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DRAINAGE SERVICES DEPARTMENT CONTRACT NO. DC/2006/02

YUEN LONG, KAM TIN, NGAU TAM MEI AND TIN SHUI WAI DRAINAGE IMPROVEMENTS, STAGE 1, PHASE 2B – CHEUNG CHUN SAN TSUEN AND KAM TSIN WAI

KT15 Quarterly EM&A Summary Report – 26TH JUNE TO 25TH SEPTEMBER 2009

PREPARED FOR

CHIT CHEUNG CONSTRUCTION COMPANY LIMITED

Quality Index			
Date	Reference No.	Prepared By	Certified By
29 October 2009	TCS00371/07/600/R1487v4	Anh	
		Nicola Hon	Andrew Lau
		Environmental Consultant	Environmental Team Leader

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1	21 October 2009	First Submission
2	24 October 2009	Amended against IEC's comment on 23 October 2009
3	27 October 2009	Amended against IEC's comment on 27 October 2009
4	29 October 2009	Amended against IEC's comment on 28 October 2009

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EXECUTIVE SUMMARY

- ES01. Chit Cheung Construction Company Limited (CCC) has been awarded the Drainage Services Department (DSD) Contract No. DC/2006/02 Yuen Long, Kam Tin, Ngau Tam Mei and Tin Shui Wai Drainage Improvements, Stage 1, Phase 2B – Cheung Chun San Tsuen and Kam Tsin Wai (hereinafter "the Project") on 3 April 2007. According to the contract specification requirements, an Environmental Monitoring & Audit (EM&A) program is to be implemented by an Independent Environmental Team (ET) throughout the major construction period.
- ES02. Under the Project Profile for Yuen Long, Kam Tin, Ngau Tam Mei and Tin Shui Wai, Drainage Improvement Stage 1 Phase 2B – Kam Tin Secondary Drainage Channels KT14 & KT15 (Ref.: 382047/E/PP/Issue 5), KT14 & KT15 were defined as Designated Projects and governed by the Environmental Permit (EP-231/2005/A).
- ES03. Action-United Environmental Services and Consulting (AUES) has been commissioned by CCC as an Independent Environmental Team (ET) to implement the EM&A program in compliance with the requirements as stated in the Environmental Permit and the *Environmental Monitoring &Audit Manual (EM&A Manual) for Secondary Channels KT14 & KT15 (August 2005).* This contract (DC/2006/02) only covers KT15; and KT14 will be carried out under another contract.
- ES04. This is the 9th Quarterly Environmental Monitoring & Audit (EM&A) Summary Report for **July to September 2009** containing the monitoring results and audit findings for the period from 26 June 2009 to 25 September 2009 (this quarter).

BREACH OF ACTION AND LIMIT (A/L) LEVELS

ES05. Monitored data exceedances in this quarter are summaried in following table.

Monitoring	Parameters	Action Level	Limit Level
Air Quality	1-hour TSP	-	-
	24-hour TSP	-	-
Noise	Leq (30min) Daytime	-	-
	Dissolve Oxygen (DO)	-	-
	Turbidity (NTU)	-	_
Stream pH		-	_
Water	Suspended Solids (SS)	-	_
	Ammonia Nitrogen		-
Zinc		-	-
Ecology Number of species of wetland birds		-	24 Jul, 21 Aug and 21 Sep 09
Total number of wetland birds		-	24 Jul 09
Number of species of wetland fauna		-	24 Jul 09
	Total number of wetland fauna	-	24 Jul 09

Note: According to the EM&A Manual S7.5.1(b), fauna monitoring was only undertaken during wet season (April to July)

COMPLAINTS LOG

ES06. No environmental complaint was received in this quarter.

NOTIFICATIONS OF ANY SUMMONS AND SUCCESSFUL PROSECUTIONS

ES07. There was no environmental summons or successful prosecution was recorded in this quarter.



Reporting Changes

ES08. There are no changes in reporting made in this quarter.

CONSTRUCTION ACTIVITIES IN THE REPORTING QUARTER

ES09. Construction activities in the quarter are listed in the following table:

Reporting Period	Construction Activities	
26 June 2009 – 25 July 2009	 Backfilling behind completed structure; Road construction; Tree protection and tree transplanting works; Utilities companies liaison; and Carrying out joined survey 	
26 July 2009 – 25 August 2009	 Backfilling behind Completed Structure; Road Construction; Carrying out joined survey; Tree protection and tree transplanting works; Utilities companies liasion; Excavation Gabion Installation 	
26 August 2009– 25 September 2009	 Backfilling behind completed structure; Road construction; Carrying out joined survey; Tree protection and tree transplanting works; Utilities companies liaison; Excavation Gabion installation Hydroseeding Planting tree 	

ES10. Potential environmental impacts for this project generally include air quality, noise, ecology, surface runoff and construction waste. The contractor shall properly implement the required environmental mitigation measures as per the Implementation Schedule in the EM&A manual.

EM&A ACTIVITIES IN THE REPORTING QUARTER

ES11. A summary of the monitoring activities in this quarter is listed below:

•	1-hour TSP Monitoring	48	Events
•	24-hour TSP Monitoring	16	Events
•	Noise Monitoring	16	Events
•	Stream Water Quality	52	Events
•	Ecology	3	Events
•	Site Inspection Audit	14	Times

AIR QUALITY

ES12. No Action or Limit Level exceedance of 1-hour or 24-hour TSP was recorded in this quarter.

CONSTRUCTION NOISE

ES13. No exceedance in construction noise measurements was recorded and no construction noise complaint was received in this quarter.



STREAM WATER QUALITY

ES14. No stream water quality monitoring result that triggered the Action or Limit Level was recorded in this reporting period.

ECOLOGY

ES15. One fauna and three wetland bird monitoring sessions were conducted during the reporting quarter. Non-compliances with the ecological criteria were found during the quarter (24 July, 21 August and 21 September 2009). No intrusions of construction activities, discharge to the wetland areas or adverse impact to the adjacent wetland were observed on 24 July, 21 August and 21 September 2009. Investigation reports revealed that major construction works carried out during the exceedance days were only erection of formwork, steel fixing and concreting. Those activities would not cause excessive disturbance to the adjacent wetlands. Therefore, the non-compliances in number of species and individual number of both wetland dependent birds and fauna were not due to the project.

SUMMARY OF MONITORING EXCEEDANCES

ES16. A summary of monitoring exceedances in this quarter for air quality, noise, stream water quality and ecology monitoring are presented below:

Env. Quality	Parameters	Work-Related Exceedance %	Investigation & Corrective Actions
Air Quality	1-hour TSP	0	Not Required for 0% Exceedance
	24-hour TSP	0	Not Required for 0% Exceedance
Noise	Leq (30min) Daytime	0	Not Required for 0% Exceedance
Stream Water	Dissolve Oxygen (DO)	0	Not Required for 0% Exceedance
	Suspended Solids (SS)	0	Not Required for 0% Exceedance
	Turbidity (NTU)	0	Not Required for 0% Exceedance
	pH	0	Not Required for 0% Exceedance
	Ammonia Nitrogen	0	Not Required for 0% Exceedance
	Zinc	0	Not Required for 0% Exceedance
Ecology	Decrease in the total number of species or individuals of wetland dependent bird from baseline		Not Required for 0% Exceedance
	Decrease in the total number of species or individuals of wetland fauna from baseline		Not Required for 0% Exceedance

SITE INSPECTION BY EXTERNAL PARTIES

ES17. No site visit or inspection was carried out by the Environmental Protection Department in this Reporting Period.



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1.0 INTRODUCTION

- 1.01 Chit Cheung Construction Company Limited (CCC) has been awarded the Drainage Services Department Contract No. DC/2006/02 Yuen Long, Kam Tin, Ngau Tam Mei and Tin Shui Wai Drainage Improvements, Stage 1, Phase 2B Cheung Chun San Tsuen and Kam Tsin Wai (hereinafter "the Project") on 3 April 2007. According to the contract specification requirements the Project should implement an Environmental Monitoring & Audit (EM&A) program by an Independent Environmental Team (ET) throughout the construction period in accordance with the requirements as stated in the project particular specification, Environmental Permit (EP-231/2005/A) and EM&A Manual for Channel KT15. The location of the project site is presented in Appendix A and the construction program is presented in the pervious monthly EM&A reports.
- 1.02 The works to be executed at the proposed Channel KT15 mainly comprise the following:
 - Construction of about 0.8 km secondary drainage channels;
 - Construction of DSD maintenances access;
 - Provisioning and re-provisioning of pedestrian crossings;
 - Associated ancillary works; and
 - Construction of temporary vehicular access in Portion 5A1 of the site for vehicular access from Kam Sheung Road to Lot Nos. 398RP, 395 in DD106 which are adjacent to the site.
- 1.03 Action-United Environmental Services and Consulting (AUES) has been commissioned by CCC as an Independent Environmental Team (ET) for implementation of the EM&A program in accordance with the requirements as set out in the contract particular specification, Environmental Permit (EP-231/2005/A), EM&A Manual for Channel KT15 and the Environment Impact Assessment Ordinance (EIAO).
- 1.04 This report summaries the monitoring results and inspection findings for the quarter **July to September 2009** during the period from **26 June 2009 to 25 September 2009** under the EM&A program.

REPORT STRUCTURE

1.05 This Quarterly EM&A Summary Report is structured into the following sections:

SECTION 1	INTRODUCTION
SECTION 2	PROJECT ORGANIZATION AND CONSTRUCTION PROGRESS
SECTION 3	SUMMARY OF MONITORING REQUIREMENTS
SECTION 4	IMPACT MONITORING METHODOLOGY
SECTION 5	IMPACT MONITORING RESULTS
SECTION 6	WASTE MANAGEMENT
SECTION 7	SITE INSPECTION
SECTION 8	ENVIRONMENTAL COMPLAINT AND NON-COMPLIANCE
SECTION 9	IMPLEMENTATION STATUS OF MITIGATION MEASURES
SECTION 10	Conclusions



2.0 PROJECT ORGANIZATION AND CONSTRUCTION PROGRESS

PROJECT ORGANIZATION AND MANAGEMENT STRUCTURE

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

CONSTRUCTION PROGRESS

2.02 The major construction activities undertaken in this quarter were summaries in Table 2-1.

Table 2-1 Major Construction Activities				
Reporting Period	Construction Activities			
26 June 2009 – 25 July 2009	 Backfilling behind completed structure; Road construction; Tree protection and tree transplanting works; Utilities companies liaison; and Carrying out joined survey 			
26 July 2009 – 25 August 2009	 Backfilling behind Completed Structure; Road Construction; Carrying out joined survey; Tree protection and tree transplanting works; Utilities companies liasion; Excavation Gabion Installation 			
26 August 2009– 25 September 2009	 Backfilling behind completed structure; Road construction; Carrying out joined survey; Tree protection and tree transplanting works; Utilities companies liaison; Excavation Gabion installation Hydroseeding Planting tree 			

 Table 2-1
 Major Construction Activities

SUMMARY OF ENVIRONMENTAL SUBMISSIONS

2.03 A summary of the relevant permits, licences, and/or notifications on environmental protection for this Project in this quarter are presented in **Table 2-2**.

Table 2-2 Status of Environmental Lic	censes and Permits
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Items	Item Description	License/Permits Status
1	Environmental Permit (EP-231/2005/A)	-
2	Air Pollution Control (Construction Dust)	Notified EPD on 9 July 2007
5	(Portion 8, Ma Fung Ling Koad, Tong Tan San Isuen, Tuen Long)	Registration on 20 April 2007
4	Chemical Waste Producer Registration WPN:5113-533-C3434-09 (Kam Tsin Wai, Kam Tin, Yuen Long)	Registration on 20 April 2007
	Chemical Waste Producer Registration WPN:5213-424-C3431-01 (Portion 7, Birthing Area, Hoi Wan Road, Tuen Mun)	Registration on 20 April 2007
6	Water Pollution Control Ordinance (Discharge License) License No.: 1U450/1	Updated on 20 June 2009
7	Billing Account for Disposal of Construction Waste (Account Number : 7005311)	Valid on 7 May 2007



3.0 SUMMARY OF IMPACT MONITORING REQUIREMENTS

- 3.01 Environmental monitoring and audit requirements are set out in the EM&A Manual. Air quality, construction noise, stream water quality and ecology have been identified to be the key environmental issues during the construction phase of the project.
- 3.02 A summary of the EM&A requirements for air quality, construction noise, stream water quality and ecology monitoring are shown in Table 3-1. The designated station of the air quality, construction noise, stream water quality locations and ecology monitoring area are shown in Appendix C.

Environmental Aspect	Monitoring Parameters		Monitoring Stations
Air Quality	1-hour and 24-hour TS	P	A10
Construction Noise	Leq(30min) during norma	l working hours	N10a*
	Supplementary data of	L_{10} and L_{90} for reference.	
Stream Water Quality	In Situ Measurement	 Dissolved Oxygen Concentration (mg/L); Dissolved Oxygen Saturation (% Sat); Turbidity (NTU); pH; Salinity (%); Water Depth (m) and Temperature (°C). 	W9A & W9B
	Laboratory Analysis	 Suspended Solids (mg/L); Ammonia Nitrogen (mg/L); and Zinc (μg/L). 	
Ecology			

 Table 3-1
 Summary of EM&A Requirements

Note: * The noise ambient condition within the victim area without significant change. Due to the accessibility, noise monitoring will undertake at N10a. Once the access is available, the impact noise monitoring will undertake at N10.

- 3.03 Air monitoring is carried out once every six days for 24-hour TSP and 3 times every six days for 1-hour TSP at one designated monitoring station A10.
- 3.04 Noise monitoring is conducted once per week at one designated monitoring location (N10a). Measurements of $Leq_{(30min)}$ shall be taken between 0700 and 1900 hours with supplementary L_{10} and L_{90} data collected for reference.
- 3.05 Stream water quality monitoring is conducted were undertaken at two location W9A & W9B twice per week. Dissolved Oxygen (DO), pH, Turbidity (NTU) was measured in-situ; water depth, temperature and salinity were collected for relevant data. Suspended solids (SS), ammonia nitrogen and zinc were determined in a HOKLAS accredited laboratory.



- 3.06 Ecological monitoring is conducted in the seasonal wetland area as shown in the Project Profile of Channel KT15 (Figure ATT 4-7.2). Bird survey should be conducted in monthly and other faunal groups (reptiles, amphibians, dragonflies and butterflies) are conducted in wet season (April to July inclusive). Photographic record should be made at six-month intervals. The last photographic record was undertaken in June 2009, and next one will be conducted in December 2009 accordingly.
- A summary of the Action/Limit (A/L) Levels for air quality, construction noise, 3.07 stream water quality and ecology are shown in Tables 3-2, 3-3, 3-4 and 3-5.

Table 3-2 Action and Limit Levels for Air Quality Monitor	ring
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Monitoring Station	Action Level (µg/m ³)		(µg/m ³) Limit Level (µg/m ³)	
Womtor mg Station	1-hour TSP	24-hour TSP	1-hour TSP	24-hour TSP
A10	> 307	> 165	> 500	> 260

Table 3-3 Action and Limit Levels for Construction Noise Monitoring

Time Period	Action Level in dB(A)	Limit Level in dB(A)	
0700-1900 hrs on normal weekdays	When one or more documented complaints are received	>75* dB(A)	
Note: * Reduces to $70dB(A)$ for schools and $65dB(A)$ during the school examination periods			

to 70dB(A) for schools and 65dB(A) during the school examination periods.

Table 3-4 Action and Limit Levels for Stream Water Quality Monitoring

Dissolved Oxygen (mg/l)	W9A (Upstream) [#]	W9B (Downstream)
Action Level	NA	< 0.3
Limit Level	NA	< 0.2
Turbidity (NTU)	W9A (Upstream) [#]	W9B (Downstream)
Action Level	NA	> 73.5*
Limit Level	NA	> 78.2**
pH	W9A (Upstream) [#]	W9B (Downstream)
Action Level	NA	> 7.0*
Limit Level	NA	> 7.1**
Suspended Solids (mg/L)	W9A (Upstream) [#]	W9B (Downstream)
Action Level	NA	> 148*
Limit Level	NA	> 159**
Ammonia Nitrogen (mg/L)	W9A (Upstream) [#]	W9B (Downstream)
Action Level	NA	> 30.91*
Limit Level	NA	> 32.20**
Zinc (µg/L)	W9A (Upstream) [#]	W9B (Downstream)
Action Level	NA	> 242*
Limit Level	NA	> 252**

 [#] Act as Control Station for the Impact Water Quality Monitoring.
 * Alternative Action Level of the Turbidity, pH, Suspended Solid, Ammonia Nitrogen and Zinc are 120% of upstream control station of same day.

** Alternative Limit Level of the Turbidity, pH, Suspended Solid, Ammonia Nitrogen and Zinc are 130% of upstream control station of same day.

 Table 3-5
 Action and Limit Levels for Ecology Monitoring

Parameters	Action Level	Limit Level
Decrease in number of species of wetland birds of conservation	20 – 40% of 2	>40% of 2 species
importance from baseline.	species	> 40% 01 2 species
Decrease in the total number of wetland birds of conservation	20 – 40% of 1.2	>40% of 1.2
importance from baseline.	individuals	individuals
Decrease in number of species of wetland fauna of conservation	20 – 40% of 21	> 40% of 21 spacing
importance from baseline.	species	> 40% of 21 species
Decrease in the total number of wetland fauna of conservation	20 – 40% of 44.99	> 40% of 44.99
importance from baseline.	individuals	individuals

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4.0 IMPACT MONITORING METHDOLOGY

MONITORING LOCATIONS

4.01 The 1-hour and 24-hour TSP monitoring was carried out at one designated station A10. Impact construction noise monitoring was undertaken at the designated location N10a. Stream water quality monitoring was undertaken at two designated locations (W9A & W9B). The ecology monitoring was conducted within the wetland area in according to the EM&A Manual of KT15. The descriptions of monitoring stations are presented in Tables 4-1 and Appendix C.

Table 4-1Location of Air Quality, Noise & Stream Water Quality Monitoring
Station/Locations

Air Quality Station	
A10	Village House in Tin Sam San Tsuen
Construction Noise I	Location
N10*	Village House in Tin Sam San Tsuen
N10a	Village House in Tin Sam San Tsuen
Water Quality Locat	ions
W9A [#]	Tin Sam San Tsuen
W9B	Tin Sam San Tsuen

Note: * The noise ambient condition within the victim area without significant change. Due to the accessibility, noise monitoring will undertake at N10a. Once the access is available, the impact noise monitoring will undertake at N10

- # Act as control station in impact monitoring
- 4.02 The meteorological data during the quarter were obtained from the Lau Fau Shan Station of the Hong Kong Observatory (HKO).

MONITORING FREQUENCY AND PERIOD

<u>1-HOUR TSP MONITORING</u>

4.03 The 1-hour TSP monitoring was conducted in designated station A10 in according to the EM&A Manual three times every 6 days. A total of 48 monitoring events were carried out in this quarter.

<u>24-HOUR TSP MONITORING</u>

4.04 The 24-hour TSP monitoring was conducted at station A10 once every six days. A total of **16** monitoring events were carried out in this quarter.

NOISE MONITORING

4.05 Impact noise monitoring was undertaken at one location N10a once per week. A total of **16** monitoring events were carried out in this quarter.

STREAM WATER QUALITY MONITORING

4.06 The stream water quality monitoring was undertaken at two locations W9A & W9B two times per week and a total of 52 monitoring events were carried out.



ECOLOGY MONITORING

- 4.07 Bird survey should be conducted in monthly and other faunal groups (reptiles, amphibians, dragonflies and butterflies) are conducted in wet season (April to July inclusive) in the seasonal wetland area. Based on the EM&A Manual requirements, three monitoring and checking of construction activities adjacent to the wetland areas was undertaken on 24 July, 21 August and 21 September 2009.
- 4.08 Photographic record should be made at six-month intervals. The last photographic record was undertaken in June 2009, and next one will be conducted in December 2009 accordingly.



5.0 IMPACT MONITORING RESULTS

5.01 The impact EM&A program was carried out by the ET in compliance with the project specific EM&A Manual in this quarter. The impact monitoring schedules were presented in pervious Monthly EM&A Reports (July 2009, August 2009 and September 2009). All the impact monitoring was undertaken in according to the monitoring schedule. Details of the monitoring results are present in the pervious Monthly EM&A Reports (July 2009, August 2009).

AIR QUALITY

- 5.02 No 1-hour/24-hour TSP Action or Limit Level exceedance was recorded in this quarter. Details of the impact air quality monitoring data were present in the pervious Monthly EM&A Reports (July 2009, August 2009 and September 2009). Graphical plots of the 1-hour and 24-hour TSP monitoring results are shown in Appendix D.
- 5.03 The meteorological data of this quarter are summarized in Appendix E.

CONSTRUCTION NOISE

5.04 No construction noise exceedance (Action/Limit Level) was recorded in this quarter. Details of the impact noise monitoring data were present in the pervious Monthly EM&A Reports (July 2009, August 2009 and September 2009). Graphical plots of the monitoring data are presented in Appendix D.

STREAM WATER QUALITY

5.05 No stream water quality monitoring result that triggered the Action or Limit Level was recorded in this reporting period. Details of the monitoring results were present in the pervious Monthly EM&A Reports (July 2009, August 2009 and September 2009) and graphical plots for each parameter are presented in Appendix D.

ECOLOGY

5.06 Exceedances in ecology were recorded in this quarter. Details of the monitoring results were presented in the pervious Monthly EM&A Reports (July 2009, August 2009 and September 2009) and a summary of the exceedance is presented in Table 5-1. From Section 7.5.1(b) of the EM&A Manual, fauna survey is required during wet season (i.e. April to July) and thus fauna monitoring was undertaken in this period.

Month	Taxa	Parameters	Action Level	Limit Level
July 2009	Bird	Species no.	-	Breach
		Individual no.	-	Breach
	Fauna	Species no.	-	Breach
		Individual no.	-	Breach
August 2009	Bird	Species no.	-	Breach
		Individual no.	-	-
	Fauna	Species no.	-	-
		Individual no.	-	-
September 2009	Bird	Species no.	-	Breach
		Individual no.	-	-
	Fauna	Species no.	-	-
		Individual no.	-	-

 Table 5-1
 Summary of Exceedances in Ecology Impact Monitoring



5.07 Photographic records are scheduled in six-month intervals; the last photographic records were taken in June 2009 and the next photographic records will be conducted in December 2009.



6.0 WASTE MANAGEMENT

6.01 The waste management was implemented by an Environmental Officer or Environmental Supervisor employed by the Contractor.

RECORDS OF WASTE QUANTITIES

- 6.02 All types of waste arising from the construction work are classified into the following:
 - Construction & Demolition (C&D) Material;
 - Chemical Waste;
 - General Refuse; and
 - Excavated Soil.
- 6.03 Total quantities of waste for disposal in this quarter were summarized in Tables 6-1 and 6-2. Whenever possible, materials were reused on-site as far as practicable. The quantities of excavation soil for marine disposal in this quarter are summarized in Table 6-3.

 Table 6-1
 Summary of Quantities of Inert C&D Materials

Type of Waste	July 2009	August 2009	September 2009
Broken Concrete (Inert) (m ³)	0	0	0
Reused in this Contract (Inert) (m ³)	0	0	0
Reused in other Projects (Inert) (m ³)	0	0	0
Disposal as Public Fill (Inert) (m ³)	0	0	0

Table 6-2	Summary of Quantities of C&D Wastes
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Type of Waste	July 2009	August 2009	September 2009
Recycled Metal (kg)	0	0	0
Recycled Paper / Cardboard Packing (kg)	0	0	0
Recycled Plastic (kg)	0	0	0
Chemical Wastes (L)	0	0	0
General Refuses (m ³)	7	14	21

 Table 6-3
 Summary of Excavated Soil for Marine Disposal

Type of Waste	July 2009	August 2009	September 2009
Type 1 Materials (m ³)	0	0	0
Type 2 Materials (m ³)	0	0	0



7.0 SITE INSPECTION

7.01 According to the Section 9.1.2 of the EM&A Manual, the environmental site inspection should be formulated by the Environmental Team Leader. The inspection dates of ET's weekly environmental site inspection and IEC monthly site audit were summaried in Table 7-1.

 Table 7-1
 Date of Environmental Weekly Site Inspection and Monthly Audit

Date of Inspection/Audit	Involved Parties
26 June 2009	ER, CCC and ET
2 July 2009	ER, CCC and ET
8 July 2009	ER, CCC and ET
* 15 July 2009	ER, IEC, CCC and ET
24 July 2009	ER, CCC and ET
29 July 2009	ER, CCC and ET
5 August 2009	ER, CCC and ET
12 August 2009	ER, CCC and ET
* 19 August 2009	ER, IEC, CCC and ET
24 August 2009	ER, CCC and ET
2 September 2009	ER, CCC and ET
9 September 2009	ER, CCC and ET
* 16 September 2009	ER, IEC, CCC and ET
23 September 2009	ER, CCC and ET

Note: *Monthly IEC site audit.

7.02 During the weekly site inspection or monthly auditing, there have no non-compliance but 13 observations were recorded in this quarter. The weekly ET site inspection and monthly IEC site audit checklists were presented in the pervious Monthly EM&A Reports (July 2009, August 2009 and September 2009).



8.0 ENVIRONMENTAL COMPLAINT AND NON-COMPLIANCE

ENVIRONMENTAL COMPLAINT, SUMMONS AND PROSECUTION

8.01 No environmental complaint, summons and prosecution was received in this quarter. The statistical summary table of environmental complaint is presented in **Tables 8-1**, **8-2 and 8-3**.

Reporting Period	Environmental Complaints Statistics				
Keporting Terrou	Frequency	Cumulative	Complaint Nature		
26 June- 25 July 2009	0	0	NA		
26 July- 25 August 2009	0	0	NA		
26 August- 25 September 2009	0	0	NA		

Table 8-1 Statistical Summary of Environmental Complaints

Table 8-2 Statistical Summary of Environmental Summons

Reporting Period	Environmental Summons Statistics				
Keporting Terrou	Frequency	Cumulative	Nature		
26 June- 25 July 2009	0	0	NA		
26 July- 25 August 2009	0	0	NA		
26 August- 25 September 2009	0	0	NA		

Table 8-3 Statistical Summary of Environmental Prosecution

Reporting Period	Environmental Prosecution Statistics				
Keporting Terrod	Frequency	Cumulative	Nature		
26 June- 25 July 2009	0	0	NA		
26 July- 25 August 2009	0	0	NA		
26 August- 25 September 2009	0	0	NA		



9.0 IMPLEMENTATION STATUS OF MITIGATION MEASURES

- 9.01 CCC has been implementing the required environmental mitigation measures according to the EM&A Manual of KT15 Mitigation Measures Implementation Schedule.
- 9.02 A summary of environmental mitigation measures generally implemented by CCC in this quarter is presented as follows:

Water Quality

- Wastewater were appropriately treated by treatment facilities;
- Drainage channels were provided to convey run-off into the treatment facilities;
- Drainage systems were regularly and adequately maintained.

Air Quality

- Vehicles were clear of mud and debris before leaving the site;
- Site vehicles were limited to 8 km/hr;
- Public roads around the site entrance/exit had been kept clean and free from dust;
- Dust suppression measures were properly provided to reduce dust emission from stockpile.

Noise

- Works and equipment were located to minimize noise nuisance from the nearest sensitive receiver;
- Idle equipments were either turned off or throttled down;
- Powered Mechanical Equipments were covered or shielded by appropriate acoustic materials if practicable.

Waste and Chemical Management

- Wastes were properly segregated into inert and non-inert in appropriate containers/areas;
- Excavated materials were reused where practicable.
- A chemical waste storage area had been provided on site;

General

• The site was generally kept tidy and clean.



10.0 CONCLUSION

10.01 The EM&A program in this quarter (26 June – 25 September 2009) were undertaken in compliance with the EM&A Manual for Channel KT15. A summary of environmental compliance of air, noise, stream water quality and ecology in this quarter are presented in Table 10-1.

	•		•
Issues	Parameters	Work-Related Exceedance %	Investigation & Corrective Actions
Air	1-hour TSP	0	Not Required for 0% Exceedance
Quality	24-hour TSP	0	Not Required for 0% Exceedance
Noise	Leq (30min) Daytime	0	Not Required for 0% Exceedance
	Dissolve Oxygen (DO)	0	Not Required for 0% Exceedance
	Suspended Solids (SS)	0	Not Required for 0% Exceedance
Stream	Turbidity (NTU)	0	Not Required for 0% Exceedance
Water	pH	0	Not Required for 0% Exceedance
	Ammonia Nitrogen	0	Not Required for 0% Exceedance
	Zinc	0	Not Required for 0% Exceedance
	Decrease in the total number of species or		
	individuals of wetland dependent bird from	0	Not Required for 0% Exceedance
Ecology	baseline		
	Decrease in the total number of species or individuals of wetland fauna from baseline	0	Not Required for 0% Exceedance

Table 10-1Summary of the Exceedances for Impact Monitoring

- 10.02 No 1-hour or 24-hour TSP exceedance of the Action/Limit Level was recorded in this quarter.
- 10.03 All measured daytime construction noise levels were below the Limit Level and no complaint was received in this quarter.
- 10.04 No water quality monitoring results exceedances were recorded in this Reporting Period.
- 10.05 One fauna and three wetland bird monitoring were conducted during the reporting quarter. Non-compliances with the ecological criteria were found during the quarter (24 July, 21 August and 21 September 2009). No intrusions of construction activities, discharge to the wetland areas or adverse impact to the adjacent wetland were observed on 24 July, 21 August and 21 September 2009. Investigation reports revealed that major construction works carried out during the exceedance days were only erection of formwork, steel fixing and concreting. Those activities would not cause excessive disturbance to the adjacent wetlands. Therefore, the non-compliances in number of species and individual number of both wetland dependent birds and fauna were not due to the project.
- 10.06 No environmental complaint, summons or prosecution was received in this quarter.

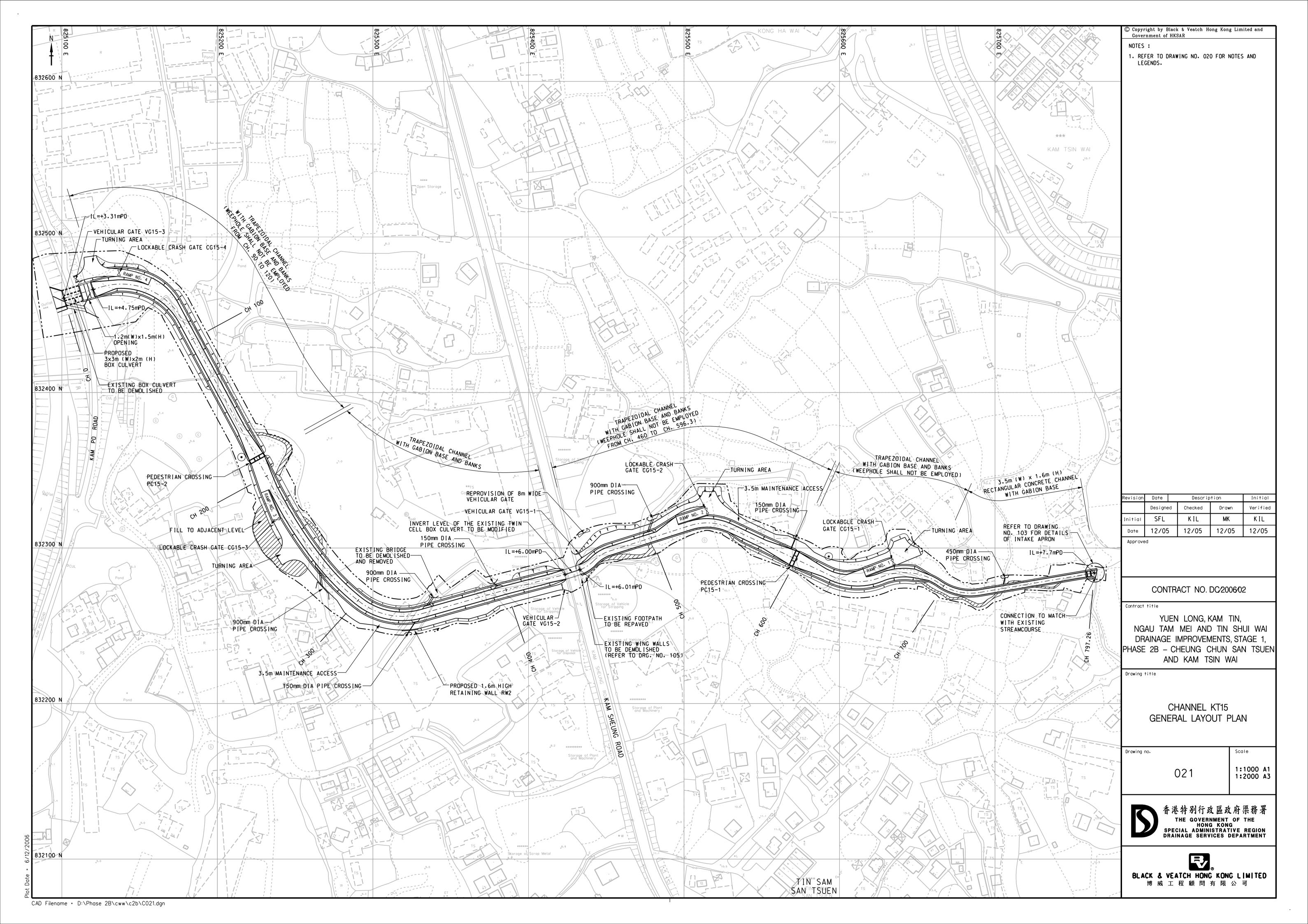
RECOMMENDATIONS

- 10.07 Based on the weekly ET site inspection and monthly IEC site audit, no non-compliance but 13 observations were recorded in this quarter. Details of the observations were present in the pervious Monthly EM&A Reports (July 2009, August 2009 and September 2009). In general, the environmental performance of proposed channel KT15 was acceptable.
- 10.08 The ET will continue to implement the EM&A program and audit the mitigation measures implement by the Contractor.



Appendix A

Project Site Layout



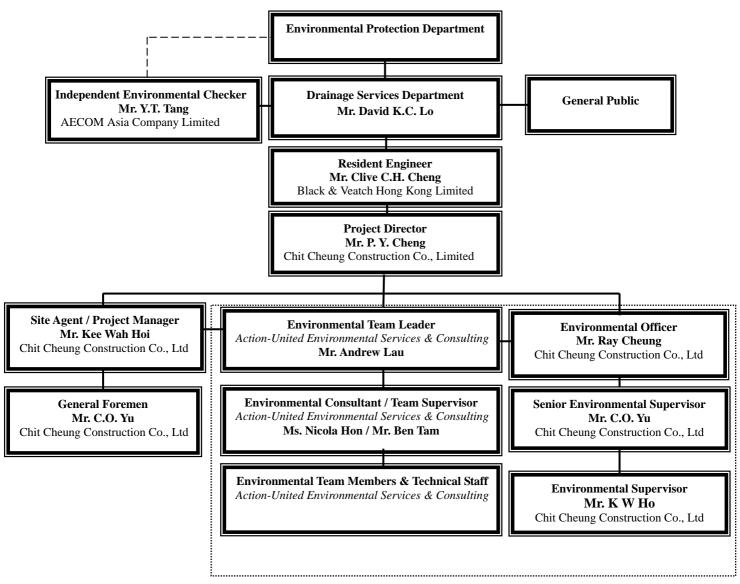


Appendix B

Environmental Organization Structure



Environmental Organization Structure



Contractor's Environmental Team (CET)



Organization	Project Role	Name of Key Staff	Tel No.	Fax No.
DSD	Employer	Mr. David K.C. LO	2594-7254	2827-8526
B&V	Engineer	Mr. Kelvin N.F. LAU	2601-1000	2601-3988
B&V	Engineer's Representative	Mr. Clive C.H. CHENG	2478-9161	2478-9396
AECOM	Independent Environmental Checker	Mr. Y.T. Tang	3105-8537	2891-0305
CCC	Project Director	Mr. P.Y. CHENG	9023-4821	2403-1162
CCC	Project Manager	Mr. K.W. Hoi	6603-9711	2479-1365
CCC	Site Agent	Mr. K.W. Hoi	6603-9711	2479-1365
CCC	Site Engineer	Mr. Jimmy CHAN	9234-8632	2479-1365
CCC	Environmental Officer	Mr. Ray Cheung	6103-7404	2479-1365
CCC	Senior Environmental Supervisor	Mr. C. O. Yu	9026-9501	2479-1365
CCC	Environmental Supervisor	Mr. K W Ho	9016-0592	2479-1365
CCC	Safety Officer	Mr. C.C Lui	6086-4658	2479-1365
AUES	Environmental Team Leader	Andrew Lau	2959-6059	2959-6079
AUES	Ecologist	Vincent Lai	9406-9784	2959-6079
AUES	Environmental Team Supervisor	Ben Tam	2959-6059	2959-6079

Contact Details of Key Personnel

Legend:

Legena.	
DSD (Employer)	-
B&V (Engineer)	-
CCC (Contractor)	-
AECOM (IEC)	-
AUES (ET)	-

Drainage Services Department

Black & Veatch Hong Kong Limited

Chit Cheung Construction Company Limited.

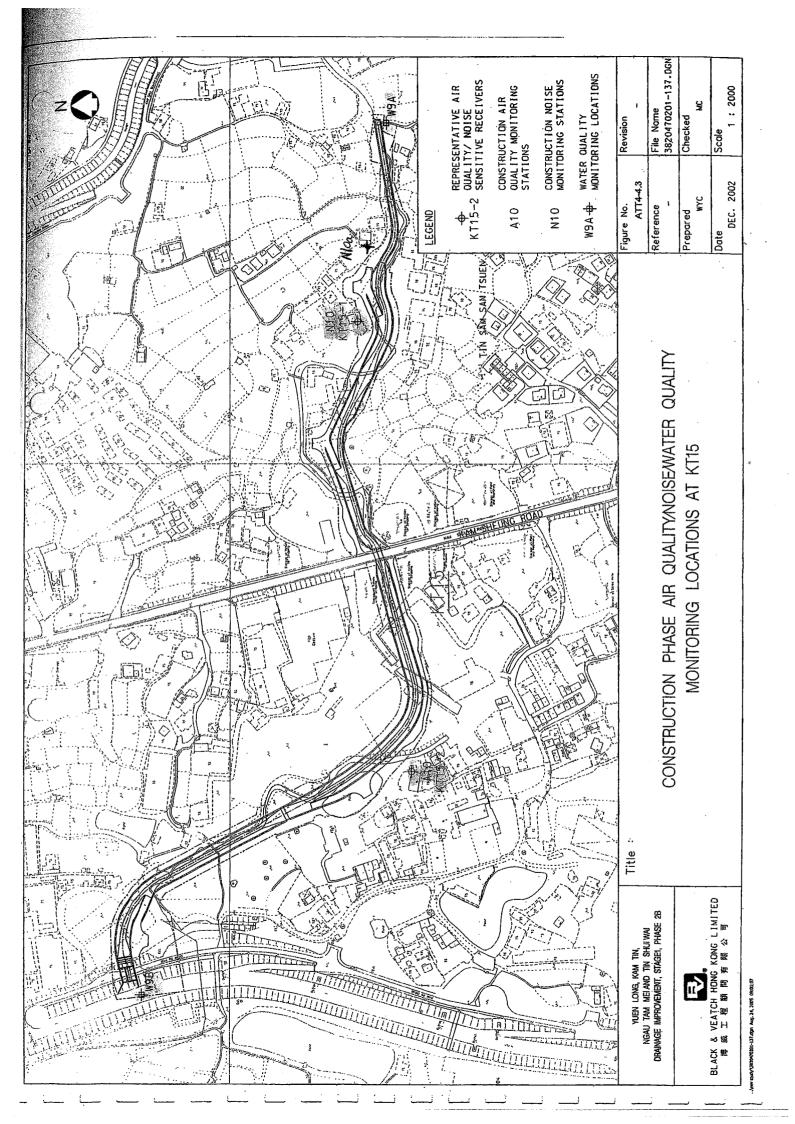
AECOM Asia Company Limited.

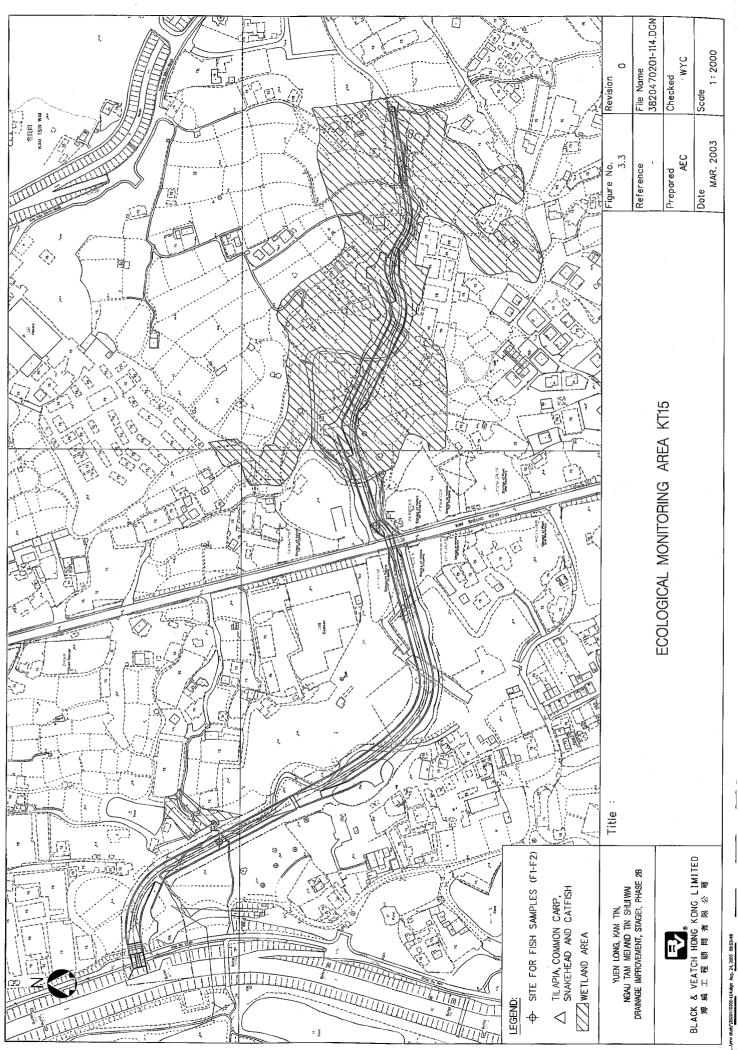
Action-United Environmental Services & Consulting



Appendix C

Locations of Designated Monitoring Station/Locations/Area







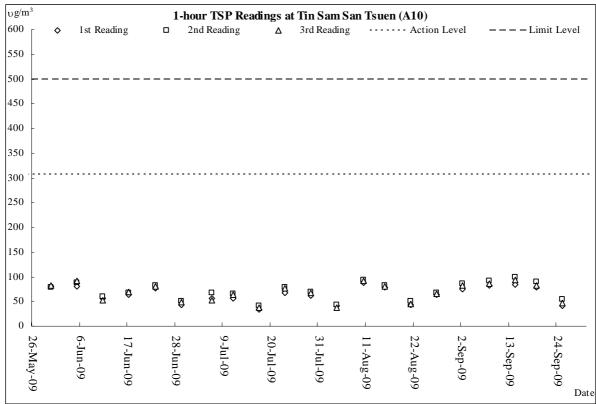
Appendix D

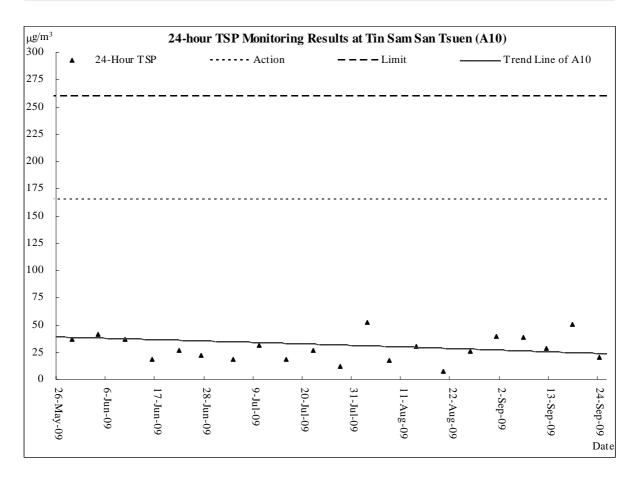
Graphical Plots of Air Quality, Construction Noise & & Stream Water Quality Monitoring

DSD Contract No. DC/2006/02 Yuen Long, Kam Tin, Ngau Tam Mei and Tin Shui Wai Drainage Improvements, Stage 1, Phase 2B – Cheung Chun San Tsuen and Kam Tsin Wai KT15 9th Quarterly EM&A Summary Report for 26 July to 25 September 2009



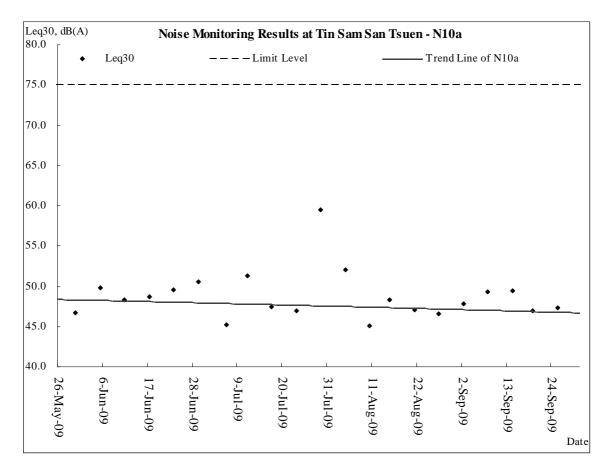
Air Quality







Construction Noise

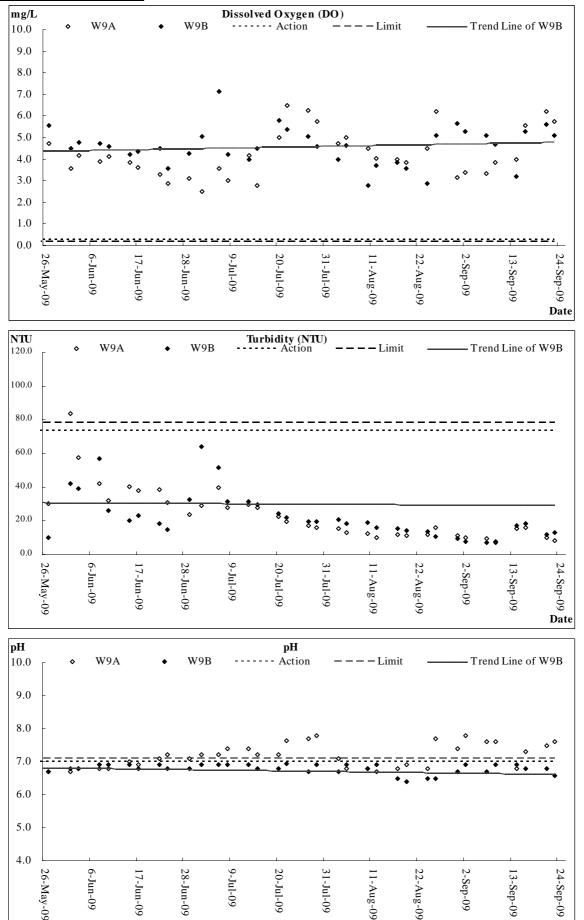






Date

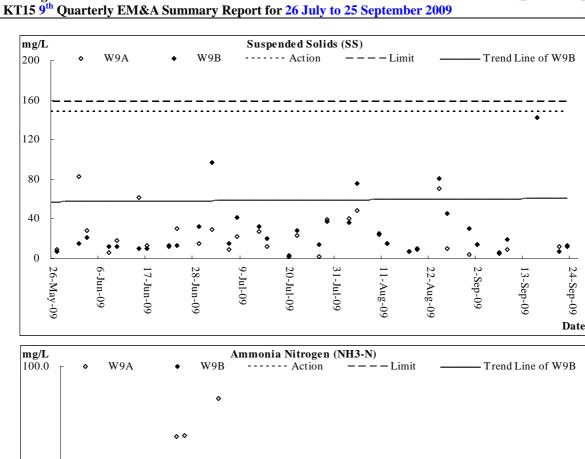
Stream Water Quality

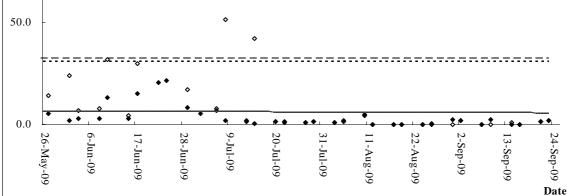


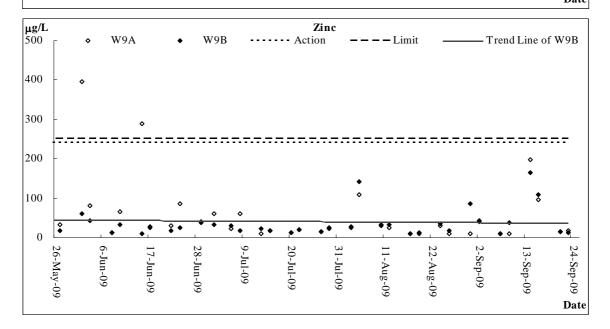
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DSD Contract No. DC/2006/02 Yuen Long, Kam Tin, Ngau Tam Mei and Tin Shui Wai Drainage Improvements, Stage 1, Phase 2B – Cheung Chun San Tsuen and Kam Tsin Wai KT15 9th Ouarterly EM&A Summary Report for 26 July to 25 September









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Appendix E

Meteorological Data

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Meteorological Data Extracted from HKO in the Reporting Quarter

				Lau Fau Shan Weather Station			
	Date	Weather	Total Rainfall (mm)	Mean Air Temp.(°C)	Wind Speed (km/h)	Mean Relative Humidity (%)	Wind Direction
Fri	26-Jun-09	cloudy/squally showers/moderate/fresh/strong	17.7	28.8	12	79.2	E/NE
Sat	27-Jun-09	cloudy/rain/fresh/strong	46.9	26.7	23.5	80	E/NE
Sun	28-Jun-09	cloudy/showers/squally thunderstorm/moderate	48.7	27.3	23.5	85	S/SE
Mon	29-Jun-09	a few showers/sunny periods/cloudy/moderate/fresh	Trace	28.5	16	82.5	S/SE
Tue	30-Jun-09	hot/sunny periods/isolated showers/moderate/fresh	0.1	30.4	18.5	Maintenance	S/SE
Thu	1-Jul-09	Holiday					
Fri	2-Jul-09	hot/sunny periods/moderate/fresh	Trace	30.2	18.2	72	S/SW
Sat	3-Jul-09	cloudy/a few showers/sunny intervals/moderate/fresh	0.5	29.6	20.5	73.5	S/SW
Sun	4-Jul-09	cloudy/showers/squally thunderstorm/moderate/fresh	17.4	26.2	17.2	80	S/SE
Mon	5-Jul-09	cloudy/scattered showers/squally thunderstorm/moderate	49.6	27.3	21	84	S/SE
Tue	6-Jul-09	fine/isolated showers/moderate	31.2	28.3	16.5	81.5	E/SE
Wed	7-Jul-09	fine/hot/isolated showers/light winds	20.1	29.4	13	76.5	S/SE
Thu	8-Jul-09	fine/hot/light winds	0	29.5	13	75.5	S/SE
Fri	9-Jul-09	fine/very hot/ light winds	0	29.9	14.5	71.5	W/SW
Sat	10-Jul-09	fine/very hot/moderate	Trace	30.2	16	75	W/SW
Sun	11-Jul-09	cloudy/squally showers/fresh/strong	8.1	29.7	16.5	70.7	E/NE
Mon	12-Jul-09	fine/moderate	Trace	30.4	12	75.5	E/SE
Tue	13-Jul-09	fine/hot/light winds	0	29.8	11	55	E/NE
Wed	14-Jul-09	fine/very hot/isolated showers/moderate	0	28.8	12.2	72.5	W/SW
Thu	15-Jul-09	cloudy/a few showers/sunny periods/moderate	4.8	29.4	12.5	80.2	E/NE
Fri	16-Jul-09	fine/very hot/isolated showers/moderate/fresh	0.8	30.3	14	74.5	E/SE
Sat	17-Jul-09	fine/very hot/light/ winds	0.4	29.8	11	73	E/SE
Sun	18-Jul-09	very hot/hazy/squally showers/moderate	11.7	30.7	12	73.5	W/SW
Mon	19-Jul-09	sunny periods/isolated showers/moderate/fresh	124.6	26.6	20	82.5	S/SE
Tue	20-Jul-09	sunny periods/isolated showes/moderate/fresh	8.1	29.1	13.7	81	SE
Wed	21-Jul-09	fine/hot/moderate	0.6	29.4	15	76	S/SE
Thu	22-Jul-09	a few showers/sunny periods/moderate	0	29.3	10	74.5	S/SE
Fri	23-Jul-09	a few showers/sunny periods/hot/moderate	0.6	28.7	13.5	78	S/SE
Sat	24-Jul-09	hot/a few showers/moderate/fresh/sunny periods	2.6	29.5	16.5	79.5	S/SE
Sun	25-Jul-09	hot/sunny periods/a few showers/moderate/fresh	8.3	30.1	15	79.5	S/SW



Lau Fau Shan Weather			Weather Sta	ation			
	Date	Weather	Total Rainfall (mm)	Mean Air Temp. (°C)	Wind Speed (km/h)	Mean Relative Humidity (%)	Wind Direction
Sun	26-Jul-09	cloudy/a few showers/moderate	24.1	30.6	15.7	75.2	S/SE
Mon	27-Jul-09	cloudy/a few showers/sunny intervals/fresh	33.6	28.3	12.5	90	S/SE
Tue	28-Jul-09	cloudy/showers/squally thunderstorm/moderate	10.2	29.2	13.5	85.5	S/SE
Wed	29-Jul-09	cloudy/a few showers/sunny intervals/moderate	2.4	29	13.2	84	S/SE
Thu	30-Jul-09	cloudy/showers/squally thunderstorms/moderate/fresh	14	29.3	13.5	81	S/SE
Fri	31-Jul-09	fine/showers/moderate/fresh	8.7	29.8	18.5	77.5	E/SE
Sat	1-Aug-09	fine/very hot/showers/light winds	0	29.8	14	76	E
Sun	2-Aug-09	sunny periods/showers/very hot/moderate/fresh	0	31.4	10.5	72.5	S/SE
Mon	3-Aug-09	sunny periods/very hot/a few showers/moderate/fresh	21.4	31.7	9.5	77	E/NE
Tue	4-Aug-09	strong/cloudy/rain/squalls	21.3	28.1	17.5	75.5	E/NE
Wed	5-Aug-09	cloudy/rain/squalls/moderate/fresh/strong	92.5	27	21	89.7	E/SE
Thu	6-Aug-09	cloudy/a few showers/squally thunderstorm/moderate/fresh	8.3	28.1	18.5	88.5	SE
Fri	7-Aug-09	fine/moderate	0	29.4	11	84.2	S/SE
Sat	8-Aug-09	very hot/fresh/moderate	0	30.2	14.5	82.3	S/SE
Sun	9-Aug-09	sunny periods/very hot/a few showers/light winds	0	30	12	79	W/SW
Mon	10-Aug-09	cloudy/showers/thunderstorms/light winds	21.8	29.5	9.5	82.5	W/SW
Tue	11-Aug-09	cloudy/rain/squally thunderstorm/light winds	32.2	27.7	17	84.5	S/SE
Wed	12-Aug-09	cloudy/rain/squally thunderstorm/light winds	3.1	26.7	16.2	88.5	E/SE
Thu	13-Aug-09	cloudy/rain/squally thunderstorms/moderate	70.7	26.2	8.2	93.5	S/SE
Fri	14-Aug-09	cloudy/a few showers/sunny intervals/moderate	44.9	28.2	10.5	86.5	S/SE
Sat	15-Aug-09	hot/sunny periods/a few showers/moderate	0	28.7	11	85.5	S/SE
Sun	16-Aug-09	sunny periods/a few showers/hot/moderate	0	30.2	15.7	78	W/NW
Mon	17-Aug-09	cloudy/showers/squally thunderstorm/light winds	2	29.4	8	76.5	S/SE
Tue	18-Aug-09	fine/hot/isolated showers/thunderstorm/light winds	12.7	28.6	11.5	77	E/NE
Wed	19-Aug-09	fine/isolated showers/very hot/light winds	0.3	29	16	83	E/SE
Thu	20-Aug-09	fine/isolated/ showers/very hot/light winds	0	29.3	9.5	79	S/SE
Fri	21-Aug-09	fine/very hot/light winds	0	29.9	13.5	71.7	E/SE
Sat	22-Aug-09	fine/isolated showers/very hot/moderate	0	30.3	14	67	W
Sun	23-Aug-09	very hot/fine/isolated showers/moderate	Trace	30.1	15.7	Maintenance	W/SW
Mon	24-Aug-09	sunny intervals/haze/showers/moderate	0	29.4	8	Maintenance	N/NE
Tue	25-Aug-09	sunny periods/a few showers/thunderstorm/cloudy/moderate	Trace	30.9	12	72	E/NE



				Lau Fau Shan Weather Station			ion
	Date	Weather	Total Rainfall (mm)	Mean Air Temperature (°C)	Wind Speed (km/h)	Mean Relative Humidity (%)	Wind Direction
Wed	26-Aug-09	fine/very hot/isolated	10	28.4	8.2	83	080
Thu	27-Aug-09	fine/very hot/isolated	0	29.2	9.2	80	100
Fri	28-Aug-09	fine/very hot/isolated showers/light	0	30.2	9.6	74	250
Sat	29-Aug-09	fine/very hot/isolated showers/light	5	28.7	9.5	81	100
Sun	30-Aug-09	fine/hazy/hot/moderate	0	29.2	9.6	79	080
Mon	31-Aug-09	fine/hazy/very hot/moderate	0.5	28.3	9.1	77	070
Tue	1-Sep-09	fine/very hot/a few	0	29.0	11.2	75	080
Wed	2-Sep-09	fine/very hot/isolated	0	29.6	11.6	71	080
Thu	3-Sep-09	fine/very hot/hazy/moderate	0	33.0	11.4	72	090
Fri	4-Sep-09	fine/very hot/isolated	0.5	29.3	11.0	78	140
Sat	5-Sep-09	fine/very hot/isolated	0	30.0	13.1	68	090
Sun	6-Sep-09	fine/very hot isolated	0	29.9	10.0	70	080
Mon	7-Sep-09	fine/very hot/moderate	0	29.9	10.9	69	080
Tue	8-Sep-09	fine/very hot/moderate	0	29.8	10.5	69	080
Wed	9-Sep-09	sunny periods/hot/isolated	0	29.9	10.9	69	080
Thu	10-Sep-09	cloudy/squally showers/fresh/strong	0	28.9	21.3	67	080
Fri	11-Sep-09	cloudy/rain/squally thunderstorms/moderate/fresh/strong	4.0	27.9	17.7	78	090
Sat	12-Sep-09	a few showers/sunny intervals/moderate/fresh	0.5	29.5	16.5	72	090
Sun	13-Sep-09	fresh/cloudy/rain/moderate	0	29.4	9.8	78	250
Mon	14-Sep-09	fresh/strong/gales/cloudy/squally	27.5	27.1	25.2	87	040
Tue	15-Sep-09	fresh/strong/gales	68.5	26.1	26.9	91	140
Wed	16-Sep-09	scattered showers/squally	7.5	27.6	12.0	88	140
Thu	17-Sep-09	fine/hot/isolated showers/moderate	0	28.3	10.4	85	150
Fri	18-Sep-09	fine/very hot/moderate	0	29.2	9.4	80	250
Sat	19-Sep-09	fine/very hot/moderate	0	30.1	9.9	81	250
Sun	20-Sep-09	fine/very hot/moderate	0	29.7	12.0	80	150
Mon	21-Sep-09	cloudy/sunny intervals/haze/light	4.5	29.4	11.9	80	140
Tue	22-Sep-09	fine/dry/moderate	0	28.2	15.1	69	020
Wed	23-Sep-09	sunny periods/cloudy/rain/moderate	0	28.0	12.6	71	080
Thu	24-Sep-09	sunny periods/cloudy/fresh/strong	0	29.3	17.7	69	090
Fri	25-Sep-09	fine/hot/moderate/fresh	0	29.6	13.6	67	080



Appendix F

Response to Comments



Contract No. DC/2006/02

Yuen Long, Kam Tin, Ngau Tam Mei and Tin Shui Wai Drainage Improvements, Stage 1, Phase 2B – Cheung Chun San Tsuen and Kam Tsin Wai KT15 – Quarterly EM&A Summary Report for 26 June 2009 – 25 September 2009 (R1487 Version 1) Response to IEC's comments [Received from e-mail on 23 October 2009]

Items	Section / Paragraph	Comments	Response to Comments
1	ES09	Please update the list of construction activities conducted during the reporting period from 26 June 2009 to 25 July 2009.	Updated.
2	ES15. / Section 10.05	 Please rewrite the sentences as "No intrusions of construction activities, discharge to the wetland areas or adverse impact to the adjacent wetland were observed on 24 July, 21 August and 21 September 2009." And "the non-compliances in number of species and individual number of both wetland dependent birds and fauna were…" Please include "steel fixing work" into the list of major construction works carried out during the quarter as steel fixing work was conducted during July 2009. 	 Noted and revised Review the Monthly Report- July 2009, no steel fixing work was undertaken in accordance with the information as provided by the Contractor.
3	Table 2-1	Please keep consistency of the content with the table in ES09.	Due to The table in ES09 was updated, so both tables is consistency.
4	Section 4.07	Please consider to add into the text the details on photographic recording required.	Noted. The details on photographic records required are stipulated in Section 4.08
5	Table 5-1	Please fill up the empty spacing with "-" if there is no breaching of Action/Limit level form	Done
6	Appendix B	 Please update the organization name of IEC as "AECOM Asia Company Limited" and "AECOM" in short form. Please keep consistency of the contact numbers of CCC's Project Manager/Site Agent, Environmental Officer and Environmental Supervisor with those listed in the monthly reports. 	 Name of IEC as "AECOM Asia Company Limited" and "AECOM" in short form was updated. Noted.
7	Appendix E	Please cross-check the meteorological data with the data from HKO Lau Fau Shan Automatic Weather Station and write all the remarks as listed in the HKO's data set.	Keep consistency of the approved EM&A monthly present. So the data extracted from Appendix I of July 2009, August 2009 and September 2009 accordingly.



Contract No. DC/2006/02

Yuen Long, Kam Tin, Ngau Tam Mei and Tin Shui Wai Drainage Improvements, Stage 1, Phase 2B – Cheung Chun San Tsuen and Kam Tsin Wai KT15 – Quarterly EM&A Summary Report for 26 June 2009 – 25 September 2009 (R1487 Version 2) Response to IEC's comments [Received from e-mail on 27 October 2009]

Items	Section / Paragraph	Comments	Response to Comments
1	Cover page	Please update the quality index date and reference number of report.	Noted and updated
2	ES15./Sectin 10.05	Please include "steel fixing work" into the list of major construction works carried out during the quarter as steel fixing work was conducted during July 2009.	Section ES09 and Table 2-1 is updated.
3.	Table 2-1	Please keep consistency of the content with the table in ES09 as the major construction activities listed in ES09 and Table 2-1 are different.	Checked. The table 2-1 is updated to made it consistency of the ES09
4	Section 4.08	Please rewrite the text with correct grammar. Also, please include the months for last and next photographic records. Please also provide the details on photographic record requirement to Section 3.06.	The Section 4.08 is re-wrote and also the status of scheduling of photographic record undertaking are adopted.
5	Appendix B	Please delete out the last row as the details is repeated.	Noted and deleted.
6	Appendix F item no. 4 RTC column	Please rewrite the text as "Noted. The details on photographic records required are stipulated in Section 4.08".	Amended.



Contract No. DC/2006/02

Yuen Long, Kam Tin, Ngau Tam Mei and Tin Shui Wai Drainage Improvements, Stage 1, Phase 2B – Cheung Chun San Tsuen and Kam Tsin Wai KT15 – Quarterly EM&A Summary Report for 26 June 2009 – 25 September 2009 (R1487 Version 3) Response to IEC's comments [Received from e-mail on 28 October 2009]

Items	Section / Paragraph	Comments	Response to Comments
1	ES09 /Table 2-1	Please erase out the "steel fixing work" from the construction activities list for July 2009 in order to keep consistency with the approved monthly EM&A report for July 2009.	Revised.
2	ES15./Section 10.05	Please rewrite the text as "major construction works carried out during the exceedance days were only erection of formwork, steel fixing and concreting. Those activites"	Amended.
3.	Section 3.06	Please consider adding into the text the details on photographic recording required and keep consistency with the text in Section 4.08.	Revised.
4	Section 4.08	Please rewrite as "six-month intervals" and "and the next one will be conducted in December 2009 accordingly.".	Revised.
5	Appendix F RTC (Version 2) Item no. 4	Please add "Please also provide the details on photographic record requirement to Section 3.06. "into the "Comments" box as it is written as comment according our comments list.	Noted.