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TEST REPORT

KIER-LEADER-KENWORTH JOINT VENTURE

NGONG PING SEWAGE TREATMENT
PLANT, TRUNK SEWERS AND
EFFLUENT EXPORT PIPELINE
(CONTRACT NO.: DC/2003/01)

BASELINE MONITORING REPORT
(20 SEPTEMBER TO 04 OCTOBER 2003)

REVISION A

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Date: 20 September and 04 October 2003

Report No.: ENA 30528A

CH2M · IDC

Our Ref.: DSDNPSTPEM00/0/0233

Date: 24 March 2004

Sewerage Projects Division
Drainage Services Department
44/F., Revenue Tower,
5 Gloucester Road, Wan Chai,
Hong Kong

By Hand and By fax (2109 9955)

Attention : Mr. Ping-Wa Chan

Dear Mr. Chan,

Re: **Contract No: DC/2003/01 Ngong Ping Sewage Treatment Plant, Truck Sewers and Effluent Export Pipeline Environmental Permit No 157-2003 Condition 5.3 Baseline Monitoring Report**

Reference is made to the revised pages of the Baseline Report (Rev. A) faxed by the Environmental Team - ETS-Testconsult Limited on 23 March 2004 (ETL Ref: NPSTW/TEC/040323/001) for submission to the EIAO Register Office for the captioned project.

We write to confirm on our verification on the aforesaid Baseline Monitoring Report is in compliance with the Condition 5.3 of the Environmental Permit No. EP-157/2003.

Thank you very much for your kind attention. Should you have any queries, please do not hesitate to the undersigned or our Billy Yu.

Yours sincerely,



David Yeung
Independent Environmental Checker

c.c. Mr. Wilson Lau
Mr. C L Lau

Kier-Leader-Kenworth Joint Venture
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EXECUTIVE SUMMARY

Baseline environmental monitoring was carried out for implementation of the Contract No. DC/2003/01 Ngong Ping Sewage Treatment Plant, Trunk Sewers and Effluent Export Pipeline. Under the requirements of Section 5 of "the Environmental Permit (No. EP-157/2003)" (the EP), EM&A programme as set out in "the Updated EM&A Manual - Contract No. DC/2003/01 Ngong Ping Sewage Treatment Plant, Trunk Sewers and Effluent Export Pipeline" (the Updated EM&A Manual) is required to be implemented.

Prior to the commencement of the construction works, baseline air quality and noise monitoring data were collected to establish the background environmental condition in the vicinity of the project area. Based on the monitoring results, Action and Limit Levels were determined for comparing the air quality and noise level condition before construction activities start.

The baseline 24-hour TSP and 1-hour TSP monitoring were conducted at two designated air quality monitoring locations for 14-days, from 20 September to 04 October 2003 according to the Updated EM&A Manual. The average 1-hour TSP and 24-hour TSP levels at Tung Shing Store were in the range of 20 – 87 $\mu\text{g}/\text{m}^3$ and 27 – 59 $\mu\text{g}/\text{m}^3$ respectively. The average 1-hour TSP and 24-hour TSP levels at the Village House near Ngong Ping Road were in the range of 43 – 164 $\mu\text{g}/\text{m}^3$ and 31 – 82 $\mu\text{g}/\text{m}^3$ respectively. The 1-hour TSP and 24-hour TSP results were generally found to be staying in low to intermediate levels.

The baseline noise level monitoring was conducted at two designated locations, Lin Chi Monastery and Village House along Ngong Ping Road near bus terminal, from 20 September to 04 October 2003 in accordance to the Updated EM&A Manual. The ambient noise level for two locations was measured continuously for 24 hours during the monitoring period. The data obtained from the baseline noise monitoring was processed according to the four periods namely 0700-1900 of weekdays, 1900-2300 of weekdays, 0700-2300 of holidays, and 2300-0700 of all days. The mean noise levels L_{eq} of four periods at all locations were presented in Table 4.4 of this report. Regarding noise level monitoring, traffic noise from Ngong Ping Road, dog's barking and human activities near the monitoring locations were the major noise sources during daytime and evening-time.

According to the baseline air quality and noise monitoring result, low local impact was found near the monitoring station. Therefore, air quality and noise monitoring data from all monitoring stations can be used as background indicator at Ngong Ping.

Under the baseline monitoring for landscape, the vegetation survey was undertaken by Urbis Ltd. in January and September 2003 and found that the trees surveyed were all of species commonly found in Hong Kong and none of the species is protected under local statute in the proposed works site. No rare specimens were recorded and none of them have any special ecological value. Principal species noted on site were *Acacia confusa*, *Casuarina stricta* and *Mallotus paniculatus*. Most of the trees are found to be in fair condition.

In conclusion, the Contractor is advised to be aware of any site practice that may give rise to significant pollution to the existing environment. Implementation of necessary remedial measures should be instigated to rectify the potential impact on sensitive receivers located in the vicinity of the construction area.



1. INTRODUCTION

"Kier-Leader-Kenworth Joint Venture" (KLKJV) has been awarded the Contract No.: DC/2003/01, "Ngong Ping Sewage Treatment Plant, Trunk Sewers and Effluent Export Pipeline" (the Project) by the DSD. "ETS-Testconsult Limited" (ETL) has been commissioned as Environmental Team (ET) to carry out baseline air quality and noise monitoring for the Project according to the requirements and specifications of the EP and the Updated EM&A Manual. The landscape baseline monitoring was undertaken by Urbis Ltd.

Under the requirements of Section 5 of "the Environmental Permit (No. EP-157/2003)" (the EP), the purpose of this baseline report is to set out baseline levels for air quality, noise and landscape that will be used as a basis for the environmental impact and compliance monitoring for the Project. In accordance to the updated EM&A manual, air quality and noise environmental baseline monitoring were implemented at the designated monitoring stations between 20 September and 04 October 2003 by ETL and the landscape baseline monitoring was carried out in Jan. and Sept. 2003 for tree felling application. Action and Limit (A/L) Levels were determined under the baseline monitoring. This report presents monitoring locations, equipment, monitoring duration, methodology, results and observations for noise, air and landscape during baseline monitoring period.

2. PROJECT INFORMATION

2.1 Background

Master Plan (OI SMP) Study in December 1994 and drew up a SMP for Lantau Island, Cheung Chau, Lamma Island, Peng Chau and other smaller and less populated islands. The SMP comprises provisions for upgrading and expanding the sewerage systems to cover unsewered areas.

This sewerage project is the Stage 1 works under the OI SMP and can be divided into 3 packages as follows:

- Package 1 – Ngong Ping STW with tertiary treatment
- Package 2 – Ngong Ping main trunk sewer and effluent export pipeline
- Package 3 – Ngong Ping village sewerage system

The general layout plan of the project is shown in Drawing No. 23400/EN/098.

The existing treatment facilities at Ngong Ping include grease traps and septic tanks, with discharge locally to soakaways. Following the opening of the Statue of Buddha in December 1993, the number of visitors to Ngong Ping increased significantly. The existing treatment and disposal facilities were found to be inadequate, with significant quantities of sewage being directly discharged into the local stream. It was under this setting that the recommendation to provide a local sewerage system and a centralised treatment system for Ngong Ping was put forward in the OI SMP in 1994.

The Cable Car system linking Tung Chung and Ngong Ping is being planned for commissioning in August 2005. It will certainly further increase the number of visitors in Ngong Ping. This sewerage project will be completed to tie in with the commissioning of the Cable Car project. The proposed Ngong Ping Cable Car Terminal is close to the Ngong Ping Sewage Treatment Works and is some 50m to the proposed STW site.

The Project was planned and designed by the Drainage Sewage Department. As the main Contractor of the captioned project contracted by, KLKJV will follow the environmental monitoring recommendation stated in the Updated EM&A Manual that was prepared with reference to the EIA Report (Register No.: AEIAR-065/2002).



2.2 Site Description

The construction site is located at Ngong Ping. The general layout plan of the project is shown in Drawing No. 23400/EN/098 and the portion of site and work area are shown on Drawing No. 23400/T/010 to 23400/T/018.

Surrounding the construction site, there are air and noise sensitive receivers: Lin Chi Monastery, Village House near bus terminal, Po Lin Monastery, Tin Tan Buddha Statue and SG Davis Youth Hostel. Drawing No. 2340D/R/004 show the air and noise sensitive receivers around Ngong Ping Area.

The air and noise baseline monitoring locations are shown on Drawing No. 2340D/EN/094 and tree locations for landscape monitoring were shown on the Drawing No. 23400/T/1180-1182.

2.3 Construction Programme

The updated construction programme is shown in Appendix D.

The project comprises the construction works for the Ngong Ping Sewage Treatment Works and the proposed scope includes:

- Construction of various structures of Ngong Ping Sewage Treatment Plant (NPSTP) including all other ancillary civil, pipe-laying geotechnical, building services, architectural and landscaping works in Portions A1, A2, A3 and landscaping works in Portion B1 excluding Establishment Works;
- Construction of all Electrical & Mechanical (E&M) works for NPSTP and flow monitoring chamber in Portions A3 and B4 respectively and any works other than those works under Sections I, III, VI, VII, VIII and IX of the Works excluding Establishment Works;
- Pipelaying works for trunk sewers to NPSTP as well as Effluent Export Pipeline from NPSTP along Ngong Ping Road and part of Shum Wat Road in Portion B1;
- Pipelaying works for Effluent Export Pipeline along part of Shum Wat Road and Keung Shan Road in Portion B2;
- Pipelaying works for Effluent Export Pipeline along part of Keung Shan Road in Portion B3;
- Pipelaying works for Effluent Export Pipeline along Shek Pik Reservoir Road in B4. All construction works for the flow monitoring chamber excluding E&M works in Portion B4;
- Pipelaying works for Effluent Export Pipeline along the existing pier at Tung Wan in Portion B5;
- Construction of Water Reuse Facilities including E&M works and all other ancillary civil, pipe-laying geotechnical, building services, architectural and landscaping works in Portion A3 and B1 excluding Establishment Works;
- Roadworks and pipeworks entrusted by Water Supplies Department along Ngong Ping Road in Portion B1.

Reference to the actual works progress and programme during the construction stage, the schedule of EM&A works should be prepared by the ET leader, and the Contractor should provide the respective information to the ET leader for formulating the EM&A schedule.

2.4 Milestones of Environmental Protection / Mitigation activities annotated

Based on the Appendix A of the Updated EM&A Manual, it recommends environmental protection/mitigation measures to prevent and reduce the unacceptable impacts during the construction phase.



3. BASELINE AIR QUALITY MONITORING

3.1 Monitoring Requirement

As the requirement in Updated EM&A Manual, baseline air quality monitoring was conducted for a period of 14 consecutive days, in terms of 24-hour and 1-hour TSP, at designated monitoring locations:

- Tung Shing Store (A2);
- Village House near Ngong Ping Road (A1).

The sampling of 1-hour TSP was carried out three times (at three consecutive hours) per day when the highest dust impact was expected. Generally, the highest dust impact should be expected at day-time between 0900-1800 since the most active construction works may be present during this period.

3.2 Monitoring Equipment

Continuous 24-hour TSP and 1-hr air quality monitoring was performed using a GMWS2310 High Volume Air Sampler (HVS) located at each of the designated monitoring station. Table 3.1 summarizes the equipment used in the baseline air quality monitoring programme. A copy of the calibration certificate for the HVS and portable dust meter are attached in Appendix A1.

Table 3.1 Air Quality Monitoring Equipment

<i>Equipment</i>	<i>Model and Make</i>
<i>HVS Sampler</i>	<i>Greasby GMWS2310</i>
<i>Calibrator</i>	<i>G25 A</i>

3.3 Monitoring Parameters, Frequency and Duration

Table 3.2 summarizes the monitoring parameters, monitoring duration and frequencies of baseline air quality monitoring.

Table 3.2 Monitoring parameters, duration and frequencies of baseline air quality monitoring

<i>Parameter</i>	<i>Duration</i>	<i>Frequency</i>
<i>24-hr TSP</i>	<i>24 hr (0000-2400)</i>	<i>Daily (for 14 consecutive days)</i>
<i>1-hr TSP</i>	<i>1 hr (0700-1900)</i>	<i>3 times per day (for 14 consecutive days)</i>

3.4 Monitoring Locations and Period

As the requirement in the Updated EM&A Manual, two designated dust monitoring stations were selected. Table 3.3 tabulates the air quality monitoring locations of this project.

Table 3.3 Dust monitoring station and location

<i>Dust Monitoring station</i>	<i>Location</i>
<i>A1</i>	<i>Village House near Ngong Ping Road</i>
<i>A2</i>	<i>Tung Shing Store</i>



The baseline air quality monitoring programme for 24-hr and 1-hr TSP monitoring at designated monitoring stations is summarized in table 3.4. All TSP monitoring were carried out for a period of 14 consecutive days.

Table 3.4 Monitoring Periods for the dust monitoring stations

Dust monitoring station	Location	Monitoring Period	
		24-hr TSP	1-hr TSP
A1	Village House near Ngong Ping Road	20/09/03 – 04/10/03	21/09/03 – 04/10/03
A2	Tung Shing Store	20/09/03 – 04/10/03	21/09/03 – 04/10/03

3.5 Monitoring Methodology

3.5.1 24-hour TSP Monitoring

Instrumentation

High volume sampler, as HVS, (Greasby GMWS2310) complete with appropriate sampling inlets are employed for 24-hour TSP monitoring. The sampler is composed of a motor, a filter holder, a flow controller and a sampling inlet and its performance specification complies with that required by USEPA standard Title 40, Code of Federation Regulations Chapter 1 (Part 50 Appendix B).

Installation

The installation of HVS refers to the requirement stated in Section 2.2 of the Updated EM&A Manual. HVS in compliance with the following specifications should be used for carrying out the 1-hour and 24-hour TSP monitoring:

- 0.6-1.7m³/min (20-60 SCFM) adjustable flow range;
- equipped with a timing/control device with +/- 5 minutes accuracy for 24 hours operation;
- installed with elapsed-time meter with +/- 2 minutes accuracy for 24 hours operation;
- capable of providing a minimum exposed area of 406cm² (63in²);
- flow control accuracy: +/- 2.5% deviation over 24-hour sampling period;
- equipped with a shelter to protect the filter and sampler;
- incorporated with an electronic mass flow rate controller or other equivalent devices;
- equipped with a flow recorder for continuous monitoring;
- provided with a peaked roof inlet;
- incorporated with a manometer;
- able to hold and seal the filter paper to the sampler housing at horizontal position;
- easy to change the filter; and
- capable of operating continuously for 24-hour period.

Operation/Analytical Procedures

Operating/analytical procedures for the operation of HVS are as below:

Prior to the commencement of the dust sampling, the flow rate of the high volume sampler was properly set (between 0.6m³/min and 1.7m³/min.) in accordance with the manufacturer's instruction to within the range recommended in USEPA Standard Title 40, CFR Part 50.



- For TSP sampling, fiberglass filters (GA-55) were used.
- The power supply was checked to ensure the sampler worked properly.
- On sampling, the sampler was operated 5 min to establish thermal equilibrium before placing any filter media at designated air monitoring station.
- The filter holding frame was then removed by loosening the four nuts and carefully a weighted and conditioned filter was centered with the stamped number upwards, on a supporting screen.
- The filter was aligned on the screen so that the gasket formed an air-tight seal on the outer edges of the filter. Then the filter holder frame was tightened to the filter holder with swing bolts. The applied pressure should be sufficient to avoid air leakage at the edges.
- The timer was then programmed. Information was recorded on the record sheet, which included the starting time, the weather condition, the filter number (the initial weight of the filter paper can be found out by using the filter number.)
- After sampling, the filter was transferred from filter holder of the HVS to a plastic bag and sent to the laboratory for weighting. The elapsed time was also recoded.
- Before weighting, all filters were equilibrated in a desiccator for 24 hour with the temperature of $25^{\circ}\text{C} \pm 3^{\circ}\text{C}$ and the relative humidity(RH) $<50\% \pm 5\%$.

Maintenance & Calibration

- The HVS and their accessories should be maintained in good working condition, such as replacing motor brushes routinely and checking electrical wiring to ensure a continuous power supply.
- HVS should be calibrated at bi-monthly intervals.

3.5.3 Wind Data Monitoring

Due to the problem of permanent power supply and insufficient space for the setup of wind data monitoring equipment, no adequate locations for installation of wind data monitoring equipment were found near the monitoring stations and construction site. Therefore, wind data (wind speed and wind direction) were directly extracted from Chek Lap Kok Station of Hong Kong Observatory during the impact monitoring period (from 20 September to 04 October 2003) upon the agreement from the ER in consultation with the IEC.

3.6 Results and Observations

The baseline air quality monitoring results for A1 and A2 are summarized in Table 3.5. All monitoring data and graphical presentation of the 1-hr and 24-hr TSP monitoring results are provided in Appendix A2 and A3.

Table 3.5 Summary of 24-hr and 1-hr TSP Monitoring Results

Dust Monitoring Station	Average 24-hr TSP Concentration ($\mu\text{g}/\text{m}^3$) (Range)	Average 1-hr TSP Concentration ($\mu\text{g}/\text{m}^3$) (Range)
A1	43 (27 – 59)	55 (20 – 87)
A2	48 (31 – 82)	81 (43 – 164)



3.6.1 Observations

Major Dust Sources

The local impacts observed were mainly vehicle emissions along Ngong Ping Road during the baseline air quality monitoring period.

Apart from the vehicle emission, no other dust impacts were identified since there was no construction work around the monitoring stations during the baseline monitoring.

According to the baseline dust monitoring result, local impact was found insignificant near the monitoring station. Therefore, dust monitoring data from all monitoring stations can be used as background indicator at Ngong Ping.

3.7 Action and Limit Levels

The criteria for Action and Limit levels have been set out in the Updated EM&A Manual as follows:

Table 3.6 The criteria of Action and Limit Levels for Air Quality.

Parameters	Action	Limit
24-hour TSP Level in $\mu\text{g}/\text{m}^3$	For baseline level $<200\mu\text{g}/\text{m}^3$, Action level = (Baseline level*1.3 + Limit Level) / 2. For baseline level $>200\mu\text{g}/\text{m}^3$, Action level=Limit Level	260 $\mu\text{g}/\text{m}^3$
1-hour TSP Level in $\mu\text{g}/\text{m}^3$	For baseline level $<384\mu\text{g}/\text{m}^3$, Action level = (Baseline level*1.3 + Limit Level) / 2. For baseline level $>384\mu\text{g}/\text{m}^3$, Action level=Limit Level	500 $\mu\text{g}/\text{m}^3$

Following the criteria shown in Table 3.6, the Action and Limit levels for 24-hr TSP and 1-hr TSP derived as illustrated in Table 3.7.

Table 3.7 Action and Limit Levels for 24-hr TSP and 1-hr TSP

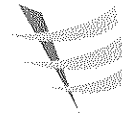
Monitoring Station	24-hr TSP ($\mu\text{g}/\text{m}^3$)		1-hr TSP ($\mu\text{g}/\text{m}^3$)	
	Action Level	Limit Level	Action Level	Limit Level
A1	158	260	286	500
A2	161	260	303	500

4. Baseline Noise Monitoring

4.1 Monitoring Requirements

As the requirement in EM&A, baseline noise monitoring was conducted for a period of 14 consecutive days at designated monitoring locations:

- Lin Chi Monastery(N1);
- Village House along Ngong Ping Road near bus terminal (N2).



4.2 Monitoring Equipment

Integrating Sound Level Meters were used for baseline noise monitoring. They were Type 1 sound level meters capable of giving a continuous readout of the noise level reading including equivalent continuous sound pressure level (L_{eq}) and percentile sound pressure level (L_x). They comply with International Electro technical Commission Publications 651:1979 (Type1) and speed in m/s was used to monitor the wind speed. Table 4.1 summarized the noise monitoring equipment model being used. A copy of the calibration certificates for noise meters and calibrator are attached in Appendix B1.

Table 4.1 Noise Monitoring Equipment

<i>Equipment</i>	<i>Model</i>
<i>Integrating Sound Level Meter</i>	<i>Rion NL-31 Sound Level Meter</i>
<i>Calibrator</i>	<i>Rion NL-73 Sound Level Meter</i>
<i>Portable Wind Speed Indicator</i>	<i>TSI Model 8340-M Air Velocity Meter</i>

4.3 Monitoring Parameters, duration and Frequency

Baseline noise monitoring for the A-weighted levels Leq , L_{10} and L_{90} were recorded. Data obtained from the baseline noise monitoring was processed and presented according to the following periods.

- 0700-1900 hours on normal weekdays: Leq (30min) (= 6 consecutive Leq (5min) intervals) for a period of 2 weeks;
- 1900-2300 hours on normal weekdays: Leq (5min) for a period of 2 weeks;
- 2300-0700 hours of next days: Leq (5min) for a period of 2 weeks;
- 0700-2300 hours on holidays: Leq (5min) for a period of 2 weeks.

4.4 Monitoring Locations and Period

In accordance with the Updated EM&A Manual, there are two noise monitoring locations. The location of two monitoring stations are described in Table 4.3 and depicted in Figure 2.

Table 4.2 Noise Monitoring Station and Location

<i>Noise Monitoring station</i>	<i>Location</i>
<i>N1</i>	<i>Lin Chi Monastery</i>
<i>N2</i>	<i>Village House along Ngong Ping Road near bus terminal</i>

The baseline noise monitoring programme at designated monitoring locations is summarized in table 4.4. Noise monitoring was carried out for a period of 14 consecutive days.

Table 4.3 Monitoring Periods for the Baseline noise monitoring stations

<i>Baseline noise monitoring stations</i>	<i>Location</i>	<i>Monitoring Period</i>
<i>N1</i>	<i>Lin Chi Monastery</i>	<i>20/09/03 – 04/10/03</i>
<i>N2</i>	<i>Village House along Ngong Ping Road near bus terminal</i>	<i>20/09/03 – 04/10/03</i>



4.5 Monitoring Methodology

Instrumentation

Integrating Sound Level Meter (Rion NL-31 Sound Level Meter) was employed for noise monitoring.

Operation/Analysis Procedures

- The Sound Level Meter was set on a tripod at a height of 1.2m above the ground.
- For free field measurement, the meter was positioned away from any nearby reflective surfaces.
- The battery condition was checked to ensure the correct functioning of the meter.
- Parameters such as frequency weighting, the time weighting and the measurement time were set as follows:
 - Frequency weighting: A
 - Time weighting : Fast
 - Time measurement : 30 mins
- Prior to and after each noise measurement, the meter was calibrated using a Calibrator for 94 dB at 1000HZ. If the difference in the calibration level before and after measurement was more than 1 dB(A), the measurement would be considered invalid and repeat measurement would be required after re-calibration or repair of the equipment.
- During the monitoring period, the Leq, L10 and L90 were recorded. In addition, site conditions and noise sources were recorded on a standard record sheet.
- Noise measurement may be paused during periods of high intrusive noise (e.g. dog barking directly towards the receiver of noise level meter). If noise measurement was paused during high intrusive noise, the noise level meter would be resumed and continued the noise measurement and the observations would also be recorded. Any pause intervals were not included in the measurement time.
- Noise monitoring would be cancelled in the presence of fog, rain, wind with a steady speed exceeding 5m/s, or wind gusts exceeding 10m/s.

Maintenance and Calibration

- The microphone head of the sound level meter and calibrator should clean with soft cloth at quarterly intervals.
- The meter should be sent to be supplier or HOKLAS laboratory to check and calibrated at yearly intervals.

4.6 Results and Observations

Baseline noise monitoring data conducted between 20 September and 04 October 2003 at two noise monitoring stations. During baseline noise monitoring, no data was needed to be excluded since no intrusive noise was recorded and also absence of fog, rain, wind with a steady speed exceeding 5m/s, or wind gusts exceeding 10m/s was found refer to weather and wind data recorded. Hence, all data recorded during the baseline noise monitoring were found valid to represent as baseline condition of the Project. The monitoring results are summarized in Table 4.5. Graphical presentations of baseline noise monitoring during daytime at the two locations are provided in Appendix B3. All detailed baseline noise monitoring data at the two locations are given in Appendix B2. Detailed weather condition at the monitoring locations during baseline noise monitoring period is shown in Appendix C.

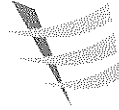


Table 4.4 Summary of Baseline Noise Monitoring Results

Monitoring Station	Mean Noise Level L_{eq} , dB(A) (Range)			
	0700-1900 on normal weekdays	1900-2300 on normal weekdays	2300-0700 of next days	0700-2300 on holidays
N1	59.8 (51.9 – 61.7)	58.2 (54.7 – 61.4)	54.3 (46.8 – 60.8)	59.7 (55.2 – 63.4)
N2	62.7 (54.1 – 73.0)	56.2 (51.1 – 67.6)	51.9 (45.0 – 66.1)	62.2 (51.8 – 73.8)

4.6.1 Observations

The weather condition during the baseline noise monitoring period varied to be sunny, fine and cloudy days. All the baseline noise monitoring was conducted without high intrusive noise and wind speed was below 5ms^{-1} .

Major local impacts observed in the baseline noise monitoring were as below:

- N1: dog's barking and human activities
- N2: passing vehicles and human activities

Apart from the traffic noise, no construction activities were found near the monitoring stations during the baseline monitoring. According to the baseline noise monitoring result, local impact was found insignificant near the monitoring station. Therefore, noise monitoring data from all monitoring stations can be used as background indicator at Ngong Ping.

4.7 Actions and Limit Levels

The Action and Limit Levels (AL Levels) were established in accordance to the Updated EM&A Manual. Table 4.6 presents the AL levels for noise monitoring.

Table 4.5 Action and Limit Levels for noise monitoring

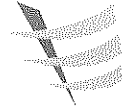
Time Period	Action	Limit
0700-1900 hrs on normal weekdays	When one documented complaint is received	75 dB(A) *
1900-2300 hrs on normal weekdays; and 0700-2300 hrs on holidays		70 dB(A) **
2300-0700 hrs of next day		55 dB(A) **

** = Area Sensitivity Rating (ASR) C is selected from the "Technical Memorandum on Noise from Construction Work Other Than Percussive Piling".

5. Baseline Monitoring for Landscape

5.1 According to the EM&A Manual, a vegetation survey of the entire selected route undertaken on an 'area' basis is required to be conducted during the baseline monitoring. Representative vegetation types will be identified along with typical species composition. An assessment of landscape character will be made against which future change can be monitored.

5.2 A vegetation survey in the proposed site was undertaken by Urbis Ltd. In January and September 2003 for the tree felling application.



- 5.3 As reported in the Tree Felling Report prepared by Urbis Ltd., the tree surveyed were all of species commonly found in Hong Kong and none of the species is protected under local statutes. No rare specimens were recorded and none of them have any special ecological value. Principal species noted on site were *Acacia confusa*, *Casuarina stricta* and *Mallotus paniculatus*. Most of the trees are found to be in fair condition.
- 5.4 A description of each tree is given in the Existing Tree Assessment Schedule (Refer to the Appendix E) and their location area shown on the attached drawing no. 23400/T/1180-1182.
6. **Revision for inclusion in the Updated EM&A Manual**
- 6.1 The recommended Action and Limit levels for air quality and noise parameters given in Table 3.7 and 4.6 of this report should be included in the Updated EM&A Manual.

7. **Conclusion**

Baseline environmental study regarding the air quality and noise level was conducted for the Project.

From the baseline results of air quality monitoring, low to intermediate level of 1-hour TSP and 24-hour TSP were reported. Apart from the vehicle emission along Ngong Ping Road, no noticeable impact was found near the monitoring stations during the baseline monitoring.

Regarding noise level monitoring, traffic noise is the major noise source during 0700-1900 hours of both weekdays and holidays at Noise Monitoring Station N2 - Village house along Ngong Ping Road near bus terminal. Apart from the traffic noise, human activities and dog's barking were also been considered as local noise impacts near both monitoring stations during the baseline monitoring.

According to the baseline air quality and noise monitoring result, low local impact was found near the monitoring station. Therefore, air quality and noise monitoring data from all monitoring stations can be used as background indicator at Ngong Ping.

In conclusion, the Contractor is advised to be aware of any site practice that may give rise to significant pollution to the existing environment. Implementation of necessary remedial measures should be instigated to rectify the potential impact on sensitive receivers located in the vicinity of the construction area.