Citybus Group Limited

Citybus Permanent Headquarters and Bus Maintenance Depot in Chai Wan

Quarterly Environmental Monitoring and Audit Summary Report
March 2003 to May 2003

First Issue

Citybus Group Limited

Citybus Permanent Headquarters and Bus Maintenance Depot in Chai Wan

Environmental Monitoring and Audit

Quarterly Environmental Monitoring and Audit Summary Report March 2003 to May 2003

June 2003

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ABBREVIATIONS AND ACRONYMS

A/L Levels	Action and Limited Levels
AQO	Air Quality Objectives
Arup	Ove Arup & Partners Hong Kong Limited
ASR	Area Sensitive Rating
B&K	Brüel & Kjær
CNP	Construction Noise Permit
CR	Contractor
DA-TM	Technical Memorandum on Noise from Construction Work in Designated Areas
EA	Environmental Auditor
EM&A	Environmental Monitoring and Audit
EPD	Environmental Protection Department
ER	Engineer / Engineer's Representative
ET	Environmental Team
GW-TM	Technical Memorandum on Noise from Construction Work other than Percussive Piling
HKSAR	Hong Kong Special Administrative Region
HOKLAS	The Hong Kong Laboratory Accreditation Scheme
HVS	High Volume Sampler
IC(E)	Independent Environmental Checker
IEC	International Electrotechnical Commission Publications
IVE - CW	Institution of Vocational Education (Chai Wan)
K	Degrees Kelvin
LCP	Ling Chan + Partners Limited
NAMAS	National Measurement Accreditation Service
NSR	Noise Sensitive Receiver
PSPS	Private Sector Participation Schemes
SR	Sensitive Receiver
TSP	Total Suspended Particulates

EXECUTIVE SUMMARY

This quarterly EM&A report summaries the site inspection findings, air quality and noise impact monitoring works for the period between March 2003 to May 2003.

Daytime (0700 – 1900 hours) noise monitoring was conducted at 4 locations. The highest noise level was 69.9 dB(A) recorded at both of Tsuen Wan Estate on 17 March 2003 and 14 April 2003 and at Hong Kong IVE Chai Wan on 4 April 2003 and 30 May 2003 respectively. The lowest noise level was 65.1 dB(A) recorded at Heng Fa Tsuen on 17 March 2003. There were no exceedances on the A/L Levels during the monitoring period.

The highest average 1-hour TSP level was 281.4 $\mu g/m^3$ recorded at Hong Kong IVE Chai Wan on 17 March 2003 and the lowest average 1-hour TSP level was 113.9 $\mu g/m^3$ recorded at IVE on 3 May 2003. There were no exceedances on the A/L Levels during the monitoring period.

The highest 24-hour TSP level was 148.0 $\mu g/m^3$ recorded at Hong Kong IVE Chai Wan on 17 March 2003 and the lowest 24-hour TSP level was 56.8 $\mu g/m^3$ recorded at IVE on 3 May 2003. There were no exceedances on the A/L Levels during the monitoring period.

The major construction activity carried out by the Contractor from March 2003 to May 2003 was construction of ground level and first level of the maintenance depot.

No inert material have been disposed of at Quarry Bay Public Filling Barging Point by common dump truck from March 2003 to May 2003.

No public complaints regarding the air quality and noise were received from March 2003 to May 2003.

No inert material have been disposed of at Quarry Bay Public Filling Barging Point by common dump truck from March 2003 to May 2003. A total of 62 loads of non-inert material have been disposed of at SENT Landfill from March 2003 to May 2003. The total quantity of the disposed non-inert material was 1,488 tonnes from March 2003 to May 2003.

1. INTRODUCTION

Ove Arup & Partners Hong Kong Limited (Arup) was appointed by Citybus Group Limited as the Environmental Team (ET) for Citybus Permanent Headquarters and Bus Depot in Chai Wan (hereafter called the "Project"). Environmental parameters including air quality and construction noise were selected for impact monitoring. The construction activities of the Project have commenced in December 2001 and is expected to last for about 18 months.

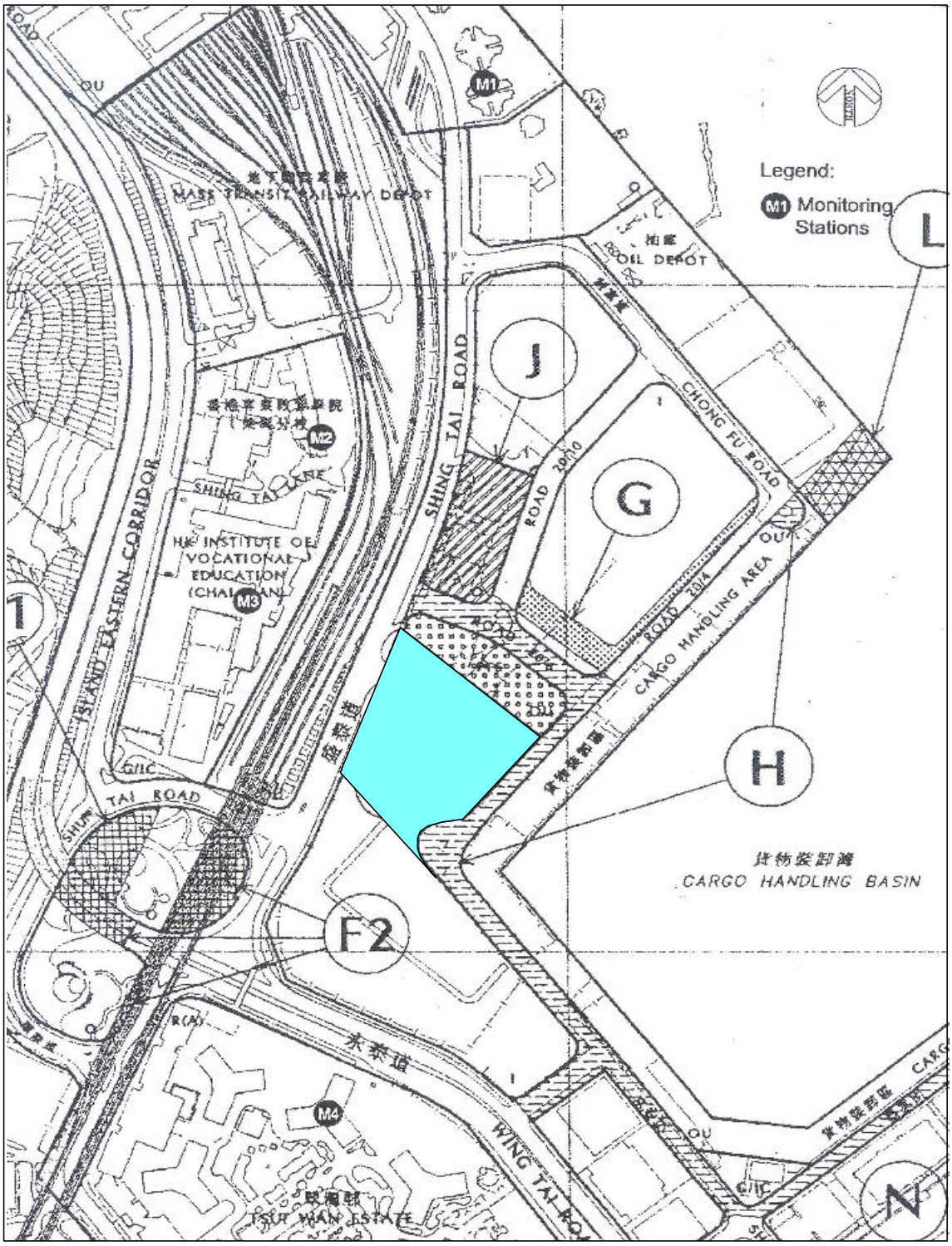
1.1 Purpose of the Report

The purpose of the quarterly EM&A summary report is to summarise the monitoring and audit results for the environmental issues including air quality, noise, and waste management due to the captioned construction project for the period from March 2003 to May 2003.

1.2 Site Description

The construction site is surrounded by Road 20/4, Road 20/6 and Shing Tai Road as shown in Figure 1-1. The total site area is approximately 1 hectare. The Project consists of five storeys with the bus depot located on G/F to 3/F for bus parking and maintenance, and depot office on 4/F to 5/F.

Figure 1-1 Site location plan of Citybus permanent headquarters and bus maintenance depot in Chai Wan



1.3 Organisation and Personnel

The primary responsibilities and duties of the respective parties in this EM&A programme are described in the following sub-sections: -

1.3.1 Project Manager

The entire construction of the Project is managed by ***Citybus Group Limited*** as the Project Manager. The Project Manager is supported by an Engineer's Representative (ER) and an Environmental Team (ET) to ensure that the environmental quality will comply with the project requirements.

1.3.2 Engineer's Representative

The Engineer is ***Ling Chan + Partners Limited (LCP).*** The Engineer's Representative is responsible for:

- Supervising the Contractor (CR) activities and ensuring that the requirements in the Environmental Management Plan[1] are fully complied with;
- Informing the CR when action is required to reduce impacts in accordance with the Event and Action Plans; and
- Adhering to the procedures for carrying out complaint investigation in accordance with Environmental Management Plan.

1.3.3 Environmental Team

Ove Arup & Partners Hong Kong Limited (Arup), has been appointed by Citybus to take up the role of the Environmental Team (ET), and ET is responsible for:

- Sampling, analysis and statistical evaluation of monitoring parameters with reference to the EIA study recommendations and requirements with respect of noise, dust and water quality.
- Conducting environmental site surveillance.
- Auditing the compliance with environmental protection and pollution prevention and control regulations.
- Monitoring the implementation of environmental mitigation measures.
- Monitoring the compliance with the environmental protection clauses/specifications in the Contract.
- Reviewing construction programme and providing comment as necessary.
- Reviewing construction methodology and providing comment as necessary.
- Conducting complaint investigation, evaluation and identification of corrective measures.
- Auditing of the EMS and recommending and implementing any changes as appropriate.
- Liasing with the Independent Environmental Checker (IC((E)) on all environmental performance matters.

- Advising the Contractor on environmental improvement, awareness, enhancement matter, etc. on site.
- Submitting the designated EM&A reports timely to the ER, the IC(E) and the EPD as appropriate.

1.3.4 Contractors

The site formation works are undertaken by ***Vibro (HK) Limited*** and construction of superstructure are undertaken by ***W. Hing Construction Co. Ltd***, the Contractors (CR). In this EM&A programme, the CR is responsible for:

- Submitting the proposals on mitigation measures in cases of exceedance of Action and Limit levels and in accordance with the Event and Action Plans;
- Implementing measures to reduce impact where Action and Limit levels are exceeded; and
- Adhering the procedures for carrying out complaint investigation in accordance with the Environmental Management Plan.

2. ENVIRONMENTAL STATUS

2.1 Construction Programme

The construction has been commenced in December 2001, and is anticipated to be completed in 18 months. The construction programme is given in the Monthly EM&A Report – December 2001.

2.2 Construction Activities of the Quarter

The major construction activities carried out by the CR in the period from March 2003 to May 2003 were construction of ground level and first level of the maintenance depot.

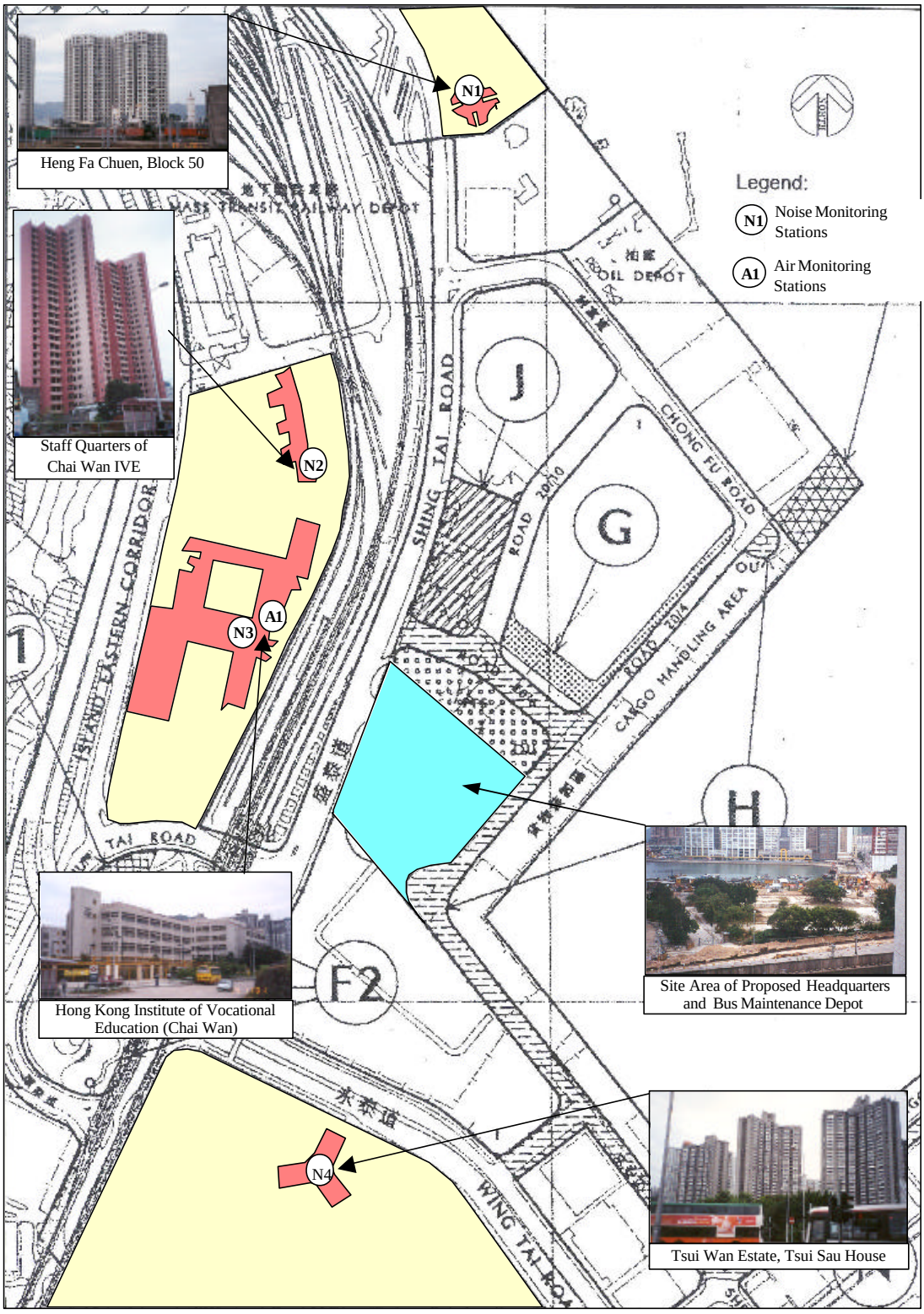
2.3 Environmental Sensitive Receivers

Several residential buildings and educational institution close to the site have been identified as environmental sensitive receivers in the EIA Report. The identified sensitive receivers are summarised in Table 2-1 and shown in Figure 2-1.

Table 2-1 Identified sensitive receivers

Sensitive Receivers No.	Description
N1	Heng Fa Chuen
N2	Staff Quarters of Chai Wan IVE
N3/A1	Hong Kong IVE Chai Wan
N4	Tsuen Wan Estate

Figure 2-1 Locations of construction site and environmental sensitive receivers



3. SUMMARY OF EM&A REQUIREMENTS

Construction noise and air quality were significant environmental impacts identified for the construction period of the project. In accordance with the Environmental Management Plan, air quality and noise impact monitoring shall be performed by the ET at all specified monitoring locations during the construction stage.

3.1 Construction Noise Monitoring

3.1.1 Monitoring Parameters

Construction noise monitoring shall be measured in terms of the A-weighted equivalent continuous sound pressure level (L_{eq}). L_{10} and L_{90} will also be recorded as supplementary reference information for data auditing.

3.1.2 Monitoring Frequency

Construction noise measurements were required to be taken on a weekly basis according to the Environmental Management Plan. The monitoring time periods, monitoring parameters and frequency are specified in Table 3-1.

Table 3-1 Construction noise monitoring parameters and frequency requirements

Time Period (when construction activity is found)	Parameters	Monitoring Frequency	No. of measurements for each monitoring
Between 0700-1900 hours on normal weekdays	$L_{eq(30\ min)}$	Once per week	1
Between 1900-2300 hours on normal weekdays	$L_{eq(5\ min)}$*		3 (consecutive)
Between 2300-0700 hours of next day			
Between 0700-1900 hours on holidays			

Remarks: * The $L_{eq(5\ min)}$ will only be measured if construction activities are conducted on general holidays and between the period of 1900 and 0700 hours during normal weekdays.

3.1.3 Monitoring Locations

A total of 4 monitoring locations were specified. They are given in Table 3-2. The measurements were taken at 1m from the building facade and maintained at a height 1.2m above floor. Photos showing the noise monitoring work in action are given in Figure 3-1.

Table 3-2 Noise impact monitoring locations

NSR No.	Location	Monitoring Point
N1	Heng Fa Chuen	Block 50
N2	Staff Quarters of IVE Chai Wan	Roof-top (Block C,D)
N3	Hong Kong IVE Chai Wan	Roof-top
N4	Tsui Wan Estate	Tsui Sau House

Figure 3-1 Noise monitoring in progress

3.2 Air Quality Monitoring

3.2.1 Monitoring Parameters

Air monitoring shall be measured in terms of the TSP levels for both 24-hour and 1-hour periods.

3.2.2 Monitoring Frequency

24-hour TSP and 1-hour TSP levels shall be monitored during the course of construction according to the Environmental Management Plan. The monitoring parameters and frequencies are specified in Table 3-3.

Table 3-3 TSP monitoring parameters and frequency

Parameters	Monitoring Frequency	Time Period	No. of measurement for each monitoring
24-hour TSP	Once every six days	0000 – 2400	1
1-hour TSP	Three times per every six days	0700 – 1900	1

3.2.3 Monitoring Locations

One monitoring location was specified for air quality impact and it is presented in Table 3-4.

Table 3-4 Air quality monitoring location

ASR No.	Location	Monitoring Point
A1	Hong Kong IVE Chai Wan	Roof-top

3.3 Performance Limits and Event-Action Plans

The monitoring results were checked against appropriate standards and requirements. A two-tier system performance limits has been established in Environmental Management Plan. The "Action Level" and the "Limit Level" are established according to the EPD requirements. Corresponding actions will be taken by ET, ER and CR in accordance with the Event-Action Plans if the monitoring results exceed the performance limits.

3.3.1 Construction Noise Impact

The Action and Limit (A/L) levels for the construction noise have been established in accordance with the Generic EM&A Manual and they are tabulated in Table 3-5.

Table 3-5 Action and Limit levels for construction noise

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

Remarks: * reduced to 70dB(A) for schools and 65dB(A) during school examination periods.
** 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

Table 3-6 details the actions required to be carried out by different parties in the case of an exceedance of performance limits being detected.

Table 3-6 Event-action plan for construction noise

Event	Action	
	ET or ER	Contractor
Action Level	1. Notify Contractor 2. Analyse investigation 3. Require Contractor to propose measures for the analysed noise problem 4. Increase monitoring frequency to check mitigation effectiveness	1. Submit noise mitigation proposals to ET / ER 2. Implement noise mitigation proposals
Limit Level	1. Notify Contractor 2. Notify EPD 3. Require Contractor to implement mitigation measures, increase monitoring frequency to check mitigation effectiveness	1. Implement mitigation measures 2. Prove to ET / ER effectiveness of measures applied

3.3.2 Air Quality

The A/L levels for air quality have been established in the Environmental Management Plan and they are tabulated in Table 3-7

Table 3-7 Action and Limit levels for air quality

Parameters	Action Level	Limit Level
24 Hour TSP Level in μg/m^3	• For baseline level $\leq$ 200μg/m^3, Action Level = (baseline level plus 30% + Limit Level)/2 • For baseline level > 200μg/m^3, Action Level = Limit Level	260
1 Hour TSP Level in μg/m^3	• For baseline level $\leq$ 384μg/m^3, Action Level = (baseline level plus 30% + Limit Level)/2 • For baseline level > 384μg/m^3, Action Level = Limit Level	500

In accordance with the Baseline Monitoring Report [2], the Action and Limit levels for 24-hour TSP and 1-hour TSP at monitoring location A1 were established and they are tabulated in Table 3-8 and Table 3-9 respectively.

Table 3-8 Action and Limit levels for 24-hour TSP

ASR No.	Monitoring Location	24-hour TSP Level in $\mu g/m^3$	
		Action Level	Limit Level
A1	Hong Kong IVE Chai Wan	220.8	260.0

Table 3-9 Action and Limit levels for 1-hour TSP

ASR No.	Monitoring Location	1-hour TSP Level in $\mu g/m^3$	
		Action Level	Limit Level
A1	Hong Kong IVE Chai Wan	303.2	500.0

Table 3-10 details the actions required to be carried out by different parties in case of an exceedance of performance limits being detected.

Table 3-10a Event-action plan for air quality (Action Level)

Event	Action		
	ET	ER	Contractor
Action Level			
1. Exceedance for one sample	1. Identify source 2. Inform ER 3. Repeat measurement to confirm finding 4. Increase monitoring frequency to daily	1. Notify Contractor 2. Check monitoring data and Contractor's working methods	1. Rectify any unacceptable practice 2. Amend working methods if appropriate
2. Exceedance for two or more consecutive samples	1. Identify source 2. Inform ER 3. Repeat measurement to confirm findings 4. Increase monitoring frequency to daily 5. Discuss with ER for remedial actions required 6. If exceedance continues, arrange meeting with ER 7. If exceedance stops, cease additional monitoring	1. Confirm receipt of notification of failure in writing 2. Notify Contractor 3. Check monitoring data and Contractor's working methods 4. Discuss with Environmental Supervisor and Contractor on potential remedial actions 5. Ensure remedial actions properly implemented	1. Submit proposals for remedial actions to ER within 3 working days of notification 2. Implement the agreed proposals 3. Amend proposal if appropriate

Table 3-10b Event-action plan for air quality (Limit Level)

Event	Action		
	ET	ER	Contractor
Limit Level			
1. Exceedance for one sample	1. Identify source 2. Inform ER and EPD 3. Repeat measurement to confirm finding 4. Increase monitoring frequency to daily 5. Assess effectiveness of Contractor's remedial actions and keep EPD and ER informed of the results	1. Confirm receipt of notification of failure in writing 2. Notify Contractor 3. Check monitoring data and Contractor's working methods 4. Discuss with Environmental Supervisor and Contractor on potential remedial actions 5. Ensure remedial actions properly implemented	1. Take immediate action to avoid further exceedance 2. Submit proposals for remedial actions to ER within 3 working days of notification 3. Implement the agreed proposals 4. Amend proposal if appropriate
2. Exceedance for two or more consecutive samples	1. Identify source 2. Inform ER and EPD the causes & actions taken for the exceedances 3. Repeat measurement to confirm findings 4. Increase monitoring frequency to daily 5. Investigate the causes of exceedance 6. Arrange meeting with EPD and ER to discuss the remedial actions to be taken 7. Assess effectiveness of Contractor's remedial actions and keep EPD and ER informed of the results 8. If exceedance stops, cease additional monitoring	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 amongst Environmental Team Leader and the Contractor potential remedial actions 5. Review Contractor's remedial actions whenever necessary to assure their effectiveness 6. If exceedance continues, consider what portion of the works is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated	1. Take immediate action to avoid further exceedance 2. Submit proposals for remedial actions to ER 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 ER until the exceedance is abated

4. NOISE

4.1 Noise Monitoring Results

All the noise measurements were taken between 0700-1900 hours on normal weekdays during which the construction site was under normal operation. The construction noise monitoring results from March 2003 to May 2003 is summarised in Table 4-1. The detailed construction noise monitoring results from March 2003 to May 2003 are given in Appendix A. The trend of the noise levels at each monitoring location are plotted and presented in Figure 4-1.

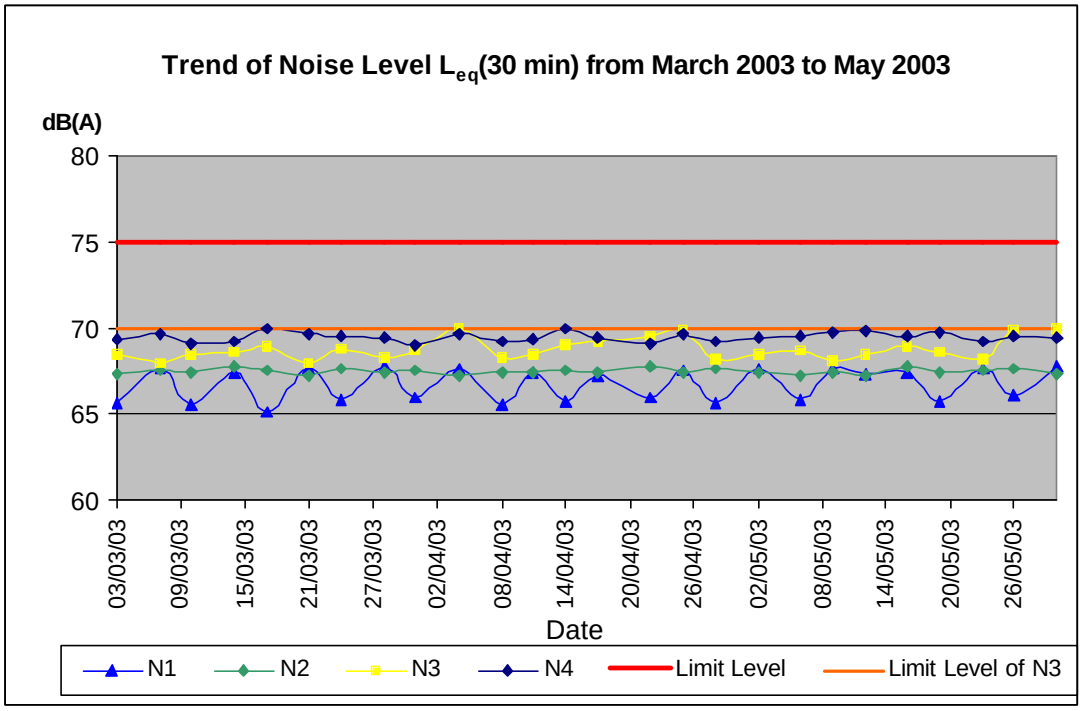
Table 4-1 Daytime noise monitoring results (0700 – 1900 hours on normal weekdays) from March 2003 to May 2003

Date of Monitoring	Monitoring Parameters	Monitoring Results, dB(A) (30 min)			
		N1	N2	N3	N4
03/03/03 (Mon)	L_{eq}	65.7	67.3	68.5	69.3
	L_{10}	70.1	71.1	73.1	73.6
	L_{90}	58.6	65.1	62.6	63.1
07/03/03 (Fri)	L_{eq}	67.6	67.5	68.0	69.6
	L_{10}	72.6	70.1	72.6	73.1
	L_{90}	62.1	65.1	63.1	62.1
10/03/03 (Mon)	L_{eq}	65.5	67.4	68.5	69.1
	L_{10}	69.6	70.1	73.1	72.6
	L_{90}	59.6	65.6	64.1	63.1
14/03/03 (Fri)	L_{eq}	67.4	67.7	68.6	69.2
	L_{10}	72.1	71.1	73.6	73.6
	L_{90}	62.6	65.1	63.6	62.6
17/03/03 (Mon)	L_{eq}	65.1	67.5	68.9	69.9
	L_{10}	69.6	70.1	74.6	73.6
	L_{90}	59.1	65.1	62.6	63.1
21/03/03 (Fri)	L_{eq}	67.6	67.2	68.0	69.6
	L_{10}	72.6	70.1	72.6	73.1
	L_{90}	62.6	65.1	62.6	62.6
24/03/03 (Mon)	L_{eq}	65.9	67.6	68.8	69.5
	L_{10}	70.6	71.1	74.1	72.6
	L_{90}	59.6	66.1	62.1	63.1
28/03/03 (Fri)	L_{eq}	67.7	67.4	68.3	69.4
	L_{10}	72.6	71.1	74.6	73.6
	L_{90}	62.1	65.1	63.1	62.6
31/03/03 (Mon)	L_{eq}	66.0	67.5	68.7	69.0
	L_{10}	70.1	71.1	74.6	72.6
	L_{90}	60.1	65.1	62.6	62.6

Date of Monitoring	Monitoring Parameters	Monitoring Results, dB(A) (30 min)			
		N1	N2	N3	N4
04/04/03 (Fri)	L_{eq}	67.6	67.2	69.9	69.6
	L_{10}	72.6	70.1	75.1	73.1
	L_{90}	62.6	65.1	62.1	62.6
08/04/03 (Tue)	L_{eq}	65.5	67.4	68.3	69.2
	L_{10}	69.6	70.1	73.1	73.6
	L_{90}	59.6	65.1	64.6	62.1
11/04/03 (Fri)	L_{eq}	67.4	67.4	68.5	69.3
	L_{10}	72.6	70.6	74.1	73.6
	L_{90}	62.1	65.1	63.1	62.6
14/04/03 (Mon)	L_{eq}	65.8	67.5	69.0	69.9
	L_{10}	70.1	70.1	74.6	73.6
	L_{90}	59.6	65.6	62.6	63.1
17/04/03 (Thu)	L_{eq}	67.2	67.4	69.2	69.4
	L_{10}	72.1	70.6	74.6	73.1
	L_{90}	62.1	65.1	63.1	62.6
22/04/03 (Tue)	L_{eq}	66.0	67.7	69.5	69.1
	L_{10}	70.6	71.1	75.1	72.6
	L_{90}	60.1	65.6	62.6	62.6
25/04/03 (Fri)	L_{eq}	67.5	67.4	69.8	69.6
	L_{10}	72.6	70.1	75.1	73.6
	L_{90}	62.1	65.6	63.1	62.1
28/04/03 (Mon)	L_{eq}	65.7	67.6	68.2	69.2
	L_{10}	70.1	70.6	73.1	73.1
	L_{90}	59.1	65.6	64.1	63.1
02/05/03 (Fri)	L_{eq}	67.6	67.4	68.5	69.4
	L_{10}	72.6	70.1	74.1	73.1
	L_{90}	62.6	65.6	63.6	62.1
06/05/03 (Tue)	L_{eq}	65.9	67.2	68.7	69.5
	L_{10}	70.1	70.1	74.6	72.6
	L_{90}	60.1	65.1	63.1	63.1
09/05/03 (Fri)	L_{eq}	67.6	67.4	68.1	69.7
	L_{10}	72.6	70.1	73.6	73.6
	L_{90}	62.1	65.6	64.1	62.6
12/05/03 (Mon)	L_{eq}	67.3	67.2	68.5	69.8
	L_{10}	73.1	70.1	73.1	74.1
	L_{90}	62.1	65.1	64.6	63.1
16/05/03 (Thu)	L_{eq}	67.4	67.7	68.9	69.5
	L_{10}	72.1	71.1	74.1	74.1
	L_{90}	62.1	66.1	63.1	62.6
19/05/03 (Tue)	L_{eq}	65.8	67.4	68.6	69.7
	L_{10}	70.1	70.1	73.6	73.6
	L_{90}	60.6	65.6	64.1	63.1

Date of Monitoring	Monitoring Parameters	Monitoring Results, dB(A) (30 min)			
		N1	N2	N3	N4
23/05/03 (Fri)	L_{eq}	67.6	67.5	68.2	69.2
	L_{10}	72.6	70.1	73.1	74.1
	L_{90}	62.1	65.1	63.6	62.1
26/05/03 (Mon)	L_{eq}	66.1	67.6	69.8	69.5
	L_{10}	70.1	70.6	74.6	73.1
	L_{90}	60.1	65.1	62.6	62.6
30/05/03 (Fri)	L_{eq}	67.7	67.3	69.9	69.4
	L_{10}	72.6	70.1	75.1	74.6
	L_{90}	62.6	65.6	62.6	62.1

Figure 4-1 Trend of noise monitoring level from March 2003 to May 2003



5. AIR QUALITY

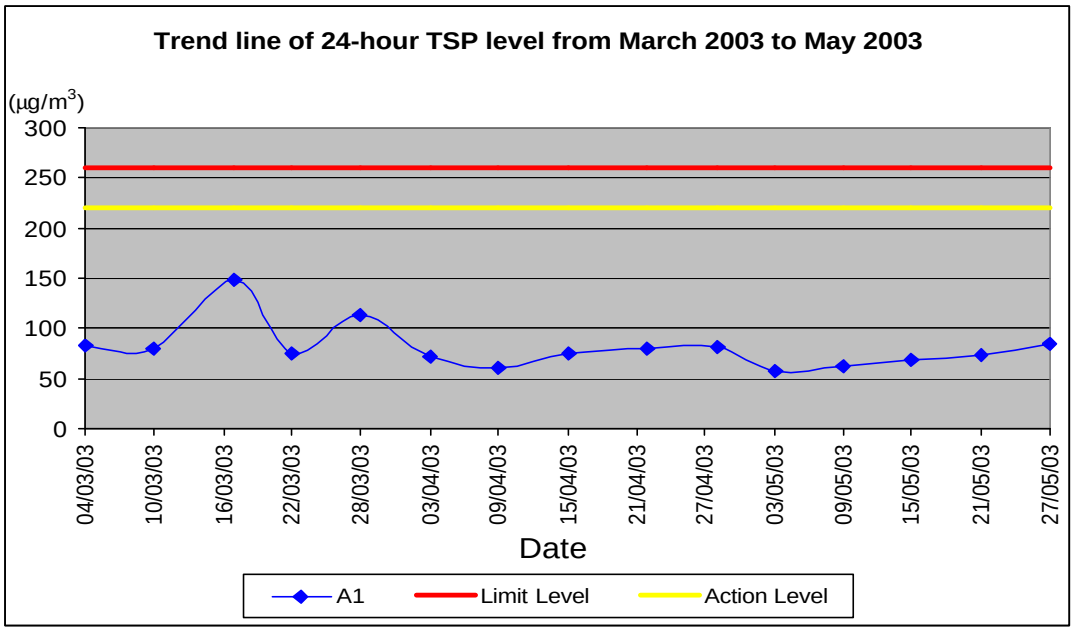
5.1 24-hour TSP Monitoring Results

The monitoring result of 24-hour TSP during the period from March 2003 to May 2003 is summarised in Table 5-1. The trend of the 24-hour TSP levels at each monitoring location are plotted and presented in Figure 5-1. The details of the 24-hour monitoring results are given in Appendix B.

Table 5-1 24-hour TSP monitoring results from March 2003 to May 2003

Date of Monitoring	24-hour TSP Monitoring Results (mg/m³)	
	Weather	Averaged Result
04/03/03 (Tue)	Overcast	82.8
10/03/03 (Mon)	Overcast	79.1
17/03/03 (Mon)	Fine	148.0
22/03/03 (Sat)	Overcast	74.6
28/03/03 (Fri)	Overcast	114.0
03/04/03 (Thu)	Rainy	72.3
09/04/03 (Wed)	Rainy	60.2
15/04/03 (Tue)	Overcast	74.9
22/04/03 (Tue)	Fine	79.8
28/04/03 (Mon)	Overcast	81.3
03/05/03 (Thu)	Rainy	56.8
09/05/03 (Wed)	Rainy	62.1
15/05/03 (Tue)	Fine	68.0
21/05/03 (Wed)	Fine	73.7
27/05/03 (Tue)	Overcast	83.9

Figure 5-1 Trend of 24-hour TSP levels from March 2003 to May 2003



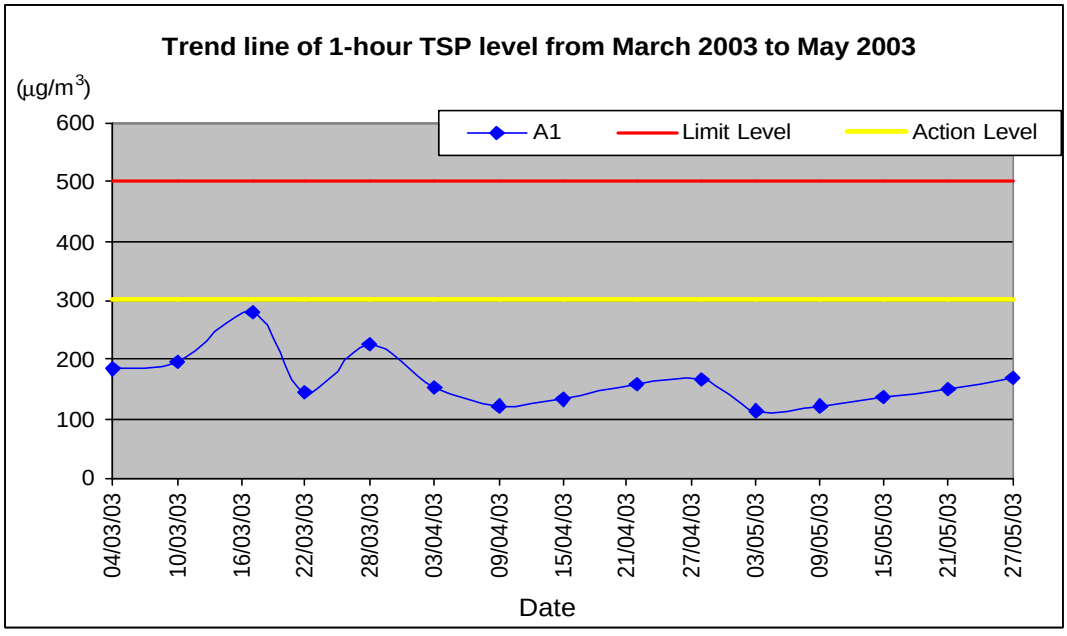
5.2 1-hour TSP Monitoring Results

The monitoring result of 1-hour TSP during the period from March 2003 to May 2003 is summarised in Table 5-2. The trend of the 1-hour TSP levels at each monitoring location are plotted and presented in Figure 5-2. The details of the 1-hour monitoring results are given in Appendix C.

Table 5-2 1-hour TSP monitoring results from March 2003 to May 2003

Date of Monitoring	1-hour TSP Monitoring Results (µg/m³)	
	Weather	Averaged Result
04/03/03 (Tue)	Overcast	184.4
10/03/03 (Mon)	Overcast	195.9
17/03/03 (Mon)	Fine	281.4
22/03/03 (Sat)	Overcast	143.2
28/03/03 (Fri)	Overcast	226.3
03/04/03 (Thu)	Rainy	151.4
09/04/03 (Wed)	Rainy	120.6
15/04/03 (Tue)	Overcast	133.2
22/04/03 (Tue)	Fine	159.3
28/04/03 (Mon)	Overcast	167.7
03/05/03 (Thu)	Rainy	113.9
09/05/03 (Wed)	Rainy	122.6
15/05/03 (Tue)	Fine	136.0
21/05/03 (Wed)	Fine	149.7
27/05/03 (Tue)	Overcast	170.4

Figure 5-2 Trend of 1-hour TSP levels from March 2003 to May 2003



6. QUARTERLY SUMMARY, ENVIRONMENTAL COMPLAINT AND NON-COMPLIANCE RECORDS

6.1 Summary of Waste Disposal

No inert material have been disposed of at Quarry Bay Public Filling Barging Point by common dump truck from March 2003 to May 2003. A total of 62 loads of non-inert material have been disposed of at SENT Landfill from March 2003 to May 2003. The total quantity of the disposed non-inert material was 1,488 tonnes from March 2003 to May 2003.The total quantities of the waste disposal to Quarry Bay Public Filling Barging Point are summarised in Table 6-1.

Table 6-1 Waste disposal summary

Month	No. of Loads to Quarry Bay Public Filling Barging Point	Total Disposed Quantity (m^3)	No. of Loads to SENT Landfill	Total Disposed Quantity (Tonnes)
February 2002	254	1,524	-	-
March 2002	362	2,172	-	-
April 2002	521	3,126	-	-
May 2002	478	2,868	-	-
June 2002	33	198	-	-
July 2002	5	30	-	-
August 2002	72	432	-	-
September 2002	133	798	-	-
October 2002	417	2,502	-	-
November 2002	682	4,092	-	-
December 2002	476	2,856	-	-
January 2003	439	2,364	-	-
February 2003	-	-	-	-
March 2003*	-	-	5	120
April 2003*	-	-	26	624
May 2003	-	-	31	744
Total	3,872	22,962	62	1,488

Noted: An average of $6m^3$ soil per load is assumed for the estimation of the disposed quantity.
* Update information from the Contractor in May 2003.

6.2 Complaint Record

No public complaints regarding the air quality and noise were received from March 2003 to May 2003.

6.3 Non-compliance Record

There are no non-compliances recorded from March 2003 to May 2003.

7. REFERENCES

[1] Environmental Management Plan for Proposed Headquarters and Bus Maintenance Depot in Chai Wan. Ref : R0474-3.01. CH2M HILL (China) Limited.

[2] Environmental Baseline Monitoring Report – Citybus Chai Wan Permanent Depot Enviromental Team Services. Ove Arup & Partners Hong Kong Limited.

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APPENDIX A

Detailed Noise Monitoring Results

Details of Noise Impact Monitoring

Month	Date	NSR No.	Time periods		Weather condition	Noise Level dB(A)			Influencing factors/ Site condition
			Start	Finish		L_{eq}	L_{10}	L_{90}	
Mar-03	03-Mar-03	N1	8:00	8:30	Overcast	65.7	70.1	58.6	Work in Progress
Mar-03	03-Mar-03	N2	14:00	14:30	Overcast	67.3	71.1	65.1	Work in Progress
Mar-03	03-Mar-03	N3	10:55	11:25	Overcast	68.5	73.1	62.6	Work in Progress
Mar-03	03-Mar-03	N4	8:45	9:15	Overcast	69.3	73.6	63.1	Work in Progress
Mar-03	07-Mar-03	N1	14:55	15:25	Overcast	67.6	72.6	62.1	Work in Progress
Mar-03	07-Mar-03	N2	14:10	14:40	Overcast	67.5	70.1	65.1	Work in Progress
Mar-03	07-Mar-03	N3	11:05	11:35	Overcast	68.0	72.6	63.1	Work in Progress
Mar-03	07-Mar-03	N4	15:40	16:10	Overcast	69.6	73.1	62.1	Work in Progress
Mar-03	10-Mar-03	N1	8:00	8:30	Overcast	65.5	69.6	59.6	Work in Progress
Mar-03	10-Mar-03	N2	14:15	14:45	Overcast	67.4	70.1	65.6	Work in Progress
Mar-03	10-Mar-03	N3	11:00	11:30	Overcast	68.5	73.1	64.1	Work in Progress
Mar-03	10-Mar-03	N4	8:50	9:20	Overcast	69.1	72.6	63.1	Work in Progress
Mar-03	14-Mar-03	N1	14:45	15:15	Overcast	67.4	72.1	62.6	Work in Progress
Mar-03	14-Mar-03	N2	14:00	14:30	Overcast	67.7	71.1	65.1	Work in Progress
Mar-03	14-Mar-03	N3	10:55	11:25	Overcast	68.6	73.6	63.6	Work in Progress
Mar-03	14-Mar-03	N4	15:30	16:00	Overcast	69.2	73.6	62.6	Work in Progress
Mar-03	17-Mar-03	N1	8:00	8:30	Fine	65.1	69.6	59.1	Work in Progress
Mar-03	17-Mar-03	N2	13:45	14:15	Fine	67.5	70.1	65.1	Work in Progress
Mar-03	17-Mar-03	N3	11:00	11:30	Fine	68.9	74.6	62.6	Work in Progress
Mar-03	17-Mar-03	N4	8:50	9:20	Fine	69.9	73.6	63.1	Work in Progress
Mar-03	21-Mar-03	N1	14:50	15:20	Overcast	67.6	72.6	62.6	Work in Progress
Mar-03	21-Mar-03	N2	14:00	14:30	Overcast	67.2	70.1	65.1	Work in Progress
Mar-03	21-Mar-03	N3	10:50	11:20	Overcast	68.0	72.6	62.6	Work in Progress
Mar-03	21-Mar-03	N4	15:40	16:10	Overcast	69.6	73.1	62.6	Work in Progress
Mar-03	24-Mar-03	N1	8:10	8:40	Overcast	65.9	70.6	59.6	Work in Progress
Mar-03	24-Mar-03	N2	14:00	14:30	Overcast	67.6	71.1	66.1	Work in Progress
Mar-03	24-Mar-03	N3	10:55	11:25	Overcast	68.8	74.1	62.1	Work in Progress
Mar-03	24-Mar-03	N4	8:55	9:25	Overcast	69.5	72.6	63.1	Work in Progress
Mar-03	28-Mar-03	N1	14:45	15:15	Overcast	67.7	72.6	62.1	Work in Progress
Mar-03	28-Mar-03	N2	14:00	14:30	Overcast	67.4	71.1	65.1	Work in Progress
Mar-03	28-Mar-03	N3	10:50	11:20	Overcast	68.3	74.6	63.1	Work in Progress
Mar-03	28-Mar-03	N4	15:25	15:55	Overcast	69.4	73.6	62.6	Work in Progress
Mar-03	31-Mar-03	N1	8:00	8:30	Overcast	66.0	70.1	60.1	Work in Progress
Mar-03	31-Mar-03	N2	14:30	15:00	Overcast	67.5	71.1	65.1	Work in Progress
Mar-03	31-Mar-03	N3	11:00	11:30	Overcast	68.7	74.6	62.6	Work in Progress
Mar-03	31-Mar-03	N4	8:50	9:20	Overcast	69.0	72.6	62.6	Work in Progress
Apr-03	04-Apr-03	N1	14:30	15:00	Overcast	67.6	72.6	62.6	Work in Progress
Apr-03	04-Apr-03	N2	13:45	14:15	Overcast	67.2	70.1	65.1	Work in Progress
Apr-03	04-Apr-03	N3	12:00	12:30	Overcast	69.9	75.1	62.1	Work in Progress
Apr-03	04-Apr-03	N4	15:10	15:40	Overcast	69.6	73.1	62.6	Work in Progress
Apr-03	08-Apr-03	N1	8:00	8:30	Overcast	65.5	69.6	59.6	Work in Progress
Apr-03	08-Apr-03	N2	15:00	15:30	Overcast	67.4	70.1	65.1	Work in Progress
Apr-03	08-Apr-03	N3	11:05	11:35	Overcast	68.3	73.1	64.6	Work in Progress
Apr-03	08-Apr-03	N4	8:50	9:20	Overcast	69.2	73.6	62.1	Work in Progress
Apr-03	11-Apr-03	N1	14:15	14:45	Overcast	67.4	72.6	62.1	Work in Progress
Apr-03	11-Apr-03	N2	13:30	14:00	Overcast	67.4	70.6	65.1	Work in Progress
Apr-03	11-Apr-03	N3	11:05	11:35	Overcast	68.5	74.1	63.1	Work in Progress
Apr-03	11-Apr-03	N4	14:55	15:25	Overcast	69.3	73.6	62.6	Work in Progress
Apr-03	14-Apr-03	N1	8:00	8:30	Overcast	65.8	70.1	59.6	Work in Progress
Apr-03	14-Apr-03	N2	13:30	14:00	Overcast	67.5	70.1	65.6	Work in Progress
Apr-03	14-Apr-03	N3	10:45	11:15	Overcast	69.0	74.6	62.6	Work in Progress
Apr-03	14-Apr-03	N4	8:45	9:15	Overcast	69.9	73.6	63.1	Work in Progress
Apr-03	17-Apr-03	N1	15:00	15:30	Overcast	67.2	72.1	62.1	Work in Progress
Apr-03	17-Apr-03	N2	14:15	14:45	Overcast	67.4	70.6	65.1	Work in Progress
Apr-03	17-Apr-03	N3	11:00	11:30	Overcast	69.2	74.6	63.1	Work in Progress
Apr-03	17-Apr-03	N4	15:40	16:10	Overcast	69.4	73.1	62.6	Work in Progress
Apr-03	22-Apr-03	N1	8:00	8:30	Fine	66.0	70.6	60.1	Work in Progress
Apr-03	22-Apr-03	N2	14:00	14:30	Fine	67.7	71.1	65.6	Work in Progress
Apr-03	22-Apr-03	N3	10:45	11:15	Fine	69.5	75.1	62.6	Work in Progress
Apr-03	22-Apr-03	N4	8:50	9:20	Fine	69.1	72.6	62.6	Work in Progress
Apr-03	25-Apr-03	N1	14:50	15:20	Overcast	67.5	72.6	62.1	Work in Progress
Apr-03	25-Apr-03	N2	14:00	14:30	Overcast	67.4	70.1	65.6	Work in Progress
Apr-03	25-Apr-03	N3	10:55	11:25	Overcast	69.8	75.1	63.1	Work in Progress
Apr-03	25-Apr-03	N4	15:40	16:10	Overcast	69.6	73.6	62.1	Work in Progress
Apr-03	28-Apr-03	N1	8:05	8:35	Overcast	65.7	70.1	59.1	Work in Progress
Apr-03	28-Apr-03	N2	14:30	15:00	Overcast	67.6	70.6	65.6	Work in Progress
Apr-03	28-Apr-03	N3	10:45	11:15	Overcast	68.2	73.1	64.1	Work in Progress
Apr-03	28-Apr-03	N4	8:55	9:25	Overcast	69.2	73.1	63.1	Work in Progress

Details of Noise Impact Monitoring

Month	Date	NSR No.	Time periods		Weather condition	Noise Level dB(A)			Influencing factors/ Site condition
			Start	Finish		L_{eq}	L_{10}	L_{90}	
May-03	02-May-03	N1	15:00	15:30	Overcast	67.6	72.6	62.6	Work in Progress
May-03	02-May-03	N2	14:15	14:45	Overcast	67.4	70.1	65.6	Work in Progress
May-03	02-May-03	N3	10:55	11:25	Overcast	68.5	74.1	63.6	Work in Progress
May-03	02-May-03	N4	15:40	16:10	Overcast	69.4	73.1	62.1	Work in Progress
May-03	06-May-03	N1	8:00	8:30	Overcast	65.9	70.1	60.1	Work in Progress
May-03	06-May-03	N2	14:30	15:00	Overcast	67.2	70.1	65.1	Work in Progress
May-03	06-May-03	N3	11:00	11:30	Overcast	68.7	74.6	63.1	Work in Progress
May-03	06-May-03	N4	8:45	9:15	Overcast	69.5	72.6	63.1	Work in Progress
May-03	09-May-03	N1	15:30	16:00	Overcast	67.6	72.6	62.1	Work in Progress
May-03	09-May-03	N2	14:45	15:15	Overcast	67.4	70.1	65.6	Work in Progress
May-03	09-May-03	N3	11:00	11:30	Overcast	68.1	73.6	64.1	Work in Progress
May-03	09-May-03	N4	16:10	16:40	Overcast	69.7	73.6	62.6	Work in Progress
May-03	12-May-03	N1	15:10	15:40	Overcast	67.3	73.1	62.1	Work in Progress
May-03	12-May-03	N2	14:10	14:40	Overcast	67.2	70.1	65.1	Work in Progress
May-03	12-May-03	N3	11:00	11:30	Overcast	68.5	73.1	64.6	Work in Progress
May-03	12-May-03	N4	15:55	16:25	Overcast	69.8	74.1	63.1	Work in Progress
May-03	16-May-03	N1	15:15	15:45	Fine	67.4	72.1	62.1	Work in Progress
May-03	16-May-03	N2	14:30	15:00	Fine	67.7	71.1	66.1	Work in Progress
May-03	16-May-03	N3	10:55	11:25	Fine	68.9	74.1	63.1	Work in Progress
May-03	16-May-03	N4	16:00	16:30	Fine	69.5	74.1	62.6	Work in Progress
May-03	19-May-03	N1	8:00	8:30	Overcast	65.8	70.1	60.6	Work in Progress
May-03	19-May-03	N2	14:00	14:30	Overcast	67.4	70.1	65.6	Work in Progress
May-03	19-May-03	N3	10:55	11:25	Overcast	68.6	73.6	64.1	Work in Progress
May-03	19-May-03	N4	8:50	9:20	Overcast	69.7	73.6	63.1	Work in Progress
May-03	23-May-03	N1	14:45	15:15	Fine	67.6	72.6	62.1	Work in Progress
May-03	23-May-03	N2	14:00	14:30	Fine	67.5	70.1	65.1	Work in Progress
May-03	23-May-03	N3	11:00	11:30	Fine	68.2	73.1	63.6	Work in Progress
May-03	23-May-03	N4	15:25	15:55	Fine	69.2	74.1	62.1	Work in Progress
May-03	26-May-03	N1	8:00	8:30	Overcast	66.1	70.1	60.1	Work in Progress
May-03	26-May-03	N2	14:00	14:30	Overcast	67.6	70.6	65.1	Work in Progress
May-03	26-May-03	N3	11:00	11:30	Overcast	69.8	74.6	62.6	Work in Progress
May-03	26-May-03	N4	8:50	9:20	Overcast	69.5	73.1	62.6	Work in Progress
May-03	30-May-03	N1	15:00	15:30	Fine	67.7	72.6	62.6	Work in Progress
May-03	30-May-03	N2	14:15	14:45	Fine	67.3	70.1	65.6	Work in Progress
May-03	30-May-03	N3	11:00	11:30	Fine	69.9	75.1	62.6	Work in Progress
May-03	30-May-03	N4	15:45	16:15	Fine	69.4	74.6	62.1	Work in Progress

APPENDIX B

Detailed Air Quality (24-hour TSP) Monitoring Results

Details of 24-Hour TSP Monitoring

Month	Date	Receptor No.	Weather condition	Site condition	Filter Weight (g)		TSP weight (g)	Flow Rate (m^3/min)		Average Flow Rate (m^3/min)	Elapse Time		Sampling Time (mins.)	Total vol. (m^3)	24-hour TSP Level ($\mu g/m^3$)
					Initial	Final		Initial	Final		Start	Finish			
Mar-03	04-Mar-03	A1	Overcast	Work in progress	2.7510	2.9290	0.1780	1.5139	1.4707	1.4923	4521.36	4545.36	1440.00	2148.91	82.8
Mar-03	10-Mar-03	A1	Overcast	Work in progress	2.7489	2.9196	0.1707	1.5440	1.4533	1.4987	4569.36	4593.36	1440.00	2158.06	79.1
Mar-03	17-Mar-03	A1	Fine	Work in progress	2.7422	3.0611	0.3189	1.4753	1.5178	1.4966	4593.36	4617.36	1440.00	2155.03	148.0
Mar-03	22-Mar-03	A1	Overcast	Work in progress	2.7513	2.9106	0.1593	1.4932	1.4716	1.4824	4617.36	4641.36	1440.00	2134.66	74.6
Mar-03	28-Mar-03	A1	Overcast	Work in progress	2.7509	2.9983	0.2474	1.5285	1.4856	1.5071	4641.36	4665.36	1440.00	2170.15	114.0
Apr-03	03-Apr-03	A1	Rainy	Work in progress	2.7459	2.8973	0.1514	1.4533	1.4568	1.4551	4665.36	4689.36	1440.00	2095.27	72.3
Apr-03	09-Apr-03	A1	Rainy	Work in progress	2.7421	2.8698	0.1277	1.4838	1.4606	1.4722	4689.36	4713.36	1440.00	2119.97	60.2
Apr-03	15-Apr-03	A1	Overcast	Work in progress	2.7456	2.9017	0.1561	1.4582	1.4369	1.4476	4715.26	4739.26	1440.00	2084.47	74.9
Apr-03	22-Apr-03	A1	Fine	Work in progress	2.7501	2.9285	0.1784	1.5633	1.5409	1.5521	4739.26	4763.26	1440.00	2235.02	79.8
Apr-03	28-Apr-03	A1	Overcast	Work in progress	2.7489	2.9302	0.1813	1.5603	1.5380	1.5492	4763.26	4787.26	1440.00	2230.78	81.3
May-03	03-May-03	A1	Rainy	Work in progress	2.7523	2.8758	0.1235	1.5226	1.4965	1.5096	4787.26	4811.26	1440.00	2173.75	56.8
May-03	09-May-03	A1	Rainy	Work in progress	2.7516	2.8894	0.1378	1.5412	1.5412	1.5412	4811.26	4835.26	1440.00	2219.33	62.1
May-03	15-May-03	A1	Fine	Work in progress	2.7511	2.9012	0.1501	1.5536	1.5100	1.5318	4835.26	4859.26	1440.00	2205.79	68.0
May-03	21-May-03	A1	Fine	Work in progress	2.7498	2.9115	0.1617	1.5347	1.5107	1.5227	4859.26	4883.26	1440.00	2192.69	73.7
May-03	27-May-03	A1	Overcast	Work in progress	2.7488	2.9314	0.1826	1.5125	1.5108	1.5117	4883.26	4907.26	1440.00	2176.78	83.9

APPENDIX C

Detailed Air Quality (1-hour TSP) Monitoring Results

Details of 1-Hour TSP Monitoring

Date	Receptor No.	Set No.	Time periods		Weather condition	Site condition	Temp. (°C)	Pressure (mmHg)	1-hour TSP Level (μg/m³)
			Start	Finish					
04-Mar-03	A1	1	10:00	11:00	Overcast	Work in progress	18.0	771.0	182.1
04-Mar-03	A1	2	11:00	12:00	Overcast	Work in progress	18.0	771.0	183.1
04-Mar-03	A1	3	12:00	13:00	Overcast	Work in progress	18.0	771.0	188.1
10-Mar-03	A1	1	10:00	11:00	Overcast	Work in progress	16.0	772.0	194.0
10-Mar-03	A1	2	11:00	12:00	Overcast	Work in progress	16.0	772.0	196.3
10-Mar-03	A1	3	12:00	13:00	Overcast	Work in progress	16.0	772.0	197.3
17-Mar-03	A1	1	10:00	11:00	Fine	Work in progress	27.0	770.0	272.8
17-Mar-03	A1	2	11:00	12:00	Fine	Work in progress	27.0	770.0	285.4
17-Mar-03	A1	3	12:00	13:00	Fine	Work in progress	27.0	770.0	286.0
22-Mar-03	A1	1	9:00	10:00	Overcast	Work in progress	19.0	775.0	143.4
22-Mar-03	A1	2	10:00	11:00	Overcast	Work in progress	19.0	775.0	142.6
22-Mar-03	A1	3	11:00	12:00	Overcast	Work in progress	19.0	775.0	143.6
28-Mar-03	A1	1	9:00	10:00	Overcast	Work in progress	22.0	772.0	220.1
28-Mar-03	A1	2	10:00	11:00	Overcast	Work in progress	22.0	772.0	229.3
28-Mar-03	A1	3	11:00	12:00	Overcast	Work in progress	22.0	772.0	229.5
03-Apr-03	A1	1	9:00	10:00	Rainy	Work in progress	25.0	769.0	153.9
03-Apr-03	A1	2	10:00	11:00	Rainy	Work in progress	25.0	769.0	153.7
03-Apr-03	A1	3	11:00	12:00	Rainy	Work in progress	25.0	769.0	146.7
09-Apr-03	A1	1	9:00	10:00	Rainy	Work in progress	24.0	772.0	120.4
09-Apr-03	A1	2	10:00	11:00	Rainy	Work in progress	24.0	772.0	120.2
09-Apr-03	A1	3	11:00	12:00	Rainy	Work in progress	24.0	772.0	121.2
15-Apr-03	A1	1	9:00	10:00	Overcast	Work in progress	25.0	771.0	134.6
15-Apr-03	A1	2	10:00	11:00	Overcast	Work in progress	25.0	771.0	132.1
15-Apr-03	A1	3	11:00	12:00	Overcast	Work in progress	25.0	771.0	132.8
22-Apr-03	A1	1	9:00	10:00	Fine	Work in progress	27.0	772.0	157.8
22-Apr-03	A1	2	10:00	11:00	Fine	Work in progress	27.0	772.0	160.6
22-Apr-03	A1	3	11:00	12:00	Fine	Work in progress	27.0	772.0	159.5
28-Apr-03	A1	1	9:00	10:00	Overcast	Work in progress	29.0	773.0	166.4
28-Apr-03	A1	2	10:00	11:00	Overcast	Work in progress	29.0	773.0	166.2
28-Apr-03	A1	3	11:00	12:00	Overcast	Work in progress	29.0	773.0	170.4
03-May-03	A1	1	9:00	10:00	Rainy	Work in progress	28.0	775.0	113.5
03-May-03	A1	2	10:00	11:00	Rainy	Work in progress	28.0	775.0	114.3
03-May-03	A1	3	11:00	12:00	Rainy	Work in progress	28.0	775.0	114.1
09-May-03	A1	1	9:00	10:00	Rainy	Work in progress	29.0	775.0	123.1
09-May-03	A1	2	10:00	11:00	Rainy	Work in progress	29.0	775.0	122.3
09-May-03	A1	3	11:00	12:00	Rainy	Work in progress	29.0	775.0	122.5
15-May-03	A1	1	9:00	10:00	Fine	Work in progress	31.0	770.0	135.9
15-May-03	A1	2	10:00	11:00	Fine	Work in progress	31.0	770.0	135.5
15-May-03	A1	3	11:00	12:00	Fine	Work in progress	31.0	770.0	136.5
21-May-03	A1	1	9:00	10:00	Fine	Work in progress	31.0	771.0	150.3
21-May-03	A1	2	10:00	11:00	Fine	Work in progress	31.0	771.0	149.5
21-May-03	A1	3	11:00	12:00	Fine	Work in progress	31.0	771.0	149.1
27-May-03	A1	1	9:00	10:00	Overcast	Work in progress	29.0	776.0	168.9
27-May-03	A1	2	10:00	11:00	Overcast	Work in progress	29.0	766.0	171.0
27-May-03	A1	3	11:00	12:00	Overcast	Work in progress	29.0	766.0	171.2