


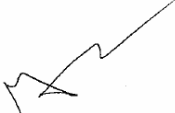
PROJECT No.: TCS/00408/08

**DSD CONTRACT NO. DC/2007/17
DRAINAGE IMPROVEMENT WORKS IN CHEUNG PO,
MA ON KONG, YUEN KONG SAN TSUEN AND TIN SAM
TSUEN OF YUEN LONG DISTRICT AND SEWERAGE AT
TSENG TAU CHUNG TSUEN, TUEN MUN**

**2ND QUARTERLY EM&A SUMMARY REPORT –
KT14A
JANUARY – MARCH 2009**

PREPARED FOR
CHINA ROAD & BRIDGE CORPORATION

Quality Index

Date	Reference No.	Prepared By	Certified By
15 April 2009	TCS00408/08/600/R0933v2	 Nicola Hon Environmental Consultant	 Andrew Lau Environmental Team Leader

Version	Date	Prepared by	Certified by	Description
1	8 April 2009	Nicola Hon	Andrew Lau	First submission
2	15 April 2009	Nicola Hon	Andrew Lau	Amended against IEC's comment on 15 April 2009

This report has been prepared by Action-United Environmental Services & Consulting with all reasonable skill, care and diligence within the terms of the Agreement with the client, incorporating our General Terms and Conditions of Business and taking account of the resources devoted to it by agreement with the client. We disclaim any responsibility to the client and others in respect of any matters outside the scope of the above. This report is confidential to the client and we accept no responsibility of whatsoever nature to third parties to whom this report, or any part thereof, is made known. Any such party relies upon the report at their own risk.

Ove Arup & Partners
奧雅納工程顧問

Our ref 25211/L109/CN/cl

Date 15 April 2009

Level 5, Festival Walk
80 Tat Chee Avenue
Kowloon Tong, Kowloon
Hong Kong
Tel +852 2528 3031
Fax +852 2268 3950
Direct Tel +852 2268 3097
coleman.ng@arup.com

By Fax and Post

Black & Veatch Hong Kong Limited
25/F, Millennium City 6
392 Kwun Tong Road
Kowloon
Hong Kong

Attention: Mr. Clive Cheng

www.arup.com

ARUP

Dear Mr. Cheng,

Contract No. DC/2007/17 Drainage Improvement Works in Cheung Po, Ma On Kong, Yuen King San and Tin Sam Tsuen of Yuen Long District and Sewerage at Tseng Tau Chung Tsuen, Tuen Mun
2nd Quarterly EM&A Summary Report - KT14A (January to March 2009) Revision 2

We refer to the captioned submission (letter ref.: TCS00408/08/600/R0933r2) and advise that we have no further comment on the captioned report.

We hereby endorse the captioned report for your onward submission.

If you require any further information, please do not hesitate to contact the undersigned.

Yours sincerely,



Coleman Ng
Independent Environmental Consultant

cc: China Road and Bridge Corporation (Mr. Raymond Mau) (Fax: 2478 9612)
AUES (Mr. TW Tam / Mr. Andrew Lau) (Fax: 2959 6079)

Executive Summary

ES.01. This is the Second Quarterly EM&A Report for Channels KT14A (Designated Project works) summarizing the key environmental monitoring results during the period from 26 December 2008 to 25 March 2009 on air quality, construction noise, water quality and waste management.

Progress of the EM&A Programme

ES.02. The impact EM&A program was undertaken in accordance with the relevant EM&A manuals. A summary of the monitoring activities in this quarter is listed below:

Environmental Issues	Channels KT14A
• 1-hour TSP Monitoring	45 events monitoring
• 24-hour TSP Monitoring	15 events monitoring
• Noise Monitoring	15 monitoring events
• Water Quality Monitoring	37 monitoring days
• Site Inspection Audit	12 occasions

Breaches of Environmental Quality Criteria

ES.03. In this quarter, no complaint was received and noise levels measured at all monitoring stations were below the Action and Limit Levels (A/L Levels).

ES.04. For air quality, there were two (2) Action Level exceedances for 24-hour TSP monitored on 13 January 2009 and 5 February and no exceedances were recorded for all 1-hour TSP measurements. Investigation showed that the 24-hour exceedance was not works related.

ES.05. A total of 38 exceedances of water quality A/L Levels of which 24 were exceedances of Action Levels and 14 Limit Levels, were recorded. The overall compliance rate of water quality monitoring in the third quarter is 82.8%. Investigation showed that all exceedances were not works related.

ES.06. A summary of all environmental exceedances is presented as follows:

Issues	Parameters	Compliance Rate %	Investigation Results & Corrective Actions
		Channel KT14A	
Air Quality	24-hour TSP	86.7	Investigation completed
	1-hour TSP	100	N/A
Noise	Leq(30min) Daytime	100	N/A
Water Quality	Suspended Solids	73	Investigation completed for Jan 09 & Feb 09 Investigation in progress for Mar 09
	Turbidity	94.6	
	Dissolved Oxygen	35	
	Ammonia-N	94.6	N/A
	pH	100	
Zinc	100		

Environmental Complaint, Notifications of Summons and Prosecutions

ES07 No documented complaint, notification of summons and successful prosecution was received during the Reporting Period. No major environmental impacts were observed during the weekly site inspection. Environmental audit of the Reporting Period, indicated that the implemented mitigation measures for air quality, construction noise and ecology were effective. Minor deficiencies found in the weekly site inspection were in general rectified within the specified deadlines. The environmental performance of the Project was therefore considered satisfactory.

Reporting Changes

ES08 No reporting changes were made during the Reporting Period.

Future key issues

ES09 As wet season has approached, water quality mitigation measures to avoid ingress of runoff into Channel KT14A should be properly installed and maintained, as appropriate.

ES10 To prevent exceedance of water quality, it is recommended that water quality mitigation measures stipulated in the EIA and summarized in the EM&A Manual, including containment structure such as temporary earth bunds, sand bags, sheet pile barriers or other similar techniques, should be fully implemented. In addition, implemented mitigation measures such as sand bags downstream of the excavation site may also be improved to cater for additional water flows during the coming wet season.

ES11 It is noted that abnormally high frequency of exceedance of the existing water quality criteria has occurred since the commencement of the water quality monitoring at W8B of KT14A. A proposal on the revision of the A/L levels has been submitted for agreement of the ER and IEC prior to seek formal approval from EPD. Percentile approach as recommended in the EM&A Manual is applied to the baseline monitoring data with replenishment of the most recent monitoring data obtained under zero construction impacts.

END OF TEXT

Table of Contents

1	INTRODUCTION	- 1 -
1.1	BASIC PROJECT BACKGROUND	- 1 -
1.2	REPORT STRUCTURE.....	- 1 -
1.3	PROJECT ORGANISATION AND CONSTRUCTION PROGRESS	- 1 -
2	SUMMARY OF IMPACT ENVIRONMENTAL MONITORING AND AUDIT REQUIREMENTS.....	- 3 -
2.1	MONITORING PARAMETERS.....	- 3 -
2.2	MONITORING LOCATIONS.....	- 3 -
2.3	MONITORING FREQUENCY	- 3 -
2.4	ENVIRONMENTAL QUALITY CRITERIA	- 4 -
2.5	ENVIRONMENTAL MITIGATION MEASURES.....	- 4 -
3	MONITORING RESULTS AND BREACHES OF ENVIRONMENTAL QUALITY CRITERIA	- 6 -
3.1	AIR QUALITY	- 6 -
3.2	CONSTRUCTION NOISE.....	- 6 -
3.3	WATER QUALITY	- 6 -
3.4	SUMMARIES WEATHER CONDITIONS DURING THE QUARTER REPORTING PERIOD	- 8 -
4	NON-COMPLIANCE, COMPLAINTS, NOTIFICATIONS OF SUMMONS AND SUCCESSFUL PROSECUTIONS.....	- 10 -
4.1	NON-COMPLIANCE	- 10 -
4.2	ENVIRONMENTAL COMPLAINTS	- 10 -
4.3	NOTIFICATIONS OF SUMMONS AND SUCCESSFUL PROSECUTIONS	- 10 -
4.4	OTHERS.....	- 10 -
5	CONCLUSIONS	- 12 -

LIST OF TABLES

Table 1	Status of Environmental Licenses and Permits
Table 2-1	Summary of Monitoring Parameters
Table 2-2	Summary of Monitoring Locations
Table 2-4-1	Summary of Air Quality Monitoring Results at KT14A-A8(a)
Table 2-4-2	Action and Limit Levels of Construction Noise Monitoring
Table 2-4-3	Water Quality Action and Limit Levels
Table 3-1-1	Summaries of Air Quality of 1-hr and 24-hr TSP in the Quarter Reporting period
Table 3-1-2	Summaries of Breaches of Air Quality A/L Level
Table 3-2	Summaries of Breaches of Construction Noise A/L Levels
Table 3-3-1	Summaries of Breaches of the Existing Water Quality A/L Levels at W8B
Table 3-3-2	Recommended Water Quality Action and Limit Levels for KT14A
Table 4-3	Summary of Findings of Site Inspection and Environmental Audit

LIST OF APPENDICES

Appendix A	Location Plan of the Project and Environmental Monitoring Locations
Appendix B	Environmental Management Organization and Contacts of Key Personnel
Appendix C	Construction Program
Appendix D	Mitigation Measures Implementation Schedule
Appendix E	Graphic Plot of Air Quality, Construction Noise and Water Quality
Appendix F	Monthly Summary Waste Flow Table

1 INTRODUCTION

1.1 BASIC PROJECT BACKGROUND

CRBC has been awarded the DSD Contract No. DC/2007/17 (hereinafter “the Project”). The works to be executed under the Project are located in Kam Tin, Pat Heung and Tuen Mun, New Territories. The location plan of the Project is shown in **Appendix A**.

The Project involves construction of five drainage channels, namely Channels KT12, KT13 (under Environmental Permit No. EP263/2007), KT14A (under Environmental Permit No. EP231/2005A), KT14B and KT14C in Kam Tin and Pat Heung and the sewerage works at Tseng Tau Chung Tsuen in Tuen Mun. As the environmental monitoring requirements for the two Environmental Permits and those not under a permit are different, the EM&A report under the Project is split to the following three stand-alone parts:

1. EM&A Report – Channel KT13 (under EP No. EP263/2007);
2. EM&A Report – Channel KT14A (under EP No. EP231/2005A); and
3. EM&A Report – Channels KT12, KT14B and KT14C (Non-Designated Project works with no Environmental Permit)

This report presents the EM&A results of the Designated Projects works for Channels KT14A. It is the Second Quarterly EM&A Summary Report covering a three month period from 26 December 2008 to 25 March 2009 (the Reporting Period).

1.2 REPORT STRUCTURE

This Report is structured as follows:

- Section 1** Introduction
- Section 2** Summary of Impact Environmental Monitoring and Audit Requirements
- Section 3** Monitoring Results and Breaches of Environmental Quality Criteria
- Section 4** Non-compliance, Complaints, Notifications of Summons and Successful Prosecutions
- Section 5** Conclusion

1.3 PROJECT ORGANISATION AND CONSTRUCTION PROGRESS

1.3.1 ENVIRONMENTAL MANAGEMENT ORGANIZATION

The environmental management team comprises: DSD (Project Proponent), CRBC (main Contractor), EPD and AFCD (supervisory departments in Government), BVHKL (ER); ARUP (IEC) and AUES (ET). Detailed management organization including organisation structure and key personnel contacts is presented in **Appendix B**.

1.3.2 WORKS UNDERTAKEN DURING THE QUARTER REPORTING PERIOD

Construction activities implemented during the Reporting Period are presented in **Appendix C**. In addition to the preparation works and site clearance, including underground utility investigation, tree survey, tree pruning and tree transplant, major construction activities are summarized as follows:

26 December 2008 – 25 January 2009

- Channel Excavation; and
- Construction of rectangular channel structure;

26 January to 25 February 2009

- Channel Excavation; and
- Construction of rectangular channel structure;

26 February to 25 March 2009

- Excavation of Channel Formation;
- Construction of rectangular channel structure;
- Construction of manholes and catchpits; and
- Installation of type 2 railing

1.3.3 ENVIRONMENTAL LICENSING STATUS

The environmental licensing status in the quarter reporting period is summarized in **Table 1**.

Table 1 Status of Environmental Licenses and Permits

Item	License / Permit Description	Status
1	Air Pollution Control (Construction Dust)	Notified EPD on 14-Feb-08
2	Water Pollution Control (Discharge License) License No. 1U461/1	Valid
3	Chemical Waste Producer Registration WPN: 5611-531-C3124-28	Registration on 2-May-08
4	Construction Waste Disposal Billing Account Number 7006524	Valid on 9 Jan 2008

2 SUMMARY OF IMPACT ENVIRONMENTAL MONITORING AND AUDIT REQUIREMENTS

2.1 MONITORING PARAMETERS

The ET has compiled the EM&A requirements set out in the associated EM&A Manuals in the **Environmental Monitoring Methodology**, which has been agreed by the ER and IEC. The monitoring parameters are summarized below.

Table 2-1 Summary of Monitoring Parameters

Environmental Aspect	Monitoring Parameters	
Air Quality	(a) 1-Hour Total Suspended Particulate (hereinafter '1-Hr TSP'); and (b) 24-Hour Total Suspended Particulate (hereinafter '24-Hr TSP').	
Construction Noise	(a) A-weighted equivalent continuous sound pressure level (30min) (hereinafter 'Leq(30min)') during the normal working hours; and (b) A-weighted equivalent continuous sound pressure level (5min) (hereinafter 'Leq(5min)') for construction work during the restricted hours.	
Water Quality	(a) In Situ Measurement	temperature, Dissolved Oxygen (hereinafter 'DO'), pH & Turbidity
	(b) Laboratory Analysis	Suspended Solids (hereinafter 'SS'), Ammonia Nitrogen (hereinafter 'NH ₃ -N') and Zinc (hereinafter 'Zn')

2.2 MONITORING LOCATIONS

Monitoring locations are summarized in **Table 2-2** and shown in **Appendix A**.

Table 2-2 Summary of Monitoring Locations

Env. Aspect	Monitoring Location ID	Identified Address / Co-ordinates
Air	A8(a)	Entrance of Strong Sing Garden
Noise	N8	Ground floor of Strong Sing Garden H502
Water	W8A	E825274 / N831712
	W8B	E825143 / N831786

2.3 MONITORING FREQUENCY

The impact monitoring frequency and duration for air quality, construction noise, water quality, ecology and other parameters are summarized below.

2.3.1 Air Quality

Frequency: Once every 6 days for 24-Hr TSP and three times every 6 days for 1-Hr TSP, when the highest construction dust impacts are anticipated.

Duration: Throughout the construction period

2.3.2 Construction Noise

Frequency: Measurement of Leq 30min: Once a week during 0700-1900 on normal weekdays for Leq30min

If the construction work is undertake at restrict hour, the frequency of noise monitoring will be conducted in accordance with the requirements under the related Construction Noise Permit issued by EPD as follows:

- 3 consecutive Leq5min at restrict hour from 1700 – 2300;
- 3 consecutive Leq5min for restrict hour from 2300 – 0700 next day;
- 3 consecutive Leq5min for Sunday or public holiday from 0700 – 1900;

Duration: Throughout the construction period

2.3.3 Water Quality

Frequency: Three times a week with at least 36 hour intervals between any two consecutive monitoring events

Depths: As the water columns in the stream water within KT14A is generally less than 3 m, measurement is performed at the mid-depths of the monitoring locations. In case the

water columns are deeper than 6 m, measurement shall be carried out at three water depths, namely, 1 m below water surface, mid-depth, and 1 m above river bed. If the water depths are between 3 to 6 m, the mid-depth measurement is omitted.

Duration: Throughout the construction period.

2.4 ENVIRONMENTAL QUALITY CRITERIA

The Environmental Quality Criteria i.e. Action and Limit levels (herein after 'A/L levels') are summarized as follows:

Table 2-4-1 Summary of Air Quality Monitoring Results at KT14A-A8(a)

Monitoring Location ID	Action Level ($\mu\text{g}/\text{m}^3$)		Limit Level ($\mu\text{g}/\text{m}^3$)	
	1-hr TSP	24-hr TSP	1-hr TSP	24-hr TSP
KT14A - A8(a)	310	144	500	260

Table 2-4-2 Action and Limit Levels of Construction Noise Monitoring

Time Period	Action Level in dB(A)	Limit Level in dB(A)
0700-1900 hrs on normal weekdays	When one documented complaint is received	75* dB(A)

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

Table 2-4-3 Water Quality Action and Limit Levels

Parameter	Monitoring Location	Type of Station	Action Level	Limit Level
DO (mg/L)	W8A	Control	NA	NA
	W8B	Impact	6.378	4.00
Turbidity (NTU)	W8A	Control	NA	NA
	W8B	Impact	120% of the results of upstream control station's of the same day	130% of the results of upstream control station's of the same day
pH	W8A	Control	NA	NA
	W8B	Impact	9.2 (95%-ile of baseline results)	9.3 (99%-ile of baseline results)
SS (mg/L)	W8A	Control	NA	NA
	W8B	Impact	120% of the results of upstream control station's of the same day	130% of the results of upstream control station's of the same day
Ammonia ($\mu\text{g}/\text{L}$)	W8A	Control	NA	NA
	W8B	Impact	120% of the results of upstream control station's of the same day	130% of the results of upstream control station's of the same day
Zinc ($\mu\text{g}/\text{L}$)	W8A	Control	NA	NA
	W8B	Impact	120% of the results of upstream control station's of the same day	130% of the results of upstream control station's of the same day

2.5 ENVIRONMENTAL MITIGATION MEASURES

CRBC has committed to implement environmental protection and pollution control and mitigation measures as recommended in the PP, EP and the EM&A Manual. Continuous up-dating of the Mitigation Measures Implementation Schedules attached in the EM&A Manual is required under the PS. The updated Environmental Mitigation Measures Schedule is enclosed in **Appendix D**. The implemented mitigation measures include:

- Watering of exposed dry and dusty surface, including stock piles of dusty materials;
- Covering of the loose soil to minimize water quality impacts;
- Hard pavement of haul road leading to public roads;
- Wheel washing facility at to avoid construction dust impacts on the public roads; and

- (e) Construction of noise barriers.
- (f) During construction works nearby the seasonal wetland, mitigation measures of Ecology will be followed in accordance with EM&A Manual Annex A ECO.1 and ECO.3;

3 MONITORING RESULTS AND BREACHES OF ENVIRONMENTAL QUALITY CRITERIA

The environmental monitoring results will be compared against the Action and Limit Levels established based on the baseline monitoring results and statutory criteria. In case the measured data exceed the environmental quality criteria, remedial actions will be triggered according to the Event and Action Plan. In the report quarter, the graphical plots of the trends of monitored parameter over the past four months are presented in **Appendix E**.

3.1 AIR QUALITY

In this quarter reporting period, there were total of 45 sampling events for 1-hour TSP and 15 sampling events for 24-hour TSP at the designated location KT14A-A8(a). The summary of Air Quality of 1-hour and 24-hour TSP in this quarterly report are presented in **Table 3-1-1 and 3-1-2**.

Table 3-1-1 Summaries of Air Quality of 1-hour and 24-hour TSP in the Quarter Reporting period

Channel	Station	1-hour TSP			24-hour TSP		
		Max	Min	Mean	Max	Min	Mean
KT14A	A8(a)	192	57	116	189	21	64
Recorded in the date		2 Mar 08	24 Feb 09	45 events	5 Feb 09	24 Mar 09	15 events

Table 3-1-2 Summaries of Breaches of Air Quality A/L Levels

Location	Exceedance	1-hour TSP	24-hour TSP	Total
A8(a)	Action Level	0	2	2
	Limit Level	0	0	0

As shown in **Table 3-1-1 and 3-1-2** and **Appendix E**, the 1-hour TSP and 24-hour TSP of the Reporting Period fluctuated in general below the Action levels of 310 and 144 respectively, except two (2) exceedances of 24-hour TSP Action level recorded on 13 January 2009 and 5 February 2009.

The notification of exceedance of environmental quality criteria (hereinafter 'the NOE') and the associated investigation report have been issued upon confirmation of the results and construction information, although the ER and IEC's agreement for closure of the NOE is still pending.

3.2 CONSTRUCTION NOISE

Monitoring results are presented in graphic plots in **Appendix E**. Breaches of construction noise A/L levels during the Reporting Period are summarized in **Table 3-2**.

Table 3-2 Summaries of Breaches of Construction Noise A/L Levels

Channel	Station	Leq30min		Action Level in dB(A)	Limit Level in dB(A)
		Max	Min		
KT14	N8	69.3	54.1	When one documented complaint is received	75* dB(A)
Recorded in the date		19 Mar 09	20 Jan 09		

As shown in **Tables 3-2** and **Appendix E**, all the construction noise results fluctuated below the Limit level. Neither exceedance of Limit levels nor documented construction complaint was recorded during the Reporting Period. Neither NOE of construction noise nor corrective action was therefore required.

3.3 WATER QUALITY

Monitoring results are presented in graphic plots in **Appendix E**. Breaches of water quality A/L levels during the Reporting Period are summarized in **Table 3-3**, taken into account that W8A is set as the up-stream control station for W8B.

Table 3-3-1 Summaries of Breaches of the Existing Water Quality A/L Levels at W8B

location	Exceedance	DO	Turbidity	pH	SS	NH ₄ +N	Zn	Total
W8B (January 2009)	Action Level	9	0	0	0	0	0	9
	Limit Level	0	0	0	5	2	0	7
W8B (February 2009)	Action Level	6	0	0	0	0	0	6
	Limit Level	0	1	0	1	0	0	2
W8B (March 2009)	Action Level	9	0	0	0	0	0	9
	Limit Level	0	1	0	4	0	0	5
Total	Action Level	24	0	0	0	0	0	24
	Limit Level	0	2	0	10	2	0	14
Total (38)		24	2	0	10	2	0	38
Compliance (%) (Number of monitoring occasions per parameter per location= 37)		35	94.6	100	73	94.6	100	82.8

As shown in **Tables 3-3** and **Appendix E**, a total of 38 exceedances of water quality A/L levels, namely 24 exceedances of Action levels and 14 exceedances of Limit levels, were recorded during the Reporting Period.

In this reporting period, temperature recorded at impact station W8B fluctuated within 14.1°C to 24.6°C; DO fluctuated within 4.55mg/L to 8.48mg/L; pH fluctuated well within 6.80 and 7.30 while turbidity fluctuated within 4.57NTU to 91.35NTU. For Suspended Solids, the laboratory results data shown that the concentration fluctuated between 2 and 876.0 mg/L. Summary of breaches of the existing water quality A/L at W8B is shown in **Table 3-3-1**.

The NOE and the associated investigation report have been issued upon confirmation of the results and construction information. Investigation concluded that all of the exceedances are not related to the works under the Project. No corrective actions were recommended.

It is noted that abnormally high frequency of exceedance of the existing water quality criteria has occurred since the commencement of the water quality monitoring at W8B of KT14A. Particular attention has been paid to the water quality exceedances during 26 August to 2 October 2008, when no construction activities were commenced. This implies that the exceedances are not related to the works under the Project but due to changes of the ambient conditions and up-stream control station.

A proposal on the revision of the A/L levels has been submitted for agreement of the ER and IEC prior to seek formal approval from EPD. Percentile approach as recommended in the EM&A Manual is applied to the baseline monitoring data with replenishment of the most recent monitoring data obtained under zero construction impacts. The recommended A/L levels are summarized in **Table 3-3-2**.

Table 3-3-2 Recommended Water Quality Action and Limit Levels for KT14A

Parameter	Monitoring Location	Type of Station	Action Level	Limit Level
DO* (mg/L)	W8A	Impact Monitoring Station	2.22	1.80
	W8B	Impact Monitoring Station	4.06	4.04
Turbidity (NTU)	W8A	Impact Monitoring Station	36.5	39.6
	W8B	Impact Monitoring Station	18.6	52.0
pH+	W8A	Impact Monitoring Station	6.5 – 8.5	6.0 – 9.0
	W8B	Impact Monitoring Station	6.5 – 8.5	6.0 – 9.0
SS (mg/L)	W8A	Impact Monitoring Station	70	95
	W8B	Impact Monitoring Station	29	39
Ammonia (mg/L)	W8A	Impact Monitoring Station	40.8	43.7
	W8B	Impact Monitoring Station	3.46	4.44

Parameter	Monitoring Location	Type of Station	Action Level	Limit Level
Zinc (µg/L)	W8A	Impact Monitoring Station	136	166
	W8B	Impact Monitoring Station	54	63

- * A/L levels of DO are respectively set at 5%-ile and 1%-ile of baseline level
- + A/L levels of pH are respectively set at out side the ranges of 6.5 - 8.5 and 6 – 9 as generally used for environmental water quality standards.
- # Zn obtained at W8A on 18 March (458 ug/L) and 2 September 2008 (228 ug/L), as well as Turbidity, SS and Zn obtained at W8B on 2 September 2008 (161.5 NTU, 473 mg/L and 492 ug/L respectively) and SS and Zn obtained at W8B on 24 September 2008 (492 mg/L and 107 ug/L respectively) are considered as outliers and excluded from A/L level calculation

3.4 SUMMARIES WEATHER CONDITIONS DURING THE QUARTER REPORTING PERIOD

January 2009

January 2009 was sunnier and drier than usual. The total bright sunshine duration for the month was 226.5 hours, about 60 percent above the normal figure of 141.7 hours. Only a trace of rainfall was recorded during the month, making it the driest January since 1994. The monthly mean temperature of 15.3 degrees was 0.8 degrees below normal. Under the influence of a strong winter monsoon, the weather was fine, dry and cold in the first week of the year. A replenishment of the northeast monsoon brought cold and very dry conditions to the territory on 8 January and stayed cold in the next eight days. Frost was reported on 11 & 12 January. Then the weather stayed fine and dry from 17 to 19 January. The cold air associated with an intense winter monsoon reached the south China coastal areas in the evening of 23 January bringing cloudy and rather cool weather to Hong Kong. It was generally cloudy and cold in the ensuing four days. With the moderation of the northeast monsoon, temperatures rose gradually during the next two days. It was generally fine for the last two days of the month.

February 2009

February 2009 was the warmest February since records began in 1884. The monthly mean temperature of 20.5 degrees was 4.2 degrees higher than normal. The temperature of 28.3 degrees recorded on February 25 was the highest daily maximum temperature for February. The month was also sunnier than normal. The total bright sunshine duration for the month was 140.7 hours, about 50 percent above normal. Only 1.1 millimetres of rainfall was recorded in February 2009, much below the normal figure of 52.3 millimetres. The weather in Hong Kong was generally cloudy on the first day of the month. Under the influence of a ridge of high pressure over southeastern China, the local weather became generally fine for the ensuing 9 days. A humid maritime airstream dominated over the south China coastal areas and brought cloudy and humid weather to the territory from 12 to 15 February. It was also foggy on 15 February. The visibility dropped below 400 meters in the harbour on that day. Under the influence of an easterly airstream, the weather in Hong Kong was windy, rainy and slightly cooler from 16 to 18 February. It remained cloudy with light rain patches on 19 February. It was humid with fog from 23 to 25 February when Hong Kong was affected by a warm and humid maritime airstream. The temperature at the Hong Kong Observatory rose to a maximum of 28.3 degrees on 25 February, the highest of the month.

March 2009

March 2009 was wetter and milder than usual. The total rainfall in the month was 120.7 millimetres, about 69 percent above the normal figure of 71.4 millimetres. The mean temperature was 19.7 degrees, 0.8 degrees above the normal figure of 18.9 degrees. Under the influence of the northeast monsoon, the weather was cloudy with a few light rain and mist patches in the first four days of the month. A cold front developed over the northern part of southern China and moved towards the coast of Guangdong on 5 March, bringing rainy and rather cool weather to Hong Kong. Hails were reported at Tsuen Wan, Tsing Yi and northern Lantau on that morning. Affected by the northeast monsoon behind the cold front, it remained cool with a few rain patches in the ensuing three days. Local weather was cloudy and windy from 10 to 12 March. An intense cold front crossed the coastal areas of southern China on 13 March. Temperatures at the Hong Kong Observatory dropped appreciably from around 25 degrees in the afternoon to around 14 degrees before mid-night of that day. A maritime airstream brought cloudy and foggy weather to the territory from 19 to 23 March. Visibility fell to below 400 metres in the harbour on 20 March. With

the strengthening of the northeast monsoon over southern China, local weather was windy with a few squally thunderstorms on 24 and 25 March.

4 NON-COMPLIANCE, COMPLAINTS, NOTIFICATIONS OF SUMMONS AND SUCCESSFUL PROSECUTIONS

4.1 NON-COMPLIANCE

Apart from the exceedances of water quality A/L levels summarized in **section 3** above, no non-compliance or deficiency was identified during regular site inspection and environmental audit. No associated remedial actions were recommended. No other non-compliance or deficiency was identified during regular site inspection and environmental audit. No associated remedial actions were recommended.

4.2 ENVIRONMENTAL COMPLAINTS

No written or verbal complaints were received for each environmental issue during the Reporting Period. No associated remedial actions were recommended.

4.3 NOTIFICATIONS OF SUMMONS AND SUCCESSFUL PROSECUTIONS

No notifications of summons and successful prosecutions were recorded during the Reporting Period. No associated remedial actions were recommended.

4.4 OTHERS

4.4.1 Waste Management Status

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 and sediment

Waste generated, re-used, recycled and disposed of during the Reporting Period is shown in **Appendix F: Monthly Summary Waste Flow Table**.

4.4.2 Site Inspection and Environmental Audit

A total of twelve (12) occasions of weekly environmental site inspection and audit were conducted jointly by the ER, EO and ET during the Reporting Period. Minor deficiencies found during the site inspection and audit were in general rectified within the specified deadlines. Findings of the site inspection and environmental audit are summarized in **Table 4-3**.

Table 4-3 Summary of Findings of Site Inspection and Environmental Audit

Date	Findings / Deficiencies	Follow-Up Status
2 Jan 2009	No adverse environmental impacts were observed during the site inspection. However, further improvement of house keeping is reminded to contractor as scattered of general waste was observed on site. More frequent water spraying during dry season was reminded	Reminded measures based on the observation were observed on 08 Jan 2009.
8 Jan 2009	Haul road within the site were observed dry and general waste was found scattered on excavation site. Thorough water spraying and wheel washing of the vehicles leaving the site is reminded. The Contractor is reminded to fully implement construction dust suppression measures when carrying out dusty works including vehicle movement during dry and sunny days	Reminded measures based on the observation were observed on 15 Jan 2009.
15 Jan 2009	Stockpile exposed to the site was observed. The contractor is reminded to remove or cover the stockpile with tarpaulin to minimize the dust generation. During dry season, construction dust suppression measures are reminded during dry and dusty works as well as vehicle movement.	Reminded measures based on the observation were observed on 19 Jan 2009.
19 Jan 2009	Mosquito control measures is reminded to prevent mosquito breeding as stagnant water was observed. Stockpile shall be removed or covered with tarpaulin sheet to avoid dust pollution. As in dry season, The Contractor is reminded to fully implement construction dust suppression measures when carrying out dusty works including vehicle movement during dry and sunny days	Reminded measures based on the observation to be followed-up on the forth coming site inspection.
30 Jan 2009	Open Stockpile exposure to the site was observed. The contractor is reminded to remove or cover the stockpile with tarpaulin sheet to minimize the dust generation. During dry season, construction dust suppression measures are reminded during dry and dusty works as well as vehicle movement.	Reminded measures based on the observation were observed on 06 Feb 2009.
6 Feb 2009	No adverse environmental impacts were observed during the site inspection. However, further improvement of house keeping is reminded to contractor as general waste was observed on site.	Reminded measures based on the observation were observed on 12 Feb 2009.
12 Feb 2009	No adverse environmental impacts were observed during the site inspection. Haul road within the site were observed dry. Thorough water spraying and wheel washing of the vehicles leaving the site is reminded. The Contractor is reminded to fully implement construction dust suppression measures when carrying out dusty works including vehicle movement during dry and sunny days.	Reminded measures based on the observation were observed on 18 Feb 2009.
18 Feb 2009	General waste and debris were observed on the construction site. Further improvement of house keeping is reminded to contractor in order to maintain tidiness of the construction area. As wet season approach, open slope and stockpile shall be covered with tarpaulin or similar to prevent runoff to the river stream.	Reminded measures based on the observation to be followed-up on the forth coming site inspection.
26 Feb 2009	Exposed slope surface next to the existing stream was observed. The contractor is reminded to cover the open slope with tarpaulin sheet to minimize the dust generation or prevent surface runoff during rainstorm.	Reminded measures based on the observation were observed on 4 Mar 2009.
4 Mar 2009	Construction waste was observed scattered within the site. Good site practice is reminded to avoid excessive accumulation of the waste.	Reminded measures based on the observation were observed on 12 Mar 2009.
12 Mar 2009	No adverse environmental impacts were observed during the site inspection. However, further improvement of house keeping is reminded to contractor as general waste was observed on site.	Reminded measures based on the observation were observed on 17 Mar 2009.
17 Mar 2009	Free standing chemical container was observed at KT13, the contractor was reminded to provide drip tray for all chemical or oil container.	Reminded measures based on the observation to be followed-up on the forth coming site inspection.

5 CONCLUSIONS

This is the Second Quarterly EM&A Report for Designated Project works during the period from 26 December 2008 to 25 March 2009 summarising the environmental impact monitoring and audit results on air quality, construction noise, water quality and waste management.

Monitoring results demonstrated that no exceedance of environmental quality criteria of construction noise during the Reporting Period.

For air quality, there were (2) exceedances of environmental quality criteria (Action Levels) on 13 January and 5 February 2009. The exceedance is concluded not related to the works under the Project but due to a hill fire on the day of exceedance. No remedial action was recommended.

A total of 38 exceedances of water quality A/L Levels of which 24 were exceedances of Action Levels and 14 Limit Levels, were recorded. The overall compliance rate of water quality monitoring in the third quarter is 82.8%. Investigation showed that all exceedances were not works related. No corrective actions were recommended.

No written or verbal complaints, notifications of summons and successful prosecutions were received (written or verbal) from any medium during the Reporting Period. No adverse environmental impacts were observed during the weekly site inspection and environmental audit which indicated that the implemented mitigation measures for air quality, construction noise, water quality and ecology were effective. Minor deficiencies were found in the weekly site inspection and audit which were in general rectified within the specified deadlines. The environmental performance of the Project was therefore considered satisfactory.

As wet season is approaching, water quality mitigation measures to avoid ingress of runoff into Channel KT14A should be properly installed and maintained, as appropriate. In particular, open stockpiles and exposed slope should be covered thoroughly with tarpaulin sheet and applied with hydroseeding, as appropriate. In addition, attention should also be paid to construction noise and other environmental issues identified in the EM&A Manual. Mitigation measures recommended in the Environmental Study Report and summarized in the Mitigation Measure Implementation Schedule should be fully implemented.

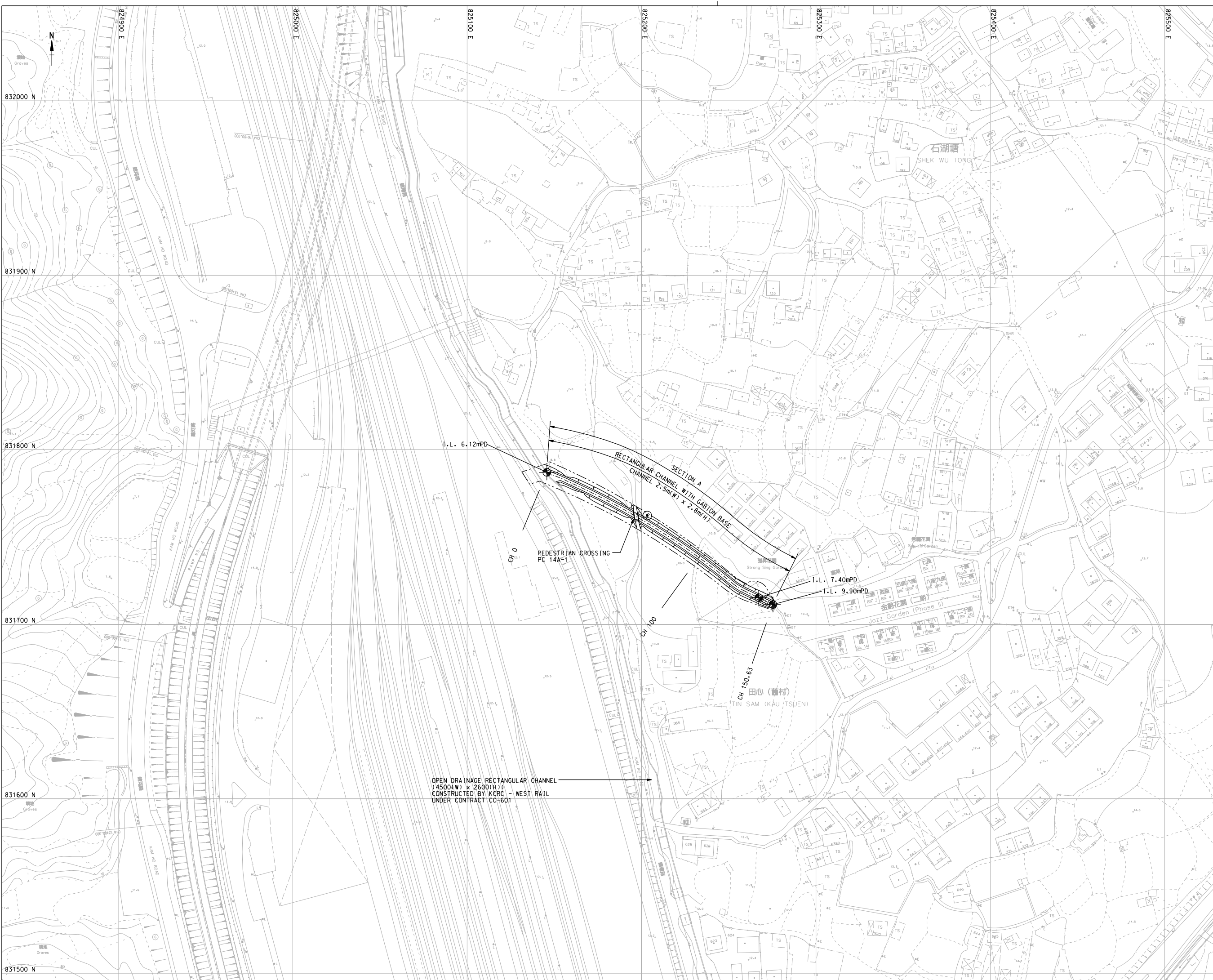
It is noted that abnormally high frequency of exceedance of the existing water quality criteria has occurred since the commencement of the water quality monitoring at W8B of KT14A. A proposal on the revision of the A/L levels has been submitted for agreement of the ER and IEC prior to seek formal approval from EPD. Percentile approach as recommended in the EM&A Manual is applied to the baseline monitoring data with replenishment of the most recent monitoring data obtained under zero construction impacts.

END OF TEXT

Appendix A

Location Plan of the Project and Environmental Monitoring Locations

NOTES :
1. FOR NOTES AND LEGEND REFER TO DRAWING NO. 021.



Revision	Date	Description	Initial	
	Designed	Checked	Drawn	Verified
Initial	BW	WLC	LWL	KIL
Date	09/07	09/07	09/07	09/07
Approved				

CONTRACT NO. DC /2007 /17

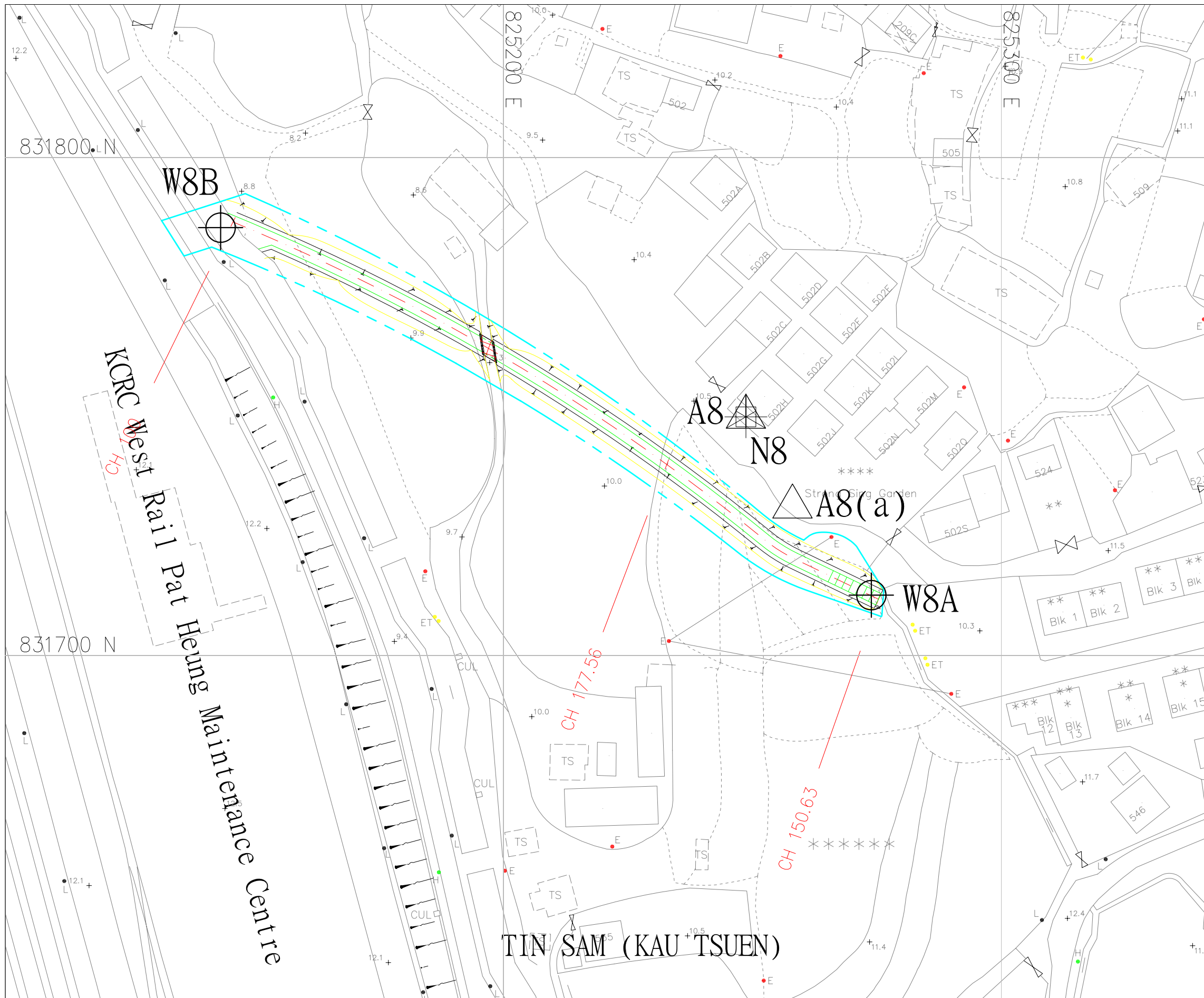
Contract title
DRAINAGE IMPROVEMENT WORKS
IN CHEUNG PO, MA ON KONG,
YUEN KONG SAN TSUEN AND TIN SAM
TSUEN OF YUEN LONG DISTRICT AND
SEWERAGE AT TSENG TAU CHUNG TSUEN,
TUEN MUN

Drawing title
CHANNEL KT14
GENERAL LAYOUT PLAN
(SHEET 1 OF 2)





Drawing no.	Scale
024	1:1000 A1 1:2000 A3



Plot Date : 9/25/2007



Legends

-  Construction Noise Monitoring Location
-  Air Quality Monitoring Location
-  Water Quality Monitoring Location
-  Monitoring Location access is not allow (Air or Noise or Water) for measurement

Table

Monitoring Parameter	Location ID	Address	Remarks
Water	W8A	E825274 / N831712	
Water	W8B	E825143 / N831786	
Air	A8		Replaced by A8(a)
Air	A8(a)	Entrance of Strong Sing Garden	Recommended Location
Noise	N8	No. 205H of Strong Sing Garden	

Note:
 Air Monitoring Location A8 are proposed to relocate at the entrance of Strong Sing Garden A8(a) due to request of the property management. The relocated monitoring point is considered suitable as representative sensitive receiver for Strong Sing Garden.

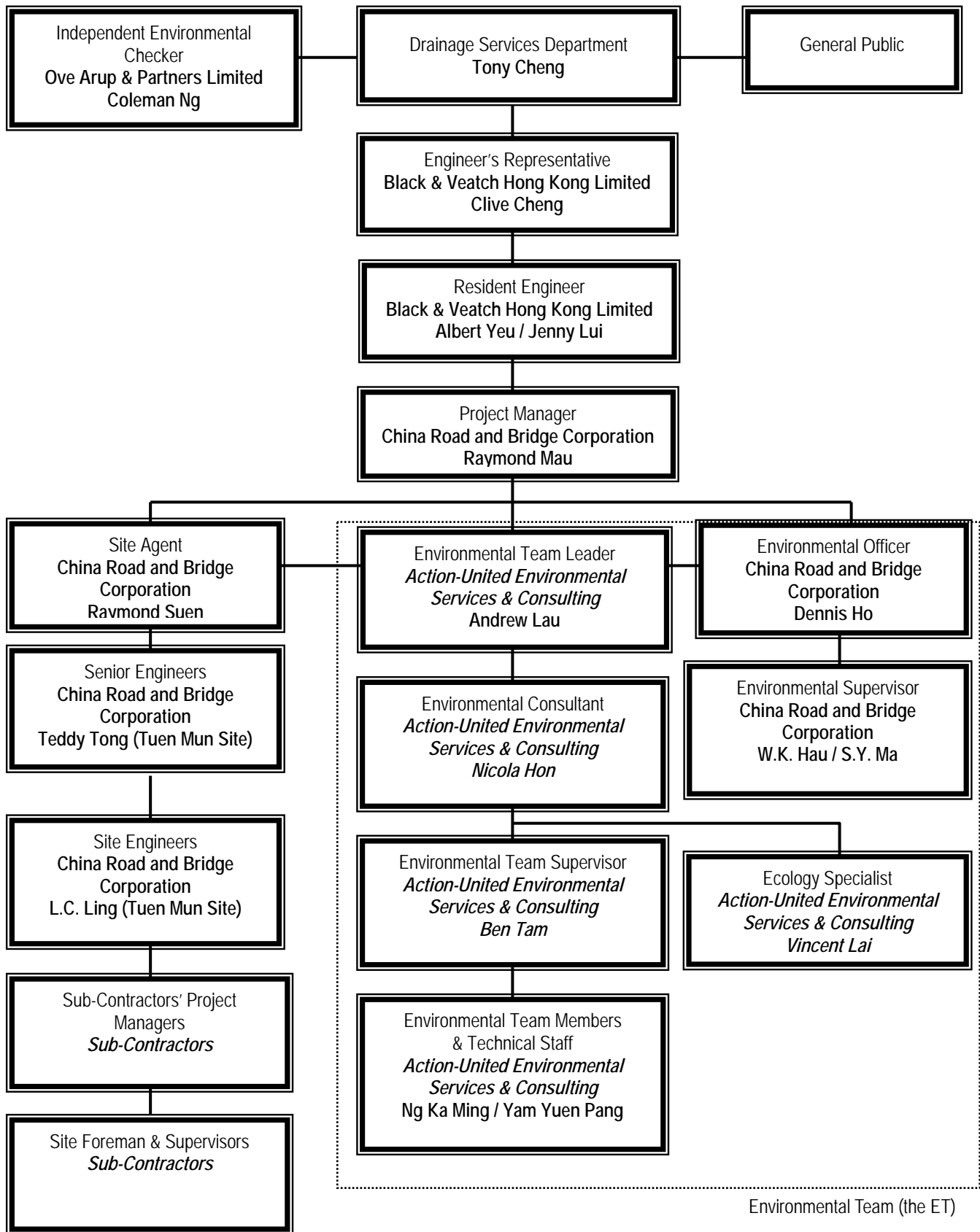
Drawing:
 Air, Noise and Stream Water Monitoring Location at KT-14A

Contract No. DC/2007/17-
 Drainage Improvement Works in Cheung Po, Ma On Kong, Yuen Kong San Tsuen and Tin Sam Tsuen of Yuen Long District and Sewerage at Tseng Tau Chung Tsuen, Tuen Mun

AUES

Appendix B

**Environmental Management Organization and
Contacts of Key Personnel**



Environmental Management Organization

Contact Details of Key Personnel

Organization	Project Role	Name of Key Staff	Tel No.	Fax No.
DSD	Employer	Mr. Tony Cheng	2594-7264	2827-8526
B&V	Engineer's Representative	Mr. Clive Cheng	2478-9161	2478-9369
B&V	Resident Engineer	Mr. Albert Yeu	2478-9161	2478-9369
B&V	Resident Engineer	Mr. Jenny Lui	2478-9161	2478-9369
OAP	Independent Environmental Checker	Mr. Coleman Ng	2268-3097	2268-3950
CRBC	Project Director	Mr. Wang Yanhua	2283-1688	2283-1689
CRBC	Project Manager	Mr. Raymond Mau	9048-3669	2283-1689
CRBC	Site Agent	Mr. Raymond Suen	9779-8871	2283-1689
CRBC	Senior Engineer (Tuen Mun Site)	Mr. Teddy Tong	6283-9684	2283-1689
CRBC	Site Engineer (Tuen Mun Site)	Mr. L.C. Ling	6770-4010	2283-1689
CRBC	Environmental Officer	Mr. Dennis Ho	6474-6975	2283-1689
CRBC	Environmental / Construction Supervisor (Tuen Mun and Yuen Long site)	Mr. W.K. Hau	6283-9696	2283-1689
CRBC	Environmental / Construction Supervisor (Yuen Long site)	Mr. S.Y. Ma	9401-6296	2283-1689
CRBC	Safety Officer	Kenny Sze	9374-8954	2283-1689
AUES	Environmental Team Leader	Mr. Andrew Lau	2959-6059	2959-6079
AUES	Environmental Consultant	Miss Nicola Hon	2959-6059	2959-6079
AUES	Environmental Site Inspector	Mr. Ben Tam	2959-6059	2959-6079
AUES	Ecologist	Mr. Vincent Lai	2959-6059	2959-6079

Legend:

DSD (Employer) – Drainage Services Department

B&V (Engineer) – Black & Veatch Hong Kong Limited

CRBC (Main Contractor) – China Road and Bridge Corporation

OAP (IEC) – Ove Arup & Partners Ltd

AUES (ET) – Action-United Environmental Services & Consulting

Appendix C

Construction Program

Contract No. : DC/2007/17

**Drainage Improvement Works in Cheung Po, Ma On Kong, Yuen Kong San Tsuen and Tin Sam Tsuen of Yuen Long District and Sewerage at Tseng Tau Chung Tsuen, Tuen Mun
Monthly Programme (December 2008)**

ID	Task Name	Duration	Start	Finish	30/11/2008			7/12/2008			14/12/2008			21/12/2008			28/12/2008											
					Sun	o	Tue	c	Thu	Fri	Sat	Sun	o	Tue	c	Thu	Fri	Sat	Sun	o	Tue	c	Thu	Fri	Sat	Sun	o	Tue
47	Section B	25 days	2008/12/1	2008/12/31																								
48	Excavation to Channel Formation & Laying of Rock Fill Material	24 days	2008/12/1	2008/12/30																								
49	Bay 1 (B CH300.00 - B CH316.00)	12 days	2008/12/1	2008/12/13																								
50	Bay 2 (B CH300.00 - B CH292.00) - Transition	12 days	2008/12/15	2008/12/30																								
51	Construction of Channel Structures	1 day	2008/12/31	2008/12/31																								
52	Bay 1 (B CH300.00 - B CH316.00)	1 day	2008/12/31	2008/12/31																								
53																												
54	Section III (Channel KT14A)	25 days	2008/12/1	2008/12/31																								
55	Regular Environmental Impact Monitoring	25 days	2008/12/1	2008/12/31																								
56	Regular Tree Survey	25 days	2008/12/1	2008/12/31																								
57	Regular Structural Condition Survey	25 days	2008/12/1	2008/12/31																								
58	Construction of Rectangular Channel	22 days	2008/12/4	2008/12/31																								
59	Bay 1 (CH0.00 - CH11.00)	17 days	2008/12/4	2008/12/23																								
60	Excavation	5 days	2008/12/4	2008/12/9																								
61	Installation of Sheet Piling	4 days	2008/12/5	2008/12/9																								
62	Cast Blinding Layer	1 day	2008/12/10	2008/12/10																								
63	Construction of Base Slab	4 days	2008/12/11	2008/12/15																								
64	Backfilling to the Kicker Level	1 day	2008/12/16	2008/12/16																								
65	Construction of Vertical Wall	4 days	2008/12/17	2008/12/20																								
66	Backfilling	1 day	2008/12/22	2008/12/22																								
67	Removal of Sheet Piling	1 day	2008/12/23	2008/12/23																								
68	Bay 2 (CH11.00 - CH23.00)	11 days	2008/12/16	2008/12/30																								
69	Excavation	5 days	2008/12/16	2008/12/20																								
70	Installation of Sheet Piling	4 days	2008/12/17	2008/12/20																								
71	Cast Blinding Layer	1 day	2008/12/22	2008/12/22																								
72	Construction of Base Slab	4 days	2008/12/23	2008/12/29																								
73	Backfilling to the Kicker Level	1 day	2008/12/30	2008/12/30																								
74	Bay 3 (CH23.00 - CH35.00)	2 days	2008/12/30	2008/12/31																								
75	Excavation	2 days	2008/12/30	2008/12/31																								
76	Installation of Sheet Piling	1 day	2008/12/31	2008/12/31																								
77																												
78	Section IV (Channel KT14B & KT14C)	25 days	2008/12/1	2008/12/31																								
79	Regular Environmental Impact Monitoring	25 days	2008/12/1	2008/12/31																								
80	Regular Tree Survey & Protection	25 days	2008/12/1	2008/12/31																								
81	Regular Structural Condition Survey	25 days	2008/12/1	2008/12/31																								
82	Construction of Kam Sheung Road (Portion 8B)	25 days	2008/12/1	2008/12/31																								
83	Construction of Channel between existing and CP9	25 days	2008/12/1	2008/12/31																								
84	Construction of Rectangular Channel of KT14B	25 days	2008/12/1	2008/12/31																								
85	Bay 12 (CH110.00 - CH122.00)	12 days	2008/12/1	2008/12/13																								
86	Excavation	5 days	2008/12/1	2008/12/5																								
87	Cast Blinding Layer	1 day	2008/12/6	2008/12/6																								
88	Construction of Base Slab & Vertical Wall	5 days	2008/12/8	2008/12/12																								
89	Backfilling	1 day	2008/12/13	2008/12/13																								
95	Bay 13-2 (CH125.00 - CH134.00)	12 days	2008/12/1	2008/12/13																								
96	Excavation	5 days	2008/12/1	2008/12/5																								
97	Cast Blinding Layer	1 day	2008/12/6	2008/12/6																								

Task Progress Summary External Tasks Deadline
 Split Milestone Project Summary Page 2 External Milestone

Contract No. : DC/2007/17
Drainage Improvement Works in Cheung Po, Ma On Kong, Yuen Kong San Tsuen and Tin Sam Tsuen of Yuen Long District and Sewerage at Tseng Tau Chung Tsuen, Tuen Mun
Three Months Rolling Programme (January 2009 to March 2009)

Task No.	Task Name	Duration	Start	Finish	Jan 2009					Feb 2009				Mar 2009				Apr 2009					
					28/12	4/1	11/1	18/1	25/1	1/2	8/2	15/2	22/2	1/3	8/3	15/3	22/3	29/3					
1	Section I (Channel KT12)	73 days	2009/1/2	2009/3/31																			
31																							
32	Section II (Channel KT13)	73 days	2009/1/2	2009/3/31																			
113																							
114	Section III (Channel KT14A)	73 days	2009/1/2	2009/3/31																			
115	Regular Environmental Impact Monitoring	73 days	2009/1/2	2009/3/31																			
116	Regular Tree Survey	73 days	2009/1/2	2009/3/31																			
117	Regular Structural Condition Survey	73 days	2009/1/2	2009/3/31																			
118	Construction of Rectangular Channel	73 days	2009/1/2	2009/3/31																			
119	Bay 2 (CH11.00 - CH23.00)	5 days	2009/1/2	2009/1/7																			
120	Construction of Vertical Wall	3 days	2009/1/2	2009/1/5																			
121	Backfilling	1 day	2009/1/6	2009/1/6																			
122	Removal of Sheet Piling	1 day	2009/1/7	2009/1/7																			
123	Bay 3 (CH23.00 - CH35.00)	17 days	2009/1/2	2009/1/21																			
124	Excavation	3 days	2009/1/2	2009/1/5																			
125	Installation of Sheet Piling	4 days	2009/1/3	2009/1/7																			
126	Cast Blinding Layer	1 day	2009/1/8	2009/1/8																			
127	Construction of Base Slab	4 days	2009/1/9	2009/1/13																			
128	Backfilling to the Kicker Level	1 day	2009/1/14	2009/1/14																			
129	Construction of Vertical Wall	4 days	2009/1/15	2009/1/19																			
130	Backfilling	1 day	2009/1/20	2009/1/20																			
131	Removal of Sheet Piling	1 day	2009/1/21	2009/1/21																			
132	Bay 4 (CH35.00 - CH48.00)	17 days	2009/1/14	2009/2/5																			
133	Excavation	5 days	2009/1/14	2009/1/19																			
134	Installation of Sheet Piling	4 days	2009/1/15	2009/1/19																			
135	Cast Blinding Layer	1 day	2009/1/20	2009/1/20																			
136	Construction of Base Slab	4 days	2009/1/21	2009/1/24																			
137	Backfilling to the Kicker Level	1 day	2009/1/29	2009/1/29																			
138	Construction of Vertical Wall	4 days	2009/1/30	2009/2/3																			
139	Backfilling	1 day	2009/2/4	2009/2/4																			
140	Removal of Sheet Piling	1 day	2009/2/5	2009/2/5																			
141	Bay 5 (CH48.00 - CH52.00)	11 days	2009/1/20	2009/2/4																			
142	Excavation	5 days	2009/1/29	2009/2/3																			
143	Installation of Sheet Piling	4 days	2009/1/30	2009/2/3																			
144	Cast Blinding Layer	1 day	2009/2/4	2009/2/4																			
145	Construction of Base Slab	4 days	2009/1/20	2009/1/23																			
146	Backfilling to the Kicker Level	1 day	2009/1/24	2009/1/24																			
147	Construction of Vertical Wall	4 days	2009/1/29	2009/2/2																			
148	Backfilling	1 day	2009/2/3	2009/2/3																			
149	Removal of Sheet Piling	1 day	2009/2/4	2009/2/4																			
150	Bay 6 (CH52.00 - CH56.00)	16 days	2009/1/24	2009/2/14																			
151	Excavation	5 days	2009/1/24	2009/2/2																			
152	Installation of Sheet Piling	4 days	2009/1/29	2009/2/2																			
153	Cast Blinding Layer	1 day	2009/2/3	2009/2/3																			
154	Construction of Base Slab	4 days	2009/2/3	2009/2/6																			
155	Backfilling to the Kicker Level	1 day	2009/2/7	2009/2/7																			
156	Construction of Vertical Wall & Top Slab	4 days	2009/2/9	2009/2/12																			
157	Backfilling	1 day	2009/2/13	2009/2/13																			
158	Removal of Sheet Piling	1 day	2009/2/14	2009/2/14																			
159	Bay 7 (CH56.00 - CH64.00)	17 days	2009/2/7	2009/2/26																			
160	Excavation	5 days	2009/2/7	2009/2/12																			
161	Installation of Sheet Piling	4 days	2009/2/9	2009/2/12																			
162	Cast Blinding Layer	1 day	2009/2/13	2009/2/13																			
163	Construction of Base Slab	4 days	2009/2/14	2009/2/18																			
164	Backfilling to the Kicker Level	1 day	2009/2/19	2009/2/19																			
165	Construction of Vertical Wall	4 days	2009/2/20	2009/2/24																			

Task Progress Summary External Tasks Deadline Split Milestone Project Summary External Milestone

Contract No. : DC/2007/17
Drainage Improvement Works in Cheung Po, Ma On Kong, Yuen Kong San Tsuen and Tin Sam Tsuen of Yuen Long District and Sewerage at Tseng Tau Chung Tsuen, Tuen Mun
Three Months Rolling Programme (January 2009 to March 2009)

ID	Task Name	Duration	Start	Finish	Jan 2009					Feb 2009				Mar 2009				Apr 2009	
					28/12	4/1	11/1	18/1	25/1	1/2	8/2	15/2	22/2	1/3	8/3	15/3	22/3	29/3	
166	Backfilling	1 day	2009/2/25	2009/2/25															
167	Removal of Sheet Piling	1 day	2009/2/26	2009/2/26															
168	Bay 8 (CH64.00 - CH76.00)	17 days	2009/2/19	2009/3/10															
169	Excavation	5 days	2009/2/19	2009/2/24															
170	Installation of Sheet Piling	4 days	2009/2/20	2009/2/24															
171	Cast Blinding Layer	1 day	2009/2/25	2009/2/25															
172	Construction of Base Slab	4 days	2009/2/26	2009/3/2															
173	Backfilling to the Kicker Level	1 day	2009/3/3	2009/3/3															
174	Construction of Vertical Wall	4 days	2009/3/4	2009/3/7															
175	Backfilling	1 day	2009/3/9	2009/3/9															
176	Removal of Sheet Piling	1 day	2009/3/10	2009/3/10															
177	Bay 9 (CH76.00 - CH88.00)	17 days	2009/3/3	2009/3/21															
178	Excavation	5 days	2009/3/3	2009/3/7															
179	Installation of Sheet Piling	4 days	2009/3/4	2009/3/7															
180	Cast Blinding Layer	1 day	2009/3/9	2009/3/9															
181	Construction of Base Slab	4 days	2009/3/10	2009/3/13															
182	Backfilling to the Kicker Level	1 day	2009/3/14	2009/3/14															
183	Construction of Vertical Wall	4 days	2009/3/16	2009/3/19															
184	Backfilling	1 day	2009/3/20	2009/3/20															
185	Removal of Sheet Piling	1 day	2009/3/21	2009/3/21															
186	Bay 10 (CH88.00 - CH100.00)	15 days	2009/3/14	2009/3/31															
187	Excavation	5 days	2009/3/14	2009/3/19															
188	Installation of Sheet Piling	4 days	2009/3/16	2009/3/19															
189	Cast Blinding Layer	1 day	2009/3/20	2009/3/20															
190	Construction of Base Slab	4 days	2009/3/21	2009/3/25															
191	Backfilling to the Kicker Level	1 day	2009/3/26	2009/3/26															
192	Construction of Vertical Wall	4 days	2009/3/27	2009/3/31															
193	Bay 11 (CH100.00 - CH112.00)	5 days	2009/3/26	2009/3/31															
194	Excavation	5 days	2009/3/26	2009/3/31															
195	Installation of Sheet Piling	4 days	2009/3/27	2009/3/31															
196	Laying of Gabion Block Inside the Channel Structures	48 days	2009/2/4	2009/3/31															
197	Bay 1 (CH0.00 - CH11.00)	15 days	2009/2/4	2009/2/20															
198	Bay 2 (CH11.00 - CH23.00)	15 days	2009/2/21	2009/3/10															
199	Bay 3 (CH23.00 - CH35.00)	15 days	2009/3/11	2009/3/27															
200	Bay 4 (CH35.00 - CH48.00)	3 days	2009/3/28	2009/3/31															
201																			
202	Section IV (Channel KT14B & KT14C)	73 days	2009/1/2	2009/3/31															
388																			
389	Section V (For Section I, II, III & IV)	73 days	2009/1/2	2009/3/31															
391																			
392	Section VI - Portion 9A & 9B (Tuen Mun Sewerage Work)	73 days	2009/1/2	2009/3/31															
396																			
397	Section VII - Portion 10A, 10B & 10C (Tuen Mun Sewerage Work)	73 days	2009/1/2	2009/3/31															

Task		Progress		Summary		External Tasks		Deadline	
Split		Milestone		Project Summary		External Milestone			

Appendix D

Mitigation Measure Implementation Schedule

Mitigation Measure Implementation Schedule – Construction Noise

Construction Noise Impact Mitigation								
Item Ref:	Mitigation Measures	Objectives of Proposed Measures	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent(s)	Implementation Stage			Relevant Legislation & Guidelines
					Design	Construction	Operation	
Noise 1	<p>The Contractor is required to adopt Level 1 and 2 site-specific direct technical measures as specified below during the construction phase</p> <p><i>Level 1 Mitigation Measures</i></p> <ul style="list-style-type: none"> The use of equipment with sound power level lower than that stipulated in the Technical Memorandum on Noise from Construction Works Other Than Percussive Piling is recommended as the first level mitigation (Level 1 mitigation) for all construction works under this Project. Quiet plant is defined as PME whose actual sound power level is less than the value specified in the Technical Memorandum on Noise from Construction Works Other Than Percussive Piling for the same piece of equipment. BS5228 also provides examples of quiet construction plant and their sound power level. The quiet plant used in the noise calculation including the BS5228 reference number is shown in Attachment 1 for reference <p><i>Level 2 Mitigation Measures</i></p> <ul style="list-style-type: none"> In addition to the use of quiet plant purpose-built site noise barriers shall be used as hoarding where construction works would be undertaken close (about 30m or less) to the NSRs (Figure 5.4). Temporary noise barrier with a minimum height of 3m shall be erected along the part of site boundary closest to the NSRs. Notwithstanding the required minimum height these barriers shall be constructed in a way such that no construction works and PME can be visible from the NSRs nearby. The minimum height is estimated assuming the construction equipment activities will be located on the channel bed 2m below the surrounding ground level. 	Prevent noise impact at sensitive receivers	To be implemented at the works site of KT14 during the Construction Phase (Figure 5.4 show locations of proposed temporary noise barriers.)	Construction Contractor		√		EIAO

Construction Noise Impact Mitigation								
Item Ref:	Mitigation Measures	Objectives of Proposed Measures	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent(s)	Implementation Stage			Relevant Legislation & Guidelines
					Design	Construction	Operation	
Noise 1 (Cont'd)	<ul style="list-style-type: none"> Stationary equipment shall be placed on the channel bed during construction works. For the construction works which are predicted to exceed 75dB(A) (Leq30min) at nearby NSR and whose line of sight cannot be blocked by the temporary noise barrier (i.e. further away from the hoardings), movable (mobile) noise barrier of more than 3m high shall be provided. A typical example is shown in Figure 5.7. The noise barriers or screens shall be constructed of appropriate material with a minimum surface density of 10kg/m². Generators and compressors, shall be completely screened by construction barriers giving a total noise reduction of 10dB(A) or more. The location of the proposed temporary noise barriers for KT14 is shown on Figures 5.4. 	Prevent noise impact at sensitive receivers	To be implemented at the works site of KT14 during the Construction Phase (Figure 5.4 show locations of proposed temporary noise barriers.)	Construction Contractor		√		EIAO

Mitigation Measure Implementation Schedule – Air Quality

Air Quality Impact Mitigation								
Item Ref:	Mitigation Measures	Objectives of Proposed Measures	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent(s)	Implementation Stage			Relevant Legislation & Guidelines
					Design	Construction	Operation	
Air 1	The Contractor shall prevent dust nuisance arising from the construction activities. The Contractor is required to follow all the requirements for dust control stipulated in the Air Pollution Control (Construction Dust) Regulation	Prevent dust nuisance	To be implemented at all works are of KT14 site during the Construction Phase.	Construction Contractor		√		Air Pollution Control Ordinance Air Pollution Control (Construction Dust Regulation)
Air 2	<p>The following dust suppression measures shall be installed as part of construction practice, and these shall be incorporated in the Contract Specification and implemented to minimize dust nuisance to within acceptable levels.</p> <ul style="list-style-type: none"> i) The Contractor shall frequently clean and water the site to minimise fugitive dust emissions. ii) Effective water sprays shall be used during the delivery and handling of aggregate, and other similar materials, when dust is likely to be created and to dampen all stored materials during dry and windy weather. iii) Watering of exposed surfaces shall be exercised at least three times a day. iv) Areas within the site where there is a regular movement of vehicles must be regularly watered at minimum three times a day. v) The Contractor shall restrict all motorised vehicles within the site, excluding those on public roads, to a maximum speed of 15 km per hour and confine haulage and delivery vehicles to designated road ways inside the site. vi) Any stockpiles of construction materials that are likely to generate fugitive dust shall be covered with tarpaulins including the materials on lorries or trucks. 	Prevent dust nuisance	To be implemented at all works are of KT14 site during the Construction Phase.	Construction Contractor		√		Air Pollution Control Ordinance Air Pollution Control (Construction Dust Regulation)

Air Quality Impact Mitigation								
Item Ref:	Mitigation Measures	Objectives of Proposed Measures	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent(s)	Implementation Stage			Relevant Legislation & Guidelines
					Design	Construction	Operation	
Air 2 (Cont'd)	<p>vii) Wheel washing facilities shall be installed and used by all vehicles leaving the site. No earth, mud, debris, dust and the like shall be deposited on public roads. Water in the wheel cleaning facility shall be changed at frequent intervals and sediments shall be removed regularly. The Contractor shall submit details of proposals for the wheel cleaning facility. Such wheel washing facilities shall be usable prior to any earthworks excavating activity on the site. The Contractor shall also provide a hard-surfaced road between any washing facility and the public road.</p> <p>viii) Any materials dropped on paved roads will need to be cleaned up immediately to prevent dust nuisance.</p>	Prevent dust nuisance	To be implemented at all works are of KT14 site during the Construction Phase.	Construction Contractor		√		<p>Air Pollution Control Ordinance</p> <p>Air Pollution Control (Construction Dust Regulation)</p>

Mitigation Measure Implementation Schedule – Water Quality

Water Quality Impact Mitigation								
Item Ref:	Mitigation Measures	Objectives of Proposed Measures	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent(s)	Implementation Stage			Relevant Legislation & Guidelines
					Design	Construction	Operation	
Water 1	Wash facilities for workers and wheel wash waste result in muddy construction site runoff. Temporary earth hunds and sand barriers shall be used to direct such runoff to a designated settlement area within the site.	Prevent additional pollution load being added to stream due to KT14 works	To be implemented at the works sites of KT14 during the Construction Phase	Construction Contractor		√		WPCO & ProPECC PN1/94
Water 1 (Cont'd)	The settlement area shall be located within the temporary site area. Construction site runoff shall be settled in this settlement area, while runoff from the surface should be channelled through a local site drainage system into the settlement area. When solids build up in the settlement area, and certainly before the onset of the wet season (Apr-Oct) solids shall be excavated from the base of the settlement area. No excavation shall be allowed in rainy weather.	Prevent additional pollution load being added to stream due to KT14 works	To be implemented at the works sites of KT14 during the Construction Phase	Construction Contractor		√		WPCO & ProPECC PN1/94
Water 2	All discharged waters, including sewage and site runoff, should comply with the appropriate standards in the Technical Memorandum on Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters, prior to discharge. Licensed contractors shall dispose the collected sewage to the government sewers. No sewage shall be allowed to enter wash facilities or sediment setting area.	Prevent additional pollution load being added to stream due to KT14 works	To be implemented at the works sites of KT14 during the Construction Phase	Construction Contractor		√		WPCO & ProPECC PN1/94

Mitigation Measure Implementation Schedule – Waste Management

Waste Management								
Item Ref:	Mitigation Measures	Objectives of Proposed Measures	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent(s)	Implementation Stage			Relevant Legislation & Guidelines
					Design	Construction	Operation	
	<p><i>Waste Management Plan</i></p> <p>Upon appointment, the main contractor of each construction contract should submit a Waste Management Plan (WMP) to the Engineer for approval. The WMP shall describe the arrangements for avoidance, reuse, recovery and recycling, storage, collection, treatment and disposal of different categories of waste to be generated from the construction activities and shall take into account the recommended mitigation measures in the Project Profile report. Such a management plan shall incorporate site specific factors, such as the designation of areas for segregation and temporary storage of reusable and recyclable materials. All mitigation measures numbered Waste 1 to 6 shall be included in the WMP</p>	<p>Planning for waste reduction, re-use, recycling and proper disposal and form compliance with Waste Disposal Ordinance and other guideline.</p>	<p>To be implemented at the works sites of KT14 during the Construction Phase.</p>	<p>Construction Contractor</p>		<p>√</p>		<p>WBTC No. 2/93, 2/93B, 16/96, 4/98, 4/98A, 25/99 25/99A, 25/99C, 12/2000, 19/2001</p> <p>ETWB TC No. 33/2002, 34/2002, 15/2003, 31/2004</p>
Waste 1	<p>i) Trip-ticket system – In order to monitor the disposal of C&D and solid wastes at public filling facilities and landfills, and control fly-tipping, a trip-ticket system shall be included.</p> <p>ii) Records of wastes – A recording system for the amount of wastes generated, recycled and disposed (including the disposal sites) shall be proposed.</p> <p>iii) Training – Training should be provided to workers about the concepts of site cleanliness and appropriate waste management procedure, including waste reduction, reuse and recycling.</p>	<p>Planning for waste reduction, re-use, recycling and proper disposal and form compliance with Waste Disposal Ordinance and other guideline.</p>	<p>To be implemented at the works sites of KT14 during the Construction Phase.</p>	<p>Construction Contractor</p>		<p>√</p>		<p>WBTC No. 2/93, 2/93B, 16/96, 4/98, 4/98A, 25/99 25/99A, 25/99C, 12/2000, 19/2001</p> <p>ETWB TC No. 33/2002, 34/2002, 15/2003, 31/2004</p>

Waste Management								
Item Ref:	Mitigation Measures	Objectives of Proposed Measures	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent(s)	Implementation Stage			Relevant Legislation & Guidelines
					Design	Construction	Operation	
Waste 2	<p><i>Site Clearance Waste / Demolition Waste</i></p> <p>All construction waste shall be sorted on site into inert and non-inert components. Non-inert materials (wood, glass, metals and plastics) shall be recycled or reused and disposed to landfill only as a last resort. Inert materials (soil, rubble, sand, rock, brick and concrete) shall be separated and reused on site prior to final disposal at public filling facilities. The final disposal site for public fill shall be the Public Filling Facility at Tuen Mun Area 38. The final disposal site for construction and demolition waste shall be the North East New Territories (NENT) Landfill.</p>	<p>Planning for waste reduction, re-use, recycling and proper disposal and form compliance with Waste Disposal Ordinance and other guideline.</p>	<p>To be implemented at the works sites of KT14 during the Construction Phase.</p>	<p>Construction Contractor</p>		<p>√</p>		<p>WBTC No. 2/93, 2/93B, 16/96, 4/98, 4/98A, 25/99A, 25/99C, 12/2000, 19/2001</p> <p>ETWB(TC) W No. 33/2002, 34/2002, 15/2003, 31/2004</p>
Waste 3	<p>Excavated Material</p> <p>Any excavated material from the stream shall not be stockpiled, and shall be removed from site on the same day. The material shall be stored in covered impermeable skips while awaiting removal from site.</p> <p>Any leachate from skips shall be treated to meet discharge standard from Government sewers before being collected along with toilet waste by licensed contractor.</p>	<p>Planning for waste reduction, re-use, recycling and proper disposal and form compliance with Waste Disposal Ordinance and other guideline. Planning for waste reduction, re-use, recycling and proper disposal and form compliance with Waste Disposal Ordinance and other guideline.</p>	<p>To be implemented at the works sites of KT14 during the Construction Stage.</p> <p>To be implemented at the works sites of KT14 during the Construction Stage</p>	<p>Construction Contractor during Construction Stage</p> <p>Construction Contractor during Construction Stage</p>		<p>√</p> <p>√</p>		<p>ETWB(TC) W No. 34/2002,</p> <p>WBTC 12/2000</p> <p>ETWB(TC) W No. 34/2002,</p> <p>WBTC 12/2000</p>

Waste Management								
Item Ref:	Mitigation Measures	Objectives of Proposed Measures	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent(s)	Implementation Stage			Relevant Legislation & Guidelines
					Design	Construction	Operation	
Waste 4	<p><i>Recycling the Use of Non-Reusable Materials on Site</i></p> <p>Hoarding, shutters, form works and false works made of reusable materials such as steel or plastic concrete panels shall be used as a preferred alternative to non-reusable materials such as wood and timber, with reference to WBTC No. 19/2001 – Metallic Site Hoarding and Signboards.</p>	<p>Planning for waste reduction, re-use, recycling and proper disposal and form compliance with Waste Disposal Ordinance and other guideline</p>	<p>To be implemented at the works sites of KT14 during the Construction Phase</p>	<p>Construction Contractor</p>		<p>√</p>		<p>WBTC 19/2001</p>
Waste 5	<p><i>Chemical Waste</i></p> <p>Any Contractor generating waste oil, lubricants, paints or other chemicals as a result of his activities should register in a chemical waste producer. Storage, handling, transport and disposal of chemical waste should be arranged in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes published by EPD. Chemical waste should be collected by licensed collector.</p> <p>The Contractor shall provide a storage area with hard standing, impermeable surface for storing chemicals on site to prevent inadvertent release of waste oil or other chemicals into nearby water bodies. Oil and fuel bunkers should be bunded and/or enclosed on three sides to prevent discharge due to accidental spillages or breaches of tanks. Bunded area should be of sufficient capacity to accommodate 110% of the volume of the largest container or 20% of the total volume of waste, whichever is largest. For construction plant that is likely to leak oil, absorbent inert materials e.g. sand, shall be placed beneath it. This material should be replaced on a regular basis and the contaminated material disposed as chemical wastes. Storage areas should have adequate ventilation and be covered to prevent rain entering.</p>	<p>Planning for waste reduction, re-use, recycling and proper disposal and form compliance with Waste Disposal Ordinance and other guideline</p>	<p>To be implemented at the works sites of KT14 during the Construction Phase</p>	<p>Construction Contractor</p>		<p>√</p>		<p>WDO Waste Disposal (Chemical Waste) General Regulation)</p>

Waste Management								
Item Ref:	Mitigation Measures	Objectives of Proposed Measures	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent(s)	Implementation Stage			Relevant Legislation & Guidelines
					Design	Construction	Operation	
Waste 5 (Cont'd)	Grease traps shall be installed for site drains. These traps shall be cleared at least once a week. A licensed contractor shall regularly clear the traps and dispose waste oils. No chemicals should be allowed to discharge into water courses, either by direct discharge, or as contaminants carried in surface water runoff from the construction site. Training on safety codes and relevant manuals related to the chemicals stored on site should be obligatory for the personnel who handle the chemicals on site.	Planning for waste reduction, re-use, recycling and proper disposal and form compliance with Waste Disposal Ordinance and other guideline	To be implemented at the works sites of KT14 during the Construction Phase	Construction Contractor		√		WDO Waste Disposal (Chemical Waste) General Regulation)
Waste 6	Domestic garbage generated by site staff shall be stored at dry locations in covered impermeable skips. It should be collected daily and disposed to the nearest Refuse Collection Point or arranged for collection by licensed contractors. The Engineer is responsible for checking that no chemical waste, sewage, excavated material or sorted reusable material is disposed as domestic garbage.	Planning for waste reduction, re-use, recycling and proper disposal and form compliance with Waste Disposal Ordinance and other guideline	To be implemented at all of KT14 construction site	Construction Contractor		√		Public Health and Municipal Services Ordinance

Mitigation Measure Implementation Schedule – Landscape / Visual

Landscape / Visual Impact Mitigation								
Item Ref:	Mitigation Measures	Objectives of Proposed Measures	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent(s)	Implementation Stage			Relevant Legislation & Guidelines
					Design	Construction	Operation	
Land 1	A survey of existing trees shall be completed in accordance with Works Branch Technical Circular No. 14/2002. Management and Maintenance of Natural Vegetation and Landscape Works, and Tree Preservation during detailed design stage. The results of the survey shall form consideration in the detail design for the proposed Secondary Channels KT14, in order that any significant trees shall be protected during both the design and construction periods. Parameters assessed in the survey shall include species, health, form, transplant-ability and amenity value (assessed according to form, size, age, condition and situation of the tree). All surveyed trees should be checked with species listed under the “Animals and Plants (Protection of Endangered Species) Ordinance (CAP 187)” and Forestry and Countryside Ordinance (CAP. 96)” to ensure that no endangered species are affected. Where tree felling is unavoidable, compensatory planting proposal shall be prepared and submitted to EPD and LandsD for approval.	Protect visual quality of project area and proposed works Ensure protection of trees.	To be implemented along KT14 during the Detail Design Phase and Construction Phase.	Design Engineer to conduct tree survey during detailed design stage. Construction Contractor to follow the results during construction	√			Works Bureau Technical Circular No. 14/2002
					√	√		
		Protect visual quality of project area and proposed works Ensure protection of trees	To be implemented along KT14 during the Detail Design Phase and Construction Phase.	Design Engineer to conduct tree survey during detailed design stage. Construction Contractor to follow the results during construction				

Note:

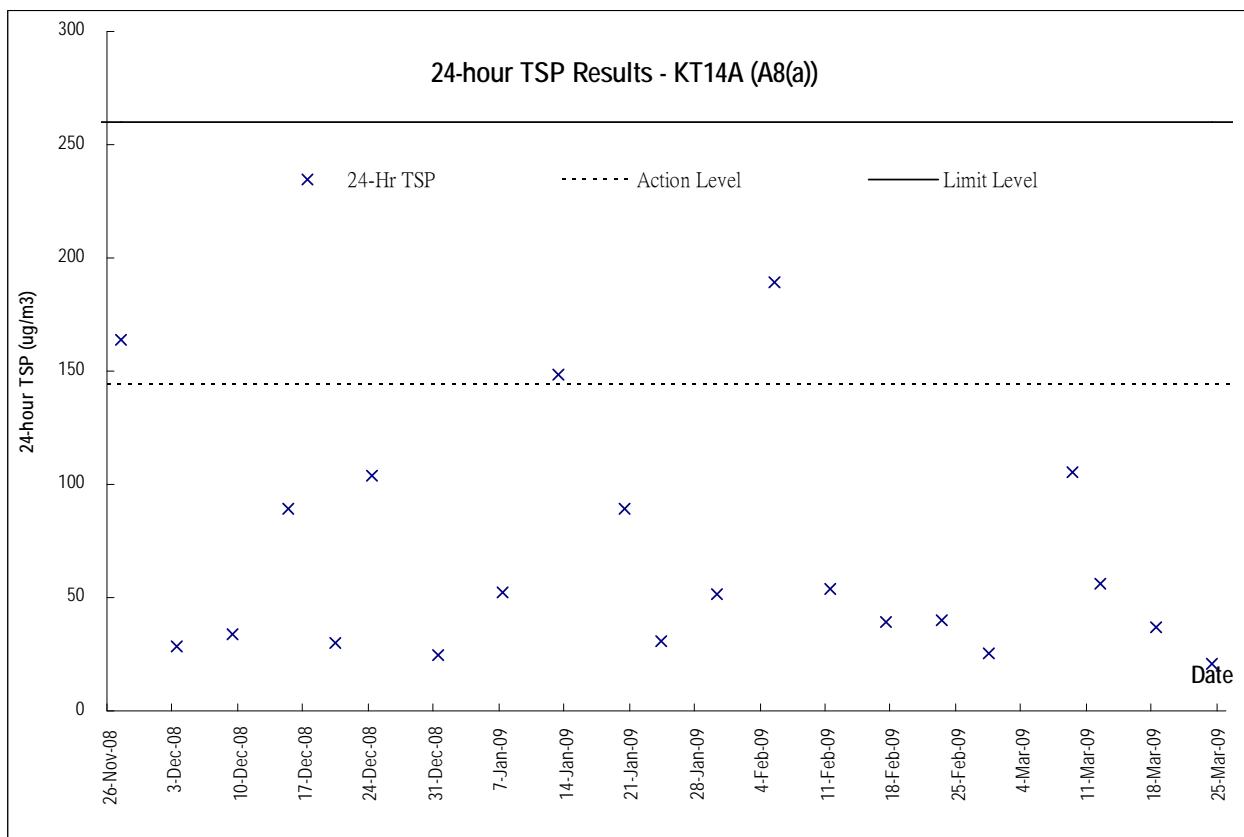
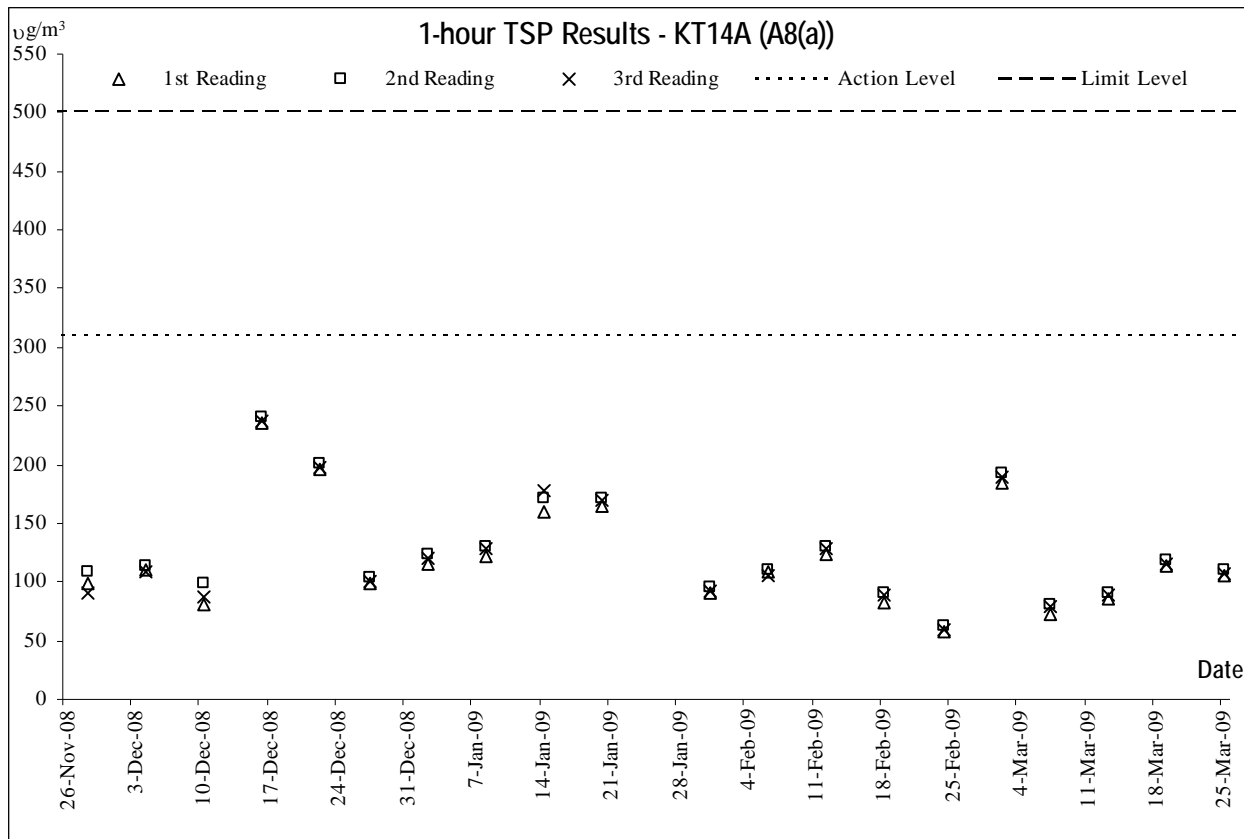
- EIAO Environmental Impact Assessment Ordinance
- WDO Waste Disposal Ordinance
- WPCO Water Pollution Control Ordinance
- TMEIA Technical Memorandum on Environmental Impact Assessment Process

Appendix E

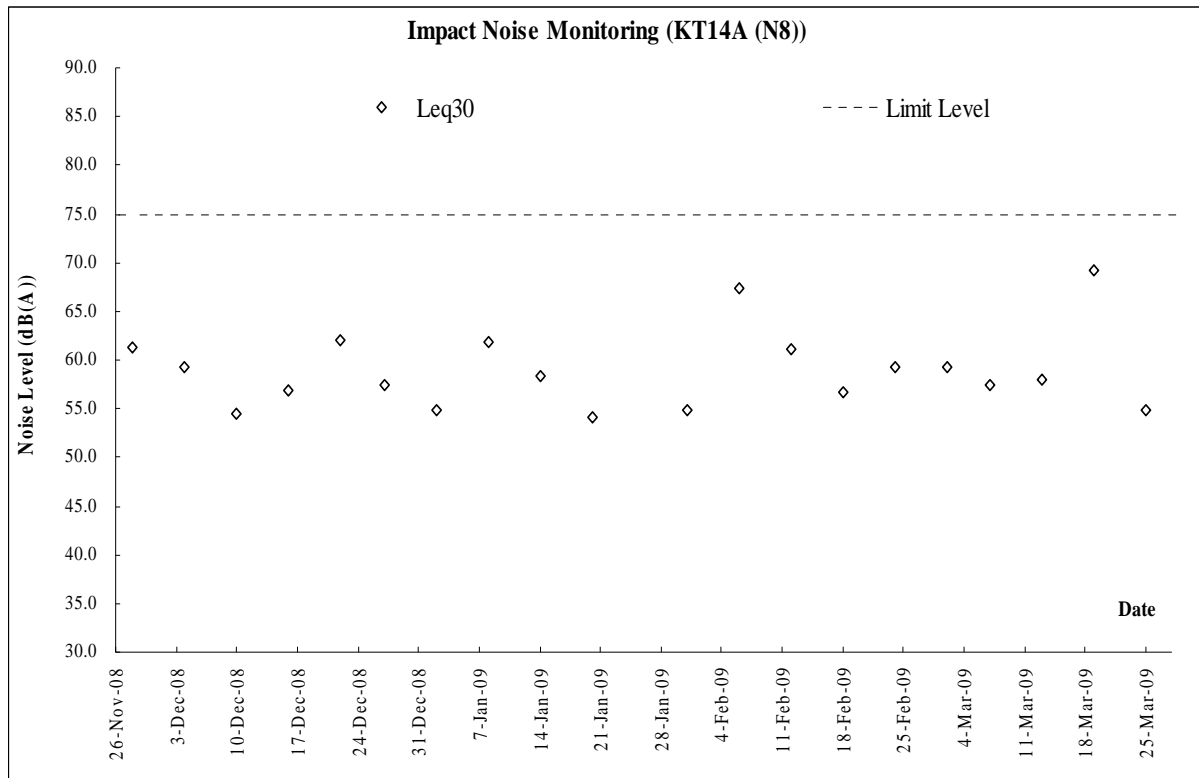
Graphic Plots of

- (a) Air Quality**
- (b) Construction Noise**
- (c) Water Quality**

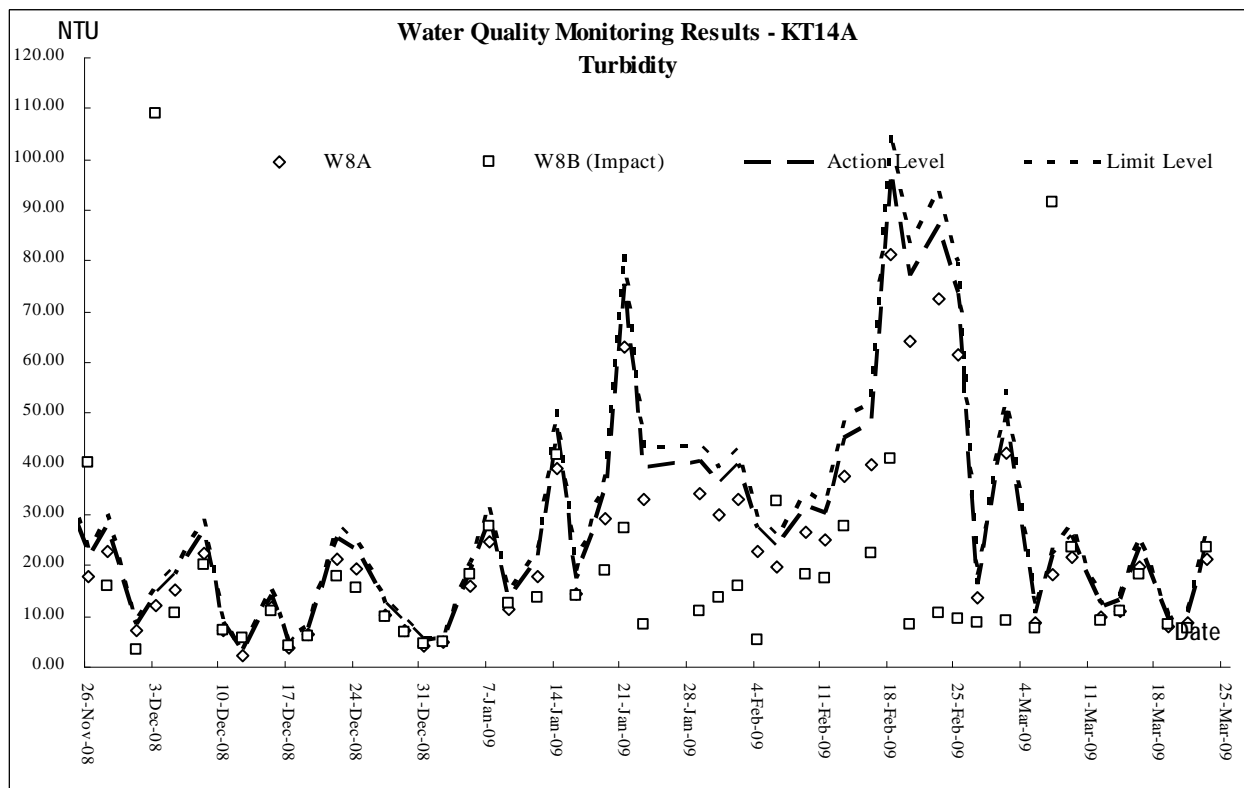
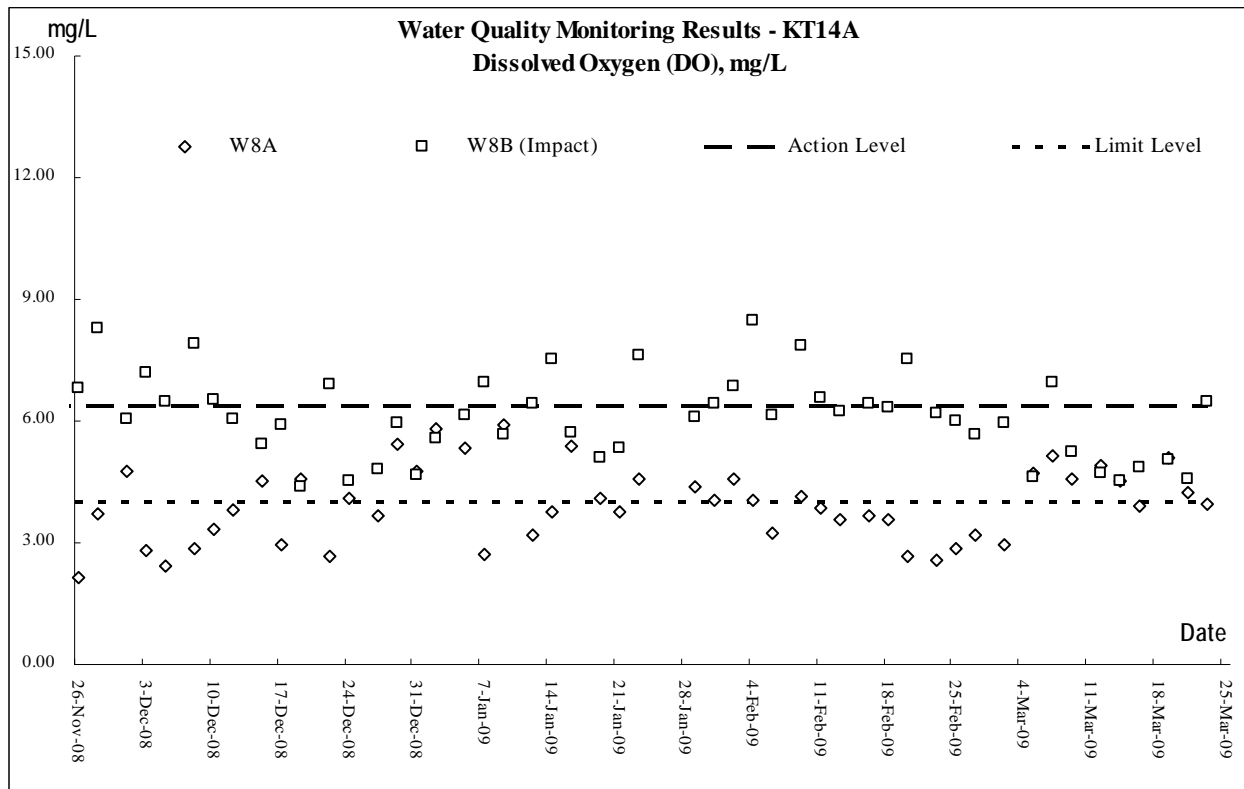
Air Quality

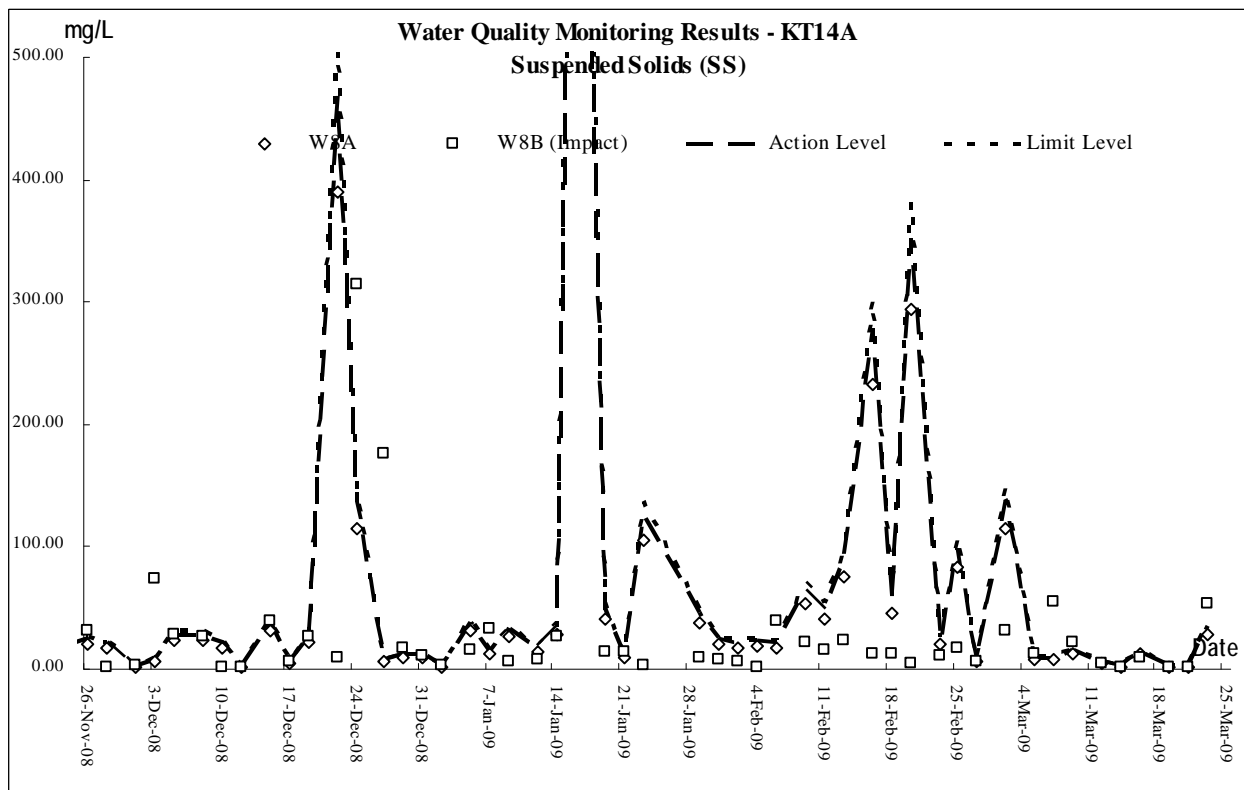
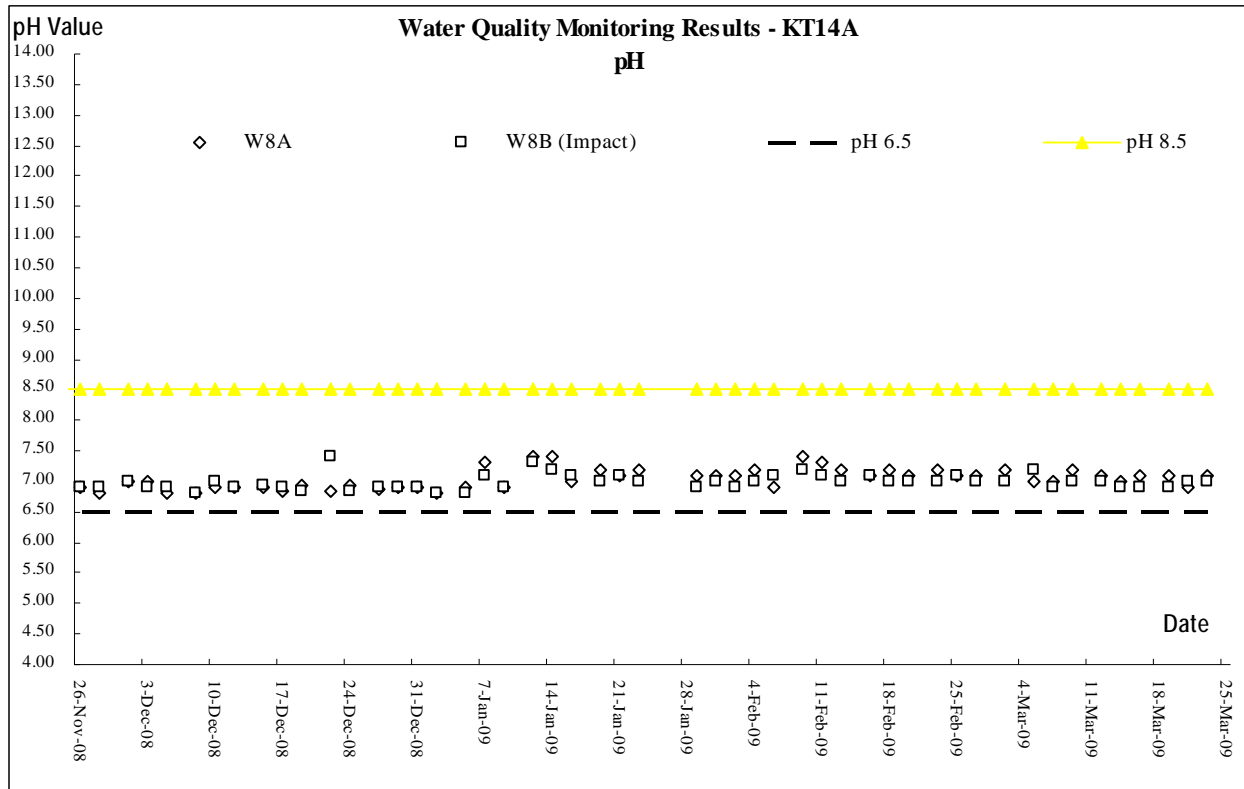


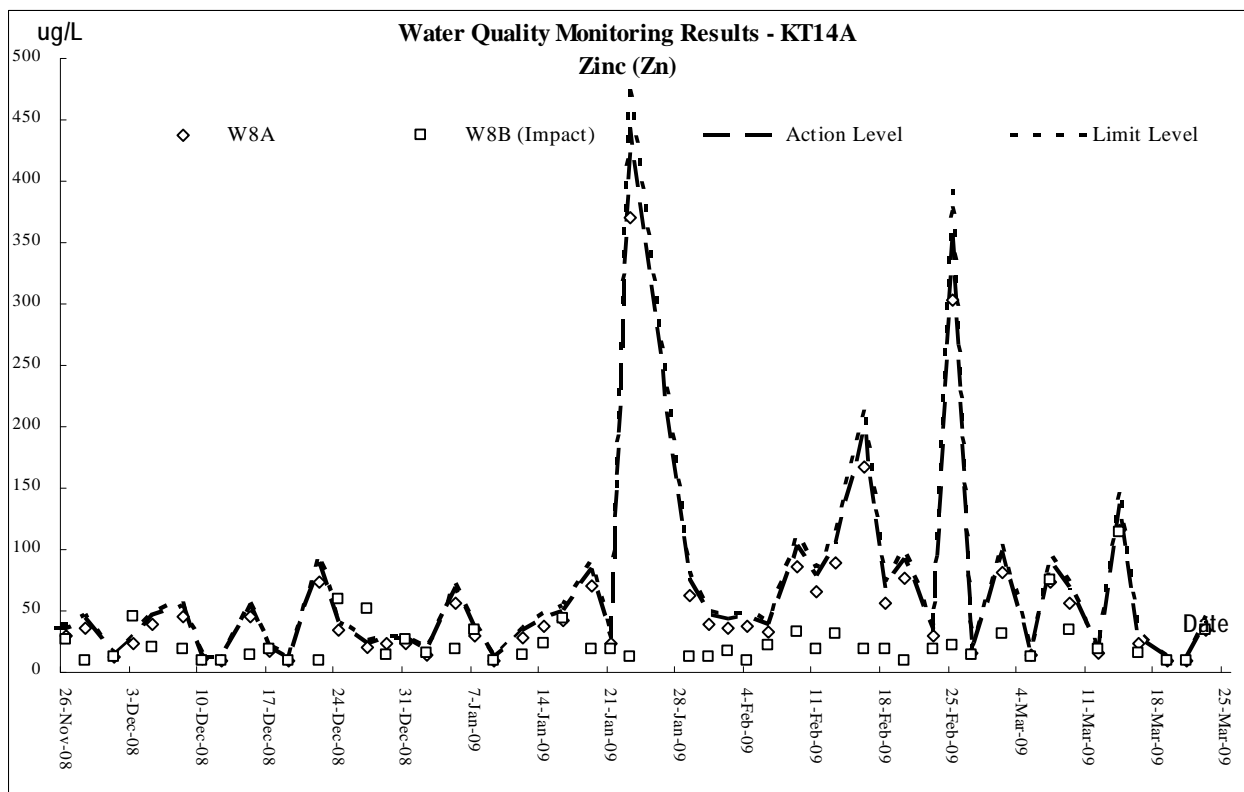
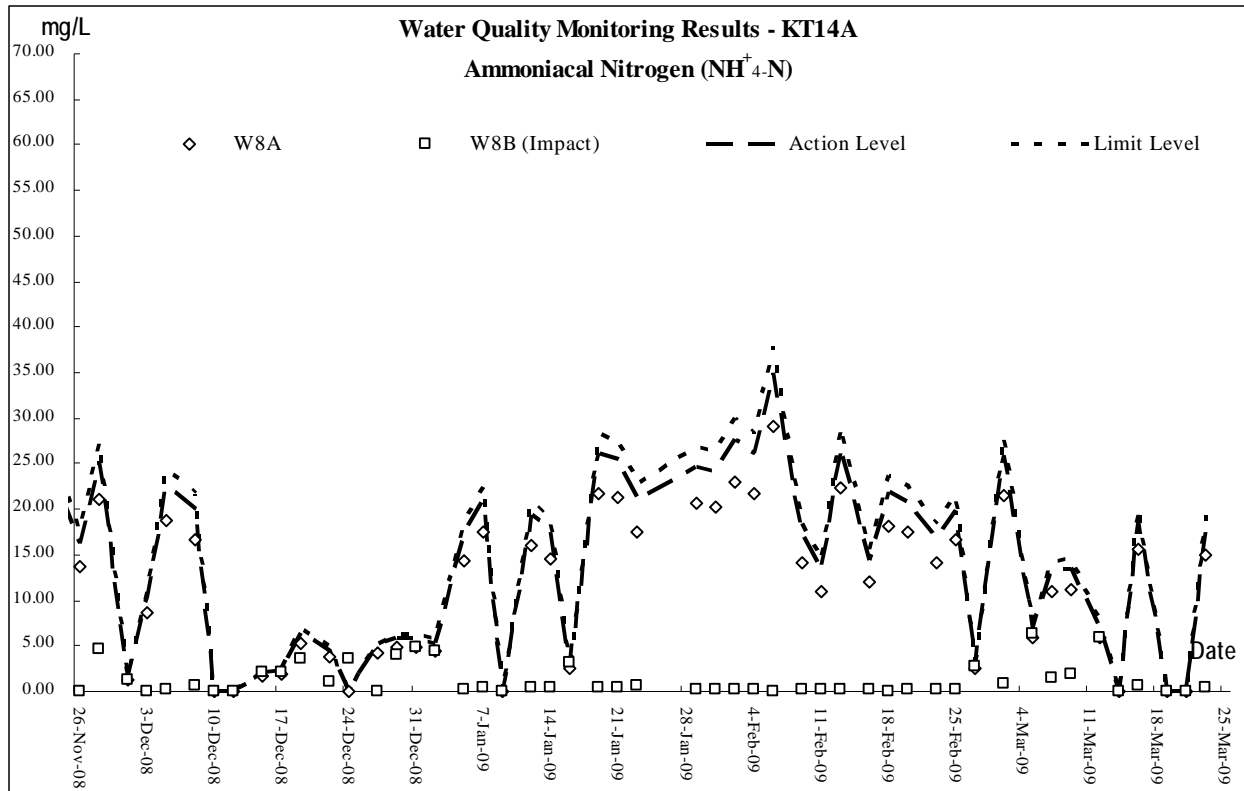
Construction Noise



Water Quality







Appendix F

Monthly Summary Waste Flow Table

Monthly Summary Waste Flow Table

Date: 31-Mar-09
Year/Month: Mar-09

Monthly Summary Waste Flow Table for February 2009										
Year	Actual Quantities of Inert C & D Materials Generated Monthly					Estimated Annual Quantities of C & D Wastes Generated Monthly				
	Total Quantity Generated	Broken Concrete (see note 4)	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Metals	Paper/ Cardboard packaging	Plastics (see note 3)	Chemical Waste	Others, e.g. General refuse
	(in '000M ³)	(in '000M ³)	(in '000M ³)	(in '000M ³)	(in '000M ³)	(in '000KG)	(in '000KG)	(in '000KG)	(in '000KG)	(in '000M ³)
Jan	6.716	0.008	6.708	0	0	0	0	0	0	0
Feb	8.001	0.009	7.632	0.36	0	0	0	0	0	0
Mar	5.792	0.014	5.778	0	0	0	0	0	0	0
Apr										
May										
Jun										
Sub-Total	20.51	0.031	20.118	0.36	0	0	0	0	0	0
Jul										
Aug										
Sep										
Oct										
Nov										
Dec										
Total	20.509	0.031	20.118	0.360	0.000	0.000	0.000	0.000	0.000	0.000

- Notes:
- (1) The performance targets are given in PS Clause 28.10(14)
 - (2) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
 - (3) Plastics refer to plastic bottles/ containers, plastic sheets/ foam form packaging material
 - (4) Broken concrete for recycling into aggregates