

3. NOISE

3.1 Monitoring Requirements

According to the requirements in the Construction EM&A Manual for Lamma Extension, the baseline levels at the monitoring locations have to be determined prior to the commencement of the construction of Lamma Power Station Extension and Transmission System. Locations of baseline noise monitoring at Ash Lagoon & Ching Lam and Pak Kok Tsui are shown in Figures 3.1 and 3.2 respectively.

Baseline noise monitoring of six consecutive Leq (5 min) was carried out for 7 days at Ash Lagoon for the construction of Lamma Extension during 1-7 November 2000. The noise data during 1 and 7 November 2000 for the evening time period 19:00-23:00 were discarded due to windy conditions. Hence, the noise monitoring was extended to 11 November 2000.

The baseline monitoring for the construction of the Transmission System was carried out at Pak Kok Tsui during 24-30 November 2000.

The monthly 30-minute Leq's measured at the existing Ching Lam noise monitoring station in the past 12 months (viz. from December 1999 to November 2000) were regarded as the baseline noise levels for the construction of Lamma Extension.

The baseline noise level will be used for applying correction to the impact noise monitoring data for the most critical NSR's. For the construction of Lamma Power Station Extension, the two critical NSR's are the Long Tsai Tsuen/Hung Shing Ye and the school within the village of Tai Wan San Tsuen. For the construction of the Transmission System, the NSR's is Pak Kok Tsui residence.

3.2 Monitoring Locations

In accordance with the EM&A manual, the three identified noise baseline monitoring locations are listed in table 3.1 as follows:

Table 3.1 Noise Monitoring Location

Purpose of the noise monitoring	Monitoring Location
Lamma Extension	Roof top of Ash Lagoon decantrate pump house
Lamma Extension	Existing Ching Lam noise monitoring station
Transmission System	Pak Kok Tsui

3.3 Monitoring Parameters, Frequency and Duration

The A-weighted Leq levels were recorded at 5-minute intervals at Ash Lagoon and Pak Kok Tsui while A-weighted Leq levels of 30-minute intervals were recorded in the existing noise monitoring station at Ching Lam.

The frequencies and parameters of baseline noise monitoring were presented in table 3.2 as follows:

Table 3.2 Baseline Noise Monitoring Parameter and Frequency

a. Ash Lagoon and Pak Kok Tsui

Time Period	Duration	Parameter
Daytime: 0700-1900 hrs on normal weekdays	Six consecutive Leq (5min)	Leq
Evening-time: 0700-2300 hrs on holidays; and 1900-2300 hrs on all other days		
Night-time: 2300-0700 hrs of the next day		

b. Ching Lam

Time Period	Duration	Parameter
Daytime: 0700-1900 hrs	Continuous Leq (30min)	Leq
Evening-time: 1900-2300 hrs		
Night-time: 2300-0700 hrs of the next day		

Noise measurements have been made in accordance with standard acoustical principles and practices in relation to weather conditions. A wind speed sensor has been installed at Station Building Rooftop of Lamma Power Station. The wind speed signal recorded by computer was used to determine whether the data from Ash Lagoon were affected. The noise data were discarded when the hourly average wind speed exceeded 5 m/s.

The wind speed at Pak Kok Tsui throughout the period of baseline monitoring was measured. The noise data were discarded when the wind speed exceeded 5 m/s.

For the existing noise monitoring station at Ching Lam, the computer has been programmed to automatically discard the noise data in case the instantaneous wind speed measured at the Station Building Rooftop exceeded 10 m/s.

3.4 Monitoring Equipment

The sound level meters used for baseline noise monitoring comply with International Electrotechnical Commission Publications 651:1979 (Type 1) and 804:1985 (Type 1). The noise monitoring equipment used is shown in Table 3.3.

Table 3.3 Noise Monitoring Equipment

Equipment	Model
Sound level meter	Onosokki LA-5110 (at Ash Lagoon and Pak Kok Tsui) Cirrus CR:271 (at the existing Ching Lam noise monitoring station)
Calibrator (IEC 942 Class 1)	Cirrus CRL512/Norsonic 1251

3.5 Monitoring Procedures

Noise monitoring was conducted in accordance with the methodology specified in the EM&A Manual. Detailed procedures can be referred to the EM&A Manual.

3.6 Results & Observations

Results

Baseline noise monitoring was conducted. The baseline noise monitoring data at Ash Lagoon & Pak Kok Tsui and Ching Lam are detailed in Annexes C, D & E respectively. The graphical presentations of monitoring data measured at the three monitoring locations are also shown in Annexes F, G and H respectively. Weather conditions at the monitoring locations during the baseline monitoring period are presented in Annex I.

The baseline noise monitoring results are summarized in the Table 3.4 and 3.5.

Table 3.4 Summaries of Noise Monitoring Results at Ash Lagoon and Pak Kok Tsui

Location	Average 5-min Leq Noise Level (dB(A)) (Range)		
	Daytime 07:00-19:00 hrs on normal weekdays	Evening-time 07:00-23:00 hrs on holidays and 19:00-23:00 hrs on all other days	Night-time 23:00-07:00 hrs of next day
Ash Lagoon	61.8 (53.4 – 71.7)	56.9 (52.8 – 64.6)	56.3 (53.4 – 64.5)
Pak Kok Tsui	54.9 (46.8-63.9)	53.0 (44.0-62.4)	52.4 (45.3-61.9)

Table 3.5 Summaries of Monthly Noise Data at the Existing Ching Lam Noise Monitoring Station

Month	Monthly Average 30-min Leq Noise Level (dB(A))		
	07:00-19:00	19:00-23:00	23:00-07:00 of next day
December 1999	59.0	57.3	56.9
January 2000	58.0	56.8	56.4
February 2000	58.2	57.0	56.9
March 2000	59.0	57.6	56.8
April 2000	57.3	56.0	56.0
May 2000	59.3	57.8	57.5
June 2000	58.3	57.4	56.6
July 2000	58.1	57.4	56.4
August 2000	57.7	57.5	56.5
September 2000	57.0	57.1	56.4
October 2000	56.0	55.3	54.9
November 2000	55.8	55.1	55.0

The baseline noise levels at Ash Lagoon, Pak Kok Tsui and Ching Lam will be used for applying correction to the corresponding impact noise monitoring data in daytime of normal weekdays of 30-min Leq and in other time periods of 5-min Leq.

Observations

The ET members identified no major activities which might have affected the baseline monitoring.

3.7 Monitoring Frequency, Action and Limit Levels

The monitoring frequency, Action and Limit Levels (AL Levels) were established in accordance with the EM&A Manual. Table 3.6 presents the AL levels for construction noise.

Table 3.6 Monitoring Frequency and Action & Limit Levels of Construction Noise (Other than Percussive Piling)

Parameters	Frequency	Action	Limit
1. Noise Levels at the NSRs at Long Tsai Tsuen/Hung Shing Ye and school within the village of Tai Wan San Tsuen predicted by the noise alarm monitoring system	Continuous	When one or more documented complaints are received	a. 75 dB(A) in $L_{Aeq,30 \text{ min}}$ (07:00-19:00 hrs on normal weekdays) (Note 2) b. subject to statutory control under the Noise Control Ordinance (07:00-23:00 hrs on holidays; 19:00-23:00 hrs on all other days)
2. Manual noise monitoring at the nearest Pak Kok Tsui residences to cable landing points N4 and N5 (Note 1)	Twice per week (period a); once per week (periods b-c)		c. subject to statutory control under the Noise Control Ordinance (23:00-07:00 hrs of next day)
Note: 1. One set of measurements shall include one $L_{Aeq,30 \text{ min}}$ for period a or three consecutive $L_{Aeq,5 \text{ min}}$, for periods b and c. 2. For educational institution, the limit level shall be 70 dB(A), reduced to 65 dB(A) during examination periods.			

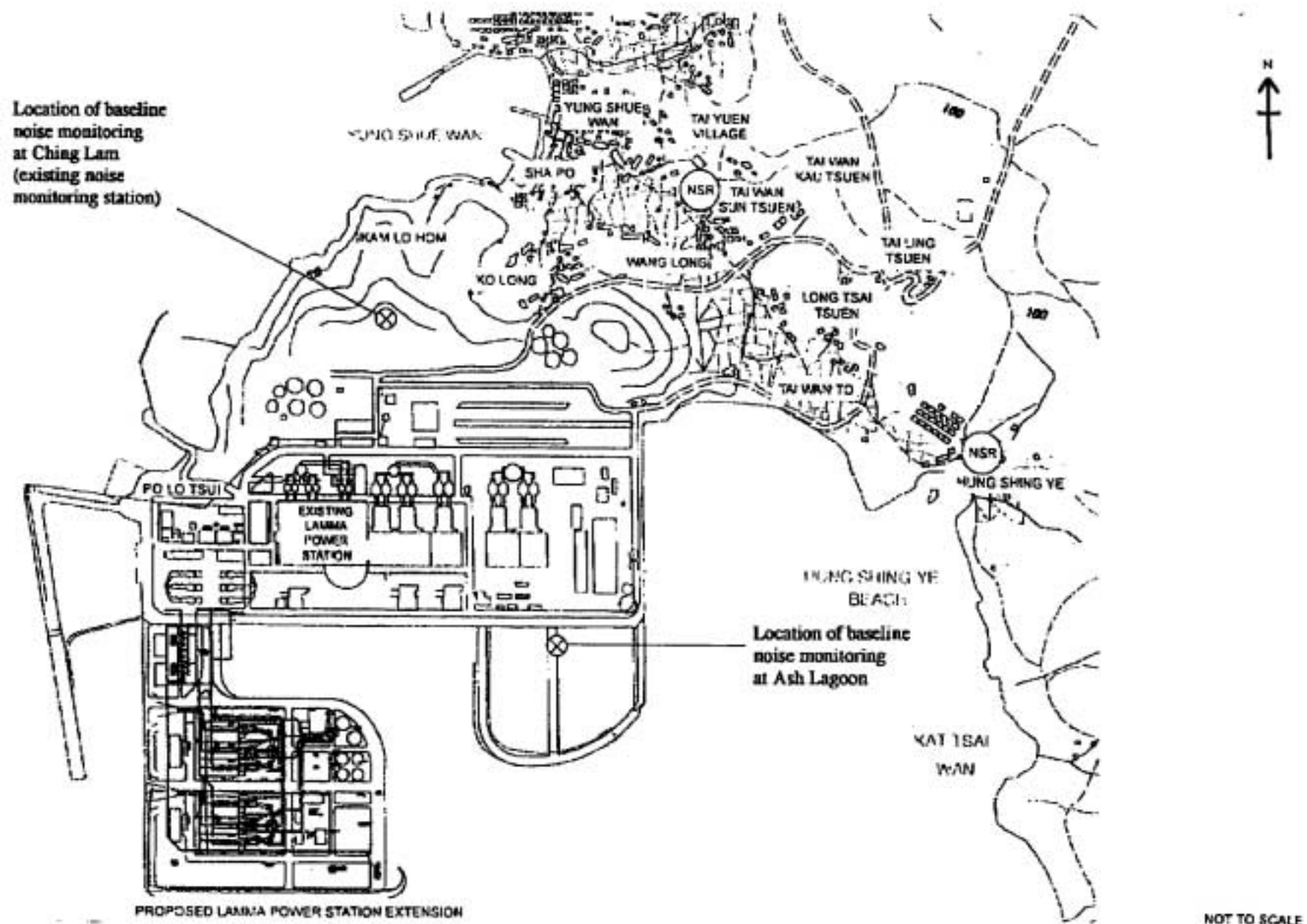


Figure 3.1 Baseline Noise Monitoring at Ash Lagoon and Ching Lam for the Construction of Lamma Power Station Extension

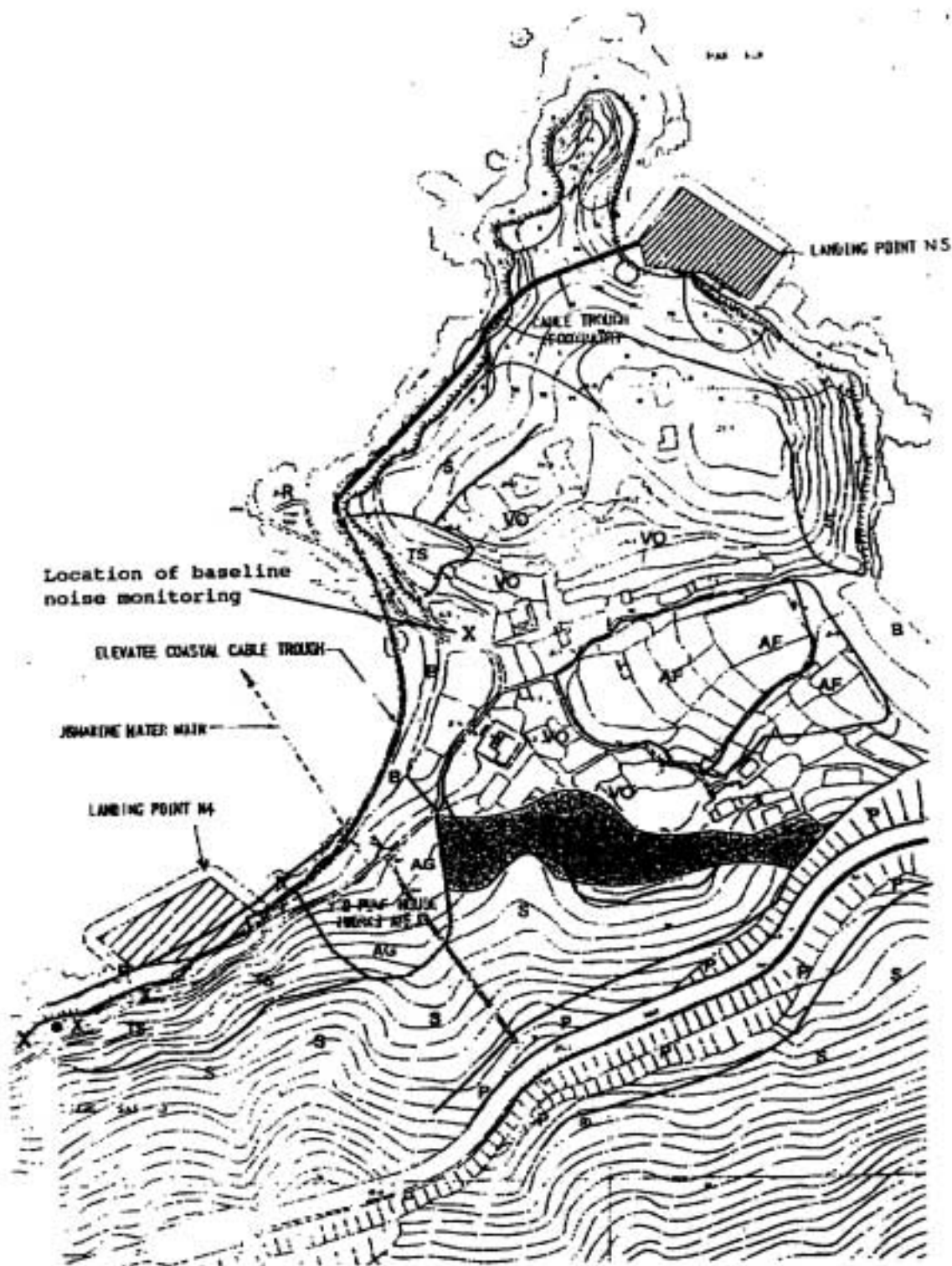


Figure 3.2 Baseline Noise Monitoring at Pak Kok Tsui for the Construction of Transmission System