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TEST REPORT

CHINA HARBOUR ENGINEERING CO. LTD.

DELIVERY OF RECLAMATION MATERIAL TO MAINLAND – ENVIRONMENTAL MONITORING AND AUDIT (CONTRACT NO.: CV/2005/01)

TUEN MUN AREA 38 FILL BANK

QUARTERLY EM&A SUMMARY REPORT NO.7

(FROM JUNE TO AUGUST 2008)

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From	Joseph Poon	No. of Pages	1 (Incl. this page)
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	Mr William Chan / Mr Albus Cheung (China Habour Engineering Co. Ltd.)	Fax No.	2247 4108
Subject	**Agreement No. CE 9/2005 (EP) Tuen Mun Area 38 Fill Bank – Quarterly Environmental Monitoring & Audit Report for June – August 2008**		

We refer to the 7th Quarterly EM&A Report for June to August 2008 that we received through email on 24th Sept 2008 and are pleased to confirm we have no further comment on the report.

Should you require further information, please feel free to contact us.

Best regards,

Joseph Poon
Independent Environmental Checker

JP/by

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EXECUTIVE SUMMARY

This is the seventh Quarterly Environmental Monitoring and Audit (EM&A) Summary Report prepared by ETS-Testconsult Ltd (ET) for the "Contract No. CV/2005/01 Delivery of Reclamation Material to Mainland -Tuen Mun Area 38 Fill Bank" (The Project).

This report documents the findings of EM&A Works conducted during the operation phase of Fill Bank at Tuen Mun Area 38 from June to August 2008.

Construction Progress

As informed by the Contractor, the construction activities in this reporting quarter were as below:

- *Removal & delivery of public fill stockpiled material to Mainland*
- *Operation of the road water lorries and the road sweeper*
- *Maintenance of haul road within fill bank area*
- *Operation of the Tipping Halls (B1, B2 & B3)*
- *Operation at the queuing area for public truck lorries*

Environmental Monitoring Works

Air Monitoring

During the reporting quarter, no exceedances of Action and Limit levels were recorded for 24-hr and 1-hr TSP monitoring. The air quality during the operation hours of the Fill Bank was considered acceptable.

Marine Water Quality Monitoring

According to the summary of marine water monitoring results, no exceedances of Action and Limit Level were recorded in this quarter.

Noise Monitoring

No exceedances of Action and Limit levels for noise monitoring were recorded in this quarter.

Environmental Complaints, Notification of summons and successful prosecutions

One complaint and no notification of summons and prosecutions with respect to environmental issues were received in this quarter. Details of the complaint are present in clause 6.4.

1.0 INTRODUCTION

China Harbour Engineering Company Limited (CHEC) appointed Environmental Team (ET) of ETS-Testconsult Limited (ETL) to undertake the Environmental Monitoring and Audit (EM&A) for the "Contract No. CV/2005/01 Delivery of Reclamation Material to Mainland – Tuen Mun Area 38 Fill Bank" (The Project).

In accordance with the Condition 5 of Part C of Environmental Permit (No.: EP-210/2005) (the EP), an EM&A programme as set out in the Project Profile should be implemented. The EM&A programme requires environmental monitoring for air quality, water quality and environmental site inspections for air quality, water quality, landscape and visual, and waste management.

Baseline monitoring was completed in May 2003 by Stanger Asia Ltd. Action and Limit Levels were established for air and water quality parameters based on the baseline monitoring results.

This quarterly report documented the findings of EM&A Works conducted during the operation phase of Fill Bank at Tuen Mun Area 38 in June, July and August 2008.

2.0 PROJECT INFORMATION

2.1 Construction Programme in this reporting quarter

Details of construction programme are shown in Appendix G.

2.2 Project Organization and Management Structure

The organization chart and lines of communication with respect to the on-site environmental management and monitoring program are shown in Appendix A.

2.3 Contact Details of Key Personnel

The key personnel contact names and telephone numbers are shown in Table 2.1.

Table 2.1 Contact Details of Key Personnel

Organization	*Name of Key Staff*	*Project Role*	*Tel. No.*	*Fax No.*
CEDD	*Mr. W T CHAU* *Mr. H C TANG* *Mr. P Y LU*	*Engineer's Representative*	*2760 5835*	*2714 0113*
IEC (Materialab)	*Mr Joseph POON*	*IEC*	*2450 8238*	*2450 6138*
Contractor (CHEC)	*Mr. William CHAN*	*Contractor's Agent*	*9772 7055*	*2243 4089*
ET (ETL)	*Mr C. L. Lau*	*ET Leader*	*2946 7791*	*2695 3944*

3.0 SUMMARY OF EM&A REQUIREMENTS

3.1 EM&A Programme

The EM&A programme required environmental monitoring for air quality, marine water quality and environmental site inspections for air quality, marine water quality, landscape and visual, and waste management. The EM&A requirements for each parameter described in the following sections include:

- *All monitoring parameters;*
- *Monitoring schedules for the reporting month and forthcoming months;*
- *Action and Limit levels for all environmental parameters;*
- *Event/Action Plans;*
- *Environmental mitigation measures, as recommended in the Project EIA study final report; and*
- *Environmental requirements in contract documents.*

The advice on implementation status of environmental protection and pollution control/mitigation measures is summarized in Section 4 of the Report.

3.2 Monitoring Stations and Parameters

The EM&A Manual designates several locations to monitor environmental impacts in terms of air quality, noise and water quality due to the Project. The description and detailed locations of monitoring stations for air quality, noise and marine water quality are shown in Figures 2, 3 and 4 and relevant sections of this Report.

3.3 Monitoring Methodology and Calibration Details

All monitoring works were conducted and monitoring equipment was calibrated in according with the EM&A Manual.

3.4 Environmental Quality Performance Limits (Action/Limit Levels)

The environmental quality performance limits, i.e. Action/Limit Levels (AL Levels) were derived from the baseline monitoring results. If the measured environmental quality parameters exceed the AL Levels, the respective action plan will be implemented. The AL Levels for each monitoring parameter are given in Appendix E. The event action plan is given in Appendix F.

3.5 Environmental Mitigation Measures

Relevant mitigation measures were recommended in the EM&A Manual for the Contractor to implement. A list of mitigation measures is given in Appendix H.

4.0 MONITORING RESULTS

4.1 Air Quality

In accordance with the EM&A Manual, 1-hr and 24-hr TSP air quality monitoring are to be conducted three times and one time per six days correspondingly. In the reporting quarter, all the 1-hr and 24-hr TSP monitoring results complied with the AL Levels. The monitoring trend of air quality during the reporting quarter are given in Appendix B.

Major dust sources in the Fill Bank were dump truck traffic and hauling activities.

Table 4.1 presents the number of exceedances recorded in each month of the reporting quarter. The number of monitoring event included regular monitoring events and additional ones.

Table 4.1 Summary of Number of Exceedances for 1-hr and 24-hr TSP Monitoring

Monitoring Parameter	*Level of Exceedance*	*June 2008*	*July 2008*	*August 2008*
24-hr TSP	*No of monitoring events*	*6*	*5*	*5*
	Action Level	*0*	*0*	*0*
	Limit Level	*0*	*0*	*0*
	Total	*0*	*0*	*0*
1-hr TSP	*No of monitoring events*	*16*	*16*	*16*
	Action Level	*0*	*0*	*0*
	Limit Level	*0*	*0*	*0*
	Total	*0*	*0*	*0*

4.2 Noise

According to the Section 26.11 of the Particular Specification of the Project, noise monitoring was carried out at two noise monitoring stations, TM-N1 and TM-N2 (Planned Holiday Camp Sites).

No exceedances were recorded in this reporting quarter.

4.3 Marine Water Quality

In accordance with the Project Profile, impact marine water quality monitoring was conducted at two control monitoring stations (TM-FC1 and TM-FC2) and two impact monitoring stations (TM-FM1and TM-FM2) in this quarter.

Impact marine water quality monitoring was conducted three days per week. Measurements were taken at both mid-ebb and mid-flood tides at three depths (i.e. 1m below surface, mid depth and 1m above seabed). The AL Levels are included in Appendix E.

No exceedances of all marine water quality monitoring parameters were recorded in this quarter.

Table 4.2 presents the total number of marine water quality exceedances in the reporting quarter. The trend of marine water quality in the past three months is depicted in Appendix D.

Table 4.2 Total Number of Marine Water Quality Exceedances in this quarter

Parameter	*Exceedance Level*	*June 2008*	*July 2008*	*August 2008*
Number of monitoring days		*11*	*13*	*13*
Dissolved Oxygen, DO (S&M)	*Action*	*0*	*0*	*0*
	Limit	*0*	*0*	*0*
	Total	*0*	*0*	*0*
Dissolved Oxygen, DO (B)	*Action*	*0*	*0*	*0*
	Limit	*0*	*0*	*0*
	Total	*0*	*0*	*0*
Turbidity	*Action*	*0*	*0*	*0*
	Limit	*0*	*0*	*0*
	Total	*0*	*0*	*0*
Suspended Solids, SS	*Action*	*0*	*0*	*0*
	Limit	*0*	*0*	*0*
	Total	*0*	*0*	*0*
Total Number of DO, Turbidity and SS Exceedances	*Action*	*0*	*0*	*0*
	Limit	*0*	*0*	*0*
	Total	*0*	*0*	*0*

A comparison between the quarterly mean/median of SS and the 1.3 times of the baseline mean was made for each tide at each station. The statistical analysis results are given in Appendix I and it shows that the quarterly mean of SS during impact monitoring was found greater than 130% of the baseline mean. Since there is no significant difference between the control and impact monitoring stations in SS level, higher level in SS level is not project related. Monitoring stations with significant difference ($p<0.05$) is summarized in Table 4.3.

Table 4.3 Summary of Statistically Significant Results of SS

Monitoring Station		*Significant difference?*	
		Mid-ebb	*Mid-flood*
Designated Control Station	*FC1*	√	√
	FC2	√	√
Designated Monitoring Station	*FM1*	√	√
	FM2	√	√

5.0 INSPECTION RESULTS

5.1 Implementation Status of Environmental Mitigation Measures

ET conducted weekly site inspections to monitor the Contractor's implementation of environmental mitigation measures.

Air quality was the major environmental issue in the reporting quarter. The Contractor generally implemented most of the environmental mitigation measures in the reporting quarter. Dump truck traffic was the major dust source in the Fill Bank. Generally, the Contractor implemented adequate dust mitigation measures in the reporting quarter including dampening of haul roads, water spraying on the truckloads, during loading and unloading of material and for crushing plant, operation of automatic wheel washing facilities, dampening of fill material prior to handling or stockpiling, etc.

The major noise source was dump truck traffic in the Fill Bank. All site equipment and machinery were well maintained and no noise nuisance was observed during operating.

Drainage channels and wastewater treatment facilities were found maintained in good condition for merit function. The Contractor arranged site workers to clean up the silt and mud regularly.

Although there were a few observations regarding improper handling of oil drums and chemical containers, such as lack of drip tray and accumulated of stagnant water in the drip tray, the Contractor rectified most of these problems. Besides, the Contractor should provide tarpaulin sheets before repairing and maintenance works and also carry out proper cleaning activities immediately after such works.

Overall site area was found tidy and clean. The Contractor was reminded to collect and dispose of the general refuse and other C&D waste in a timely manner.

5.2 Status of Environmental Licensing and Permitting

The status of licences and permits is summarized in Table 5.1.

Table 5.1 Summary of environmental licensing and permit status

Description	*Permit No.*	*Valid Period*		*Section*
		From	*To*	
Amended Environmental Permit	*EP-134/2002/F*	*26/01/06*	*---*	*(Valid)* ▪ *Site clearance* ▪ *Construction of a temporary storm water system* ▪ *Stockpiling of 6 million m3 of public fill* ▪ *Setting up two barging points for transporting the stockpiled public fill by barges* ▪ *Setting up a temporary barging point at the existing Explosive Off-loading Barging Point for the period of May 2004 to December 2004 for transporting the stockpiled public fill by barge* ▪ *Construction of operation of a construction and Demolition Material Sorting Facility (C&DMSF)* ▪ *Setting up a Construction and Demolition Material Crushing Facility at the TKO Basin* ▪ *Remove the temporary fill bank*
Chemical Waste Producer	*5123-839-C1186-05*	*04/01/07*	*---*	*Spent Lubricating oil / Spent Flammable Liquid / Spent Battery / Surplus Paint*
Effluent Discharge License	*EP760/421/012141/I*	*19/04/07*	*30/04/12*	*Discharge of Industrial Trade Effluent arising from public fill reception facilities*

5.3 Advice on Solids and Liquid Waste Management Status

Table 5.2 summarizes data on offsite waste disposal in the quarter.

Table 5.2 Estimated Offsite Waste Disposal in the Reporting Quarter

Waste Type	*Examples*	*June 2008*	*July 2008*	*August 2008*
C&D Waste	*Domestic waste (site) collected in garbage bins and general refuse (m^3)*	*0*	*0*	*0*
Chemical Waste	*Waste oil (L) / Chemical Waste (kg)*	*0*	*0*	*245 kg*

6.0 NON-COMPLIANCE OF THE ENVIRONMENTAL QUALITY PERFORMANCE LIMITS

6.1 Summary of Non-compliance

In this reporting quarter, no exceedances of Action and Limit Level of marine water quality, noise, 24-hr and 1-hr TSP monitoring results were recorded.

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

Since there were no exceedances on noise, marine water quality and air quality monitoring parameters recorded in this monitoring quarter, the review of the reasons for the non-compliance was not required.

6.3 Summary of Actions Taken

Since no exceedances were recorded, no further actions were required.

6.4 Summary of Environmental Complaint, Notifications of Summons and Successful Prosecutions Handling

A complaint was received on 02 September 2008 through email forwarded by the EPD from a citizen against dust emission at the exit of Tuen Mun Area 38 Fill Bank which caused by the dropping of small size of stones / rocks from dump truck leaving the public dump site on 26 August 2008. The small sizes of stones were then crushed into dust by the movement of vehicles, hereby generating fugitive dust. The complainant complained that the dust generated caused an environmental nuisance.

The complaint was reported to be happened in the evening time on 26 August 2008. After discussing with the Contractor, they reported that the site was closed at around 19:00 on 26 August 2008. Since no other observer was reported in the complaint, it is difficult to proof whether the contractor dump truck or other private dump truck was leaving the site especially after 19:00.

Refer to the ET weekly site inspection on 26 August 2008, dust depression measures such as regular public road cleaning and wheel washing facilities at the site entrance were provided by the Contractor and which were also operated properly during our routine weekly site inspections. Besides, dump trucks with open load carrying area used for moving materials which has the potential to create dust were properly fitting side and tail boards and were covered by tarpaulin sheets to prevent dropping when leaving the site.

As a result, we concluded that the complaint is an occasional case and no evidence to proof the complaint is project related. However, the Contractor agreed to take more effort on the maintenance of the public road, such as checking the exist more frequently, increase the frequency of road watering and cleaning the haul road / public road as soon as possible when leaving of stones/rocks were found. In addition, hoarding related notices in the site area was advised to remind the public to avoid dropping of any stones/rocks on the road when leaving the public dump site.

No notifications of summons and successful prosecutions were received in this quarter.

A summary of environmental complaints and prosecutions was given in Table 6.1.

Table 6.1 Summary of Environmental Complaints and Prosecutions

Period	*Complaints logged*	*Summon served*	*Successful Prosecution*
June 2008	*0*	*0*	*0*
July 2008	*0*	*0*	*0*
August 2008	*1*	*0*	*0*
Cumulative	*1*	*0*	*0*

7.0 COMMENTS, CONCLUSIONS AND RECOMMENDATION

This report presents the third quarter of the Fill Bank operation. Major activity in the Fill Bank was the import and dumping of fill material. Air quality was the major environmental issue in the Fill Bank. Generally, the Contractor implemented most of the mitigation measures to minimize the dust impact.

No exceedances of Action and Limit Level of air quality, noise and marine water quality monitoring were recorded in this reporting quarter.

The noise level measured at the monitoring station complied with the Limit Level. No complaint was received regarding noise issue in this reporting month.

One complaint and no notification of summons and prosecutions with respect to environmental issues were received in this quarter.

According to the ET weekly site inspection and IEC site audits carried out in this quarter, it was indicated that site practices of the Contractor were generally undertaken in an environmentally acceptable manner and the overall site environmental performance was up to standard.

According to the environmental site inspections performed in the reporting quarter, the following recommendations were provided:

Air Quality
- Ensure the frequency of water spraying on haul roads, unloading areas and stockpiles to be sufficient to suppress the dust sources;
- Conduct road sweeping on the public road and the main haul roads outside and near the site egress by the road sweeper;
- Undertake water spraying on stockpiling area;
- Provide proper maintenance for the powered mechanical equipment and barges to avoid emission of dark smoke;
- Provide water spraying onto the truckloads during inspection of fill material;
- Erect adequate speed limit signs to advise the truck drivers of the speed limit;
- Implement the dust mitigation measures for the construction activities; and
- Ensure all vehicles to be washed before leaving the site egress through the provision, operation and maintenance of automatic wheel washing facilities.

Noise
- Conduct noisy activities at a farther location from the NSRs.

Water Quality
- Maintain the drainage system regularly;
- Operate the cleaning vessel regularly; and
- Remove the stagnant water or provide pesticide for the stagnant water in the permanent desilting chambers, if any.

Chemical and Waste Management
- Remove waste materials from the site to avoid accumulation regularly;
- Handle and store chemical wastes properly;
- Remove unwanted material in the existing stockpiles and avoid further dumping of such material;
- Provide and maintain sufficient drip trays for diesel drums, chemical containers, chemical waste storage drums and diesel operated generator set;
- Maintain good housekeeping at the workshop area;
- Ensure sufficient tarpaulin sheets are provided to cover drip trays; and

- Avoid soil being polluted during oil filling and equipment maintenance; hence, properly remove and store the contaminated soil, if any.

Landscape and Visual

- Provide hydroseeding on the exposed slopes, on which the final profile has been formed;
- Erect all the site hoarding/chaining fences in accordance with agreed design at proper location; and
- Maintain the hydroseeding slopes in accordance with the Landscape Plan.