

# **Territory Development Department**

**Contract No. ST 77/01**

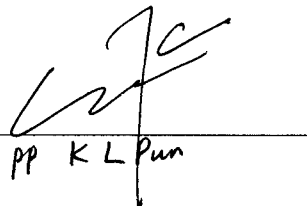
**Sha Tin New Town, Stage II  
Road D15 Linking Lok Shun Path  
and Tai Po Road**

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

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

**Monthly Environmental Monitoring & Audit Report –  
October 2002**

Checked in accordance with EML QP22  
Environmental Team Leader



PP K L Pun

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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 October 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.

The major construction activities in this reporting period included:

- Utility diversion
- Slope cutting
- Drainage works
- Precast yard setup
- Construction of pile caps at A2, A3 A4 and pier A3, A4
- Piling works at Pier C2
- Procurement, manufacturing and testing of bridge bearing
- Retaining walls & stairs including Wall 4, Wall 7 & Stair 7, Wall 11 & Stair 4
- Flood wall and backfilling for box culvert extension

Over the reporting period, one exceedance in Action Level was noted for the monitored 1-hour TSP levels. The exceedance was measured at monitoring station A1 on 30 October. From discussion with MCAL and the Contractor, the exceedance may have contributed by the sheet piling activities in the vicinity carried out on the site at that time. Although the sheet piling activities were completed in early November and that no further exceedances in TSP levels were measured, it is recommended to the Contractor that impervious sheetings should be placed around the working area in order to minimize dust impacts to nearby residents.

In addition, deteriorations in the water quality of the stream north-east of Lok Shun Path Roundabout were noted during site inspection. It was recommended to the Contractor that more mitigation measures should be installed along the stream, including the additional of sandbags on the banks. The wastewater treatment facility should be operated at times when there were construction activities carried out upstream.

## 1. INTRODUCTION

### 1.1 Background

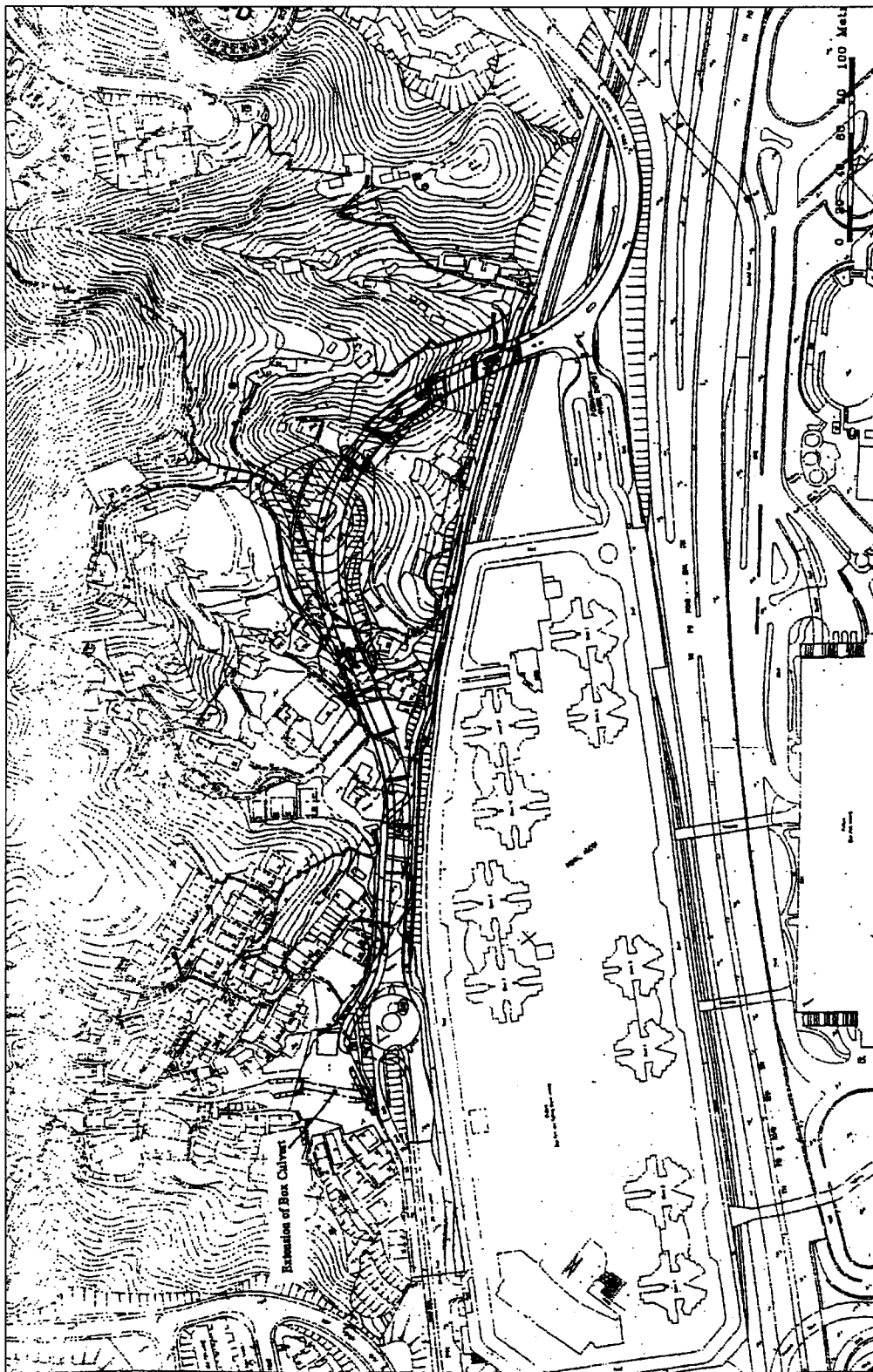
Environmental Management Limited (EML) was appointed by Maunsell Consultants Asia Ltd. as the Environmental Specialist for the project *Sha Tin New Town, Stage II Road Linking Lok Shun Path and Tai Po Road* (Contract No. ST 77/01).

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 October 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 October 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	57.2	35 - 111	0	0
	A2	58.6	35 - 117	0	0
	A3	56.2	34 - 100	0	0
1 – hour TSP	A1	152.4	77 - 375	1	0
	A2	131.5	79 - 220	0	0
	A3	134.2	71 - 207	0	0

One measured 1-hour TSP level at monitoring station A1 had exceeded the relevant Action Level shown in **Appendix A**. The measured level of  $375\mu\text{g}/\text{m}^3$ , monitored on 30 October, is  $4\mu\text{g}/\text{m}^3$  or approximately 1.1% above the Action Level of  $371\mu\text{g}/\text{m}^3$ . Consequently, the Event and Action Plan for Air Quality as set out in **Appendix G** was triggered and the details are discussed in **Section 3.2**.

Over the reporting period, the local weather conditions during the monitoring were mainly sunny or cloudy except some precipitations were recorded on 18 and 30 October. 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, precast yard setup, construction of pile caps, piling works, retaining walls & stairs and flood wall and backfilling for box culvert extension. 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, with the exception of the Action Level exceedance at monitoring station A1, the measured mean 24-hour TSP levels were similar while the mean 1-hour TSP levels were lower in this reporting period.



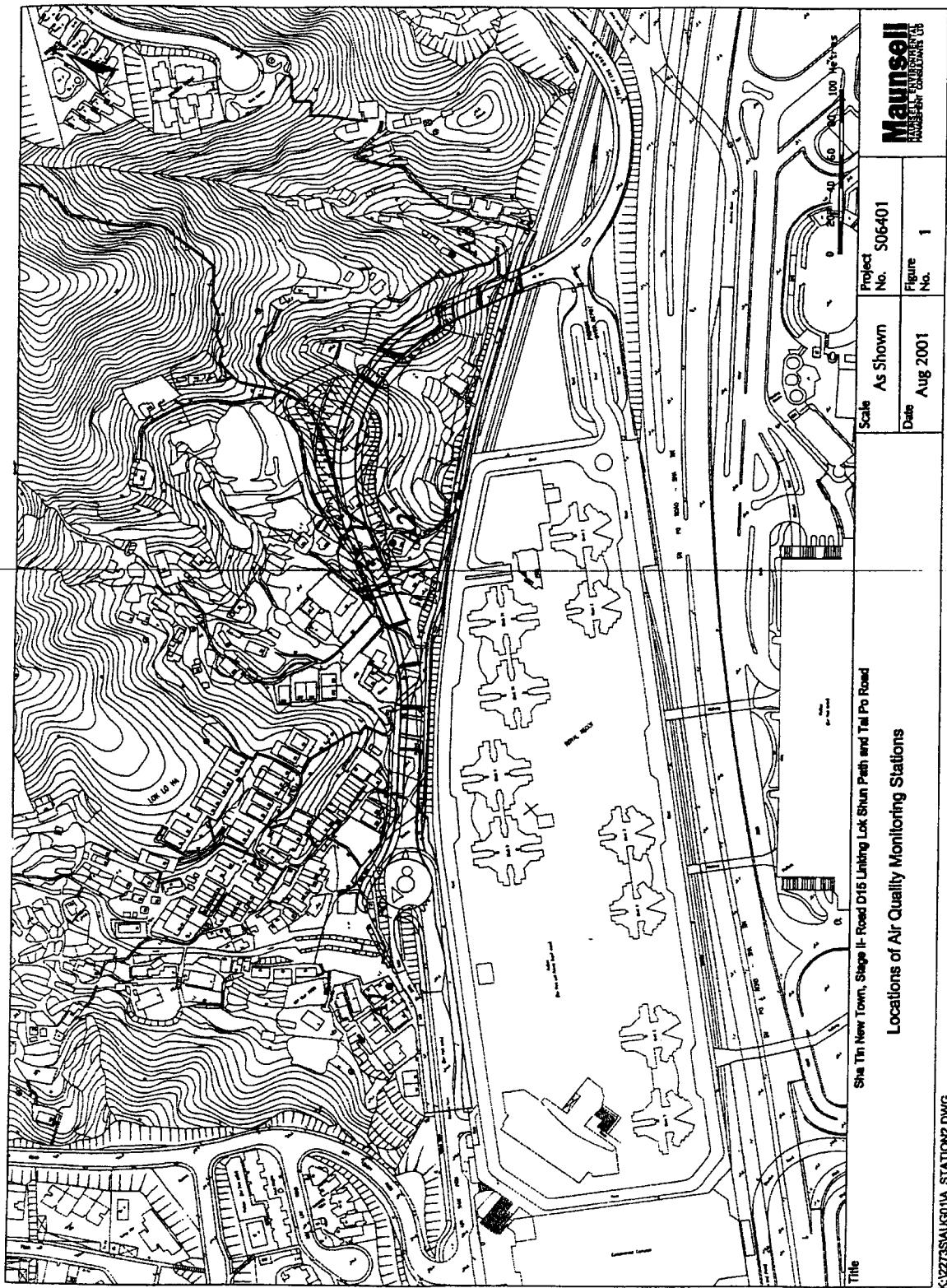


Figure 2.1 Air Quality Monitoring Locations

## 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 October 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	62.0 – 69.0	0	0
	N2	65.3 – 69.6		0
	N3	56.0 – 65.0		0
	N4	55.6 – 73.0		0
	N5	58.8 – 65.9		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 1.8 m/s. Traffic and construction activities were the major noise sources identified at the five monitoring locations. Meanwhile, the carrying out of various pilings, excavation, cutting, compressor 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 at all stations in this month were similar. The highest level was recorded at Station N4 (73.0 dB(A)) and occurred in the morning of 31 October. According to field log, the major noise sources at that time were the operations of excavation works and rockbreaking activities.

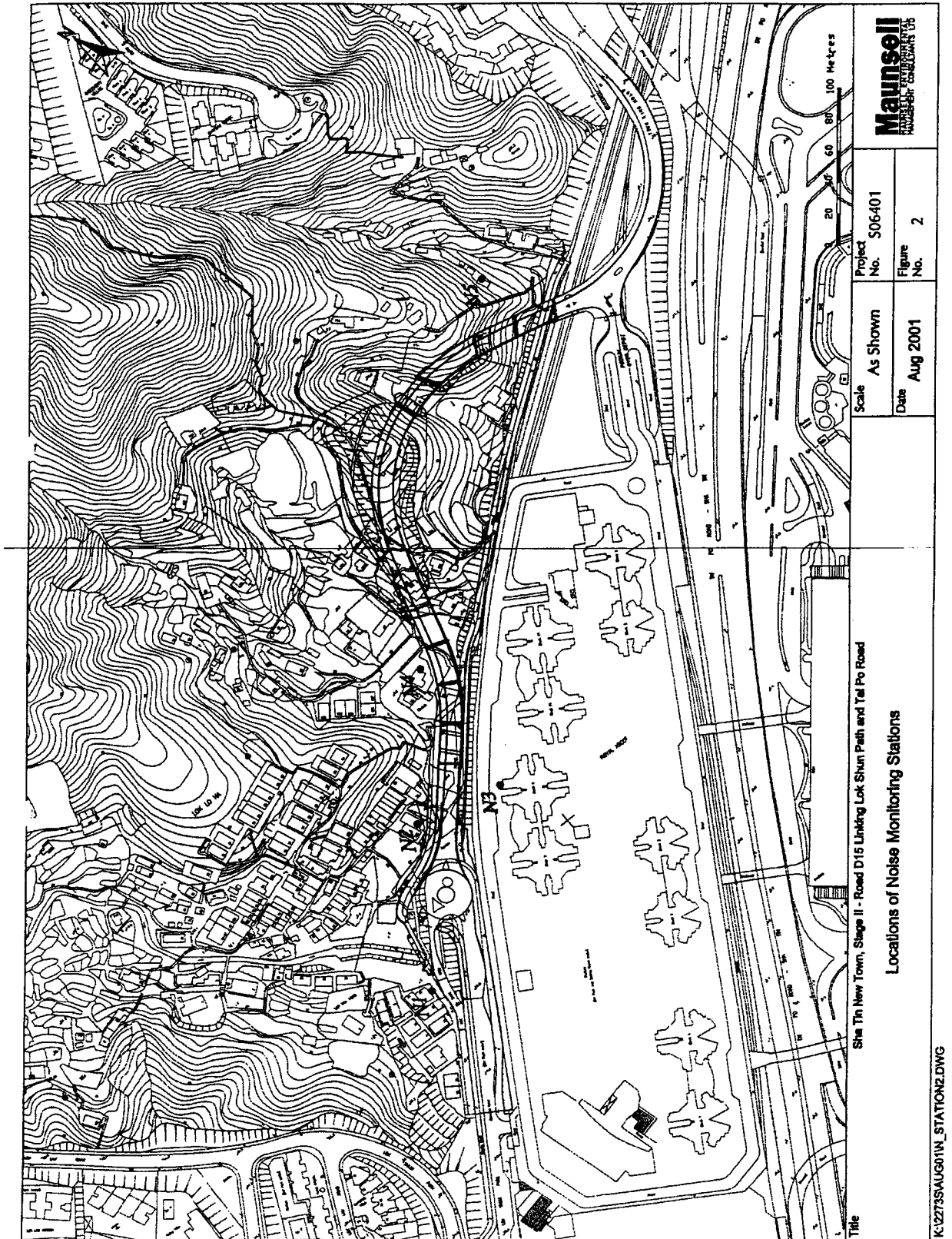


Figure 2.2 Noise Monitoring Locations

### 3. ENVIRONMENTAL AUDIT

#### 3.1 General

In the last monthly EM&A report, it was mentioned that the Contractor had received a pink and yellow site inspection record form from EPD in relating to dust and water pollution. As a result, the following recommendations were given to the Contractor:

- Regular water spraying and tarpaulin cover at areas where dust generations are likely
- Connect drains to water treatment facility prior to discharging into the drainage system when there are construction activities upstream which could cause water pollution.

From site inspection, improvements in the above dust and water pollution control measures were noted.

**Table 3.1 Summary of Site Inspection during the Reporting Period**

Date	Type of Inspection
2 October 2002 (Wednesday)	Regular Site Inspection
11 October 2002 (Friday)	Regular Site Inspection
18 October 2002 (Friday)	Regular Site Inspection
24 October 2002 (Thursday)	Regular Site Inspection

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

- Utility diversion
- Slope cutting
- Drainage works
- Precast yard setup
- Construction of pile caps at A2, A3 A4 and pier A3, A4
- Piling works at Pier C2
- Procurement, manufacturing and testing of bridge bearing
- Retaining walls & stairs including Wall 4, Wall 7 & Stair 7, Wall 11 & Stair 4
- Flood wall and backfilling for box culvert extension

#### 3.2 Assessment of Environmental Monitoring Results

In this reporting month, there was in total one incident where the monitoring results had exceeded the Action Level specified in **Appendix A**. The exceedance occurred for 1-hour TSP measured in the morning of 30 October at monitoring station A1. The monitoring results were already discussed in **Section 2** of the report and are summarized in **Table 3.2** and **Table 3.3** below.

**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	01/10/02 to 31/10/02	15	0	0
2	1 – hour TSP	01/10/02 to 31/10/02	51	1	0
3	30-minute Noise Measurement (Leq)	01/10/02 to 31/10/02	30	0	0

**Table 3.3 Summary of Non-Compliance with Relevant Criteria**

Location	Parameter	Date & Time of Exceedance	Measured Level ( $\mu\text{g}/\text{m}^3$ )	Action Level ( $\mu\text{g}/\text{m}^3$ )	Type of Exceedance
Village House at Lok Lo Ha Village (Station A1)	1-hour TSP	30 October 2002 9:00 – 10:00am	375	371	Action Level (by $4\mu\text{g}/\text{m}^3$ )

As shown in **Table 3.3**, the measured level of  $375\mu\text{g}/\text{m}^3$  is  $4\mu\text{g}/\text{m}^3$  or approximately 1.1% above the Action Level of  $371\mu\text{g}/\text{m}^3$ . Since exceedance in Action Level had occurred, the Event and Action Plan for Air Quality attached in **Appendix G** was triggered. Discussions were held between the ET, MCAL and Contractor and it was noted that at the time of exceedance, pile sheeting works were carried out in the vicinity of monitoring station A1. Meanwhile, the sheet piling works were completed in early November and no exceedances were recorded in the subsequent dust monitoring. However, since the construction works are in close proximity to residential buildings, it was reminded to the Contractor that impervious sheetings be placed around the working area in order to minimize potential dust impacts to nearby residents.

### 3.3 Environmental Complaints

No environmental complaints had been received against the construction site in this reporting month. **Table 3.4** shows the summary record for this reporting month while **Table 3.5** 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 3.4 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 3.5 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 3.6** presented the status of the major mitigation measures identified during site inspection.

**Table 3.6 Summary of Major Mitigation Measures at the Site**

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

As discussed in **Section 3.2**, impervious sheeting should be placed around the working area near monitoring station A1 in order to prevent potential dust impacts on nearby residents. The monitoring results at monitoring station A1 will be observed closely for any further exceedances in the following months.

In addition, deteriorations in the water quality of the stream north-east of Lok Shun Path Roundabout were noted during site inspection. It was recommended to the Contractor that more mitigation measures should be installed along the stream, including the additional of sandbags on the banks. The wastewater treatment facility should be operated at times when there were construction activities carried out upstream.

#### 4. FUTURE KEY ISSUE AND RECOMMENDATION

There are 2 environmental issues that will need to be addressed in the next reporting month:

- Impervious sheetings should be placed around the working area near monitoring station A1. Closer attention will be placed on the dust monitoring results, in particular at Station A1, for any further exceedances in Action and Limit Levels;
- Improvements in the mitigation measures of the stream north-east of 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**.



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**APPENDIX A:**

**Action and Limit Levels**

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**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.

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**APPENDIX B:**

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

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1. Tentative Schedule for Current Reporting Month – October 2002

DM :

NO. : 25606553

Sep. 16 2002 05:11

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 Dust Monitoring for October 2002

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

FROM :

25606553 NO. : 25606553

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Fax # 2706701	Fax #		

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 October 2002

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

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2. Tentative Schedule for Next Reporting Month – November 2002

FROM :

25606553 NO. : 25606553

Oct. 22 2002 04:05

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 Dust Monitoring for November 2002

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



FROM :

NO. : 25606553

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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 November 2002

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

88 x 70 / R / 185

E M L			
22 OCT 2002			
CIRC/ACT/DATE	TO/INIT/DATE		
SH			
FILE			

Post-it® Fax Note	7671	Date	22-10-02	# of pages	2
To	Lawrence Tso	From	Sxin		
Co/Dept	EML	Co.	Envirotech		
Phone #		Phone #			
Fax #	28906901	Fax #	25606553		

---

**APPENDIX C:**

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

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### 1. 24-hour TSP Monitoring Results

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

Date	Filter Weight (g)		Flow Rate (m <sup>3</sup> /min.)		Elapse Time		Total Sampling Time (min.)	Conc. (µg/m <sup>3</sup> )	Weather Condition
	Initial	Final	Initial	Final	Initial	Final			
7-Oct-02	2.8862	3.0638	1.11	1.11	10468.08	10492.08	1440	111	Fine
11-Oct-02	2.8702	2.9674	1.11	1.11	10495.08	10519.08	1440	61	Fine
18-Oct-02	2.8217	2.8831	1.11	1.11	10322.08	10546.08	1440	38	Rainy
24-Oct-02	2.7767	2.8430	1.11	1.11	10549.08	10573.08	1440	41	Fine
30-Oct-02	2.7480	2.8036	1.11	1.11	10576.11	10600.11	1440	35	Rainy
							Min	35	
							Max	111	
							Average	57.2	

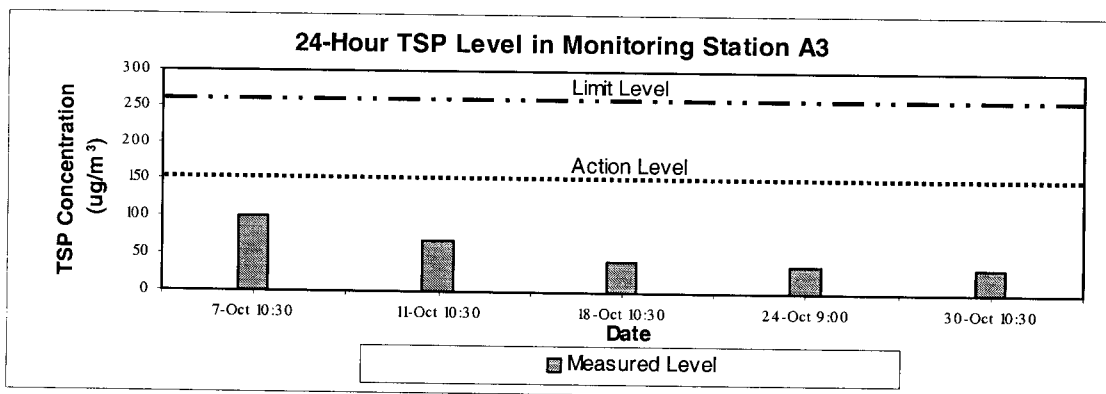
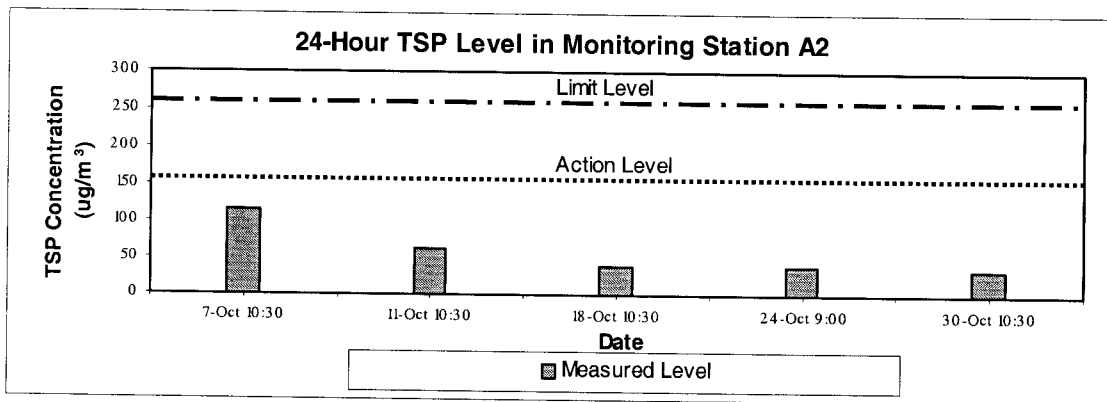
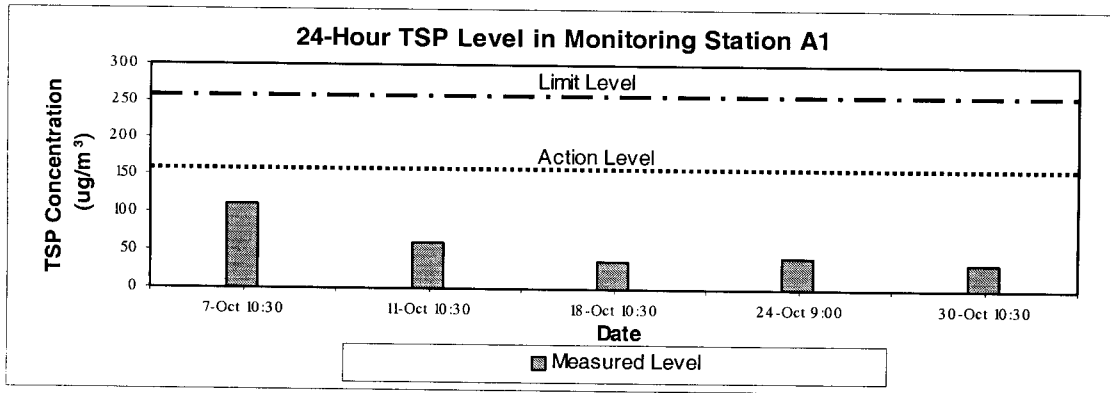
#### Monitoring Station A2 (Lok Lo Ha Village House No. 104)

Date	Filter Weight (g)		Flow Rate (m <sup>3</sup> /min.)		Elapse Time		Total Sampling Time (min.)	Conc. (µg/m <sup>3</sup> )	Weather Condition
	Initial	Final	Initial	Final	Initial	Final			
7-Oct-02	2.8982	3.1120	1.27	1.27	923.43	947.43	1440	117	Fine
11-Oct-02	2.8795	2.9928	1.27	1.27	950.43	974.43	1440	62	Fine
18-Oct-02	2.8959	2.9686	1.27	1.27	977.43	1001.42	1440	40	Rainy
24-Oct-02	2.7632	2.8341	1.27	1.27	1004.43	1028.43	1440	39	Fine
30-Oct-02	2.7444	2.8090	1.27	1.27	1031.43	1055.43	1440	35	Rainy
							Min	35	
							Max	117	
							Average	58.6	

**Monitoring Station A3 (Village House near Tsun King Road)**

Date	Filter Weight (g)		Flow Rate (m <sup>3</sup> /min.)		Elapse Time		Total Sampling Time (min.)	Conc. (µg/m <sup>3</sup> )	Weather Condition
	Initial	Final	Initial	Final	Initial	Final			
7-Oct-02	2.8826	3.0620	1.24	1.24	9645.84	9669.84	1440	100	Fine
11-Oct-02	2.8689	2.9913	1.24	1.24	9672.84	9696.84	1440	69	Fine
18-Sep-02	2.7872	2.8599	1.24	1.24	9699.84	9723.84	1440	41	Rainy
24-Sep-02	2.7637	2.8296	1.24	1.24	9726.84	9750.84	1440	37	Fine
30-Sep-02	2.7630	2.8242	1.24	1.24	9753.84	9777.84	1440	34	Rainy
							Min	34	
							Max	100	
							Average	56.2	

## 2. Plots for 24-hour Monitoring Results



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**APPENDIX D:**

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

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## 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-Oct-02	1100 – 1200	168
3-Oct-02	1400 – 1500	155
7-Oct-02	0900 – 1000	137
8-Oct-02	1100 – 1200	122
8-Oct-02	1400 – 1500	111
11-Oct-02	0900 – 1000	272
15-Oct-02	1100 – 1200	132
15-Oct-02	1400 – 1500	171
18-Oct-02	0900 – 1000	87
21-Oct-02	1100 – 1200	126
21-Oct-02	1400 – 1500	122
24-Oct-02	0900 – 1000	149
25-Oct-02	1000 – 1100	159
25-Oct-02	1400 – 1500	117
30-Oct-02	0900 – 1000	375
31-Oct-02	1100 – 1200	111
31-Oct-02	1400 – 1500	77
Average		152.4
Max		375
Min		77

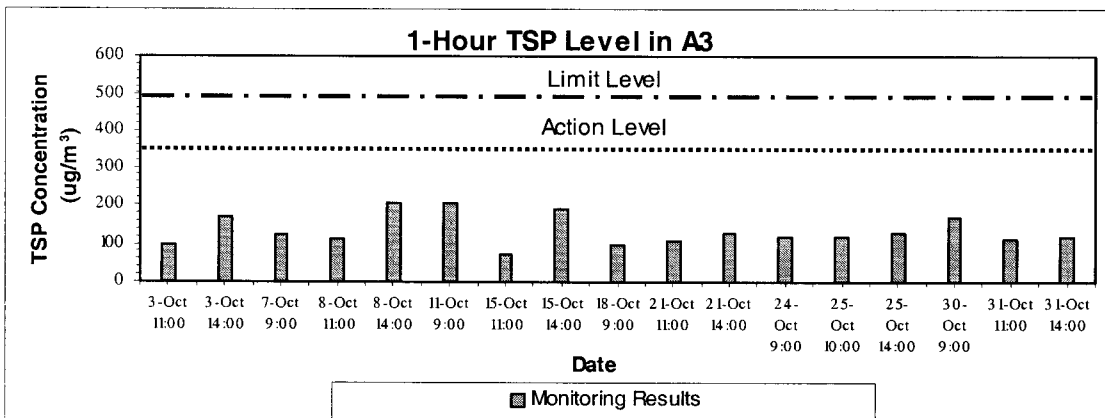
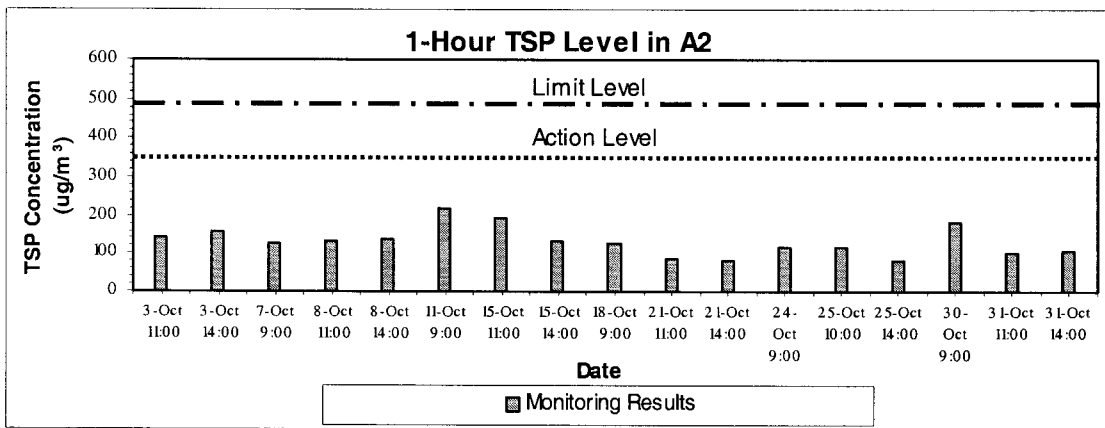
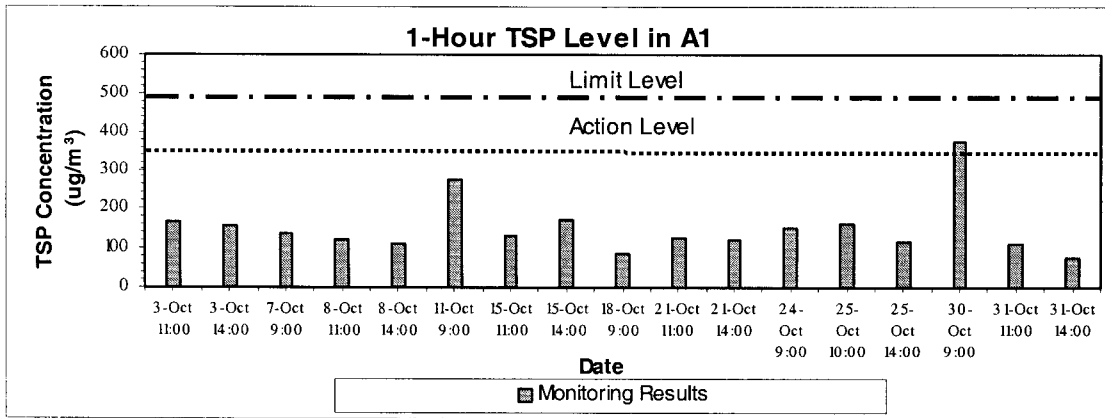
### Station A2 (Lok Lo Ha Village House No. 104)

Date	Time of sampling	Concentration, $\mu\text{g}/\text{m}^3$
3-Oct-02	1100 – 1200	140
3-Oct-02	1400 – 1500	157
7-Oct-02	0900 – 1000	126
8-Oct-02	1100 – 1200	133
8-Oct-02	1400 – 1500	135
11-Oct-02	0900 – 1000	220
15-Oct-02	1100 – 1200	192
15-Oct-02	1400 – 1500	131
18-Oct-02	0900 – 1000	129
21-Oct-02	1100 – 1200	85
21-Oct-02	1400 – 1500	79
24-Oct-02	0900 – 1000	117
25-Oct-02	1000 – 1100	117
25-Oct-02	1400 – 1500	83
30-Oct-02	0900 – 1000	181
31-Oct-02	1100 – 1200	102
31-Oct-02	1400 – 1500	108
Average		131.5
Max		220
Min		79

**Station A3 (Village House near Tsun King Road)**

<b>Date</b>	<b>Time of sampling</b>	<b>Concentration, <math>\mu\text{g}/\text{m}^3</math></b>
3-Oct-02	1100 – 1200	99
3-Oct-02	1400 – 1500	171
7-Oct-02	0900 – 1000	122
8-Oct-02	1100 – 1200	114
8-Oct-02	1400 – 1500	207
11-Oct-02	0900 – 1000	203
15-Oct-02	1100 – 1200	71
15-Oct-02	1400 – 1500	190
18-Oct-02	0900 – 1000	98
21-Oct-02	1100 – 1200	110
21-Oct-02	1400 – 1500	130
24-Oct-02	0900 – 1000	120
25-Oct-02	1000 – 1100	117
25-Oct-02	1400 – 1500	129
30-Oct-02	0900 – 1000	171
31-Oct-02	1100 – 1200	113
31-Oct-02	1400 – 1500	116
	Average	134.2
	Max	207
	Min	71

## 2. Plots of 1-hour TSP Monitoring Results



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**APPENDIX E:**

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

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## 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 <sub>eq</sub>	L <sub>10</sub>	L <sub>90</sub>
3-Oct-02	1430 – 1500	63.6	65.6	59.7
8-Oct-02	1430 – 1500	63.5	67.2	58.7
15-Oct-02	1430 – 1500	62.0	64.5	58.4
21-Oct-02	1430 – 1500	63.0	65.7	59.6
25-Oct-02	1045 – 1115	69.0	71.8	63.1
31-Oct-02	1430 – 1500	67.9	70.2	64.6

Min	62.0	64.5	58.4
Max	69.0	71.8	64.6

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

Date	Noise Level for 30 min, dB(A)			
	Time of Sampling	L <sub>eq</sub>	L <sub>10</sub>	L <sub>90</sub>
3-Oct-02	1330 – 1400	66.8	69.6	59.5
8-Oct-02	1330 – 1400	67.6	72.4	59.8
15-Oct-02	1330 – 1400	69.6	73.8	64.0
21-Oct-02	1330 – 1400	65.3	68.0	59.7
25-Oct-02	1000 – 1030	68.4	73.3	60.8
31-Oct-02	1330 – 1400	66.5	70.4	59.7

Min	65.3	68.0	59.5
Max	69.6	73.8	64.0

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

Date	Noise Level for 30 min, dB(A)			
	Time of Sampling	L <sub>eq</sub>	L <sub>10</sub>	L <sub>90</sub>
3-Oct-02	1130 – 1200	62.5	64.4	56.2
8-Oct-02	1130 – 1200	61.9	63.6	53.4
15-Oct-02	1130 – 1200	57.9	60.9	50.4
21-Oct-02	1130 – 1200	56.0	58.1	48.8
25-Oct-02	1130 – 1200	65.0	68.9	55.6
31-Oct-02	1130 – 1200	56.2	59.0	49.0

Min	56.0	58.1	48.8
Max	65.0	68.9	56.2

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

Date	Noise Level for 30 min, dB(A)			
	Time of Sampling	L <sub>eq</sub>	L <sub>10</sub>	L <sub>90</sub>
3-Oct-02	1045 – 1115	69.3	71.6	62.4
8-Oct-02	1045 – 1115	58.4	60.8	53.6
15-Oct-02	1045 – 1115	58.3	61.2	53.3
21-Oct-02	1045 – 1115	55.6	61.2	49.0
25-Oct-02	0925 – 0955	68.8	71.9	62.9
31-Oct-02	1045 – 1115	73.0	77.0	61.9

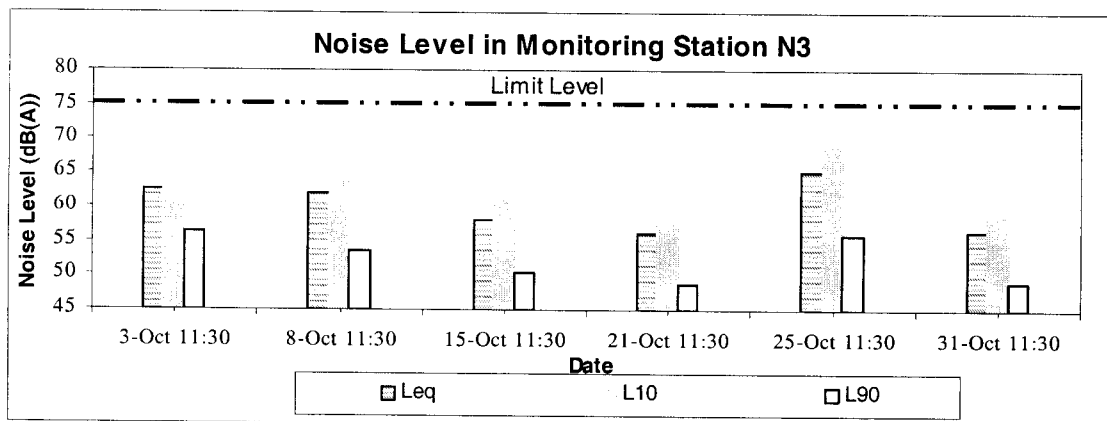
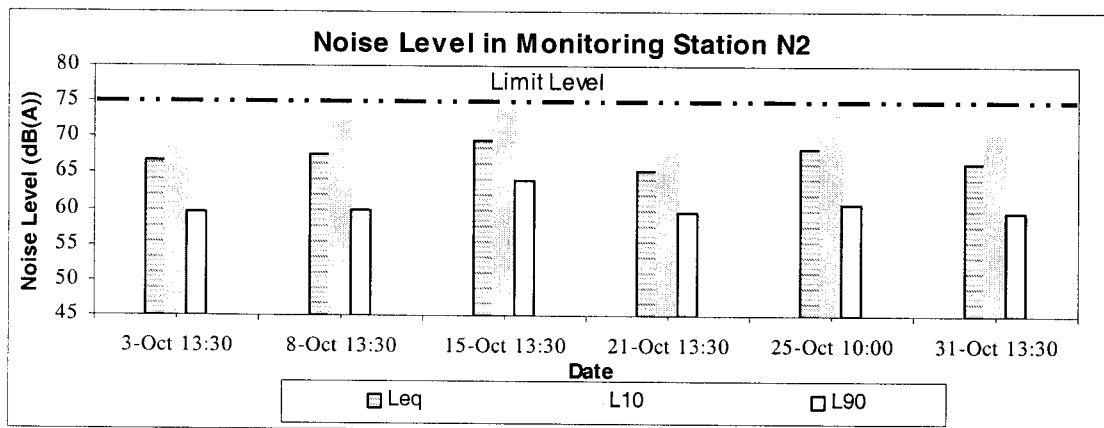
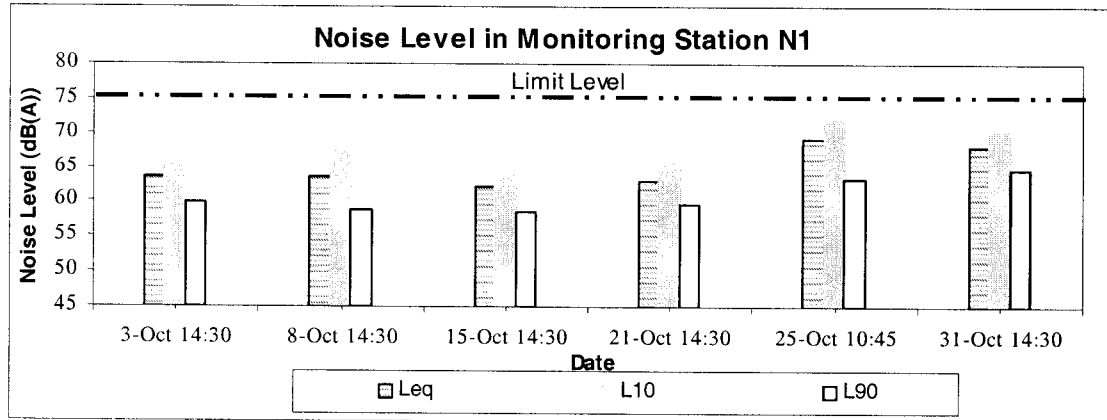
Min                      55.6                      60.8                      49.0  
 Max                      73.0                      77.0                      62.9

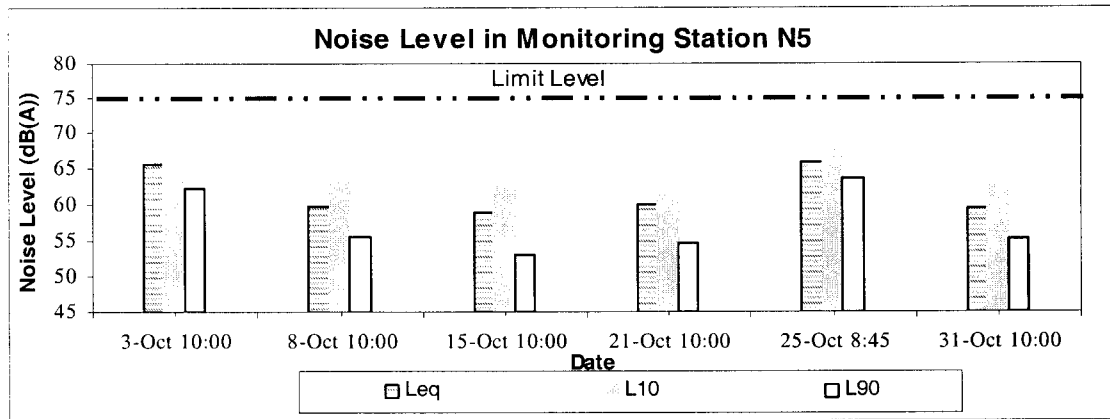
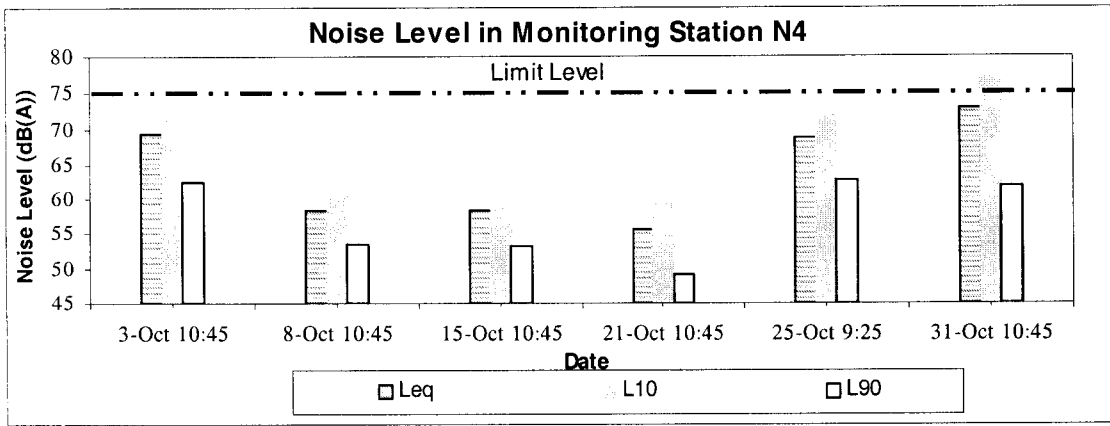
**Monitoring Station N5 (Village House near Royal Ascot)**

Date	Noise Level for 30 min, dB(A)			
	Time of Sampling	L <sub>eq</sub>	L <sub>10</sub>	L <sub>90</sub>
3-Oct-02	1000 – 1030	65.6	67.9	62.1
8-Oct-02	1000 – 1030	59.7	63.0	55.5
15-Oct-02	1000 – 1030	58.8	63.0	53.1
21-Oct-02	1000 – 1030	59.9	63.8	54.7
25-Oct-02	0845 – 0915	65.9	68.0	63.7
31-Oct-02	1000 – 1030	59.4	62.5	55.4

Min                      58.8                      62.5                      53.1  
 Max                      65.9                      68.0                      63.7

## 2. Plots of Noise Monitoring Results





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**APPENDIX F:**

**Weather Conditions During  
Monitoring Periods**

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**Weather Condition during Monitoring Period  
(From 3 to 31 October 2002)**

Date	Weather	Mean Air Temperature (°C)	Wind Speed (m/s)	Mean Relative Humidity (%)
3-October-02	Fine	26.7	0.5	78
7-October-02	Fine	23.8	1.0 – 1.2	48
8-October-02	Fine	24.1	1.5 – 1.6	45
11-October-02	Fine	25.8	0.8 – 0.9	73
15-October-02	Fine	26.5	0.6 – 0.8	80
18-October-02	Rainy	26.6	0.5 – 0.6	87
21-October-02	Cloudy	24.1	0.5 – 0.8	89
24-October-02	Fine	22.1	1.0	77
25-October-02	Fine	24.6	0.5	78
30-October-02	Rainy	23.1	1.3	96
31-October-02	Cloudy	22.0	1.0 – 1.3	90

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**APPENDIX G:**

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

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## Event / Action Plan for Air Quality

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



**Event / Action Plan for Construction Noise**

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

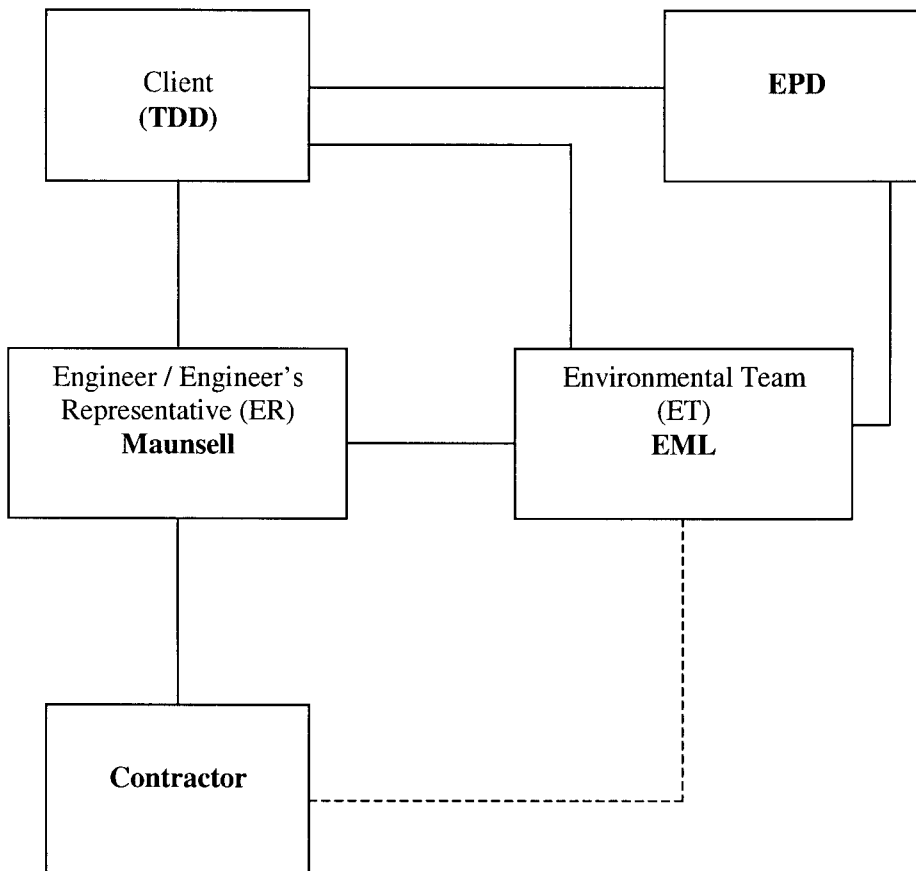
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**APPENDIX H:**

**Project Organisation and  
Contacts of Key Personnel**

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**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

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**APPENDIX I:**

**Summary Records of  
Complaints Received**

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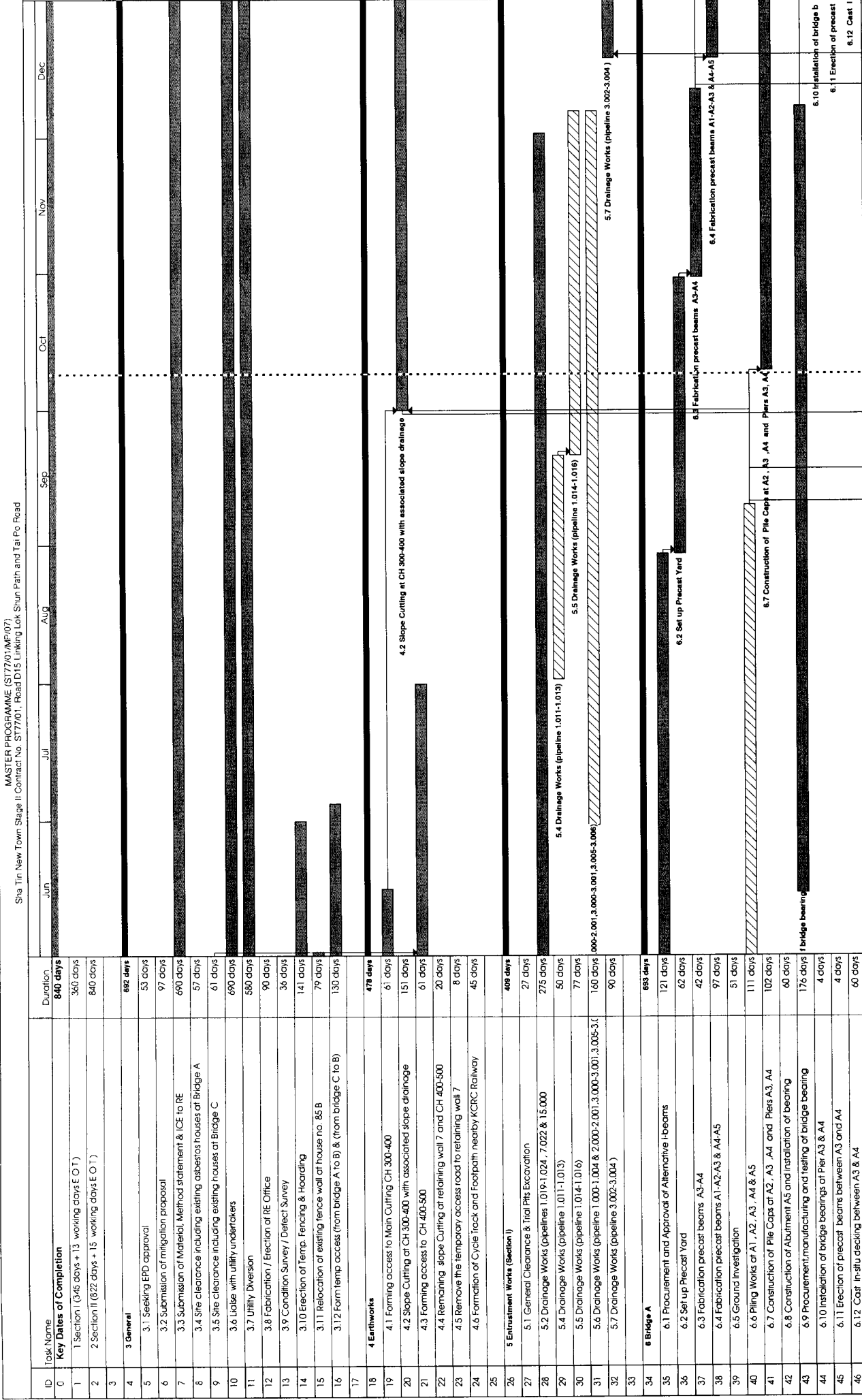
Complaint No.	Received date & Time	Description (inc. location/ nature of complaint)	Follow-up Action Taken	Recommended Measures	Status/ Remarks
C02-N1	Morning, 29/7/2002	<p>Around 9:30am on 29/7/02, police came on site to investigate a complaint of noise pollution emitted during rock breaking which carried 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</p>	<ul style="list-style-type: none"> <li>Ad hoc site inspection was carried out on 31/7/02, jointly with the Engineer and Contractor</li> <li>The complaint log sheet, the investigation findings and recommendations on mitigation measures were submitted to the Engineer and Contractor.</li> <li>A letter, addressing to the complainant, will be sent to the police.</li> </ul>	<p>Mitigation actions:</p> <ul style="list-style-type: none"> <li>Excavator-mounted breaker shall not be carried out within 125m from any nearby noise sensitive receivers and;</li> <li>Temporary purposed built barrier should be installed whenever there are high noise level construction activities.</li> </ul>	<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"> <li>Nearby residents complained to police that a generator in Road D15 Site was operating in night-time near Lok Lo Ha Village.</li> <li>Police came to the site to investigate the complaint and inform watchmen to turn off the operating generator at around 8:30pm.</li> <li>The complaint was valid as it concerned with construction noise during the restricted hours.</li> </ul>	<ul style="list-style-type: none"> <li>Ad hoc site inspection was carried out on 8 August 02, jointly with the Engineer and Contractor and ET.</li> <li>The complaint log sheet, the investigation findings and recommendations on mitigation measures were submitted to the Engineer and Contractor.</li> <li>A letter in both English and Chinese, addressing to the complainant, has been sent to the police.</li> </ul>	<p>Mitigation actions:</p> <ul style="list-style-type: none"> <li>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;</li> <li>A watchmen or site staff should be employed to check daily that all generators and plants are switched off after the permissible working hours.</li> </ul>	<p>File Closed.</p>

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**APPENDIX J:**

**Updated Construction  
Program**

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Project: Key Dates of Completion  
Date: Wed 08/10/02

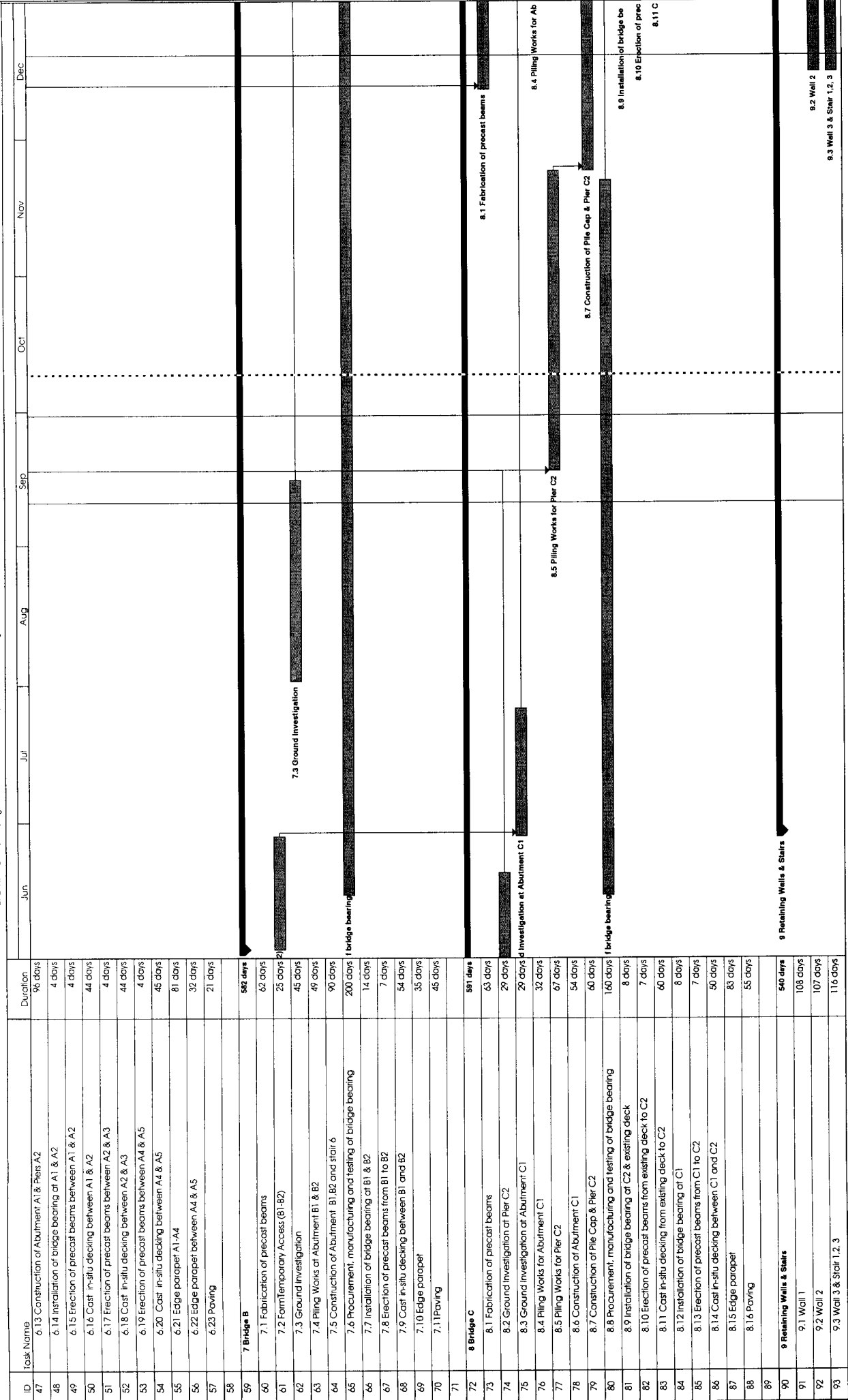
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Milestone: [Diamond] Summary: [Arrow]

Rolled Up Task: [Solid Bar] Rolled Up Critical Task: [Hatched Bar] Rolled Up Milestone: [Diamond]

Project Summary: [Arrow]

Legend: [Solid Bar] Rolled Up Progress [Hatched Bar] Split [Dotted Bar] External Tasks [Diamond]



Project: Key Dates of Completion Date: Wed 05/10/02

Task Progress: Task Critical Task: Milestone: Summary:

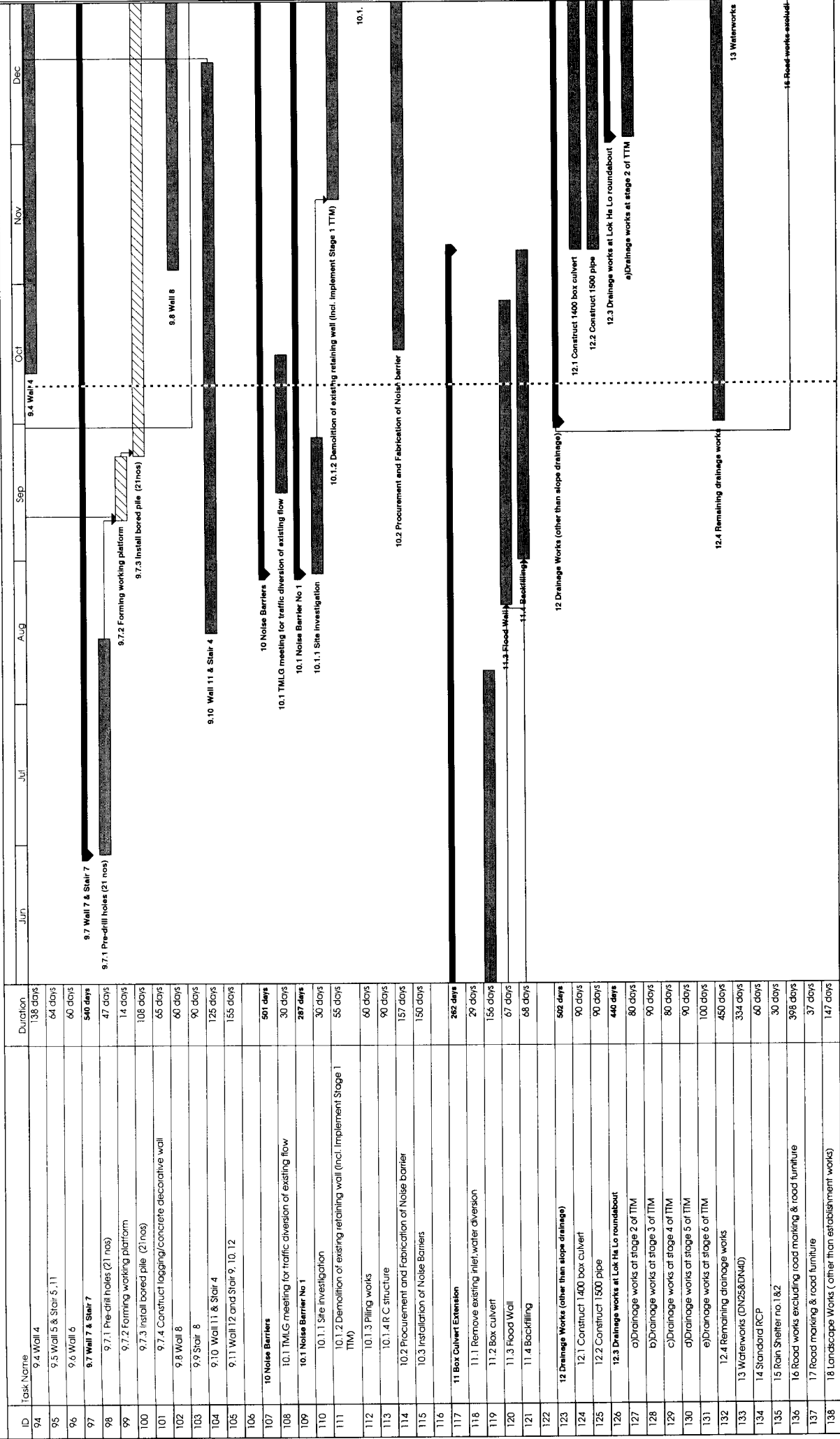
Rollled Up Task: Rollled Up Critical Task: Rollled Up Milestone:

Rollled Up Progress: Split: External Tasks:

Project Summary:

Page 2





Project: Key Dates of Completion  
 Date: Wed 08/10/02

Task  
 Task Progress  
 Critical Task

Critical Task Progress  
 Milestone  
 Summary

Rollled Up Progress  
 Rolled Up Critical Task  
 Rolled Up Milestone

Project Summary

15. Road works excluded