

**DRAINAGE SERVICES DEPARTMENT (DSD)
CONTRACT NO. DC/2005/02**





**CONSTRUCTION OF SEWERS, RISING MAINS
& SEWAGE PUMPING STATION AT KAM TIN, NAM SANG
WAI AND AU TAU IN YUEN LONG**

Final EM&A Summary Report - Designated Elements

PREPARED FOR

Leader Civil Engineering Corporation Ltd

Quality Index

Date	Reference No.		
14 January 2011	TCS00310/06/600/R1136v2		
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Version No.	Date	Remarks
1	30 December 2010	First Submission
2	14 January 2011	Amended against IEC's comments on 7 January 2011

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Your Ref.:
 Our Ref.: J0511/03.08/10270/L
 Date: 24 January 2011

Director of Environmental Protection
 27/F Southorn Centre
 130 Hennessy Road
 Wan Chai, Hong Kong

By Hand

Attention: EIAO Register Office

Dear Sir,

Contract No. DC/2005/02
Construction of Sewers, Rising Mains and Sewage Pumping Station at Kam Tin
Nam Sang Wai and Au Tau in Yuen Long
Submission of Final EM&A Report for Designated Project (EP-220/2005 Condition 5.5)

We are pleased to submit 3 hard copies and 1 soft copy of the captioned Final EM&A report certified by the ETL and verified by the IEC in accordance with EP Condition 5.5 for your retention.

Should you have any queries, please do not hesitate to contact the undersigned on Tel 2443 9835.

Yours faithfully
 For and on behalf of
Leader Civil Engineering Corporation Limited

PP P-t-k
Vincent Chan
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Encl.

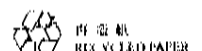
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A MEMBER OF BUILD KING HOLDINGS 利基控股集團成員



EXECUTIVE SUMMARY

- ES.01 Leader Civil Engineering Corporation Limited (the Contractor) was awarded the DSD Contract DC/2005/02 Construction of Sewers, Rising Mains and Sewage Pumping Station at Kam Tin, Nam Sang Wai and Au Tau in Yuen Long (the Project) in December 2005. The construction works of the Project was commenced on 6 April 2006 and construction activities which have potential adverse environmental impact were completed on 31 July 2010.
- ES.02 This is the Final EM&A Summary Report prepared by Action-United Environmental Services & Consulting (AUES), the designated Environmental Team (hereinafter called the "ET") for the Project. This report summarizes the EM&A works of the Project undertaken during baseline and impact monitoring period from 22 February 2006 to 31 July 2010. Due to the substantially completion of the Project, notification of termination of the EM&A Programme for the Project was submitted to relevant parties and approved by IEC on 24 August 2010. The designated major construction works at the Project in accordance with the Environmental Permit (EP-220/2005) is as follows:
- Construction of Kam Tin Pumping Station (P1)
 - Construction of Sha Po Pumping Station (P2)
 - Construction of Nam Sang Wai Pumping Station (P3)
 - Construction of underground sewerage pipeline at Nam Sang Wai Road (S4)
 - Construction of underground sewerage pipeline at Pok Wai South Road (S5 and S6)
- ES.03 Environmental Monitoring and Audit for DC/2005/02 was conducted in accordance with the requirements set out in the Project's Updated EM&A (Designated Elements) Manual. The EM&A programme included monitoring of air quality and construction noise. Weekly site inspections were conducted to ensure the recommended mitigation measures in the EIA were effectively implemented. The implementation of Event Action Plans and complaint handling procedures were also checked.

Air Quality

- ES.04 Air quality monitoring was conducted at 4 designated monitoring stations AM1, AM5, AM6 and AM7 as stipulated in the Updated EM&A (Designated Elements) Manual of the Project. Baseline monitoring for the 1-hour TSP and 24-hour TSP were conducted for continuous two weeks at Locations AM1 and AM7 in February 2006 and at Locations AM5 and AM6 in October 2006. During the impact monitoring phase, a total of 10 Action Level and 12 Limit Level exceedances in air quality were recorded, no direct evidence between the exceedances and the construction site activities of the Project could be established for all non-compliances and therefore no action was required to be taken. It is concluded that the potential dust generating activities of the Project did not cause any noticeable deterioration in air quality to the surrounding of Project's working areas. The average 24-hour TSP level recorded at designated monitoring stations in EM&A programme is similar magnitude with the background TSP concentration of annual average $102 \mu\text{gm}^{-3}$ at Yuen Long AQMS in 1999 recorded by EPD.

Construction Noise

- ES.05 Noise monitoring was conducted at 4 designated noise sensitive receivers NM3, NM4, NM6 and NM7 throughout the baseline and impact monitoring periods. Baseline monitoring for continuous measurement was conducted for seven consecutive days at Locations AM1 and AM7 in February 2006, and at Locations AM5 and AM6 in October 2006. No holiday, evening time or night-time monitoring was preform during the construction period. No exceedance in construction noise and noise complaint received during the impact monitoring period. During construction period, about 93% of monitoring results recorded below 70dB of $L_{\text{eq}30\text{min}}$. Therefore, potential noise generating activities of the Project did not cause any noticeable noise impact to the sensitive receivers. The construction noise levels recorded were generally similar to the predicted construction noise levels in the Project EIA.

Audit Results

- ES.06 Implementation of applicable environmental mitigation measures were observed during weekly site inspections throughout the impact monitoring period. The boundary hoarding of 2.4m height were erected (with a superficial density of at least 20kg/m² and no gap) in accordance with EP-220/2005 Condition 3.1, it was regularly maintained during the construction.

Complaints and Summons and Prosecutions

- ES.07 No complaint was made against the construction works of the Project since the commencement of the Project. Furthermore, no summon or prosecution was received or recorded since commencement of the Project.

Conclusions and Recommendations

- ES.08 The construction works under the Project did not cause any unacceptable environmental impacts or disturbance to the air quality and noise in the vicinity of Kam Tin, Nam Sang Wai and Au Tau during the construction period. Based on the monitoring data collected and reviewed during the construction period, it can be confirmed that the EM&A programme is effective. Any deterioration in environmental condition was readily detected and timely actions were taken to rectify any non-compliance. Erection of noise barrier hoarding as a construction noise mitigation measures was effectively in reducing the noise disturbance to the vicinity of the working areas.

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1. INTRODUCTION

BASIC INFORMATION

- 1.01 In January 1999, the Environmental Protection Department completed the “Review of Yuen Long and Kam Tin Sewerage and Sewage Disposal Requirements” Study. The Study assessed the adequacy of the existing sewerage infrastructure in North West New Territories and recommended the provision of sewerage, sewage treatment and disposal facilities to cater for the demand arising from increasing population and developments. The proposed trunk sewerage at Kam Tin, Nam Sang Wai and Au Tau is one of the recommendations.
- 1.02 During the Studying stage, there is no public sewerage at Kam Tin and Nam Sang Wai. Sewage generated from these areas is treated and disposed of by means of privately owned sewage treatment plants or septic tank and soakaway systems. The Study recommended the provision of the trunk sewerage to collect the sewage and convey it to the Yuen Long Sewage Treatment Works for treatment. This will help alleviate the water pollution problem in the areas and the downstream Deep Bay, and to cope with the increasing sewerage demands arising from future population increase at Kam Tin and Nam Sang Wai. The existing sewers at Au Tau are unable to cope with the sewage flow arising from a projected population of about 12 000 in the upcoming developments in the area. The study recommended the upgrading some of the existing trunk sewers at Au Tau to cope with the demand.
- 1.03 In December 2005, Leader Civil Engineering Corporation Ltd (the Contractor) was awarded the DSD Contract DC/2005/02 Construction of Sewers, Rising Mains and Sewage Pumping Station at Kam Tin, Nam Sang Wai and Au Tau in Yuen Long (the Project). The Project is part of the Yuen Long and Kam Tin Sewerage and Sewage Disposal (YLKTSSD) Scheme. The Project involved construction of 7.5 kilometres gravity sewers and manholes, three sewage pumping stations and associated 5.7 kilometres twin rising mains and chambers at Kam Tin, Nam Sang Wai and Au Tau. Construction works under the Project was predicted to be completed in May 2009. Finally the Project was completed on 31 July 2010. A site layout map showing the site boundary and the work areas is shown in **Annex A**.
- 1.04 This is the Final EM&A Summary Report prepared by Action-United Environmental Services & Consulting (AUES), the designated Environmental Team (hereinafter called the “ET”) for the Project. This report summarizes the EM&A works of the Project undertaken during baseline and impact monitoring period from 22 February 2006 to 31 July 2010. Termination of the EM&A Programme for the Project was submitted to relevant parties and approved by IEC on 24 August 2010.

PROJECT ORGANIZATION

- 1.05 The organization and lines of communication among the Project Proponent, Engineer Representative (ER), Independent Environmental Checker (IEC), the Contractor and the Environmental Team (ET) was set up for the Project. The organization and contact details are shown in **Annex B**.

PROJECT PROGRAMME AND WORKS UNDERTAKEN DURING THE ENTIRE CONSTRUCTION PERIOD

- 1.06 The construction works of the Project commenced on 6 April 2006 and all construction activities that had the potential to result in adverse environmental impact were completed on 31 July 2010. Construction programmes for the Project are presented in respective monthly EM&A reports. Works undertaken during the entire construction period are presented in **Annex C**. Major works undertaken include:
- Construction of Kam Tin Sewage Pumping Station to the capacity of 17,133m³ per day (maximum average dry weather flow up to 25,700m³ per day);
 - Construction of Sha Po Sewage Pumping Station to the capacity of 8,795m³ per day (maximum average dry weather flow up to 13,200m³ per day);

- Construction of Nam Sang Wan Sewage Pumping Station to the capacity of 42,921m³ per day (maximum average dry weather flow up to 64,400m³ per day);
- Construction of sewer pipeline within the “Conservation Area” zone in the Nam Sang Wai; and
- Construction of sewer pipeline within the “Conservation Area” zone in the Pok Wai South Road

WORK UNDERTAKEN DURING THE REPORTING PERIOD WITH ILLUSTRATIONS

- 1.07 A summary of environmental mitigation measures implemented during the construction period is shown in **Table 1-1**.

Table 1-1 Work Undertaken in Construction Period with Illustrations of Mitigation Measures

Environmental Mitigation Measures	EM&A Ref.
<ul style="list-style-type: none"> • Erect 2.4m high noise barrier hoarding around the works area at P1, P2 and P3 • Remove dust and spray water at the construction access • Cover the stockpiles of dusty material properly • Spray water to all dusty materials immediately before loading and unloading • Wash the wheels of vehicles before leaving the site • Install and use power-operated cover at the dump trucks • spray water at the pavement breaking locations • Spray the working area of excavation frequently • Maximize the use of quiet PME on site • Apply and obtain appropriate waste disposal licenses • Restrict open fires and provide fire fighting equipment in the works area • Perform weekly inspection with ET and monthly audit with IEC • Conduct noise and dust monitoring as per EM&A manual during construction • Provide sedimentation tanks for treating site discharge. • Recycle wheel washing water and provide sedimentation tanks for treating site discharge. • Implement trip-ticket system for waste disposal 	A1, A2, A3, A4, A5, A6, A7 & A8 B1, B2 & D1, D2, D3 & D4 F5, F6 & F9 H1, I1 & I2

- 1.08 In according EP-220/2005 requirement, photograph record of 2.4m high noise barrier implementation for the Project is shown in **Annex D**.

APPLICATION AND SUBMISSION

- 1.09 In the construction period, application of the permits, licences, and/or notifications on environmental protection for this Project summarized in **Table 1-2**.

Table 1-2 Application of Environmental Licenses and Permits in the Construction Period

Item	Item Description	Permit Status
1	Environmental Permit No.: EP-220/2005	Issued in June 2005
2	Air Pollution Control (Construction Dust)	Notified EPD on 24 Dec 2005
3	Chemical Waste Producer Registration (5213-528-L2544-08)	Registration on 27 Jan 2006
4	Water Pollution Control (Discharge license No. 1U434/1)	Applied to EPD on 7 Feb 2006
5	Account for Disposal of Construction Waste No. 5004959	Registration on 27 Dec 2005
6	Construction Noise Permit (CNP No. PP-RN0017-06)	Valid (1 Jun to 2 Dec 2006)
7	Construction Noise Permit (CNP No. PP-RN0036-06)	Valid (8 Dec 2006 to 07 Apr 2007)
8	Construction Noise Permit (CNP No. GW-RN0250-06)	Valid (20 May 2006 to 03 Nov 2006)
9	Construction Noise Permit (CNP No. GW-RN0299-06)	Valid (08 Jun 2006 to 30 Sep 2006)
10	Construction Noise Permit (CNP No. GW-RN0591-06)	Valid (8 Dec 2006 to 07 Apr 2007)
11	Construction Noise Permit (CNP No. PP-RN0001-07)	Valid (7 Mar 2007 to 06 Dec 2007)
12	Construction Noise Permit (CNP No. PP-RN0004-07)	Valid (7 May 2007 to 06 Feb 2008)
13	Construction Noise Permit (CNP No. GW-RN0083-07)	Valid (8 Mar 2007 to 07 Sep 2007)
14	Construction Noise Permit (CNP No. GW-RN0118-07)	Valid (28 Mar 2007 to 27 Sep 2007)
15	Construction Noise Permit (CNP No. GW-RN0183-07)	Valid (03 May 2007 to 02 Nov 2007)
16	Construction Noise Permit (CNP No. GW-RN0355-07)	Valid (24 Aug 2007 to 23 Feb 2008)

Item	Item Description	Permit Status
17	Construction Noise Permit (CNP No. GW-RN0379-07)	Valid (09 Sep 2007 to 02 Mar 2008)
18	Construction Noise Permit (CNP No. GW-RN0479-07)	Valid (06 Nov 2007 to 05 May 2008)
19	Construction Noise Permit (CNP No. PP-RN0008-08)	Valid (22 May 2008 to 21 Feb 2009)
20	Construction Noise Permit (CNP No. GW-RN0480-07)	Valid (06 Nov 2007 to 05 May 2008)

- 1.10 During the construction period, a total fifty-two (52) of EM&A monthly reports and 8 bi-annual summary reports were submitted for IEC verification and EPD endorsement. The detailed submission of the Project is listed in *Table 1-3*.

Table 1-3 Detailed EM&A Submission of the Project in Construction Period

Item	Description of Report
1	Updated Environmental Monitoring and Audit (Designated Elements) Manual
2	Baseline Monitoring Report (Designated Elements)
3	Baseline Monitoring Report of AM6 & NM6 (Designated Elements)
4	Baseline Monitoring Report of AM5 & NM7 (Designated Elements)
5	Monthly EM&A Report – April 2006
6	Monthly EM&A Report – May 2006
7	Monthly EM&A Report – June 2006
8	Monthly EM&A Report – July 2006
9	Monthly EM&A Report – August 2006
10	Monthly EM&A Report – September 2006
11	Monthly EM&A Report – October 2006
12	Monthly EM&A Report – November 2006
13	Monthly EM&A Report – December 2006
14	Monthly EM&A Report – January 2007
15	Monthly EM&A Report – February 2007
16	Monthly EM&A Report – March 2007
17	Monthly EM&A Report – April 2007
18	Monthly EM&A Report – May 2007
19	Monthly EM&A Report – June 2007
20	Monthly EM&A Report – July 2007
21	Monthly EM&A Report – August 2007
22	Monthly EM&A Report – September 2007
23	Monthly EM&A Report – October 2007
24	Monthly EM&A Report – November 2007
25	Monthly EM&A Report – December 2007
26	Monthly EM&A Report – January 2008
27	Monthly EM&A Report – February 2008
28	Monthly EM&A Report – March 2008
29	Monthly EM&A Report – April 2008
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38	Monthly EM&A Report – January 2009
39	Monthly EM&A Report – February 2009
40	Monthly EM&A Report – March 2009
41	Monthly EM&A Report – April 2009
42	Monthly EM&A Report – May 2009
43	Monthly EM&A Report – June 2009
44	Monthly EM&A Report – July 2009
45	Monthly EM&A Report – August 2009
46	Monthly EM&A Report – September 2009
47	Monthly EM&A Report – October 2009
48	Monthly EM&A Report – November 2009

Item	Description of Report
49	Monthly EM&A Report – December 2009
50	Monthly EM&A Report – January 2010
51	Monthly EM&A Report – February 2010
52	Monthly EM&A Report – March 2010
53	Monthly EM&A Report – April 2010
54	Monthly EM&A Report – May 2010
55	Monthly EM&A Report – June 2010
56	Monthly EM&A Report – July 2010
57	Bi-annual EM&A Summary Report (April 2006 – September 2006)
58	Bi-annual EM&A Summary Report (October 2006 – March 2007)
59	Bi-annual EM&A Summary Report (April 2007 - September 2007)
60	Bi-annual EM&A Summary Report (October 2007 – March 2008)
61	Bi-annual EM&A Summary Report (April 2008 - September 2008)
62	Bi-annual EM&A Summary Report (October 2008 – March 2009)
63	Bi-annual EM&A Summary Report (April 2009 - September 2009)
64	Bi-annual EM&A Summary Report (October 2009 – March 2010)

2. MONITORING AND AUDIT REQUIREMENT UNDER THE PROJECT

MONITORING LOCATION

- 2.01 The Project, four designated air quality and four noise monitoring stations had been performed for EM&A programme in accordance with the Updated EM&A (Designated Elements) Manual during the construction period. The location of monitoring stations detailed to list in *Table 2-1* and geographic shown in *Annex E*.

Table 2-1 Work Undertaken in Reporting Period with Illustrations of Mitigation Measures

Aspect	Station ID	Nature of Premise	Station Coordinates	
			Northern	Eastern
Air Quality	AM1	Site Boundary in NSW	835829	822910
	AM5	Site Boundary in FKH	835121	823515
	AM6	Site Boundary in KT	833308	823987
	AM7	Site Boundary in NSW	836171	822586
Construction Noise	NM3	Village House in NSW	835808	822817
	NM4	Village House in NSW	835282	822811
	NM6	Village House in KT	833288	823999
	NM7	Village House in FKH	835121	823495

MONITORING PARAMETERS

- 2.02 Environmental monitoring and audit requirements are set out in the Updated EM&A manual. Air quality and construction noise have been identified to be the key monitoring parameters during the impact phase for the construction of the project.
- 2.03 A summary of the impact EM&A requirements for air quality and construction noise as per the project Updated EM&A Manual are shown in *Table 2-2*.

Table 2-2 Summary of EM&A Requirements

Environmental Aspect	Monitoring Parameters
Air Quality	24-hour TSP
Construction Noise	Leq 30min during day time 07:00 to 19:00
	Supplementary L10 and L90 for reference.

ENVIRONMENTAL QUALITY PERFORMANCE LIMITS

Air Quality

- 2.04 Baseline monitoring of 1-hour TSP and 24-hour TSP was conducted for a continuous period of two weeks at Locations AM1 and AM7 in February 2006, and at Locations AM5 and AM6 in October 2006. Based on result findings, Action and Limit levels of air quality established is shown in Table 2-3.

Table 2-3 Action and Limit Levels for Air Quality Monitoring

Monitoring Location	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
AM1	391	184	500	260
AM5	353	237	500	260
AM6	329	183	500	260
AM7	383	204	500	260

Construction Noise

- 2.05 Baseline monitoring of continuous noise measurement was conducted for seven consecutive days at Locations AM1 and AM7 in February 2006, and at Locations AM5 and AM6 in October 2006. The Action/Limit (A/L) Levels of construction noise established is shown in *Tables 2-4*.

Table 2-4 Action and Limit Levels for Construction Noise

Parameter	Action Level in dB(A)	Limit Level in dB(A)
0700-1900 hours on normal weekdays	When one or more documented complaints are received	75 dB(A)

MONITORING OF FREQUENCY IN CONSTRUCTION PERIOD

Air Quality of 24-Hour TSP Monitoring

- 2.06 The impact 24-hour TSP monitoring was conducted at the designated stations once every 6 days in accordance with the Updated Environmental Monitoring and Audit (Designated Elements) Manual.

Construction Noise of Leq_{30min} Monitoring

- 2.07 The impact noise monitoring was conducted at the designated stations once every 6 days in accordance with the Updated Environmental Monitoring and Audit (Designated Elements) Manual.

EVENT AND ACTION PLAN

- 2.08 An Event Action Plans for air quality and construction noise for the Project are presented in *Annex F*.

ENVIRONMENTAL MITIGATION MEASURES

- 2.09 The environmental mitigation measures for the Project stipulated in EIA are showed in *Annex G*.

3. AIR QUALITY

MONITORING RESULTS

3.01 The baseline and impact air quality monitoring data are provided in the baseline monitoring reports and monthly EM&A reports respectively.

3.02 During the construction period, there have had 846 successful and 124 unsuccessful events were recorded. The unsuccessful events are due to power supply failure or shortage. The events of air quality monitoring as counted in each monitoring stations is listed in *Table 3-1*.

Table 3-1 Total Air Quality Monitoring Undertake in Construction Period

Station	24-Hr TSP Monitoring Event		Commencement Date	Cease Date
	Successful	Unsuccessful		
AM1	211	51	7 April 2006	28 July 2010
AM5	216	6	5 December 2006	28 July 2010
AM6	203	21	23 November 2006	28 July 2010
AM7	216	46	7 April 2006	28 July 2010

3.03 As within the construction period, air quality of 24-Hr TSP recorded is summarized in *Table 3-2*.

Table 3-2 Summary of Air Quality Monitoring Result in Construction Period

Monitoring Station	Minimum Value		Maximum Value		Averaged Dust Concentration ($\mu\text{g}/\text{m}^3$)
	Dust Concentration ($\mu\text{g}/\text{m}^3$)	Date of Record	Dust Concentration ($\mu\text{g}/\text{m}^3$)	Date of Record	
AM1	14	26 Jul 08	295	02 Feb 09	85
AM5	10	05 Dec 08	385	23 Apr 09	100
AM6	11	15 Jul 08	567	29 Nov 08	61
AM7	10	19 Aug 08	304	29 Oct 09	52
		30 Aug 08			
		20 Oct 08			

3.04 Graphical presentation of the trend of 24-hour TSP over the impact monitoring period is provided in *Annex H*.

NON-COMPLIANCE (EXCEEDANCES) OF THE ENVIRONMENTAL QUALITY PERFORMANCE LIMITS (ACTION AND LIMIT LEVELS)

3.05 Throughout the construction monitoring period, there were 5 Action Level and 3 Limit Level exceedances recorded at Location AM1, 1 Action Level and 7 Limit Level exceedances for Location AM5, 3 Action Level and 1 Limit Level exceedances for Location AM6 and 1 Action Level and 1 Limit Level exceedances for Location AM7. The exceedances recorded at 4 stations are summarized in *Table 3-3*.

Table 3-3 Detail Air Quality Exceedance at the Monitoring Stations

Station	Action Level ($\mu\text{g}/\text{m}^3$)	Limit Level ($\mu\text{g}/\text{m}^3$)	Date of Exceeded	Concentration ($\mu\text{g}/\text{m}^3$)	Exceedance Level	
					Action	Limit
AM1	184	260	11 Nov 06	231	✓	
			17 Dec 08	247	✓	
			30 Dec 08	185	✓	
			15 Jan 09	203	✓	
			02 Feb 09	295		✓
			09 Mar 09	196	✓	
			03 Dec 09	265		✓
AM5	237	260	28 Jan 10	276		✓
			3 Dec 09	257	✓	
			14 Mar 09	283		✓
			23 Apr 09	385		✓
			5 Oct 09	278		✓
			10 Oct 09	307		✓

Station	Action Level ($\mu\text{g}/\text{m}^3$)	Limit Level ($\mu\text{g}/\text{m}^3$)	Date of Exceeded	Concentration ($\mu\text{g}/\text{m}^3$)	Exceedance Level	
					Action	Limit
			29 Oct 09	271		✓
			10 Nov 09	267		✓
			28 Jan 09	299		✓
AM6	183	260	13 May 08	205	✓	
			25 Oct 08	187	✓	
			29 Nov 08	567		✓
			15 Dec 09	224	✓	
AM7	204	260	02 Mar 09	210	✓	
			29 Oct 09	304		✓
Total					10	12

Actions Taken in the event of Air Quality Non-Compliance

- 3.06 Other than the mitigation measures implemented as mentioned in Section 2.9 and Table 1-1, in the event of non-compliance, actions were taken in accordance with the Event-Action Plan in the Updated Environmental Monitoring and Audit (Designated Elements) Manual. Once non-compliances recorded, the Contractor would notify all relevant parties immediately. Investigation was then carried out of identification of non-compliance such as identifying the air pollution sources, checking the implementation status of the mitigation measures, etc. Further investigation was carried out to identify the source of pollution when deemed necessary. In summary, no direct evidence between the exceedances and the construction activities for the Project could be established for all non-compliances and therefore no action was required to be taken.

Review of Reasons for and the implications of Non-Compliance

- 3.07 A total of 10 Action Level and 12 Limit Level exceedances were recorded during the 24-hr TSP impact monitoring period. Investigation for the possible causes of each exceedance was undertaken and reported in the respective monthly EM&A reports. Based on the information provided by the Contractor, dust suppression measures were implemented and no non-compliant on work method and construction plant was observed. All exceedances were not related to the works of the project.

ENVIRONMENTAL ACCEPTABILITY OF THE PROJECT

- 3.08 Other than a few isolated events, at least 96% of the 24-hour TSP monitoring results were well below the Action and Limit levels. The trend of TSP at AM1, AM5, AM6 and AM7 monitoring stations were comparable to the baseline range and showed no noticeable deterioration of air quality during the impact monitoring period.
- 3.09 Potential dust generating activities of the Project did not cause any noticeable deterioration in air quality at Kam Tin, Nam Sang Wai and Au Tau in Yuen Long. With proper implementation of air quality mitigation measures, the monitoring results showed no adverse air quality impact at the monitoring location except for a few isolated and short-term incidents.

AIR QUALITY MONITORING RESULTS COMPARE WITH EIA PREDICTIONS

- 3.10 Kam Tin and Nam Sang Wai areas are located within a new development area. The air pollution source within the working site is dominated by vehicle emissions from the Kam Tin Road, Kam Sheung Road, Route 3, Fan Kam Road, Route Twisk and cross boundary fluxes of pollutants. There is currently no EPD air quality monitoring station (AQMS) in operation in the Kam Tin and Nam Sang Wai areas. The most representative is the nearest station which located in Yuen Long. The annual average background TSP concentration monitored at Yuen Long AQMS in 1999 was $102 \mu\text{g}/\text{m}^3$.
- 3.11 No TSP level was predicted by the Project EIA at the designated monitoring stations and therefore, no comparison of EM&A data with EIA predictions could be made. Annual

average of 24-hour TSP levels at the designated monitoring stations AM1, AM5, AM6 and AM7 during the construction period had the potential to result in adverse environmental impact are summarized in *Table 3-4*.

Table 3-4 Annual Average of 24-hour TSP Monitoring Results During Construction Period

Monitoring Station	Dust Concentration Level annual Average ($\mu\text{g}\text{m}^{-3}$)					Average ($\mu\text{g}\text{m}^{-3}$)	Yearly Dust Concentration Average ($\mu\text{g}\text{m}^{-3}$) Recorded by EPD		Hong Kong Air Quality Objectives ($\mu\text{g}\text{m}^{-3}$)
	2006	2007	2008	2009	2010		1999	2005	
AM1	84*	68	86	98	132*	85	102	104	80
AM5	197*	93	73	139	86*	100			
AM6	93*	57	64	60	56*	61			
AM7	60*	41	40	70	115*	52			

Remarks: (*) the average result is not covered whole year period.

- 3.12 The annual average 24-hour TSP Level recorded at Locations AM1, AM5, AM6 and AM7 in the past were in similar magnitude or well below the annual average TSP dust level recorded by EPD in 1999 and 2005 prior the Project commencement except for AM5 in 2009. Consider that Location AM5 is located near to San Tam Road and San Tin Highway and high traffic flow always were observed all the time. Therefore, high dust detections are likely due to the traffic dust generation.

PRACTICALITY AND EFFECTIVENESS OF THE EIA PROCESS AND THE EM&A PROGRAMME

- 3.13 Monitoring and auditing of air quality was recommended for the construction phase of the Project in the EIA to ensure no exceedance of the TSP standard at the sensitive receiver.
- 3.14 The air quality monitoring methodology was effective in monitoring the air quality impacts of the Project. Baseline monitoring of 1-hour and 24-hour TSP helped to determine the ambient TSP levels at the sensitive receiver prior to commencement of construction works. During construction phase of the Project, impact monitoring of 24-hour TSP helped to determine whether the Project induced unacceptable air quality impacts to the sensitive receiver. As the scope of the Project mainly includes formation and infrastructure work of three sewer pumping stations and sewerage pipeline construction only, dust generation comes from the construction activities is the key concern during the construction phase. The monitoring of TSP was therefore considered to be cost effective for the Project.
- 3.15 All recommended mitigation measures were applicable to the Project. As discussed above, the Project did not cause unacceptable air quality impacts. However, the Project was divided for several working area, so C&D waste, excavated soil and construction material cannot be stored at working area as spare area was limited. Those materials would immediately transfer to the dump trucks by excavator or the mobile crane lorry and transport to the filling area via specified routes disposal. Watering as a dust suppression measure was applied at the transferring area and the specified routes. Therefore, the implemented mitigation measures were effective and efficient in controlling air quality impacts.
- 3.16 Monitoring and audit of 24-hour TSP levels had ensured that any deterioration in air quality was readily detected and timely actions taken to rectify any non-compliance. Assessment and analysis of 24-hour TSP results collected throughout the baseline and impact monitoring periods also demonstrated the environmental acceptability of the Project. Weekly site inspections had ensured that the EIA recommended air quality mitigation measures were effectively implemented. The EM&A program is considered to be cost effective.

CONCLUSION

- 3.17 Air quality monitoring for the Project was conducted during the baseline and impact monitoring periods. Key construction activities of the Project including excavation, back

filling and public fill of the waste. The trend of 24-hour TSP was comparable to the baseline range and showed no noticeable deterioration of air quality during the monitoring period. Although exceedances were recorded, they were isolated and short-term events. There is no evidence of long-term deteriorating trend.

- 3.18 The average values of 24-hour TSP monitoring results recorded at Locations AM1, AM5, AM6 and AM7 in the past were in similar magnitude or well below the average TSP dust level recorded by EPD in 1999 and 2005 prior the Project commencement except for AM5 in 2009. Consider that Location AM5 is located near San Tam Road and San Tin Highway, high traffic flow always were observed all the time. Therefore, high dust detections was likely due to the traffic dust generation. Air quality mitigation measures implemented were effective in controlling air quality impacts.

4. CONSTRUCTION NOISE OF LEQ, 30 MINUTES MONITORING

MONITORING RESULTS

- 4.01 The baseline and impact noise monitoring data are provided in the baseline monitoring reports and monthly EM&A reports respectively.
- 4.02 Noise Impact monitoring throughout the construction period, total of 962 events had been undertaken at the four designated noise sensitive receivers. The detailed information of noise monitoring is listed *Table 4-1*.

Table 4-1 Construction Noise Monitoring Undertake in Construction Period

Station	Event of Construction Noise Monitoring	Commenced Date	Ceased Date
NM3	261	7 April 2006	29 July 2010
NM4	261	7 April 2006	29 July 2010
NM6	222	18 November 2006	29 July 2010
NM7	218	12 December 2006	29 July 2010

- 4.03 The measured impact noise levels of the Project for each monitoring station are summarized in *Table 4-2*.

Table 4-2 Summary of Construction Noise (Leq_{30min}) Monitoring Result

Monitoring Station	Average Impact Noise Levels (dB(A))	Range of Impact Noise Level (dB(A))	Impact Noise Level dB(A) Recorded Percent (%)				
			75 – 70 dB(A)	70 – 65 dB(A)	65 – 60 dB(A)	60 – 50 dB(A)	Below 50 dB(A)
NM3	56.2	45.7 – 74.3	0.77	5.74	14.18	69.35	9.96
NM4	59.5	47.9 – 74.9	4.21	10.35	30.27	53.25	1.92
NM6	61.0	51.2 – 74.9	6.76	18.01	24.33	50.90	0.00
NM7	56.5	45.9 – 70.1	0.46	2.29	17.43	76.15	3.67

- 4.04 The graphical of construction noise measurement result is showed in *Annex H*.

ENVIRONMENTAL ACCEPTABILITY OF THE PROJECT

- 4.05 All construction noise monitoring were recorded below 75dB of the Limit Level stipulation. Moreover, no related noise nuisance complaint (Action Level) was received to under the Project in throughout construction period. The trend showed no noticeable noise impact from the Project during the impact monitoring period.

COMPARISON OF EM&A RESULTS WITH EIA PREDICTIONS

- 4.06 The EIA predicted that noise emitted by the use of Powered Mechanical Equipment (PME) on site at Kam Tin, Nam Sang Wai and Au Tau in Yuen Long for each activity during different periods of time would be the major source of noise impact during construction of the Yuen Long and Kam Tin Sewerage and Sewage Disposal (YLKTSSD) Scheme. The predicted cumulative noise impacts of construction activities of the Project and associated developments with the concurrent projects are summarized in *Table 4-3* (extracted from *Annex A* Tables A4-1 to A4-8 of the EIA Report).

Table 4-3 Predicted Cumulative Construction Noise Levels in EIA Study

EIA NSR ID	EM&A Station ID	Cumulative Impacts (no mitigation measures)				Cumulative Impacts (with mitigation measures)			
		2003	2004	2005	2006	2003	2004	2005	2006
D12	AM3	98	98	98	98	88	88	88	88
D11	AM4	82	82	82	82	71	71	71	71
D17	NM6	87	86	86	81	74	73	73	67
D18	NM7	88	87	87	84	76	75	75	74

- 4.07 The impact noise levels recorded in the construction period were mostly within the predicted construction noise levels in the EIA Report except D12/AM3. The receiver D12/AM3 is well below the EIA prediction.

PRACTICALITY AND EFFECTIVENESS OF THE EIA PROCESS AND THE EM&A PROGRAMME

- 4.08 Monitoring and auditing of construction noise was recommended for the construction phase of the Project in the EIA process to ensure compliance with the appropriate criterion at the receivers.
- 4.09 The noise monitoring methodology was effectively monitor the noise impacts of the Project. Baseline noise monitoring determined the ambient noise levels at the sensitive receivers prior to commencement of construction works. During periods when possible noise generating construction activities were on-going, impact noise monitoring would determine whether the Project caused adverse noise impacts on the sensitive receivers. The impact noise monitoring which focus on Leq, 30 minutes during daytime is therefore considered to be cost effective for the Project.
- 4.10 Noise mitigation measures recommended in the EIA Report were stipulated in the EM&A Manual for the Contractor to implement during the construction phase of the Project. The list of noise mitigation measures is depicted in *Annex G*. All recommended mitigation measures were applicable to the Project. As discussed above, the Project did not cause adverse noise impacts to the receivers. Therefore, the mitigation measures implemented were effective and efficient in controlling noise impacts.
- 4.11 Assessment and analysis of noise results collected throughout the baseline and impact monitoring periods demonstrated the environmental acceptability of the Project. Weekly site inspections ensured that the EIA recommended noise mitigation measures were effectively implemented. The EM&A program is considered to be cost effective.

CONCLUSION

- 4.12 No exceedance including Action and Limit Levels were recorded. The trend of Leq was comparable to the baseline range and showed no noticeable noise impact during the impact monitoring period. The average impact noise levels recorded in EM&A programme were mostly within the range of the construction noise levels predicted in the EIA except D12/AM3. The receiver D12/AM3 is well below the EIA prediction. Noise mitigation measures implemented were effective in controlling noise impacts.

5. LAND CONTAMINATION

- 5.01 As part of the Project, contamination assessment was undertaken in accordance with the Contamination Assessment Plan (CAP) prepared under the Contract “Yuen Long and Kam Tin Sewerage and Sewage Disposal Stage 1 Sewers, Rising Mains and Ancillary Pumping Stations EIA and Traffic Impact Assessment (Agreement No. CE 31/99)”.
- 5.02 In accordance with the CAP of EIA report, there were 11 designated potential contamination areas located within the Project and is listed in **Table 5-1**.

Table 5-1 Designated Potential Contamination Areas within the Project

Potentially Contaminated Site No	Site Activities	Responsible Contract
666b	Vacant Land area along dirt road	GE/2002/14
1	Small Scrap and Storage Yard, with construction materials and equipment	GE/2002/14
2	Vehicle/Motor Components, with some trailer storage	DC/2005/02
3	Scrap Yard / Temporary Concrete Batching Plant	GE/2002/14
3a	Scrap Yard / Scrap and Construction Material Storage	DC/2005/02
3c	Temporary Concrete Batching Plant / San Tin Vehicle Maintenance	GE/2002/14
4	San Tin Vehicle Maintenance	GE/2002/14
6a	Scrap Metal Storage	GE/2002/14
6b	Equipment and Materials Storage	GE/2002/14
7	Jaguar, Tai Hing Motor Companies	GE/2002/14
13	Vacant Land; some storage	DC/2005/02

- 5.03 Site investigation was separated to two government contracts. Phase 1 site investigation (SI) under the Civil Engineering and Development Department (CEDD) Contract GE/2002/14 was undertaken between 26 Nov and 14 Dec 2004 as covered the potentially contaminated areas including 666d, 1, 3, 3c, 4, 6a, 6b and 7. Phase 2 SI work at the other residual areas was responsible undertaken by the Project between 24 May and 6 June 2006. The location of potentially contamination areas and sampling points are shown in **Annex I**.

ASSESSMENT RESULTS

- 5.04 Total 66 soil and 20 water samples were collected from two phase of SI and delivered to laboratory to carry out chemical analysis in accordance with the CAP of EIA report requirement. Result summary of chemical analysis soil and groundwater show in **Annex J**.
- 5.05 The assessment results were evaluated against the Dutch’s assessment criteria in accordance with the ProPECC Note PN 3/94 Contaminated Land Assessment and Remediation. The Dutch “A-B-C” criterion was a local remediation standard at that time. Furthermore, remediation perform is depended samples exceeded Dutch Level “B” or not.

COMPARISON OF CHEMICAL RESULTS WITH DUTCH’S ASSESSMENT CRITERIA

Assessment Results of Soil Samples

- 5.06 The chemical analysis results were compared with Dutch’s assessment criteria, there had 15 representative soil samples to exceed Dutch “B” criterion, and summarized in **Table 5-2**.

Table 5-2 Summary of Soil Samples Exceeding Dutch Level “B”

Site Area	Borehole No	Depth (m bgl)	Exceedance of Dutch Level B					
			SVOC (mg/kg)	Dutch List Metals (mg/kg)				
			Benzo(a)pyrene	Arsenic	Lead	Copper	Zinc	Barium
Dutch “B” Criteria Limit			1.0	30	150	100	500	400
666a	C1	0.5		99		175		
666a	C1	1.0		39				
1	C4	0.5		224				

Site Area	Borehole No	Depth (m bgl)	Exceedance of Dutch Level B					
			SVOC (mg/kg)	Dutch List Metals (mg/kg)				
			Benzo(a)pyrene	Arsenic	Lead	Copper	Zinc	Barium
Dutch "B" Criteria Limit			1.0	30	150	100	500	400
1	C4	1.0		236				
3a	C7	0.5		66		663		
3a	C7	3.0				100		
6a	C16	1.0			218			
2	C3	0.50		101				
2	C3	1.55 – 2.00		405				
2	C3	2.95 – 3.40		51				
1	C5	0.50		110				
1	C5	1.50		520	1120			
1	C5	2.85 – 3.25		31				
3a	C6	1.50	5.0		714	1270	711	454
13	C25	1.50	2.5					

NON-COMPLIANCE (EXCEEDANCES) OF THE REMEDIATION CRITERIA (DUTCH "B" LEVEL)

- 5.07 According to assessment results, cement stabilization onsite treatment methodology was proposed for remediation in accordance with the government guidelines and the contract requirements. 71m³ of contaminated soil is initially requested for remediation.
- 5.08 The remediation work was undertaken between April 2007 and September 2007. Total of 98 confirmatory soil samples were collected before the remediation to confirm whether the remediation area need to be extended. The related chemical analysis of confirmatory soil show in *Annex J*. As 4 confirmatory soil samples collected at Site 6a were found exceed the Dutch "B" level, remediation at Site 6a was needed to extend in accordance to EPD requirement. Extra 90m³ contaminated soils were carried out remediation. Finally, there have about 161m³ contaminated soils were treated with cement stabilization; and the products of successful treatment disposed as filling materials on the Project site.

CONCLUSION

- 5.09 Land contamination assessment for the Project was conducted before the construction work commenced at the potential contamination area. Excavation soil at sites including drainage trench and the foundation of pump stations is compliance with the current Environmental Regulations requirements for the disposal.
- 5.10 The identified contamination areas were successfully carried out the remediation. The rest of soil below existing ground at the already assessed areas is considered acceptance; and no further remediation action should request for those areas.

6. GENERAL REQUIRMENTS SITE INSPECTION AND AUDITING

SITE INSPECTION AND AUDITING

- 6.01 Representatives of the Engineer, the Contractor and ET carried out weekly joint site inspection throughout the Construction period to evaluate the site environmental performance. Moreover, monthly joint site audit with IEC were conducted once per month. The relevant environmental site inspection checklists and IEC site audit reports were presented in the related monthly EM&A reports. Throughout the construction period, regular joint site weekly inspection or audit were carried out a total 223 events which included 48 occasions with IEC joint site audit.
- 6.02 During the construction period, total 330 observations and 5 reminders were found by ET during the regular weekly site inspections. Also, total 116 observations, 7 reminders and 1 non-compliance were recorded by IEC in monthly audit. However, 1 non-compliance was recorded by IEC on 31 October 2008 which is uniquely once found for the Project. The non-compliance was regarded to the direct discharge of site effluent at construction site of Kam Tin Pumping Station. The Contractor has taken immediate action which make sure all the effluent was passing through the sedimentation tank prior discharge out of the site. Overall, all the deficiencies recorded during weekly site inspection and audit were rectified within the specified deadlines.

SOLID AND LIQUID WASTE MANAGE

- 6.03 Total quantities of waste for disposal or reuse in the construction period are summarized in **Tables 6-1 and 6-2.**

Table 6-1 Total Quantities of Waste for Disposal in the Construction Period

Type of Waste	Quantity	Disposal Location
C&D Materials (Inert) (tons) – Disposed	116,332.68	Tuen Mun 38 Fill Bank
C&D Materials (Inert) (tons) – Reused	36,079.30	DSD Contract DC/2005/02
C&D Materials (Non-Inert) (tons)	36,878.00	NENT
Chemical Waste (tons)	1,913.30	License Collector
General Refuse (tons)	1,019.29	Refuse Collector

Table 6-2 Total Quantities of Waste for Reuse/Recycling in the Construction Period

Type of Waste	Quantity	Disposal Location
Metals for Recycling (kg)	86,425.35	Recycling Company
Paper for Recycling (kg)	1,353.0	Recycling Company
Plastics for Recycling (kg)	562.0	Recycling Company

- 6.04 During the construction period, no site effluent was discharged but it was estimated that at the most 50m³ of surface runoff would be made in each reporting month.

RECORD OF ENVIRONMENTAL COMPLAINTS RECEIVED

- 6.05 During the construction period, no any environmental complaints were received by the DSD, ER, Contractor and EPD.

RECORD OF NOTIFICATIONS OF SUMMONS AND SUCCESSFUL PROSECUTION

- 6.06 During the construction period, no any notifications of summons and successful prosecution were recorded as under the Project.

7. CONCLUSIONS AND RECOMMENDATIONS

- 7.01 Environmental Monitoring and Audit for DC/2005/02 was conducted in accordance with the requirements set out in the Project's Updated EM&A (Designated Elements) Manual. The EM&A programme included monitoring of air quality and construction noise. Termination of the EM&A Programme for the Project was submitted to relevant parties and approved by IEC on 24 August 2010.
- 7.02 Throughout the construction monitoring period of air quality, there were 5 Action Level and 3 Limit Level exceedances recorded at Location AM1, 1 Action Level and 7 Limit Level exceedances for Location AM5, 3 Action Level and 1 Limit Level exceedances for Location AM6 and 1 Action Level and 1 Limit Level exceedances for Location AM7. Potential dust generating activities of the Project did not cause any noticeable deterioration in air quality at working sites. The annual average 24-hour TSP Level recorded at all stations in the past was in similar magnitude or well below the annual average TSP dust level recorded by EPD in 1999 and 2005 prior the Project commencement except for AM5 in 2009.
- 7.03 Throughout the construction period, all construction noise monitoring were recorded below 75dB of the Limit Level, no related noise nuisance complaint (Action Level) was received to under the Project. The trend showed no noticeable noise impact from the Project during the impact monitoring period.
- 7.04 Regularly joint site with ER, Contractor, ET and IEC representatives performed the site inspection and audit. Total of 463 observations and 12 reminders and uniquely once non-compliance were recorded by ET and IEC. The non-compliance incident was immediate followed up and also resolved in a given time. Nevertheless, all deficiencies were found in the weekly site inspection or audit which mostly could be rectified within the specified deadlines.
- 7.05 No complaint was received during the impact monitoring period of the Project. No summon or prosecution was recorded during the construction period of the Project.
- 7.06 As discussed in the above sections, the Project did not cause unacceptable environmental impacts or disturbance to air quality and noise in the vicinity of Kam Tin, Nam Sang Wai and Au Tau.

Annex A

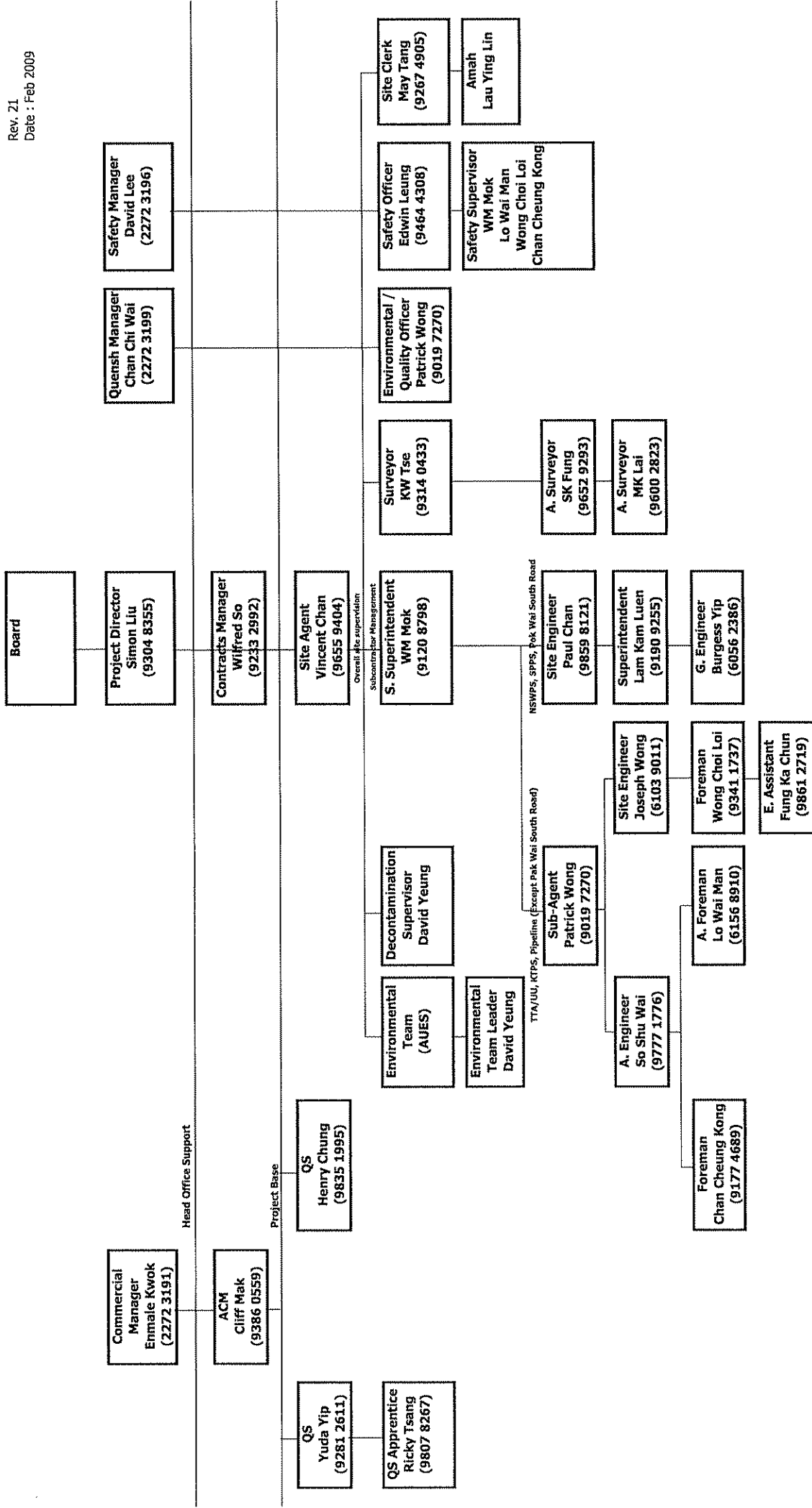
Project Site Layout

Annex B

Project Organization and Management Structure

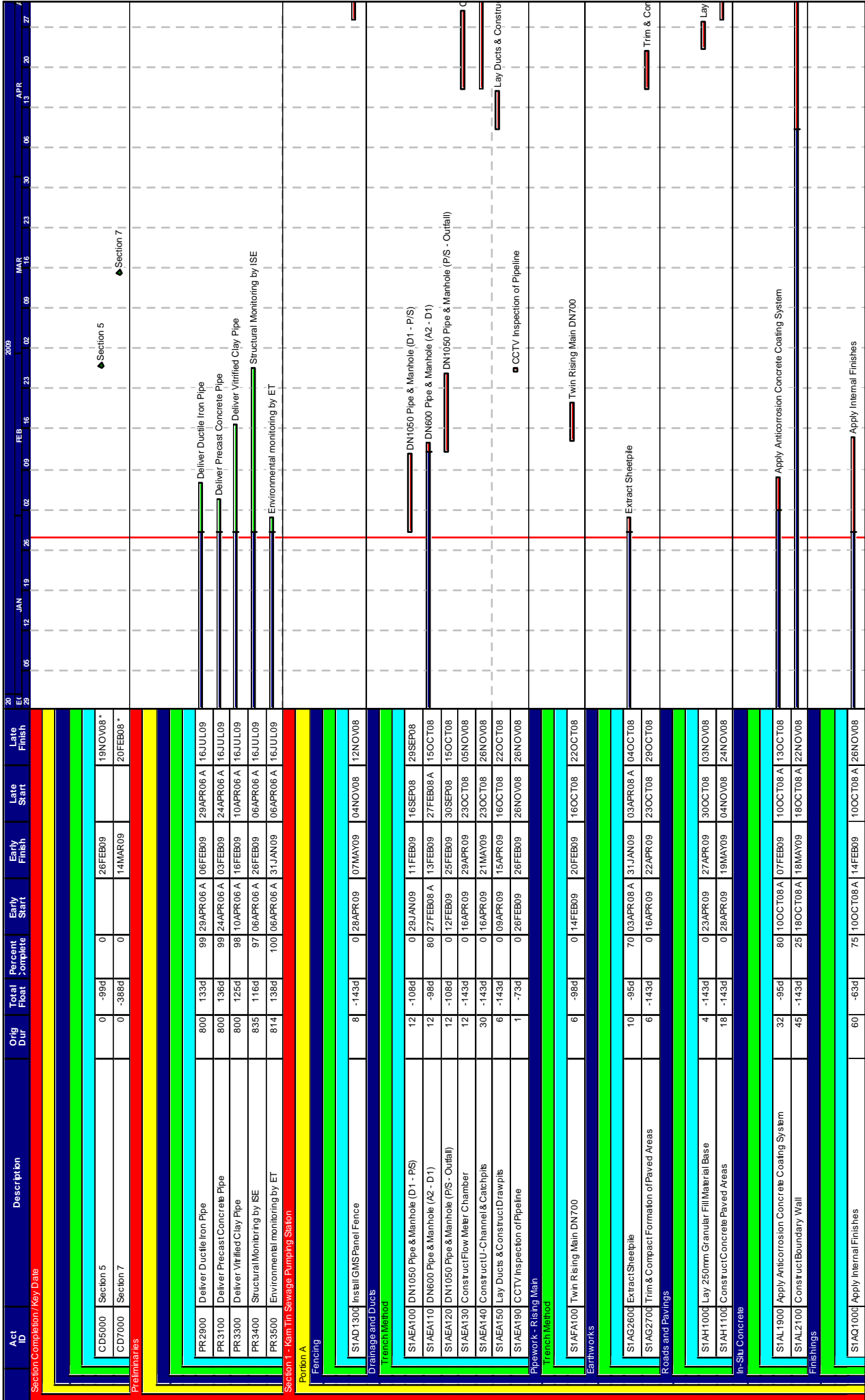
**DSD Contract No. DC/2005/02
Construction of Sewers, Rising Mains and Sewage Pumping Station at Kam Tin
Nam Sang Wai and Au Tau in Yuen Long
Contractor's Site Organization Chart**

Rev. 21
Date : Feb 2009



Annex C

Construction Program



Act ID	Description	Orig Dur	Total Float	Percent Complete	Early Start	Early Finish	Late Start	Late Finish
CD5000	Section 5	0	-99d	0	26FEB09	19NOV08*		
CD7000	Section 7	0	-388d	0	14MAR09	20FEB08*		
PR2900	Deliver Ductile Iron Pipe	800	133d	99	29APR06 A	06FEB09	29APR06 A	16JUL09
PR3100	Deliver Precast Concrete Pipe	800	136d	99	24APR06 A	03FEB09	24APR06 A	16JUL09
PR3300	Deliver Vitrified Clay Pipe	800	125d	98	10APR06 A	16FEB09	10APR06 A	16JUL09
PR3400	Structural Monitoring by ISE	835	116d	97	06APR06 A	26FEB09	06APR06 A	16JUL09
PR3500	Environmental monitoring by ET	814	138d	100	06APR06 A	31JAN09	06APR06 A	16JUL09
S1AD1300	Install GMS Panel Fence	8	-143d	0	28APR09	07MAY09	04NOV08	12NOV08
S1AE1100	DN1050 Pipe & Manhole (D1 - PS)	12	-108d	0	29JAN09	11FEB09	16SEP08	29SEP08
S1AE1200	DN600 Pipe & Manhole (A2 - D1)	12	-98d	80	27FEB08 A	13FEB09	27FEB08 A	15OCT08
S1AE1300	DN1050 Pipe & Manhole (PS - Outfall)	12	-108d	0	12FEB09	25FEB09	30SEP08	15OCT08
S1AE1400	Construct U-Channel & Catchpits	12	-143d	0	16APR09	29APR09	23OCT08	05NOV08
S1AE1500	Lay Ducts & Construct Drawpits	30	-143d	0	16APR09	21MAY09	23OCT08	26NOV08
S1AE1900	CCTV Inspection of Pipeline	1	-73d	0	09APR09	15APR09	18OCT08	22OCT08
S1AF1000	Twin Rising Main DN700	6	-98d	0	14FEB09	20FEB09	16OCT08	22OCT08
S1AG2600	Extract Sheepile	10	-95d	70	03APR08 A	31JAN09	03APR08 A	04OCT08
S1AG2700	Trim & Compact Formation of Paved Areas	6	-143d	0	16APR09	22APR09	23OCT08	29OCT08
S1AH1000	Lay 250mm Granular Fill Material Base	4	-143d	0	23APR09	27APR09	30OCT08	03NOV08
S1AH1100	Construct Concrete Paved Areas	18	-143d	0	28APR09	19MAY09	04NOV08	24NOV08
S1AL1900	Apply Anticorrosion Concrete Coating System	32	-95d	80	10OCT08 A	07FEB09	10OCT08 A	13OCT08
S1AL2100	Construct Boundary Wall	45	-143d	25	18OCT08 A	19MAY09	18OCT08 A	22NOV08
S1AQ1000	Apply Internal Finishes	60	-63d	75	10OCT08 A	14FEB09	10OCT08 A	26NOV08

Leader Civil Engineering Corp. Ltd.
 DSD Contract No. DC/2005/02
 3-Month Rolling Programme - 3M01 at 28 January 2009

Start date	19DEC05
Finish date	13NOV10
Data date	28JAN09
Page number	1A
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Act ID	Description	Orig Dur	Total Float	Percent Complete	Early Start	Early Finish	Late Start	Late Finish	2009
S1AQ105d	Apply Roof Finishes	10	-61d	0	02FEB09	12FEB09	15NOV08	26NOV08	APR 27
S1AQ110d	Apply External Finishes	30		100	23OCT08 A	23JAN09 A	23OCT08 A	23JAN09 A	MAR 06
Testing									
S1AS1100	Watertightness of Structure - Compartments	72		100	10NOV08 A	20JAN09 A	10NOV08 A	20JAN09 A	FEB 16
Miscellaneous									
S1AT1000	Install Doors, Louvres & Folding doors	30	-47d	95	14OCT08 A	02FEB09	14OCT08 A	02DEC08	
S1AT1100	Sundry Metalwork	12	-44d	60	15DEC08 A	06FEB09	15DEC08 A	10DEC08	
S1AT1200	Install Glass Block	12	-44d	0	07FEB09	20FEB09	11DEC08	24DEC08	
S1AT1300	Plumbing Work	24	-95d	40	14JAN09 A	24FEB09	14JAN09 A	29OCT08	
S1AT1400	Electrical and Mechanical Installations	24	-95d	0	25FEB09	24MAR09	30OCT08	26NOV08	
S1AT1500	Install FRP Water Storage Tanks	12	-93d	0	09FEB09	21FEB09	16OCT08	29OCT08	
S1AT1600	Install FRP Cat Ladders & Handrails	24	-93d	0	23FEB09	21MAR09	30OCT08	26NOV08	
Section 2 - Sha Po Sewage Pumping Station									
Potion B									
Drainage and Ducts									
Trench Method									
S2BEA100	DN900 Pipe & Manhole (F1 - P/S)	12	-156d	0	24APR09	08MAY09	16OCT08	29OCT08	
In-Situ Concrete									
S2BL1800	Apply Anticorrosion Concrete Coating System	24	-111d	95	10DEC08 A	29JAN09	10DEC08 A	11SEP08	
S2BL2000	Construct Boundary Wall	47	-120d	5	12JAN09 A	21MAR09	12JAN09 A	25OCT08	
Finishings									
S2BQ1000	Apply Internal Finishes	50	-111d	50	09DEC08 A	30MAR09	09DEC08 A	13NOV08	
S2BQ105d	Apply Roof Finishes	10	-69d	0	29JAN09	09FEB09	03NOV08	13NOV08	
S2BQ1100	Apply External Finishes	25	-27d	25	15JAN09 A	22APR09	15JAN09 A	25MAY09	
Testing									
S2BS1000	Pressure Testing to Twin Rising Main DN500	12	-71d	0	29JAN09	11FEB09	31OCT08	13NOV08	
S2BS1100	Watertightness of Structure - Compartments	66	-111d	45	14JAN09 A	11MAR09	14JAN09 A	25OCT08	
Miscellaneous									
S2BT1000	Install Doors, Louvres & Folding doors	30	-82d	95	22DEC08 A	30JAN09	22DEC08 A	20OCT08	
S2BT1100	Sundry Metalwork	12	-82d	95	27DEC08 A	30JAN09	27DEC08 A	20OCT08	
S2BT1200	Install Glass Block	12	-82d	0	31JAN09	13FEB09	21OCT08	03NOV08	
S2BT1300	Plumbing Work	24	-103d	40	22JAN09 A	14FEB09	22JAN09 A	10OCT08	
S2BT1400	Electrical and Mechanical Installations	24	-103d	0	10FEB09	09MAR09	04OCT08	01NOV08	
S2BT1500	Install FRP Water Storage Tanks	12	-106d	0	30JAN09	12FEB09	19SEP08	03OCT08	
S2BT1600	Install FRP Cat Ladders & Handrails	24	-111d	0	19FEB09	18MAR09	04OCT08	01NOV08	
Additional Works / Disruption									
Revised BW all Details at SPPS (Claim No. 030)									
S2BV2000	Drive Sheepiles	10	-485d	0	29JAN09	09FEB09	11JUN07	22JUN07	
S2BV2010	Excavate to 1st Layer of Walling & Strut	6	-485d	0	10FEB09	16FEB09	23JUN07	29JUN07	
S2BV2020	Install 1st Layer of Walling & Strut	6	-485d	0	17FEB09	23FEB09	30JUN07	07JUL07	

Start date 19DEC05

Finish date 13NOV10

Data date 26JAN09

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Legend:

- █ Early bar
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Act ID	Description	Orig Dur	Total Float	Percent Complete	Early Start	Early Finish	Late Start	Late Finish	
S2B12030	Excavate to 2nd Layer of Waling & Strut	6	-485d	0	24FEB09	02MAR09	09JUL07	14JUL07	
S2B12040	Install 2nd Layer of Waling & Strut	6	-485d	0	03MAR09	09MAR09	16JUL07	21JUL07	
S2B12050	Excavate to 3rd Layer of Waling & Strut	6	-485d	0	10MAR09	16MAR09	23JUL07	28JUL07	
S2B12060	Install 3rd Layer of Waling & Strut	6	-485d	0	17MAR09	23MAR09	30JUL07	04AUG07	
S2B12070	Excavate to Formation & Pour Blinding	6	-485d	0	24MAR09	30MAR09	06AUG07	11AUG07	
S2B12080	Construct Base Slab for Bay 1 & 3	8	-485d	0	31MAR09	09APR09	13AUG07	21AUG07	
S2B12090	Construct Base Slab for Bay 2 & 4	6	-485d	0	10APR09	16APR09	22AUG07	28AUG07	
S2B12100	Backfill & Remove 3rd Layer of Waling & Strut	6	-485d	0	17APR09	23APR09	29AUG07	04SEP07	
S2B12110	Construct Wall Stem 1s Lift for Bay 1 & 3	8	-485d	0	24APR09	04MAY09	05SEP07	13SEP07	
Section 3 - Nam Sang Wai Sewage Pumping Station									
Portion C									
Ground Investigation									
S3C B1700	Install Settlement Markers for Pumping Station	2	-180d	75	01DEC07 A	10FEB09	01DEC07 A	04JUL08	
Drainage and Ducts									
Trench Method									
S3C E1100	DN1200 Pipe & Manhole (H1 - PS)	12		100	13JUN08 A	26JAN09	13JUN08 A	28JAN09	
S3C E1140	DN1200 Pipe & Manhole (PS - Outfall)	12	-184d	0	09FEB09	21FEB09	27JUN08	11JUL08	
S3C E1150	Construct U-channel, Dish Channel & Catchpit	27	-184d	0	14MAR09	15APR09	01AUG08	01SEP08	
S3C E1160	Lay Ducts & Construct Drawpit	6	-184d	0	16APR09	22APR09	02SEP08	08SEP08	
S3C E2110	CCTV Inspection of Pipeline	1	-97d	0	23FEB09	23FEB09	25OCT08	25OCT08	
Pipework - Rising Main									
Trench Method									
S3C F1100	Twin Rising Main DN900	6	-184d	0	29JAN09	04FEB09	17JUN08	23JUN08	
S3C F1200	CCTV Inspection of Pipeline	1	-94d	0	05FEB09	05FEB09	11OCT08	11OCT08	
Earthworks									
S3C G2800	Backfill to Formation of Ground Slab	8	-184d	95	20OCT08 A	04FEB09	20OCT08 A	23JUN08	
S3C G2900	Extract Sheetpile	11	-184d	45	04NOV08 A	07FEB09	04NOV08 A	26JUN08	
S3C G3000	Trim & Compact Formation of Paved Areas	6	-184d	0	23APR09	29APR09	08SEP08	16SEP08	
Formwork									
S3C J1600	Erect Formwork to Ground Slab	8	-180d	90	15NOV08 A	04FEB09	15NOV08 A	27JUN08	
S3C J1700	Erect Formwork to +10.80mPD	12	-180d	40	23DEC08 A	24FEB09	23DEC08 A	18JUL08	
S3C J1800	Erect Formwork to +13.75mPD & Roof Slab	12	-180d	0	07MAR09	20MAR09	30JUL08	12AUG08	
Steel Reinforcement									
S3C K1500	Fix Re-bar to Ground Slab	8	-180d	50	26NOV08 A	09FEB09	26NOV08 A	03JUL08	
S3C K1600	Fix Re-bar to +10.80mPD	8	-180d	40	07JAN09 A	19FEB09	07JAN09 A	10JUL08	
S3C K1700	Fix Re-bar to +13.75mPD	8	-180d	0	26FEB09	06MAR09	21JUL08	29JUL08	
S3C K1800	Fix Re-bar to Roof Slab	8	-180d	0	21MAR09	30MAR09	13AUG08	21AUG08	
In-Situ Concrete									
S3C L1550	Cast Wall Stem to +5.00mPD	2	-184d	75	03OCT08 A	04FEB09	03OCT08 A	23JUN08	
S3C L1600	Cast Ground Slab	2	-180d	50	18DEC08 A	10FEB09	18DEC08 A	04JUL08	
S3C L1700	Cast Wall Stem to +10.80mPD	2	-180d	40	20JAN09 A	25FEB09	20JAN09 A	19JUL08	
S3C L1800	Cast Wall Stem to +13.75mPD & Roof Slab	2	-180d	0	31MAR09	01APR09	22AUG08	23AUG08	

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Act ID	Description	Orig Dur	Total Float	Percent Complete	Early Start	Early Finish	Late Start	Late Finish	
S3CL1900	Apply Anticorrosion Concrete Coating System	24	-176d	0	04MAR09	31MAR09	31JUL08	27AUG08	
S3CL2100	Construct Boundary Wall	17	-184d	0	23FEB09	13MAR09	12JUL08	31JUL08	
Geotechnical works									
S3CP1000	Monitoring of Instruments	787	-94d	98	06APR06 A	19FEB09	06APR06 A	25OCT08	
Finishings									
S3CQ1000	Apply Internal Finishes	45	-180d	0	10APR09	03JUN09	01SEP08	25OCT08	
S3CQ1050	Apply Roof Finishes	10	-139d	0	02APR09	14APR09	15OCT08	25OCT08	
Testing									
S3CS1000	Pressure Testing to Twin Rising Main DN900	12	-94d	0	06FEB09	19FEB09	13OCT08	25OCT08	
S3CS1100	Watertightness of Structure - Grid D-E	40	-176d	0	18MAR09	05MAY09	14AUG08	30SEP08	
S3CS1210	Watertightness of Structure - Grid F-G	40	-176d	0	18MAR09	05MAY09	14AUG08	30SEP08	
Miscellaneous									
S3CT1000	Install Doors, Louvres & Folding doors	30	-180d	0	17APR09	22MAY09	08SEP08	15OCT08	
S3CT1100	Sundry Metalwork	12	8d	0	17APR09	30APR09	27APR09	11MAY09	
S3CT1300	Plumbing Work	24	8d	0	17APR09	15MAY09	27APR09	25MAY09	
S3CT1400	Electrical and Mechanical Installations	24	8d	0	17APR09	15MAY09	27APR09	25MAY09	
S3CT1500	Install FRP Water Storage Tanks	12	8d	0	17APR09	30APR09	27APR09	11MAY09	
Section 4 - Sewers & RM in Portion D, F, G, H, J									
Portion D									
Drainage and Ducts									
Trench Method									
S4DEA100	DN1200 Pipe & Manhole (G1-Treatment Plant)	60	-6d	40	31MAR08 A	01JUN09	31MAR08 A	23MAY09	
Pipework - Rising Main									
Trench Method									
S4DFA110	Twin Rising Main DN900 (CHA1850 - WOIC1)	107	-15d	55	15DEC06 A	12JUN09	15DEC06 A	25MAY09	
S4DFA120	Twin Rising Main DN900 (CHA2095 - CHA2215)	148	-15d	55	20DEC07 A	17APR09	20DEC07 A	30MAR09	
S4DFA130	CCTV Inspection of Pipeline	5	-1d	20	16AUG08 A	12MAY09	16AUG08 A	11MAY09	
Trenchless Method									
S4DFB110	Construct WOIC1	30	22d	0	29JAN09	04MAR09	24FEB09	30MAR09	
S4DFB120	CCTV Inspection of Pipeline	3	53d	0	05MAR09	07MAR09	08MAY09	11MAY09	
Geotechnical works									
S4DPI1000	Monitoring of Instruments	602	61d	94	02NOV06 A	12MAR09	02NOV06 A	25MAY09	
Portion F									
Ground Investigation									
S4FBI1500	Install Settlement Markers	698	63d	95	27APR06 A	10MAR09	27APR06 A	25MAY09	
Drainage and Ducts									
Trench Method									
S4FEA100	DN900 Pipe & Manhole (H8 - H7) 1st Stage	53	-77d	0	31MAR09	03JUN09	24DEC08	02MAR09	
Trenchless Method									
S4FEB104	Construct Manhole H2 & H1	27	84d	65	27SEP08 A	07FEB09	27SEP08 A	19MAY09	

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Act ID	Description	Orig Dur	Total Float	Percent Complete	Early Start	Early Finish	Late Start	Late Finish	
S4FFB160	CCTV Inspection of Pipeline	5	84d	0	09FEB09	13FEB09	20MAY09	25MAY09	
Pipework - Rising Main									
Trenchless Method									
S4FFA130	Twin Rising Main DN700 (WOIC5 - ChC2000)	80	22d	30	05JUN08 A	09APR09	05JUN08 A	30APR09	
S4FFA200	Twin Rising Main DN700 (ChC2300 - ChC2350)	45	24d	20	07JAN09 A	01APR09	07JAN09 A	30APR09	
S4FFA220	Twin Rising Main DN700 (ChC2400 - WOIC4)	93	24d	80	13SEP08 A	18FEB09	13SEP08 A	18MAR09	
S4FFA230	Twin Rising Main DN700 (ChC2639 - H7)	52	-77d	0	29JAN09	30MAR09	24OCT08	23DEC08	
S4FFA240	Construct AVIC5	30	33d	10	22JAN09 A	21MAR09	22JAN09 A	30APR09	
S4FFA260	CCTV Inspection of Pipeline	8	22d	0	06APR09	14APR09	02MAY09	11MAY09	
Trenchless Method									
S4FFB120	Construct WOIC4	30	36d	80	10JUN08 A	04FEB09	10JUN08 A	18MAR09	
S4FFB130	Construct WOIC5	30	75d	90	28JUN08 A	31JAN09	28JUN08 A	30APR09	
S4FFB140	CCTV Inspection of Pipeline	5	81d	10	16AUG08 A	03FEB09	16AUG08 A	11MAY09	
Geotechnical works									
S4FFP1000	Monitoring of Instruments	772	75d	97	05JUN06 A	24FEB09	05JUN06 A	25MAY09	
Portion G									
Pipework - Rising Main									
Trenchless Method									
S4GFA100	Twin Rising Main DN500 (AVIC4 - ChB250)	98	60d	90	26JUN08 A	21FEB09	26JUN08 A	05MAY09	
S4GFA130	Twin Rising Main DN500 (ChB450 - ChB550)	84	9d	50	16JAN08 A	18MAR09	16JAN08 A	28MAR09	
S4GFA170	Construct WOIC3	30	9d	0	19MAR09	23APR09	30MAR09	05MAY09	
S4GFA190	CCTV Inspection of Pipeline	9	9d	50	06MAR07 A	29APR09	06MAR07 A	11MAY09	
Trenchless Method									
S4GFB110	Construct AVIC4	30	60d	30	09JUL08 A	21FEB09	09JUL08 A	05MAY09	
S4GFB120	CCTV Inspection of Pipeline	2	63d	0	23FEB09	24FEB09	09MAY09	11MAY09	
Geotechnical works									
S4GPI1000	Monitoring of Instruments	720	83d	98	22APR06 A	14FEB09	22APR06 A	25MAY09	
Portion H									
Ground Investigation									
S4HBI100	Install Settlement Markers	727	-35d	82	26MAY06 A	07JUL09	26MAY06 A	25MAY09	
Drainage and Ducts									
Trenchless Method									
S4HEA100	DN500 Pipe & Manhole (A3 - A6)	90	-105d	40	03OCT08 A	01APR09	03OCT08 A	22NOV08	
S4HEA190	DN300 Pipe & Manhole (B4 - B6)	67	-179d	0	21MAR09	10JUN09	14AUG08	03NOV08	
S4HEA200	DN300 Pipe & Manhole (B6 - B8)	44	-179d	0	29JAN09	20MAR09	23JUN08	13AUG08	
Trenchless Method									
S4HEB100	Jacking DN600 (A2 - A3)	57	-105d	0	29JAN09	06APR09	19SEP08	26NOV08	
S4HEB104	Construct Manholes A2 & A3	27	-105d	0	07APR09	08MAY09	27NOV08	30DEC08	
Pipework - Rising Main									
Trenchless Method									
S4HFA100	Twin Rising Main DN700 (ChC63 - ChC170)	45	-7d	40	08OCT08 A	05MAY09	08OCT08 A	25APR09	
S4HFA180	Twin Rising Main DN700 (ChC850 - ChC950)	125	-95d	0	21MAR09	19AUG09	24NOV08	25APR09	

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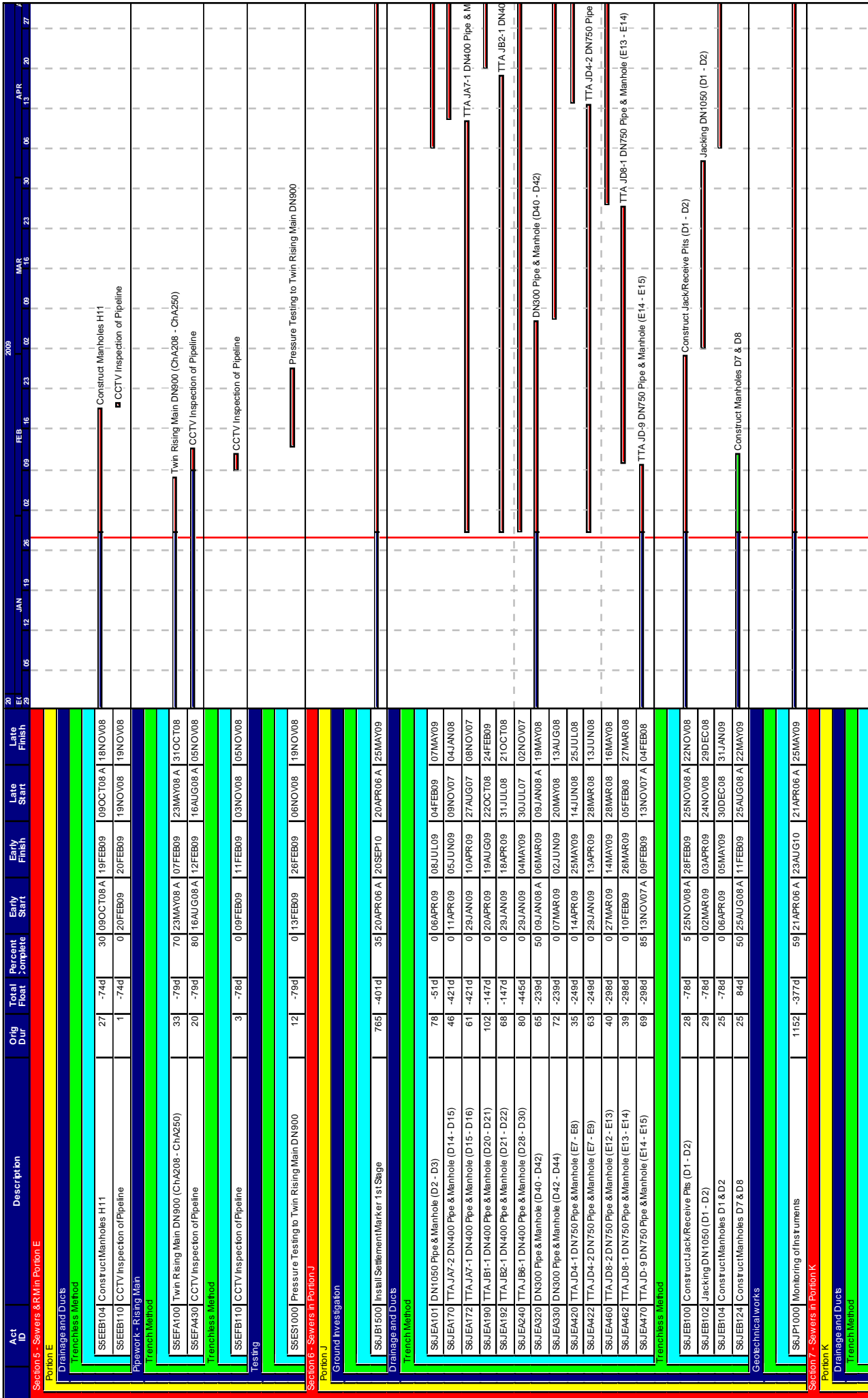
Act ID	Description	Orig Dur	Total Float	Percent Complete	Early Start	Early Finish	Late Start	Late Finish	
S4HFA199	Twin Rising Main DN700 (ChC950 - ChC1000)	44	-95d	0	29/JAN/09	20/MAR/09	02/OCT/08	22/NOV/08	
S4HF222	Twin Rising Main DN700 (ChC1250 - WOIC7)	104	-32d	40	20/AUG/08	04/JUN/09	20/AUG/08	25/APR/09	
S4HF244	Twin Rising Main DN700 (ChC1450 - ChC1550)	110	-160d	0	29/JAN/09	09/JUN/09	16/JUL/08	24/NOV/08	
S4HF255	Twin Rising Main DN700 (ChC1600 - ChC1618)	44	-106d	100	10/JUN/08	29/DEC/08	10/JUN/08	29/DEC/08	
S4HF255	Twin Rising Main DN700 (WOIC6 - ChC1664)	47	-106d	80	12/JUN/08	07/FEB/09	12/JUN/08	27/SEP/08	
S4HF261	Twin Rising Main DN700 (ChC1715 - ChC1750)	47	-106d	0	09/FEB/09	03/APR/09	29/SEP/08	24/NOV/08	
S4HF270	Twin Rising Main DN700 (ChC1750 - AVIC6)	124	-106d	0	06/APR/09	31/AUG/09	25/NOV/08	25/APR/09	
S4HFA300	Construct WOIC9	20	10d	0	21/MAR/09	14/APR/09	02/APR/09	25/APR/09	
S4HFA310	Construct WOIC8	20	10d	0	21/MAR/09	14/APR/09	02/APR/09	25/APR/09	
S4HFA350	Construct AVIC6	30	44d	0	29/JAN/09	04/MAR/09	21/MAR/09	25/APR/09	
Trenchless Method									
S4HFB100	Construct Jack/Receive Pits (ChC42 - ChC63)	57		100	24/OCT/08	05/JAN/09	24/OCT/08	05/JAN/09	
S4HFB102	Jacking Twin DN700 (ChC42 - ChC63)	65	-143d	0	06/JAN/09	15/APR/09	06/JAN/09	22/OCT/08	
S4HFB112	Jacking Twin DN700 (AIC9 - WOIC7)	69		100	05/DEC/08	20/JAN/09	05/DEC/08	20/JAN/09	
S4HFB120	Construct WOIC7	30	-74d	0	06/APR/09	11/MAY/09	05/JAN/09	11/FEB/09	
S4HFB130	CCTV Inspection of Pipeline	2	19d	0	16/APR/09	17/APR/09	09/MAY/09	11/MAY/09	
Geotechnical works									
S4HP1000	Monitoring of Instruments	947	-94d	80	26/MAY/06	14/SEP/09	26/MAY/06	25/MAY/09	
Additional Works / Disruption									
Re-alignment ChC420 & ChC607 (Claim No. 118)									
S4HV1310	Twin Rising Main DN700 (ChC610 - ChC680)	40		100	23/JUL/08	15/JAN/09	23/JUL/08	15/JAN/09	
S4HV1340	Twin Rising Main DN700 (ChC515 - ChC490)	20		100	06/OCT/08	21/JAN/09	06/OCT/08	21/JAN/09	
S4HV1350	Twin Rising Main DN700 (ChC490 - ChC460)	20		100	06/OCT/08	21/JAN/09	06/OCT/08	21/JAN/09	
S4HV1360	Twin Rising Main DN700 (ChC460 - ChC436)	20		100	10/OCT/08	28/JAN/09	10/OCT/08	28/JAN/09	
S4HV1380	Construct WOIC9	20		100	29/AUG/08	15/JAN/09	29/AUG/08	15/JAN/09	
S4HV1410	DN500 Pipe & Manhole (A14 - A15)	30	53d	30	24/OCT/08	21/FEB/09	24/OCT/08	25/APR/09	
Portion I									
Ground Investigation									
S4IB1300	Install Settlement Markers	736	-60d	79	26/JUN/06	05/AUG/09	26/JUN/06	25/MAY/09	
Drainage and Ducts									
Trench Method									
S4IEA1000	DN500 Pipe & Manhole (C2 - C4)	58	-65d	35	24/DEC/08	27/APR/09	24/DEC/08	09/FEB/09	
S4IEA1020	DN500 Pipe & Manhole (C4 - C6)	76	-65d	50	27/AUG/08	13/MAR/09	27/AUG/08	20/DEC/08	
S4IEA1200	DN400 Pipe & Manhole (C7a - C7)	36	62d	0	29/JAN/09	11/MAR/09	13/APR/09	25/MAY/09	
S4IEA1330	DN500 Pipe & Manhole (C11 - C12)	35	-65d	0	28/APR/09	09/JUN/09	10/FEB/09	21/MAR/09	
S4IEA1920	DN500 Pipe & Manhole (C22 - C23)	65	58d	50	28/NOV/08	06/MAR/09	28/NOV/08	15/MAY/09	
S4IEA2320	DN500 Pipe & Manhole (C31 - C32)	53	-164d	0	29/JAN/09	31/MAR/09	11/JUL/08	10/SEP/08	
S4IEA2400	DN500 Pipe & Manhole (C32 - C34)	70	-164d	0	01/APR/09	24/JUN/09	11/SEP/08	04/DEC/08	
Trenchless Method									
S4IEB1000	Construct Jack/Receive Pits (C1 - C2)	30	-52d	0	29/JAN/09	04/MAR/09	22/NOV/08	29/DEC/08	
S4IEB1020	Jacking DN500 (C1 - C2)	78	-52d	0	05/MAR/09	06/JUN/09	30/DEC/08	03/APR/09	
Geotechnical works									
S4IF1000	Monitoring of Instruments	827	-76d	79	28/JUN/06	24/AUG/09	28/JUN/06	25/MAY/09	

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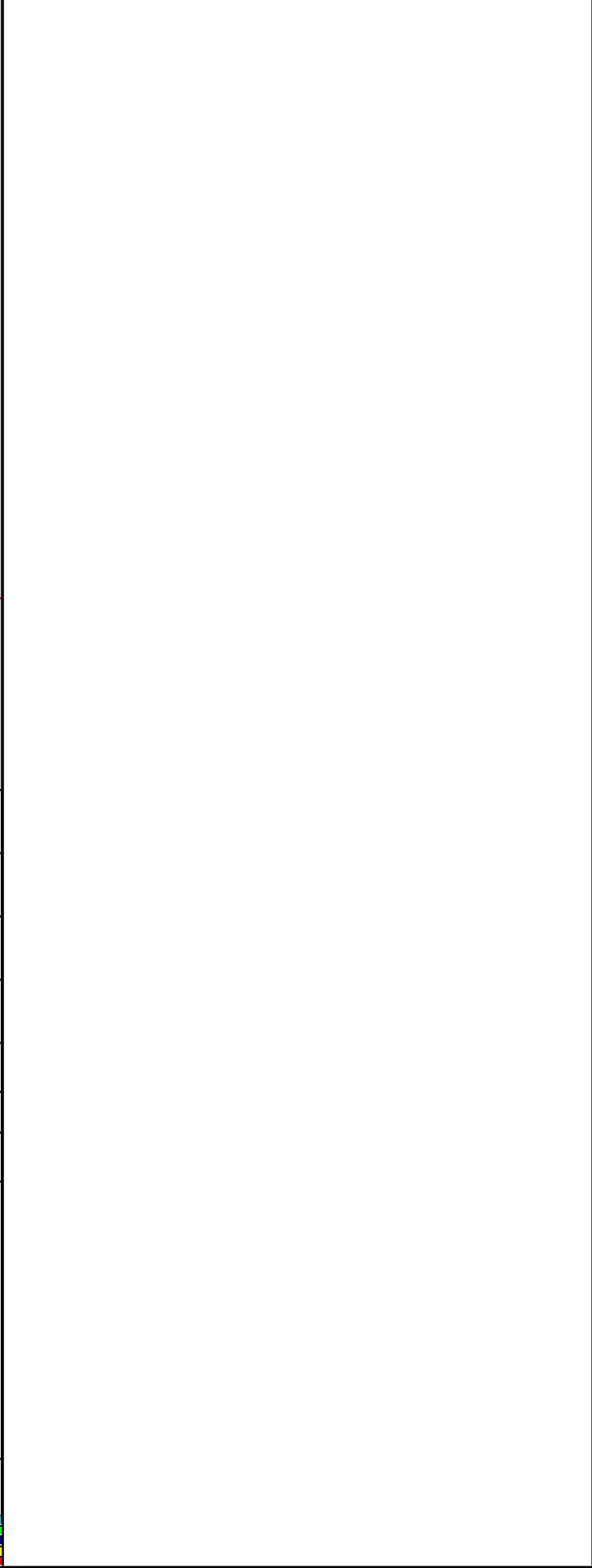
█ Early bar
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Act ID	Description	Orig Dur	Total Float	Percent Complete	Early Start	Early Finish	Late Start	Late Finish	
S7KEA110	DN600 Pipe & Manhole (M2 - M3) Stage 2	35	-316d	0	29/JAN/09	10/MAR/09	03/JAN/08	15/FEB/08	
S7KEA161	DN900 Pipe & Manhole (M11 - M12) Stage 2	54	-286d	90	20/AUG/08 A	03/FEB/09	20/AUG/08 A	15/FEB/08	
S7KEA210	CCTV Inspection of Pipeline	5	-316d	30	16/AUG/08 A	14/MAR/09	16/AUG/08 A	20/FEB/08	
Trenchless Method									
S7KEB130	CCTV Inspection of Pipeline	2	-278d	30	16/AUG/08 A	29/JAN/09	16/AUG/08 A	20/FEB/08	
Roads and Pavings									
S7KH1000	Concrete Footpath from M14 to M16a	18	-282d	70	25/OCT/08 A	03/FEB/09	25/OCT/08 A	20/FEB/08	
Section 8 - Preservation and Protection of Trees									
All Portions									
Landscape Softworks and Establishment Works									
S8QR1100	Preservation & Protection of Preserved Trees	744	-21d	84	29/JUL/06 A	19/JUN/09	29/JUL/06 A	25/MAY/09	
Decontamination Works									
Portion H									
Decontamination									
S8HU1000	Decontamination Works	48	60d	0	23/FEB/09	20/APR/09	06/MAY/09	02/JUL/09	



Annex D

Photographical Records – Noise Barrier On-Site



Annex E

Locations of Monitoring Stations

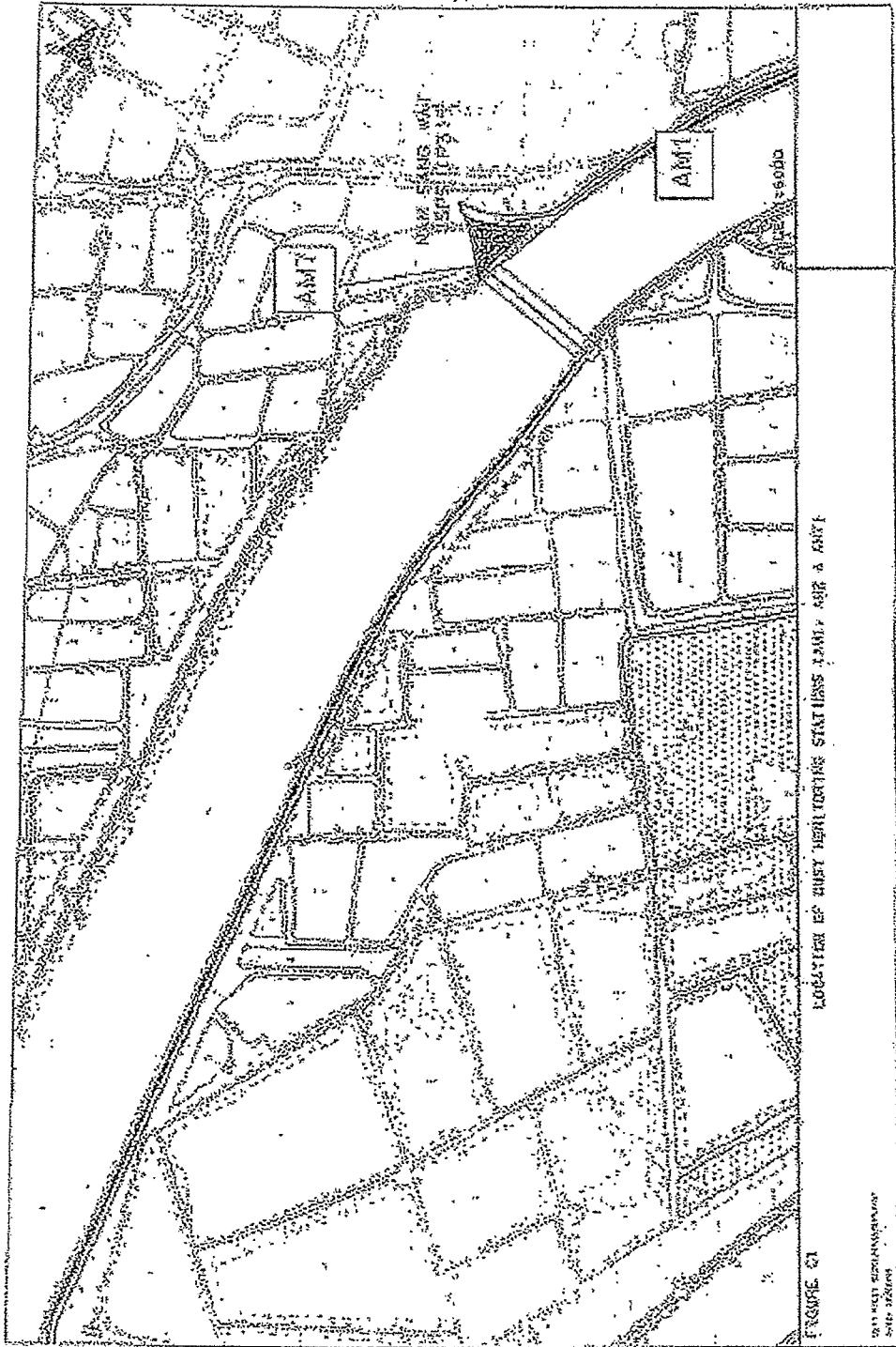


FIGURE 01

LOCATION OF MUST HURTING STATIONS 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100

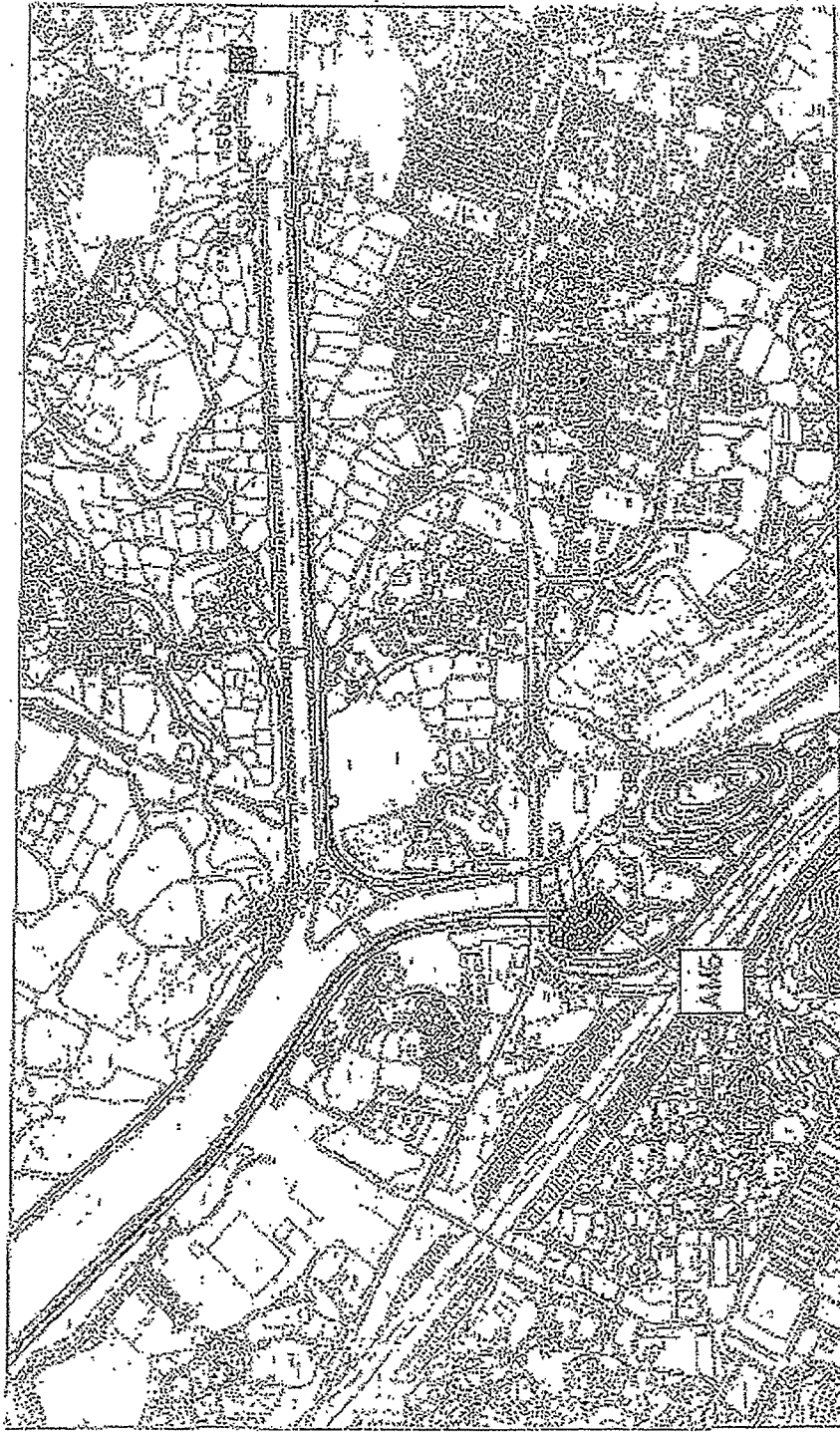
BY THE SURVEYOR



FIGURE OF BEST MONITORING STATION LAYOUT

FIGURE 02

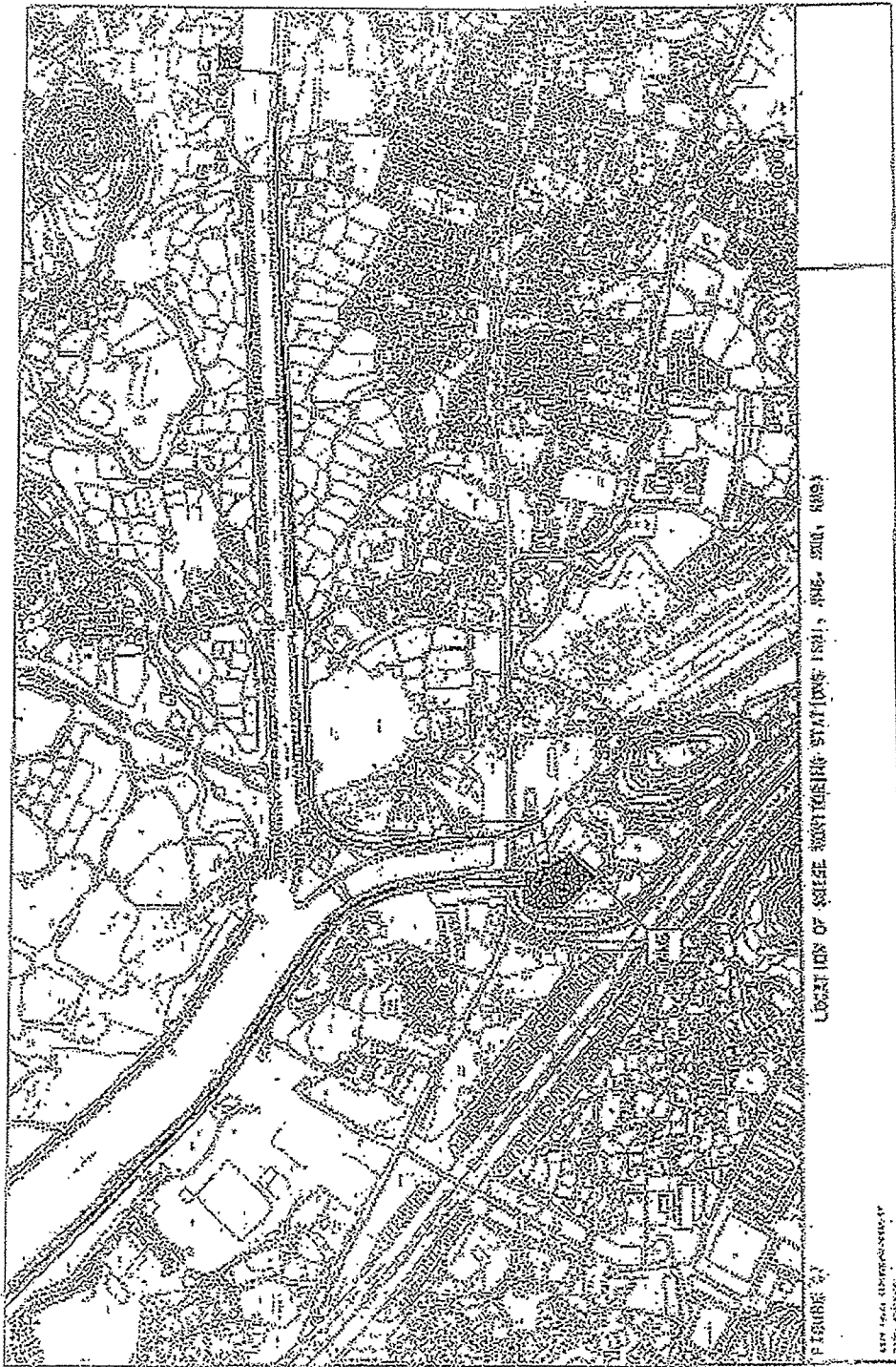
SECRET, INFORMATIONAL
NO FORN DISSEM



LOCATION OF BEST MONITORING STATIONS (AMC, AM6 & AM10)

FIGURE 50

AMC
AM6
AM10



LOCATIONS OF SEWER HOUSING STATIONS 1931, 1932, 1933, 1934

FIGURE 4

NEW YORK UNIVERSITY
 CIVIL ENGINEERING DEPARTMENT

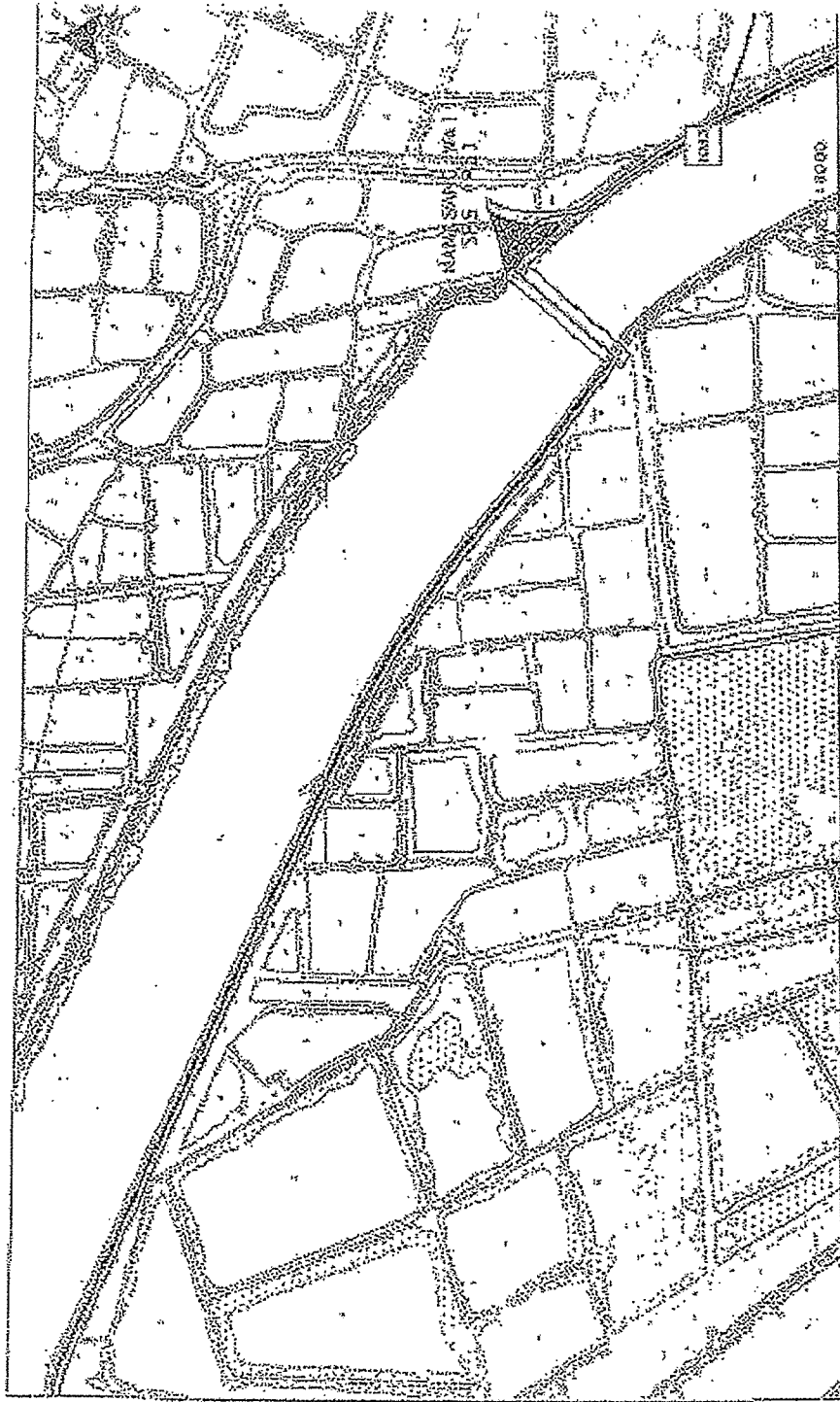


FIGURE 10

LOCATION OF HOUSE PUMPING STATIONS (IND. RW-1)

GENERAL ENGINEERING
AND ARCHITECTURE



LOCATION OF NOISE MONITORING STATIONS FROM MAP 2

SCALE 1:1000

BY: [unreadable]
DATE: [unreadable]

Annex F

Event and Action Plan

Event and Action Plan for Construction Phase Air Quality

EVENT	ACTION			
	ET Leader	IEC	Engineer	Contractor
Action Level Exceedance for one sample	<ol style="list-style-type: none"> Identify source (s) of exceedance and inform IEC, Contractor and Engineer Repeat dust measurements to confirm findings Increase monitoring frequency to daily Assess efficacy of remedial measures and keep the Contractor, IEC, and Engineer informed 	<ol style="list-style-type: none"> Check monitoring data submitted by ET Check monitoring data trends and Contractors working methods Check and confirm Contractors proposed remedial actions and working methods are appropriate 	<ol style="list-style-type: none"> Confirm receipt of notification of exceedance in writing Remind the Contractor of his contractual obligations and review the Contractor's working methods Discuss remedial actions with the Contractor and IEC Inform complainant of actions taken, if necessary 	<ol style="list-style-type: none"> Rectify any unacceptable practice Liaise with Engineer and IEC to develop appropriate remedial measures to reduce dust impact Amend working methods and remedial proposals if required by the Engineer or IEC Implement the agreed remedial actions upon instruction from the Engineer and IEC
Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> Identify source (s) of exceedance and inform IEC, Contractor and Engineer Repeat measurements to confirm findings Increase the monitoring frequency to daily to assess the efficacy of remedial measures and keep the Contractor informed Discuss remedial actions with IEC and Contractor If exceedance continues, arrange meeting with Engineer, IEC and Contractor to review working practices and identify further remedial actions If exceedance stops, inform the Contractor and cease additional monitoring 	<ol style="list-style-type: none"> Check monitoring data submitted by ET Check monitoring data trends and Contractors working methods Discuss with Contractor and Engineer on possible remedial measures Check and confirm Contractors proposed remedial measures are appropriate Determine the efficacy of remedial actions and keep the Engineer informed 	<ol style="list-style-type: none"> Confirm receipt of notification of exceedance in writing Remind the Contractor of his contractual obligations and review the Contractor's working methods Discuss remedial actions with the Contractor and IEC Ensure remedial measures are properly implemented Inform complainant of actions taken, if necessary. 	<ol style="list-style-type: none"> Rectify any unacceptable practice, if possible Submit proposals for remedial actions to Engineer and IEC within three working days of notification Discuss and amend remedial actions, if required, by the Engineer and IEC Implement the remedial action (s) immediately upon instruction from the Engineer Discuss with Engineer and IEC, to optimise the effectiveness of the agreed remedial actions
Limit Level				

Event and Action Plan for Construction Phase Air Quality

EVENT	ACTION			
	ET Leader	IEC	Engineer	Contractor
Exceedance for one sample	<ol style="list-style-type: none"> 1. Identify source (s) of exceedance and inform IEC, Contractor and Engineer 2. Repeat dust measurements to confirm findings 3. Increase monitoring frequency to daily 4. Assess efficacy of remedial measures and keep the Contractor, IEC, Engineer and EPD informed 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET 2. Check monitoring data trends and Contractor's working methods 3. Check and confirm Contractor's proposed remedial actions and working methods are appropriate 4. Check and confirm Contractor's proposed remedial measures are appropriate 5. Determine the efficacy of remedial actions and keep the Engineer informed 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of exceedance in writing 2. Remind the Contractor of his contractual obligations and review the Contractor's working methods 3. Discuss remedial actions with the Contractor and IEC, 4. Ensure remedial measures are properly implemented 5. Inform complainant of actions taken, if necessary. 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance 2. Submit proposals for remedial actions to Engineer and IEC within three working days of notification 3. Discuss and amend remedial actions, if required, by the Engineer and IEC 4. Implement the remedial action (s) immediately upon instruction from the Engineer 5. Discuss with Engineer and IEC, to optimise the effectiveness of the agreed remedial actions
Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> 1. Identify source (s) of exceedance and inform IEC, Contractor and Engineer 2. Repeat measurements to confirm findings 3. Increase the monitoring frequency to daily to assess the efficacy of remedial measures and keep the Contractor informed 4. Discuss remedial actions with IEC and Contractor 5. If exceedance continues, arrange meeting with Engineer, IEC and Contractor to review working practices and identify further remedial actions 6. If exceedance stops, inform the Contractor and cease additional monitoring. 	<ol style="list-style-type: none"> 1. Discuss with Contractor and Engineer on possible remedial measures 2. Check and confirm Contractor's proposed remedial measures are appropriate 3. Determine the efficacy of remedial actions and keep the Engineer informed 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of exceedance in writing 2. Remind the Contractor of his contractual obligations and review the Contractor's working methods 3. Discuss remedial actions with the Contractor and IEC 4. Ensure remedial measures are properly implemented 5. If exceedance continues, instruct the Contractor to stop the relevant portion of work until the exceedance is abated 6. Inform complainant of actions taken, if necessary. 	<ol style="list-style-type: none"> 1. Rectify any unacceptable practice, if possible 2. Submit proposals for remedial actions to Engineer and IEC within three working days of notification 3. Discuss and amend remedial actions, if required, by the Engineer and IEC 4. Implement the remedial action (s) immediately upon instruction from the Engineer 5. Discuss with Engineer and IEC, to optimise the effectiveness of the agreed remedial actions

Event and Action Plan for Construction Noise				
EVENT	ET Leader	IEC	Engineer	Contractor
Limit Level Exceedance for one sample	<ol style="list-style-type: none"> 1. Identify source (s) of exceedance and inform IEC, Contractor and Engineer 2. Repeat dust measurements to confirm findings 3. If repeat measurements confirm exceedance ,increase monitoring frequency to daily 4. Assess efficacy of remedial measures and keep the Contractor, IEC, and Engineer informed 5. If exceedance stops, inform Contractor and cease additional noise monitoring 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET 2. Check monitoring data trends and Contractors working methods 3. Check and confirm Contractors proposed remedial actions and working methods are appropriate 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of exceedance in writing 2. Remind the Contractor of his contractual obligations and review the Contractor's working methods 3. Discuss remedial actions with the Contractor and IEC 4. Inform complainant of actions taken, if necessary 	<ol style="list-style-type: none"> 1. Rectify any unacceptable practice 2. Liaise with Engineer and IEC to develop appropriate remedial measures to reduce noise impact 3. Amend working methods and remedial proposals if required by the Engineer or IEC 4. Implement the agreed remedial actions upon instruction from the Engineer and IEC
Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> 1. Identify source (s) of exceedance and inform IEC, Contractor and Engineer 2. Repeat measurements to confirm findings 3. Increase the monitoring frequency to daily 4. Discuss remedial actions with IEC, Engineer and the EPD 5. Assess the efficacy of remedial measures and keep the Contractor informed 6. If exceedance continues, arrange meeting with Engineer, IEC and Contractor to review working practices and identify further remedial actions 7. If exceedance stops, inform the Contractor and cease additional monitoring. 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET 2. Check monitoring data trends and Contractors working methods 3. Discuss with Contractor and Engineer on possible remedial measures 4. Check and confirm Contractors proposed remedial measures are appropriate 5. Determine the efficacy of remedial actions and keep the Engineer informed 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of exceedance in writing 2. Remind the Contractor of his contractual obligations and review the Contractor's working methods 3. Discuss remedial actions with the Contractor and IEC 4. Ensure remedial measures are properly implemented 5. Contractor to stop the relevant portion of work until the exceedance is abated 6. Inform complainant of actions taken, if necessary. 	<ol style="list-style-type: none"> 1. Rectify any unacceptable practice, if possible 2. Submit proposals for remedial actions to Engineer and IEC within three working days of notification 3. Discuss and amend remedial actions, if required, by the Engineer and IEC 4. Implement the remedial action (s) immediately upon instruction from the Engineer 5. Discuss with Engineer and IEC, to optimise the effectiveness of the agreed remedial actions 6. Stop the relevant portion of work as determined by the Engineer until the exceedance is abated

Annex G

Mitigation Implementation Schedule

EIA* Ref.	EM&A Ref	Environmental Protection Measures	Objectives of the Recommended Measures & Main Concerns	Location of the measure	Implementation Agent	Implementation Stage**				Relevant Legislation & Guidelines
						Des	C	O	Dec	
		CONSTRUCTION PHASE AIR QUALITY - Construction Phase The following measures are enforceable under the <i>Air Pollution Control (Construction Dust) Regulations</i>								
3.5	A1	Site boundary and entrance <ul style="list-style-type: none"> where a site boundary adjoins a road, street, service lane or other area accessible to the public, hoarding of not less than 2.4 m high from ground level should be provided along the boundaries of the seven pumping stations sites and the works area where the Engineer's site office and the Contractor's site office erected; Access Road <ul style="list-style-type: none"> the portion of any road leading only to a construction site that is within 30 m of a discernible or designated vehicle entrance or exit should be kept clear of dusty materials; Stockpiling of Dusty Materials <ul style="list-style-type: none"> any stockpile of dusty materials should be either covered entirely by impervious sheeting and placed in an area sheltered on the top and the 3 sides or sprayed with water so as to maintain the entire surface wet; Loading, unloading or transfer of dusty materials <ul style="list-style-type: none"> all dusty materials should be sprayed with water or a dust suppression chemical immediately prior to any loading and unloading so as to maintain the dusty materials wet; Use of vehicles <ul style="list-style-type: none"> every vehicle should be washed to remove any dusty materials from its body and wheels immediately before leaving a construction site; 	To prevent access to the site and control potential dust impacts from construction works.	Site wide and throughout the full duration of the construction contract.	The Contractor	✓				Part III, Clause 13 (c), <i>Air Pollution Control (Construction Dust) Regulations</i>
3.5	A2		To control potential dust impacts from vehicle movements.	Site wide and throughout the full duration of the construction contract.	The Contractor	✓				Part III, Clause 14, (b), <i>Air Pollution Control (Construction Dust) Regulations</i>
3.5	A3		To control potential dust impacts during excavation and stockpiling activities.	Site wide and throughout the full duration of the construction contract.	The Contractor	✓				Part IV, Clause 18, (a, b & c), <i>Air Pollution Control (Construction Dust) Regulations</i>
3.5	A4		To control potential dust impacts during material handling and truck movements.	Site wide and throughout the full duration of the construction contract.	The Contractor	✓				Part IV, Clause 19, <i>Air Pollution Control (Construction Dust) Regulations</i>
3.5	A5		To control potential dust impacts from vehicle movements.	Site wide and throughout the full duration of the construction contract.	The Contractor	✓				Part IV, Clause 21, (1), <i>Air Pollution Control (Construction Dust) Regulations</i>

EIA* Ref.	EM&A Ref	Environmental Protection Measures	Objectives of the Recommended Measures & Main Concerns	Location of the measure	Implementation Agent	Implementation Stage**				Relevant Legislation & Guidelines
						Des	C	O	Dec	
3.5	A6	<ul style="list-style-type: none"> where a vehicle leaving a construction site is carrying a load of dusty materials, the load should be covered entirely by clean impervious sheeting to ensure that the dusty materials do not leak from the vehicle; 	To control potential dust impacts during material transportation.	Site wide and throughout the full duration of the construction contract.	The Contractor		✓			Dust) Regulations Part IV, Clause 21, (2), Air Pollution Control (Construction Dust) Regulations
3.5	A7	<p>Power-driven drilling, and cutting</p> <ul style="list-style-type: none"> water should be continuously sprayed on the surface where any mechanical breaking operation that causes dust emission is carried out, unless the process is accompanied by the operation of an effective dusty extraction and filtering device; 	To control potential dust impacts during mechanical breaking.	Site wide and throughout the full duration of the construction contract.	The Contractor		✓			Part IV, Clause 22, Air Pollution Control (Construction Dust) Regulations
3.5	A8	<p>Excavation and earth moving</p> <ul style="list-style-type: none"> the working area of excavation should be sprayed with water immediately before, during and immediately after the operation so as to maintain the entire surface wet; 	To control potential dust impacts arising from excavation works.	Site wide and throughout the full duration of the construction contract.	The Contractor		✓			Part IV, Clause 24, Air Pollution Control (Construction Dust) Regulations
3.5	A9	<p>Construction of the superstructure of a building</p> <ul style="list-style-type: none"> where a scaffolding is erected around the perimeter of a building under construction, effective dust screens, sheeting or netting should be provided to enclose the scaffolding from the round floor level of the SPS, or if a canopy is provided a the first floor level, from the first floor level, up to the highest level of the scaffolding; and 	To control potential dust impacts from SPS building construction works.	Full duration of SPS construction contract.	The Contractor		✓			Part I, Clause 6, (a), Air Pollution Control (Construction Dust) Regulations
3.5	A10	<ul style="list-style-type: none"> any skip hoist for material transport should be totally enclosed by the impervious sheeting. 	To control potential dust impacts during material transportation.	Full duration of SPS construction contract.	The Contractor		✓			Part I, Clause 6, (b), Air Pollution Control (Construction Dust) Regulations

EIA* Ref.	EM&A Ref	Environmental Protection Measures	Objectives of the Recommended Measures & Main Concerns	Location of the measure	Implementation Agent	Implementation Stage**				Relevant Legislation & Guidelines
						Des	C	O	Dec	
		NOISE - Construction Phase								
		General Site Clearance – Demolition Works								
4.7.1	B1	<ul style="list-style-type: none"> Use of quiet PME which meet the SWLs taken from British Standard, <i>Noise and Vibration Control on Construction Open Sites, BS 5228: Part 1: 1997 (Examples of these PME are shown in Table F2)</i>, 	To control potential noise impacts during site clearance and demolition works	Site wide and throughout the full duration of the construction contract.	The Contractor		✓			Annex 5 of EIAO-TM
		Construction of Sewage Pumping Stations P1, P2 & P3								
4.7.1	B2	<ul style="list-style-type: none"> Use of quiet PME which meet the SWLs taken from British Standard, <i>Noise and Vibration Control on Construction Open Sites, BS 5228: Part 1: 1997</i>, Adoption of temporary noise barrier, in the form of a site hoarding (with a superficial density of at least 20kg/m², with no substantial gaps), along the site boundary of the pumping station sites. 	To minimise potential noise impacts arising during the construction of P1, P2 & P3	Site wide and throughout the full duration of the construction contract.	The Contractor		✓			Annex 5 of EIAO-TM
		Sewers and Rising Mains using Open Trench Method								
4.7.1	B3	<ul style="list-style-type: none"> Use of quiet PME which meet the SWLs taken from British Standard, <i>Noise and Vibration Control on Construction Open Sites, BS 5228: Part 1: 1997</i>, 	To control potential noise impacts during excavation works.	Site wide and throughout the full duration of the construction contract.	The Contractor		✓			Annex 5 of EIAO-TM
4.7.1	B4	<ul style="list-style-type: none"> Use of handheld breakers for all initial road opening activities, when breaking tarmac/concrete road surface to a depth of 300mm or when granular material is reached. 	To control potential noise impacts during road opening activities.	Where there are NSRs located within 50m of the line of sight. Throughout the full duration of the road opening activities.	The Contractor		✓			
4.7.1	B5	<ul style="list-style-type: none"> Use of movable noise barriers or 3 sided enclosures for all initial road opening activities 	To control potential noise impacts during road opening	Where there are NSRs located within 50m of the	The Contractor		✓			

EIA* Ref.	EM&A Ref	Environmental Protection Measures	Objectives of the Recommended Measures & Main Concerns	Location of the measure	Implementation Agent	Implementation Stage**				Relevant Legislation & Guidelines	
						Des	C	O	Dec		
4.7.1	B6	enclosures for all initial road opening activities (breaking tarmac/concrete road surface to a depth of 300mm or when granular material is reached), where there are NSRs located within 50m of the line of sight from the works area.	activities.	line of sight. Throughout the full duration of the road opening activities.							
4.7.1	B7	<p>Sewers and Rising Mains using Pipe Jacking Method</p> <ul style="list-style-type: none"> Use of quiet PME which meet the SWLs taken from British Standard, <i>Noise and Vibration Control on Construction Open Sites, BS 5228: Part 1: 1997</i>, <p>Road Pavement and Finishes</p> <ul style="list-style-type: none"> Use of quiet PME which meet the SWLs taken from British Standard, <i>Noise and Vibration Control on Construction Open Sites, BS 5228: Part 1: 1997</i>, 	To control potential noise impacts from PME during construction works	Site wide and throughout the full duration of the construction contract.	The Contractor		✓			Annex 5 of EIAO-TM	
		<p>WATER QUALITY - Construction Phase</p> <p>No water quality monitoring is required under this study.</p>									
6.6.2	D1	<p>WASTE - Construction Phase</p> <p>The Contractor shall obtain the necessary waste disposal permits from the appropriate authorities for the disposal of chemical and C&D waste,</p> <ul style="list-style-type: none"> Chemical Waste Producer and Chemical Waste Disposal Licence (<i>Waste Disposal (Chemical Waste) (General) Regulations</i>); and Dumping Licence (<i>Land (Miscellaneous Provisions) Ordinance (Cap 28)</i>) 	To monitor the collection, handling and disposal of chemical waste and C&D waste, and in compliance with relevant Hong Kong Standards and Regulations.	Site wide and throughout the full duration of the construction contract.	The Contractor	✓	✓			Waste Disposal Ordinance (Cap 354), Waste Disposal (Chemical Waste)(General) Regulation (Cap 354), the Land (Miscellaneous Provisions) Ordinance (Cap 28))	

EIA* Ref.	EM&A Ref	Environmental Protection Measures	Objectives of the Recommended Measures & Main Concerns	Location of the measure	Implementation Agent	Implementation Stage**				Relevant Legislation & Guidelines
						Des	C	O	Dec	
6.6.2	D2	<p>Chemical Waste Chemical waste that is produced, as defined by Schedule 1 of the <i>Waste Disposal (Chemical Waste) (General) Regulation</i>, should be handled in accordance with the regulations and Code of Practice on the Packaging, Handling and Storage of Chemical Wastes as follows. All chemical waste producers should be registered with the EPD.</p> <p>Storage, Packaging and Labelling of Chemical Waste Containers used for storage of chemical wastes should:</p> <ul style="list-style-type: none"> be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition, and securely closed; have a capacity of less than 450 L unless the specifications have been approved by the EPD; and display a label in English and Chinese in accordance with instructions prescribed in Schedule 2 of the Regulations. <p>Storage of chemical waste The storage area for chemical wastes should:</p> <ul style="list-style-type: none"> be clearly labelled and used solely for the storage of chemical waste; be enclosed on at least 3 sides; have an impermeable floor and bunding, of capacity to accommodate 110% of the volume of the largest container or 20% by volume of the chemical waste stored in that area, whichever is the greatest; have adequate ventilation; be covered to prevent rainfall entering (water collected within the bund must be tested and disposed as chemical waste, if necessary); and be arranged so that incompatible materials are 	<p>To control the handling, storage and disposal of chemical waste, in order to minimise potential spillages/leakages and human health and environmental impacts.</p> <p>To ensure the proper storage, packaging and labelling of chemical waste in accordance with the Regulations.</p> <p>To ensure the proper storage of chemical waste in accordance with the Regulations.</p>	<p>To be implemented at all worksites throughout the full duration of the construction phase.</p> <p>To be implemented at all worksites throughout the full duration of the construction phase.</p> <p>To be implemented at all worksites throughout the full duration of the construction phase.</p>	<p>The Contractor</p> <p>The Contractor</p> <p>The Contractor</p>	<p>✓</p> <p>✓</p> <p>✓</p>			<p>Part II, (6) Waste Disposal (Chemical Waste) (General) Regulation</p> <p>Part IV, (9, 10, 11 & 12) Waste Disposal (Chemical Waste) (General) Regulation</p> <p>Part IV, (13, 14, 15, 16, 17, & 18) Waste Disposal (Chemical Waste) (General) Regulation</p>	

EIA* Ref.	EM&A Ref	Environmental Protection Measures	Objectives of the Recommended Measures & Main Concerns	Location of the measure	Implementation Agent	Implementation Stage**				Relevant Legislation & Guidelines	
						Des	C	O	Dec		
		adequately separate									
		<p>Disposal of chemical waste</p> <ul style="list-style-type: none"> The Contractor should ensure that the disposal of chemical waste is via a licensed Waste Collector and in accordance with the <i>Waste Disposal (Chemical Waste) (General) Regulations</i>. 	To control the disposal of chemical waste in accordance with the Regulations.	To be implemented at all work sites throughout the full duration of the construction phase.	The Contractor		✓			Part IV, (20-25) <i>Waste Disposal (Chemical Waste) (General) Regulation</i>	
6.6.2	D5	<p><i>Management of Waste Disposal</i></p> <p>A trip-ticket system should be established which monitors the disposal of C&DM and solid wastes at public filling facilities and landfills and to control fly-tipping, in accordance with <i>Land (Miscellaneous Provisions) Ordinance (Cap28)</i> and the <i>Works Bureau Technical Circular No. 5/99</i>.</p> <p>LAND CONTAMINATION- Construction Phase</p> <p>A revised CAP should be submitted to the EPD for approval before the commencement of the construction works. Following receipt of the EPD's approval, the CAP shall be implemented and the findings of the investigations will be reported in the Contaminated Assessment Report (CAR), before ground disturbance is allowed at the concerned sites.</p> <p>If land contamination is confirmed, a Remediation Action Plan (RAP) shall be prepared, and both the CAR and the RAP shall be submitted as a combined report to the EPD for approval before disturbing the ground of the concerned sites. If applicable and required in consultation with the</p>	To monitor the disposal of C&DM and solid wastes at public filling facilities and landfills and to control fly-tipping.	To be implemented at all work sites throughout the full duration of the construction phase.	The Engineer/ Contractor		✓			<i>Land (Miscellaneous Provisions) Ordinance (Cap 295) and Works Bureau Technical Circular No. 5/99.</i>	
7.5.6	E1		To determine the presence of soil and groundwater contamination and remedy any potential concerns to acceptable levels.	To be implemented before the commencement of the construction works.	To be Implemented by DSD or their sub-consultants at the Detailed Design Stage, depending upon when site access can be gained.			✓			EIAO TM Annex 19/3.1.1 & 3.1.2

EIA* Ref.	EM&A Ref	Environmental Protection Measures	Objectives of the Recommended Measures & Main Concerns	Location of the measure	Implementation Agent	Implementation Stage**				Relevant Legislation & Guidelines
						Des	C	O	Dec	
8.7.1	F1	<p>EPD, the contaminated site(s) shall be remediated in accordance with the approved CAR/RAP.</p> <p>ECOLOGICAL - Construction Phase Mitigation Measures Adopted - Avoidance Construction activities shall be prohibited during the winter season (November to March) along the section of the proposed sewerage alignment, which fall within the Deep Bay Wetland Conservation Area and the Deep Bay Wetland Buffer Area (WCA and WBA) and close to the locations of ecologically sensitive species (including Intermediate Egret, Black-faced Spoonbill, Buzzard, Imperial Eagle and Avocet). (See Figure 8.7a attached). Regular site inspections (at least twice a month) should be conducted by the Environmental Team during the winter season (November to March) to ensure proper implementation of this restriction</p>	<p>To schedule construction works in order to minimise potential impacts to winter visiting birds. To be confirmed by regular site inspections.</p>	<p>At identified location (Figure 8.7a) for the full duration of the construction contract.</p>	<p>The Contractor</p>	<p>✓</p>				
8.7.2	F2	<p>Mitigation Measures Adopted - Minimisation Pipe jacking method should be used instead of dredging where sewers and rising mains cross over existing MDC within the WCA and WBA.</p>	<p>To minimise potential construction noise impacts to ecological sensitive receivers within the WCA/WBA.</p>	<p>For the full duration of the construction contract.</p>	<p>The Contractor</p>	<p>✓</p>				
8.7.2	F4	<p>Regular inspections (at least twice a month) should be conducted by the ET during the winter season (November to March) for the remaining sections of the proposed sewerage alignment (including parts of S4, S5 and S6) within the WCA and WBA, where construction activities cannot be rescheduled.</p> <p>The site inspections shall check and report the number of workfronts and implementation of</p>	<p>To schedule noisy construction activities to minimise potential impacts to winter visiting birds.</p>	<p>Work fronts other than identified sections within WBA & WCA (see Figure 8.7a attached) throughout the full duration of the construction contract.</p>	<p>The Contractor</p>	<p>✓</p>				

EIA* Ref.	EM&A Ref	Environmental Protection Measures	Objectives of the Recommended Measures & Main Concerns	Location of the measure	Implementation Agent	Implementation Stage**				Relevant Legislation & Guidelines
						Des	C	O	Dec	
8.7.3	F5	<p>mitigation measures (i.e. erection of movable noise barriers with a suitable footing along the sites) in the monthly EM&A reports.</p> <p>Mitigation Measures Adopted</p> <p>Quietered construction plant and equipment (as shown in Table F2) should be used for the construction of pumping stations (P3 and P2) and sewerage alignment (S4, S5 and S6) located within the WCA and WBA.</p>	<p>Quiet construction plant shall minimise potential noise impacts to the wildlife, particularly rare birds including Black-faced Spoonbill, Buzzard, Hobby, Imperial Eagle, Intermediate Egret, Avocet and Black-eared Kite</p>	<p>At described locations and throughout the full duration of the construction contract.</p>	The Contractor	✓				
8.7.4	F6	<p>Erection of fences along the boundary of pumping station construction sites (P1 to P3) before the commencement of construction works to prevent tipping, vehicle movements, and encroachment of personnel into adjacent areas, and P2 to avoid disturbance to the remaining pond areas (0.7 ha);</p>	<p>To erect fences to prevent encroachment of construction activities onto adjacent areas.</p>	<p>At P1 to P3 for full duration of the construction contract.</p>	The Contractor	✓				
8.7.4	F7	<p>No filling and dumping to the remaining abandoned fishpond at P2.</p>	<p>To avoid disturbance to abandoned fishponds from construction activities and illegal dumping.</p>	<p>At P2 for full duration of the construction contract</p>	The Contractor	✓				
8.7.4	F8	<p>Installation and operation of silt removal facilities at construction sites of P1 to P3. The silt removal facilities should be designed in accordance with Appendix A1 of ProPECC Note PN1/94 Construction Site Drainage. The minimal total combined volume of the silt removal facilities at Nam Sang Wai SPS (P3) should be 15m³.</p>	<p>To install silt removal facilities in potentially impact streams and ponds to prevent sedimentation.</p>	<p>At P1 to P3 for full duration of the construction contract.</p>	The Contractor	✓				
8.7.4	F9	<p>No open fires within the site boundary during</p>	<p>To prohibit open fires, thereby</p>	<p>Site wide and throughout</p>	The Contractor	✓				Air Pollution Control

EIA* Ref.	EM&A Ref	Environmental Protection Measures	Objectives of the Recommended Measures & Main Concerns	Location of the measure	Implementation Agent	Implementation Stage**				Relevant Legislation & Guidelines
						Des	C	O	Dec	
8.7.4	F7	construction and provide temporary fire fighting equipment in the work areas. No filling and dumping to the remaining abandoned fishpond at P2.	minimising potential damage to trees and shrubs. To avoid disturbance to abandoned fishponds from construction activities and illegal dumping.	the full duration of the construction contract. At P2 for full duration of the construction contract	The Contractor	✓				(Open Burning) Regulation
8.7.4	F8	Installation and operation of silt removal facilities at construction sites of P1 to P3. The silt removal facilities should be designed in accordance with Appendix A1 of ProPECC Note PN1/94 Construction Site Drainage.	To install silt removal facilities in potentially impact streams and ponds to prevent sedimentation.	At P1 to P3 for full duration of the construction contract.	The Contractor	✓				
8.7.4	F9	No open fires within the site boundary during construction and provide temporary fire fighting equipment in the work areas.	To prohibit open fires, thereby minimising potential damage to trees and shrubs.	Site wide and throughout the full duration of the construction contract.	The Contractor	✓				Air Pollution Control (Open Burning) Regulation
		FISHERIES - Construction Phase								
		No specific mitigation measures are required for inclusion in the EP.								
		CULTURAL HERITAGE – Not Applicable for Package 1A-1T (DC/2005/02)								
		LANDSCAPE AND VISUAL - Construction Phase								
	H1	The site inspections shall check and report the implementation of mitigation measures (i.e. top-soil are reused and new compensatory planting works are carried out immediately after the construction of the civil structure) in the monthly EM&A reports. The first monthly EM&A Report should also report the appearance of the temporary hoarding barriers.	To minimise potential landscape and visual impacts.	To be implemented during the construction phases of the project.	The Contractor	✓				
	H2	Prior to application for an Environmental Permit, a set of landscape plans and building elevations of the proposed pumping stations should be	To minimise potential landscape and visual impacts.	To be implemented during the design and construction phases of the	DSD and The Contractor	✓				

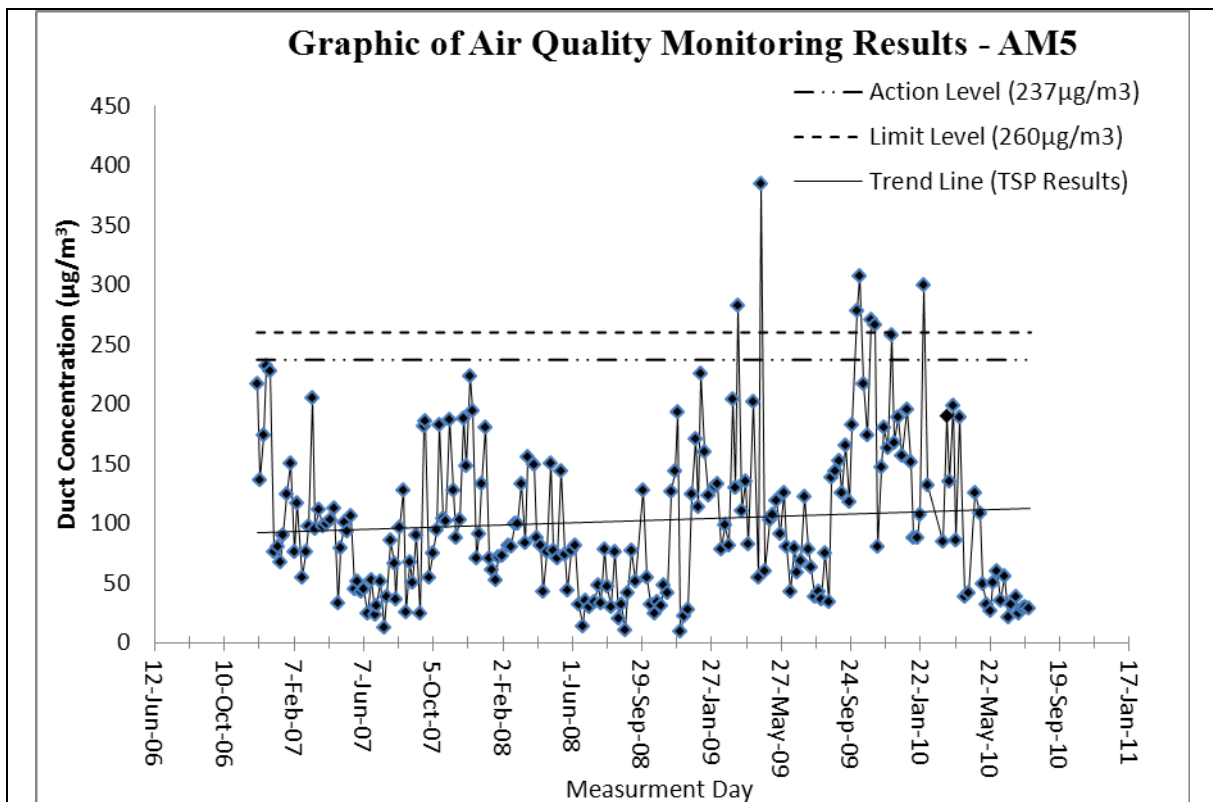
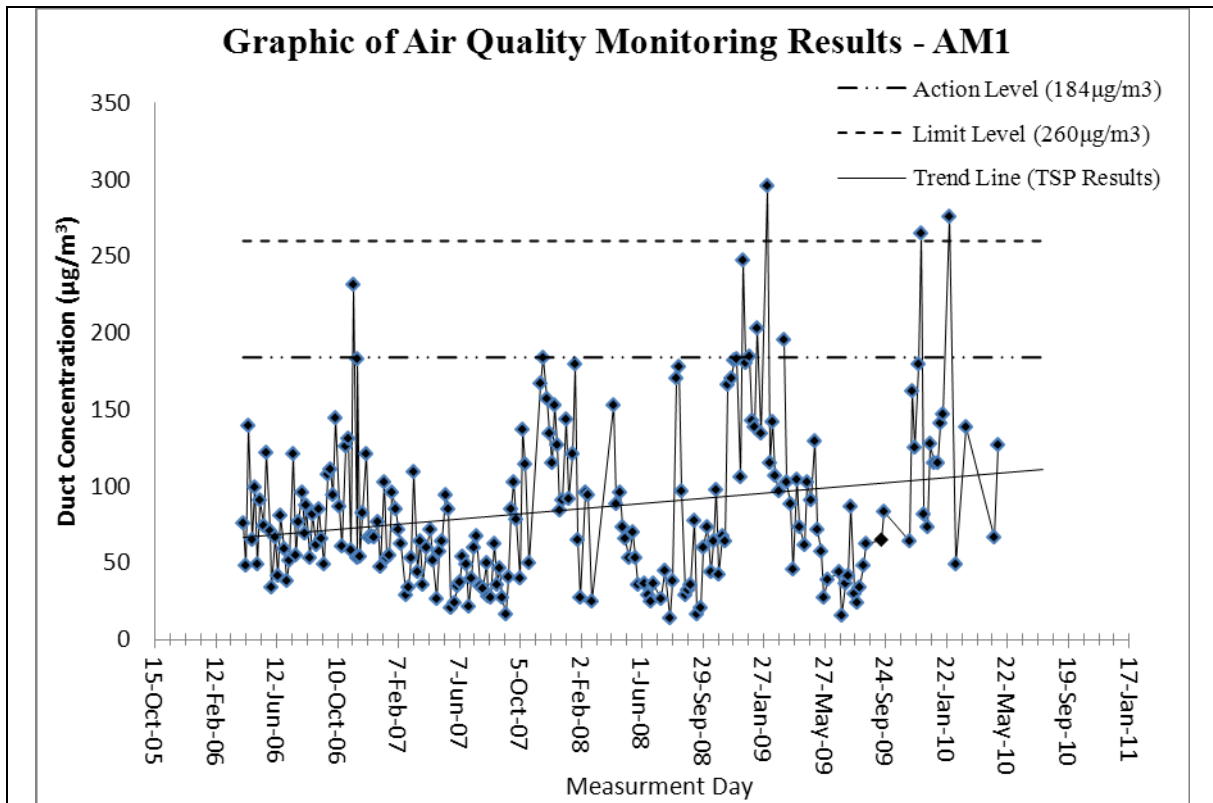
EIA* Ref.	EM&A Ref	Environmental Protection Measures	Objectives of the Recommended Measures & Main Concerns	Location of the measure	Implementation Agent	Implementation Stage**				Relevant Legislation & Guidelines
						Des	C	O	Dec	
		submitted for approval by the EPD. The landscape plans and pumping station elevations should demonstrate that the following elements are considered: <ul style="list-style-type: none"> existing landscape elements (such as mature trees), transplantation of valuable trees, new compensatory planting incorporate information on materials, details and textures so as to be as visually recessive as possible and in a style that fits with the surrounding village buildings. colour should be of low chromatic intensity to reduce the potential contrast between the structures and their background. The external finishing of the Pumping Stations shall be designed in conjunction with the landscape scheme. a minimum screen planting of 3m width and use of trees with a dense canopy of up to 5 m in height subject to constraints such as engineering and land availability. felling of mature trees are kept to a minimum. 		project.						
3.7	I1	EM&A REQUIREMENTS - Construction Phase <i>Air Quality</i> Subject to the Environmental Protection Departments (EPDs) agreement, construction phase dust monitoring shall be undertaken at the following locations in accordance with the recommendations of the EIA. <ul style="list-style-type: none"> Worksite boundary facing Scattered house in Nam Sang Wai (AM1); Worksite boundary facing Fung Kat Heung (AM5); Worksite boundary facing Scattered House near Route 3 (AM6); 	Installations of the dust monitoring stations to ensure the action and limit levels are not exceeded.	At specified dust monitoring locations for the duration of the construction works.	To be undertaken by the Environmental Team (ET) and reviewed and audited by the Engineer /DSD		✓			<i>Air Pollution Control (Construction Dust) Regulations</i>

EIA* Ref.	EM&A Ref	Environmental Protection Measures	Objectives of the Recommended Measures & Main Concerns	Location of the measure	Implementation Agent	Implementation Stage**				Relevant Legislation & Guidelines
						Des	C	O	Dec	
4.9.1	I2	<ul style="list-style-type: none"> at any additional locations, where considered necessary, in agreement with EPD. <p><i>Construction Noise</i> Subject to the Environmental Protection Departments (EPDs) agreement, construction phase noise monitoring shall be undertaken at the following locations in accordance with the recommendations of the EIA.</p> <ul style="list-style-type: none"> (NM3) Scattered House in Nam San Wai (D12); (NM4) Scattered House in Nam San Wai (D11); (NM6) Scattered House near Route 3 (D17); (NM7) Fung Kat Heung (D19); and at any additional locations, where considered necessary, in agreement with EPD 	Installations of the noise monitoring stations to ensure the action and limit levels are not exceeded.	At specified noise monitoring locations throughout the duration of the construction works.	To be undertaken by the Environmental Team (ET) and reviewed and audited by the Engineer	✓				Noise Control Ordinance
Des = Design, C = Construction, O = Operation, Dec = Decommissioning										

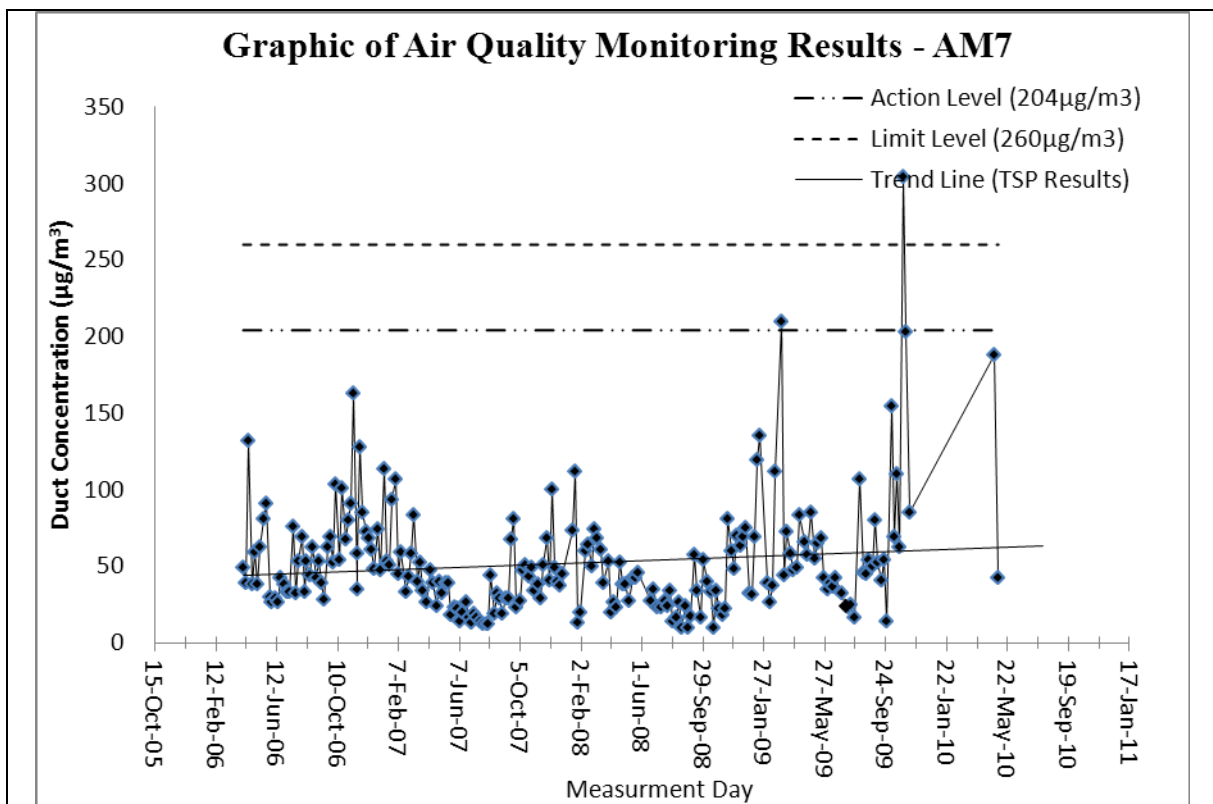
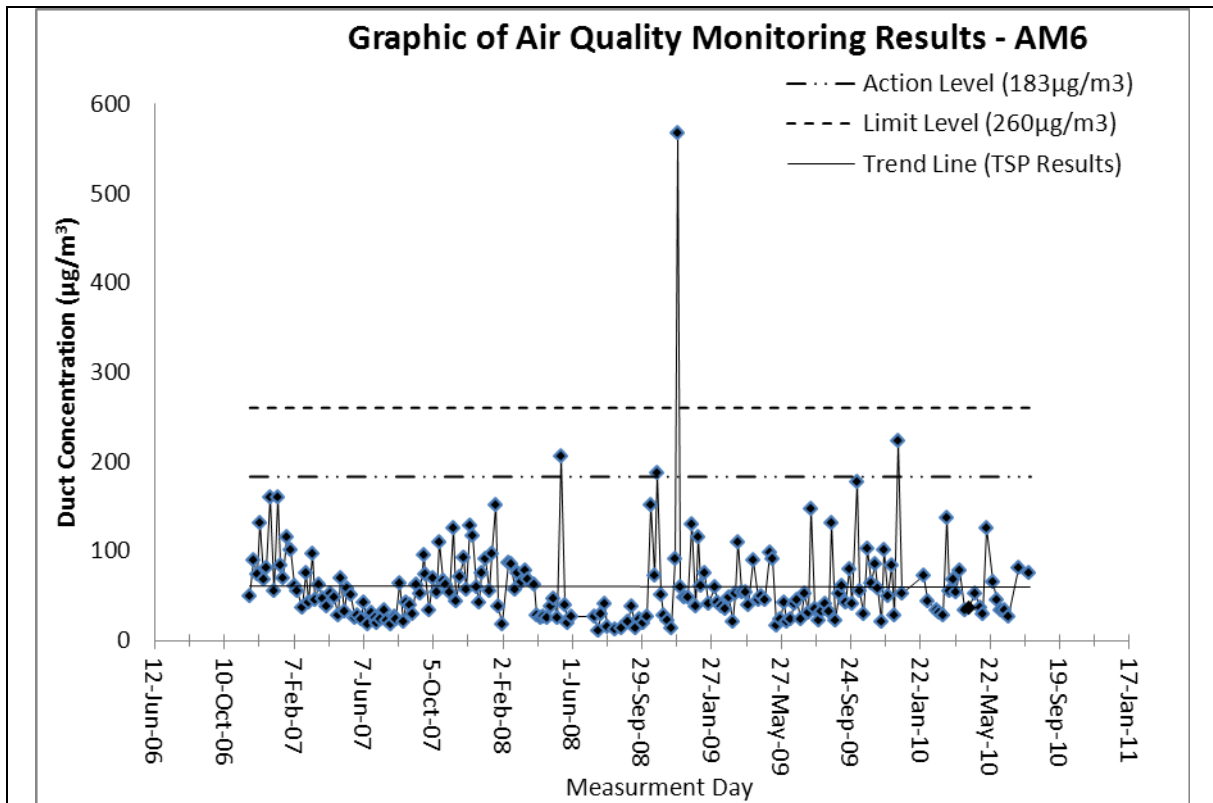
Annex H

**Graphical Plots of Air Quality
and
Noise Monitoring Results**

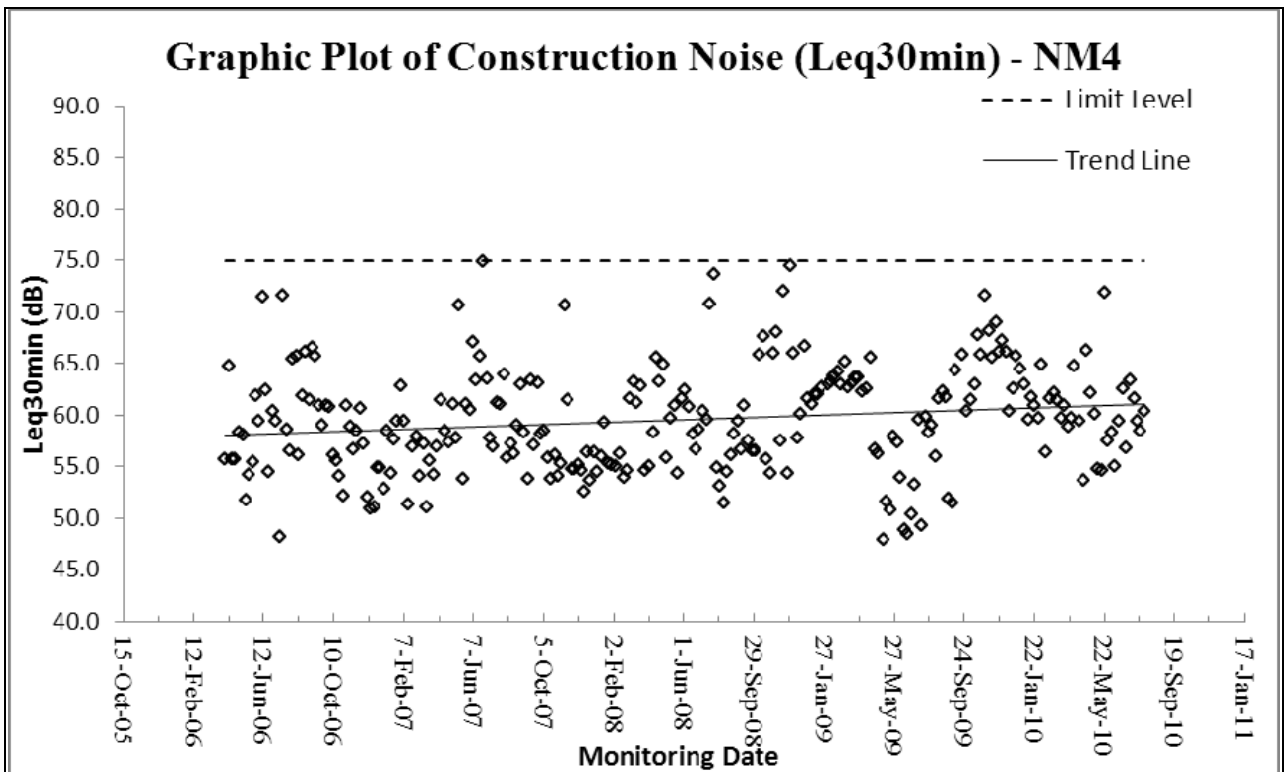
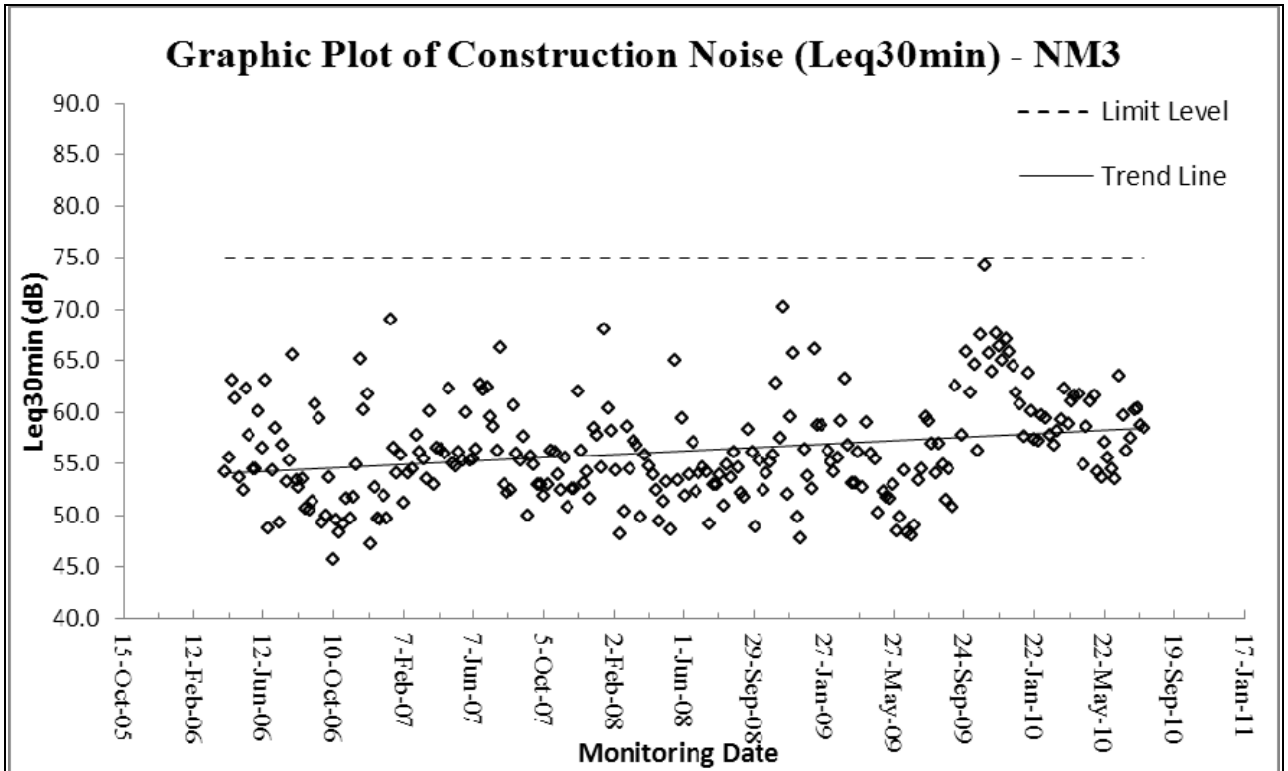
Air Quality Monitoring



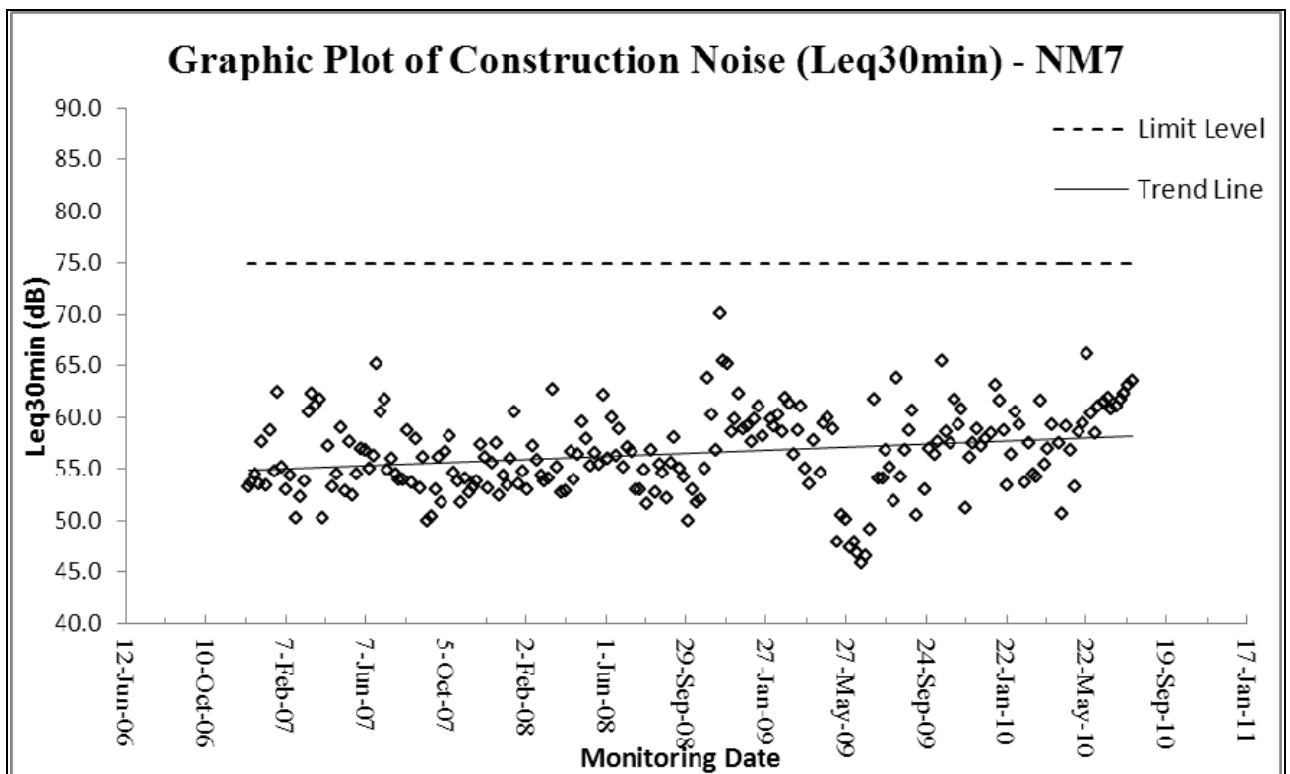
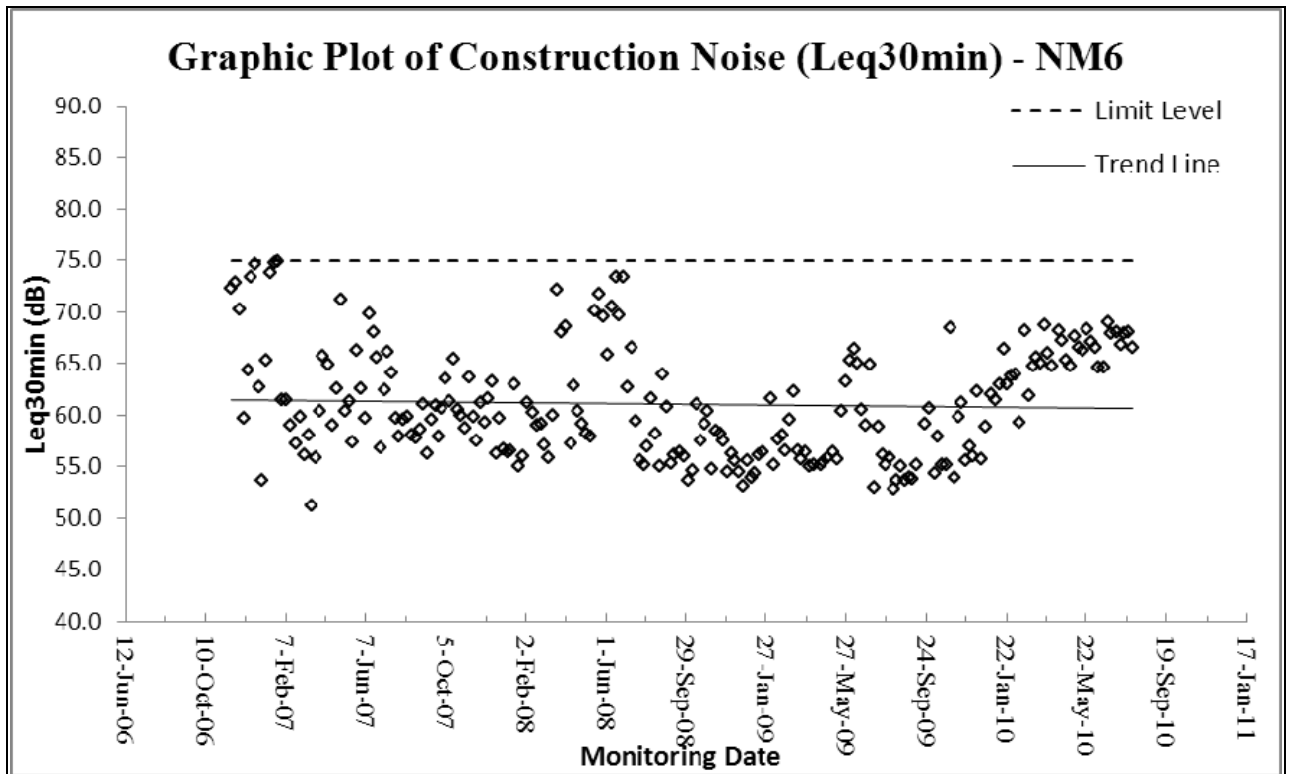
Air Quality Monitoring



Construction Noise Monitoring

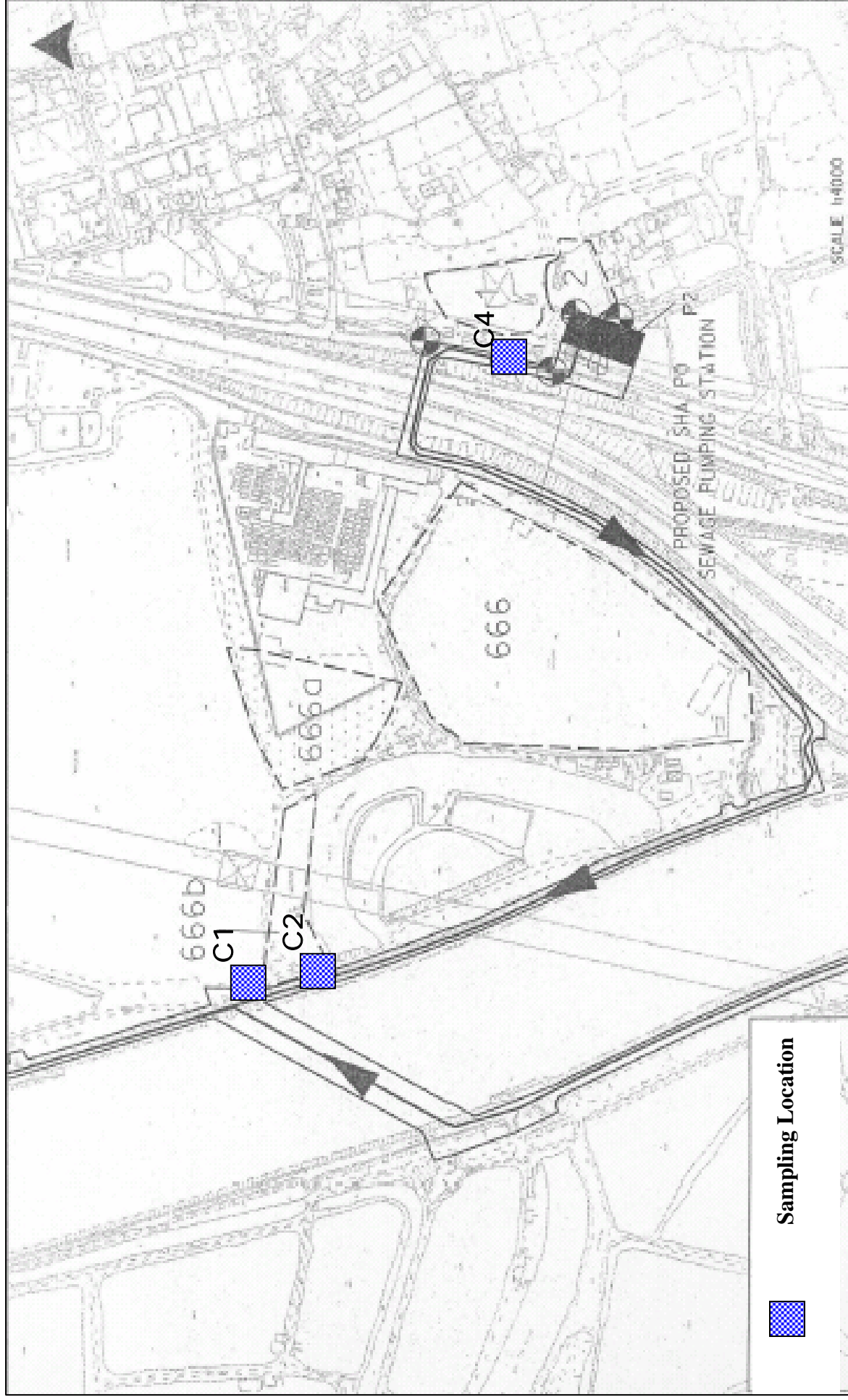


Construction Noise Monitoring

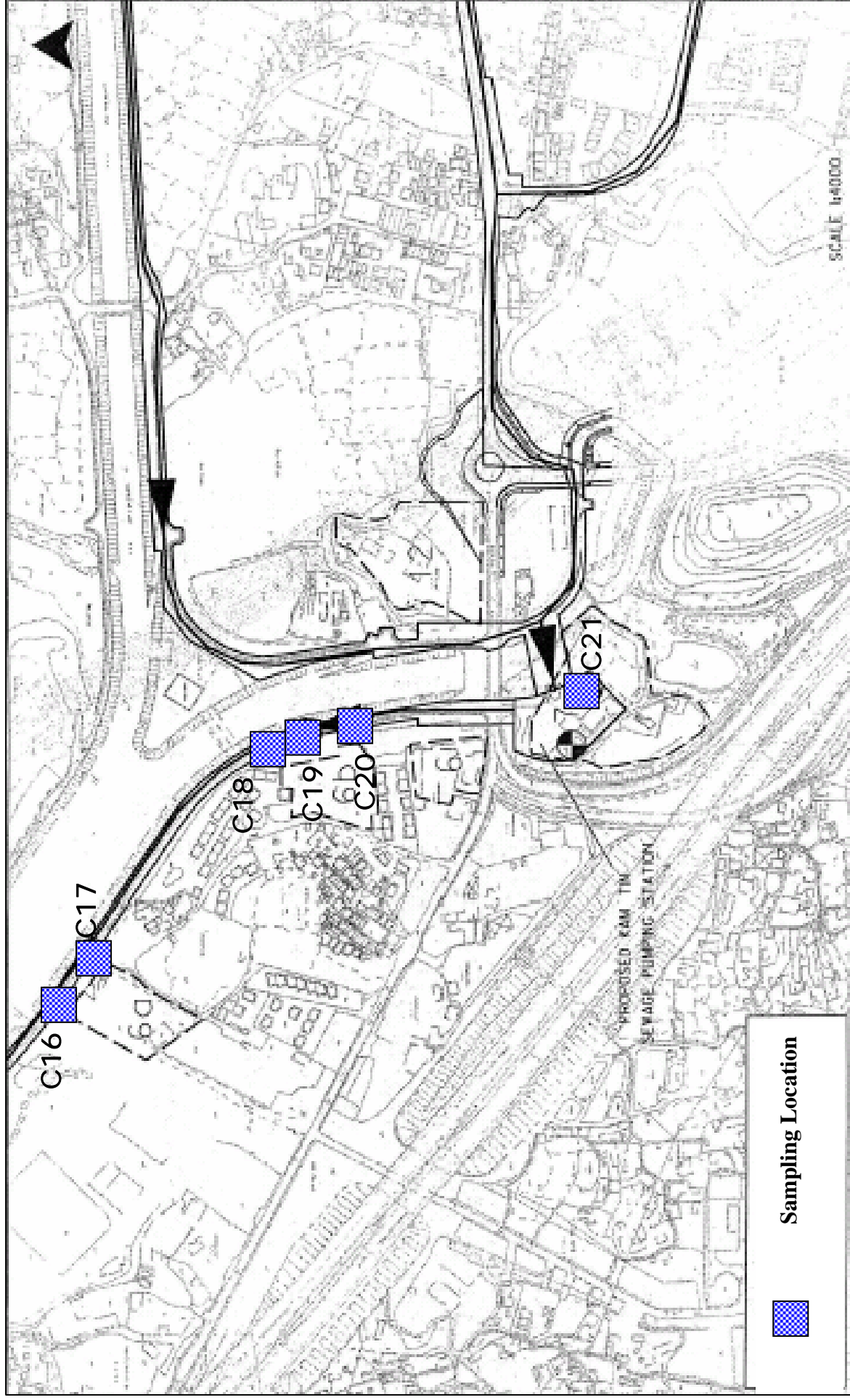


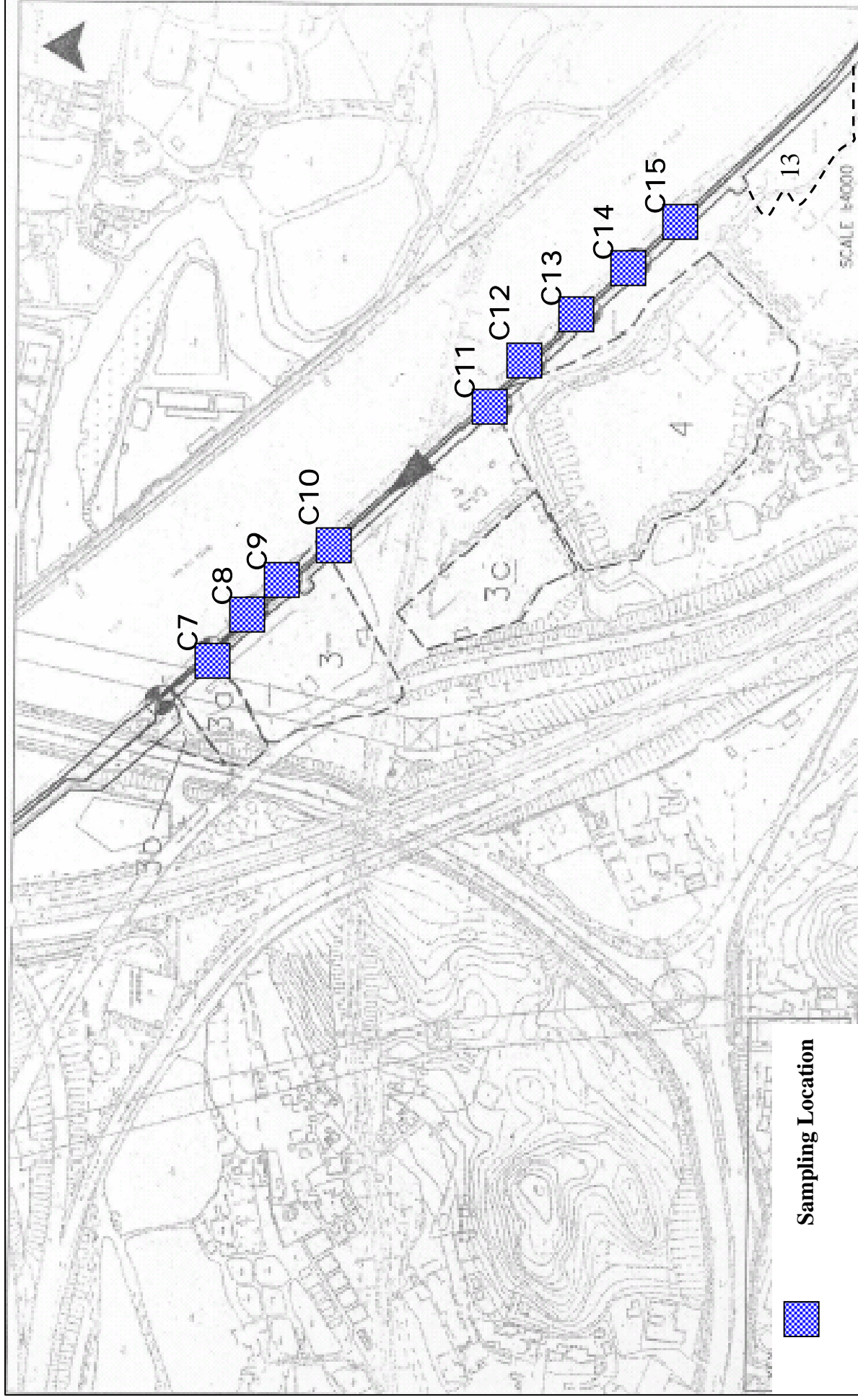
Annex I

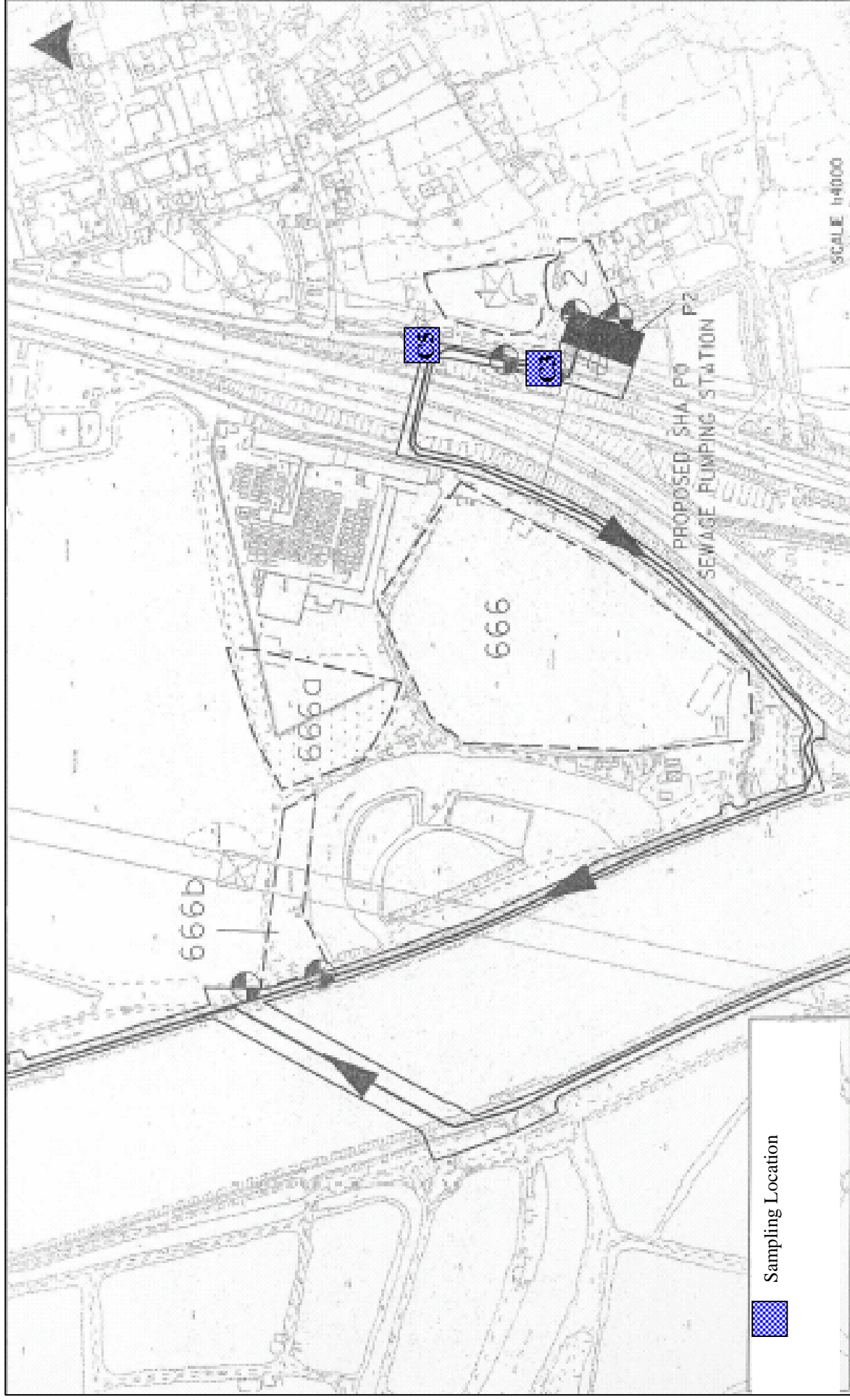
**Location of Potentially Contamination Areas
And Sampling Points**



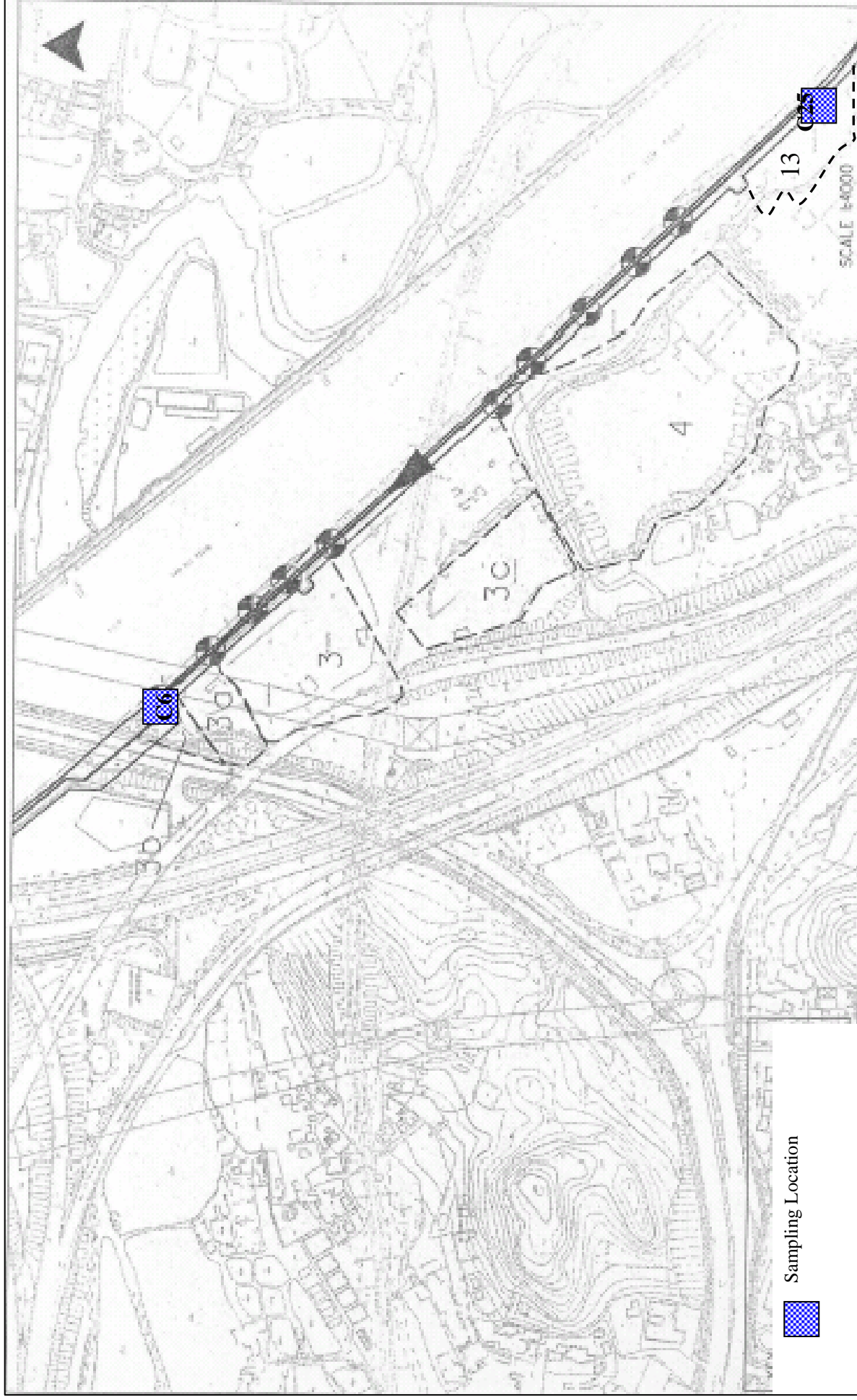
AUES

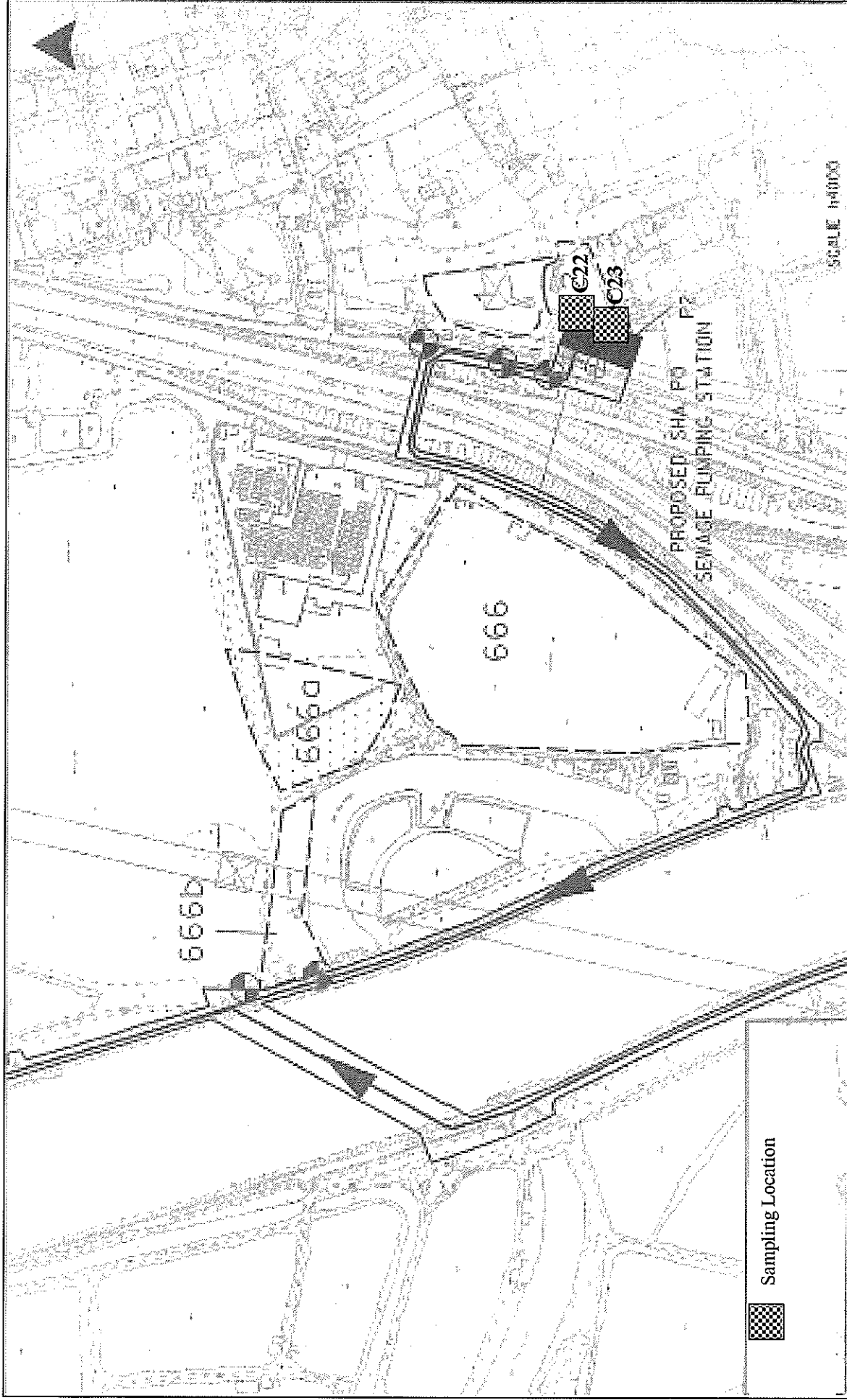


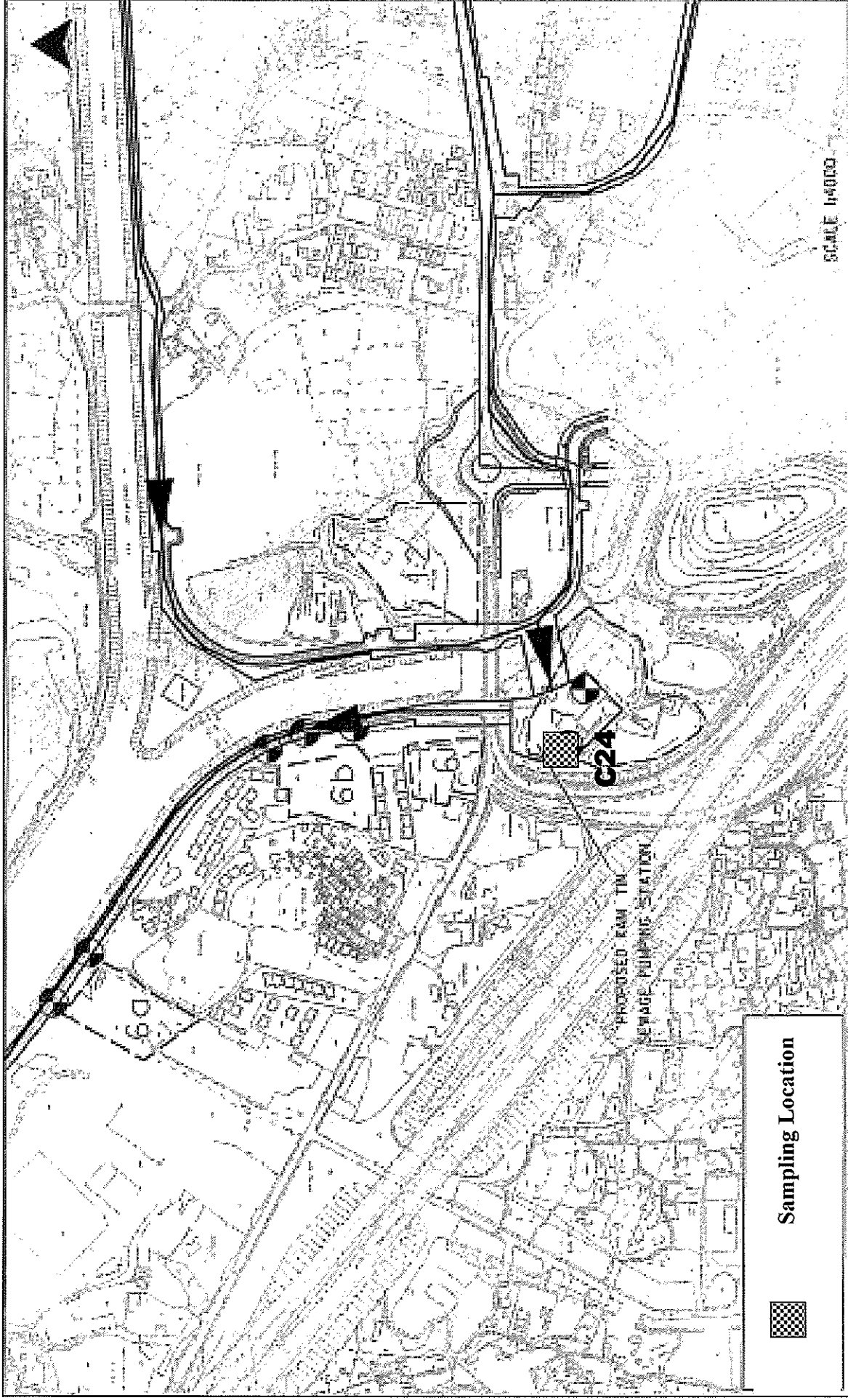




AUES







Annex J

Result summary of chemical analysis soil and groundwater

Borehole No	Sample ID	Depth (m bgl)	Moisture Content (%)	Toxicity Characteristic Leaching Procedure (TCLP) (mg/L)																	
				Cadmium	Chromium	Copper	Nickel	Lead	Zinc	Mercury	Tin	Silver	Antimony	Arsenic	Beryllium	Thallium	Vanadium	Selenium	Barium		
			(mg/kg)	0.02	0.1	0.1	0.1	0.1	0.1	0.1	0.01	0.1	0.1	0.1	0.1	0.1	0.1	0.1			
			Dutch Level "B" (mg/kg)	10	50	250	250	50	250	1	250	50	150	50	10	50	250	1	1000		
			TCLP Limit (ppm)	10	50	250	250	50	250	1	250	50	150	50	10	50	250	1	1000		
C3	1	0.5	10.8	<0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.01	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	
C3	2	1.5	15.3	<0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.01	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2
C3	3	3.0	22.1	<0.02	<0.1	<0.1	<0.1	<0.1	2.8	<0.01	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.3
C5	1	0.5	14.9	<0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.01	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.2
C5	2	1.5	12.1	<0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.01	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
C5	3	3.0	14.3	<0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.01	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
C6	1	0.5	19.9	<0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.01	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.5
C6	2	1.5	20.9	<0.02	<0.1	<0.1	<0.1	0.2	2.7	<0.01	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.8
C6	3	3.0	44.2	<0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.01	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2
C25	1	0.5	14.8	<0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.01	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.5
C25	2	1.5	19.8	<0.02	<0.1	<0.1	<0.1	<0.1	0.4	<0.01	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.5
C25	3	3.0	15.4	<0.02	<0.1	<0.1	<0.1	<0.1	0.1	<0.01	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.7
QC1	Same as		20.7	<0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.01	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.6

Remarks: 1ppm = 1mg/L

- 1000 ml = 1gm
- 1000gm = 1kg
- 1ml = 1gm
- 1 Litre = 1,000ml = 1,000n = 1,000, at 4 °C

Borehole No	Sample ID	Depth (m bgl)	Moisture Content (%)	Toxicity Characteristic Leaching Procedure (TCLP) (mg/L)															
				Cadmium	Chromium	Copper	Nickel	Lead	Zinc	Mercury	Tin	Silver	Antimony	Arsenic	Beryllium	Thallium	Vanadium	Selenium	Barium
(mg/kg)				0.02	0.1	0.1	0.1	0.1	0.1	0.01	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
Dutch Level "B" (mg/kg)																			
TCLP Limit (ppm)				10	50	250	250	50	250	1	250	50	150	50	10	50	250	1	1000
C22	1	0.5	11.1	<0.02	<0.1	<0.1	0.9	<0.1	<0.1	<0.01	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.5
C22	2	1.5	12.4	<0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.01	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
C22	3	3.0	28.9	<0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.01	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
C23	1	0.5	11.6	<0.02	<0.1	<0.1	<0.1	<0.1	0.1	<0.01	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2
C23	2	1.5	19.3	<0.02	<0.1	<0.1	<0.1	<0.1	0.3	<0.01	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
C23	3	3.0	30.6	<0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.01	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
C24	1	0.5	12.7	<0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.01	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.3
C24	2	1.5	18.3	<0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.01	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.9
C24	3	3.0	21.8	<0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.01	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.6

Remarks: 1ppm = 1mg/L

1000 m = 1 gm

1000gr = 1 kg

1ml = 1 gm

1 Litre = 1,000n = 1,000 gm = 1,000,000 n at 4 °C

following **Table 3-3** to **Table 3-6**.

Table 3-3 Results of Confirmation samples at Ko Po Road CHC447.5 – CHC492.35 Drainage Trench Alignment

Location	Depth (m bgl)	Related Contaminated Soil Borehole	Lead (mg/kg)	Remarks
CHC 447.5	1.50	C16	49	No exceedance
CHC 450.5	1.50	C16	49	No exceedance
CHC 453.5	1.50	C16	42	No exceedance
CHC 456.23	1.50	C16	71	No exceedance
CHC 459.23	1.50	C16	96	No exceedance
CHC 462.23	1.50	C16	100	No exceedance
CHC 465.23	1.50	C16	93	No exceedance
CHC 468.23	1.50	C16	62	No exceedance
CHC 471.23	0.20	C16	115	No exceedance
CHC 474.23	1.50	C16	72	No exceedance
CHC 477.23	1.50	C16	92	No exceedance
CHC 480.23	1.50	C16	64	No exceedance
CHC 483.23	1.50	C16	68	No exceedance
CHC 486.23	1.50	C16	93	No exceedance
CHC 489.23	1.50	C16	79	No exceedance
CHC 492.23	1.50	C16	80	No exceedance

Remarks: CHC471.23 - The concrete surface of box culver locate the existing ground level 0.2 below

Table 3-4 Results of Confirmation samples at Ko Po Road CHC558.6 – CHC660.6 Drainage Trench Alignment

Location	Depth (m bgl)	Related Contaminated Soil Borehole	Benzo(a) pyrene (mg/kg)	Remarks
CHC 558.6	1.50	C25	<0.5	No exceedance
CHC 561.6	1.50	C25	<0.5	No exceedance
CHC 564.6	1.50	C25	<0.5	No exceedance
CHC 567.6	1.50	C25	<0.5	No exceedance
CHC 570.6	1.50	C25	<0.5	No exceedance
CHC 573.6	1.50	C25	<0.5	No exceedance
CHC 576.6	1.50	C25	<0.5	No exceedance
CHC 579.6	1.50	C25	<0.5	No exceedance
CHC 582.6	1.50	C25	<0.5	No exceedance
CHC 585.6	1.50	C25	<0.5	No exceedance
CHC 588.6	1.50	C25	<0.5	No exceedance
CHC 591.6	1.50	C25	<0.5	No exceedance
CHC 594.6	1.50	C25	<0.5	No exceedance
CHC 597.6	1.50	C25	<0.5	No exceedance
CHC 600.6	1.50	C25	<0.5	No exceedance
CHC 603.6	1.50	C25	<0.5	No exceedance
CHC 606.6	1.50	C25	<0.5	No exceedance
CHC 609.6	1.50	C25	<0.5	No exceedance
CHC 612.6	1.50	C25	<0.5	No exceedance
CHC 615.6	1.50	C25	<0.5	No exceedance
CHC 618.6	1.50	C25	<0.5	No exceedance
CHC 621.6	1.50	C25	<0.5	No exceedance
CHC 624.6	1.50	C25	<0.5	No exceedance
CHC 627.6	1.50	C25	<0.5	No exceedance
CHC 630.6	1.50	C25	<0.5	No exceedance
CHC 633.6	1.50	C25	<0.5	No exceedance
CHC 636.6	1.50	C25	<0.5	No exceedance
CHC 639.6	1.50	C25	<0.5	No exceedance
CHC 642.6	1.50	C25	<0.5	No exceedance
CHC 645.6	1.50	C25	<0.5	No exceedance

Location	Depth (m bgl)	Related Contaminated Soil Borehole	Benzo(a) pyrene (mg/kg)	Remarks
CHC 648.6	1.50	C25	0.7	No exceedance
CHC 651.6	1.50	C25	<0.5	No exceedance
CHC 654.6	1.50	C25	<0.5	No exceedance
CHC 657.6	1.50	C25	<0.5	No exceedance
CHC 660.6	1.50	C25	<0.5	No exceedance

Table 3-5 Results of Confirmation samples at Ko Po Road CHC1200 – CHC1233 Drainage Trench Alignment

Location	Depth (m bgl)	Related Contaminated Soil Borehole	Arsenic (mg/kg)	Copper (mg/kg)	Remarks
CHC 1200	0.50	C7	9.0	6	No exceedance
CHC 1200	3.00-3.45	C7		54	No exceedance
CHC 1203	0.50	C7	61.0	25	Exceedance
CHC 1203	3.00-3.45	C7		8	No exceedance
CHC 1206	0.50	C7	7.0	10	No exceedance
CHC 1206	3.00-3.45	C7		22	No exceedance
CHC 1209	0.50	C7	23.0	13	No exceedance
CHC 1212	0.50	C7	8.0	7	No exceedance
CHC 1212	3.00-3.45	C7		6	No exceedance
CHC 1215	0.50	C7	12.0	7	No exceedance
CHC 1215	3.00-3.45	C7		2	No exceedance
CHC 1218	0.50	C7	10.0	6	No exceedance
CHC 1218	3.00-3.45	C7		6	No exceedance
CHC 1221	0.50	C7	3.0	2	No exceedance
CHC 1221	3.00-3.45	C7		5	No exceedance
CHC 1224	0.50	C7	6.0	4	No exceedance
CHC 1224	3.00-3.45	C7		8	No exceedance
CHC 1227	0.50	C7	7.0	6	No exceedance
CHC 1227	3.00-3.45	C7		6	No exceedance
CHC 1230	0.50	C7	6.0	5	No exceedance
CHC 1230	3.00-3.45	C7		7	No exceedance
CHC 1233	0.50	C7	5.0	4	No exceedance
CHC 1233	3.00-3.45	C7		7	No exceedance

Remarks: CHC1209 -The drilling work was stopped due with the box culver are below the existing ground level 1.50m bgl

Table 3-6 Results of Confirmation samples at Ko Po Road CHC1200 – CHC1233 Drainage Trench Alignment

Location	Depth (m bgl)	Related Contaminated Soil Borehole	Benzo(a) pyrene (mg/kg)	Barium (mg/kg)	Lead (mg/kg)	Zinc (mg/kg)	Copper (mg/kg)	Remarks
CHC 1236	1.5	C6	<0.5	51.9	108.0	73.0	5	No exceedance
CHC 1239	1.5	C6	<0.5	95.1	114.0	130.0	13	No exceedance
CHC 1242	1.5	C6	<0.5	51.3	103.0	80.0	4	No exceedance
CHC 1245	1.5	C6	<0.5	49.0	55.0	64.0	4	No exceedance
CHC 1248	1.5	C6	<0.5	202.0	106.0	71.0	4	No exceedance
CHC 1251	1.5	C6	<0.5	35.4	43.0	63.0	4	No exceedance
CHC 1254	1.5	C6	<0.5	52.2	46.0	60.0	5	No exceedance
CHC 1257	1.5	C6	<0.5	43.0	98.0	93.0	4	No exceedance
CHC 1260	1.5	C6	<0.5	41.5	97.0	97.0	4	No exceedance
CHC 1263	1.5	C6	<0.5	63.5	53.0	74.0	5	No exceedance
CHC 1266	1.5	C6	<0.5	54.6	131.0	100.0	11	No exceedance
CHC 1269	1.5	C6	<0.5	41.7	113.0	106.0	9	No exceedance
CHC 1272	1.5	C6	<0.5	53.3	52.0	83.0	16	No exceedance
CHC 1275	1.5	C6	<0.5	43.3	72.0	199.0	34	No exceedance

Table 3-3 Results of Confirmation samples at Ko Po Road Working Site

Location	Depth (m bgl)	Related Contaminated Soil Borehole	Benzo(a) pyrene (mg/kg)	Barium (mg/kg)	Lead (mg/kg)	Zinc (mg/kg)	Copper (mg/kg)	Remarks
Dutch B			1	400	150	500	100	
CH1278	1.5	C6	<0.5	73	78	137	26	No exceedance
CH1281	1.5	C6	<0.5	64	70	113	28	No exceedance
CH1284	1.5	C6	<0.5	88	100	162	34	No exceedance
CH1287	1.5	C6	<0.5	67	92	160	26	No exceedance
CH1290	1.5	C6	<0.5	65	159	98	103	Exceedance
CH1293	1.5	C6	<0.5	72	119	149	142	Exceedance
CH1296	1.5	C6	<0.5	33	34	35	7	No exceedance
CH1299	1.5	C6	1.6	167	125	278	1150	Exceedance
CH1302	1.5	C6	<0.5	47	52	42	13	No exceedance
CH1305	1.5	C6	<0.5	43	128	53	21	No exceedance