

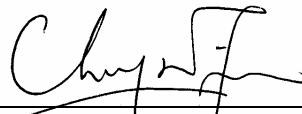
China Harbour Engineering Company (Group)

Contract No. CV/2002/09

Tai O Development Sheltered Boat Anchorage

**Environmental Monitoring and Audit
Quarterly Report (January to March 2004)**

(Version 1.0)

Certified By  <hr style="width: 60%; margin: 0 auto;"/> <p style="text-align: center;">(Environmental Team Leader)</p>

REMARKS:

The information supplied and contained within this report is, to the best of our knowledge, correct at the time of printing.

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EXECUTIVE SUMMARY

1. This is the fourth Environmental Monitoring and Audit (EM&A) Quarterly Summary Report prepared by Cinotech Consultants Limited (the Environmental Team, ET) for the project “Tai O Development – Sheltered Boat Anchorage” (the Project). This summary report presents EM&A works performed in the period between January and March 2004.
2. The construction activities undertaken in the reporting quarter were:
 - Bored piling works along seawall
 - Sheet piling works along seawall
 - Installation of tidal exchanges at seawall
 - Site Investigation at future bus stop
 - Installation of vertical drains at future bus stop
 - Sand filling at future bus stop
 - Bored piling works at future bus stop
 - Site formation works in mangrove areas
 - Percussive piling for navigation aids
 - Concreting of piles for navigation aids
 - Demolition of beacon
 - Dredging works

Environmental Monitoring Works

3. Environmental monitoring for the Project was performed regularly as stipulated in the EM&A Manual and the results were checked and reviewed. Site audits were conducted once per week. The implementation of the environmental mitigation measures, Event Action Plans and environmental complaint handling procedures were also checked.
4. Summary of the non-compliance of the reporting period is tabulated Table I.

Table I Summary Table for Non-compliance Recorded in the Reporting Period

Media / Nature	No of Exceedances		Action Taken	Results of action taken	Remarks
	Action Level	Limit Level			
Noise	0	2	N.A.	N.A.	The exceedances were not due to the Project works.
Water Quality					
DO	26	74	N.A.	N.A.	The exceedances were not due to the Project works.
Turbidity	10	54			
SS	4	48			

Construction Noise

5. All construction noise monitoring was conducted as scheduled in the reporting period.
6. As the Contractor has granted the Construction Noise permit on restricted hours including 1900 – 2300 on weekdays and General Holidays including Sundays (CNP no. GW-UW0285-03), noise monitoring works on restricted hour were conducted.

7. Two limit level exceedances were recorded during the reporting period. They were recorded at Station N11 on 11 January and 8 February 2004, respectively. The exceedance was considered to be invalid.

Water Quality

8. Water quality monitoring was conducted as scheduled in this reporting period.
9. A total of 10 Action Level and 54 Limit Level exceedances for turbidity were record. For suspended solids (SS), a total of 4 Action Level and 48 Limit Level exceedances were recorded in the reporting period.
10. A total of 26 Action Level and 74 Limit Level exceedances for DO were reported in the reporting quarter. However, no direct evidence showed that the exceedances were due to the Project works and the exceedances were all considered to be invalid.

Environmental Complaint and Prosecution

11. No environmental prosecution or complaint was received during the reporting quarter.

Environmental Licensing and Permitting

12. License/Permits granted to the Project include the Environmental Permit (EP), Waste Disposal (Chemical Waste) License, Marine Dumping Permits, Construction Noise Permit and Effluent Discharge License.

Future Key Issues

13. Bored piling works along sea wall and sand filling at breakwater will be the major construction activities for the coming quarter. The anticipated environmental impacts will be mainly on noise and water quality due to the piling works.

1. INTRODUCTION

- 1.1 Tai O was formerly one of the largest fishing villages in Hong Kong and was a historical base for fishing boats in the western approaches of Lantau Island and the Pearl River estuary. However, the importance of the fishing industry in Tai O has declined in recent decades, which has resulted in a degradation of its population base.
- 1.2 The formation of the Tai O sheltered boat anchorage is fully supported by the Islands Provisional District Board members and is widely seen as a means of reviving the town's local fishing industry and contributing to the revitalization of Tai O.
- 1.3 Previous consultancies undertaken on behalf of the Civil Engineering Department (CED) to determine the feasibility of construction a sheltered boat anchorage (Agreement No. CE 41/98) Environmental and Drainage Impact Assessment for the Tai O Sheltered Boat Anchorage Study. The original development scheme comprised an 8 ha anchorage for 220 vessels and about 1 ha reclamation for boat maintenance facilities, parking area, bus terminus and a loading/unloading bay.
- 1.4 The original development scheme has been gazetted under the Foreshore & Sea-bed (Reclamations) Ordinance in December 2000. Following public consultation and interdepartmental discussion, the scope of the scheme was revised in the adoption of the current development scheme with a reduced area of boat anchorage, shortened breakwater and reduced area of reclamation.
- 1.5 The project now comprises construction of a 4 ha sheltered boat anchorage for small boats/fishing vessels and a breakwater of about 350 m length, formation of about 0.22 ha of land for a future bus terminus, construction of a 0.23 ha promenade, site formation and associated engineering works for a mangrove planting area and restoration of the existing historic seawall.
- 1.6 An Environmental Permit No. EP-144/2002 was issued on 11 Sep 2002 for this project (EP) to the Civil Engineering Department as Permit Holder. An updated Environmental Monitoring and Audit Manual (the EM&A Manual) was prepared to fulfill requirement stipulated in Condition 2.3 of the EP.
- 1.7 The works of the Project is constructed under CED's construction Contract No. CV/2002/09 "Tai O Development – Sheltered Boat Anchorage". The site layout of the Project is shown in Figure 1.1.
- 1.8 Cinotech Consultants Limited was commissioned by the China Harbour Engineering Company (Group) (the Contractor) to undertake the Environmental Team (ET) Services for the Project. This is the forth quarterly EM&A report summarizes the EM&A works for the Project in the period between January and March 2004.

2. PROJECT CHARACTERISTICS

Project Organization and Contacts of Key Management

- 2.1 An organization structure and the line of communication were set up for the Project between the Project Proponent, Engineer Representative (ER), Independent Environmental Checker (IEC), the Contractor and Environmental Team (ET). The organization chart and contact details are shown in Appendix A and Figure 1.2.

Construction Programme and Synopsis of Work

- 2.2 The construction programme is presented in Appendix B. The site activities during the reporting period are summarized in Table 2.1.

Table 2.1 Summary of Works Undertaken in the Reporting Months

Item	Work Activity	Month		
		Jan 04	Feb 04	Mar 04
1.	Bored piling works along seawall	✓	✓	✓
2.	Sheet piling works along seawall	✓	✓	
3.	Installation of tidal exchanges at seawall	✓		
4.	Site Investigation at future bus stop	✓		
5.	Installation of vertical drains at future bus stop	✓		
6.	Sand filling at future bus stop	✓	✓	
7.	Bored piling works at future bus stop		✓	✓
8.	Site formation works in mangrove areas	✓	✓	✓
9.	Percussive piling for navigation aids	✓		
10.	Concreting of piles for navigation aids		✓	✓
11.	Demolition of beacon		✓	✓
12.	Dredging works	✓	✓	✓

3. ENVIRONMENTAL MONITORING AND AUDIT REQUIREMENTS

Monitoring Parameters and Monitoring Locations

- 3.1 The EM&A Manual designate locations for the ET to monitor environmental impacts in terms of noise and water quality due to the Project. The Project area and monitoring locations are depicted in Figures 2.1 and 3.1. Appendix C gives details of monitoring requirements.

Monitoring Methodology and Calibration Details

- 3.2 Monitoring works/equipments were conducted/calibrated regularly in accordance with the EM&A Manual. Copies of calibration certificates are attached in the appendices of the Monthly Reports.

Environmental Quality Performance Limits (Action and Limit Levels)

- 3.3 The environmental quality performance limits, i.e. Action and Limit Levels were derived from the baseline monitoring results. Should the measured environmental quality parameters exceed the Action/Limit Levels, the respective action plans would be implemented. The Action/Limit Levels for each environmental parameter are given in Appendix D.

Environmental Mitigation Measures

- 3.4 Relevant mitigation measures as recommended in the project EIA report have been stipulated in the EM&A Manual for the Contractor to implement. A list of mitigation measures is given in Appendix G.

4. MONITORING RESULTS

Weather Conditions

- 4.1 The weather during monitoring sessions was mainly sunny or cloudy. The weather conditions for each individual monitoring session were presented in the field record sheets.

Noise

- 4.2 All construction noise monitoring was conducted as scheduled in the reporting period.
- 4.3 As the Contractor has granted the Construction Noise permit on restricted hours including 1900 – 2300 on weekdays and General Holidays including Sundays (CNP no. GW-UW0285-03), noise monitoring works on restricted hour were conducted.
- 4.4 Two limit level exceedances were recorded during the reporting period. They were recorded at Station N11 on 11 January and 8 February 2004, respectively. The exceedance was considered to be invalid.

Water Quality

- 4.5 Water quality monitoring was conducted as scheduled in this reporting period.

Turbidity and SS

- 4.6 A total of 10 Action Level and 54 Limit Level exceedances for turbidity were record. For suspended solids (SS), a total of 4 Action Level and 48 Limit Level exceedances were recorded in the reporting period.
- 4.7 The turbidity and SS level exceedances were considered not directly related to the Project due to the followings reasons:
- Exceedance of SS and Turbidity levels were recorded at W1, W2, W3 and W4 whereas those of stations A1, A2, B1, B2, B3 and W5 were closer to the project site. This can be explained by the fact that the SS and turbidity were brought about from the Pearl River Delta region rather than the project itself.
 - The monitoring location at W4 (Control Point) is sheltered by the hinterland and hence the low levels of turbidity and SS at W4 cannot reflect the influence of tidal effect on turbidity and SS to the impact stations W1 – W3 at mid-flood tide
 - Limit level exceedances for turbidity and SS were recorded at impact monitoring stations whereas low levels of turbidity and SS were recorded at the control station (W1 at mid-ebb tide and W4 at mid-flood tide) at the corresponding tide.
 - The turbidity levels were well below the baseline level.

DO

- 4.8 A total of 26 Action Level and 74 Limit Level exceedances for DO were reported in the reporting quarter.
- 4.9 The DO level exceedances were considered not directly related to the Project due to the followings reasons:
- Among 100 exceedances recorded in the reporting period, none of them were recorded at A1, A2, B1, B2, B3 and W5, which were closer to the dredging site of the Project.
 - The DO levels at stations A1, A2, B1, B2, B3 and W5, which were closer to the dredging area, were higher than those recorded at stations W1 to W4 for the same monitoring event.
 - DO levels may be affected by many other factors, e.g., salinity and water temperature. Graphical presentations of the variations of salinity and water temperature are shown in Appendix F.
 - It is noteworthy that as air temperature decreased from September 2003 to February 2004, the number of DO exceedances dramatically decreased from 179 to 3. This indicates that DO levels are significantly influenced by seasonal effects, especially air temperature.

5. AUDIT RESULTS

Implementation Status of Environmental Mitigation Measures

- 5.1 The implementation status of environmental mitigation measures (EMIS) is given in Appendix G.

Site Audit Summary

Water Quality

- 5.2 Leakage of muddy water into Mangrove area M5 was observed on 31st March 2004. Follow up works would be conducted during the subsequent audit session in April 2004.

Air Quality

- 5.3 The haul roads within the site were observed dry occasionally in the reporting period. The Contractor was reminded to implement dust suppression measures.

Chemical and Waste Management

- 5.4 Oil leakage from the machines was observed occasionally. The Contractor was reminded to use well-maintained machinery on-site.

Noise and Permit / Licenses

- 5.5 No environmental deficiencies were observed during the site inspections.

Status of Environmental Licensing and Permitting

- 5.6 Environmental licenses and permits including the Environmental Permit (EP), Waste Disposal (Chemical Waste) License, Marine Dumping Permit and Construction Noise Permits (CNP) were in place and valid during the reporting quarter. A summary status of licenses and permits is given in Appendix H.

Advice on Waste Management Status

- 5.7 The waste generated from the Project was mainly non-inert C&D and uncontaminated dredged sediment.

6. NON-COMPLIANCE (EXCEEDANCES) OF THE ENVIRONMENTAL QUALITY PERFORMANCE LIMITS (ACTION AND LIMIT LEVELS)

Summary of Exceedances

- 6.1 Environmental monitoring works were performed in the reporting period and all monitoring results were checked and reviewed. A summary of exceedances is attached in Appendix J. The details of each exceedance were attached in the Monthly Reports.
- 6.2 Two limit level exceedances were recorded during the reporting period. They were recorded at Station N11 on 11 January and 8 February 2004, respectively. The exceedance was considered to be invalid.
- 6.3 A total of 10 Action Level and 54 Limit Level exceedances for turbidity were record. For suspended solids (SS), a total of 4 Action Level and 48 Limit Level exceedances were recorded in the reporting period.
- 6.4 A total of 26 Action Level and 74 Limit Level exceedances for DO were reported in the reporting quarter. However, no direct evidence showed that the exceedances were due to the Project works and the exceedances were all considered to be invalid.
- 6.5 No environmental complaint and prosecution was received since the commencement of the Project.

Review of the Reasons for and the Implications of Non-compliance

- 6.6 There was no non-compliance from the site audits in the reporting quarter. The observations and recommendations made in each individual site audit session were attached in the Monthly Reports.

7. ENVIRONMENTAL COMPLAINTS

- 7.1 No environmental complaint was recorded since the Project commencement.

8. COMMENTS, CONCLUSIONS AND RECOMMENDATIONS

- 8.1 Pilling at Promenade Deck and dredging works at anchorage area will be the major construction activities for the coming quarter. The anticipated environmental impacts will be mainly on noise and water quality due to the piling works.