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

3RD QUARTERLY EM&A SUMMARY REPORT – KT14A
APRIL – JUNE 2009

PREPARED FOR
CHINA ROAD & BRIDGE CORPORATION

Quality Index

Date	Reference No.	Prepared By	Certified By
10 July 2009	TCS00408/08/600/R1102v2	 Nicola Hon Environmental Consultant	 Andrew Lau Environmental Team Leader

Version	Date	Prepared by	Certified by	Description
1	8 July 2009	Nicola Hon	Andrew Lau	First submission
2	10 July 2009	Nicola Hon	Andrew Lau	Amended against IEC's comment on 10 July 2009

Executive Summary

ES.01. This is the Third (3rd) Quarterly EM&A Report for Channels KT14A (Designated Project works) summarizing the key environmental monitoring results during the period from 26 March 2009 to 25 June 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	42 events monitoring
• 24-hour TSP Monitoring	14 events monitoring
• Noise Monitoring	14 monitoring events
• Water Quality Monitoring	38 monitoring days
• Site Inspection Audit	14 occasions

Breaches of Environmental Quality Criteria

ES.03. In this quarter, one Action Level exceedance of construction noise due to a complaint was recorded on 26 March 2009. Investigation showed that the complaint was about the noise and vibration generated from sheet piling work. Investigation report concluded that it was due to the sheetpiling work of the project and the report is being viewed by IEC.

ES.04. For air quality, no exceedances were recorded in both 1-hour and 24-hour TSP monitoring in this reporting quarter.

ES.05. A total of 25 exceedances of water quality A/L Levels of which 1 was exceedance of Action Levels and 24 Limit Levels, were recorded. The overall compliance rate of water quality monitoring in the third quarter is 89.0%. Investigation showed that all exceedances were not works related. A summary of all environmental exceedances is presented as follows:

Parameter	Channels KT14A	
	No. of Exceedances	Compliance%
Suspended Solids	21	44.7%
Turbidity	4	89.5%
Dissolved Oxygen	0	100%
pH	0	100%
Ammonia	0	100%
Zinc	0	100%
Overall	25	89.0%

Environmental Complaint, Notifications of Summons and Prosecutions

ES07 A complaint about the construction noise from the sheetpiling works of the project was received on 26 March 2009. Investigation report concluded that it was due to the sheetpiling work of the project and the report is being viewed by IEC. No notification of summons and successful prosecution was received during the Reporting Period. 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 come, water quality mitigation measures to avoid ingress of runoff into Channel KT14A should be properly installed and maintained as stipulated in the EIA and summarized in the EM&A Manual. 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

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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 Third Quarterly EM&A Summary Report covering a three month period from 26 March 2009 to 25 June 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 March 2009 – 25 April 2009

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

26 April to 25 May 2009

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

26 May to 25 June 2009

- Construction of manholes and catchpits;
- Gabion blocks laying; 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-hour TSP and three times every 6 days for 1-hour 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 (μg /m³)		Limit Level (μg/m³)	
	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 (μg/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 (μg/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:

(a) Watering of exposed dry and dusty surface, including stock piles of dusty materials;

(b) Covering of the loose soil to minimize water quality impacts;

(c) Hard pavement of haul road leading to public roads;

(d) Wheel washing facility at to avoid construction dust impacts on the public roads; and

(e) Construction of noise barriers.

(f) During construction works nearly 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 treads pf 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 42 sampling events for 1-hour TSP and 14 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)	110	34	79	88	11	33
Recorded in the date		31 Mar 09	23 May 09	42 events	15 Apr 09	6 Apr 09	14 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	0	0
	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 below the Action levels of 310 and 144 respectively. Neither NOE of air quality nor corrective action was therefore required.

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	69.6	47.9	When one documented complaint is received	75* dB(A)
Recorded in the date		18 May 09	17 Jun 09		

As shown in ***Tables 3-2*** and ***Appendix E,*** all the construction noise results fluctuated below the Limit level. One Action Level exceedance in construction noise due to a complaint was received on 26 March 2009 and a Notice of Exceedance of environmental quality criteria (NOE) was issued accordingly. It was reported that during the exceedance day, sheet piling was carried out to provide lateral support to an excavated trench. Investigation found that high levels of noise and vibration were generated when the sheet piles struck some unexpected hard materials during the incident. The frontline staff had been reminded to stop attempting further sheet piling when excessive levels of noise and vibration were experienced. The sheet piling work was completed on 31 March 2009 and no further complaint related to the work was received. The monitoring result on 31 March 2009 is 55.5dB which well below the Limit level, it demonstrated that the noise compliance of sheet-piling work after complaints was noticed. In order to avoid similar complaints in the future, the contractor is advised to improve and review the methodology and to enhance the noise mitigation awareness of the frontline staff.

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 3-3-1 and 3-3-2***, taken into account that W8A is set as the up-stream control station for W8B.

Table 3-3-1 Summaries of Water Quality monitoring in the Quarter Reporting period

location	Exceedance	DO	Turbidity	pH	SS	NH_4^+-N	Zn	Total
W8B (April 2009)	Action Level	0	0	0	0	0	0	0
	Limit Level	0	4	0	10	0	0	14
W8B (May 2009)	Action Level	0	0	0	0	0	0	0
	Limit Level	0	0	0	4	0	0	4
W8B (June 2009)	Action Level	0	0	0	1	0	0	1
	Limit Level	0	0	0	6	0	0	6
Total	Action Level	0	0	0	1	0	0	1
	Limit Level	0	4	0	20	0	0	24

Table 3-3-2 Summaries of Breaches of the Existing Water Quality A/L Levels at W8B

Parameter	Channels KT14A	
	No. of Exceedances	Compliance%
Suspended Solids	21	44.7%
Turbidity	4	89.5%
Dissolved Oxygen	0	100%
pH	0	100%
Ammonia	0	100%
Zinc	0	100%
Overall	25	89.0%

As shown in ***Tables 3-3-1*** and ***Appendix E***, a total of 25 exceedances of water quality A/L levels, namely 1 exceedance of Action levels and 24 exceedances of Limit levels, were recorded during the Reporting Period. Summary of breaches of the existing water quality A/L at W8B is shown in ***Table 3-3-2.***

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 3-3-3***.

Table 3-3-3 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
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

April 2009

April 2009 was drier and cooler than usual. The mean temperature was 22.0 degrees, 0.5 degrees below the normal figure of 22.5 degrees. The total rainfall in the month was 108.7 millimetres, about 42 percent below the normal figure of 188.5 millimetres. The accumulated rainfall since 1 January was 230.5 millimetres, about 32 percent below the normal figure of 337.1 millimetres for the same period.

May 2009

May 2009 was drier and sunnier than usual. The total rainfall of 245.2 millimetres in the month, which was mainly recorded in the last 10 days, was about 26 percent below the normal figure of 329.5 millimetres. The accumulated rainfall since 1 January was 475.7 millimetres, about 29 percent below the normal figure of 666.6 millimetres for the same period. The total bright sunshine duration was 169.8 hours, about 23 percent above normal. The mean temperature was 25.5 degrees, 0.3 degrees below the normal figure of 25.8 degrees.

June 2009

June 2009 was drier than usual. The total rainfall of 341.8 millimetres in the month was about 12 percent below the normal figure of 388.1 millimetres. The accumulated rainfall since 1 January was 817.5 millimetres, about 22 percent below the normal figure of 1054.7 millimetres for the same period. The mean temperature was 28.1 degrees, 0.2 degrees above the normal figure of 27.9 degrees.

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 and 1 action level exceedance of construction noise due to complaint was received on 26 March 2009, 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

One construction noise complaint was recorded on 26 March 2009 at designated station N8. NOE were issued upon verbal notice about the noise complaint by CRBC on 28 March 2009. According to the site information provided by the contractor, investigation report was conducted and concluded that the complaint was due to the noise and vibration generated from sheetpiling work when the pile struck some unexpected hard materials. To mitigation the noise exceedance, the contractor has immediately reminded the frontline staff to stop attempting further sheet piling when excessive levels of noise and vibration were experienced. The sheetpiling work was completed on 31 March 2009 and no further complaint was received. The investigation is being reviewed by IEC for IEC's comment and case closure.

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 fourteen (14) 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
26 March 2009	No adverse environmental impacts were observed during the site inspection	Recommendations based on the observation on 17 March 2009 were followed.
31 March 2009	Construction waste was observed scattered within the site. Good site practice to avoid excessive accumulation of the waste is recommended.	Recommendations based on the observation on 26 March 2009 were followed.
8 April 2009	No adverse environmental impacts were observed during the site inspection	Recommendations based on the observation on 31 March 2009 were followed.
16 April 2009	No adverse environmental impacts were observed during the site inspection	Recommendations based on the observation on 8 April 2009 were followed.
23 April 2009	Exposed stockpiles shall be covered with tarpaulin sheets or similar materials and remove asap, especially during wet season, to avoid excessive	Recommendations based on the observation on 16 April 2009 were followed.

	surface run and potential water pollution.	
28 April 2009	No adverse environmental impacts were observed during the site inspection	Recommendations based on the observation on 23 April 2009 were followed.
6 May 2009	Construction materials were found exposed in the air at Channel. The contractor shall cover the materials properly	Recommendations based on the observation on 28 April 2009 were followed.
12 May 2009	The contractor was reminded to keep a good site tidiness practice with regularly disposal of waste	Recommendations based on the observation on 6 May 2009 were followed.
20 May 2009	No adverse environmental impacts were observed during the site inspection	Recommendations based on the observation on 12 May 2009 were followed.
26 May 2009	Timber was found inside the channel of KT14A, the Contractor is reminded to check and clean the waste more frequently to prevent blockage of the channel.	Recommendations based on the observation on 26 May 2009 were followed.
2 June 2009	No adverse environmental impacts were observed during the site inspection	N/A
10 June 2009	Water accumulated within the drip tray and eye-holes of concrete blocks shall be drained or filled with soil.	Recommendations based on the observation on 10 June 2009 were followed.
16 June 2009	Watering at haul road is recommended for the dust suppression when the vehicle in motion.	Recommendations based on the observation on 16 June 2009 were followed.
25 June 2009	No adverse environmental impacts were observed during the site inspection	N/A

5 CONCLUSIONS

This is the Third (3rd) Quarterly EM&A Report for Designated Project works during the period from 26 March 2009 to 25 June 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 air quality during the Reporting Period.

There was one Action Level exceedance in construction noise due to a complaint logged on 26 March 2009. Investigation concluded that the complaint was caused by sheet piling work of the project. The contractor has been advised to review the methodology of the sheetpiling and to enhance the noise mitigation awareness of the frontline staff. The investigation report is being review by IEC and RE.

A total of 25 exceedances of water quality A/L Levels of which 1 was exceedance of Action Levels and 24 Limit Levels, were recorded. The overall compliance rate of water quality monitoring in the third quarter is 89.0%. Investigation showed that all exceedances were not works related. No corrective actions were recommended.

One construction noise complaint was received on 26 March 2009, investigation report has been completed and being reviewed by IEC and RE for case closure. No notification of summons and successful prosecution was received 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 has come, water quality mitigation measures to avoid ingress of runoff into Channel KT14A should be properly installed and maintained, as appropriate. In particularly, 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.

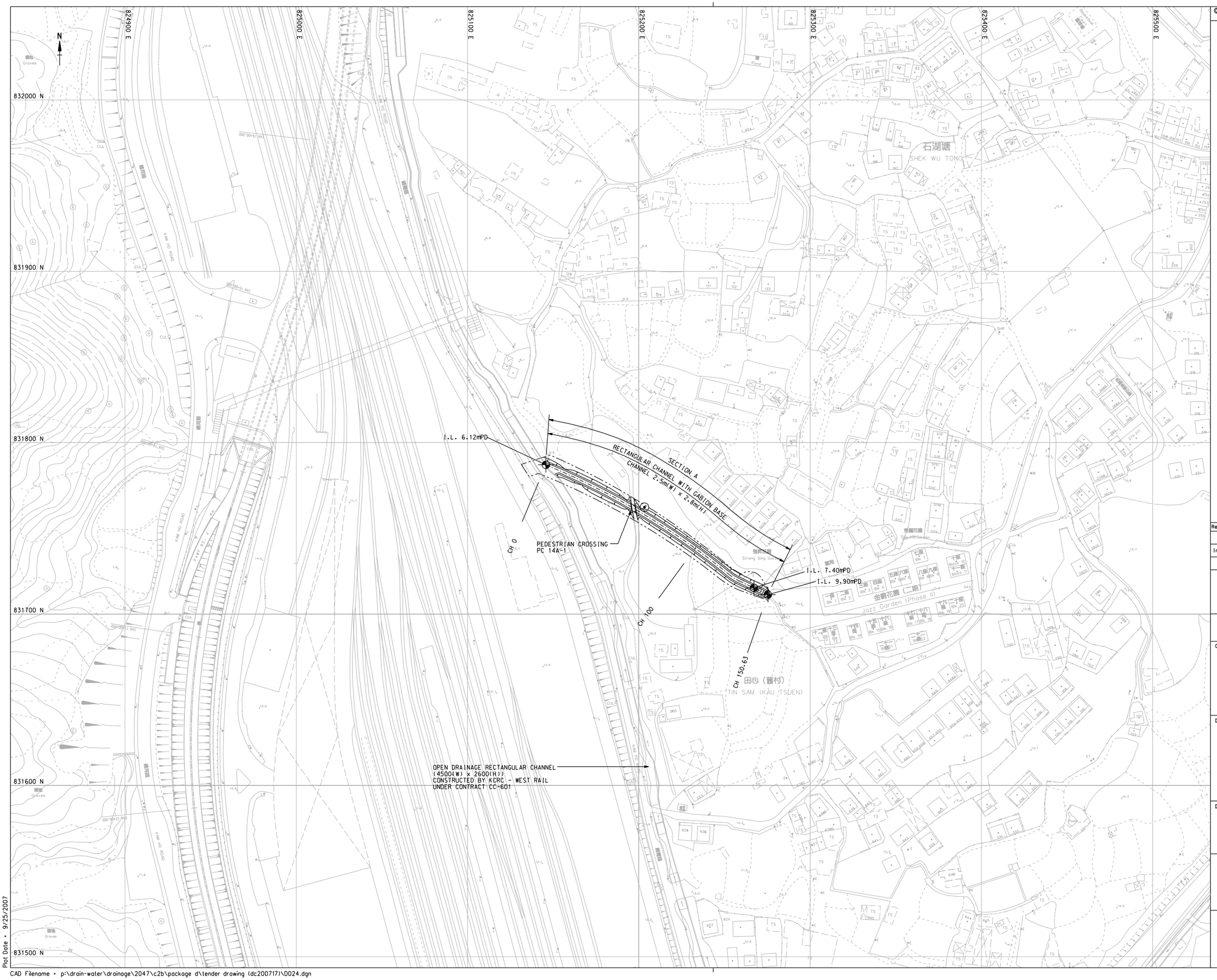
END OF TEXT

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

香港特別行政區政府渠務署
THE GOVERNMENT OF THE HONG KONG SPECIAL ADMINISTRATIVE REGION
DRAINAGE SERVICES DEPARTMENT

BLACK & VEATCH HONG KONG LIMITED
博威工程顧問有限公司

Plot Date = 9/25/2007

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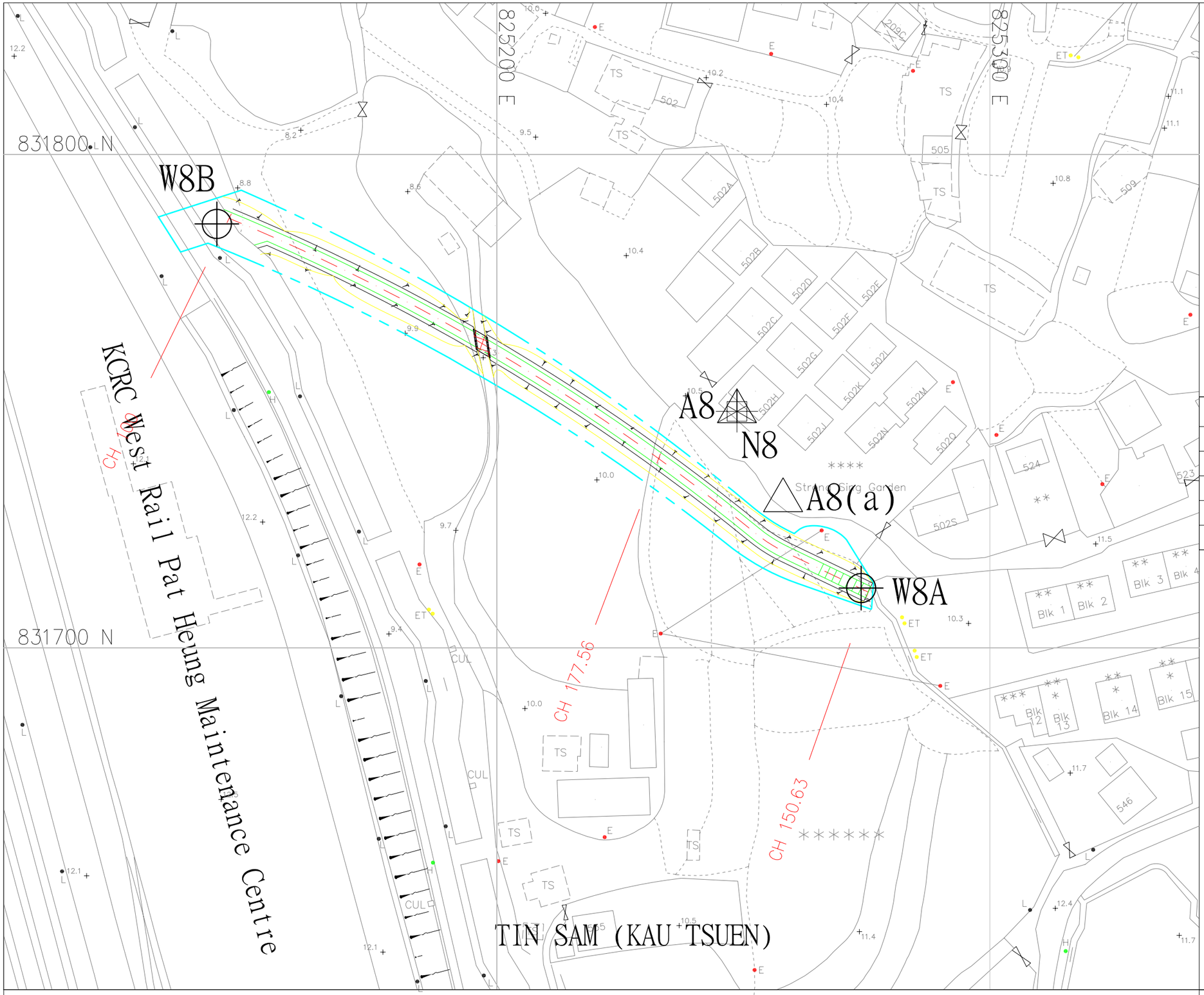


Legends

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

Table

Monitoring Parameter	Location ID	Address	Remarks
Water	W8A	E825274 / N831712	
Water	W8B	E825143 / N831786	
Air	A8		Replaced by A8(a)
Air	A8(a)	Extrance 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 extrance 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:

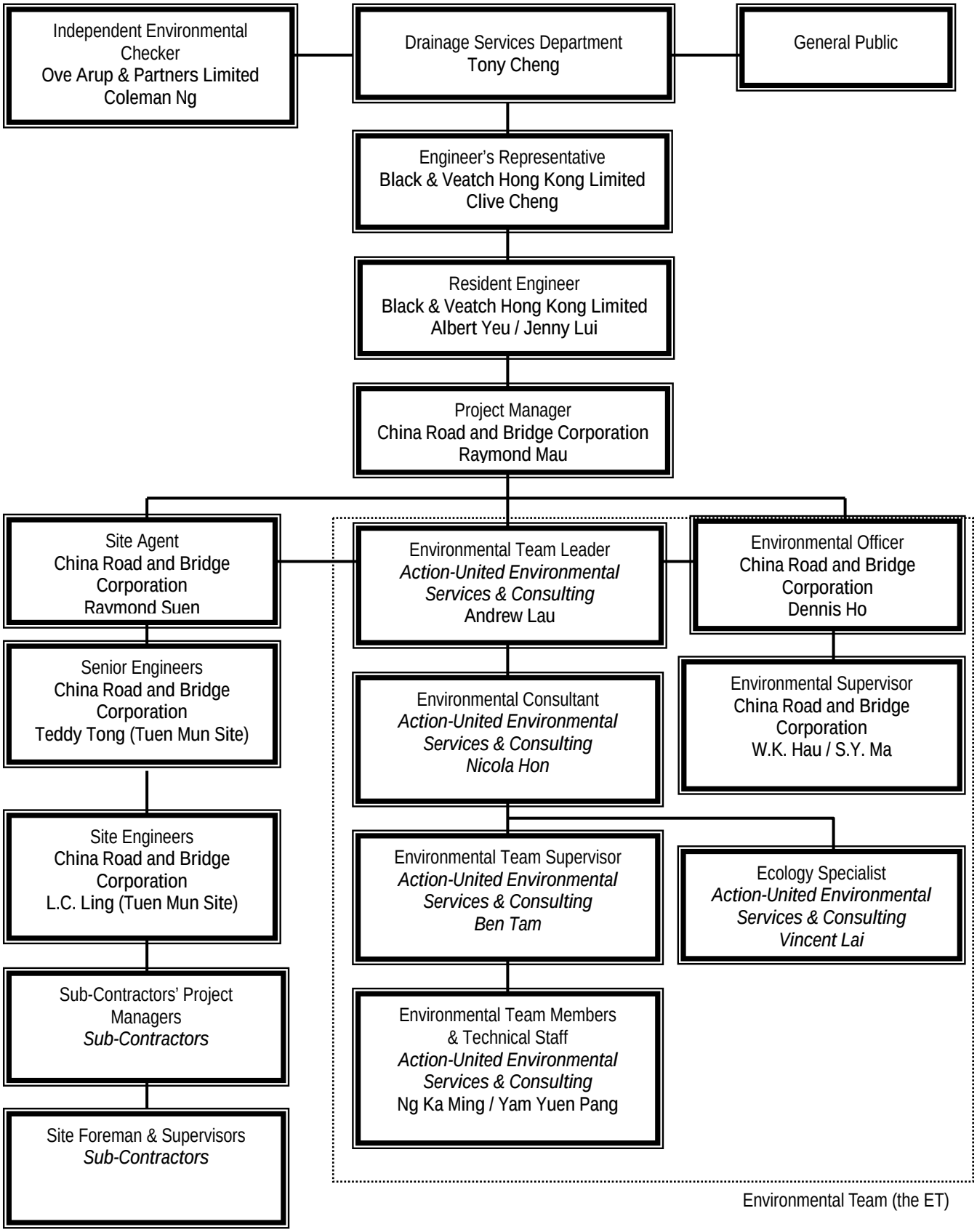
Air, Noise and Stream Water Monitoring Location at KT-14A

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

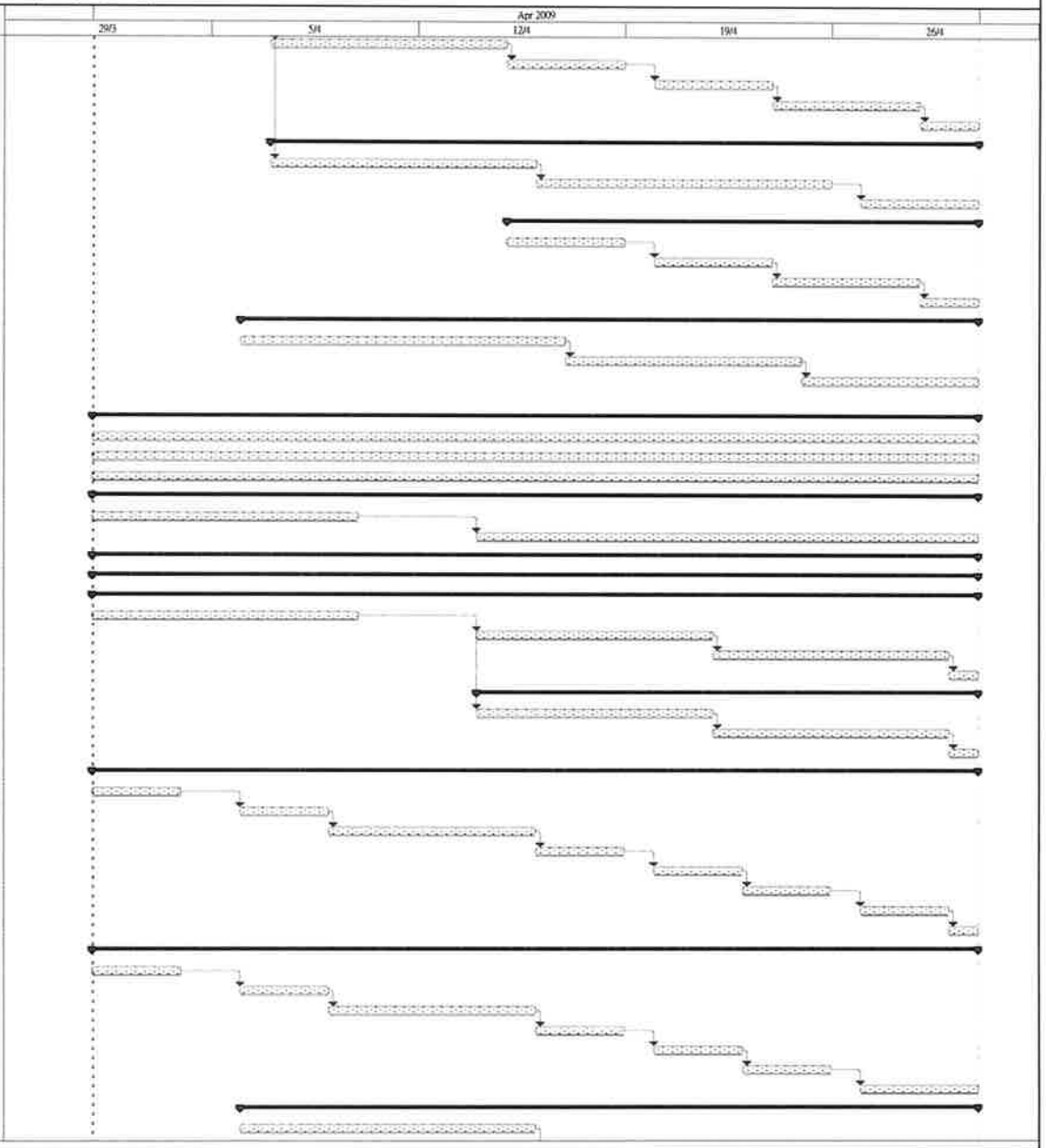
Construction Program

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 Rolling Programme - April 2009

ID	Task Name	Duration	Start	Finish
57	Bay A11 (CH101.00 - CH113.00)	4 days	2009/4/7	2009/4/14
58	Bay A12 (CH113.00 - CH125.00)	4 days	2009/4/15	2009/4/18
59	Bay A13 (CH125.00 - CH132.00)	4 days	2009/4/20	2009/4/23
60	Bay A14 (CH132.00 - CH140.00)	4 days	2009/4/24	2009/4/28
61	Bay A15 (CH140.00 - CH147.00)	2 days	2009/4/29	2009/4/30
62	Construction of channel structure (CH0.00 - CH150.00)	18 days	2009/4/7	2009/4/30
63	Bay A10 (CH89.00 - CH101.00)	5 days	2009/4/7	2009/4/15
64	Bay A11 (CH101.00 - CH113.00)	9 days	2009/4/16	2009/4/25
65	Bay A12 (CH113.00 - CH125.00)	4 days	2009/4/27	2009/4/30
66	Construction of catchpit / manhole / drain pipe along the sides of channel	14 days	2009/4/15	2009/4/30
67	Bay A1 (CH00.00 - CH12.00)	4 days	2009/4/15	2009/4/18
68	Bay A2 (CH12.00 - CH24.00)	4 days	2009/4/20	2009/4/23
69	Bay A3 (CH24.00 - CH36.00)	4 days	2009/4/24	2009/4/28
70	Bay A4 (CH36.00 - CH48.00)	2 days	2009/4/29	2009/4/30
71	Installation of Type 2 railing on top of rectangular channel (CH0.00 - CH150.00)	19 days	2009/4/6	2009/4/30
72	Bay A7 (CH57.00 - CH65.00)	7 days	2009/4/6	2009/4/16
73	Bay A8 (CH65.00 - CH77.00)	7 days	2009/4/17	2009/4/24
74	Bay A9 (CH77.00 - CH89.00)	5 days	2009/4/25	2009/4/30
75				
76	Section IV (Channel KT14B & 14C and Portion 8A & 8B)	22 days	2009/4/1	2009/4/30
77	Regular Environmental Impact Monitoring	22 days	2009/4/1	2009/4/30
78	Regular Tree Survey & Protection	22 days	2009/4/1	2009/4/30
79	Regular Structural Condition Survey	22 days	2009/4/1	2009/4/30
80	Portion 8B (CP - 1 to CP9) - Kam Sheung Road (1050 Dia. Pipe)	22 days	2009/4/1	2009/4/30
81	Manhole MH6 - Manhole MH5	7 days	2009/4/1	2009/4/9
82	Manhole MH5 - Manhole MH4	15 days	2009/4/14	2009/4/30
83	Channel 14B	22 days	2009/4/1	2009/4/30
84	Construction of rectangular channel Type RC1 (CH0.00 - CH339.00)	22 days	2009/4/1	2009/4/30
85	Excavation to channel formation & Laying rock fill material (CH0.00 - CH335.00)	22 days	2009/4/1	2009/4/30
86	Bay 29 (CH297.00 - CH307.00)	7 days	2009/4/1	2009/4/9
87	Bay 30 (CH307.00 - CH311.00) & Pedestrian Crossing PC14B-1	7 days	2009/4/14	2009/4/21
88	Bay 31 (CH311.00 - CH323.00)	7 days	2009/4/22	2009/4/29
89	Bay 32 (CH323.00 - CH335.00)	1 day	2009/4/30	2009/4/30
90	Construction of channel structure (CH0.00 - CH335.00)	15 days	2009/4/14	2009/4/30
91	Bay 29 (CH297.00 - CH307.00)	7 days	2009/4/14	2009/4/21
92	Bay 30 (CH307.00 - CH311.00) & Pedestrian Crossing PC14B-1	7 days	2009/4/22	2009/4/29
93	Bay 31 (CH311.00 - CH323.00)	1 day	2009/4/30	2009/4/30
94	Installation of Type 2 railing on top of channel walls	22 days	2009/4/1	2009/4/30
95	Bay 20 (CH207.00 - CH216.00)	3 days	2009/4/1	2009/4/3
96	Bay 21 (CH216.00 - CH220.00) & Pedestrian Crossing PC14B-2	3 days	2009/4/6	2009/4/8
97	Bay 22 (CH220.00 - CH225.00)	3 days	2009/4/9	2009/4/15
98	Bay 23 (CH225.00 - CH237.00)	3 days	2009/4/16	2009/4/18
99	Bay 24 (CH237.00 - CH249.00)	3 days	2009/4/20	2009/4/22
100	Bay 25 (CH249.00 - CH260.00)	3 days	2009/4/23	2009/4/25
101	Bay 26 (CH260.00 - CH272.00)	3 days	2009/4/27	2009/4/29
102	Bay 27 (CH272.00 - CH285.00)	1 day	2009/4/30	2009/4/30
103	Laying of gabion block inside the channel structure	22 days	2009/4/1	2009/4/30
104	Bay 22 (CH220.00 - CH225.00)	3 days	2009/4/1	2009/4/3
105	Bay 23 (CH225.00 - CH237.00)	3 days	2009/4/6	2009/4/8
106	Bay 24 (CH237.00 - CH249.00)	3 days	2009/4/9	2009/4/15
107	Bay 25 (CH249.00 - CH260.00)	3 days	2009/4/16	2009/4/18
108	Bay 26 (CH260.00 - CH272.00)	3 days	2009/4/20	2009/4/22
109	Bay 27 (CH272.00 - CH285.00)	3 days	2009/4/23	2009/4/25
110	Bay 28 (CH285.00 - CH297.00)	4 days	2009/4/27	2009/4/30
111	Construction of catchpit / manhole / drain pipe along the sides of the channel	19 days	2009/4/6	2009/4/30
112	Bay 1 (CH00.00 - CH05.00)	6 days	2009/4/6	2009/4/15



Task Progress Summary External Tasks Split

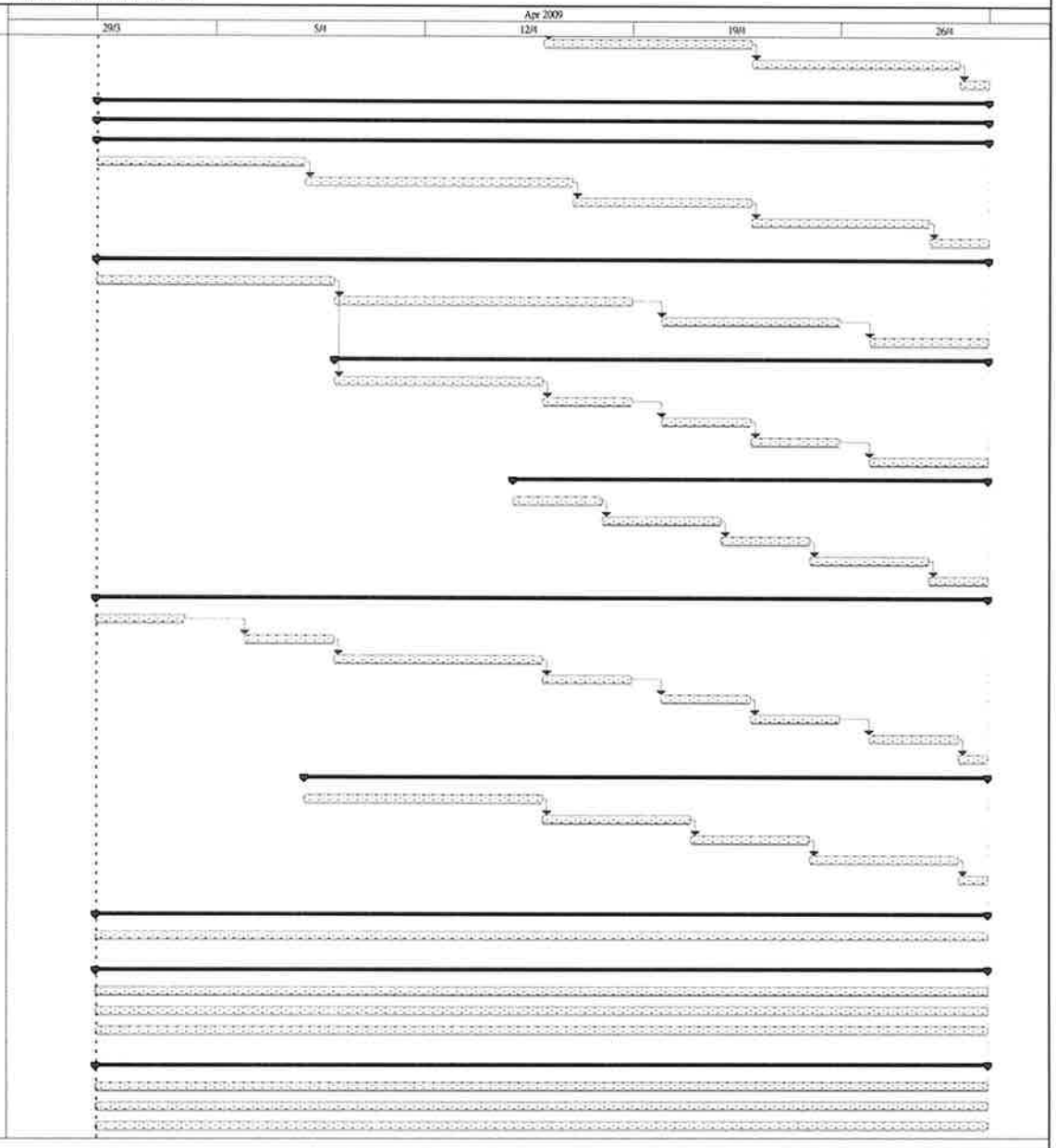
Split Milestone Project Summary External MileTasks

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 Rolling Programme - April 2009

ID	Task Name	Duration	Start	Finish
113	Bay 2 (CH05.00 - CH08.00) & Pedestrian Crossing PC14B-3	6 days	2009/4/16	2009/4/22
114	Bay 3 (CH08.00 - CH13.00)	6 days	2009/4/23	2009/4/29
115	Bay 4 (CH13.00 - CH25.00)	1 day	2009/4/30	2009/4/30
116	Channel KT14C	22 days	2009/4/1	2009/4/30
117	Rectangular channel 2.5m(W) x 2.0m(H) Type RC-1 (CH0.00 -CH475.00)	22 days	2009/4/1	2009/4/30
118	Excavation to channel formation (CH180.00 - CH475.00) & Laying of rock fill material - East Portion	22 days	2009/4/1	2009/4/30
119	Bay 23E (CH234.00 - CH222.00)	5 days	2009/4/1	2009/4/7
120	Bay 24E (CH222.00 - CH210.00)	5 days	2009/4/8	2009/4/16
121	Bay 25E (CH210.00 - CH200.00)	5 days	2009/4/17	2009/4/22
122	Bay 26E (CH200.00 - CH188.00)	5 days	2009/4/23	2009/4/28
123	Bay 27E (CH188.00 - CH184.00)	2 days	2009/4/29	2009/4/30
124	Construction of channel structure (CH180.00 - CH475.00) - East Portion	22 days	2009/4/1	2009/4/30
125	Bay 20E (CH268.00 - CH256.00)	6 days	2009/4/1	2009/4/8
126	Bay 23E (CH234.00 - CH222.00)	6 days	2009/4/9	2009/4/18
127	Bay 24E (CH222.00 - CH210.00)	6 days	2009/4/20	2009/4/25
128	Bay 25E (CH210.00 - CH200.00)	4 days	2009/4/27	2009/4/30
129	Backfilling along the sides of the channel structure & laying underground drain pipe	16 days	2009/4/9	2009/4/30
130	Bay 20E (CH268.00 - CH256.00)	3 days	2009/4/9	2009/4/15
131	Bay 21E (CH256.00 - CH246.00)	3 days	2009/4/16	2009/4/18
132	Bay 22E (CH246.00 - CH234.00)	3 days	2009/4/20	2009/4/22
133	Bay 23E (CH234.00 - CH222.00)	3 days	2009/4/23	2009/4/25
134	Bay 24E (CH222.00 - CH210.00)	4 days	2009/4/27	2009/4/30
135	Laying gabion blocks	14 days	2009/4/15	2009/4/30
136	Bay 8E (CH404.00 - CH396.00)	3 days	2009/4/15	2009/4/17
137	Bay 9E (CH396.00 - CH394.00)	3 days	2009/4/18	2009/4/21
138	Bay 10E (CH384.00 - CH371.00)	3 days	2009/4/22	2009/4/24
139	Bay 11E (CH371.00 - CH359.00)	3 days	2009/4/25	2009/4/28
140	Bay 12E (CH359.00 - CH347.00)	2 days	2009/4/29	2009/4/30
141	Construction of catchpit / manhole / drain pipe	22 days	2009/4/1	2009/4/30
142	Bay 1W (CH0.00 - CH06.00)	3 days	2009/4/1	2009/4/3
143	Bay 2W (CH06.00 - CH12.00)	3 days	2009/4/6	2009/4/8
144	Bay 3W (CH12.00 - CH21.00)	3 days	2009/4/9	2009/4/15
145	Bay 4W (CH21.00 - CH32.00) - 2.5m(W) x 2.0m(H) Box Culvert (Type BC2)	3 days	2009/4/16	2009/4/18
146	Bay 5W (CH32.00 - CH44.00)	3 days	2009/4/20	2009/4/22
147	Bay 6W (CH44.00 - CH56.00)	3 days	2009/4/23	2009/4/25
148	Bay 7W (CH56.00 - CH68.00)	3 days	2009/4/27	2009/4/29
149	Bay 8W (CH68.00 - CH80.00)	1 day	2009/4/30	2009/4/30
150	Installation of Type 2 railing on top of channel walls	17 days	2009/4/8	2009/4/30
151	Bay 8E (CH404.00 - CH396.00)	4 days	2009/4/8	2009/4/15
152	Bay 9E (CH396.00 - CH394.00)	4 days	2009/4/16	2009/4/20
153	Bay 10E (CH384.00 - CH371.00)	4 days	2009/4/21	2009/4/24
154	Bay 15E-2 (CH318.00 - CH311.00)	4 days	2009/4/25	2009/4/29
155	Bay 16E (CH311.00 - CH299.00) - 2.5m(W) x 2.0m(H) Box Culvert (Type BC2)	1 day	2009/4/30	2009/4/30
156				
157	Section V	22 days	2009/4/1	2009/4/30
158	Preservation and protection of tree for Section I, II, III and IV	22 days	2009/4/1	2009/4/30
159				
160	Section VI - Portion 9A & 9B (Tuen Mun Sewerage Work)	22 days	2009/4/1	2009/4/30
161	Structural Survey and Monitoring	22 days	2009/4/1	2009/4/30
162	Construction of Manhole, Timber Box and Trench Excavation	22 days	2009/4/1	2009/4/30
163	Apply XP Approval for Construction	22 days	2009/4/1	2009/4/30
164				
165	Section VII - Portion 10A, 10B & 10C (Tuen Mun Sewerage Work)	22 days	2009/4/1	2009/4/30
166	Structural Survey and Monitoring	22 days	2009/4/1	2009/4/30
167	Construction of Manhole, Timber Box and Trench Excavation	22 days	2009/4/1	2009/4/30
168	Apply XP Approval for Construction	22 days	2009/4/1	2009/4/30



Task Progress Summary External Tasks Split

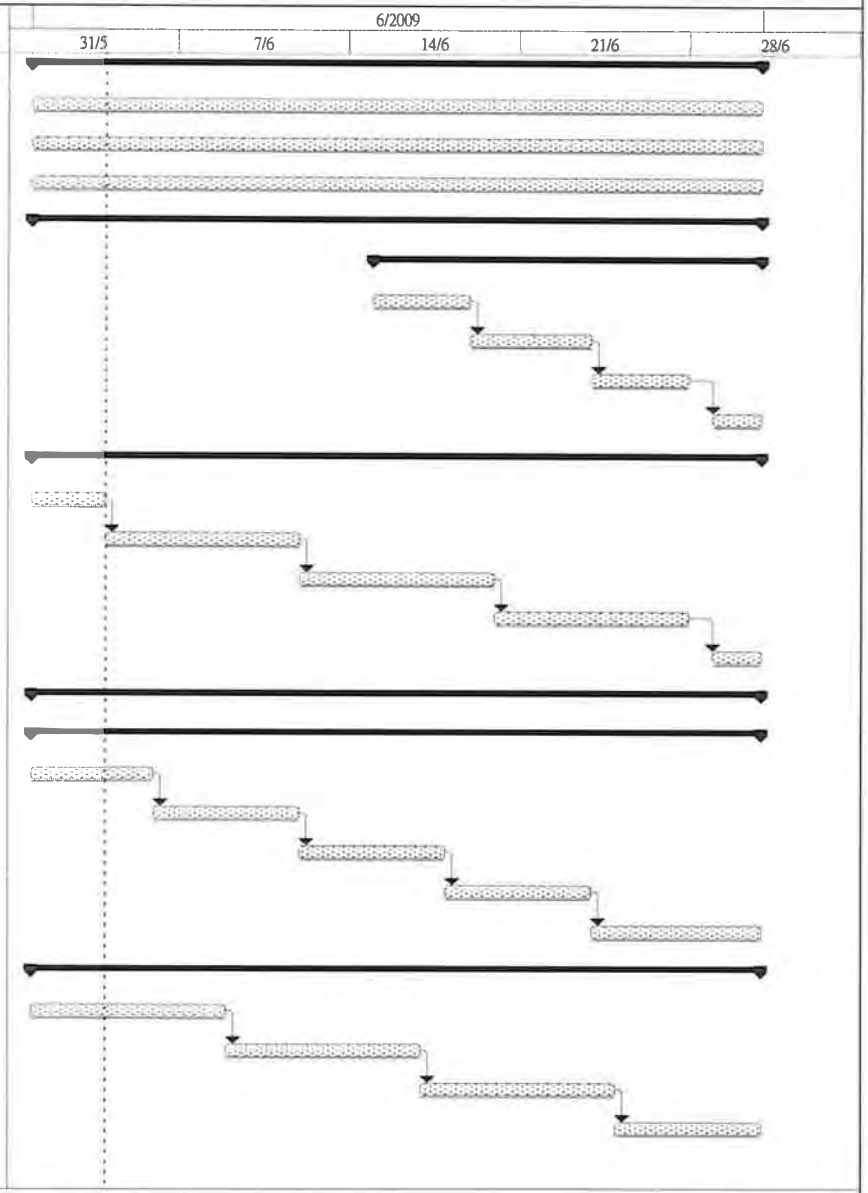
Split Milestone Project Summary External MileTasks

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 Rolling Programme - June 2009

ID	Task Name	Duration	Start	Finish
1	**Section II (Channel KT13)**	**26 days**	**2009/6/1**	**2009/6/30**
2	**Regular Environmental Impact Monitoring**	26 days	2009/6/1	2009/6/30
3	**Regular Tree Survey & Protection**	26 days	2009/6/1	2009/6/30
4	**Regular Structural Condition Survey**	26 days	2009/6/1	2009/6/30
5	**Section A**	**26 days**	**2009/6/1**	**2009/6/30**
6	**Excavation to channel formation & laying of rock fill material (A CH0.00 - A CH402.00)**	**14 days**	**2009/6/15**	**2009/6/30**
7	Bay A8 (A CH51.00 - A CH59.00) - Transition	4 days	2009/6/15	2009/6/18
8	Bay A9 (A CH59.00 - A CH71.00) - TG2	4 days	2009/6/19	2009/6/23
9	Bay A10 (A CH71.00 - A CH83.00) - TG2	4 days	2009/6/24	2009/6/27
10	Bay A11 (A CH83.00 - A CH95.00) - TG2	2 days	2009/6/29	2009/6/30
11	**Construction of channel structure (RC2, Transition, and TG2)**	**26 days**	**2009/6/1**	**2009/6/30**
12	Bay A3 (A CH18.00 - A CH26.00) - RC2	3 days	2009/6/1	2009/6/3
13	Bay A4 (A CH26.00 - A CH34.00) - Transition	7 days	2009/6/4	2009/6/11
14	Bay A5 (A CH34.00 - A CH41.00) - Transition	7 days	2009/6/12	2009/6/19
15	Bay A6 (A CH41.00 - A CH44.00) & Pedestrian Crossing	7 days	2009/6/20	2009/6/27
16	Bay A7 (A CH44.00 - A CH51.00) - Transition	2 days	2009/6/29	2009/6/30
17	**Section B**	**26 days**	**2009/6/1**	**2009/6/30**
18	**Excavation for channel formation & laying of rock fill material (B CH0.00 - B CH316.00)**	**26 days**	**2009/6/1**	**2009/6/30**
19	Bay B4 (B CH24.00 - B CH34.00) - TG3	5 days	2009/6/1	2009/6/5
20	Bay B3 (B CH14.00 - B CH24.00) - TG3	5 days	2009/6/6	2009/6/11
21	Bay B15 (B CH144.00 - B CH147.00) - Transition & Pedestrian Crossing	5 days	2009/6/12	2009/6/17
22	Bay B14 (B CH137.00 - B CH144.00) - Transition	5 days	2009/6/18	2009/6/23
23	Bay B13 (B CH129.00 - B CH137.00) - Transition	6 days	2009/6/24	2009/6/30
24	**Construction of channel structure (Transition, TG3, TG4, TG5, and TG8)**	**26 days**	**2009/6/1**	**2009/6/30**
25	Bay B8 (B CH68.00 - B CH80.00) - TG3	7 days	2009/6/1	2009/6/8
26	Bay B7 (B CH57.00 - B CH68.00) - TG3	7 days	2009/6/9	2009/6/16
27	Bay B6 (B CH46.00 - B CH57.00) - TG3	7 days	2009/6/17	2009/6/24
28	Bay B5 (B CH34.00 - B CH46.00) - TG3	5 days	2009/6/25	2009/6/30
29				



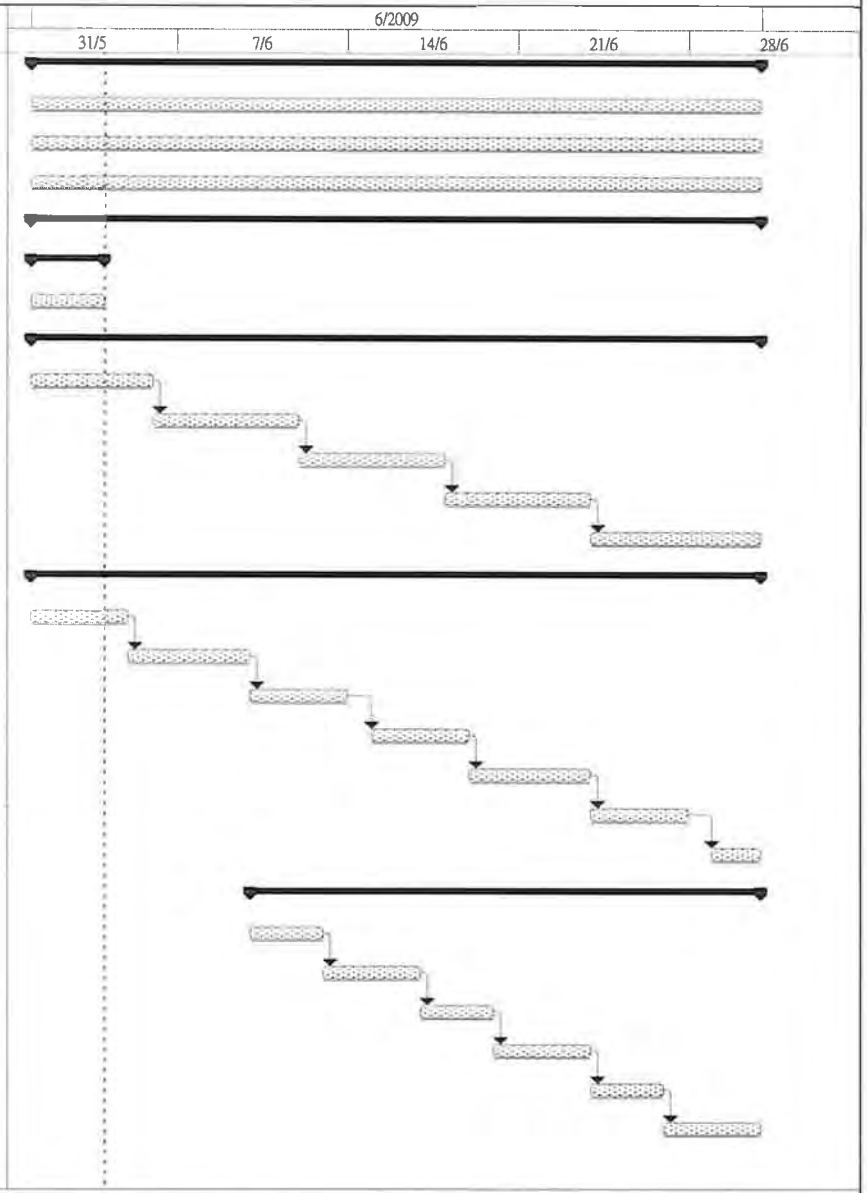
Task Progress Milestone Summary

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 Rolling Programme - June 2009

ID	Task Name	Duration	Start	Finish
30	**Section III (Channel KT14A - Tin Sam Tsuen)**	**26 days**	**2009/6/1**	**2009/6/30**
31	**Regular Environmental Impact Monitoring**	26 days	2009/6/1	2009/6/30
32	**Regular Tree Survey**	26 days	2009/6/1	2009/6/30
33	**Regular Structural Condition Survey**	26 days	2009/6/1	2009/6/30
34	**Construction of rectangular channel 2.5m(W) x 2.8m(H) Type RC1 (CH0.00 - CH150.00)**	**26 days**	**2009/6/1**	**2009/6/30**
35	**Backfilling along the sides of the channel structure**	**3 days**	**2009/6/1**	**2009/6/3**
36	Bay A14-1 (CH134.00 - CH145.00)	3 days	2009/6/1	2009/6/3
37	**Laying of gabion block inside the channel structure**	**26 days**	**2009/6/1**	**2009/6/30**
38	Bay A11 (CH101.00 - CH113.00)	5 days	2009/6/1	2009/6/5
39	Bay A12 (CH113.00 - CH119.00)	5 days	2009/6/6	2009/6/11
40	Bay A13 (CH119.00 - CH134.00)	5 days	2009/6/12	2009/6/17
41	Bay A14 (CH134.00 - CH145.00)	5 days	2009/6/18	2009/6/23
42	Bay A14-1 (CH134.00 - CH145.00)	6 days	2009/6/24	2009/6/30
43	**Construction of catchpit / manhole / drain pipe along the sides of channel**	**26 days**	**2009/6/1**	**2009/6/30**
44	Bay A1 (CH00.00 - CH12.00)	4 days	2009/6/1	2009/6/4
45	Bay A2 (CH12.00 - CH24.00)	4 days	2009/6/5	2009/6/9
46	Bay A3 (CH24.00 - CH36.00)	4 days	2009/6/10	2009/6/13
47	Bay A4 (CH36.00 - CH48.00)	4 days	2009/6/15	2009/6/18
48	Bay A5 (CH48.00 - CH53.00)	4 days	2009/6/19	2009/6/23
49	Bay A7 (CH57.00 - CH65.00)	4 days	2009/6/24	2009/6/27
50	Bay A8 (CH65.00 - CH77.00)	2 days	2009/6/29	2009/6/30
51	**Installation of Type 2 railing on top of rectangular channel (CH0.00 - CH150.00)**	**18 days**	**2009/6/10**	**2009/6/30**
52	Bay A10 (CH89.00 - CH101.00)	3 days	2009/6/10	2009/6/12
53	Bay A11 (CH101.00 - CH113.00)	3 days	2009/6/13	2009/6/16
54	Bay A12 (CH113.00 - CH119.00)	3 days	2009/6/17	2009/6/19
55	Bay A13 (CH119.00 - CH134.00)	3 days	2009/6/20	2009/6/23
56	Bay A14 (CH134.00 - CH145.00)	3 days	2009/6/24	2009/6/26
57	Bay A14-1 (CH134.00 - CH145.00)	3 days	2009/6/27	2009/6/30
58				



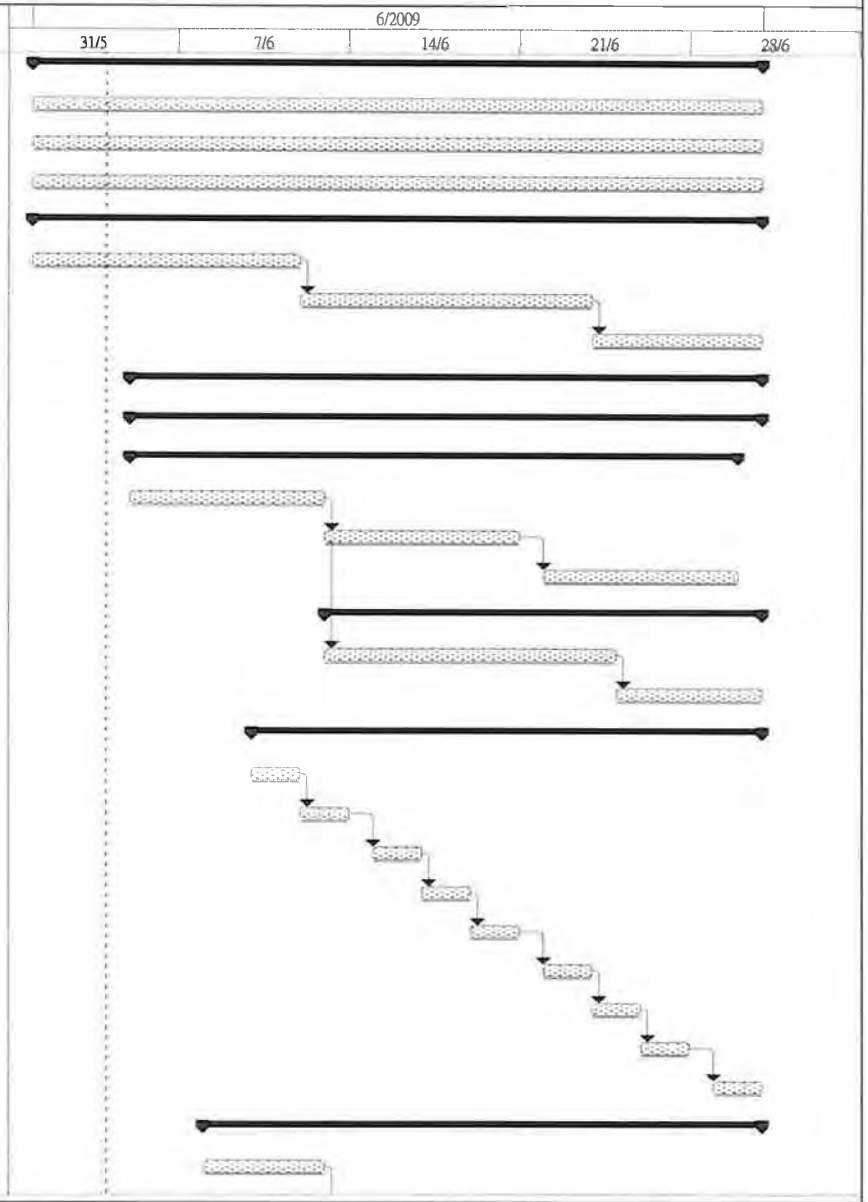
Task Progress Milestone Summary

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 Rolling Programme - June 2009

ID	Task Name	Duration	Start	Finish
59	**Section IV (Channel KT14B & 14C and Portion 8A & 8B)**	**26 days**	**2009/6/1**	**2009/6/30**
60	**Regular Environmental Impact Monitoring**	26 days	2009/6/1	2009/6/30
61	**Regular Tree Survey & Protection**	26 days	2009/6/1	2009/6/30
62	**Regular Structural Condition Survey**	26 days	2009/6/1	2009/6/30
63	**Portion 8B (CP1 to CP9) - Kam Sheung Road (1050 Dia. Pipe)**	**26 days**	**2009/6/1**	**2009/6/30**
64	Manhole MH2 - Manhole MH3	10 days	2009/6/1	2009/6/11
65	Manhole MH1 - Manhole MH2	10 days	2009/6/12	2009/6/23
66	Catchpit CP1 - Manhole MH1	6 days	2009/6/24	2009/6/30
67	**Channel 14B**	**22 days**	**2009/6/5**	**2009/6/30**
68	**Construction of rectangular channel Type RC1 (CH0.00 - CH335.00)**	**22 days**	**2009/6/5**	**2009/6/30**
69	**Excavation to channel formation & Laying rock fill material (CH0.00 - CH335.00)**	**21 days**	**2009/6/5**	**2009/6/29**
70	Bay 31A (CH309.00 - CH317.00)	7 days	2009/6/5	2009/6/12
71	Bay 30 (CH299.00 - CH303.00) & Pedestrian Crossing PC14B-1	7 days	2009/6/13	2009/6/20
72	Bay 31 (CH303.00 - CH309.00)	7 days	2009/6/22	2009/6/29
73	**Construction of channel structure (CH0.00 - CH335.00)**	**15 days**	**2009/6/13**	**2009/6/30**
74	Bay 31A (CH309.00 - CH317.00)	10 days	2009/6/13	2009/6/24
75	Bay 30 (CH299.00 - CH303.00) & Pedestrian Crossing PC14B-1	5 days	2009/6/25	2009/6/30
76	**Laying of gabion block inside the channel structure**	**18 days**	**2009/6/10**	**2009/6/30**
77	Bay 18 (CH183.00 - CH195.00)	2 days	2009/6/10	2009/6/11
78	Bay 19 (CH195.00 - CH207.00)	2 days	2009/6/12	2009/6/13
79	Bay 20 (CH207.00 - CH216.00)	2 days	2009/6/15	2009/6/16
80	Bay 22 (CH220.00 - CH225.00)	2 days	2009/6/17	2009/6/18
81	Bay 23 (CH225.00 - CH237.00)	2 days	2009/6/19	2009/6/20
82	Bay 24 (CH237.00 - CH249.00)	2 days	2009/6/22	2009/6/23
83	Bay 25 (CH249.00 - CH260.00)	2 days	2009/6/24	2009/6/25
84	Bay 26 (CH260.00 - CH272.00)	2 days	2009/6/26	2009/6/27
85	Bay 27 (CH272.00 - CH285.00)	2 days	2009/6/29	2009/6/30
86	**Construction of catchpit / manhole / drain pipe along the sides of the channel**	**20 days**	**2009/6/8**	**2009/6/30**
87	Bay 1 (CH00.00 - CH05.00)	5 days	2009/6/8	2009/6/12



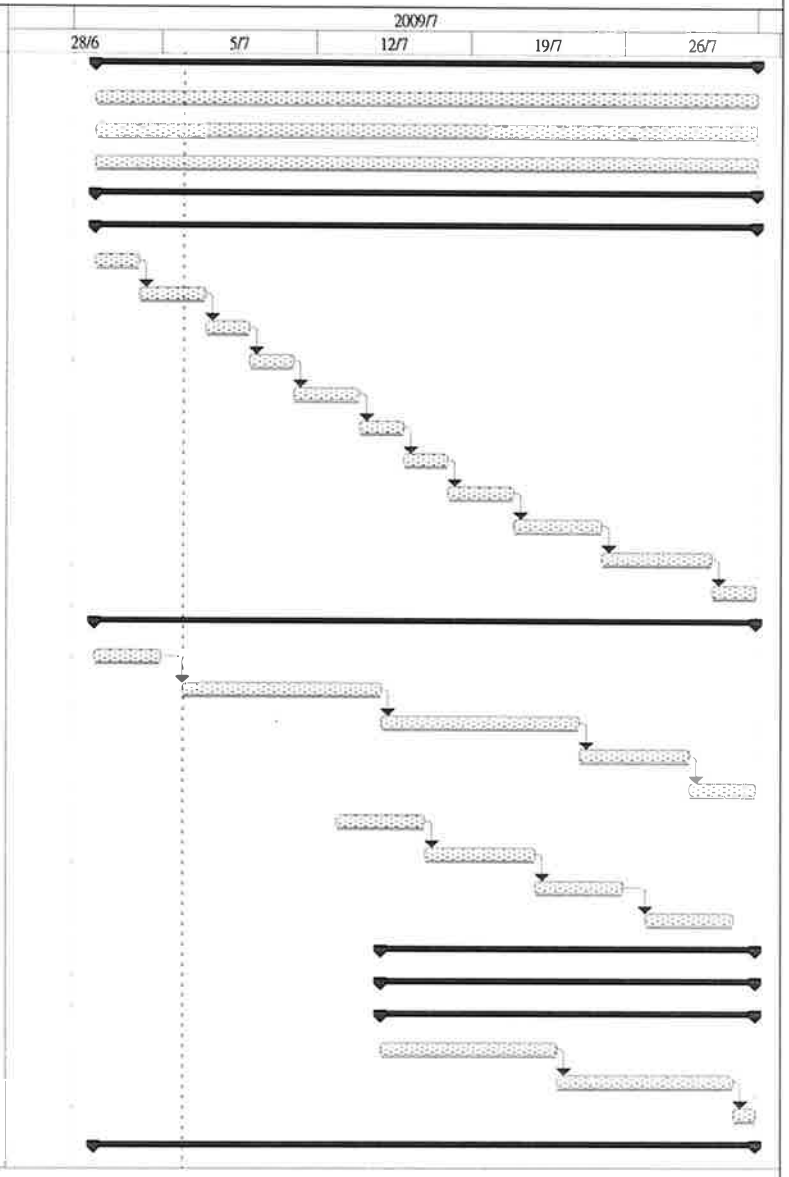
Task Progress Milestone Summary

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 Rolling Programme - July 2009

ID	Task Name	Duration	Start	Finish
1	**Section II (Channel KT13)**	**26 days**	**2009/7/2**	**2009/7/31**
2	**Regular Environmental Impact Monitoring**	26 days	2009/7/2	2009/7/31
3	**Regular Tree Survey & Protection**	26 days	2009/7/2	2009/7/31
4	**Regular Structural Condition Survey**	26 days	2009/7/2	2009/7/31
5	**Section A**	**26 days**	**2009/7/2**	**2009/7/31**
6	**Excavation to channel formation & laying of rock fill material (A CH0.00 - A CH402.00)**	**26 days**	**2009/7/2**	**2009/7/31**
7	Bay A7 (A CH44.00 - A CH51.00) - Transition	2 days	2009/7/2	2009/7/3
8	Bay A8 (A CH51.00 - A CH59.00) - Transition	2 days	2009/7/4	2009/7/6
9	Bay A9 (A CH59.00 - A CH71.00) - TG2	2 days	2009/7/7	2009/7/8
10	Bay A10 (A CH71.00 - A CH83.00) - TG2	2 days	2009/7/9	2009/7/10
11	Bay A11 (A CH83.00 - A CH95.00) - TG2	2 days	2009/7/11	2009/7/13
12	Bay A12 (A CH95.00 - A CH108.00) - TG2	2 days	2009/7/14	2009/7/15
13	Bay A13 (A CH108.00 - A CH120.00) - TG2	2 days	2009/7/16	2009/7/17
14	Bay A14 (A CH120.00 - A CH133.00) - TG2	2 days	2009/7/18	2009/7/20
15	Bay A15 (A CH133.00 - A CH145.00) - TG2	4 days	2009/7/21	2009/7/24
16	Bay A16 (A CH145.00 - A CH157.00) - TG2	4 days	2009/7/25	2009/7/29
17	Bay A17 (A CH157.00 - A CH170.00) - TG2	2 days	2009/7/30	2009/7/31
18	**Construction of channel structure (RC2, Transition, and TG2)**	**26 days**	**2009/7/2**	**2009/7/31**
19	Bay A6 (A CH41.00 - A CH44.00) & Pedestrian Crossing	3 days	2009/7/2	2009/7/4
20	Bay A7 (A CH44.00 - A CH51.00) - Transition	8 days	2009/7/6	2009/7/14
21	Bay A8 (A CH51.00 - A CH59.00) - Transition	8 days	2009/7/15	2009/7/23
22	Bay A9 (A CH59.00 - A CH71.00) - TG2	4 days	2009/7/24	2009/7/28
23	Bay A10 (A CH71.00 - A CH83.00) - TG2	3 days	2009/7/29	2009/7/31
24	Bay A11 (A CH83.00 - A CH95.00) - TG2	4 days	2009/7/13	2009/7/16
25	Bay A12 (A CH95.00 - A CH108.00) - TG2	4 days	2009/7/17	2009/7/21
26	Bay A13 (A CH108.00 - A CH120.00) - TG2	4 days	2009/7/22	2009/7/25
27	Bay A14 (A CH120.00 - A CH133.00) - TG2	4 days	2009/7/27	2009/7/30
28	**Section of Box Culvert BC13-1**	**15 days**	**2009/7/15**	**2009/7/31**
29	**Construct box culvert BC13-1 (BC CH0.00 - BC CH386.00)**	**15 days**	**2009/7/15**	**2009/7/31**
30	**Excavation for box culvert formation & laying of rock fill material (BC CH0.00 - BC CH386.00)**	**15 days**	**2009/7/15**	**2009/7/31**
31	Bay BC17 (BC CH202.00 - BC CH217.00)	7 days	2009/7/15	2009/7/22
32	Bay BC18 (BC CH217.00 - BC CH232.00)	7 days	2009/7/23	2009/7/30
33	Bay BC19 (BC CH232.00 - BC CH247.00)	1 day	2009/7/31	2009/7/31
34	**Section B**	**26 days**	**2009/7/2**	**2009/7/31**



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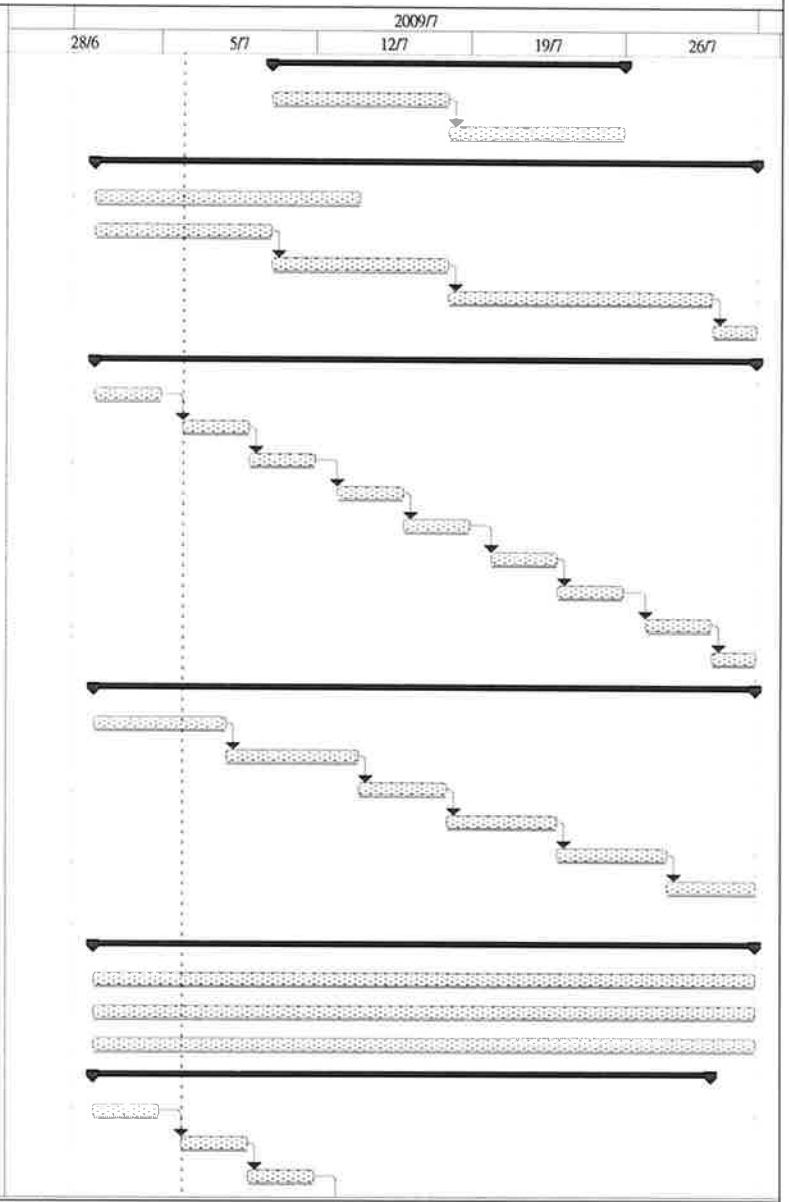
Contract No. : DC/2007/17

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 Rolling Programme - July 2009

ID	Task Name	Duration	Start	Finish
35	**Excavation for channel formation & laying of rock fill material (B CH0.00 - B CH316.00)**	**14 days**	**2009/7/10**	**2009/7/25**
36	Bay B2 (B CH07.00 - B CH14.00) - Transition	7 days	2009/7/10	2009/7/17
37	Bay B1 (B CH00.00 - B CH07.00) - Transition	7 days	2009/7/18	2009/7/25
38	**Construction of channel structure (Transition, TG3, TG4, TG5, and TG8)**	**26 days**	**2009/7/2**	**2009/7/31**
39	Bay B13 (B CH129.00 - B CH137.00) - Transition	10 days	2009/7/2	2009/7/13
40	Bay B6 (B CH46.00 - B CH57.00) - TG3	7 days	2009/7/2	2009/7/9
41	Bay B5 (B CH34.00 - B CH46.00) - TG3	7 days	2009/7/10	2009/7/17
42	Bay B2 (B CH07.00 - B CH14.00) - Transition	10 days	2009/7/18	2009/7/29
43	Bay B1 (B CH00.00 - B CH07.00) - Transition	2 days	2009/7/30	2009/7/31
44	**Backfilling along the sides of channel & laying of underground drain**	**26 days**	**2009/7/2**	**2009/7/31**
45	Bay B12 (B CH119.00 - B CH129.00) - TG3	3 days	2009/7/2	2009/7/4
46	Bay B11 (B CH107.00 - B CH119.00) - TG3	3 days	2009/7/6	2009/7/8
47	Bay B10 (B CH94.00 - B CH107.00) - TG3	3 days	2009/7/9	2009/7/11
48	Bay B9 (B CH80.00 - B CH94.00) - TG3	3 days	2009/7/13	2009/7/15
49	Bay B8 (B CH68.00 - B CH80.00) - TG3	3 days	2009/7/16	2009/7/18
50	Bay B7 (B CH57.00 - B CH68.00) - TG3	3 days	2009/7/20	2009/7/22
51	Bay B6 (B CH46.00 - B CH57.00) - TG3	3 days	2009/7/23	2009/7/25
52	Bay B5 (B CH34.00 - B CH46.00) - TG3	3 days	2009/7/27	2009/7/29
53	Bay B4 (B CH24.00 - B CH34.00) - TG3	2 days	2009/7/30	2009/7/31
54	**Installation of Type 2 railing on top of channel wall**	**26 days**	**2009/7/2**	**2009/7/31**
55	Bay A15 (A CH133.00 - A CH145.00) - TG2	5 days	2009/7/2	2009/7/7
56	Bay A14 (A CH120.00 - A CH133.00) - TG2	5 days	2009/7/8	2009/7/13
57	Bay B13 (B CH129.00 - B CH137.00) - Transition	4 days	2009/7/14	2009/7/17
58	Bay B12 (B CH119.00 - B CH129.00) - TG3	4 days	2009/7/18	2009/7/22
59	Bay B11 (B CH107.00 - B CH119.00) - TG3	4 days	2009/7/23	2009/7/27
60	Bay B10 (B CH94.00 - B CH107.00) - TG3	4 days	2009/7/28	2009/7/31
61				
62	**Section III (Channel KT14A - Tin Sam Tsuen)**	**26 days**	**2009/7/2**	**2009/7/31**
63	**Regular Environmental Impact Monitoring**	26 days	2009/7/2	2009/7/31
64	**Regular Tree Survey**	26 days	2009/7/2	2009/7/31
65	**Regular Structural Condition Survey**	26 days	2009/7/2	2009/7/31
66	**Construction of catchpit / manhole / drain pipe along the sides of channel**	**24 days**	**2009/7/2**	**2009/7/29**
67	Bay A8 (CH65.00 - CH77.00)	3 days	2009/7/2	2009/7/4
68	Bay A9 (CH77.00 - CH89.00)	3 days	2009/7/6	2009/7/8
69	Bay A10 (CH89.00 - CH101.00)	3 days	2009/7/9	2009/7/11



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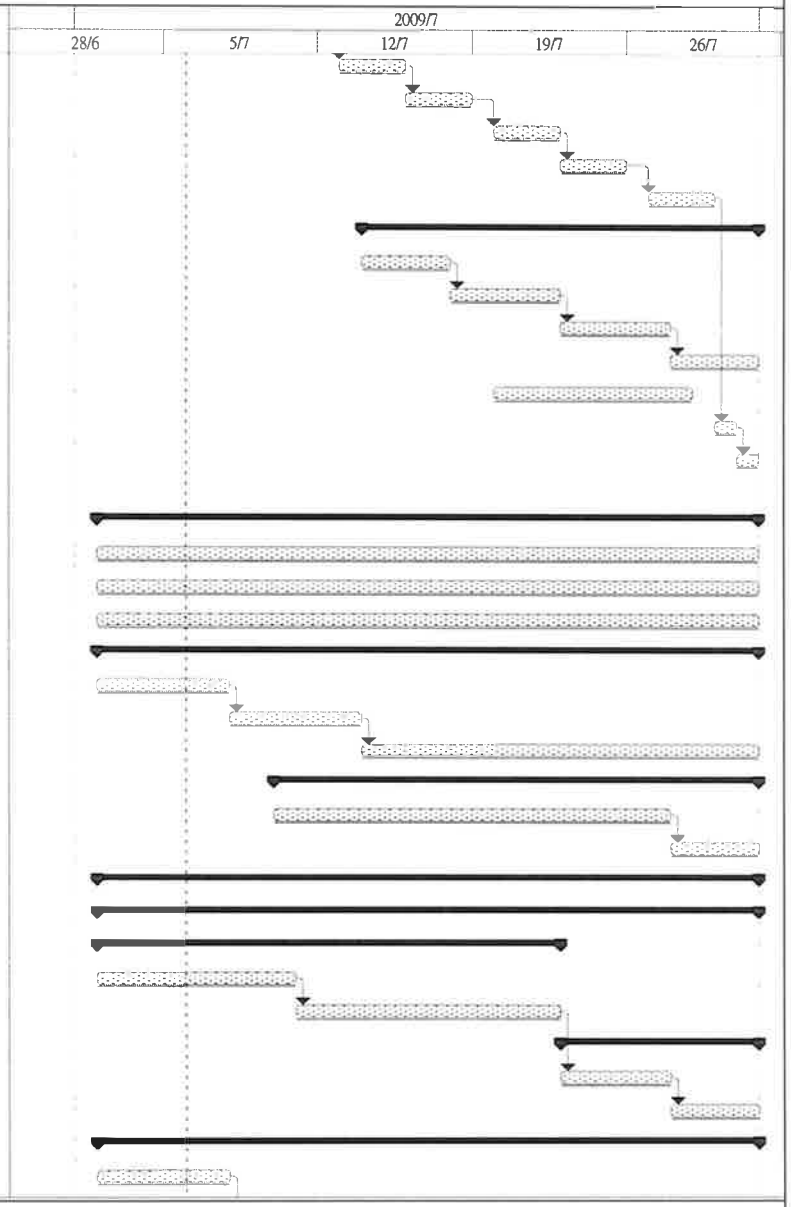
Drainage Improvement Works in Cheung Po, Ma On Kong, Yuen Kong San Tsuen and Tin Sam Tsuen of Yuen Long District and Sewerage at Tseng Tau Chung Tsuen, Tuen Mun

Monthly Rolling Programme - July 2009

ID	Task Name	Duration	Start	Finish
70	Bay A11 (CH101.00 - CH113.00)	3 days	2009/7/13	2009/7/15
71	Bay A12 (CH113.00 - CH119.00)	3 days	2009/7/16	2009/7/18
72	Bay A13 (CH119.00 - CH134.00)	3 days	2009/7/20	2009/7/22
73	Bay A14 (CH134.00 - CH145.00)	3 days	2009/7/23	2009/7/25
74	Bay A14-1 (CH134.00 - CH145.00)	3 days	2009/7/27	2009/7/29
75	**Installation of Type 2 railing on top of rectangular channel (CH0.00 - CH150.00)**	**16 days**	**2009/7/14**	**2009/7/31**
76	Bay A12 (CH113.00 - CH119.00)	4 days	2009/7/14	2009/7/17
77	Bay A13 (CH119.00 - CH134.00)	4 days	2009/7/18	2009/7/22
78	Bay A14 (CH134.00 - CH145.00)	4 days	2009/7/23	2009/7/27
79	Bay A14-1 (CH134.00 - CH145.00)	4 days	2009/7/28	2009/7/31
80	Installation of sign plate along the sides of channel/Street furniture	8 days	2009/7/20	2009/7/28
81	Hydroseeding	1 day	2009/7/30	2009/7/30
82	Compensatory Planting	1 day	2009/7/31	2009/7/31
83				
84	**Section IV (Channel KT14B & 14C and Portion 8A & 8B)**	**26 days**	**2009/7/2**	**2009/7/31**
85	**Regular Environmental Impact Monitoring**	26 days	2009/7/2	2009/7/31
86	**Regular Tree Survey & Protection**	26 days	2009/7/2	2009/7/31
87	**Regular Structural Condition Survey**	26 days	2009/7/2	2009/7/31
88	**Portion 8B (CP1 to CP9) - Kam Sheung Road (1050 Dia. Pipe)**	**26 days**	**2009/7/2**	**2009/7/31**
89	Catchpit CP2 - Manhole MH1	5 days	2009/7/2	2009/7/7
90	Manhole MH7A - Manhole 7	5 days	2009/7/8	2009/7/13
91	Manhole MH1 - Catchpit CP1	16 days	2009/7/14	2009/7/31
92	**Manhole MH7 - Manhole MH6 (Pipe Jacking)**	**19 days**	**2009/7/10**	**2009/7/31**
93	Construction of Jacking Pit and Receiving Pit	15 days	2009/7/10	2009/7/27
94	Construction of Thrust Frame and setting up of equipments	4 days	2009/7/28	2009/7/31
95	**Channel 14B**	**26 days**	**2009/7/2**	**2009/7/31**
96	**Construction of rectangular channel Type RC1 (CH0.00 - CH339.00)**	**26 days**	**2009/7/2**	**2009/7/31**
97	**Construction of channel structure (CH0.00 - CH335.00)**	**18 days**	**2009/7/2**	**2009/7/22**
98	Bay 31 (CH303.00 - CH317.00)	8 days	2009/7/2	2009/7/10
99	Bay 30 (CH299.00 - CH303.00) & Pedestrian Crossing PC14B-1	10 days	2009/7/11	2009/7/22
100	**Backfilling along the sides of the channel structure / Laying underground drain pipe**	**8 days**	**2009/7/23**	**2009/7/31**
101	Bay 31 (CH303.00 - CH317.00)	4 days	2009/7/23	2009/7/27
102	Bay 30 (CH299.00 - CH303.00) & Pedestrian Crossing PC14B-1	4 days	2009/7/28	2009/7/31
103	**Construction of catchpit / manhole / drain pipe along the sides of the channel**	**26 days**	**2009/7/2**	**2009/7/31**
104	Existing U-channel to CP14B-13 (Upstream)	5 days	2009/7/2	2009/7/7



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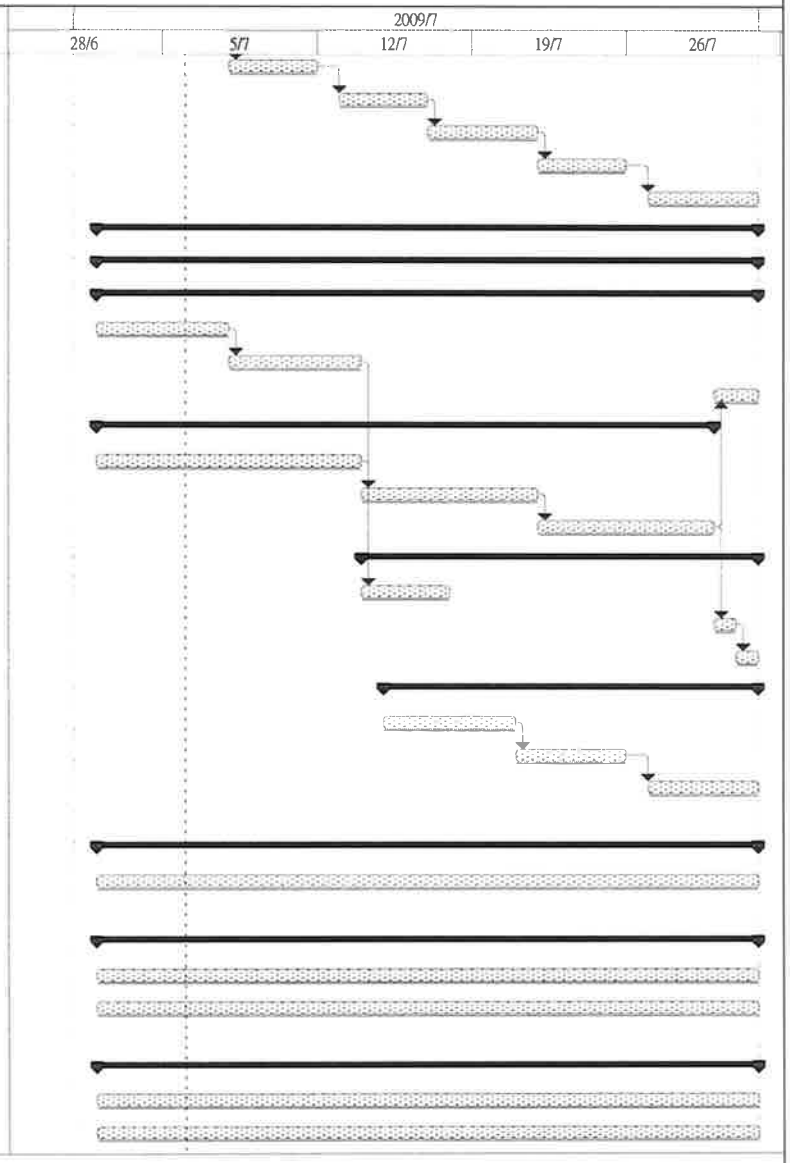
Drainage Improvement Works in Cheung Po, Ma On Kong, Yuen Kong San Tsuen and Tin Sam Tsuen of Yuen Long District and Sewerage at Tseng Tau Chung Tsuen, Tuen Mun

Monthly Rolling Programme - July 2009

ID	Task Name	Duration	Start	Finish
105	Bay 1 (CH00.00 - CH05.00)	4 days	2009/7/8	2009/7/11
106	Bay 2 (CH05.00 - CH08.00) & Pedestrian Crossing PC14B-3	4 days	2009/7/13	2009/7/16
107	Bay 3 (CH08.00 - CH13.00)	4 days	2009/7/17	2009/7/21
108	Bay 4 (CH13.00 - CH25.00)	4 days	2009/7/22	2009/7/25
109	Bay 5 (CH25.00 - CH37.00)	5 days	2009/7/27	2009/7/31
110	**Channel KT14C**	**26 days**	**2009/7/2**	**2009/7/31**
111	**Rectangular channel 2.5m(W) x 2.0m(H) Type RC-1 (CH0.00 -CH475.00)**	**26 days**	**2009/7/2**	**2009/7/31**
112	**Excavation to channel formation (CH180.00 - CH475.00) & Laying rock fill material**	**26 days**	**2009/7/2**	**2009/7/31**
113	Bay 18E (CH285.00 - CH279.00) - 2.5m(W) x 2.0m(H) Box Culvert (Type BC2)	5 days	2009/7/2	2009/7/7
114	Bay 19E (CH279.00 - CH267.00)	5 days	2009/7/8	2009/7/13
115	Bay 1E (CH475.00 - CH466.00) & Vehicular Crossing VC14C-1	2 days	2009/7/30	2009/7/31
116	**Construction of channel structure (CH180.00 - CH475.00)**	**24 days**	**2009/7/2**	**2009/7/29**
117	Bay 17W-2 (CH178.00 - CH187.00) & Vehicular Crossing VC14C-3	10 days	2009/7/2	2009/7/13
118	Bay 18E (CH285.00 - CH279.00) - 2.5m(W) x 2.0m(H) Box Culvert (Type BC2)	7 days	2009/7/14	2009/7/21
119	Bay 19E (CH279.00 - CH267.00)	7 days	2009/7/22	2009/7/29
120	**Backfilling along the sides of the channel structure & laying underground drain pipe**	**16 days**	**2009/7/14**	**2009/7/31**
121	Bay 17W-2 (CH178.00 - CH187.00) & Vehicular Crossing VC14C-3	4 days	2009/7/14	2009/7/17
122	Bay 18E (CH285.00 - CH279.00) - 2.5m(W) x 2.0m(H) Box Culvert (Type BC2)	1 day	2009/7/30	2009/7/30
123	Bay 19E (CH279.00 - CH267.00)	1 day	2009/7/31	2009/7/31
124	**Installation of Type 2 railing on top of channel walls**	**15 days**	**2009/7/15**	**2009/7/31**
125	Bay 20E (CH267.00 - CH255.00)	5 days	2009/7/15	2009/7/20
126	Bay 21E (CH255.00 - CH243.00)	5 days	2009/7/21	2009/7/25
127	Bay 22E (CH243.00 - CH235.00)	5 days	2009/7/27	2009/7/31
128				
129	**Section V**	**26 days**	**2009/7/2**	**2009/7/31**
130	Preservation and protection of tree for Section I, II, III and IV	26 days	2009/7/2	2009/7/31
131				
132	**Section VI - Portion 9A & 9B (Tuen Mun Sewerage Work)**	**26 days**	**2009/7/2**	**2009/7/31**
133	Structural Survey and Monitoring	26 days	2009/7/2	2009/7/31
134	Construction of Manhole, Timber Box and Trench Excavation	26 days	2009/7/2	2009/7/31
135				
136	**Section VII - Portion 10A, 10B & 10C (Tuen Mun Sewerage Work)**	**26 days**	**2009/7/2**	**2009/7/31**
137	Structural Survey and Monitoring	26 days	2009/7/2	2009/7/31
138	Construction of Manhole, Timber Box and Trench Excavation	26 days	2009/7/2	2009/7/31



Task Split Progress Milestone Summary

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	The Contractor is required to adopt Level 1 and 2 site-specific direct technical measures as specified below during the construction phase *Level 1 Mitigation Measures* ● 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 *Level 2 Mitigation Measures* ● 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 aactivities 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)	● 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	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. 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)	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. viii) Any materials dropped on paved roads will need to be cleaned up immediately to prevent dust nuisance.	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)

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. The settlement area shall be located within the temporary site 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
Water 1 (Cont'd)	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	
	Waste Management Plan 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	Planning for waste reduction, re-use, recycling and proper disposal and form compliance with Waste Disposal Ordnance and other guideline.	To be implemented at the works sites of KT14 during the Construction Phase.	Construction Contractor		√		WBTC No. 2/93, 2/93B, 16/96, 4/98, 4/98A, 25/99 25/99A, 25/99C, 12/2000, 19/2001 ETWB TC No. 33/2002, 34/2002, 15/2003, 31/2004
Waste 1	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. ii) Records of wastes – A recording system for the amount of wastes generated, recycled and disposed (including the disposal sites) shall be proposed. 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.	Planning for waste reduction, re-use, recycling and proper disposal and form compliance with Waste Disposal Ordnance and other guideline.	To be implemented at the works sites of KT14 during the Construction Phase.	Construction Contractor		√		WBTC No. 2/93, 2/93B, 16/96, 4/98, 4/98A, 25/99 25/99A, 25/99C, 12/2000, 19/2001 ETWB TC No. 33/2002, 34/2002, 15/2003, 31/2004

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	*Site Clearance Waste / Demolition Waste* 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.	Planning for waste reduction, re-use, recycling and proper disposal and form compliance with Waste Disposal Ordnance and other guideline.	To be implemented at the works sites of KT14 during the Construction Phase.	Construction Contractor		√		WBTC No. 2/93, 2/93B, 16/96, 4/98, 4/98A, 25/99 25/99A, 25/99C, 12/2000, 19/2001 ETWB(TC) W No. 33/2002, 34/2002, 15/2003, 31/2004
Waste 3	Excavated Material 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. Any leachate from skips shall be treated to meet discharge standard from Government sewers before being collected along with toilet waste by licensed contractor.	Planning for waste reduction, re-use, recycling and proper disposal and form compliance with Waste Disposal Ordnance and other guideline. Planning for waste reduction, re-use, recycling and proper disposal and form compliance with Waste Disposal Ordnance and other guideline.	To be implemented at the works sites of KT14 during the Construction Stage. To be implemented at the works sites of KT14 during the Construction Stage	Construction Contractor during Construction Stage Construction Contractor during Construction Stage		√ √		ETWB(TC) W No. 34/2002, WBTC 12/2000 ETWB(TC) W No. 34/2002, WBTC 12/2000

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	*Recycling the Use of Non-Reusable Materials on Site* 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.	Planning for waste reduction, re-use, recycling and proper disposal and form compliance with Waste Disposal Ordnance and other guideline	To be implemented at the works sites of KT14 during the Construction Phase	Construction Contractor		√		WBTC 19/2001
Waste 5	*Chemical Waste* 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. 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.	Planning for waste reduction, re-use, recycling and proper disposal and form compliance with Waste Disposal Ordnance 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 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 Ordnance 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 b 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 Ordnance 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. 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. 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 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 Works Bureau Technical Circular No. 14/2002

Note:

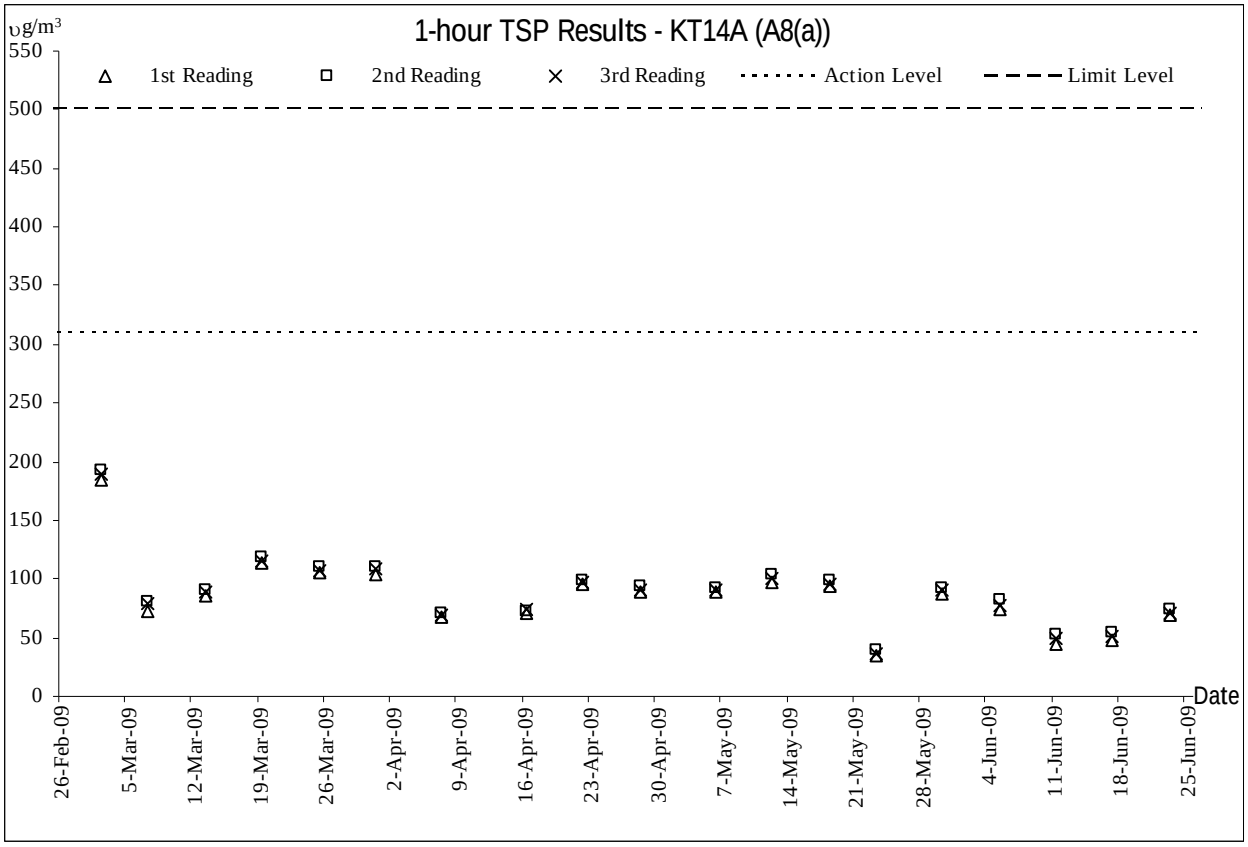
EIAO	Environmental Impact Assessment Ordinance
WDO	Waste Disposal Ordinance
WPCO	Water Pollution Control Ordinance
TMEIA	Technical Memorandum on Environmental Impact Assessment Process

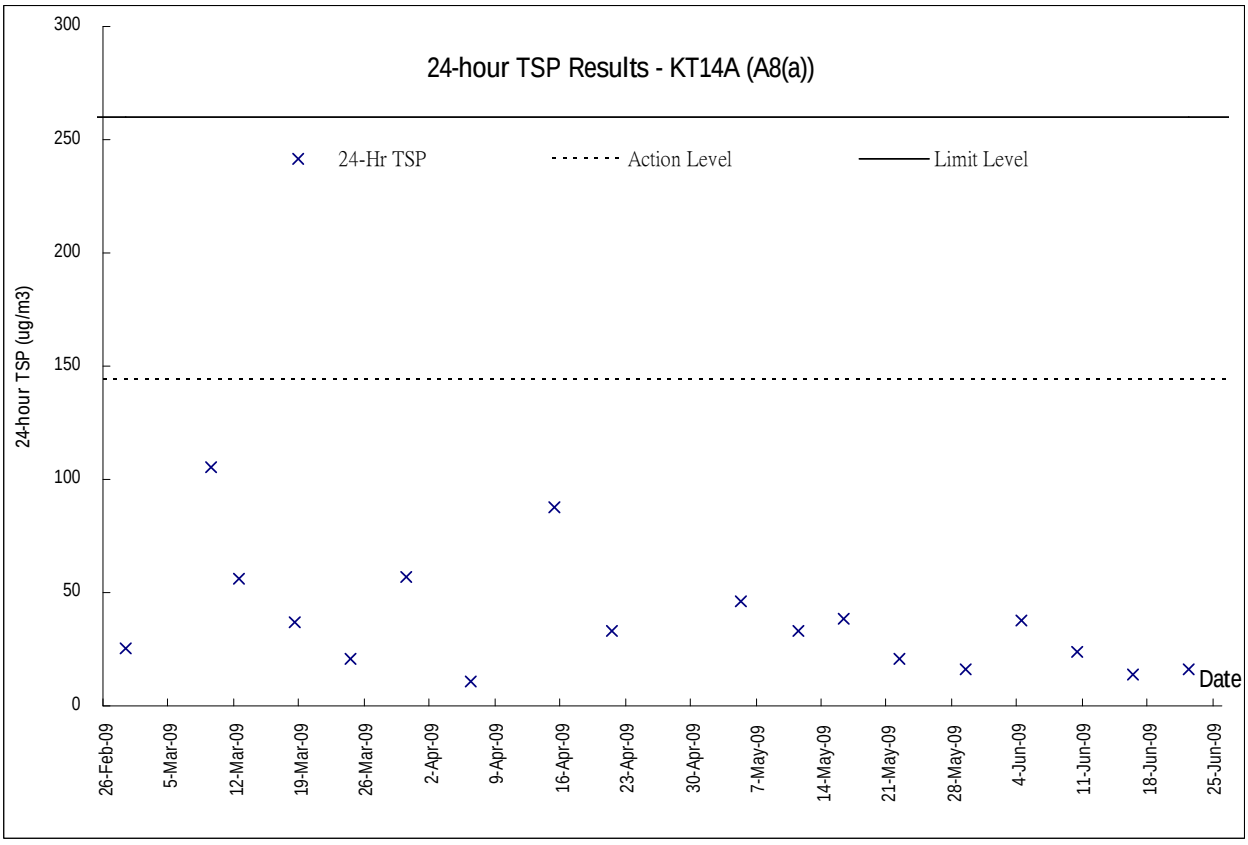
Appendix E

Graphic Plots of

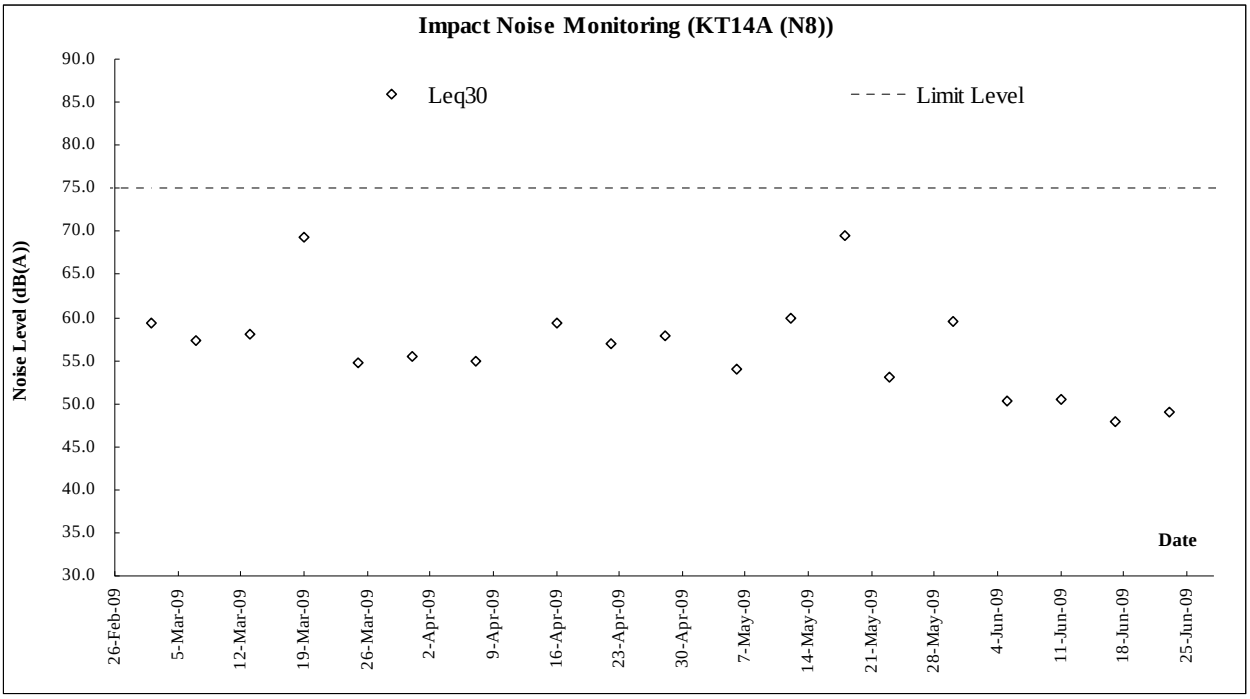
(a) Air Quality
(b) Construction Noise
(c) Water Quality

Air Quality

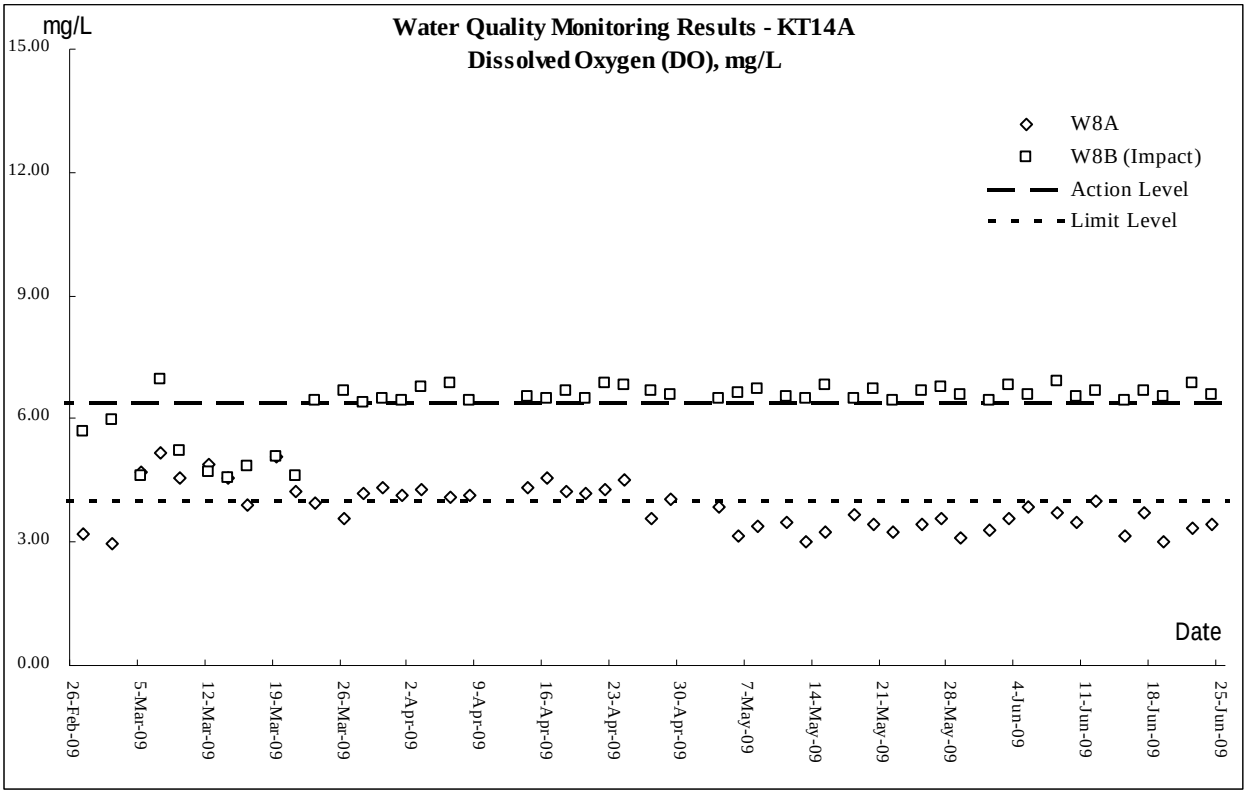

1-hour TSP Results - KT14A (A8(a))
υg/m³
1st Reading
2nd Reading
3rd Reading
Action Level
Limit Level
550
500
450
400
350
300
250
200
150
100
50
0
Date
26-Feb-09
5-Mar-09
12-Mar-09
19-Mar-09
26-Mar-09
2-Apr-09
9-Apr-09
16-Apr-09
23-Apr-09
30-Apr-09
7-May-09
14-May-09
21-May-09
28-May-09
4-Jun-09
11-Jun-09
18-Jun-09
25-Jun-09

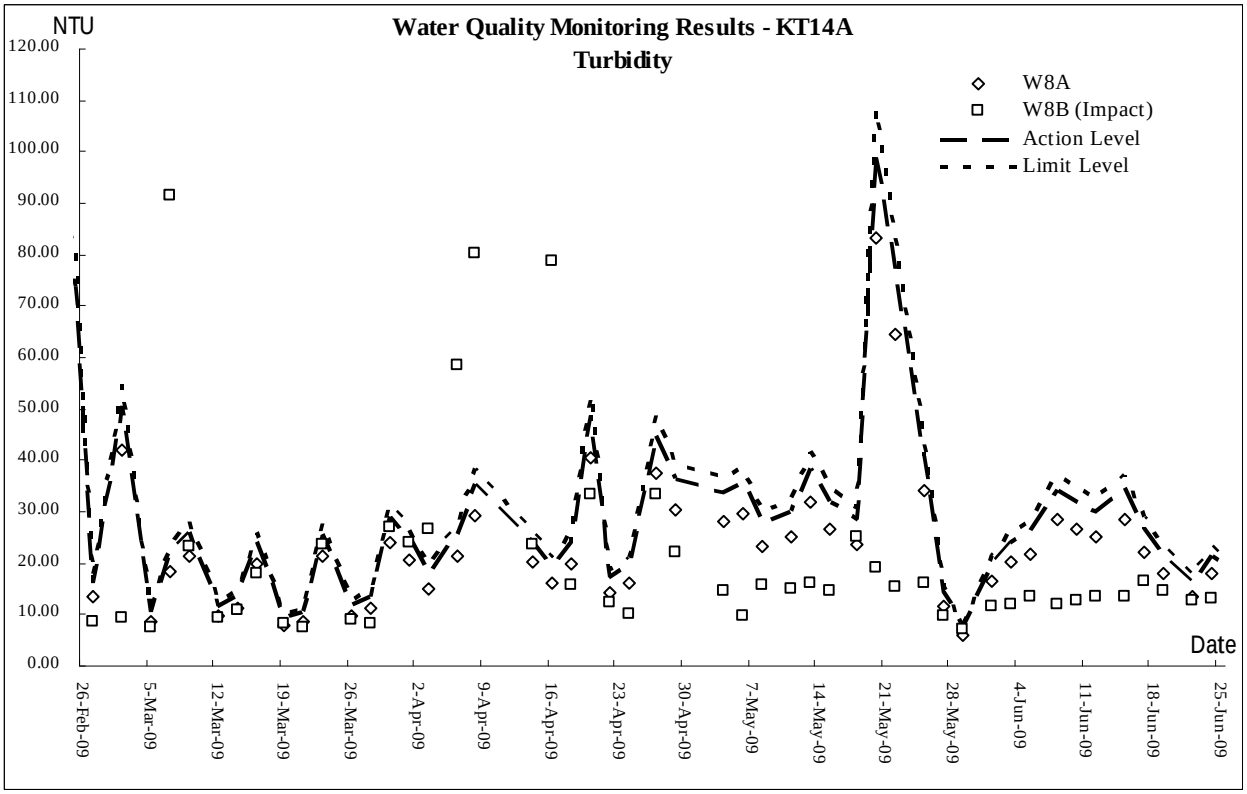

24-hour TSP Results - KT14A (A8(a))
24-Hr TSP
Action Level
Limit Level
24-hour TSP (ug/m3)
300
250
200
150
100
50
0
Date
26-Feb-09
5-Mar-09
12-Mar-09
19-Mar-09
26-Mar-09
2-Apr-09
9-Apr-09
16-Apr-09
23-Apr-09
30-Apr-09
7-May-09
14-May-09
21-May-09
28-May-09
4-Jun-09
11-Jun-09
18-Jun-09
25-Jun-09

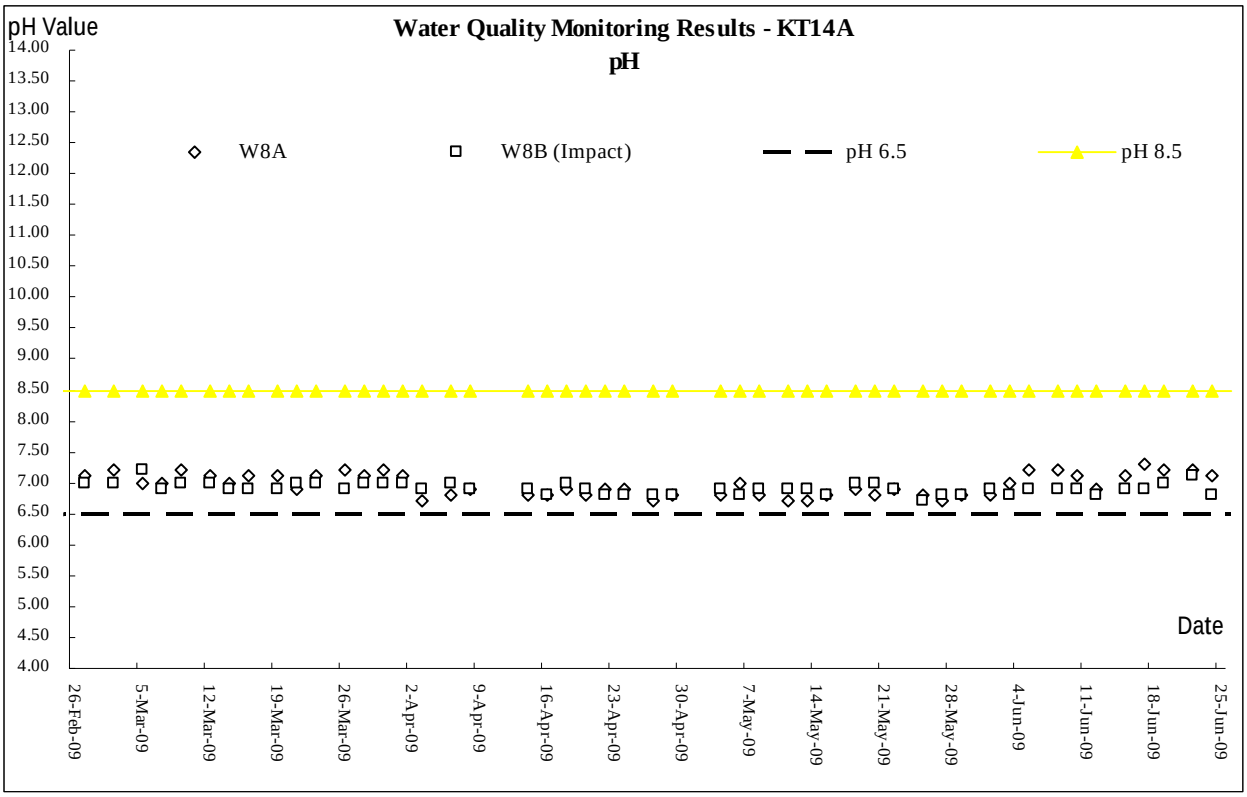
Construction Noise

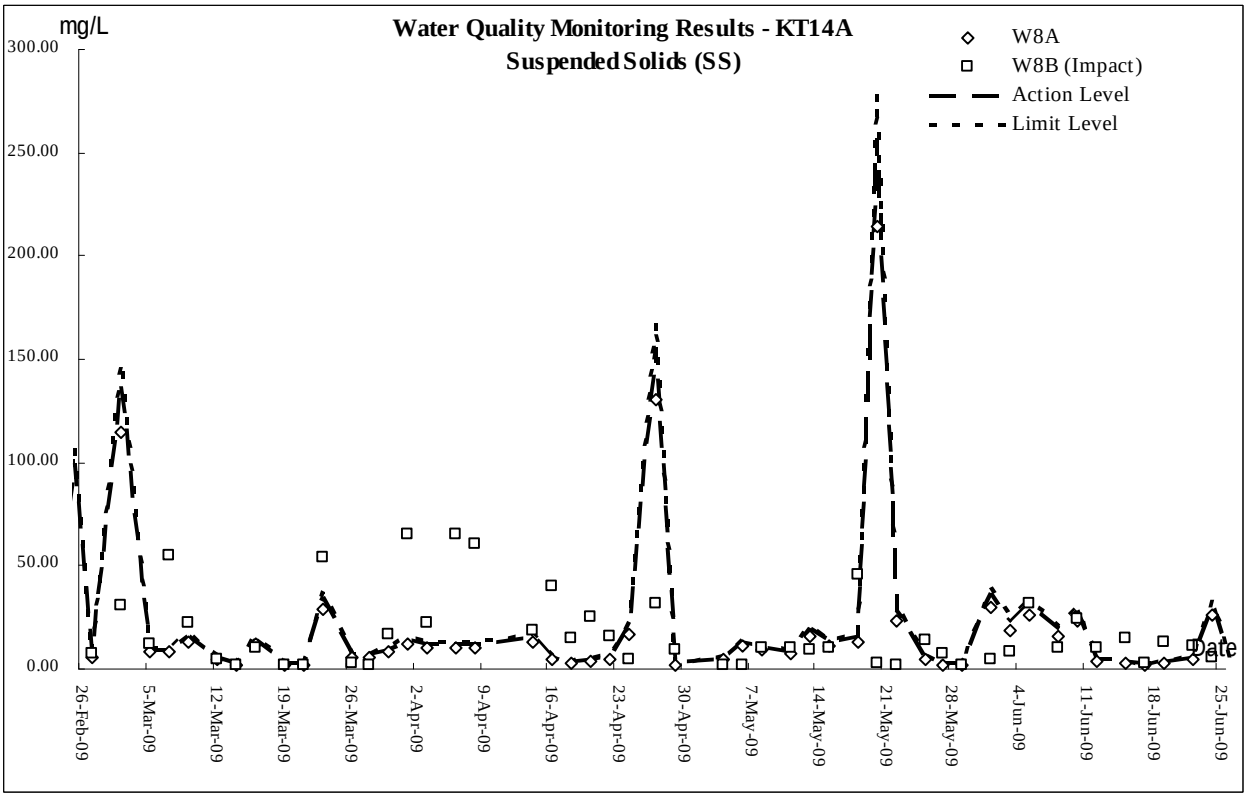

Impact Noise Monitoring (KT14A (N8))
Leq30
Limit Level
Noise Level (dB(A))
Date
90.0
85.0
80.0
75.0
70.0
65.0
60.0
55.0
50.0
45.0
40.0
35.0
30.0
26-Feb-09
5-Mar-09
12-Mar-09
19-Mar-09
26-Mar-09
2-Apr-09
9-Apr-09
16-Apr-09
23-Apr-09
30-Apr-09
7-May-09
14-May-09
21-May-09
28-May-09
4-Jun-09
11-Jun-09
18-Jun-09
25-Jun-09

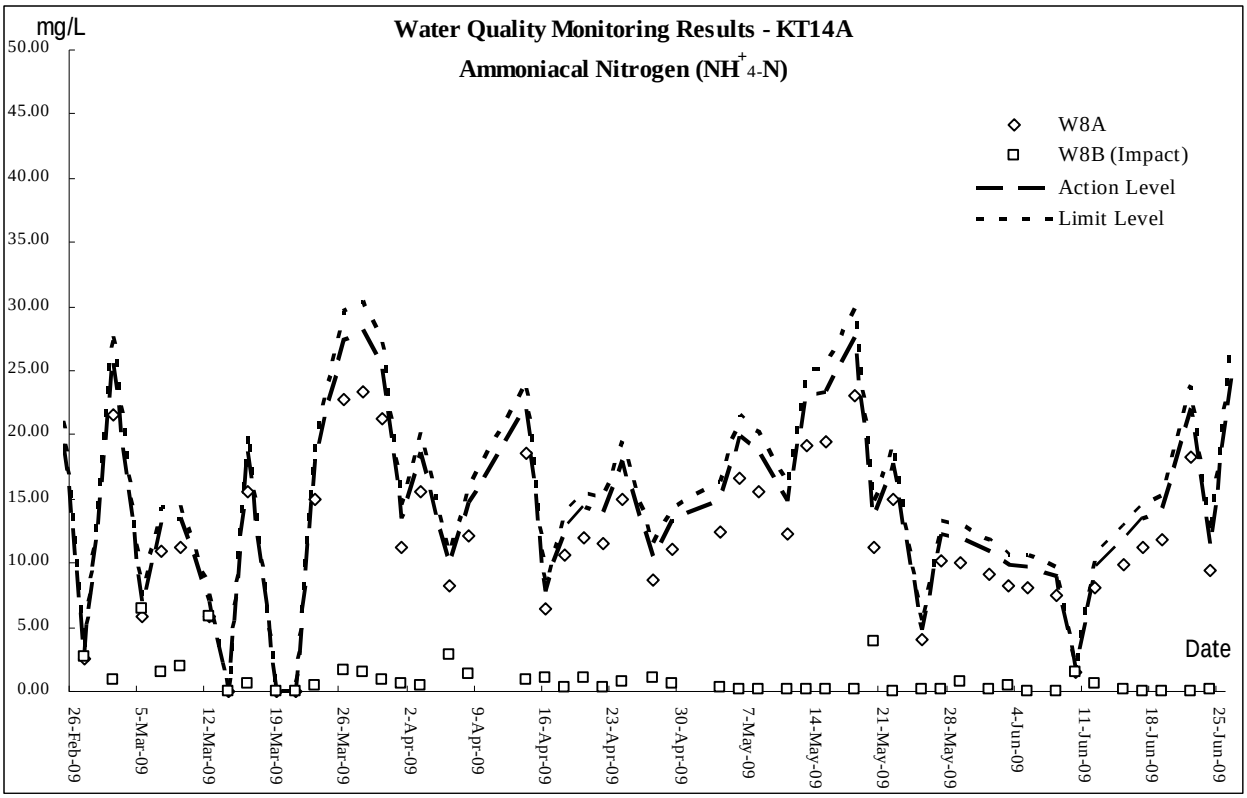
Water Quality

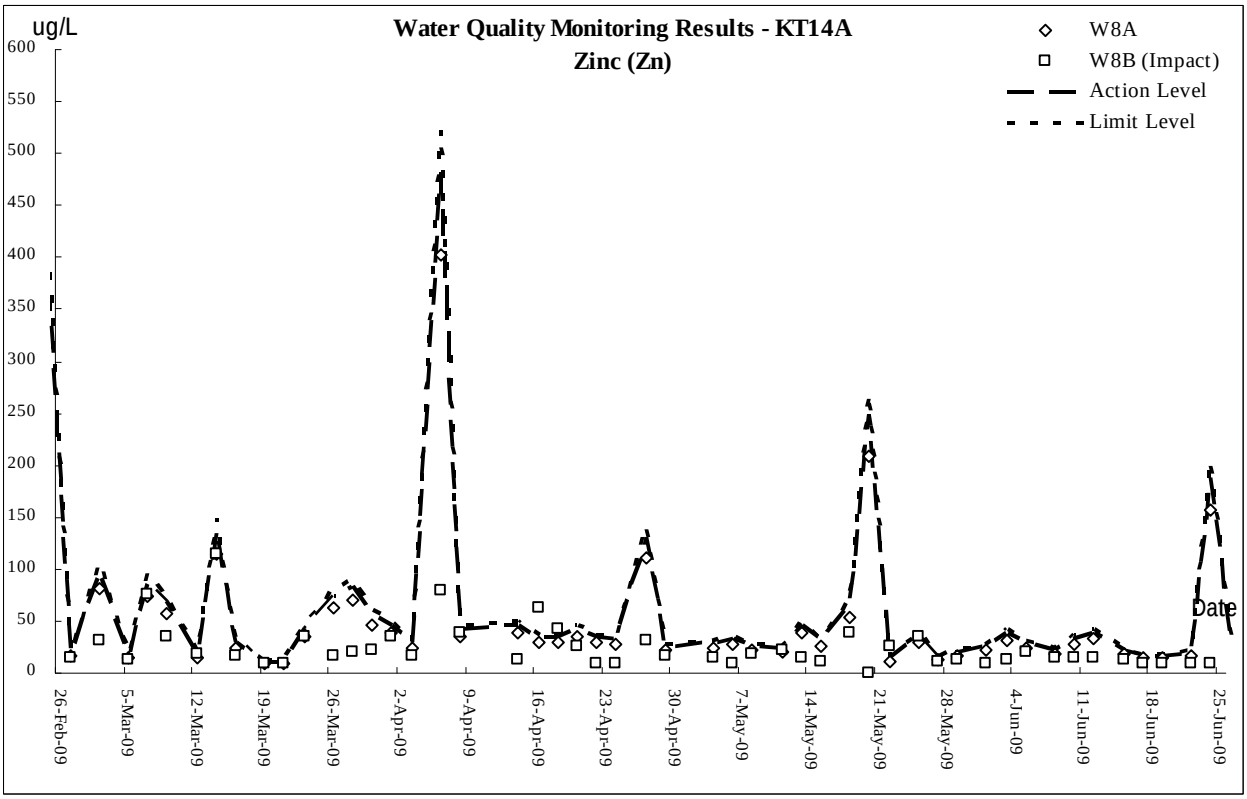

Water Quality Monitoring Results - KT14A
Dissolved Oxygen (DO), mg/L
mg/L
15.00
12.00
9.00
6.00
3.00
0.00
W8A
W8B (Impact)
Action Level
Limit Level
Date
26-Feb-09
5-Mar-09
12-Mar-09
19-Mar-09
26-Mar-09
2-Apr-09
9-Apr-09
16-Apr-09
23-Apr-09
30-Apr-09
7-May-09
14-May-09
21-May-09
28-May-09
4-Jun-09
11-Jun-09
18-Jun-09
25-Jun-09


Water Quality Monitoring Results - KT14A
Turbidity
NTU
120.00
110.00
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
W8A
W8B (Impact)
Action Level
Limit Level
Date
26-Feb-09
5-Mar-09
12-Mar-09
19-Mar-09
26-Mar-09
2-Apr-09
9-Apr-09
16-Apr-09
23-Apr-09
30-Apr-09
7-May-09
14-May-09
21-May-09
28-May-09
4-Jun-09
11-Jun-09
18-Jun-09
25-Jun-09


Water Quality Monitoring Results - KT14A
pH
pH Value
W8A
W8B (Impact)
pH 6.5
pH 8.5
Date


Water Quality Monitoring Results - KT14A
Suspended Solids (SS)
mg/L
W8A
W8B (Impact)
Action Level
Limit Level
Date


Water Quality Monitoring Results - KT14A
Ammoniacal Nitrogen (NH4+-N)
mg/L
W8A
W8B (Impact)
Action Level
Limit Level
Date
50.00
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
26-Feb-09
5-Mar-09
12-Mar-09
19-Mar-09
26-Mar-09
2-Apr-09
9-Apr-09
16-Apr-09
23-Apr-09
30-Apr-09
7-May-09
14-May-09
21-May-09
28-May-09
4-Jun-09
11-Jun-09
18-Jun-09
25-Jun-09


Water Quality Monitoring Results - KT14A
Zinc (Zn)
ug/L
W8A
W8B (Impact)
Action Level
Limit Level
Date
600
550
500
450
400
350
300
250
200
150
100
50
0
26-Feb-09
5-Mar-09
12-Mar-09
19-Mar-09
26-Mar-09
2-Apr-09
9-Apr-09
16-Apr-09
23-Apr-09
30-Apr-09
7-May-09
14-May-09
21-May-09
28-May-09
4-Jun-09
11-Jun-09
18-Jun-09
25-Jun-09

Appendix F

Monthly Summary Waste Flow Table

Monthly Summary Waste Flow Table

Date: 30-Jun-09
Year/Month: Jun-09

Monthly Summary Waste Flow Table for Jun 2009										
Year	Actual Quantities of Inert C & D Materials Generated Monthly					Estimated Annual Quantities of C & D Wastes Generated Monthly				
	Total Quantitiy 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	0.360	0	0	0	0	0	0
Mar	5.792	0.014	5.778	0	0	0	0	0	0	0
Apr	6.376	0.004	6.864	-0.492	0	0	0	0	0	0
May	7.632	0.006	7.674	-0.048	0	0	0	0	0	0
Jun	6.00	0.008	5.676	-0.498	0.816	0	0	0	0	0
Sub-Total	40.52	0.049	40.332	-0.678	0.816	0	0	0	0	0
Jul										
Aug										
Sep										
Oct										
Nov										
Dec										
Total	40.519	0.049	40.332	-0.678	0.816	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