

Territory Development Department

Contract No. ST 77/01

**Sha Tin New Town, Stage II
Road D15 Linking Lok Shun Path
and Tai Po Road**

**Monthly Environmental Monitoring & Audit Report -
December 2002**

**Sha Tin New Town, Stage II Road D15 Linking Lok Shun Path and
Tai Po Road (Contract No. ST 77/01)**

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December 2002**

Checked in accordance with EML QP22
Environmental Team Leader

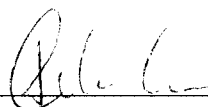


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EXECUTIVE SUMMARY

The impact environmental monitoring report was prepared by Environmental Management Limited (EML) for Environmental Monitoring & Audit (EM&A) Services of Sha Tin New Town, Stage II Road D15 Linking Lok Shun Path and Tai Po Road. This report discusses the EM&A services that had been carried out in December 2002.

Environmental monitoring for this Project included both air quality and noise measurements. The parameters measured for air quality are 24-hour and 1-hour Total Suspended Particulate (TSP) while for noise monitoring, the A-weighted continuous sound pressure level (L_{eq}) as well as percentile levels (L_{10} and L_{90}) were measured.

Over the reporting period, all measured 24-hour TSP, 1-hour TSP and noise ($L_{eq}(5min)$) monitoring data collected were below the AL Levels and no remedial actions as listed in the Event and Action Plan as set out in **Appendix G** were required.

The major construction activities in this reporting period included:

- Utility diversion
- Slope cutting at CH300-400 with associated slope drainage
- Drainage works
- Fabrication precast beams A1-A2-A3-A4-A5
- Construction of pile caps at A2, A3 A4 and pier A3, A4
- Piling works at B1
- Construction of pile Cap & Pier C2
- Procurement, manufacturing and testing of bridge bearing at Bridge A and B
- Retaining walls & stairs, including Wall 2; Wall 3 & Stair 1, 2, 3; Wall 8; Wall 11 & Stair 4
- Noise barrier, including demolition existing retaining wall for noise barrier No.1 and fabrication noise barrier
- Drainage works (other than slope drainage), including construction of box culvert & pipe and remain drainage works

Regular site inspection was conducted in this reporting month and mitigation measures, as discussed in the relevant documents, were assessed.

In comparison to last month, it was noted from site inspections that there were improvements in the implementation of dust mitigation measures. Meanwhile, it was noted that the maintenance of the stream near Lok Shun Path roundabout was not adequate, therefore it was recommended to the Contractor that more mitigation measures should be installed along the stream, including the additional of sandbags on the banks.

1. INTRODUCTION

1.1 Background

Environmental Management Limited (EML) was appointed by Maunsell Consultants Asia Ltd. as the Environmental Specialist for the project *Sha Tin New Town, Stage II Road Linking Lok Shun Path and Tai Po Road* (Contract No. ST 77/01).

The responsibilities of the Environmental Team included:

- Monitor the noise and air quality data as required in the Environmental Monitoring and Audit (EM&A) Manual;
- Analyse the monitoring data and review the success of EM&A program to cost effectively confirm the adequacy of mitigatory measures implemented and validity of the Environmental Impact Assessment Study predictions and to identify any adverse environmental impacts arising;
- Carry out site inspection to investigate and audit the Contractor's site practice, equipment and work methodologies with respect to pollution control and environmental mitigation, and anticipate environmental issues for proactive action before problems arise;
- Review the proposal for mitigation measures submitted by Contractor in accordance with Event and Action Plans;
- Propose any improvement or other alternative mitigation measures should Contractor's proposal be found to be inadequate;
- Adhere to the procedures for carrying out complaint investigation;
- Audit and prepare EM&A reports on environmental monitoring data and site environmental conditions and;
- Report on EM&A results to Engineer, the ER and EPD.

This is the monthly EM&A report for December 2002. This monthly report describes the results of the impact air quality and noise monitoring works in the reporting period as well as the environmental status and issues of Road D15 Construction Site. In addition, if required, any remedial/follow-up actions undertaken as a result of non-compliance with relevant environmental criteria or complaints related to Road D15 Construction Site would also be discussed.

The project area of Road D15 Construction Site is shown in **Figure 1.1**.

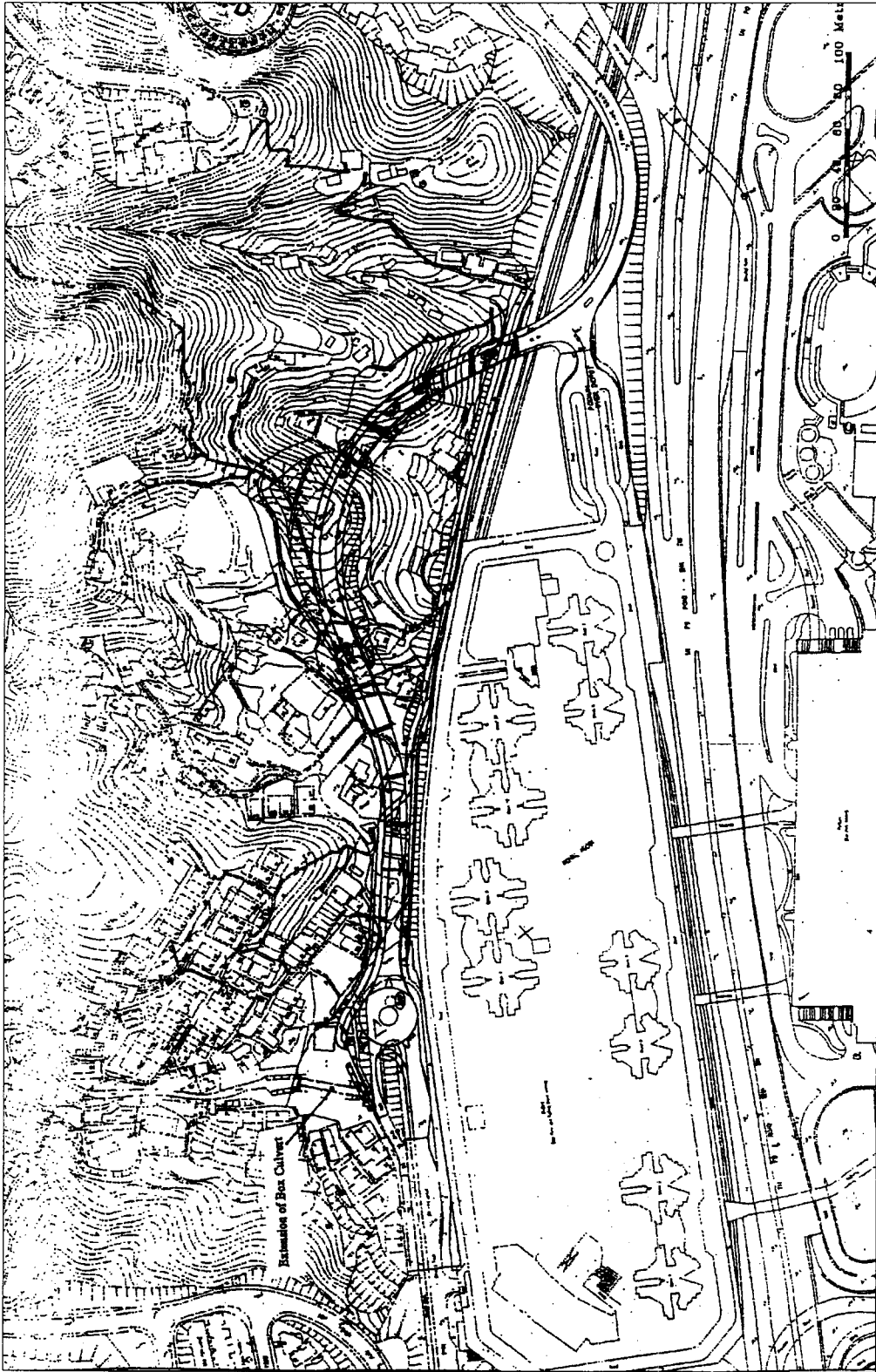


Figure 1.1 Project Area

2. ENVIRONMENTAL STATUS

2.1 Air Quality

2.1.1 Monitoring Requirements

In accordance with the EM&A Manual, air quality impact monitoring was conducted in terms of 1 –hour and 24-hour TSP at the designated monitoring locations.

Continuous 24-hour TSP monitoring was performed once in every six days while 1-hour TSP monitoring was performed 3 times in every 6 days. The Action and Limit (AL) levels for air quality is attached in **Appendix A** while the tentative monitoring schedules for the current and next reporting months are attached in **Appendix B**.

2.1.2 Monitoring Locations

The designated impact air quality monitoring stations are listed in **Table 2.1** and are shown in **Figure 2.1**.

Table 2.1 Air Quality Monitoring Locations

Monitoring Station	Location
A1	Village house at Lok Lo Ha Village
A2	Lok Lo Ha Village House No. 104
A3	Village House near Tsun King Road

2.1.3 Summary of Monitoring Results

In this report, the results for the impact air quality monitoring conducted in December 2002 at the three designated locations were evaluated. **Table 2.2** summarises the ranges and mean of the 24-hour and 1-hour TSP monitoring results carried out in the reporting period. Detailed results, including graphical plots and relevant field logs, are presented in **Appendix C** and **D**. Meanwhile, **Appendix F** shows the meteorological conditions during the monitoring days.

Table 2.2 Summary of 24 and 1-hour TSP Monitoring Results

Parameter	Monitoring Location	Mean TSP Levels ($\mu\text{g}/\text{m}^3$)	Range ($\mu\text{g}/\text{m}^3$)	No. of Exceedance	
				Action Levels	Limit Levels
24 – hour TSP	A1	66.2	30-100	0	0
	A2	53.4	31-86	0	0
	A3	61.4	35-100	0	0
1 – hour TSP	A1	170.3	101-257	0	0
	A2	116.9	62-261	0	0
	A3	123.7	79-188	0	0

As can be seen from the table above, all measured 24-hour TSP and 1-hour TSP monitoring data were below the criteria as set out in the Action and Limit Levels in **Appendix A**.

Over the reporting period, the local weather conditions during the monitoring were mainly sunny or cloudy. From field logs, the major dust sources during samplings near the designated stations included road dusts, vehicle emissions from traffic in Lok Shun Path and construction works at Road D15 Site. The major construction works carried out at Road D15 Site over the reporting period were mainly utility diversion, slope cutting, drainage works, fabrication precast beams,

piling works, retaining walls & stairs and noise barrier. Meanwhile, it was also observed that there were construction activities carried out by sites that were not related to this Project in the vicinity of the monitoring stations.

Comparing with previous monitoring results, the measured mean 24-hour TSP and 1-hour TSP levels at all stations are lower in this reporting period.

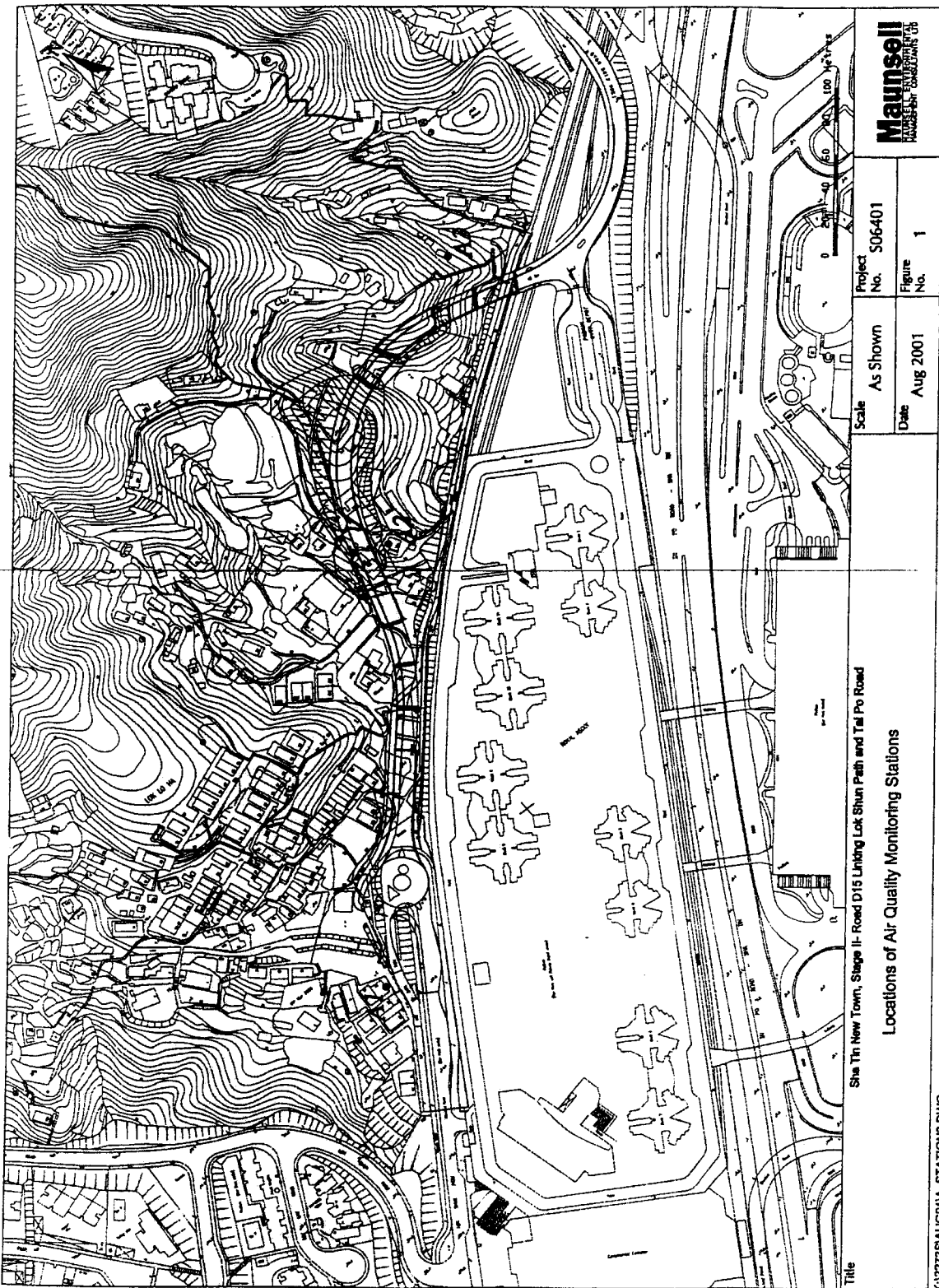


Figure 2.1 Air Quality Monitoring Locations

2.2 Noise

2.2.1 Monitoring Requirements

Impact noise monitoring was conducted once in every six days at the five designated monitoring locations in accordance with specifications in the EM&A Manual. The duration of sampling was 30 minutes. The Action and Limit levels for noise monitoring are attached in **Appendix A** while the tentative monitoring schedules for the current and next reporting months are attached in **Appendix B**.

2.2.2 Monitoring Locations

The impact noise monitoring locations are presented in **Table 2.3** and shown in **Figure 2.2**.

Table 2.3 Noise Monitoring Locations

Monitoring Location	Measurement	Location
N1	Façade	Lok Lo Ha Village House No. 3B
N2	Façade	Lok Lo Ha Village House No. 32A
N3	Façade	Royal Ascot Block 9, Flat C
N4	Façade	Lok Lo Ha Village House No. 97
N5	Façade	Village near Royal Ascot

2.2.3 Summary of Monitoring Results

In this report, the results for the impact noise monitoring conducted in December 2002 at the five designated locations were evaluated. The monitoring results obtained are summarised in **Table 2.4** below. Detailed results, including graphical plots and relevant field logs, are presented in **Appendix E**. Meanwhile, **Appendix F** shows the meteorological conditions during the monitoring days.

Table 2.4 Summary of Noise Monitoring Results

Parameter	Monitoring Location	Range of Results dB(A)	No. of Exceedance	
			Action Levels	Limit Levels
30-minute Noise Measurement (Leq)	N1	61.2-67.7	0	0
	N2	65.8-73.0		0
	N3	58.4-63.9		0
	N4	58.8-68.4		0
	N5	59.7-67.0		0

As shown in the table above, all noise monitoring data recorded were below the criteria as set out in the Action and Limit levels in **Appendix A**.

Over the reporting period, the local weather conditions during the sampling were mainly sunny or cloudy, while all monitoring was conducted with wind speed of below 2.0m/s. Traffic and construction activities were the major noise sources identified at the five monitoring locations. Meanwhile, the carrying out of excavation, breaking, sheet piling & bore piling, and crane operation, concrete lorry mixing and dump truck that related to Powered Mechanical Equipment (PME) were noted at all five monitoring stations during sampling.

Comparing with the monitoring results recorded in the last reporting period, the measured noise levels in all stations in this month were similar. The highest level was recorded at Station N2 (73.0dB(A)) and occurred in the afternoon of 20 December. According to field log, the major noise sources at that time were the operation of breaker and crane.

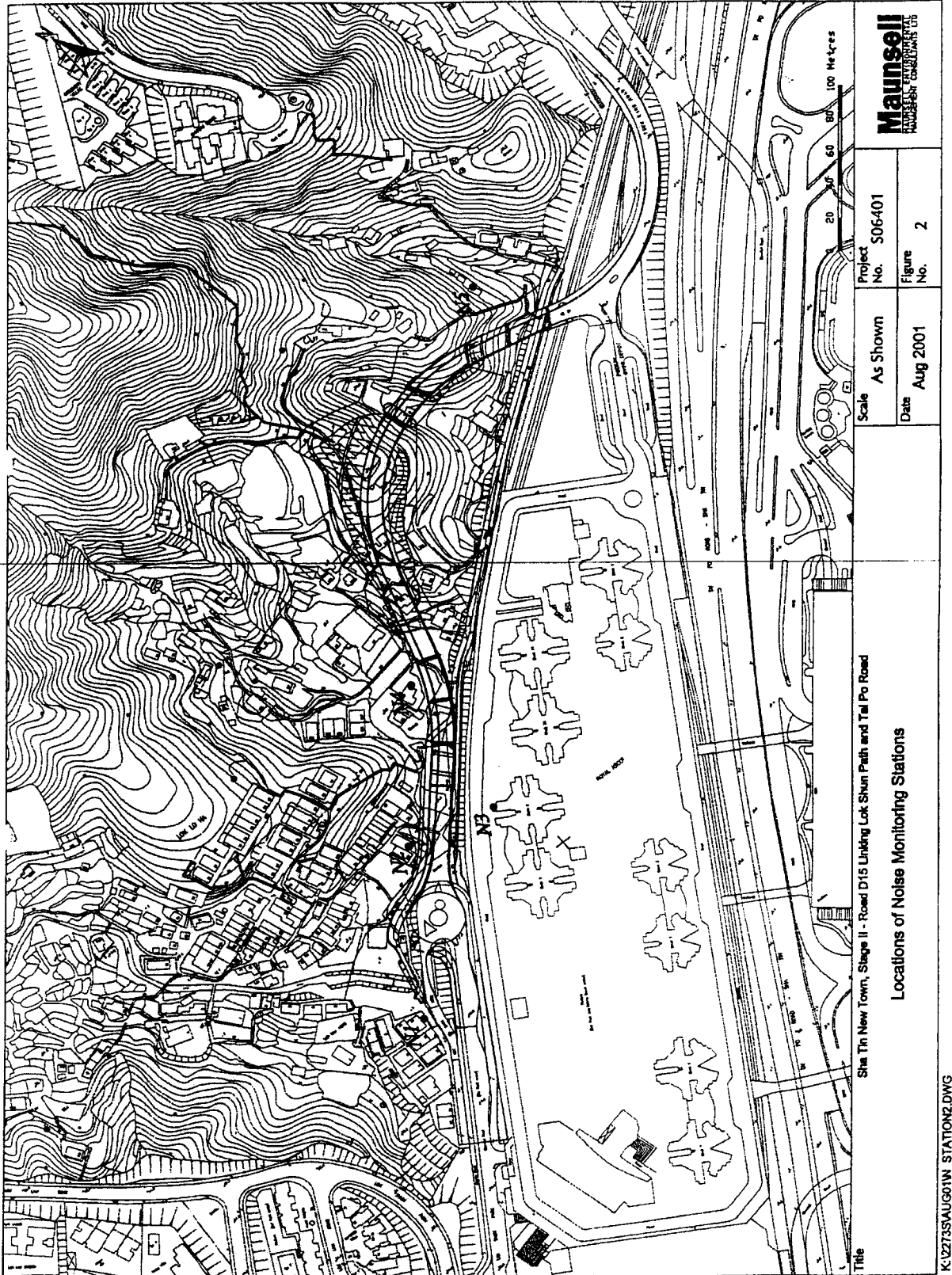


Figure 2.2 Noise Monitoring Locations

3. ENVIRONMENTAL AUDIT

3.1 General

In the last monthly EM&A report, two environmental issues were raised as follows:

- Two exceedances in 24-hour TSP level were noted around Station A1 and A3. It was recommended to the Contractor that additional impervious sheetings be placed around the working area near monitoring station A1 and A3 in order to minimize dust impacts.
- More frequent water spraying on area likely to generate dust should be implemented, which include the installation of additional sprinklers.

From site inspection, it was noted that there were improvements in the implementation of dust pollution control measures which include the placing of additional impervious sheetings around the working areas.

Table 3.1 Summary of Site Inspection during the Reporting Period

Date	Type of Inspection
6 December 2002 (Friday)	Regular Site Inspection
12 December 2002 (Thursday)	Regular Site Inspection
19 December 2002 (Thursday)	Regular Site Inspection
31 December 2002 (Tuesday)	Regular Site Inspection

Over the reporting period, the major construction work at the Site include:

- Utility diversion
- Slope cutting at CH300-400 with associated slope drainage
- Drainage works
- Fabrication precast beams A1-A2-A3-A4-A5
- Construction of pile caps at A2, A3 A4 and pier A3, A4
- Piling works at B1
- Construction of pile Cap & Pier C2
- Procurement, manufacturing and testing of bridge bearing at Bridge A and B
- Retaining walls & stairs, including Wall 2; Wall 3 & Stair 1, 2, 3; Wall 8; Wall 11 & Stair 4
- Noise barrier, including demolition existing retaining wall for noise barrier No.1 and fabrication noise barrier
- Drainage works (other than slope drainage), including construction of box culvert & pipe and remain drainage works

3.2 Assessment of Environmental Monitoring Results

In this reporting month, there were no exceedances recorded for both impact air quality and noise monitoring. The monitoring results were discussed in **Section 2** of the report and are summarized in **Table 3.2**.

Table 3.2 Summary of Environmental Monitoring

Item	Parameter	Monitoring Period	Total No. of Samples Taken (on all stations)	No. of Exceedance	
				Action Levels	Limit Levels
1	24 – hour TSP	01/12/02 to 31/12/02	15	0	0
2	1 – hour TSP	01/12/02 to 31/12/02	45	0	0
3	30-minute Noise Measurement (Leq)	01/12/02 to 31/12/02	25	0	0

3.3 Environmental Complaints

No environmental complaints had been received against the construction site in this reporting month. **Table 3.3** shows the summary record for this reporting month while **Table 3.4** summarises the complaint statistics from the commencement of the Project to date. **Appendix I** listed the details of all the complaints received on the construction site.

Table 3.3 Environmental Complaints / Enquiry Received in the Reporting Month

Complaint No.	Received date & Time	Description (inc. location/ nature of complaint)	Follow-up Action Taken	Recommended Mitigation Measures	Status/ Remarks
N/a	N/a	N/a	N/a	N/a	N/a

Table 3.4 Summary of Total Number of Complaints Received to date

Total No. of Complaints to date	No. of Complaints in this reporting period	No. of Active Complaints	No. of Inactive/Closed Complaints
2	0	N/a	2

3.4 Assessment of Mitigation Measures

Table 3.5 presented the status of the major mitigation measures identified during site inspection.

Table 3.5 Summary of Major Mitigation Measures at the Site

Type	Mitigation Measure	Comments
Noise	Temporary purposed-built Noise Barrier	<ul style="list-style-type: none"> Constructed based on the design in the Construction Noise Mitigation Proposal.
Water	Wheel Washing Facility	<ul style="list-style-type: none"> Installed and in operation.
	Sand/Silt Removal Facilities	<ul style="list-style-type: none"> Wastewater treatment systems are installed to treat site-runoffs and water from piling works Another treatment system was installed to treat wastewater from piling works near Bridge C.
	Measures along stream-banks north-east of Lok Shun Path Roundabout	<ul style="list-style-type: none"> Concrete, sandbags, sump pits and pumps were placed/installed along the banks to prevent construction debris and site run-off from entering the stream untreated.
	Diversion of Stream Course via drainage pipe	<ul style="list-style-type: none"> Installed at the existing channel.
Wastewater	Water Reuse at wheel washing facility and site investigation drilling works.	Implemented

Type	Mitigation Measure	Comments
Land Contamination	Metal trays are placed underneath stationary machines where there are potential of oil leakage	Implemented
Air	Provide plastic sheeting covers on exposed soils	Implemented
	Regular water spraying on areas where there is likely generation of dust	Implemented
	Impervious sheeting was placed around the working area near monitoring station A1	Implemented

It was noted from the site inspection that maintenance of the stream near Lok Shun Path roundabout was not adequate and therefore it was recommended to the Contractor that more mitigation measures should be installed along the stream including the additional of sandbags on the banks.

4. FUTURE KEY ISSUE AND RECOMMENDATION

There is one environmental issue that will need to be addressed in the next reporting month:

- Improvements in the implementation of mitigation measures of the stream near Lok Shun Path roundabout are required.

The updated work program for the following months are attached in **Appendix J** while the monitoring tentative schedule for the next reporting month are attached in **Appendix B**.

APPENDIX A:

Action and Limit Levels

Action and Limit Levels for 24-hour TSP

Location	Action Level, $\mu\text{g}/\text{m}^3$	Limit Level, $\mu\text{g}/\text{m}^3$
A1	156	260
A2	155	
A3	153	

Action and Limit Levels for 1-hour TSP

Location	Action Level, $\mu\text{g}/\text{m}^3$	Limit Level, $\mu\text{g}/\text{m}^3$
A1	371	500
A2	378	
A3	368	

Action / Limit Levels for Construction Noise

Time Period	Action Level	Limit Level
0700-1900 hours on normal weekdays	When one documented complaint is received	75* dB(A)
0700-2300 hours on holidays; and 1900-2300 hours on all other days		60/65/70** dB(A)
2300- 0700 hours of next day		45/50/55** dB(A)

** to be selected based on Area Sensitivity Rating

Note: If works are to be carried out during restricted hours, the conditions stipulated in the construction noise permit issued by the Noise Control Authority have to be followed.

APPENDIX B:

**Tentative Schedule for Impact
Air Quality and Noise
Monitoring**

1. Tentative Schedule for Current Reporting Month – December 2002

Tentative Time Schedule for Construction Phase Dust Monitoring for December 2002

Dec-02	Day	Start Time	
		24-hr TSP	1-hr TSP
1	Sun	x	x
2	Mon	x	x
3	Tue	12:30	09:00&11:00
4	Wed	x	14:00
5	Thu	x	x
6	Fri	x	x
7	Sat	x	x
8	Sun	x	x
9	Mon	12:30	09:00&11:00
10	Tue	x	14:00
11	Wed	x	x
12	Thu	x	x
13	Fri	12:30	09:00&11:00
14	Sat	x	x
15	Sun	x	x
16	Mon	x	14:00
17	Tue	x	x
18	Wed	x	x
19	Thu	x	x
20	Fri	12:30	09:00&11:00
21	Sat	x	x
22	Sun	x	x
23	Mon	x	14:00
24	Tue	x	x
25	Wed	x	x
26	Thu	x	x
27	Fri	10:30	9:00
28	Sat	x	x
29	Sun	x	x
30	Mon	x	09:00&11:00
31	Tue	x	x

Tentative Time Schedule for Construction Phase Noise Monitoring for December 2002

Dec-02	Day	Start Time				
		N1	N2	N3	N4	N5
1	Sun	x	x	x	x	x
2	Mon	x	x	x	x	x
3	Tue	14:30	13:30	11:30	10:45	10:00
4	Wed	x	x	x	x	x
5	Thu	x	x	x	x	x
6	Fri	x	x	x	x	x
7	Sat	x	x	x	x	x
8	Sun	x	x	x	x	x
9	Mon	14:30	13:30	11:30	10:45	10:00
10	Tue	x	x	x	x	x
11	Wed	x	x	x	x	x
12	Thu	x	x	x	x	x
13	Fri	14:30	13:30	11:30	10:45	10:00
14	Sat	x	x	x	x	x
15	Sun	x	x	x	x	x
16	Mon	x	x	x	x	x
17	Tue	x	x	x	x	x
18	Wed	x	x	x	x	x
19	Thu	x	x	x	x	x
20	Fri	14:30	13:30	11:30	10:45	10:00
21	Sat	x	x	x	x	x
22	Sun	x	x	x	x	x
23	Mon	x	x	x	x	x
24	Tue	x	x	x	x	x
25	Wed	x	x	x	x	x
26	Thu	x	x	x	x	x
27	Fri	14:30	13:30	11:30	10:45	10:00
28	Sat	x	x	x	x	x
29	Sun	x	x	x	x	x
30	Mon	x	x	x	x	x
31	Tue	x	x	x	x	x

2. Tentative Schedule for Next Reporting Month – January 2003

Contract No. ST77/01
 Sha Tin New Town, Stage II
 Road D16 Linking Lok Shun Path and Tai Po Road

Tentative Time Schedule for Construction Phase Dust Monitoring for January 2003

Jan-03	Day	Start Time	
		24-hr TSP	1-hr TSP
1	Wed	x	x
2	Thu	10:30	09:00
3	Fri	x	11:00&14:00
4	Sat	x	x
5	Sun	x	x
6	Mon	x	x
7	Tue	x	x
8	Wed	10:30	09:00
9	Thu	x	11:00&14:00
10	Fri	x	x
11	Sat	x	x
12	Sun	x	x
13	Mon	x	x
14	Tue	10:30	09:00
15	Wed	x	11:00&14:00
16	Thu	x	x
17	Fri	x	x
18	Sat	x	x
19	Sun	x	x
20	Mon	10:30	09:00
21	Tue	x	11:00&14:00
22	Wed	x	x
23	Thu	x	x
24	Fri	10:30	09:00
25	Sat	x	x
26	Sun	x	x
27	Mon	x	11:00&14:00
28	Tue	x	x
29	Wed	x	x
30	Thu	10:30	09:00
31	Fri	x	x

Contract No. ST77/01
 Sha Tin New Town, Stage II
 Road D15 Linking Lok Shun Path and Tai Po Road
 Tentative Time Schedule for Construction Phase Noise Monitoring for January 2003

Jan-03	Day	Start Time				
		N1	N2	N3	N4	N5
1	Wed	x	x	x	x	x
2	Thu	x	x	x	x	x
3	Fri	14:30	13:30	11:30	10:45	10:00
4	Sat	x	x	x	x	x
5	Sun	x	x	x	x	x
6	Mon	x	x	x	x	x
7	Tue	x	x	x	x	x
8	Wed	x	x	x	x	x
9	Thu	14:30	13:30	11:30	10:45	10:00
10	Fri	x	x	x	x	x
11	Sat	x	x	x	x	x
12	Sun	x	x	x	x	x
13	Mon	x	x	x	x	x
14	Tue	x	x	x	x	x
15	Wed	14:30	13:30	11:30	10:45	10:00
16	Thu	x	x	x	x	x
17	Fri	x	x	x	x	x
18	Sat	x	x	x	x	x
19	Sun	x	x	x	x	x
20	Mon	x	x	x	x	x
21	Tue	14:30	13:30	11:30	10:45	10:00
22	Wed	x	x	x	x	x
23	Thu	x	x	x	x	x
24	Fri	x	x	x	x	x
25	Sat	x	x	x	x	x
26	Sun	x	x	x	x	x
27	Mon	14:30	13:30	11:30	10:45	10:00
28	Tue	x	x	x	x	x
29	Wed	x	x	x	x	x
30	Thu	x	x	x	x	x
31	Fri	x	x	x	x	x

APPENDIX C:

**24-Hour TSP Impact
Monitoring Results and Plots**

1. 24-hour TSP Monitoring Results

Monitoring Station A1 (Lok Lo Ha Village House No. 3B)

Date	Filter Weight (g)		Flow Rate (m ³ /min.)		Elapse Time		Total Sampling Time (min.)	Conc. (µg/m ³)	Weather Condition
	Initial	Final	Initial	Final	Initial	Final			
3-Dec-02	2.8191	2.9750	1.11	1.11	10739.11	10763.11	1440	98	Fine
9-Dec-02	2.8128	2.9254	1.11	1.11	10766.11	10790.11	1440	70	Fine
13-Dec-02	2.7915	2.9506	1.11	1.11	10793.12	10817.12	1440	100	Fine
20-Dec-02	2.8588	2.9060	1.11	1.11	18020.12	18044.12	1440	30	Cloudy
27-Dec-02	2.7979	2.8512	1.11	1.11	18046.12	18070.12	1440	33	Cloudy
							Min	30	
							Max	100	
							Average	66.2	

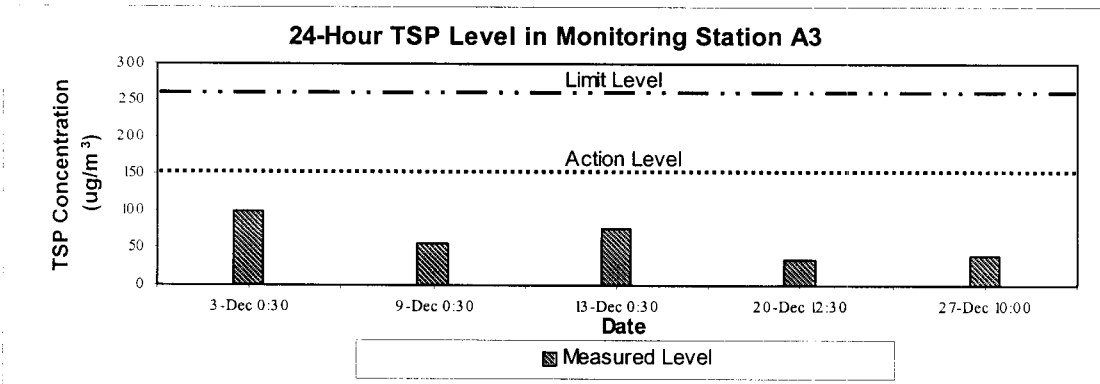
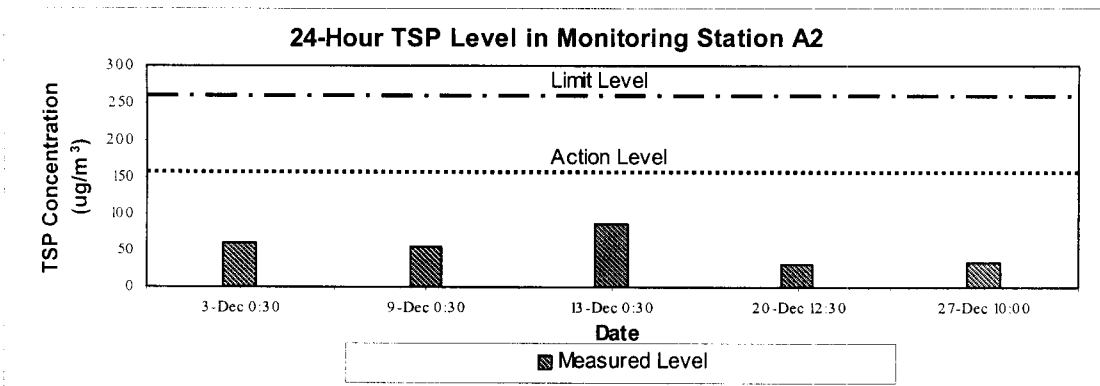
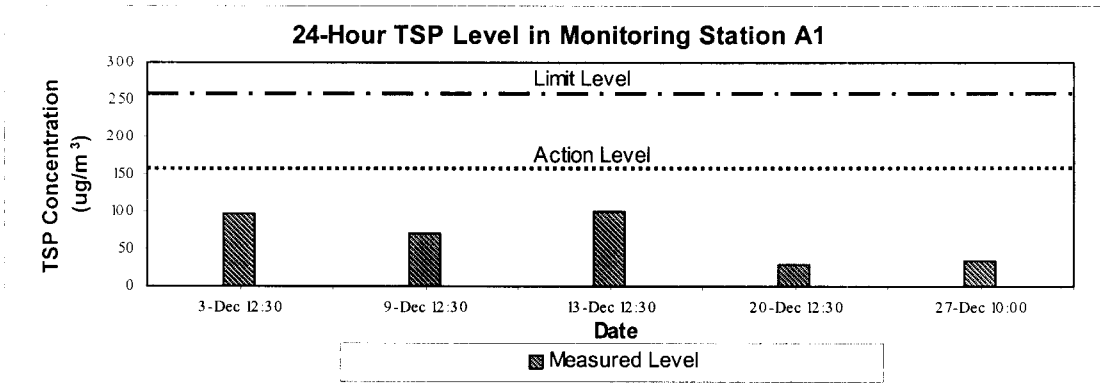
Monitoring Station A2 (Lok Lo Ha Village House No. 104)

Date	Filter Weight (g)		Flow Rate (m ³ /min.)		Elapse Time		Total Sampling Time (min.)	Conc. (µg/m ³)	Weather Condition
	Initial	Final	Initial	Final	Initial	Final			
3-Dec-02	2.7704	2.8813	1.27	1.27	1194.46	1218.46	1440	61	Fine
9-Dec-02	2.7732	2.8720	1.27	1.27	1221.46	1245.46	1440	54	Fine
13-Dec-02	2.8692	3.0270	1.27	1.27	1248.45	1272.45	1440	86	Fine
20-Dec-02	2.8144	2.8706	1.27	1.27	1275.45	1299.45	1440	31	Cloudy
27-Dec-02	2.7929	2.8567	1.27	1.27	1301.45	1325.45	1440	35	Cloudy
							Min	31	
							Max	86	
							Average	53.4	

Monitoring Station A3 (Village House near Tsun King Road)

Date	Filter Weight (g)		Flow Rate (m ³ /min.)		Elapse Time		Total Sampling Time (min.)	Conc. (µg/m ³)	Weather Condition
	Initial	Final	Initial	Final	Initial	Final			
3-Dec-02	2.8718	3.0512	1.24	1.24	9917.84	9941.84	1440	100	Fine
9-Dec-02	2.7744	2.8749	1.24	1.24	9944.84	9968.84	1440	56	Fine
13-Dec-02	2.8781	3.0159	1.24	1.24	9971.84	9995.84	1440	77	Fine
20-Dec-02	2.8859	2.9485	1.24	1.24	9998.84	1022.84	1440	35	Cloudy
27-Dec-02	2.8133	2.8824	1.24	1.24	10024.84	10048.84	1440	39	Cloudy
							Min	35	
							Max	100	
							Average	61.4	

2. Plots for 24-hour Monitoring Results



APPENDIX D:

**1-Hour TSP Impact
Monitoring Results and Plots**

1. 1-hour TSP Monitoring Results

Station A1 (Lok Lo Ha Village House No. 3B)

Date	Time of sampling	Concentration, $\mu\text{g}/\text{m}^3$
3-Dec-02	0900 – 1000	237
3-Dec-02	1100 – 1200	216
4-Dec-02	1400 – 1500	191
9-Dec-02	0800 – 0900	227
9-Dec-02	1000 – 1100	168
10-Dec-02	1400 – 1500	179
13-Dec-02	0900 – 1000	113
13-Dec-02	1100 – 1200	227
16-Dec-02	1400 – 1500	171
20-Dec-02	0900 - 1000	110
20-Dec-02	1100 - 1200	101
23-Dec-02	1400 – 1500	116
27-Dec-02	0900 – 1000	257
30-Dec-02	0900 - 1000	104
30-Dec-02	1100 - 1200	138
	Average	170.3
	Min	101
	Max	257

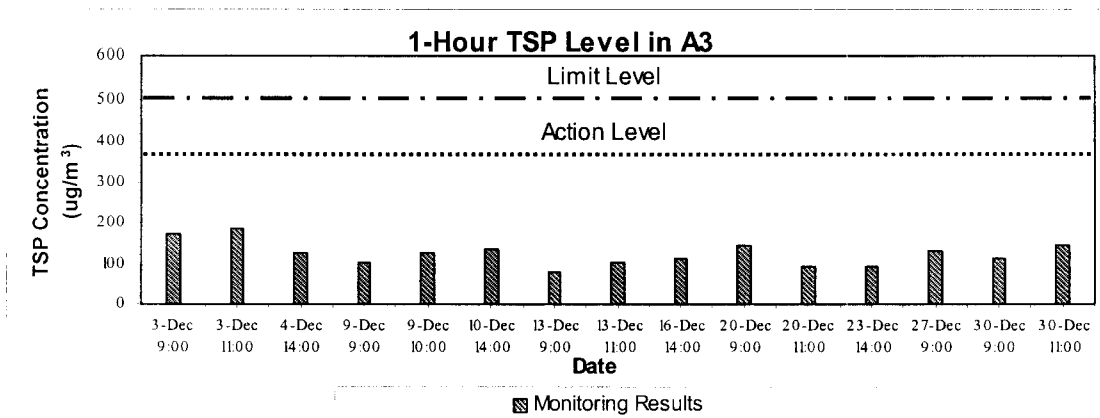
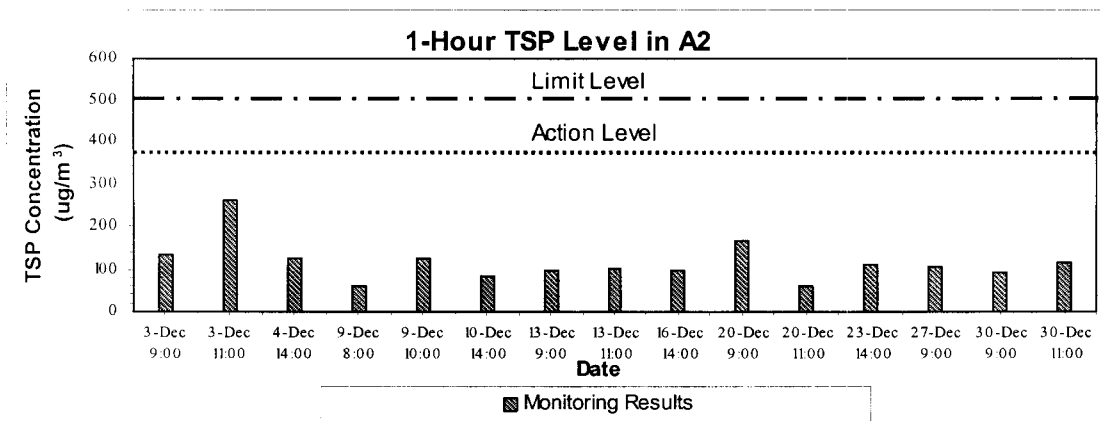
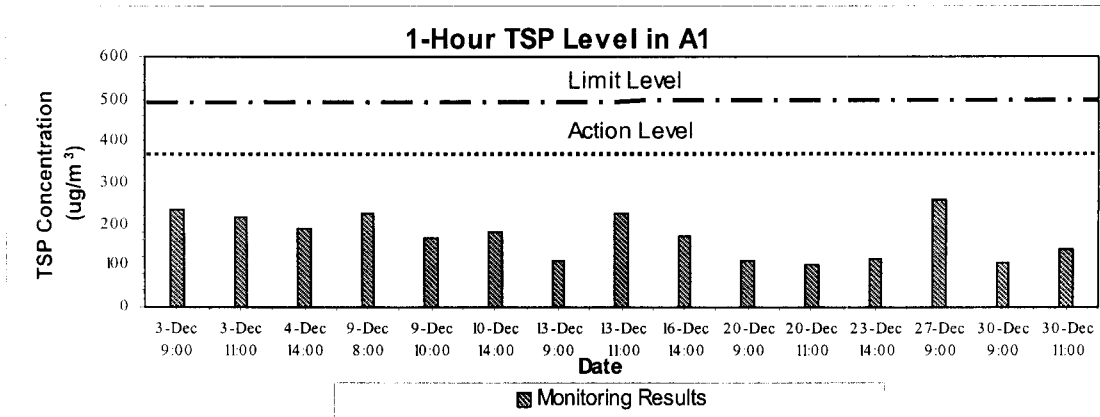
Station A2 (Lok Lo Ha Village House No. 104)

Date	Time of sampling	Concentration, $\mu\text{g}/\text{m}^3$
3-Dec-02	0900 – 1000	133
3-Dec-02	1100 – 1200	261
4-Dec-02	1400 – 1500	126
9-Dec-02	0800 – 0900	62
9-Dec-02	1000 – 1100	127
10-Dec-02	1400 – 1500	84
13-Dec-02	0900 – 1000	96
13-Dec-02	1100 – 1200	104
16-Dec-02	1400 – 1500	100
20-Dec-02	0900 - 1000	168
20-Dec-02	1100 - 1200	62
23-Dec-02	1400 – 1500	112
27-Dec-02	0900 – 1000	108
30-Dec-02	0900 - 1000	92
30-Dec-02	1100 - 1200	118
	Average	116.9
	Min	62
	Max	261

Station A3 (Village House near Tsun King Road)

Date	Time of sampling	Concentration, $\mu\text{g}/\text{m}^3$
3-Dec-02	0900 – 1000	171
3-Dec-02	1100 – 1200	188
4-Dec-02	1400 – 1500	124
9-Dec-02	0900 – 1000	103
9-Dec-02	1000 – 1100	126
10-Dec-02	1400 – 1500	137
13-Dec-02	0900 – 1000	79
13-Dec-02	1100 – 1200	103
16-Dec-02	1400 – 1500	110
20-Dec-02	0900 - 1000	144
20-Dec-02	1100 - 1200	91
23-Dec-02	1400 – 1500	94
27-Dec-02	0900 – 1000	128
30-Dec-02	0900 - 1000	112
30-Dec-02	1100 - 1200	145
	Average	123.7
	Min	79
	Max	188

2. Plots of 1-hour TSP Monitoring Results



APPENDIX E:

**Daytime 07:00 -19:00Hrs
Impact Noise Monitoring
Results and Plots**

1. Noise Monitoring Results

Monitoring Station N1 (Lok Lo Ha Village House No.3B)

Date	Noise Level for 30 min, dB(A)			
	Time of Sampling	L _{eq}	L ₁₀	L ₉₀
3-Dec-02	1430 – 1500	64.6	67.6	61.1
9-Dec-02	1120 – 1150	67.7	69.8	63.2
13-Dec-02	0837 – 0907	64.2	66.3	61.7
20-Dec-02	1335 – 1405	67.4	71.3	62.7
27-Dec-02	1300 - 1330	61.2	63.6	58.4

Min	61.2	63.6	58.4
Max	67.7	71.3	63.2

Monitoring Station N2 (Lok Lo Ha Village House No.32A)

Date	Noise Level for 30 min, dB(A)			
	Time of Sampling	L _{eq}	L ₁₀	L ₉₀
3-Dec-02	1330 – 1400	66.1	70.4	58.7
9-Dec-02	1417 – 1447	68.0	71.6	65.7
13-Dec-02	1340 – 1410	67.2	71.5	61.1
20-Dec-02	1300 - 1330	73.0	75.9	65.5
27-Dec-02	1130 - 1200	65.8	69.9	59.3

Min	65.8	69.9	58.7
Max	73.0	75.9	65.7

Monitoring Station N3 (Royal Ascot Block 9, Flat C)

Date	Noise Level for 30 min, dB(A)			
	Time of Sampling	L _{eq}	L ₁₀	L ₉₀
3-Dec-02	1130 – 1200	58.5	61.9	51.9
9-Dec-02	1300 – 1330	58.4	61.3	52.9
13-Dec-02	1300 – 1330	60.2	62.3	54.2
20-Dec-02	1130 - 1200	63.3	65.8	60.6
27-Dec-02	1005 - 1035	63.9	67.3	57.8

Min	58.4	61.3	51.9
Max	63.9	67.3	60.6

Monitoring Station N4 (Lok Lo Ha Village House No.97)

Date	Noise Level for 30 min, dB(A)			
	Time of Sampling	L _{eq}	L ₁₀	L ₉₀
3-Dec-02	1045 – 1115	61.1	64.0	56.1
9-Dec-02	1340 – 1410	62.1	63.9	59.9
13-Dec-02	1100 – 1130	68.4	71.1	62.0
20-Dec-02	1015 – 1045	65.8	68.0	62.9
27-Dec-02	0915 - 0945	58.8	62.1	52.8

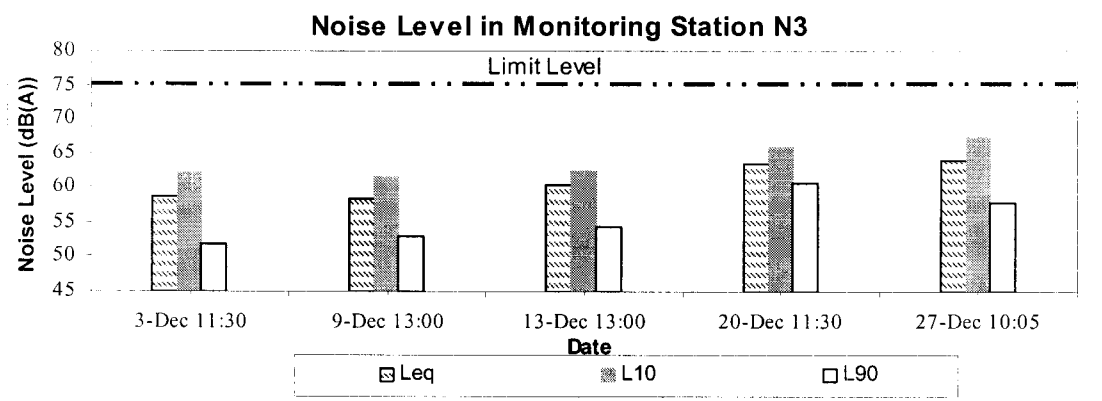
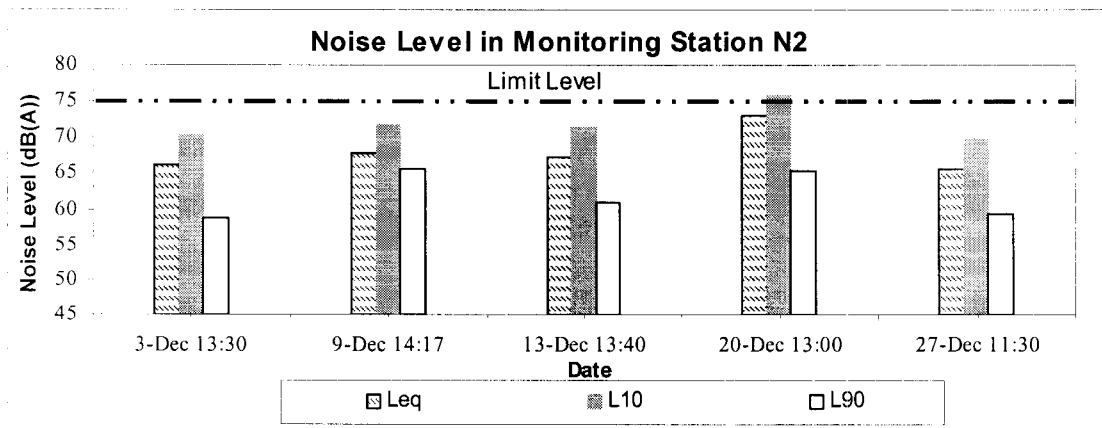
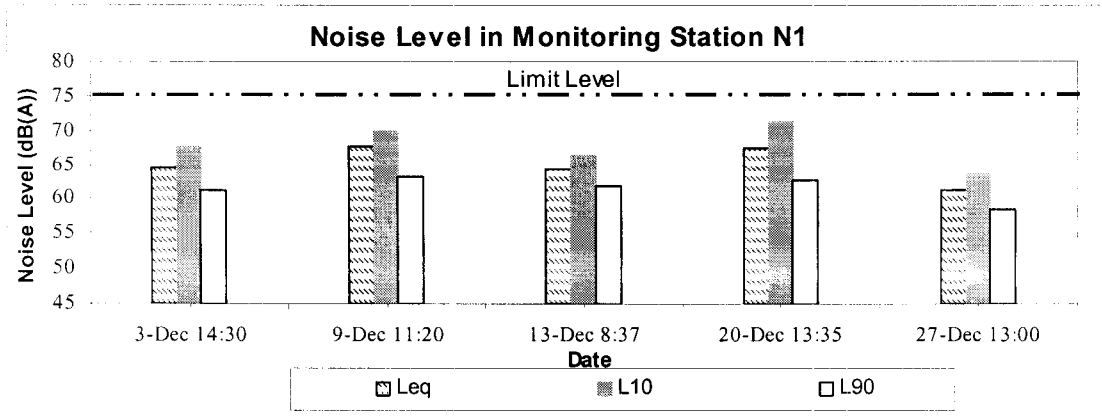
Min 58.8 62.1 52.8
 Max 68.4 71.1 62.9

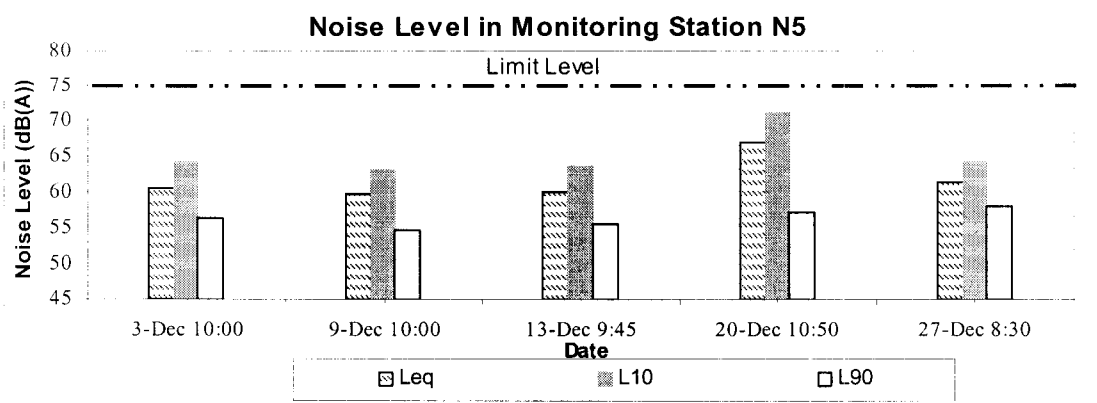
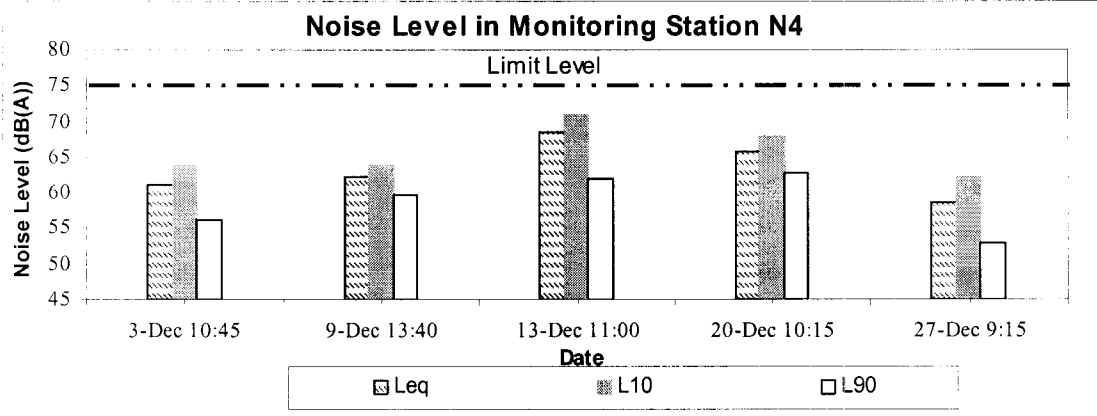
Monitoring Station N5 (Village House near Royal Ascot)

Date	Noise Level for 30 min, dB(A)			
	Time of Sampling	L _{eq}	L ₁₀	L ₉₀
3-Dec-02	1000 – 1030	60.5	64.1	56.3
9-Dec-02	1000 – 1030	59.7	63.1	54.6
13-Dec-02	0945 – 1015	60.0	63.6	55.6
20-Dec-02	1050 - 1120	67.0	71.0	57.3
27-Dec-02	0830 - 0900	61.5	64.3	58.1

Min 59.7 63.1 54.6
 Max 67.0 71.0 58.1

2. Plots of Noise Monitoring Results





APPENDIX F:

**Weather Conditions During
Monitoring Periods**

**Weather Condition during Monitoring Period
(From 3 to 30 December 2002)**

Date	Weather	Mean Air Temperature (°C)	Wind Speed (m/s)	Mean Relative Humidity (%)
3-Dec-02	Fine	22.7	0.3 – 0.9	89
4-Dec-02	Fine	23.3	0.9 – 1.0	87
9-Dec-02	Cloudy	13.2	1.9 – 2.0	65
10-Dec-02	Sunny	15.8	1.9	66
13-Dec-02	Fine	16.2	1.9	71
16-Dec-02	Fine	20.9	1.0	79
20-Dec-02	Cloudy	18.9	0.9	92
23-Dec-02	Fine	18.9	0.9	73
27-Dec-02	Cloudy	8.2	0.9	90
30-Dec-02	Cloudy	15.9	0.9	75

APPENDIX G:

**Event and Action Plan for Air
Quality and Noise**

Event / Action Plan for Air Quality

EVENT	ACTION		
	ET	Engineer	CONTRACTOR
ACTION LEVEL			
1. Exceedance for one sample	<ol style="list-style-type: none"> 1. Identify source; 2. Inform the Engineer and Contractor; 3. Repeat measurement to confirm finding; and 4. Increase monitoring frequency to daily. 	<ol style="list-style-type: none"> 1. Notify Contractor; and 2. Check monitoring data and Contractor's working methods. 	<ol style="list-style-type: none"> 1. Rectify any unacceptable practice, if any; and 2. Amend working methods if appropriate.
2. Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> 1. Identify source; 2. Inform the Engineer and Contractor; 3. Repeat measurement to confirm findings; 4. Increase monitoring frequency to daily. 5. Discuss with Engineer for remedial actions required; 6. If exceedance continues, arrange meeting with the engineer; and 7. If exceedance stops, cease additional monitoring. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Check monitoring data and Contractor's working methods; 4. Discuss with ET and Contractor on potential remedial actions; and 5. Ensure remedial measures properly implemented. 	<ol style="list-style-type: none"> 1. Submit proposals for mitigation measures to the Engineer within 3 working days of notification; 2. Implement the agreed proposals; and 3. Amend proposal if appropriate.
LIMIT LEVEL			
1. Exceedance for one sample	<ol style="list-style-type: none"> 1. Identify source; 2. Inform the Engineer and Contractor; 3. Repeat measurement to confirm findings; 4. Increase monitoring frequency to daily; 5. Assess effectiveness of Contractor's remedial actions and keep EPD and the Engineer informed of results. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Check monitoring data and Contractor's working methods; 4. Discuss with ET and Contractor on potential remedial actions; and 5. Ensure remedial action properly implemented. 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to the Engineer within 3 working days of notification; 3. Implement the agreed proposals; and 4. Amend proposal if appropriate.
2. Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> 1. Identify source; 2. Inform the Engineer and Contractor; 3. Repeat measurement to confirm findings; 4. Increase monitoring frequency to daily. 5. Investigate the causes of exceedance; 6. Arrange meeting with EPD and the Engineer to discuss the remedial actions to be taken; 7. Assess effectiveness of Contractor's remedial actions and keep EPD and the Engineer informed of the results; and 8. If exceedance stops, cease additional monitoring 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 4. Discuss among ET and Contractor on potential remedial actions; 5. Review Contractor's remedial action whenever necessary to assure their effectiveness; and 6. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop portion of work until the exceedance is abated. 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to the Engineer within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by the Engineer until the exceedance is abated.

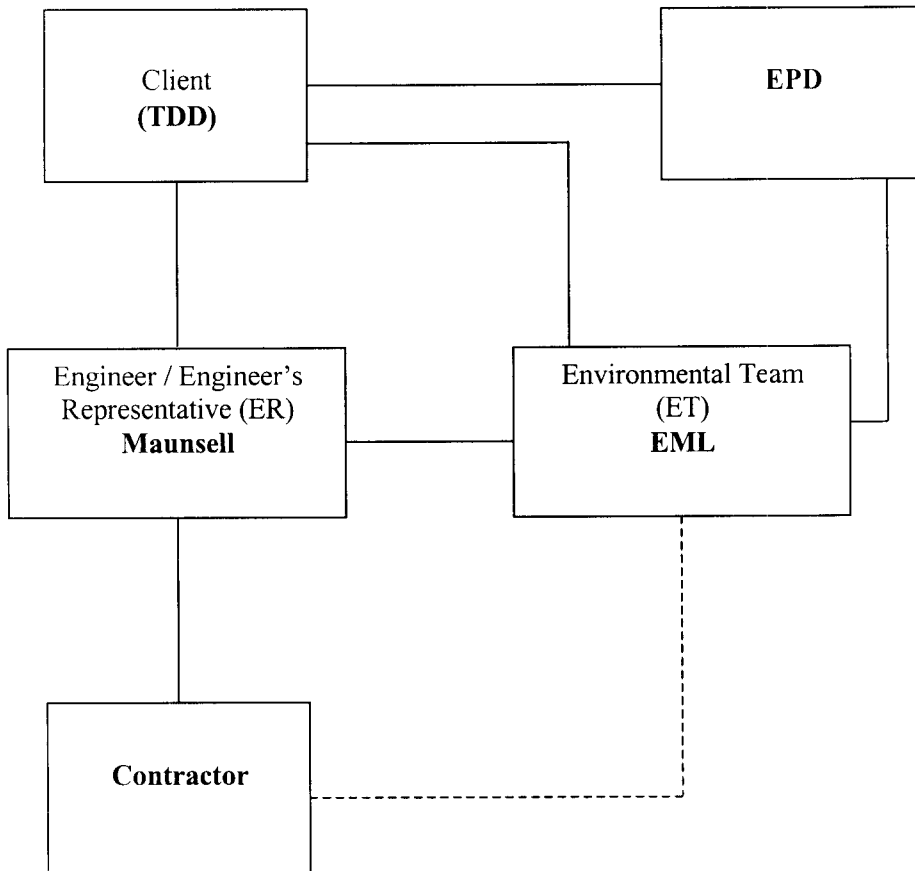
Event / Action Plan for Construction Noise

EVENT	ACTION	
	ET	Contractor
Action Level	<ol style="list-style-type: none"> 1. Notify the Engineer and Contractor; 2. Analyze investigation; 3. Require Contractor to propose measures for the analyzed noise problem; and 4. Increase monitoring frequency to check mitigation effectiveness. 	<ol style="list-style-type: none"> 1. Submit noise mitigation proposals to Environmental Team and the Engineer; and 2. Implement noise mitigation proposals.
Limit Level	<ol style="list-style-type: none"> 1. Notify the Engineer and Contractor; 2. Notify EPD; and 3. Require Contractor to implement mitigation measures; and increase monitoring frequency to check mitigation effectiveness. 	<ol style="list-style-type: none"> 1. Implement mitigation measures; and 2. Prove to Environmental Team and the Engineer effectiveness of measures applied.

APPENDIX H:

**Project Organisation and
Contacts of Key Personnel**

Figure H.1: Project Management Structure



Contacts of Key Personnel:

Organisation	Nature of Duty	Contact Personnel	Contact Number	
			Telephone	Fax
Territory Development Department (TDD)	Client	Mr. Stephen Wong	2301-1376	2721-8630
Maunsell Consultants Asia Ltd. (MCAL)	Engineer	Mr. Alan Kwong	2602-3433	2691-2649
Environmental Management Ltd. (EML)	Environmental Team	Mr. Lawrence Tsui	2890-1090	2890-6901

APPENDIX I:

**Summary Records of
Complaints Received**

Complaint No.	Received date & Time	Description (inc. location/ nature of complaint)	Follow-up Action Taken	Recommended Measures	Mitigation	Status/ Remarks
C02-N1	Morning, 29/7/2002	Around 9:30am on 29/7/02, police came on site to investigate a complaint of noise pollution emitted during rock breaking which carried out by the Contractor near the Site Office (near the box culvert and north Lok Shun Path Roundabout). The Contractor immediately halted the activity in response to police's advice	<ul style="list-style-type: none"> Ad hoc site inspection was carried out on 31/7/02, jointly with the Engineer and Contractor The complaint log sheet, the investigation findings and recommendations on mitigation measures were submitted to the Engineer and Contractor. A letter, addressing to the complainant, will be sent to the police. 	<p>Mitigation actions:</p> <ul style="list-style-type: none"> Excavator-mounted breaker shall not be carried out within 125m from any nearby noise sensitive receivers and; Temporary purposed built barrier should be installed whenever there are high noise level construction activities. 	<p>The complaint was considered as ad hoc rather than continuous. It is therefore considered not necessary to increase the noise monitoring frequency</p> <p>File Closed.</p>	
C02-N2	Night-time, 7 August, 2002	<ul style="list-style-type: none"> Nearby residents complained to police that a generator in Road D15 Site was operating in night-time near Lok Lo Ha Village. Police came to the site to investigate the complaint and inform watchmen to turn off the operating generator at around 8:30pm. The complaint was valid as it concerned with construction noise during the restricted hours. 	<ul style="list-style-type: none"> Ad hoc site inspection was carried out on 8 August 02, jointly with the Engineer and Contractor and ET. The complaint log sheet, the investigation findings and recommendations on mitigation measures were submitted to the Engineer and Contractor. A letter in both English and Chinese, addressing to the complainant, has been sent to the police. 	<p>Mitigation actions:</p> <ul style="list-style-type: none"> Under the Noise Control Ordinance, the carrying out of general construction work using powered mechanical equipment (including generators) during the restricted hours (between 7 p.m. and 7 a.m. or at any time on a general holiday (including Sunday) is prohibited unless a valid Construction Noise Permit is in force; A watchmen or site staff should be employed to check daily that all generators and plats are switched off after the permissible working hours. 	<p>File Closed.</p>	

APPENDIX J:

**Updated Construction
Program**

Sha Tin New Town Stage II Contract No. ST17701, Road D15 Linking Lok Shun Path and Tai Po Road

MASTER PROGRAMME (ST17701/MP/08)

Feb '03

Jan '03

Dec '02

2003

Nov '02

Duration

840 days

Key Dates of Completion

1 Section I (345 days + 13 working days E O T)

2 Section II (822 days + 15 working days E O T)

3

4

5

6

7

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39

40

41

42

43

44

45

46

47

48

360 days

840 days

692 days

53 days

97 days

690 days

57 days

81 days

690 days

580 days

90 days

36 days

141 days

79 days

130 days

478 days

61 days

20 days

8 days

45 days

411 days

27 days

275 days

50 days

77 days

160 days

90 days

693 days

121 days

62 days

42 days

97 days

51 days

111 days

102 days

60 days

96 days

4 days

4 days

60 days

96 days

4 days

4.1 Forming access to Main Cutting CH 300-400

4.2 Slope Cutting at CH 300-400 with associated slope drainage

4.3 Forming access to CH 400-500

4.4 Remaining slope cutting at retaining wall 7 and CH 400-500

4.5 Remove the temporary access road to retaining wall 7

4.6 Formation of Cycle Track and Footpath nearby KCRC Railway

5 Enchantment Works (Section I)

5.1 General Clearance & Trial Pits Excavation

5.2 Drainage Works (pipelines 1.019-1.024, 7.022 & 15.000)

5.3 Drainage Works (pipeline 1.011-1.013)

5.4 Drainage Works (pipeline 1.014-1.016)

5.5 Drainage Works (pipeline 1.000-1.004 & 2.000-2.001, 3.000-3.001)

5.6 Drainage Works (pipeline 3.002-3.004)

6 Bridge A

6.1 Procurement and Approval of Alternative I-beams

6.2 Set up Precast Yard

6.3 Fabrication precast beams A3-A4

6.4 Fabrication precast beams A1-A2, A3 & A4-A5

6.5 Ground Investigation

6.6 Piling Works at A1, A2, A3, A4 & A5

6.7 Construction of Pile Caps at A2, A3, A4 and Piers A3, A4

6.8 Construction of Abutment A3 and installation of bearing

6.9 Procurement, manufacturing and testing of bridge bearing

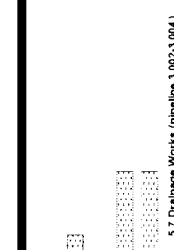
6.10 Installation of bridge bearings at Pier A3 & A4

6.11 Erection of precast beams between A3 and A4

6.12 Cast in-situ decking between A3 & A4

6.13 Construction of Abutment A1 & Piers A2

6.14 Installation of bridge bearing at A1 & A2



Project: Sha Tin New Town Stage II Contract No. ST17701, Road D15 Linking Lok Shun Path and Tai Po Road
 Date: Thu 09/01/03

Task Progress: [Pattern]

Critical Task Progress: [Pattern]

Milestone Summary: [Pattern]

Rollled Up Milestone: [Pattern]

Rollled Up Critical Task: [Pattern]

Rollled Up Progress: [Pattern]

External Tasks: [Pattern]

Split: [Pattern]

Project Summary: [Pattern]

Page 1

Feb '03

Jan '03

2003

Dec '02

Nov '02

Duration

4 days

44 days

4 days

44 days

4 days

45 days

81 days

32 days

21 days

618 days

62 days

25 days

45 days

168 days

45 days

34 days

125 days

70 days

70 days

45 days

200 days

14 days

7 days

54 days

35 days

45 days

627 days

63 days

29 days

29 days

45 days

67 days

70 days

160 days

8 days

7 days

60 days

8 days

7 days

50 days

83 days

55 days

518 days

108 days

107 days

Task Name

5.15 Erection of precast beams between A1 & A2

6.16 Cast in-situ decking between A1 & A2

6.17 Erection of precast beams between A2 & A3

6.18 Cast in-situ decking between A2 & A3

6.19 Erection of precast beams between A4 & A5

6.20 Cast in-situ decking between A4 & A5

6.21 Edge parapet A1-A4

6.22 Edge parapet between A4 & A5

6.23 Paving

7. Bridge 6

7.1 Fabrication of precast beams

7.2 Form Temporary Access (B1-B2)

7.3 Ground investigation

7.4 Piling Works at Abutment B1 & B2

a) Piling Work at B1

b) Piling Work at B2

7.5 Construction of Abutment B1, B2 and stair 6

a) Abutment B1

b) Abutment B2

c) Stair 6

7.6 Procurement, manufacturing and testing of bridge bearing

7.7 Installation of bridge bearing at B1 & B2

7.8 Erection of precast beams from B1 to B2

7.9 Cast in-situ decking between B1 and B2

7.10 Edge parapet

7.11 Paving

8. Bridge C

8.1 Fabrication of precast beams

8.2 Ground investigation at Pier C2

8.3 Ground investigation at Abutment C1

8.4 Piling Works for Abutment C1

8.5 Piling Works for Pier C2

8.6 Construction of Abutment C1

8.7 Construction of Pile Cap & Pier C2

8.8 Procurement, manufacturing and testing of bridge bearing

8.9 Installation of bridge bearing at C2 & existing deck

8.10 Erection of precast beams from existing deck to C2

8.11 Cast in-situ decking from existing deck to C2

8.12 Installation of bridge bearing at C1

8.13 Erection of precast beams from C1 to C2

8.14 Cast in-situ decking between C1 and C2

8.15 Edge parapet

8.16 Paving

9. Retaining Walls & Stairs

9.1 Wall 1

9.2 Wall 2

7.5 Construction

8.1 Fabrication of precast beams

8.7 Construction of Pile Cap & Pier C2

8.9 Installation of bridge bearing at C2 & existing deck

8.10 Erection of precast beams from existing deck to C2

8.11 Cast in-situ decking from existing deck to C2

9.2 Wall 2

Sha Tin New Town Stage II Contract No. ST7701, Road D16 Linking Lok Shun Path and Tai Po Road

MASTER PROGRAMME (ST77/01/MP/08)

ID	Task Name	Duration	2003	2004
98	9.3 Wall 3 & Stair 1, 2, 3	116 days	Nov '02	Jan '03
99	9.4 Wall 4	138 days	Dec '02	Feb '03
100	9.5 Wall 5 & Stair 5, 11	64 days		
101	9.6 Wall 6	60 days		
102	9.7 Wall 7 & Stair 7	465 days*		
103	9.7.1 Pre-drill holes (21 nos)	47 days		
104	9.7.2 Forming working platform	14 days		
105	9.7.3 Install bored pile (2 nos)	152 days		
106	9.7.4 Construct the extension section above bored pile	60 days		
107	9.7.5 Construct lagging/concrete decorative wall	80 days		
108	9.7.6 Stair 7	45 days		
109	9.8 Wall 8	60 days		
110	9.9 Stair 8	90 days		
111	9.10 Wall 11 & Stair 4	127 days		
112	9.11 Wall 12 and Stair 8, 10, 12	155 days		
113				
114	10 Noise Barriers	509 days*		
115	10.1 Noise Barrier No. 1	359 days		
116	10.1.1 Site investigation	30 days		
117	10.1.2 Demolition of existing retaining wall (Incl. Implement Stage 1 & 2 TTM)	95 days		
118	10.1.3 Piling works	60 days		
119	10.1.4 R.C structure	90 days		
120	10.2 Procurement and Fabrication of Noise Barrier	157 days		
121	10.3 Installation of Noise Barriers	150 days		
122				
123	11 Box Culvert Extension	262 days*		
124	11.1 Remove existing inlet water diversion	29 days		
125	11.2 Box culvert	156 days		
126	11.3 Flood Wall	67 days		
127	11.4 Backfilling	68 days		
128				
129	12 Drainage Works (other than slope drainage)	519 days		
130	12.1 Construct 1400 box culvert	90 days		
131	12.2 Construct 1500 pipe	90 days		
132	12.3 Drainage works at Lok Ha Lo roundabout	440 days*		
133	a) Drainage works at stage 2 of TTM	80 days		
134	b) Drainage works at stage 3 of TTM	90 days		
135	c) Drainage works at stage 4 of TTM	80 days		
136	d) Drainage works at stage 5 of TTM	90 days		
137	e) Drainage works at stage 6 of TTM	100 days		
138	12.4 Remaining drainage works	450 days		
139	13 Waterworks (DN25&DN40)	334 days		
140	14 Standard RCP	60 days		
141	15 Rain Shelter no. 1&2	30 days		
142	16 Road works excluding road marking & road furniture	398 days		
143	17 Road marking & road furniture	37 days		
144	18 Landscape Works (other than establishment works)	147 days		

9.3 Wall 3 & Stair 1, 2, 3

9.9 Stair 8

12.1 Construct 1400 box culvert

12.2 Construct 1500 pipe

12.3 Drainage works at Lok Ha Lo roundabout

a) Drainage works at stage 2 of TTM

b) Drainage works

13 Waterworks (DN25&DN40)

16 Road works excluding road marking & road furniture

Project: Sha Tin New Town Stage II
 Key Dates of Completion: 08/01/03
 Critical Task Progress: [Progress bar]
 Task Progress: [Progress bar]
 Milestone Summary: [Progress bar]
 Rolled Up Task Progress: [Progress bar]
 Rolled Up Critical Task Progress: [Progress bar]
 Split External Tasks: [Progress bar]
 Project Summary: [Progress bar]