Citybus Group Limited

Citybus Permanent Headquarters and Bus Maintenance Depot in Chai Wan

Quarterly Environmental Monitoring and Audit Summary Report
December 2002 to February 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 December 2002 to February 2003

March 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 December 2002 to February 2003.

Daytime (0700 – 1900 hours) noise monitoring was conducted at 4 locations. The highest noise level was 69.9 dB(A) recorded at Tsuen Wan Estate on 3 December 2002 and 17 February 2003. The lowest noise level was 65.1 dB(A) recorded at Heng Fa Tsuen on 10 February 2003 and 24 February 2003. There were no exceedances on the A/L Levels during the monitoring period.

The highest average 1-hour TSP level was 300.2 $\mu g/m^3$ recorded at Hong Kong IVE Chai Wan on 21 January 2003 and the lowest average 1-hour TSP level was 59.8 $\mu g/m^3$ recorded at IVE on 23 December 2002. There were no exceedances on the A/L Levels during the monitoring period.

The highest 24-hour TSP level was 174.6 $\mu g/m^3$ recorded at Hong Kong IVE Chai Wan on 21 January 2003 and the lowest 24-hour TSP level was 54.3 $\mu g/m^3$ recorded at IVE on 4 December 2002. There were no exceedances on the A/L Levels during the monitoring period.

The major construction activity carried out by the Contractor from December 2002 to February 2003 was construction of pile-cap and ground level of the maintenance depot.

No public complaints regarding the air quality and noise were received from December 2002 to February 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.

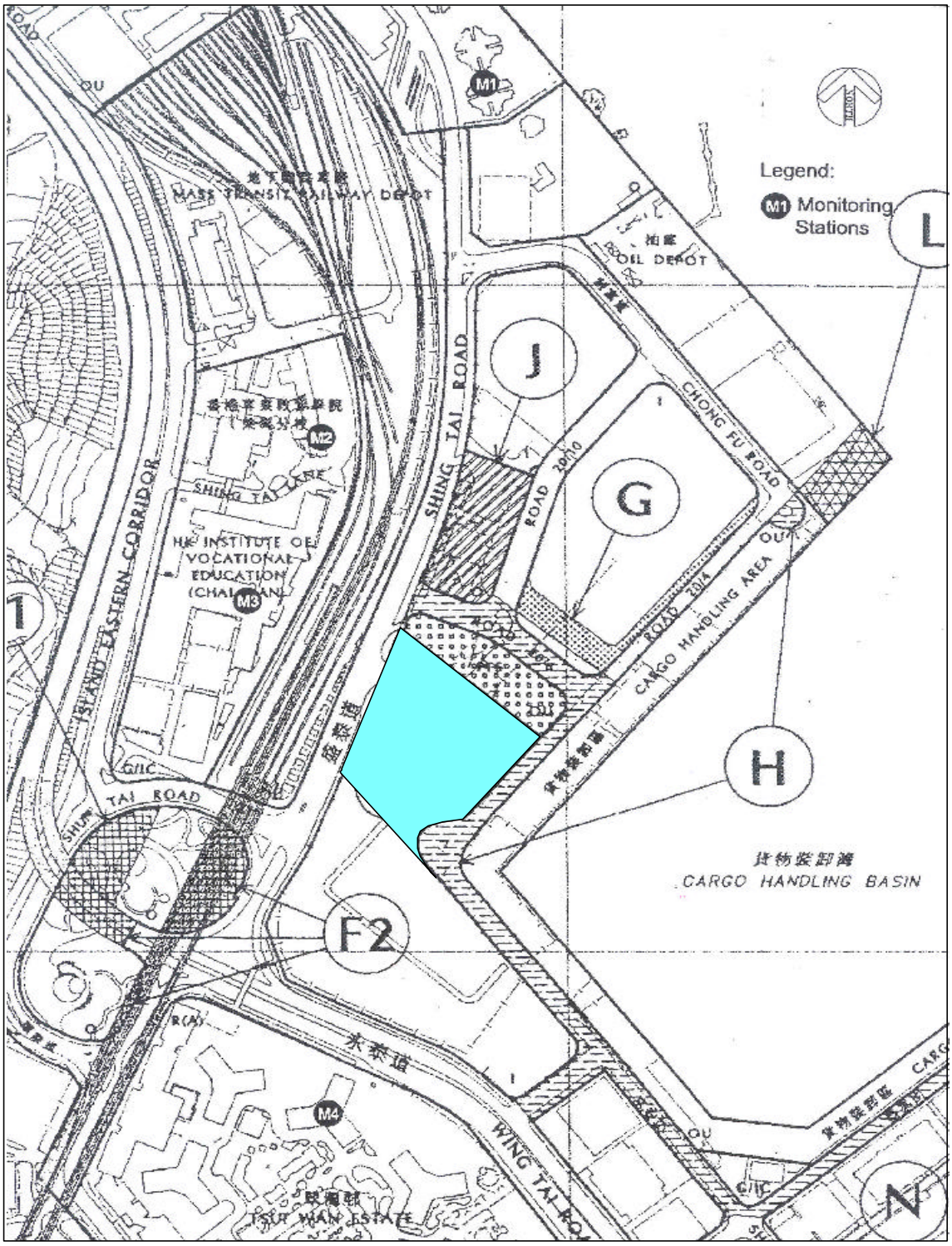
1.1 Purpose of the Report

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 December 2002 to February 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 December 2002 to February 2003 were construction of pile-cap and ground level of the maintenance depot.

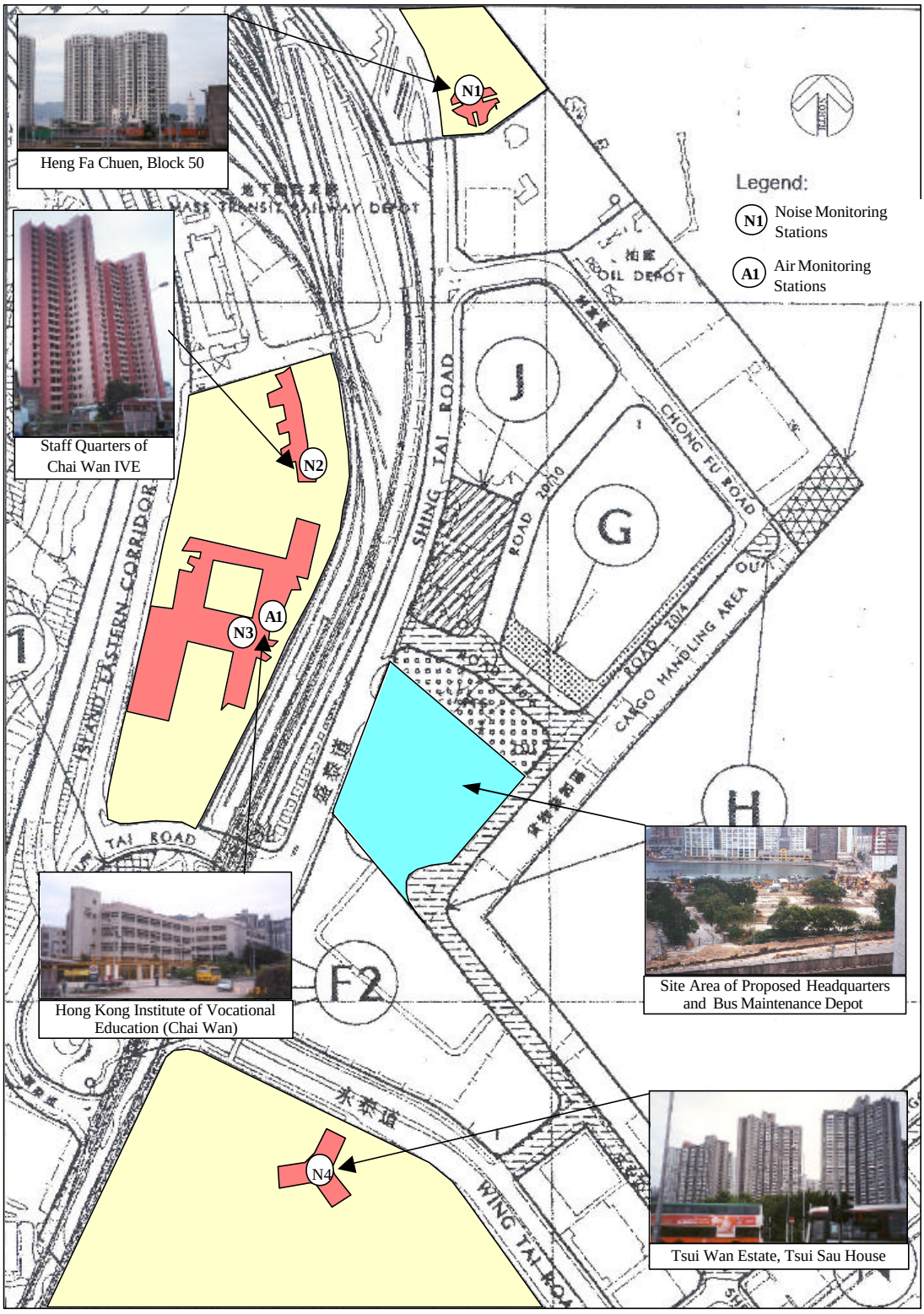
2.3 Environmental Sensitive Receivers

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 mg/m³	
		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 mg/m³	
		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 December 2002 to February 2003 is summarised in Table 4-1. The detailed construction noise monitoring results from December 2002 to February 2003 are given in Appendix A. The trend of the noise levels at each monitoring location are plotted and presented in Figure 4-1.

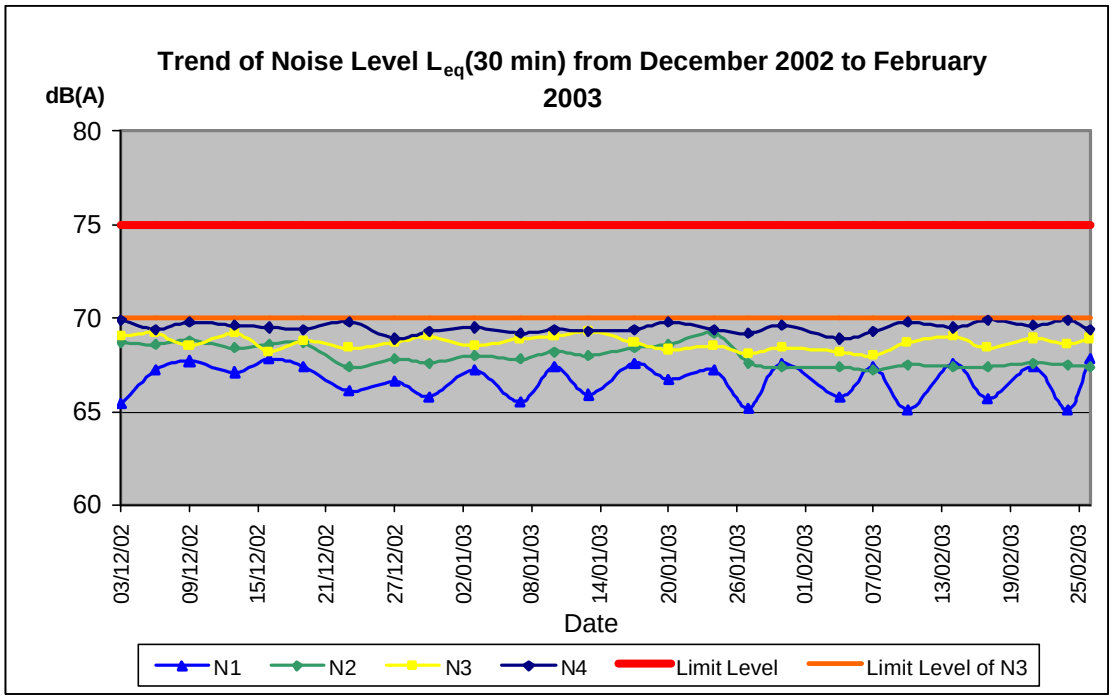
Table 4-1 Daytime noise monitoring results (0700 – 1900 hours on normal weekdays) from December 2002 to February 2003

Date of Monitoring	Monitoring Parameters	Monitoring Results, dB(A) (30 min)			
		N1	N2	N3	N4
03/12/02 (Tue)	L_{eq}	65.4	68.7	69.0	69.9
	L_{10}	68.6	71.6	73.6	74.6
	L_{90}	58.1	66.6	64.1	63.1
06/12/02 (Fri)	L_{eq}	67.2	68.6	69.2	69.4
	L_{10}	71.6	71.1	73.1	73.6
	L_{90}	61.6	66.1	64.6	62.6
09/12/02 (Mon)	L_{eq}	67.7	68.8	68.5	69.8
	L_{10}	69.6	70.6	71.6	73.1
	L_{90}	62.1	66.6	63.6	62.6
13/12/02 (Fri)	L_{eq}	67.1	68.4	69.2	69.6
	L_{10}	72.1	70.6	72.6	74.1
	L_{90}	60.6	66.1	63.1	63.1
16/12/02 (Mon)	L_{eq}	67.8	68.6	68.2	69.5
	L_{10}	71.6	71.1	72.1	73.1
	L_{90}	60.6	66.1	63.1	63.1
19/12/02 (Thu)	L_{eq}	67.4	68.7	68.8	69.4
	L_{10}	70.6	71.1	72.1	74.1
	L_{90}	61.6	66.6	63.6	62.6
23/12/02 (Mon)	L_{eq}	66.1	67.4	68.4	69.8
	L_{10}	70.1	70.1	72.6	73.1
	L_{90}	59.6	64.6	64.1	63.6
27/12/02 (Fri)	L_{eq}	66.6	67.8	68.7	68.9
	L_{10}	69.6	70.6	73.1	73.1
	L_{90}	60.6	65.1	63.6	61.1
30/12/02 (Mon)	L_{eq}	65.8	67.6	69.0	69.3
	L_{10}	68.6	70.1	73.6	74.1
	L_{90}	60.1	64.6	63.6	63.1

Date of Monitoring	Monitoring Parameters	Monitoring Results, dB(A) (30 min)			
		N1	N2	N3	N4
03/01/03 (Fri)	L_{eq}	67.2	68.0	68.5	69.5
	L_{10}	70.6	71.1	72.6	74.1
	L_{90}	61.1	66.6	63.6	62.1
07/01/03 (Tue)	L_{eq}	65.5	67.8	68.9	69.2
	L_{10}	69.1	71.1	72.6	72.6
	L_{90}	58.1	66.1	63.1	61.6
10/01/03 (Fri)	L_{eq}	67.4	68.2	69.0	69.4
	L_{10}	72.1	71.6	73.6	73.6
	L_{90}	62.1	66.6	64.1	62.6
13/01/03 (Mon)	L_{eq}	65.9	68.0	69.3	69.3
	L_{10}	68.6	71.1	73.1	74.1
	L_{90}	59.6	66.6	63.6	62.1
17/01/03 (Fri)	L_{eq}	67.6	68.4	68.7	69.4
	L_{10}	70.6	71.6	73.6	73.6
	L_{90}	62.6	66.6	63.1	62.1
20/01/03 (Mon)	L_{eq}	66.7	68.6	68.3	69.8
	L_{10}	70.6	71.6	72.6	73.6
	L_{90}	60.6	66.6	63.6	62.1
24/01/03 (Fri)	L_{eq}	67.2	69.2	68.5	69.4
	L_{10}	71.6	72.6	73.1	73.6
	L_{90}	61.6	67.1	64.1	62.6
27/01/03 (Mon)	L_{eq}	65.2	67.6	68.1	69.2
	L_{10}	68.6	70.1	72.6	72.6
	L_{90}	58.6	65.1	63.6	62.6
30/01/03 (Thu)	L_{eq}	67.6	67.4	68.4	69.6
	L_{10}	70.6	70.1	72.6	73.1
	L_{90}	62.6	66.1	63.1	62.6
04/02/03 (Tue)	L_{eq}	65.8	67.4	68.2	68.9
	L_{10}	69.6	70.1	72.6	72.6
	L_{90}	59.1	65.1	64.1	62.1
07/02/03 (Fri)	L_{eq}	67.4	67.2	68.0	69.3
	L_{10}	70.1	70.1	72.1	73.1
	L_{90}	62.1	65.6	63.6	62.6
10/02/03 (Mon)	L_{eq}	65.1	67.5	68.7	69.8
	L_{10}	69.1	70.1	72.1	73.1
	L_{90}	59.1	65.1	64.6	62.1
14/02/03 (Fri)	L_{eq}	67.6	67.4	69.0	69.5
	L_{10}	71.1	70.1	72.6	73.6
	L_{90}	61.6	65.1	62.6	62.1
17/02/03 (Mon)	L_{eq}	65.7	67.4	68.4	69.9
	L_{10}	68.6	70.1	72.1	74.6
	L_{90}	59.1	65.6	63.1	62.6

Date of Monitoring	Monitoring Parameters	Monitoring Results, dB(A) (30 min)			
		N1	N2	N3	N4
21/02/03 (Fri)	L_{eq}	67.4	67.6	68.9	69.6
	L_{10}	71.6	70.6	73.1	73.1
	L_{90}	61.1	65.1	63.1	62.1
24/02/03 (Mon)	L_{eq}	65.1	67.5	68.6	69.9
	L_{10}	70.6	70.1	72.6	74.1
	L_{90}	61.6	65.1	64.1	63.1
26/02/03 (Wed)	L_{eq}	67.8	67.4	68.9	69.4
	L_{10}	72.1	71.1	74.1	73.1
	L_{90}	62.1	65.1	63.1	62.6

Figure 4-1 Trend of noise monitoring level from December 2002 to February 2003



5. AIR QUALITY

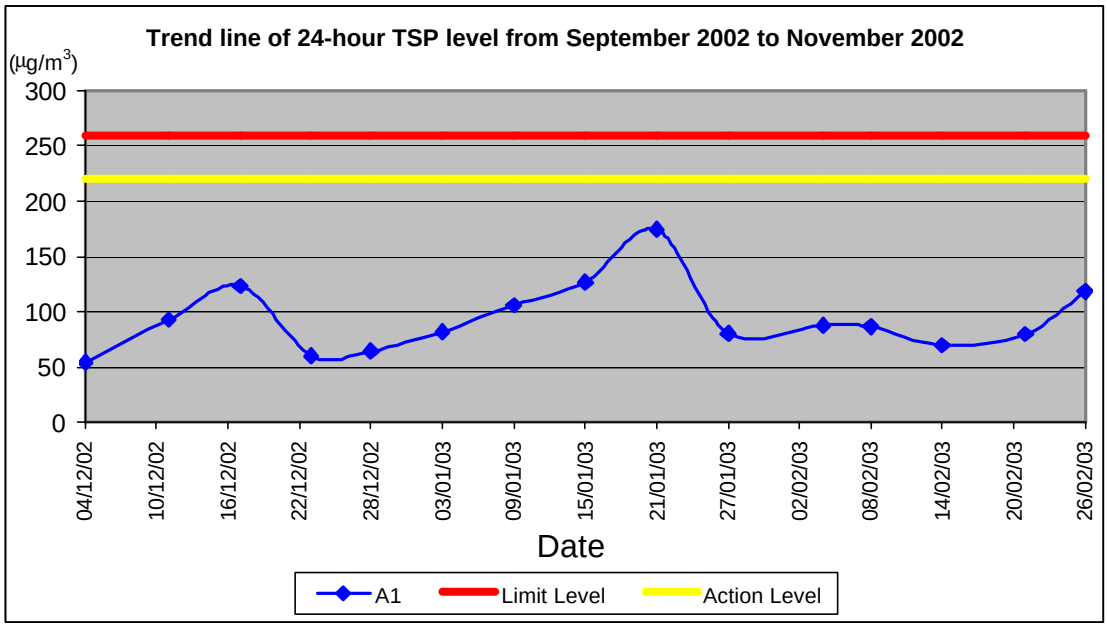
5.1 24-hour TSP Monitoring Results

The monitoring result of 24-hour TSP during the period from December 2002 to February 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 December 2002 to February 2003

Date of Monitoring	24-hour TSP Monitoring Results (μg/m3)	
	Weather	Averaged Result
04/12/02 (Wed)	Overcast	54.3
11/12/02 (Wed)	Fine	92.5
17/12/02 (Tue)	Fine	123.6
23/12/02 (Mon)	Fine	60.2
28/12/02 (Sat)	Fine	64.4
03/01/03 (Fri)	Overcast	81.9
09/01/03 (Thu)	Fine	106.2
15/01/03 (Wed)	Fine	126.8
21/01/03 (Tue)	Fine	174.6
27/01/03 (Mon)	Fine	80.5
04/02/03 (Tue)	Fine	87.6
08/02/03 (Sat)	Overcast	86.5
14/02/03 (Fri)	Overcast	69.5
21/02/03 (Fri)	Overcast	79.8
26/02/03 (Wed)	Fine	118.4

Figure 5-1 Trend of 24-hour TSP levels from December 2002 to February 2003



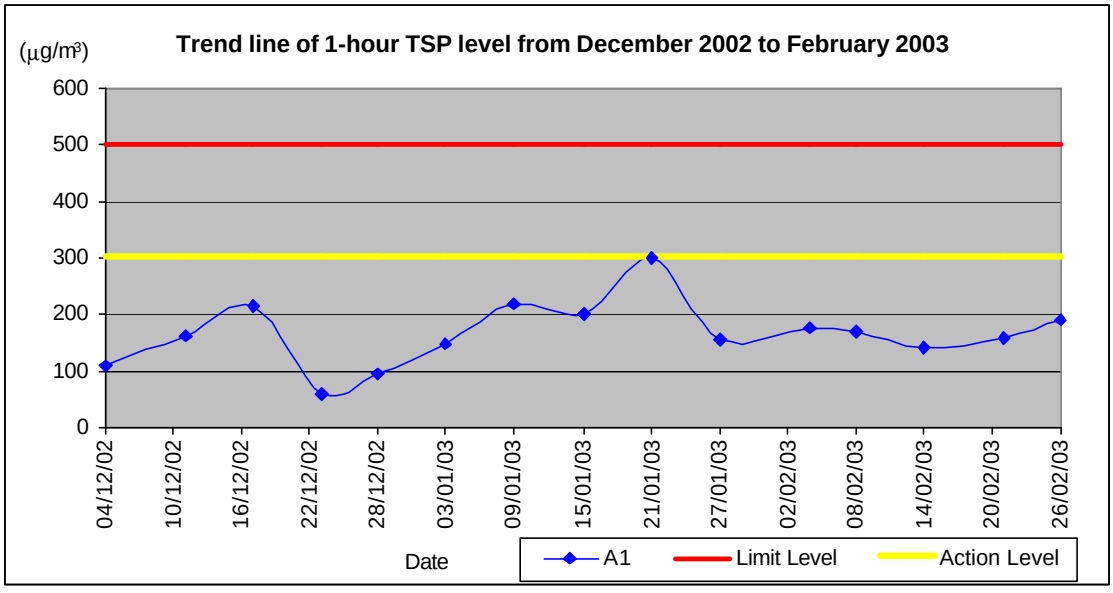
5.2 1-hour TSP Monitoring Results

The monitoring result of 1-hour TSP during the period from December 2002 to February 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 December 2002 to February 2003

Date of Monitoring	1-hour TSP Monitoring Results (µg/m³)	
	Weather	Averaged Result
04/12/02 (Wed)	Overcast	107.9
11/12/02 (Wed)	Fine	163.4
17/12/02 (Tue)	Fine	214.7
23/12/02 (Mon)	Fine	59.8
28/12/02 (Sat)	Fine	94.0
03/01/03 (Fri)	Overcast	149.8
09/01/03 (Thu)	Fine	217.3
15/01/03 (Wed)	Fine	202.8
21/01/03 (Tue)	Fine	300.2
27/01/03 (Mon)	Fine	154.5
04/02/03 (Tue)	Fine	175.9
08/02/03 (Sat)	Overcast	170.6
14/02/03 (Fri)	Overcast	140.8
21/02/03 (Fri)	Overcast	160.3
26/02/03 (Wed)	Fine	191.1

Figure 5-2 Trend of 1-hour TSP levels from December 2002 to February 2003



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

6.1 Summary of Waste Disposal

A total of 915 loads of inert material have been disposed of at Quarry Bay Public Filling Barging Point by common dump truck from December 2002 to February 2003. The total quantity of the disposed inert material was 5,220 m^3 from December 2002 to February 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	Number of Loads to Quarry Bay Public Filling Barging Point	Total Disposed Quantity (m^3)
February 2002	254	1524
March 2002	362	2172
April 2002	521	3126
May 2002	478	2868
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	-	-
Total	3,872	22,962

Noted: An average of 6m^3 soil per load is assumed for the estimation of the disposed quantity.

6.2 Complaint Record

No public complaints regarding the air quality and noise were received from December 2002 to February 2003.

6.3 Non-compliance Record

There are no non-compliances recorded from December 2002 to February 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)		
			Start	Finish		L_{eq}	L_{10}	L_{90}
Dec-02	03-Dec-02	N1	8:00	8:30	Fine	65.4	68.6	58.1
Dec-02	03-Dec-02	N2	14:15	14:45	Fine	68.7	71.6	66.6
Dec-02	03-Dec-02	N3	11:00	11:30	Fine	69.0	73.6	64.1
Dec-02	03-Dec-02	N4	8:45	9:15	Fine	69.9	74.6	63.1
Dec-02	06-Dec-02	N1	15:05	15:35	Overcast	67.2	71.6	61.6
Dec-02	06-Dec-02	N2	14:15	14:45	Overcast	68.6	71.1	66.1
Dec-02	06-Dec-02	N3	10:52	11:22	Overcast	69.2	73.1	64.6
Dec-02	06-Dec-02	N4	15:50	16:20	Overcast	69.4	73.6	62.6
Dec-02	09-Dec-02	N1	12:30	13:00	Fine	67.7	69.6	62.1
Dec-02	09-Dec-02	N2	15:30	16:00	Fine	68.8	70.6	66.6
Dec-02	09-Dec-02	N3	11:00	11:30	Fine	68.5	71.6	63.6
Dec-02	09-Dec-02	N4	14:15	14:45	Fine	69.8	73.1	62.6
Dec-02	13-Dec-02	N1	14:20	14:50	Fine	67.1	72.1	60.6
Dec-02	13-Dec-02	N2	13:30	14:00	Fine	68.4	70.6	66.1
Dec-02	13-Dec-02	N3	11:00	11:30	Fine	69.2	72.6	63.1
Dec-02	13-Dec-02	N4	15:30	16:00	Fine	69.6	74.1	63.1
Dec-02	16-Dec-02	N1	8:30	9:00	Fine	67.8	71.6	60.6
Dec-02	16-Dec-02	N2	14:30	15:00	Fine	68.6	71.1	66.1
Dec-02	16-Dec-02	N3	10:45	11:15	Fine	68.2	72.1	63.1
Dec-02	16-Dec-02	N4	9:15	9:45	Fine	69.5	73.1	63.1
Dec-02	19-Dec-02	N1	14:45	15:15	Fine	67.4	70.6	61.6
Dec-02	19-Dec-02	N2	14:00	14:30	Fine	68.7	71.1	66.6
Dec-02	19-Dec-02	N3	10:50	11:20	Fine	68.8	72.1	63.6
Dec-02	19-Dec-02	N4	15:30	16:00	Fine	69.4	74.1	62.6
Dec-02	23-Dec-02	N1	8:00	8:30	Fine	66.1	70.1	59.6
Dec-02	23-Dec-02	N2	14:30	15:00	Fine	67.4	70.1	64.6
Dec-02	23-Dec-02	N3	11:00	11:30	Fine	68.4	72.6	64.1
Dec-02	23-Dec-02	N4	8:45	9:15	Fine	69.8	73.1	63.6
Dec-02	27-Dec-02	N1	14:50	15:20	Overcast	66.6	69.6	60.6
Dec-02	27-Dec-02	N2	14:00	14:30	Overcast	67.8	70.6	65.1
Dec-02	27-Dec-02	N3	11:00	11:30	Overcast	68.7	73.1	63.6
Dec-02	27-Dec-02	N4	15:30	16:00	Overcast	68.9	73.1	61.1
Dec-02	30-Dec-02	N1	8:30	9:00	Fine	65.8	68.6	60.1
Dec-02	30-Dec-02	N2	14:00	14:30	Fine	67.6	70.1	64.6
Dec-02	30-Dec-02	N3	11:00	11:30	Fine	69.0	73.6	63.6
Dec-02	30-Dec-02	N4	9:15	9:45	Fine	69.3	74.1	63.1
Jan-03	03-Jan-03	N1	15:05	15:35	Fine	67.2	70.6	61.1
Jan-03	03-Jan-03	N2	14:15	14:45	Fine	68.0	71.1	66.6
Jan-03	03-Jan-03	N3	11:00	11:30	Fine	68.5	72.6	63.6
Jan-03	03-Jan-03	N4	15:45	16:15	Fine	69.5	74.1	62.1
Jan-03	07-Jan-03	N1	8:00	8:30	Fine	65.5	69.1	58.1
Jan-03	07-Jan-03	N2	14:30	15:00	Fine	67.8	71.1	66.1
Jan-03	07-Jan-03	N3	10:45	11:15	Fine	68.9	72.6	63.1
Jan-03	07-Jan-03	N4	9:50	9:20	Fine	69.2	72.6	61.6
Jan-03	10-Jan-03	N1	14:45	15:15	Fine	67.4	72.1	62.1
Jan-03	10-Jan-03	N2	14:00	14:30	Fine	68.2	71.6	66.6
Jan-03	10-Jan-03	N3	10:45	11:15	Fine	69.0	73.6	64.1
Jan-03	10-Jan-03	N4	15:25	15:55	Fine	69.4	73.6	62.6
Jan-03	13-Jan-03	N1	8:00	8:30	Fine	65.9	68.6	59.6
Jan-03	13-Jan-03	N2	14:45	15:15	Fine	68.0	71.1	66.6
Jan-03	13-Jan-03	N3	10:50	11:20	Fine	69.3	73.1	63.6
Jan-03	13-Jan-03	N4	8:45	9:15	Fine	69.3	74.1	62.1
Jan-03	17-Jan-03	N1	15:00	15:30	Fine	67.6	70.6	62.6
Jan-03	17-Jan-03	N2	14:15	14:45	Fine	68.4	71.6	66.6
Jan-03	17-Jan-03	N3	11:00	11:30	Fine	68.7	73.6	63.1
Jan-03	17-Jan-03	N4	15:50	16:20	Fine	69.4	73.6	62.1
Jan-03	20-Jan-03	N1	8:00	8:30	Overcast	66.7	70.6	60.6
Jan-03	20-Jan-03	N2	14:00	14:30	Overcast	68.6	71.6	66.6
Jan-03	20-Jan-03	N3	11:00	11:30	Overcast	68.3	72.6	63.6
Jan-03	20-Jan-03	N4	8:45	9:15	Overcast	69.8	73.6	62.1
Jan-03	24-Jan-03	N1	14:15	14:45	Overcast	67.2	71.6	61.6
Jan-03	24-Jan-03	N2	13:30	14:00	Overcast	69.2	72.6	67.1
Jan-03	24-Jan-03	N3	11:00	11:30	Overcast	68.5	73.1	64.1
Jan-03	24-Jan-03	N4	15:00	15:30	Overcast	69.4	73.6	62.6
Jan-03	27-Jan-03	N1	8:00	8:30	Fine	65.2	68.6	58.6
Jan-03	27-Jan-03	N2	14:55	15:25	Fine	67.6	70.1	65.1
Jan-03	27-Jan-03	N3	10:55	11:25	Fine	68.1	72.6	63.6
Jan-03	27-Jan-03	N4	8:50	9:20	Fine	69.2	72.6	62.6
Jan-03	30-Jan-03	N1	15:15	15:45	Overcast	67.6	70.6	62.6
Jan-03	30-Jan-03	N2	14:30	15:00	Overcast	67.4	70.1	66.1
Jan-03	30-Jan-03	N3	10:45	11:15	Overcast	68.4	72.6	63.1
Jan-03	30-Jan-03	N4	16:00	16:30	Overcast	69.6	73.1	62.6

Details of Noise Impact Monitoring

Month	Date	NSR No.	Time periods		Weather condition	Noise Level dB(A)		
			Start	Finish		L_{eq}	L_{10}	L_{90}
Feb-03	04-Feb-03	N1	8:00	8:30	Fine	65.8	69.6	59.1
Feb-03	04-Feb-03	N2	13:30	14:00	Fine	67.4	70.1	65.1
Feb-03	04-Feb-03	N3	10:55	11:25	Fine	68.2	72.6	64.1
Feb-03	04-Feb-03	N4	8:45	9:15	Fine	68.9	72.6	62.1
Feb-03	07-Feb-03	N1	14:50	15:20	Overcast	67.4	70.1	62.1
Feb-03	07-Feb-03	N2	14:05	14:35	Overcast	67.2	70.1	65.6
Feb-03	07-Feb-03	N3	10:45	11:15	Overcast	68.0	72.1	63.6
Feb-03	07-Feb-03	N4	15:30	16:00	Overcast	69.3	73.1	62.6
Feb-03	10-Feb-03	N1	8:15	8:45	Overcast	65.1	69.1	59.1
Feb-03	10-Feb-03	N2	13:45	14:15	Overcast	67.5	70.1	65.1
Feb-03	10-Feb-03	N3	11:00	11:30	Overcast	68.7	72.1	64.6
Feb-03	10-Feb-03	N4	9:00	9:30	Overcast	69.8	73.1	62.1
Feb-03	14-Feb-03	N1	14:45	15:15	Overcast	67.6	71.1	61.6
Feb-03	14-Feb-03	N2	14:00	14:30	Overcast	67.4	70.1	65.1
Feb-03	14-Feb-03	N3	11:05	11:35	Overcast	69.0	72.6	62.6
Feb-03	14-Feb-03	N4	15:30	16:00	Overcast	69.5	73.6	62.1
Feb-03	17-Feb-03	N1	8:00	8:30	Overcast	65.7	68.6	59.1
Feb-03	17-Feb-03	N2	15:00	15:30	Overcast	67.4	70.1	65.6
Feb-03	17-Feb-03	N3	11:00	11:30	Overcast	68.4	72.1	63.1
Feb-03	17-Feb-03	N4	8:45	9:15	Overcast	69.9	74.6	62.6
Feb-03	21-Feb-03	N1	15:15	15:45	Overcast	67.4	71.6	61.1
Feb-03	21-Feb-03	N2	14:30	15:00	Overcast	67.6	70.6	65.1
Feb-03	21-Feb-03	N3	10:45	11:15	Overcast	68.9	73.1	63.1
Feb-03	21-Feb-03	N4	16:05	16:35	Overcast	69.6	73.1	62.1
Feb-03	24-Feb-03	N1	8:15	8:45	Overcast	65.1	70.6	61.6
Feb-03	24-Feb-03	N2	14:15	14:45	Overcast	67.5	70.1	65.1
Feb-03	24-Feb-03	N3	10:55	11:25	Overcast	68.6	72.6	64.1
Feb-03	24-Feb-03	N4	9:00	9:30	Overcast	69.9	74.1	63.1
Feb-03	26-Feb-03	N1	15:00	15:30	Overcast	67.8	72.1	62.1
Feb-03	26-Feb-03	N2	14:15	14:45	Overcast	67.4	71.1	65.1
Feb-03	26-Feb-03	N3	11:00	11:30	Overcast	68.9	74.1	63.1
Feb-03	26-Feb-03	N4	15:40	16:10	Overcast	69.4	73.1	62.6

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			
Dec-02	04-Dec-02	A1	Overcast	Work in progress	2.7467	2.8695	0.1228	1.5851	1.5576	1.5714	4185.36	4209.36	1440.00	2262.74	54.3
Dec-02	11-Dec-02	A1	Fine	Work in progress	2.7569	2.9483	0.1914	1.4919	1.3830	1.4375	4209.36	4233.36	1440.00	2069.93	92.5
Dec-02	17-Dec-02	A1	Fine	Work in progress	2.7504	2.9767	0.2263	1.2858	1.2562	1.2710	4233.36	4257.36	1440.00	1830.24	123.6
Dec-02	23-Dec-02	A1	Fine	Work in progress	2.7594	2.8744	0.1150	1.3421	1.3132	1.3277	4257.36	4281.36	1440.00	1911.82	60.2
Dec-02	28-Dec-02	A1	Fine	Work in progress	2.7417	2.8887	0.1470	1.6425	1.5261	1.5843	4281.36	4305.36	1440.00	2281.39	64.4
Jan-03	03-Jan-03	A1	Overcast	Work in progress	2.7446	2.9172	0.1726	1.5204	1.4062	1.4633	4305.36	4329.36	1440.00	2107.15	81.9
Jan-03	09-Jan-03	A1	Fine	Work in progress	2.7382	2.9576	0.2194	1.5190	1.3492	1.4341	4329.36	4353.36	1440.00	2065.10	106.2
Jan-03	15-Jan-03	A1	Fine	Work in progress	2.7444	2.9994	0.2550	1.4402	1.3540	1.3971	4353.36	4377.36	1440.00	2011.82	126.8
Jan-03	21-Jan-03	A1	Fine	Work in progress	2.7514	3.1005	0.3491	1.4024	1.3742	1.3883	4377.36	4401.36	1440.00	1999.15	174.6
Jan-03	27-Jan-03	A1	Fine	Work in progress	2.7431	2.9162	0.1731	1.5794	1.4085	1.4940	4401.36	4425.36	1440.00	2151.29	80.5
Feb-03	04-Feb-03	A1	Fine	Work in progress	2.7428	2.9311	0.1883	1.5216	1.4624	1.4920	4425.36	4449.36	1440.00	2148.48	87.6
Feb-03	08-Feb-03	A1	Overcast	Work in progress	2.7502	2.9287	0.1785	1.4610	1.4045	1.4328	4449.36	4473.36	1440.00	2063.16	86.5
Feb-03	14-Feb-03	A1	Overcast	Work in progress	2.7407	2.8898	0.1491	1.5190	1.4624	1.4907	4473.36	4497.36	1440.00	2146.61	69.5
Feb-03	21-Feb-03	A1	Overcast	Work in progress	2.7505	2.9273	0.1768	1.5832	1.4946	1.5389	4497.36	4521.36	1440.00	2216.02	79.8
Feb-03	26-Feb-03	A1	Fine	Work in progress	2.7528	2.9411	0.1883	1.1204	1.0893	1.1049	4521.36	4545.36	1440.00	1590.98	118.4

APPENDIX C

Detailed Air Quality (1-hour TSP) Monitoring Results

Details of 1-Hour TSP Monitoring

Month	Date	Receptor No.	Set No.	Time periods		Weather condition	Site condition	Temp. (°C)	Pressure (mmHg)	1-hour TSP Level (μg/m³)
				Start	Finish					
Dec-02	04-Dec-02	A1	1	10:00	11:00	Overcast	Work in progress	24.0	774.0	107.9
Dec-02	04-Dec-02	A1	2	11:00	12:00	Overcast	Work in progress	24.0	774.0	107.2
Dec-02	04-Dec-02	A1	3	12:00	13:00	Overcast	Work in progress	24.0	774.0	108.7
Dec-02	11-Dec-02	A1	1	10:00	11:00	Fine	Work in progress	18.0	779.0	157.8
Dec-02	11-Dec-02	A1	2	11:00	12:00	Fine	Work in progress	18.0	779.0	166.0
Dec-02	11-Dec-02	A1	3	12:00	13:00	Fine	Work in progress	18.0	779.0	166.4
Dec-02	17-Dec-02	A1	1	10:00	11:00	Fine	Work in progress	25.0	778.0	211.3
Dec-02	17-Dec-02	A1	2	11:00	12:00	Fine	Work in progress	25.0	778.0	215.3
Dec-02	17-Dec-02	A1	3	12:00	13:00	Fine	Work in progress	25.0	778.0	217.6
Dec-02	23-Dec-02	A1	1	10:00	11:00	Fine	Work in progress	23.0	776.0	59.8
Dec-02	23-Dec-02	A1	2	11:00	12:00	Fine	Work in progress	23.0	776.0	60.6
Dec-02	23-Dec-02	A1	3	12:00	13:00	Fine	Work in progress	23.0	776.0	59.0
Dec-02	28-Dec-02	A1	1	8:30	9:30	Fine	Work in progress	17.0	777.0	92.2
Dec-02	28-Dec-02	A1	2	9:30	10:30	Fine	Work in progress	17.0	777.0	94.1
Dec-02	28-Dec-02	A1	3	10:30	11:30	Fine	Work in progress	17.0	777.0	95.7
Jan-03	03-Jan-03	A1	1	10:00	11:00	Overcast	Work in progress	20.0	778.0	145.9
Jan-03	03-Jan-03	A1	2	11:00	12:00	Overcast	Work in progress	20.0	778.0	148.4
Jan-03	03-Jan-03	A1	3	12:00	13:00	Overcast	Work in progress	20.0	778.0	155.1
Jan-03	09-Jan-03	A1	1	10:00	11:00	Fine	Work in progress	19.0	775.0	211.1
Jan-03	09-Jan-03	A1	2	11:00	12:00	Fine	Work in progress	19.0	775.0	215.9
Jan-03	09-Jan-03	A1	3	12:00	13:00	Fine	Work in progress	19.0	775.0	224.9
Jan-03	15-Jan-03	A1	1	10:00	11:00	Fine	Work in progress	18.0	778.0	187.9
Jan-03	15-Jan-03	A1	2	11:00	12:00	Fine	Work in progress	18.0	778.0	205.5
Jan-03	15-Jan-03	A1	3	12:00	13:00	Fine	Work in progress	18.0	778.0	215.1
Jan-03	21-Jan-03	A1	1	10:00	11:00	Fine	Work in progress	22.0	779.0	297.1
Jan-03	21-Jan-03	A1	2	11:00	12:00	Fine	Work in progress	22.0	779.0	301.4
Jan-03	21-Jan-03	A1	3	12:00	13:00	Fine	Work in progress	22.0	779.0	302.1
Jan-03	27-Jan-03	A1	1	10:00	11:00	Fine	Work in progress	19.0	778.0	153.4
Jan-03	27-Jan-03	A1	2	11:00	12:00	Fine	Work in progress	19.0	778.0	153.7
Jan-03	27-Jan-03	A1	3	12:00	13:00	Fine	Work in progress	19.0	778.0	156.4
Feb-03	04-Feb-03	A1	1	10:00	11:00	Fine	Work in progress	19.0	775.0	172.7
Feb-03	04-Feb-03	A1	2	11:00	12:00	Fine	Work in progress	19.0	775.0	177.3
Feb-03	04-Feb-03	A1	3	12:00	13:00	Fine	Work in progress	19.0	775.0	177.5
Feb-03	08-Feb-03	A1	1	10:00	11:00	Overcast	Work in progress	20.0	776.0	171.6
Feb-03	08-Feb-03	A1	2	11:00	12:00	Overcast	Work in progress	20.0	776.0	171.4
Feb-03	08-Feb-03	A1	3	12:00	13:00	Overcast	Work in progress	20.0	776.0	168.9
Feb-03	14-Feb-03	A1	1	10:00	11:00	Overcast	Work in progress	19.0	775.0	139.2
Feb-03	14-Feb-03	A1	2	11:00	12:00	Overcast	Work in progress	19.0	775.0	141.5
Feb-03	14-Feb-03	A1	3	12:00	13:00	Overcast	Work in progress	19.0	775.0	141.7
Feb-03	21-Feb-03	A1	1	10:00	11:00	Overcast	Work in progress	19.0	777.0	159.9
Feb-03	21-Feb-03	A1	2	11:00	12:00	Overcast	Work in progress	19.0	777.0	159.7
Feb-03	21-Feb-03	A1	3	12:00	13:00	Overcast	Work in progress	19.0	777.0	161.2
Feb-03	26-Feb-03	A1	1	10:00	11:00	Fine	Work in progress	18.0	771.0	188.6
Feb-03	26-Feb-03	A1	2	11:00	12:00	Fine	Work in progress	18.0	771.0	190.5
Feb-03	26-Feb-03	A1	3	12:00	13:00	Fine	Work in progress	18.0	771.0	194.2