Discharge Licence (EP880/W10/XX0195)	-	19 July 2004
6	Advance Notification of Night-time Construction Work (PLA)	-	16 July 2004
7	New Construction Noise Permits GW-TS0288-04 & GW-TS0308-04	-	14 July 2004

A summary of the Environmental Certification Sheet submissions to EPD during the reporting month is presented in **Table 2.3**.

Table 2.3 - Summary of Environmental Certification Sheet Submissions to the Environmental Protection Department (EPD)

No	Certification Subject	Letter Ref.	Date of Submission to EPD	Approved Status
1	Certification of Monthly Environmental Report No. 11 - June 2004	3128/M45/200/OC6182/SB/AC/al	8 July 2004	-

2.4 Environmental Meetings

No environmental meetings were held during the reporting month.

2.5 Environmental Monitoring Locations

The environmental monitoring locations are provided in **Annex C**.

3. EM&A REQUIREMENTS

3.1 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 3-1**.

Table 3.1 - 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
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

3.2 Environmental Quality Performance Limits

Environmental Quality Performance Limits for air, noise and water quality as provided in the Baseline Monitoring Report (Final) are shown in Annex D.

3.3 Event Action Plan

The Event Action Plans for air, noise and water quality as provided in the Baseline Monitoring Report (Final) are shown in **Annex E**.

3.4 Implementation of Environmental Measures

The Contractor is required to implement mitigation measures listed in the EIA Report, EM&A Manual and Further Environmental Permit. During routine site inspections, the Contractor's implementation of mitigation measures is reviewed. With regard to mitigation measures for water quality, the Contractor carried out daily visual inspection of the silt screens for seawater intakes. Floating debris in the project area was collected at least once everyday and in the water body near cooling water intakes debris was collected at least three times a day. Bi-weekly diving inspections for the silt screens were also carried out during the reporting month.

4. MONITORING RESULTS

4.1 Impact Monitoring Schedule in July 2004

Regular site inspections were carried out to assess whether the project's environmental protection and pollution control measures are in compliance with the contract specifications. Inspections were conducted on 8, 15, 22 and 29 July 2004.

Air quality monitoring has not commenced yet as no significant work areas or construction activities with the potential to impact air quality are within range of the closest air quality sensitive receivers (ASR). An ad-hoc 1-hour TSP measurement was undertaken at the PLA Central Barracks on 13 July 2004 to assess whether air quality monitoring is required at this stage of the project works. The measurement recorded an 1-hour TSP level of 126 µg/m³, which is below the average 1-hour TSP concentration recorded during baseline monitoring. Based on this information, there is no indication to suggest that significantly dusty construction activities with the potential to impact air quality are within range of the ASR at this stage.

Continuous 24-hour noise monitoring was conducted during this reporting period.

Impact water quality monitoring at all monitoring stations was undertaken during this reporting month. The water quality monitoring schedule for July 2004 is presented in **Table 4-1**.

Table 4.1 - Water Quality Monitoring Programme (Seawater Intakes Stations)

Date of Sampling	Tidal State	Timing of Sampling
2 July 2004	Mid Ebb	10:35 - 13:20
	Mid Flood	15:47 - 18:33
5 July 2004	Mid Ebb	12:52 - 15:19
	Mid Flood	07:29 - 10:40
7 July 2004	Mid Ebb	14:24 - 16:59
	Mid Flood	08:10 - 11:01
9 July 2004	Mid Ebb	14:45 - 17:21
	Mid Flood	10:08 - 12:55
12 July 2004	Mid Ebb	08:12 - 11:29
	Mid Flood	14:17 - 17:06
14 July 2004	Mid Ebb	09:10 - 11:59
	Mid Flood	15:18 - 18:05
19 July 2004	Mid Ebb	12:23 - 14:52
	Mid Flood	07:38 - 10:34
21 July 2004	Mid Ebb	13:11 - 15:32
	Mid Flood	07:26 - 11:00
23 July 2004	Mid Ebb	14:11 - 16:46
	Mid Flood	08:15 - 11:03
26 July 2004	Mid Ebb	07:34 - 10:38
	Mid Flood	12:20 - 15:10

Date of Sampling	Tidal State	Timing of Sampling
28 July 2004	Mid Ebb	08:06 - 11:18
	Mid Flood	15:12 - 17:46
30 July 2004	Mid Ebb	08:24 - 11:50
	Mid Flood	15:18 - 18:03
31 July 2004*	Mid Ebb	13:05 - 13:39
	Mid Flood	18:10 - 18:45

Note: Water quality monitoring was suspended on 16 July 2004 due to a tropical storm.
 * Ad-hoc monitoring was undertaken on 31 July 2004.

4.2 Monitoring Methodology

4.2.1 Air Quality Monitoring

Air quality monitoring will be performed in accordance with the methodology described in the EM&A Manual once construction activities requiring air quality monitoring commence. The locations of the monitoring stations at City Hall and PLA Headquarters are shown in **Annex C**.

4.2.2 Noise Quality Monitoring

Continuous 24-hour noise monitoring was performed in accordance with the methodology described in the EM&A Manual in the reporting period. The location of the noise monitoring station at City Hall is shown in **Annex C**.

4.2.3 Water Quality Monitoring

Water quality monitoring was performed in accordance with the methodology described in the EM&A Manual. Monitoring for the reporting month was conducted at all stations, which comprises of 6 marine-based stations and 8 seawater intake stations. The locations of the monitoring stations are shown in **Annex C**.

4.3 Monitoring Equipment

4.3.1 Air Quality

The equipment that is used for air quality monitoring is listed in **Table 4-2**.

Table 4.2 - Equipment for Air Quality Monitoring

Parameter Measured	Equipment
24-Hour Sampling	High Volume Sampler Model GS2310 by Anderson Instruments to be used for both monitoring stations.
1-Hour Sampling	MicroDust pro Aerosol Monitoring System to be used for both monitoring locations.

4.3.2 Noise Quality

The equipment used for continuous noise quality monitoring is listed in **Table 4-3**.

Table 4.3 - Noise Monitoring Equipment

Equipment	Model
Integrated Sound Level Meter (SLM)	B&K 2238
Calibrator	B&K 4231, Class 1

4.3.3 Water Quality

The equipment that was used for water quality monitoring is listed in **Table 4-4**.

Table 4.4 - Equipment Used for Marine Water Quality Monitoring

Parameter Measured	Equipment
Dissolved Oxygen and Temperature Measuring Equipment	<p>A Dissolved Oxygen meter YSI model 58 was used.</p> <ul style="list-style-type: none"> This instrument was portable and weatherproof and used a DC power source. The equipment was capable of measuring: DO levels in the range of 0-20 mg/l and 0-200% saturation; and Temperature of between 0 - 45 degree Celsius. The equipment had a membrane electrode with an automatic temperature compensation complete with a cable. In addition, a Wirling Psychrometer was used as a reference thermometer during the sampling.
Turbidity Measurement Instrument	A Turbidimeter, HACH model 2100P was used for determining turbidity levels. The instrument is portable and weatherproof and uses a DC power source. The instrument includes a photoelectric sensor capable of measuring turbidity between 0-1000 NTU.
pH	A MP125 pH Meter from Mettler Toledo was used to measure pH.
Salinity / Conductivity Meter	A Salinity / Conductivity meter YSI model 63 and model 30 was used for determining salinity concentrations.
Sample Containers and Storage	Water samples for SS analysis were stored in high density polythene bottles with no preservative added, packed in ice and delivered to the laboratory, and analysed as soon as possible after collection.

4.3.4 Equipment Calibration

The calibration frequencies of the monitoring equipment are provided in the following table.

Table 4.5 - Equipment Calibration Frequencies

Equipment	Calibration Frequency	Latest Calibration Date
Dissolved Oxygen Meter	Every 6 months	10 May 2004
Turbidimeter	Every 3 months for secondary standards; meter is calibrated prior to each measurement to the secondary standards	18 June 2004
pH Meter	Prior to each sampling day	–
Psychrometer	Every 6 months	5 March 2004
Integrated SLM	Every year	11 August 2003

4.4 Impact Monitoring Results

4.4.1 Air Quality & Noise Monitoring Results

No air quality monitoring work was undertaken during the reporting period as no significantly dusty construction activities with the potential to impact air quality are within range of the closest air quality sensitive receivers.

An ad-hoc 1-hour TSP measurement was undertaken at the PLA Central Barracks on 13 July 2004 to assess whether air quality monitoring is required at this stage of the project works. During the dust measurement, site observations noted that minor construction works for the cooling water mains at Lung Wui Road was undertaken. The measurement recorded an 1-hour (14:58 to 15:58 hours) TSP level of 126 $\mu\text{g}/\text{m}^3$, which is well below the average 1-hour TSP concentration recorded during baseline monitoring. Based on this information, there is no indication to suggest that significantly dusty construction activities with the potential to impact air quality are within range of the ASR at this stage.

Noise quality monitoring work was undertaken during the reporting period. The noise monitoring results are provided in **Annex F**. Graphical representation of the noise monitoring data is provided in **Annex G**.

4.4.2 Water Quality Monitoring Results

Water quality monitoring was undertaken at all water quality monitoring locations during the reporting period. The water quality monitoring results from this reporting period are presented in **Annex H**. Graphical representation of the water quality data is provided in **Annex I**. Summaries of the results are provided in Tables 4.5 to 4.9.

Marine-Based Stations

Monitoring stations M8 and M10 were selected as the marine-based impact stations as they are located outside the predicted influence of the dredging and reclamation works. The detection of water quality degradation at these two stations may indicate that project marine works are adversely affecting water quality in Victoria Harbour. Stations M7 and M9 are within the expected influence of the reclamation activities and are located along the works area boundary (or extent of the predicted sediment plume). As such, M7 and M9 are used as indicator stations to note any significant elevations in SS, turbidity or reductions in DO that may affect the marine-based impact monitoring stations.

Table 4.5 is a summary of the marine-based stations monitoring results during mid-ebb tide.

Table 4.5 - Summary of Mid-Ebb Results for Marine-Based Stations

Station		Parameter				
		DO (S&M) mg/L	DO (B) mg/L	DO % Sat. (DA)	Turbidity (DA) NTU	SS (DA) mg/L
C1	min	4.0	3.4	55.1	2.9	3.1

Station		Parameter				
		DO (S&M) mg/L	DO (B) mg/L	DO % Sat. (DA)	Turbidity (DA) NTU	SS (DA) mg/L
	max	7.3	6.1	99.9	5.7	8.4
	avg	5.9	4.5	78.8	4.5	4.8
	sd	0.9	0.8	11.5	0.8	1.8
C2	min	4.1	3.1	57.0	2.8	3.1
	max	6.6	5.8	93.9	5.2	8.9
	avg	5.8	4.6	78.0	4.1	4.7
	sd	0.7	0.9	9.8	0.8	1.8
M7	min	4.3	3.8	60.3	3.4	2.7
	max	7.2	6.7	100.0	6.0	8.3
	avg	5.8	4.7	79.2	4.4	4.7
	sd	1.0	0.8	12.0	0.8	1.7
M8	min	4.2	3.6	58.7	3.0	2.9
	max	7.1	6.4	99.5	5.8	9.0
	avg	5.8	4.7	79.0	4.4	4.8
	sd	0.9	0.8	11.2	0.8	1.7
M9	min	4.4	2.9	59.3	3.5	3.4
	max	7.3	6.3	99.7	5.0	9.0
	avg	5.9	4.3	77.8	4.4	5.0
	sd	0.9	1.0	12.1	0.5	1.8
M10	min	3.8	3.4	52.8	2.9	3.3
	max	7.7	6.7	106.6	5.6	8.9
	avg	6.0	4.7	80.6	4.4	4.8
	sd	1.1	0.9	13.7	0.8	1.8

As Table 4.5 shows, DO levels at marine-based impact stations (M8 & M10) in the surface to middle layer during mid-ebb survey ranged between 3.8 and 7.7 mg/L with an average value of 5.9 mg/L and DO measurements in the bottom layer ranged from 3.4 to 6.7 mg/L with an average level of 4.7 mg/L. Similar DO levels were recorded at the control stations at which DO levels in the surface to middle layer during mid-ebb survey ranged from 4.0 to 7.3 mg/L with an average value of around 5.9 mg/L; DO measurements in the bottom layer ranged between 3.1 and 6.1 mg/L with an average level of 4.5 mg/L.

SS levels during mid-ebb tide ranged from 3 to 9 mg/L with an average value of 5 mg/L at the marine-based impact stations (M8 & M10), which is comparable to results from the control stations in which SS content ranged from 3 to 9 mg/L with an average of 5 mg/L. The results showed no clear gradient effect (high SS and low DO levels from near-field stations M7 and M9 to far-field stations M8 and M10), which indicates that dredging works are not adversely affecting marine water quality outside the work site boundary in Victoria Harbour. Marine water quality at impact monitoring stations was found to be similar to that at the control stations also indicating that project marine works were generally not adversely affecting water quality in Victoria Harbour.

Table 4.6 is a summary of monitoring results from marine-based stations during mid-flood tide.

Table 4.6 - Summary of Mid-Flood Results for Marine-Based Stations

Station		Parameter				
		DO (S&M) mg/L	DO (B) mg/L	DO % Sat. (DA)	Turbidity (DA) NTU	SS (DA) mg/L
C1	min	4.3	3.3	56.9	3.1	3.3
	max	8.2	5.9	100.2	6.4	9.1
	avg	5.7	4.3	75.8	4.4	4.9
	sd	1.2	0.7	13.2	1.1	1.9
C2	min	4.2	3.1	55.2	2.8	2.9
	max	7.8	5.9	94.8	5.5	9.8
	avg	5.7	4.3	75.6	3.9	4.8
	sd	1.0	0.8	10.8	0.7	1.9
M7	min	3.8	3.4	53.1	3.1	3.3
	max	9.1	7.6	125.8	5.8	8.9
	avg	5.7	4.9	79.0	4.6	5.1
	sd	1.6	1.3	22.7	0.9	1.8
M8	min	4.1	3.5	56.4	3.0	2.9
	max	9.0	6.0	104.6	6.2	9.4
	avg	5.9	4.5	78.5	4.1	4.7
	sd	1.6	0.7	16.0	0.8	1.8
M9	min	4.4	2.9	59.3	3.5	3.4
	max	7.3	6.3	99.7	5.0	9.0
	avg	5.9	4.3	77.3	4.3	4.9
	sd	0.9	1.0	12.2	0.5	1.8
M10	min	3.9	3.6	56.3	3.1	3.1
	max	9.5	6.5	123.9	8.5	10.7
	avg	5.8	4.9	81.8	5.0	5.3
	sd	1.4	0.8	16.7	1.4	1.9

During mid-flood tide, DO levels at marine-based impact stations (M8 & M10) in the surface to middle layer ranged from 3.9 to 9.5 mg/L with an average level of 5.9 mg/L while DO values in the bottom layer ranged between 3.5 and 6.5 mg/L with an average of 4.7 mg/L. Similar DO concentrations were recorded at the control stations in the surface to middle layer during mid-flood survey ranged between 4.2 and 8.2 mg/L with an average value of 5.7 mg/L and DO results in the bottom layer ranged from 3.1 and 5.9 mg/L with an average of 4.3 mg/L.

SS content ranged between 3 and 11 mg/L (for stations M8 & M10) with an average of 5 mg/L during mid-flood tide and ranged from 3 to 10 mg/L with an average value of 5 mg/L at the control stations. Again, the results showed no clear gradient effect and no significant difference between control stations and marine-based impact stations. Therefore, the marine-based station results indicate that during the reporting month the dredging works were not adversely affecting water quality outside the work site boundary.

Seawater Intake Stations

Table 4.7 is a summary of monitoring results from seawater intake stations during mid-ebb tide.

Table 4.7 - Summary of Mid-Ebb Results for Seawater Intake Stations

Station		Parameter			
		DO mg/L	DO % Sat.	Turbidity NTU	SS mg/L
M1	min	3.7	55.3	2.4	4.3
	max	7.5	111.7	6.9	9.5
	avg	5.6	83.1	4.4	6.0
	sd	1.1	16.9	1.4	1.6
M2	min	3.2	47.0	2.4	4.7
	max	6.3	105.1	6.3	11.2
	avg	5.1	76.6	4.7	7.6
	sd	0.9	15.7	1.2	2.3
M3	min	3.1	45.7	1.9	3.1
	max	6.8	99.1	6.3	10.4
	avg	5.1	75.9	4.2	6.2
	sd	1.1	16.8	1.3	2.3
M4	min	3.7	54.3	2.1	3.7
	max	6.9	102.0	13.5	26.8
	avg	5.4	80.4	5.6	9.0
	sd	0.9	13.7	2.9	6.3
M5	min	3.7	54.8	2.7	4.4
	max	7.1	103.3	7.4	13.9
	avg	5.6	82.7	4.6	7.1
	sd	1.0	15.5	1.4	3.2
M6	min	3.7	54.3	1.8	4.0
	max	7.2	106.6	6.9	22.4
	avg	5.7	84.3	4.1	6.7
	sd	1.0	15.4	1.3	5.1
M11	min	3.8	56.4	2.0	3.4
	max	6.6	99.7	5.8	8.7
	avg	5.5	81.3	4.4	5.5
	sd	0.7	12.0	1.2	1.7
M12	min	3.9	57.0	2.6	4.4
	max	6.9	100.0	6.8	11.9
	avg	5.5	81.7	4.3	6.3
	sd	0.8	12.7	1.2	2.0

Seawater intake results during mid-ebb tide, Table 4.7, show that DO levels ranged from 3.1 to 7.5 mg/L with an average of 5.4 mg/L. SS ranged between 3 and 27 mg/L with an average value of 7 mg/L. The monitoring results show that water quality at seawater intake stations was generally good. Low DO levels at the intake stations were recorded during the reporting month but investigations found that they were not due to project works. Elevated SS levels at M4, M6 and M11 were found on 23, 26 and 28 July 2004. These levels were investigated and it was found that the elevated SS levels may have been attributed to marine works. As such, actions were undertaken in accordance with the Event and Action Plan for water quality and daily monitoring of SS was initiated. The results from 30 July and 31 July 2004 show that SS levels reduced significantly and no exceedances were recorded for the two consecutive days.

Table 4.8 is a summary of monitoring results from seawater intake stations during mid-flood tide.

Table 4.8 - Summary of Mid-Flood Results for Seawater Intake Stations

Station		Parameter			
		DO mg/L	DO % Sat.	Turbidity NTU	SS mg/L
M1	min	3.4	50.7	2.6	3.7
	max	6.8	100.5	8.6	12.3
	avg	5.0	73.2	5.6	7.5
	sd	0.9	13.6	1.9	2.9
M2	min	3.3	48.8	2.8	4.3
	max	6.1	91.5	9.3	13.8
	avg	4.7	68.4	6.2	9.2
	sd	0.7	10.9	2.4	4.0
M3	min	3.3	49.1	2.3	4.8
	max	6.3	93.1	8.7	13.6
	avg	4.7	69.0	5.3	8.4
	sd	0.9	13.3	2.0	3.2

Station		Parameter			
		DO mg/L	DO % Sat.	Turbidity NTU	SS mg/L
M4	min	3.1	45.2	2.2	4.3
	max	6.8	98.6	14.6	21.9
	avg	5.1	74.0	6.4	8.8
	sd	1.1	15.9	3.4	5.1
M5	min	3.2	46.6	2.0	3.9
	max	6.8	100.9	7.4	11.4
	avg	5.1	74.0	4.6	6.4
	sd	1.0	14.1	1.7	2.5
M6	min	3.1	45.4	2.3	3.9
	max	6.8	100.3	5.9	10.3
	avg	4.7	69.3	4.2	6.3
	sd	1.1	15.8	1.1	2.1
M11	min	3.5	51.9	2.6	3.5
	max	6.4	96.1	11.9	16.5
	avg	5.1	74.4	5.9	8.2
	sd	0.9	12.8	2.8	4.3
M12	min	3.6	52.6	2.0	3.7
	max	6.5	97.5	6.1	8.9
	avg	4.8	70.6	4.3	6.1
	sd	0.9	13.1	1.3	1.8

During mid-flood survey, Table 4.8 shows that DO levels at seawater intake stations ranged from 3.4 to 6.5 mg/L with an average of 5.1 mg/L. SS ranged from 5 to 18 mg/L with an average SS content of 9 mg/L. The above results show that water quality during mid-flood tide was also generally good. Again, low DO levels were found but these were found to be not due to project works. The elevated SS levels found at stations M4, M6 and M11 on 23, 26 and 28 July were investigated as mentioned previously. Appropriate actions were undertaken in accordance with the Event and Action Plan following the elevated SS levels. It was noted that SS levels decreased significantly on 30 July and 31 July and no SS exceedances were recorded during the two consecutive days.

4.4.3 Waste Management

No waste management audit was scheduled within this reporting period. The arrangement of waste management audit is detailed in the Waste Management Plan.

4.4.4 Landscape and Visual

As the major construction activities undertaken during the reporting month were related to marine works, the landscape and visual impacts are considered to be minimal.

5. ENVIRONMENTAL COMPLAINT AND NON-COMPLIANCE

5.1 Environmental Exceedances

The total number of exceedances for air, noise and water quality are presented in following sections.

5.1.1 Air Quality

No air quality monitoring work was undertaken during the reporting period.

5.1.2 Noise Quality

No noise quality exceedances were recorded during the reporting period.

5.1.3 Water Quality

Based on investigations and analyses of water quality monitoring results collected during the reporting month, it was found that generally the exceedances of the Action and Limit Levels were not attributable to the project marine works. Although DO levels below the Action Level were observed at seawater intake and marine-based stations, investigations found that they were due to natural variation or changes in ambient conditions and not caused by the project marine works. It was noted that when the DO Action Level was exceeded at the marine-based stations the control stations recorded similarly low DO levels.

The monitoring results from 23, 26 and 28 July 2004 showed elevated concentrations of SS at stations M4, M6 and M11. Investigations into these monitoring results found that the SS levels may have been attributed to project marine works and the appropriate actions were undertaken in accordance with the Event and Action Plan for water quality. Daily monitoring of SS was initiated and the results on 30 and 31 July 2004 showed that SS levels have reduced significantly and no further exceedances were recorded. An environmental meeting has been scheduled for early August to discuss the Contractor's present working practices.

5.1.4 Waste Management

No non-compliances with regard to waste management were recorded in the reporting month.

5.1.5 Landscape and Visual

No non-compliance with regard to landscape and visual aspects were recorded in the reporting month.

5.1.6 Site Environmental Audit

No environmental non-compliances were found during environmental site inspections conducted during the reporting period. A joint site inspection with the IEC was conducted on 29 July 2004, and the IEC's site inspection report is provided in **Annex K**.

Standing water from previous rainfall was found on site during the site inspection on 8 July 2004. The Contractor was asked to clear the standing water or spray mosquito oil on standing water. Further, the Contractor was asked to increase the frequency of site inspections for mosquito breeding to at least twice per week.

During the site inspection conducted on 22 July 2004, sandy stockpiles were found at site areas CR-3 and CR-12. The Contractor was advised to remove the sand stockpiles if they are not used. Further, the Contractor was asked to clear the standing water found at site area CR-15.

A site inspection on 29 July 2004 found floating debris inside the seawater intake silt screens in IRAW and the Contractor was requested to clear the debris. It was also noted that standing silty water was found near U-channels after rainfall. The Contractor was asked to clear the standing water and inspect U-channels after rainfall.

Additionally, on 22 July 2004, EPD informed the ER that a project works dump truck at the Sai Ying Pun public fill dumping site was found without a dust cover. Although the waste soil was moist, it is reminded that dust covers should be provided for dump trucks.

5.2 Environmental Complaint and Prosecution

No environmental complaints, prosecution notices or summons were received during the reporting period.

5.3 Environmental Enquiries

No environmental enquiries were received during the reporting month.

6. FORECAST AND SCHEDULE

6.1 Key Issues for the Coming Month

The key issues to be considered in the coming month include the following:

- Marine piling and rock filling works at IRAW;
- Placement of initial sand layer at IRAE;
- Landside piling works at the Central Terminal Building (CTB);
- Superstructure works at Pier No. 7;
- Cooling watermain work at Lung Wui Road; and
- Maintenance and necessary repairs to the seawater intake silt screens.

6.2 Monitoring Schedules for the Next 3 Months

The construction works scheduled for the coming months include marine piling, rock filling, sand placement, landside piling, cooling watermain work and superstructure works at Pier No. 7. Based on the Contractor's programme, the Environmental Monitoring Programme for the next three months is planned as follows:

TSP (24 hr and 1 hr monitoring)

Upon commencement of significant dust generating activities within range of the closest air quality sensitive receiver, dependent upon the Contractor's programme.

Noise (Continuous Measurements)

The noise monitoring programme throughout the entire construction period is 24-hour continuous.

Water Quality Monitoring

The water quality monitoring schedule for the upcoming months is provided in the following table.

Table 6.1 - Water Quality Monitoring Programme

Date of Sampling	Sampling Time	
2 August 2004	08:30	14:00
4 August 2004	08:30	14:55
6 August 2004	09:51	16:07
9 August 2004	08:30	14:38
11 August 2004	09:34	17:00
13 August 2004	10:53	17:00
16 August 2004	12:00	17:30
18 August 2004	08:30	14:38
20 August 2004	08:38	15:04

Date of Sampling	Sampling Time	
23 August 2004	11:56	17:00
25 August 2004	08:30	17:00
27 August 2004	10:03	17:00
30 August 2004	12:00	17:30
1 September 2004	08:30	14:00
3 September 2004	08:49	14:57
6 September 2004	11:51	16:28
8 September 2004	08:30	17:00
10 September 2004	09:36	17:00
13 September 2004	11:40	17:00
15 September 2004	12:00	17:30
17 September 2004	08:30	14:06
20 September 2004	10:41	16:15
22 September 2004	08:30	17:00
24 September 2004	08:53	16:54
27 September 2004	11:26	17:00
29 September 2004	12:00	17:30

6.3 Construction Programme for the Next 3 Months

The construction programme for the next 3 months is provided in **Annex B** and will be updated by the Contractor.

The ET will follow the Contractor's proposed programme to ensure the compliance of environmental performance and proper implementation of all necessary mitigation measures.

7. CONCLUSION

During the reporting period, exceedances of the water quality criteria were generally found to be not caused by the project works. The water quality within the project area was found to be generally good, but low DO levels have been recorded at seawater intake and marine-based stations. Investigations into the low DO levels found that they were not due to project works as control stations recorded similarly low levels. Elevated SS levels were recorded at 3 seawater intake stations on 3 sampling days in late July 2004. Investigations into these exceedances found that they may have been attributable to project works. Appropriate actions were undertaken in accordance with the Event and Action Plan and daily monitoring of SS was initiated. Further sampling noted that SS levels reduced significantly by the end of July 2004 and no further SS exceedances were recorded.

Although elevated SS levels were recorded at a few seawater intake stations, the results from the marine-based impact monitoring stations showed that offshore marine water quality was generally good. The marine-based stations established to monitor the overall impact of the reclamation activities on water quality in Victoria were shown to have similar results as the control stations, which are located outside the influence of project works. As such, the water quality monitoring results did not indicate that the marine works were adversely affecting water quality outside the works boundary in Victoria Harbour.

The monitoring work for this reporting month has been independently verified by the Independent Environmental Checker (IEC) and has been found to be in compliance with the requirements of the EM&A programme.