



**DRAINAGE SERVICES DEPARTMENT
CONTRACT NO. DC/2011/06**

**REPROVISIONING OF BOUNDARY PATROL ROAD
AND ASSOCIATED SECURITY FACILITIES
BETWEEN PING YUEN RIVER AND PAK FU SHAN
AND DRAINAGE WORKS IN NORTH DISTRICT**

**THE SIXTH QUARTERLY
EM&A SUMMARY REPORT FOR DRAINAGE
WORKS UNDER EP-277/2007/A
(SEPTEMBER – NOVEMBER 2013)**

**PREPARED FOR
SANG HING CIVIL CONSTRUCTORS CO., LTD.**

Quality Index

Date	Reference No.	Prepared By	Approval By
31 December 2013	TCS00599/12/600/R0153	 Ben Tam Environmental Consultant	 T. W. Tam Environmental Team Leader

Version	Date	Description
0	31 December 2013	First submission.

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.

Ref.: DSDBPRNDEM00_0_0221L.13

9 January 2014

By Post and Fax (2959 6079)

Action-United Environmental Services & Consulting
Unit A, 20/F,
Gold King Industrial Building,
New Territories, Hong Kong

Attention: Mr. TW Tam

Dear Sir,

**Re: Contract No. DC/2011/06
Reprovisioning of Boundary Patrol Road and Associated Security Facilities
between Ping Yuen River and Pak Fu Shan and Drainage Works in North
District
Sixth Quarterly EM&A Summary Report for Drainage Works under EP-
277/2007/A (September – November 2013)**

Reference is made to the Environmental Team's submission of the captioned report (Version 1) dated 31 December 2013 received through E-mail on 31 December 2013 for our review and comment.

Please be informed that we have no adverse comment on the captioned submission.

Should you have any queries, please do not hesitate to contact the undersigned or our Ms. Cherry Mak at 3465 2807.

Yours sincerely,



Roger Leung
Independent Environmental Checker

c.c.	DSD	Mr. Eric Cheng	by fax: 2827 8700
	SHCCCL	Mr. Raymond W.M. Yau	by fax: 2403 1162

EXECUTIVE SUMMARY

REPORTING OF THE CONTRACT

ES01. In order to ease reporting of the Contract, it has been agreed among the Engineer, IEC, Contractor and ET that the EM&A reports for the Contract are split into three stand-alone reports, namely EM&A Report for Advanced Works under EP-430/2011, EM&A Report for Drainage Works under EP-277/2007/A and EM&A Report for Drainage Works at Ma Wat Wai. This is the fifth quarterly EM&A summary report for Drainage Works under EP-277/2007/A, covering the construction period of the Works from 1 June to 31 August 2013.

ES02. The structure of this Report is as follows:

EXECUTIVE SUMMARY

- 1 *Introduction*
- 2 *Requirements for Construction Impact monitoring*
- 3 *Environmental monitoring Results*
- 4 *solid and liquid Waste Management*
- 5 *Complaints, Notification of Summons and Successful Prosecution*
- 6 *Conclusions and Recommendations*

Annex

- Annex A* *Location plan for the Works*
Annex B *Environmental Management Organization, Communication Lines and 24-Hour Hotline*
Annex C *Construction Program*
Annex D *Status of Environmental Licenses and Permits*
Annex E *Environmental Monitoring Locations*
Annex F *Graphical Plots of the Trends of Monitored Parameters*
Annex G *Monthly Summary of Waste Flow Table*

BREACH OF ENVIRONMENTAL QUALITY PERFORMANCE LIMITS

ES03. No exceedances of environmental quality performance limits for air quality, construction noise and water quality were recorded. Therefore, neither NOE nor remedial actions were required.

COMPLAINTS, NOTIFICATIONS OF SUMMONS AND SUCCESSFUL PROSECUTIONS

ES04. No environmental complaints, notifications of summons and successful prosecutions were registered during the quarter.

CONCLUSIONS

ES05. The EM&A results for the Reporting Period confirmed that the monitoring work was effective and was generating data with the necessary statistical power to categorically identify or confirm the absence of impact attributable to the works.

ES06. Neither breaches of environmental quality performance limits nor written or verbal environmental complaints, notification of summons and successful prosecutions were recorded during the Reporting Period, indicating the implemented environmental mitigation measures were effective and efficient to alleviate adverse environmental impacts generated from the construction activities of the Works.

RECOMMENDATIONS

ES07. The Contractor is reminded to fully comply with all the environmental requirements stipulated in the environmental regulations, guidelines and Particular Specifications under the Contract, in particular construction suppression measures during dusty construction activities under dry and windy conditions and water quality mitigation measures during rainy conditions.

ES08. In addition, attention is drawn to implementation of the construction noise mitigation measures during noisy construction works.

1 INTRODUCTION

BASIC PROJECT INFORMATION

- 1.01 Sang Hing Civil Contractors Company Limited has been awarded by DSD since 31 March 2012 Contract No. DC/2011/06 – Re-provisioning of Boundary Patrol Road and Associated Security Facilities between Ping Yuen River and Pak Fu Shan and Drainage Works in North District (hereafter “the Contract”). The Contract comprises:
- 1) Drainage Works in North District to be implemented under Environmental Permit No. EP-277/2007/A (hereinafter “Drainage Works under EP-277/2007/A or “the Works”);
 - 2) Re-provisioning of Boundary Patrol Road and Associated Security Facilities between Ping Yuen River and Pak Fu Shan; and
 - 3) Drainage Works in North District, a non-designated project of drainage works at Ma Wat Wai.
- 1.02 Location plan for the Works is shown in *Annex A*, whereas environmental management organization and communication lines, including contacts of key personnel under the Contract are shown in *Annex B*.
- 1.03 The Works has been commenced since 21 May 2012 upon completion of the site clearance and preparation activities after commencement of the Contract since 31 April 2012.
- 1.04 Action-United Environmental Services and Consulting (hereinafter “AUES”) has been commissioned by the Contractor as the Environmental Team (hereinafter “the ET”) to implement the environmental monitoring and audit (hereinafter “EM&A”) under the Contract.
- 1.05 In order to ease reporting of the Contract, it has been agreed among the Engineer, IEC, Contractor and ET that the EM&A reports for the Contract are split into three stand-alone reports, namely EM&A Report for Advanced Works under EP-430/2011, EM&A Report for Drainage Works under EP-277/2007/A and EM&A Report for Drainage Works at Ma Wat Wai.
- 1.06 This is the sixth quarterly EM&A summary report (herein after “this Report”) for Drainage Works under EP-277/2007/A, covering the construction period from 1 September to 30 November 2013 (hereinafter “the Reporting Period”).

WORK UNDERTAKEN DURING THE QUARTER

- 1.07 Construction program is presented in *Annex C*, whereas construction activities undertaken during the Reporting Period are summarized in the following *Table 1-1*.

Table 1-1 Major Construction Activities of the Works during the Reporting Period

Major Construction Activities during the Reporting Period at Portion E (Man Uk Pin)	
September 2013	<ul style="list-style-type: none"> • Construction of gabion wall at CH317 • Establishment of Transplanted Tree T1107 • Trail pit for existing watermain
October 2013	<ul style="list-style-type: none"> • Construction of gabion wall at CH317 • Establishment of Transplanted Tree T1107 • Laying of Watermain Pipe and associated T-junction • Liaise with lot owner for the access • Construction of Inlet Transition at the upstream • Relocation of Gate near CH275
November 2013	<ul style="list-style-type: none"> • Establishment of Transplanted Tree T1107 • Laying of Watermain Pipe and the associated T-junction • Liaise with lot owner for the access • Construction of Inlet Transition at the upstream • Construction of Box Culvert

ENVIRONMENTAL MITIGATION MEASURES AND ENVIRONMENTAL IMPLEMENTATION STATUS

- 1.08 Environmental mitigation measures to minimize potential environmental impacts arising from the construction of the project have been recommended in the Final EIA and summarized in the stand-alone EM&A Manual. They can be found in the *First Monthly EM&A Report for Drainage Works under EP-277/2007/A* (ref. TCS00599/12/600/R0017v4, dated 16 July 2012).
- 1.09 Implementation status of environmental protection and pollution control/mitigation measures, as recommended in the Final EIA and summarized in the updated implementation schedule is detailed in the following *Section 3 to 5* of this Report, whereas status of environmental licenses and permit is summarized in the *Annex D*.

2 REQUIREMENTS FOR CONSTRUCTION IMPACT MONITORING

MONITORING PARAMETERS

- 2.01 The monitoring parameters to be monitored are summarized in *Table 2-1*.

Table 2-1 Summary of Environmental Monitoring Parameters

Aspect	Parameters	
Air Quality	<ul style="list-style-type: none"> 1-Hour Total Suspended Particulate (hereinafter ‘1-Hr TSP’); and 24-Hour Total Suspended Particulate (hereinafter ‘24-Hr TSP’). 	
Construction Noise	<ul style="list-style-type: none"> A-weighted equivalent continuous sound pressure level (30min) (hereinafter ‘Leq(30min)’ during the normal working hours; and A-weighted equivalent continuous sound pressure level (5min) (hereinafter ‘Leq(5min)’ for construction work during the restricted hours. 	
Water Quality	In Situ Measurement:	Temperature, Dissolved Oxygen, Dissolved Oxygen Saturation, pH value, Water Depth & Turbidity
	Laboratory Analysis	Suspended Solids (hereinafter ‘SS’),
Ecology	<ul style="list-style-type: none"> The stream conditions monitoring (in-situ measurements of DO, pH and turbidity; laboratory testing of SS); Riparian vegetation along the banks of channel monitoring; General site audit to ensure the existing natural stream channel is protected; and Reported the sediment condition during the construction phase 	

- 2.02 As there was neither riparian vegetation along the banks of channel nor existing natural stream channel within the construction site under the Works, no ecology monitoring is required.

MONITORING LOCATIONS

Monitoring Locations Designated in the EM&A Manual

- 2.03 The sensitive receiver designated in the EM&A Manual, namely MUP05-2, which is the closest to the construction site, is selected as monitoring location for air quality namely MUP-A1 and construction noise namely MUP-N1 respectively. They are shown in *Annex E* and summarized in *Table 2-2* below.

Table 2-2 Designated Monitoring Locations

Issue	Channel	Sensitive Receiver	Location ID	Detailed Address
Air	MUP05	MUP05-2	MUP-A1	A village house at Man Uk Pin
Noise	MUP05	MUP05-2	MUP-N1	Same village house at Man Uk Pin as MUP-A1

Additional Monitoring Locations

- 2.04 Additional monitoring locations for construction noise and water quality are also shown in *Annex E* and summarized in *Table 2-3* below.

Table 2-3 Summary of Additional Environmental Monitoring Locations

Issue	Channel	Sensitive Receiver	Location ID	Detailed Address
Noise	MUP05	MUP05-2	MUP-Nx	Village house
Water Quality	MUP05	-	MUP-Wx1	Additional Up-Stream Control Station: (Prior to and after connection of stream diversion)
		-	MUP-Wx2	Additional Impact Monitoring Station: (Prior to connection of stream diversion)
		-	MUP-Wx3	Additional Impact Monitoring Station: (After connection of stream diversion)

ENVIRONMENTAL QUALITY PERFORMANCE LIMITS

2.05 The environmental quality performance limits, i.e. Action/Limit Levels, for air quality and construction noise are summarized in *Table 2-4* and *Table 2-5* respectively.

Table 2-4 Action and Limit Levels for Air Quality

Monitoring Station	Action Level ($\mu\text{g}/\text{m}^3$)		Limit Level ($\mu\text{g}/\text{m}^3$)	
	1-Hour TSP	24-Hour TSP	1-Hour TSP	24-Hour TSP
MUP-A1	307	156	500	260

Table 2-5 Action and Limit Levels for Construction Noise (dB(A))

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

2.06 Environmental quality criteria for additional water quality monitoring are presented in *Table 2-6* below.

Table 2-6 Action and Limit Levels for Water Quality

Action Level	Limit Level
120% of the Levels of Up-Stream Control Station	130% of the Levels of Up-Stream Control Station

3 ENVIRONMENTAL MONITORING RESULTS

3.01 Graphical plots of the trends of monitored parameters over the past 4 months, including the last month of the previous quarter and the Reporting Period, are presented in *Annex F*.

3.02 Weather conditions extracted from Hong Kong Observatory have been used in interpretation of this Report. They can be found in corresponding Monthly EM&A Reports.

EXCEEDANCES OF THE ENVIRONMENTAL QUALITY PERFORMANCE LIMITS

3.03 No exceedances of environmental quality performance limits were registered during the Reporting Period. Neither Notice Of Exceedances of the environmental quality performance limits (hereinafter “NOE”) nor the associated remediation actions were required during the Reporting Period.

CONCLUSIONS

3.04 The EM&A results confirmed that the monitoring work was effective and generating data with necessary statistical power to categorically identify the absence of impact attributable to the works.

3.05 Monitoring results recorded no exceedances of the environmental quality performance limits during the Reporting Period, indicating no adverse environmental impacts were generated from construction activities during the Reporting Period. No remediation actions were required.

4 SOLID AND LIQUID WASTE MANAGEMENT

4.01 The quantity of solid and liquid waste for disposal or reuse is summarized in Monthly Summary of Waste Flow Table in *Annex G*.

5 COMPLAINTS, NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTION

5.01 No written or verbal environmental complaints, notification of summons and successful prosecutions were recorded during the Reporting Period. They are summarized in *Table 5-1*.

Table 5-1 Summary of Complaints, Notification of Summons and Successful Prosecutions

Environmental Issue	Frequency of Occurrence	
	From the project commencement to last reporting month	This reporting Period
	December 2012 – August 2013	September to November 2013
Complaints	0	0
Nature of Complaints	Not Applicable	Not Applicable
Notification of Summons	0	0
Nature of Summons	Not Applicable	Not Applicable
Successful Prosecutions	0	0
Nature of Prosecutions	Not Applicable	Not Applicable

5.02 Project proponents' contacts and hotline telephone number for the public to make enquiries can be found in *Annex B*.

6 CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

6.01 Neither breaches of environmental quality performance limits nor written/verbal environmental complaints, notification of summons and successful prosecutions were recorded during the Reporting Period, indicating the implemented environmental mitigation measures were effective and efficient to alleviate adverse environmental impacts generated from the construction activities of the Works.

RECOMMENDATIONS

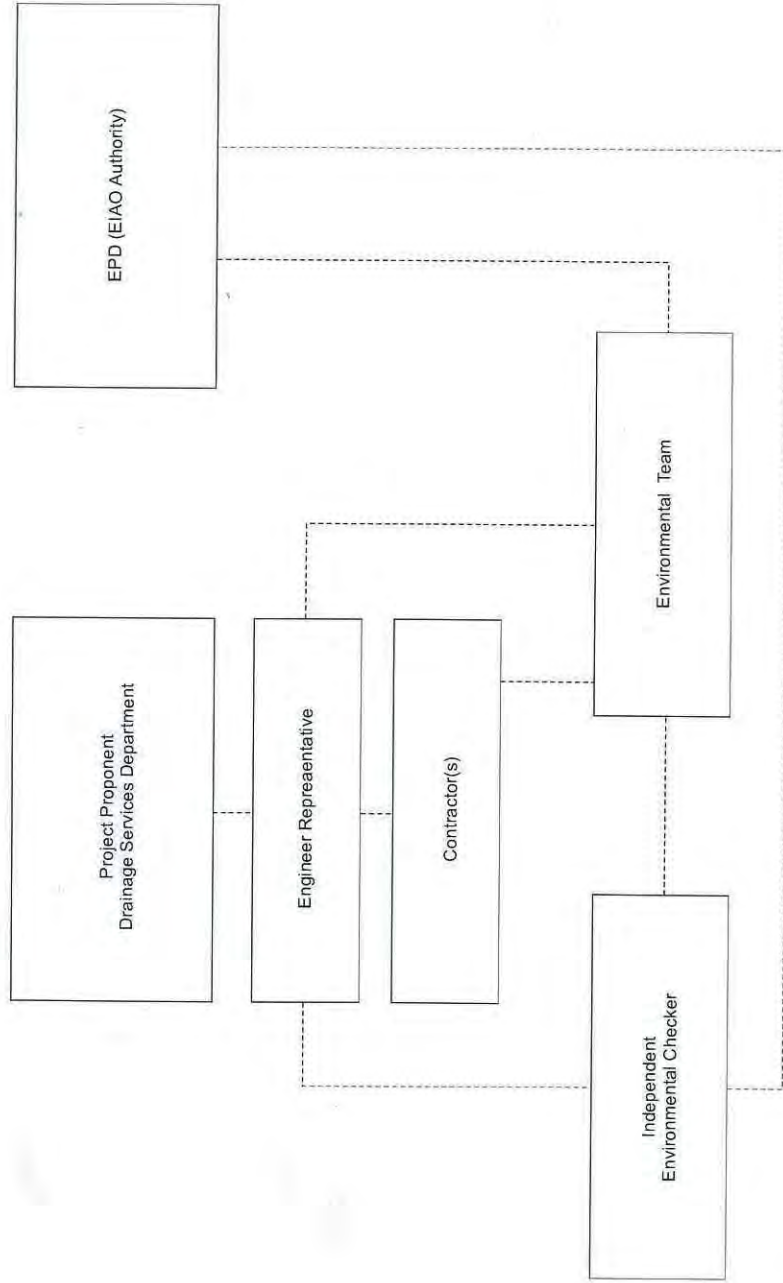
6.02 The Contractor is reminded to fully comply with all the required environmental mitigation measures, in particular construction dust suppression measures during dusty construction activities under dry and windy conditions and water quality mitigation measures during rainy conditions. In addition, attention is drawn to implementation of the construction noise mitigation measures during noisy construction works.

ANNEX A

LOCATION PLAN FOR THE WORKS

ANNEX B

***ENVIRONMENTAL MANAGEMENT ORGANIZATION AND
COMMUNICATION LINES
AND
24-HOUR HOTLINE***



Key
- - - - - Line of Communication

EM&A Organisation Chart

Contact Details of Key Personnel

Organization	Project Role	Name of Key Staff	Tel No.	Fax No.
DSD	Project Proponent / Employer	Mr. Eric Y. M. Cheng	2594-7341	2827-8700
Environ	Independent Environmental Checker	Mr. Roger W. K. Leung	3465 2888	3465 2899
CHCC	Project Manager	Mr. Raymond Yau	2403 1165	2403 1165
SHCC	Site Agent	Mr. Elvin Lam	2640 9286	2640 9286
AUES	Environmental Team Leader	Mr. T. W. Tam	2959-6059	2959-6079
AUES	Environmental Consultant	Miss Nicola Hon	2959-6059	2959-6079
AUES	Environmental Team Supervisor	Mr. Ben Tam	2959-6059	2959-6079

24-Hour Hotline Telephone Number for the Public to Make Enquiries

24-Hour Hotline: 6770 3827
Contact Person: Mr. Mocha Mok

Legends:

DSD (Project Proponent / Engineer) – Drainage Services Department

SHCC (Main Contractor) – Sang Hing Civil Constructors Co., Ltd

Environ (IEC) – Environ Hong Kong Limited

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

ANNEX C

CONSTRUCTION PROGRAM

ANNEX D

SUMMARY OF STATUS OF ENVIRONMENTAL LICENSES AND PERMIT

Permit Type	Licenses / Permit No.	Date of Issuance by EPD	Expiry Date	Concerned Location	Status
Environmental Permit	EP-277/2007	09 Jul 2007	N.A.	Man Uk Pin	EP-277/2007/A to supersede EP-277/2007
	EP-277/2007/A	01 Dec 2009			
Notification pursuant to Section 3(1) of the Air Pollution Control Ordinance (APCO) (Construction Dust) Regulation	N.A.	Pending	N.A.	Contract Area (Lin Ma Hang, Man Uk Pin, Ma Wat Wai and Ping Yuen River)	The Notification was submitted to EPD on 28 May 2012
Account for Disposal of Construction Waste	7015003	07 May 2012	N.A.	Contract Area (Lin Ma Hang, Man Uk Pin, Ma Wat Wai and Ping Yuen River)	Valid
Application for Wastewater Discharge License under Water Pollution Control Ordinance (WPCO)	W5/11363/1	29 August 2012	31 Aug 2017	Man Uk Pin	Valid
Register as a Chemical Waste Producer under Waste Disposal Ordinance	5123-642-S3565-03	3 October 2012	N.A.	Contract Area (Lin Ma Hang, Man Uk Pin, Ma Wat Wai and Ping Yuen River)	Valid

ANNEX E

ENVIRONMENTAL MONITORING LOCATIONS

Location Plan for Environmental Monitoring Station

Legend:



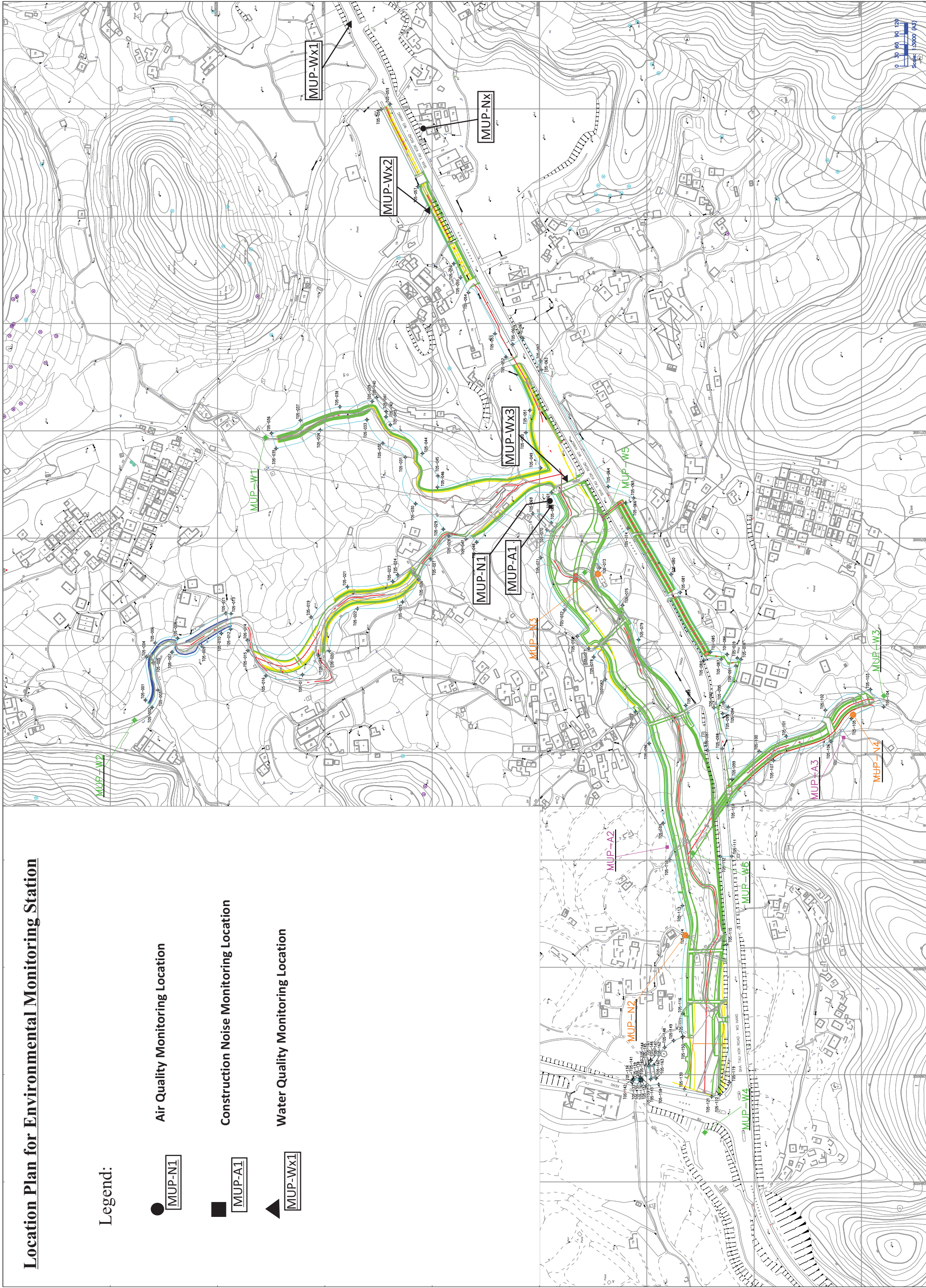
Air Quality Monitoring Location



Construction Noise Monitoring Location



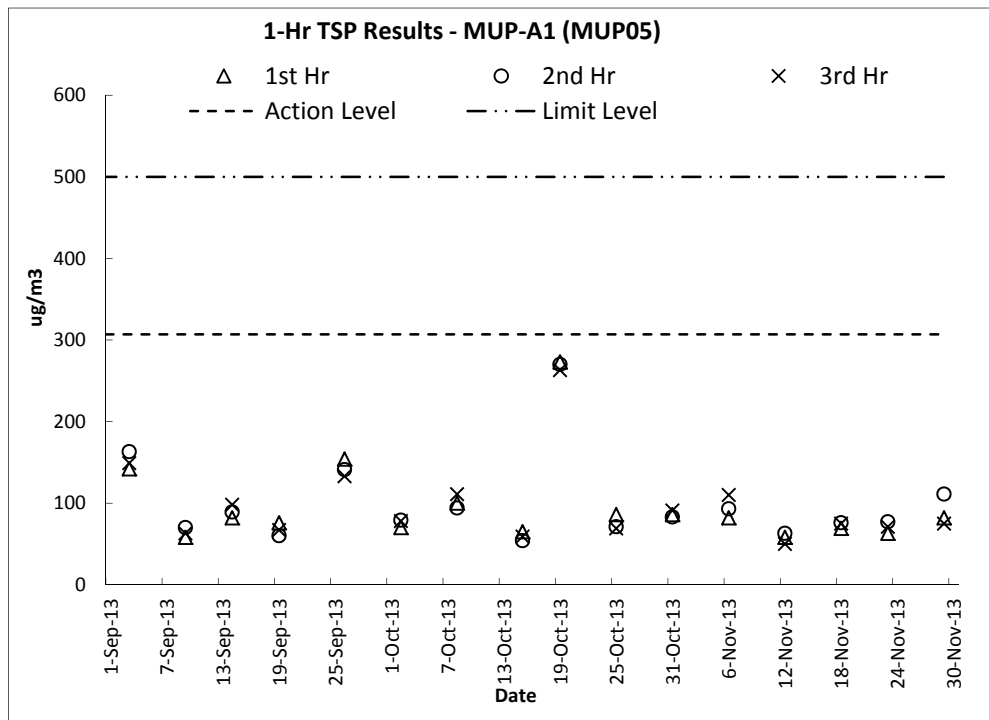
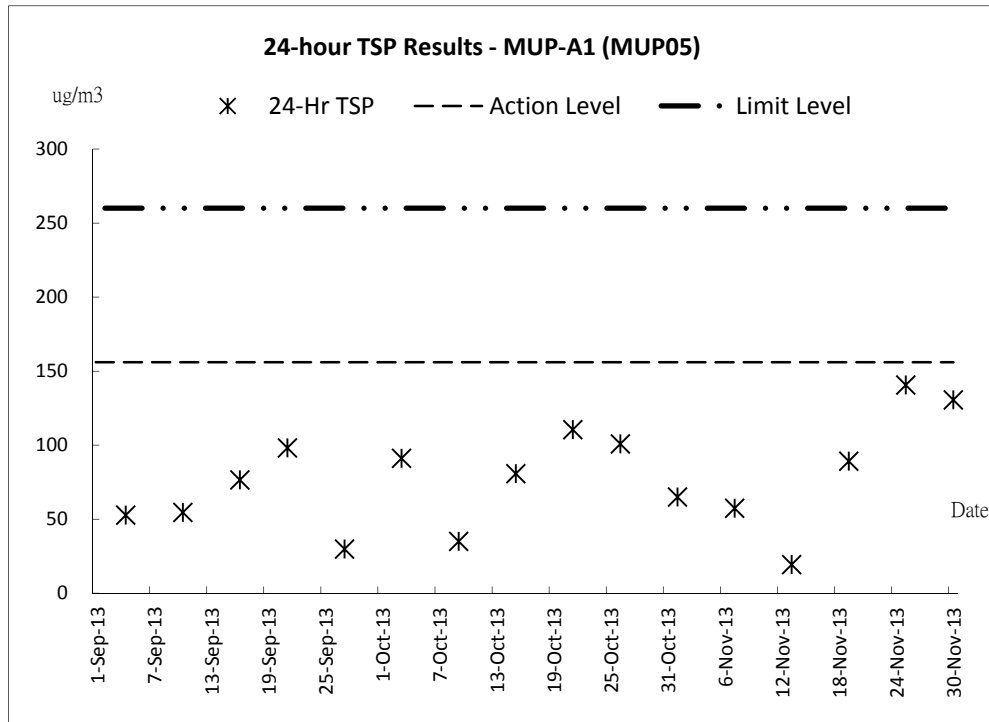
Water Quality Monitoring Location



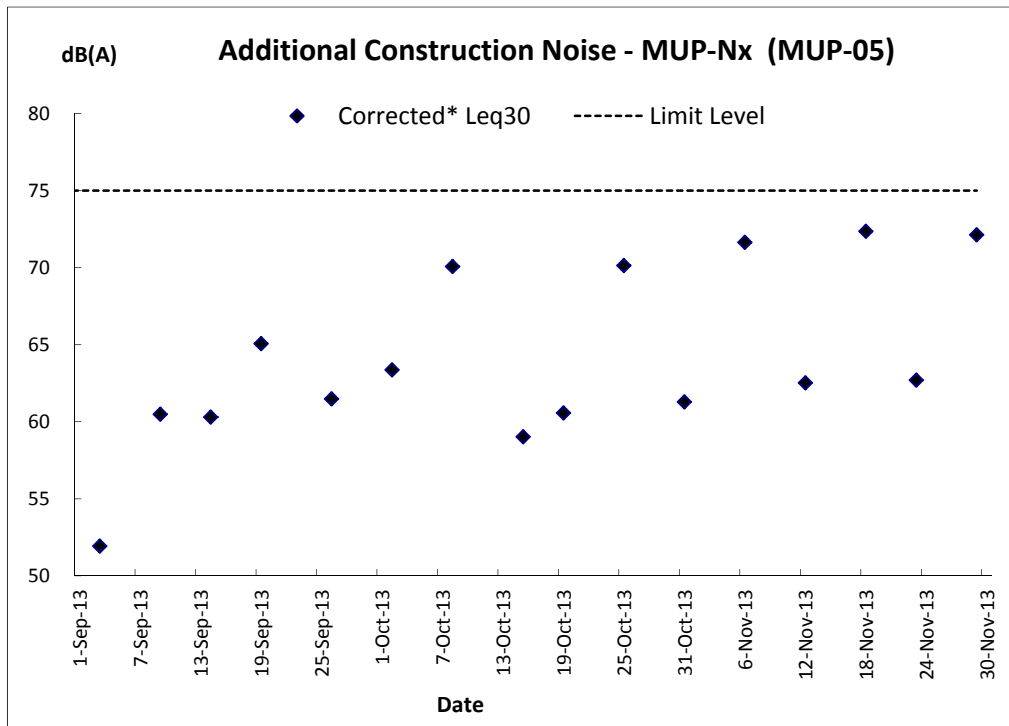
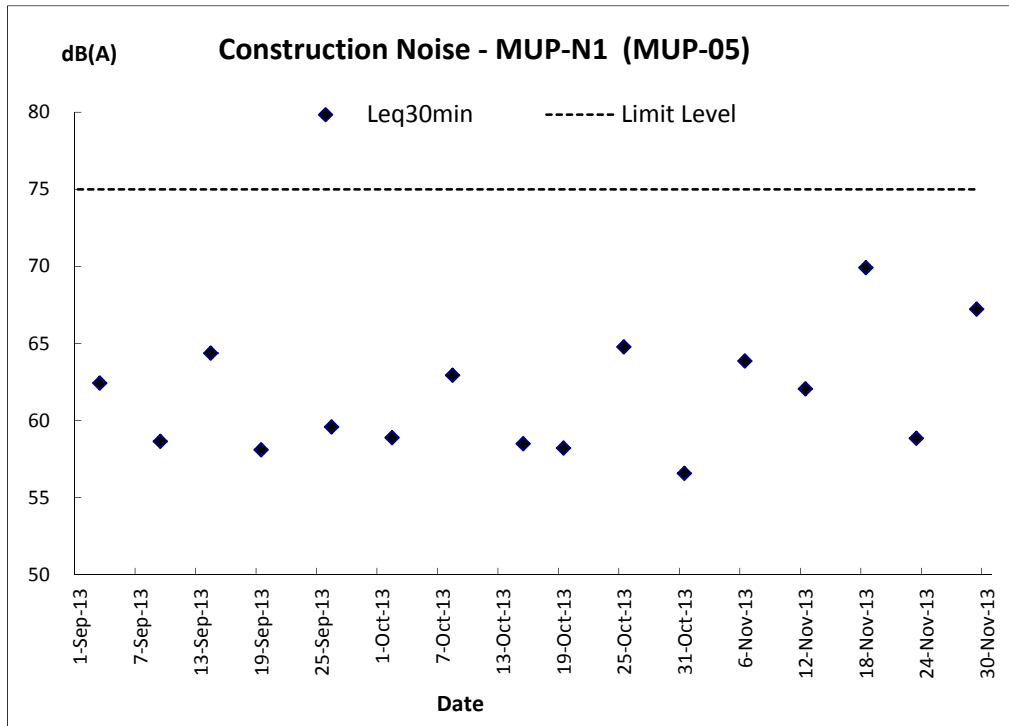
ANNEX F

GRAPHICAL PLOTS OF THE TRENDS OF MONITORED PARAMETERS

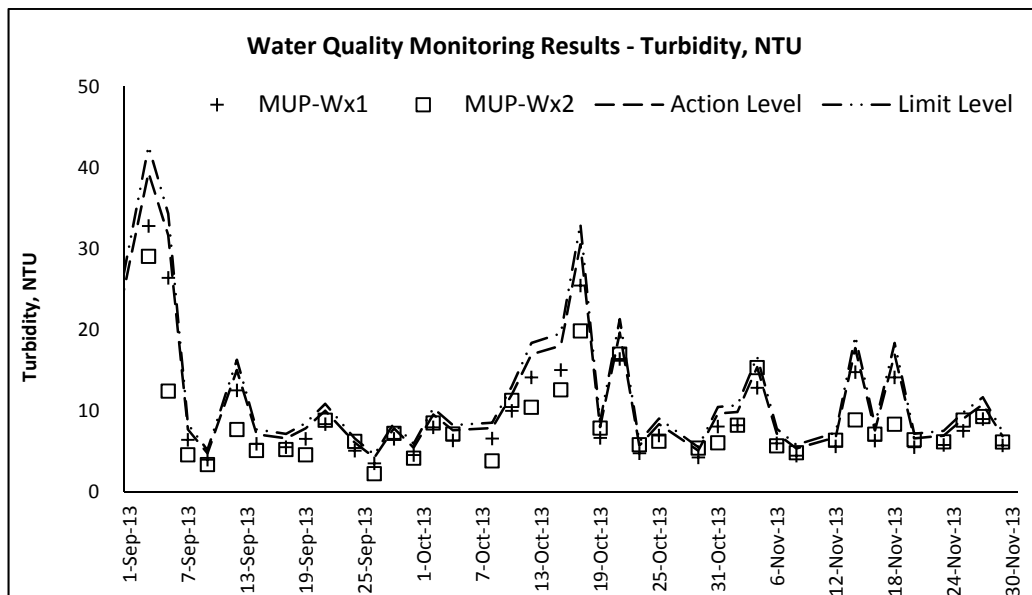
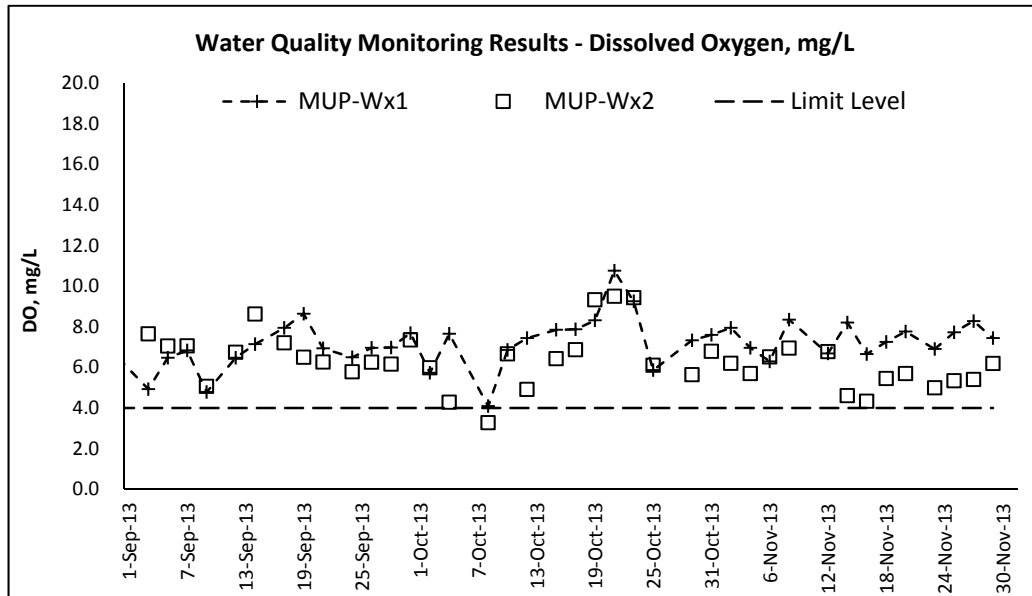
Air Quality



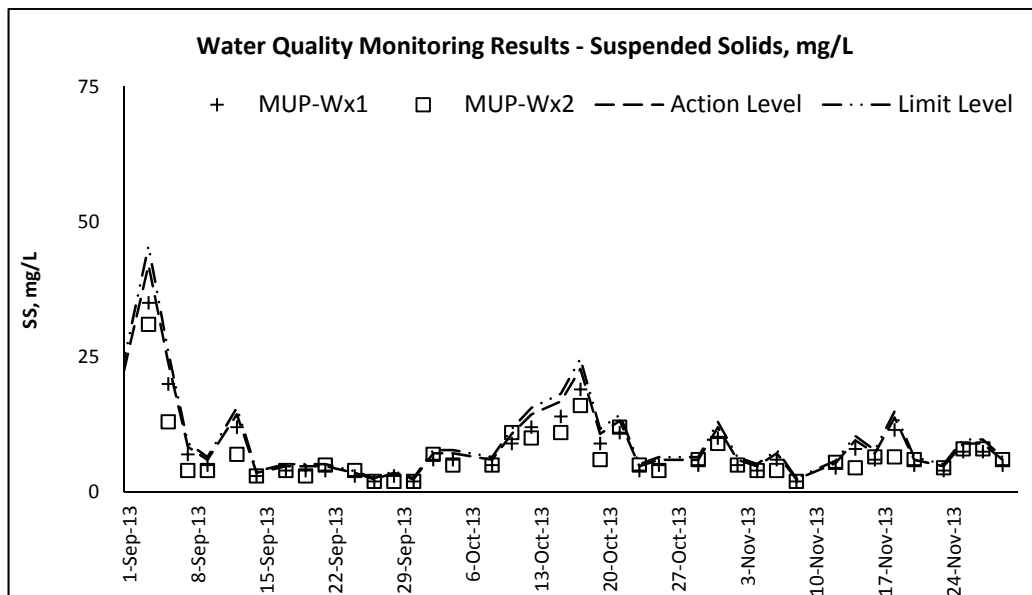
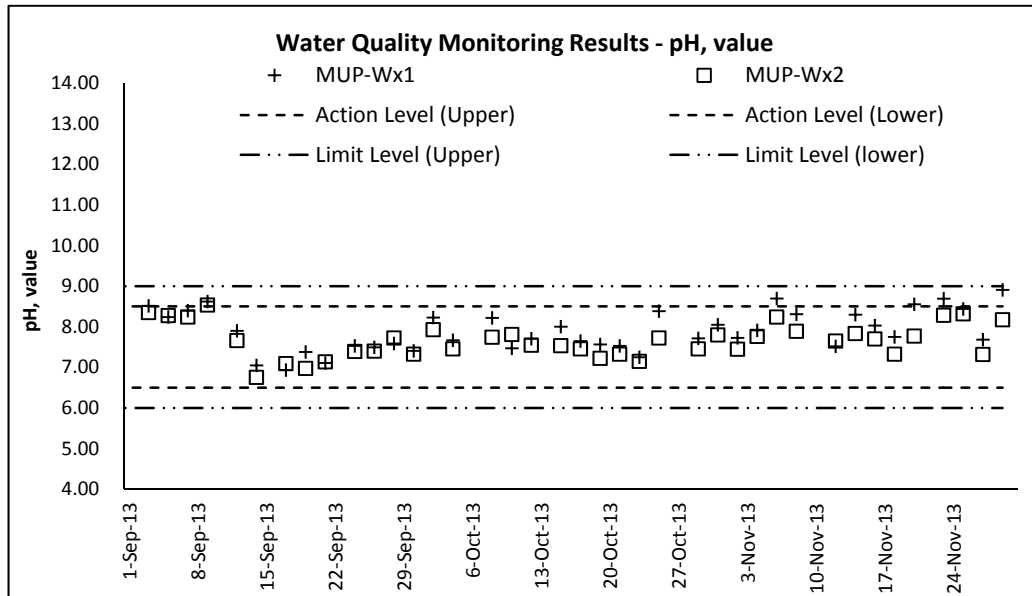
Construction Noise



Water Quality



Water Quality



ANNEX G

MONTHLY SUMMARY OF WASTE FLOW TABLE

Summary Table for Work Processes or Activities Requiring Timber for Temporary Works

Contract No.: DC/2011/06

Contract Title: *Reprovisioning of Boundary Patrol Road and Associated Security Facilities between Ping Yuen River and Pak Fu Shan and Drainage Works in North District*

Report Period: Nov-13

Item No	Description of Works Process or Activity [see note (a) below]	Justifications for Using Timber in Temporary Construction Works	Est. Quantities of Timber Used (m ³)	Actual Quantities used (m ³)	Remarks
1	Transition formwork & falsework (Portion A,B,E)	Temporary formwork & falsework design	10	9	
2	Transition formwork & falsework (Portion A,B,C)	Temporary formwork & falsework design	25	18	
3	Transition formwork & falsework (Portion A,B,C,E)	Temporary formwork & falsework design	52	40	
4	Transition formwork & falsework (Portion A,B,C,E)	Temporary formwork & falsework design	77	72	
5	Transition formwork & falsework (Portion A,B,C,E)	Temporary formwork & falsework design	102	86	
6	Transition formwork & falsework (Portion A,B,C,E)	Temporary formwork & falsework design	115	103	
7	Transition formwork & falsework (Portion A,B,C,E)	Temporary formwork & falsework design	121	112	
8	Transition formwork & falsework (Portion A,B,C,E)	Temporary formwork & falsework design	145	139	

Notes

- (a) The Contractor shall list out all the work items requiring timber for use in temporary construction works. Several minor work items may be grouped into one for ease of updating.
- (b) The summary table shall be submitted to the Engineer's Representative monthly together with the Waste Flow Table for review and monitoring

Summary Table for Work Processes or Activities Requiring Timber for Temporary Works

Contract No.: DC/2011/06

Contract Title: *Reprovisioning of Boundary Patrol Road and Associated Security Facilities between Ping Yuen River and Pak Fu Shan and Drainage Works in North District*

Report Period: Nov-13

Item No	Description of Works Process or Activity [see note (a) below]	Justifications for Using Timber in Temporary Construction Works	Est. Quantities of Timber Used (m ³)	Actual Quantities used (m ³)	Remarks
9	Transition formwork & falsework (Portion A,B,C,E)	Temporary formwork & falsework design	154	151	
10	Transition formwork & falsework (Portion A,B,C,E)	Temporary formwork & falsework design	156	155	
11	Transition formwork & falsework (Portion A,B,C,E)	Temporary formwork & falsework design	157	156	
12	Transition formwork & falsework (Portion A,B,C,E)	Temporary formwork & falsework design	160	157	
13	Transition formwork & falsework (Portion A,B,C,E)	Temporary formwork & falsework design	160	157	
14	Transition formwork & falsework (Portion A,B,C,E)	Temporary formwork & falsework design	171	166	
15	Transition formwork & falsework (Portion A,B,C,E)	Temporary formwork & falsework design	178	173	
16	Transition formwork & falsework (Portion A,B,C,E)	Temporary formwork & falsework design	191	186	
Total Estimated Quantity of Timber Used			1974		

Notes

(a) The Contractor shall list out all the work items requiring timber for use in temporary construction works. Several minor work items may be grouped into one for ease of updating.

(b) The summary table shall be submitted to the Engineer's Representative monthly together with the Waste Flow Table for review and monitoring