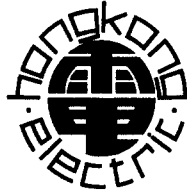


The Hongkong Electric Co Ltd
香港電燈有限公司



ENVIRONMENTAL IMPACT ASSESSMENT (EIA) ORDINANCE, CAP. 499

ENVIRONMENTAL PERMIT NO. EP-071/2000/C

**LAMMA POWER STATION EXTENSION
ENVIRONMENTAL MONITORING & AUDIT PROGRAMME
AT CONSTRUCTION PHASE**



Report Title	Environmental Monitoring and Audit Report (December 2006)
Date	12/01/2007
Certified by	 (Mr. IP Tat-Yan, Environmental Team Leader)
Verified by	 (Hong Kong Productivity Council, Independent Environmental Checker)

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EXECUTIVE SUMMARY

This is the sixty-ninth monthly Environmental Monitoring and Audit (EM&A) report for the Project “Construction of Lamma Power Station Extension” prepared by the Environmental Team (ET). This report presents the results of impact monitoring on noise for the said project in December 2006.

With the completion of erection works and a series of commissioning tests for Unit L9, the operational EM&A for Lamma Extension has commenced on 15 October 2006. The monthly EM&A report for Lamma Extension operation is submitted under a separate cover. The remaining construction work for the transmission system associated with Unit L9 was completed in December 2006. This is the last monthly EM&A report for the construction of Unit L9.

Noise monitoring was performed. The results were checked against the established Action/Limit (AL) levels. An on-site audit was conducted once per week. The implementation status of the environmental mitigation measures, Event/Action Plan and environmental complaint handling procedures were also checked.

Construction Activities Undertaken

Construction activities for Lamma Extension during the reporting month are tabulated as follows:

Item	Construction Activities
Transmission System	Backfilling above portal structure for Cable Duct 2 and cable trench from N4 landing point to Cable Duct no.2 Entrance
Miscellaneous	Slurry ash piping & filling

Environmental Monitoring Works

All monitoring work at designated stations was performed as scheduled satisfactorily.

Noise

No exceedance of Action and Limit levels for noise arising from the construction of Transmission System was recorded in the reporting month.

Site Environmental Audit

Site audits were carried out on a weekly basis to monitor environmental issues on the construction site. The site conditions were generally satisfactory. All required mitigation measures were implemented.

Environmental Licensing and Permitting

Description	Permit No.	Valid Period		Issued To	Date of Issuance
		From	To		
Varied Environmental Permit	EP-071/2000/C	18/05/05	-	HEC	18/05/05
Registration of Chemical Waste Producer	WPN5213-912-K2801-03	15/09/04	-	Contractor	15/09/04
WPCO Discharge Licence	EP890/W2/XD008 (V.1)	29/06/06	30/11/09	HEC	29/06/06
APCO Specified Process Licence	L-7-002(6)	14/09/06	31/12/08	HEC	13/09/06

Implementation Status of Environmental Mitigation Measures

Environmental mitigation measures for the construction activities as recommended in the EM&A manual were implemented in the reporting month.

Environmental Complaints

No complaint against the construction activities was received in the reporting month.

Concluding Remarks

The environmental performance of the project was generally satisfactory.

1. INTRODUCTION

1.1 Background

The Environmental Team (hereinafter called the “ET”) was formed within the Hongkong Electric Co. Ltd (HEC) to undertake Environmental Monitoring and Audit for “Construction of Lamma Power Station Extension” (hereinafter called the “Project”). Under the requirements of Section 6 of Environmental Permit EP-071/2000/C, an EM&A programme for impact environmental monitoring set out in the EM&A Manual (Construction Phase) is required to be implemented. In accordance with the EM&A Manual, environmental monitoring of air quality, noise and water quality and regular environmental audits are required for the Project. As the post-project marine water monitoring was successfully completed in September 2002, no further water quality monitoring for the reclamation works would be required. The air quality and noise monitoring for the construction of Unit L9 has also been successfully completed in mid October 2006.

The Project involves the construction of a gas-fired power station employing combined cycled gas turbine technology, forming an extension to the existing Lamma Power Station. The key elements of the Project including the construction activities associated with the transmission system and submarine gas pipeline are outlined as follows.

- dredging and reclamation to form approximately 22 hectares of usable area;
- construction of six 300MW class gas-fired combined cycle units;
- construction of a gas receiving station;
- construction of a new transmission system linking the Lamma Extension to load centres on Hong Kong Island;
- laying of a gas pipeline for the supply of natural gas to the new power station

This report summarizes the environmental monitoring and audit work for the Project for the month of December 2006.

1.2 Project Organisation

An Environmental Management Committee (EMC) has been set up in HEC to oversee the Project. The management structure includes the following:

- Environmental Protection Department (The Authority);
- Environmental Manager (The Chairman of the Environmental Management Committee);
- Engineer;
- Independent Environmental Checker (IEC);
- Environmental Team (ET);
- Contractor.

The project organisation chart for the construction EM&A programme is shown in Appendix A.

1.3 Construction Works undertaken during the Reporting Month

The remaining construction work for the transmission system associated with Unit L9 was completed in December 2006. The construction activities were backfilling above portal structure for Cable Duct 2 and cable trench from N4 landing point to Cable Duct no.2 Entrance. Layout plan for and transmission system are shown in Figure 1.1.

The main construction activities carried out during the reporting month and the corresponding environmental mitigation measures are summarized in Table 1.1. The implementation of major mitigation measures in the month is provided in Appendix H.

Table 1.1 Construction Activities and Their Corresponding Environmental Mitigation Measures

Item	Construction Activities	Environmental Mitigation Measures
Construction of Transmission System		
1	Backfilling above portal structure for Cable Duct 2 and cable trench from N4 landing point to Cable Duct no.2 Entrance	Terrestrial Ecology <ul style="list-style-type: none">– Special care and close monitoring to avoid disturbances to the rare plant species.– Temporary fire fighting equipment provided within the work area during construction.
Miscellaneous		
2	Slurry ash piping & filling	Noise <ul style="list-style-type: none">– General noise mitigation measures implemented and silent type equipment deployed.

1.4 Summary of EM&A Requirements

The EM&A program requires environmental monitoring for air, noise and water quality. As the post-project marine water monitoring was successfully completed in September 2002, no further water quality monitoring for the reclamation works would be required. The air quality and noise monitoring for the construction of Unit L9 has also been successfully completed in mid October 2006. The detailed EM&A noise monitoring

work for the transmission system are described in Section 2. Regular environmental site audits were carried out.

The following environmental audits are summarized in Section 4 of this report:

- Environmental monitoring results;
- Waste Management Records;
- Weekly site audit results;
- The status of environmental licensing and permits for the Project;
- The implementation status of environmental protection and pollution control/mitigation measures.

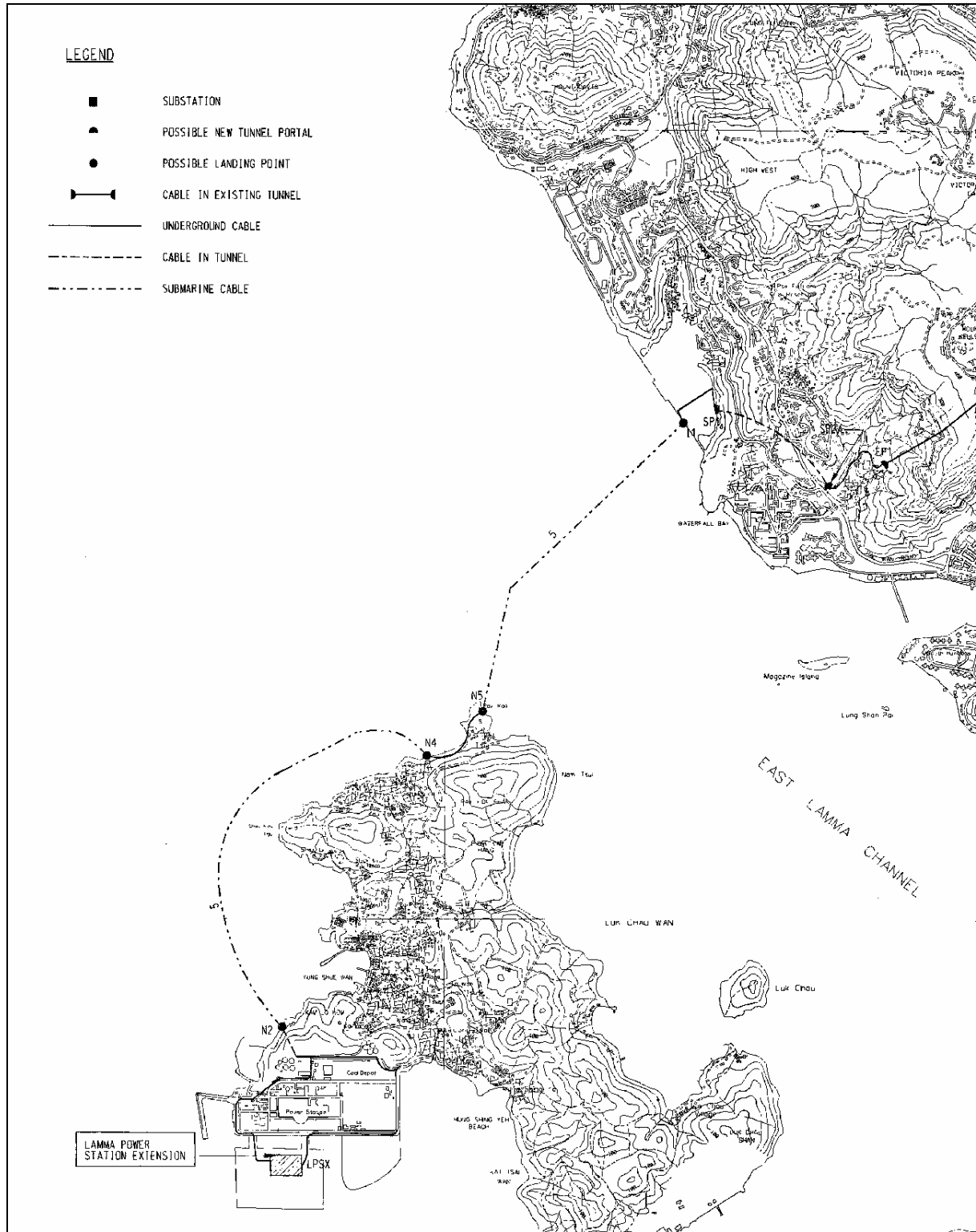


Figure 1.1 Cable Route of Transmission System

2. NOISE

2.1 Monitoring Requirements

Manual noise measurements at Pak Kok Tsui residences were carried out for the construction work of Transmission System in this reporting month. The impact noise monitoring data were checked against the limit levels specified in the EM&A Manual. Appendix B shows the established Action/Limit Levels for noise.

2.2 Monitoring Locations

In accordance with the EM&A manual, the identified noise monitoring locations are listed in Table 2.1 and shown in Figure 2.1.

Table 2.1 Noise Monitoring Locations

Purpose of noise monitoring	Monitoring Location
Transmission System	Pak Kok Tsui residences (No.2 and No.8)

2.3 Monitoring Equipment

The sound level meter used for noise monitoring complied with International Electrotechnical Commission Publications 651:1979 (Type 1) and 804:1985 (Type 1). The noise monitoring equipment used is shown in Table 2.2.

Table 2.2 Noise Monitoring Equipment

Equipment	Model
Sound level meter	Rion NL-31
Sound level calibrator	Rion NC-74

2.4 Monitoring Parameters, Frequency and Duration

Manual noise monitoring was conducted at Pak Kok Tsui residences. The measurement duration and parameter of noise monitoring were presented in Table 2.3 as follows:

Table 2.3 Noise Monitoring Duration and Parameter

Location	Time Period	Frequency	Parameter
Pak Kok Tsui residences	0700-1900 hrs on normal weekdays	Twice per week	30-min L_{Aeq}

2.5 Monitoring Procedures and Calibration Details

Manual Noise Monitoring for Transmission System Construction

Manual noise measurements were carried out at the Pak Kok Tsui residences in accordance with standard acoustical principles and practices for checking the impact of noise related to construction of the Transmission System.

Hand-held anemometer was used to measure the wind speed while taking noise measurements. If the wind speed is excessive, noise data will be discarded and re-measured.

Equipment Calibration

The sound level meters and calibrators have been verified by the manufacturer or accredited laboratory.

The sound level meters used for manual noise measurement were calibrated with a sound level calibrator immediately before and after noise measurement in accordance with the relevant Technical Memoranda under the Noise Control Ordinance. Calibration details are shown in Appendix E.

2.6 Results and Observations

Manual noise monitoring was carried out at the Pak Kok Tsui residences.

All monitoring results and their graphical presentations are provided in Appendix D. No exceedance of noise Action/Limit Level was recorded in the month.

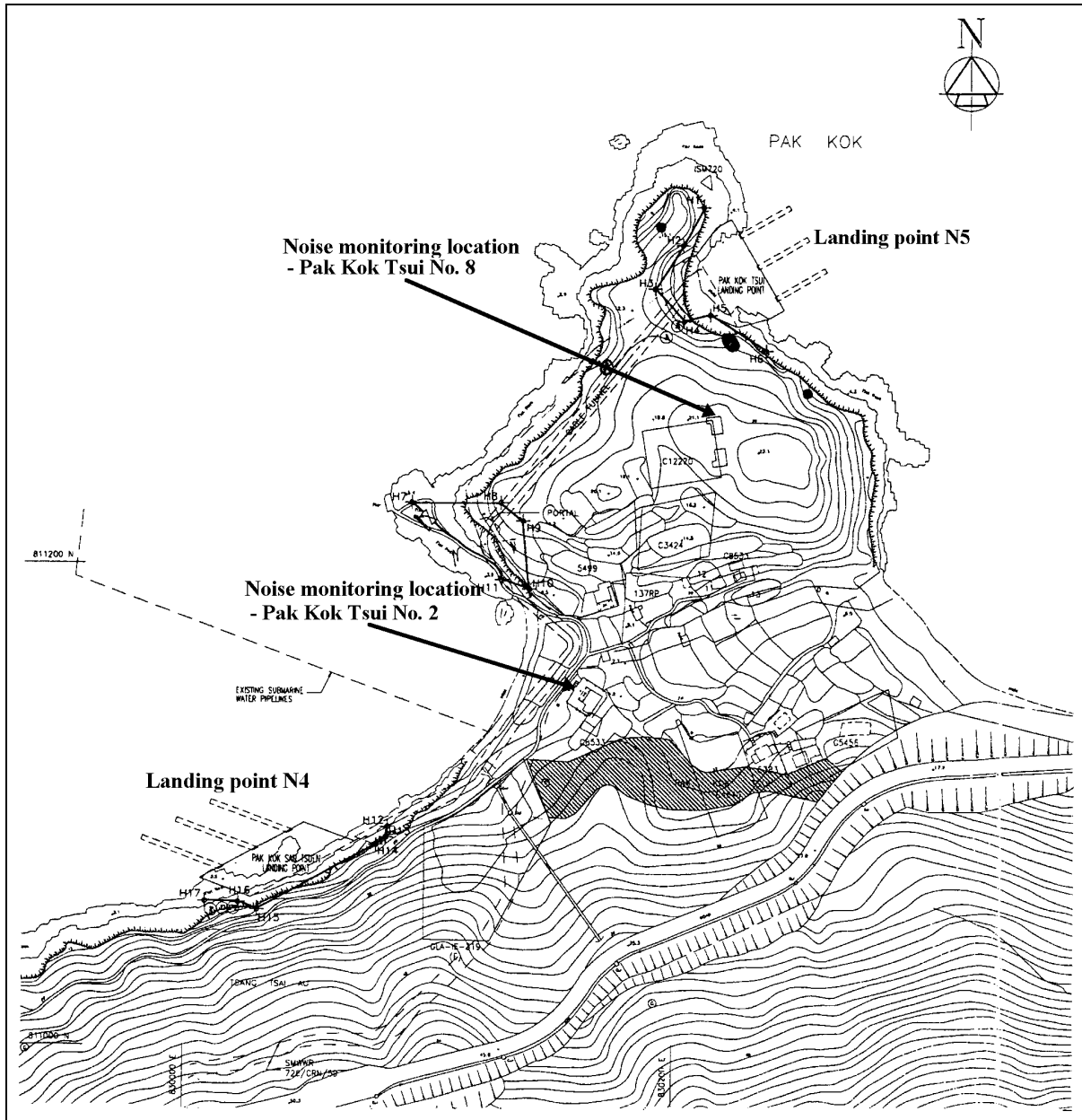


Figure 2.1 Locations of Manual Noise Monitoring

3. ENVIRONMENTAL AUDIT

3.1 Review of Environmental Monitoring Procedures

The environmental monitoring procedures were regularly reviewed by the Environmental Team. No modification to the existing monitoring procedures was recommended.

3.2 Assessment of Environmental Monitoring Results

Monitoring results for Noise

The environmental monitoring results for Noise in the reporting month presented in Section 2 are summarized in Table 3.1.

Table 3.1 Summary of AL Level Exceedances on Monitoring Parameters

Item	Parameter Monitored	Monitoring Period	No. of Exceedances In		Event/Action Plan Implementation Status and Results
			Action Level	Limit Level	
Noise					
1	Manual noise monitoring at the Pak Kok Tsui residences	01/12/06-31/12/06	0	0	

3.3 Site Environmental Audit

Site audits were carried out by ET on a weekly basis to monitor environmental issues at the construction sites to ensure that all mitigation measures were implemented timely and properly. The site conditions were generally satisfactory. All required mitigation measures were implemented. The weekly site inspection results are attached in Appendix G.

3.4 Status of Environmental Licensing and Permitting

All permits/licenses obtained for the project are summarised in Table 3.3.

Table 3.3 Summary of Environmental Licensing and Permit Status

Description	Permit No.	Valid Period		Highlights	Status
		From	To		
Varied Environmental Permit	EP-071/2000/C	18/05/05	-	The whole construction work site	Valid
Registration of Chemical Waste Producer	WPN5213-912-K2801-03	15/09/04	-	Major Chemical Waste Type: Spent lubricating oil, spent battery, contaminated soil with spent flammable liquid	Valid
WPCO Discharge Licence	EP890/W2/XD008 (V.1)	29/06/06	30/11/09	Lamma Power Station and Extension	Valid
APCO Specified Process Licence	L-7-002(6)	14/09/06	31/12/08	Lamma Power Station Extension	Valid

3.5 Implementation Status of Environmental Mitigation Measures

Mitigation measures detailed in the permits and the EM&A Manual (Construction Phase) are required to be implemented. An updated summary of the Environmental Mitigation Implementation Schedule (EMIS) is presented in Appendix H.

3.6 Implementation Status of Event/Action Plans

The Event/Action Plans extracted from the EM&A Manual (Construction Phase) are presented in Appendix F.

3.7 Implementation Status of Environmental Complaint Handling Procedures

In December 2006, no complaint against the construction activities was received.

Table 3.4 Environmental Complaints / Enquiries Received in December 2006

Case Reference / Date, Time Received / Date, Time Concerned	Descriptions /Actions Taken	Conclusion / Status
Nil	N/A	N/A

Table 3.5 Outstanding Environmental Complaints / Enquiries Carried Over

Case Reference / Date, Time Received / Date, Time Concerned	Descriptions /Actions Taken	Conclusion / Status
Nil	N/A	N/A

4. CONCLUSION

All monitoring work at designated stations was performed as scheduled satisfactorily. The environmental monitoring works and site inspection were performed as scheduled in the reporting month. All monitoring results were checked and reviewed.

No Action/Limit level exceedance on noise was recorded in the reporting month.

Environmental mitigation measures recommended in the EM&A manual for the construction activities were implemented in the reporting month. No complaint against the construction activities was received in the reporting month. No prosecution was received for this Project in the reporting period.

The environmental performance of the Project was generally satisfactory. This is the last monthly EM&A report for the construction of Unit L9.

Appendix A Organization Chart

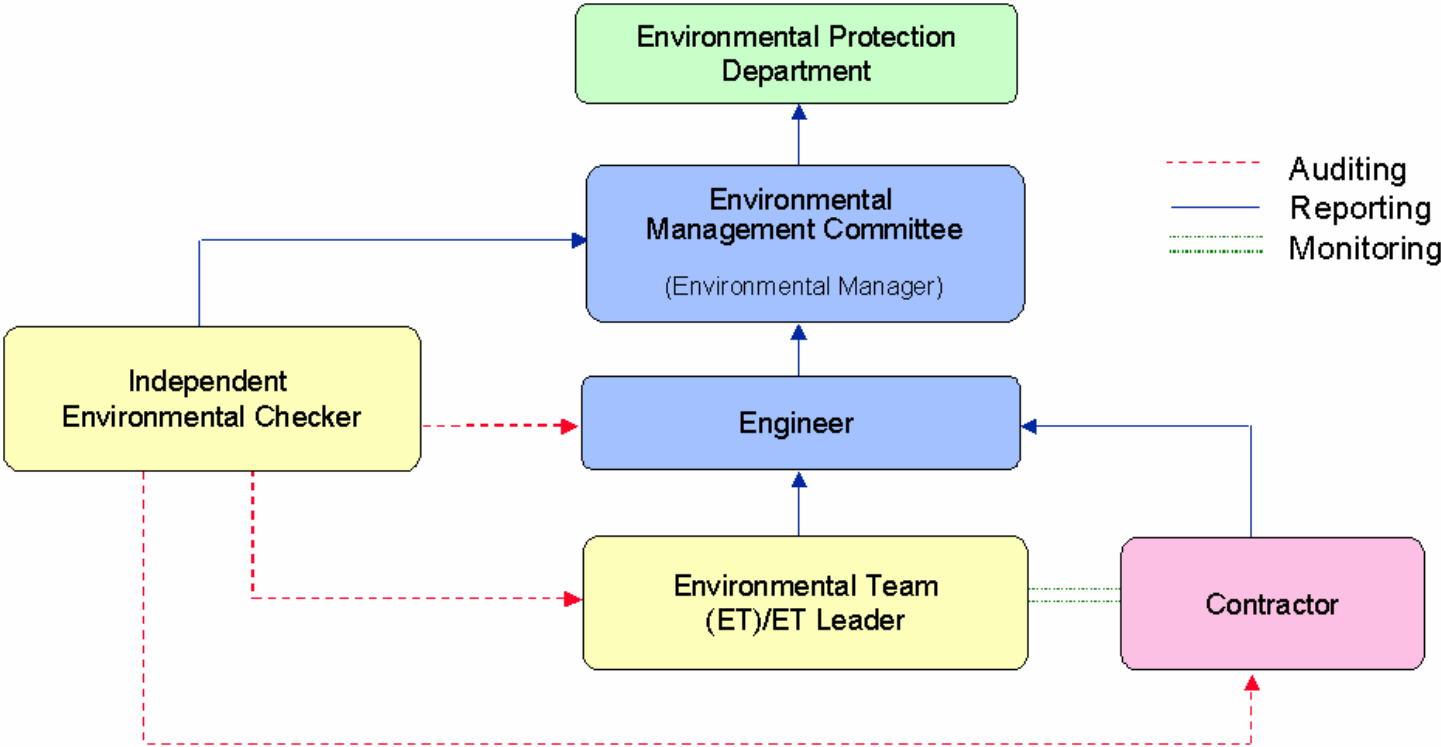


Figure A.1 Organisation of EM&A Programme at Construction Phase

Appendix B Action and Limit Levels for Noise Monitoring

Table B.1 presents the Action and Limit (AL) levels for construction noise other than percussive piling.

Table B.1 AL Levels for Construction Noise (Other than Percussive Piling)

Parameters	Action	Limit
Noise Levels at the NSR's at Long Tsai Tsuen/Hung Shing Ye and school within the village of Tai Wan San Tsuen predicted by the noise alarm monitoring system	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 1)
Manual noise monitoring at the nearest Pak Kok Tsui residences to cable landing points N4 and N5		b. subject to statutory control under the Noise Control Ordinance (07:00-23:00 hrs on holidays and 19:00-23:00 hrs on all other days). Set to 60 dB(A) in $L_{Aeq,5 \text{ min}}$ c. subject to statutory control under the Noise Control Ordinance (23:00-07:00 hrs of next day). Set to 45 dB(A) in $L_{Aeq,5 \text{ min}}$
Note: 1. For educational institution, the limit level shall be 70 dB(A), reduced to 65 dB(A) during examination periods.		

Appendix C Environmental Monitoring Schedule

Table C.1 Manual Noise Monitoring Schedule for Transmission System Construction
(December 2006)

Date	Monitoring Start Time
01/Dec/2006	14:00
05/Dec/2006	10:00
08/Dec/2006	14:00
12/Dec/2006	10:00
15/Dec/2006	14:00
19/Dec2006	10:00
22/Dec/2006	14:00
27/Dec/2006	10:00
29/Dec/2006	14:00

Appendix D**Manual Noise Monitoring Results for December 2006**

Site: Lamma Power Station Extension - Transmission System
 Measurement Parameter: 30-min Leq (07:00-19:00 hrs on normal weekdays)
 Noise Equipment Used: Rion NL-31 sound level meter and Rion NC-74 sound level calibrator
 Wind Speed Equipment: Extech Instruments 45118
 Last Calibration Date: Rion NL-31 sound level meter - 11/10/2006
 Rion NC-74 sound level calibrator - 31/10/2006

Measurement Location: N4 - Pak Kok Tsui No.2

Date	Time	Measured Noise Level (dB(A))	Notional Background Noise Level (dB(A))	Corrected Noise Level (dB(A))	Limit Noise Level (dB(A))	Wind Speed (m/s)
01/12/2006	14:00-14:30	48.2	54.9	--	75	<5
05/12/2006	10:00-10:30	49.1	54.9	--	75	<5
08/12/2006	14:00-14:30	49.5	54.9	--	75	<5
12/12/2006	10:00-10:30	49.9	54.9	--	75	<5
15/12/2006	14:00-14:30	50.2	54.9	--	75	<5
19/12/2006	10:00-10:30	50.0	54.9	--	75	<5
22/12/2006	14:00-14:30	49.0	54.9	--	75	<5
27/12/2006	10:00-10:30	48.5	54.9	--	75	<5
29/12/2006	14:00-14:30	48.8	54.9	--	75	<5

Measurement Location: N5 - Pak Kok Tsui No.8

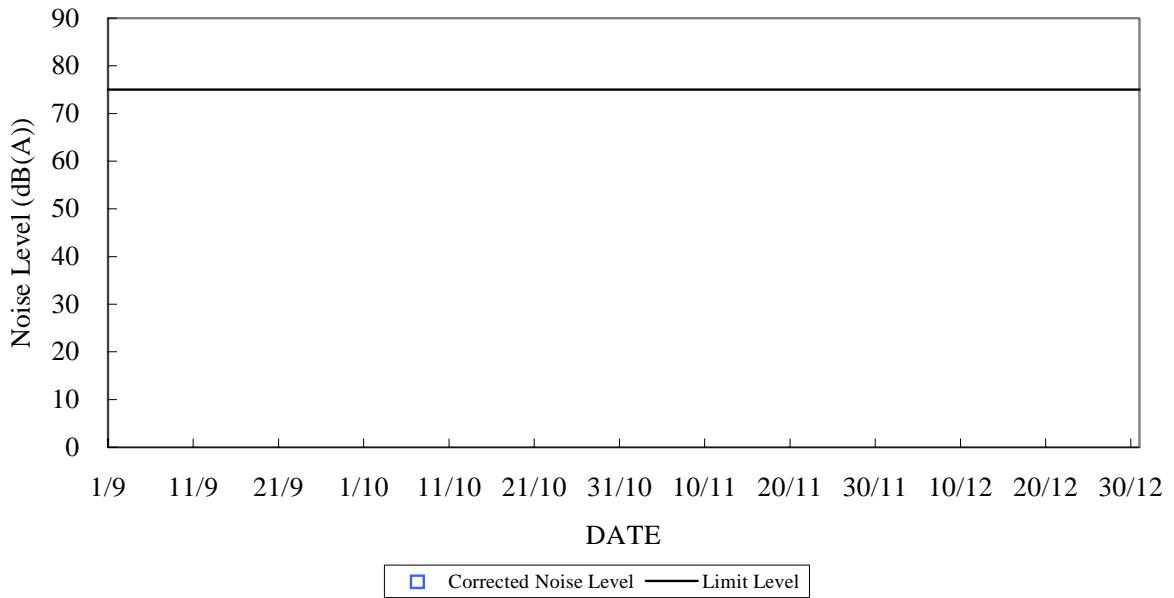
Date	Time	Measured Noise Level (dB(A))	Notional Background Noise Level (dB(A))	Corrected Noise Level (dB(A))	Limit Noise Level (dB(A))	Wind Speed (m/s)
01/12/2006	14:40-15:10	50.0	54.9	--	75	<5
05/12/2006	10:40-11:10	49.2	54.9	--	75	<5
08/12/2006	14:40-15:10	48.0	54.9	--	75	<5
12/12/2006	10:40-11:10	49.6	54.9	--	75	<5
15/12/2006	14:40-15:10	49.7	54.9	--	75	<5
19/12/2006	10:40-11:10	50.1	54.9	--	75	<5
22/12/2006	14:40-15:10	48.4	54.9	--	75	<5
27/12/2006	10:40-11:10	49.7	54.9	--	75	<5
29/12/2006	14:40-15:10	50.1	54.9	--	75	<5

Note:

- The noise generated from local noisy events (e.g. dog barking, passing-by pedestrians, motor vehicle, aeroplane, helicopter, etc.) was manually removed during measurement as far as practicable.
- "--" represents the measured noise monitoring data lower than the established notional background level.

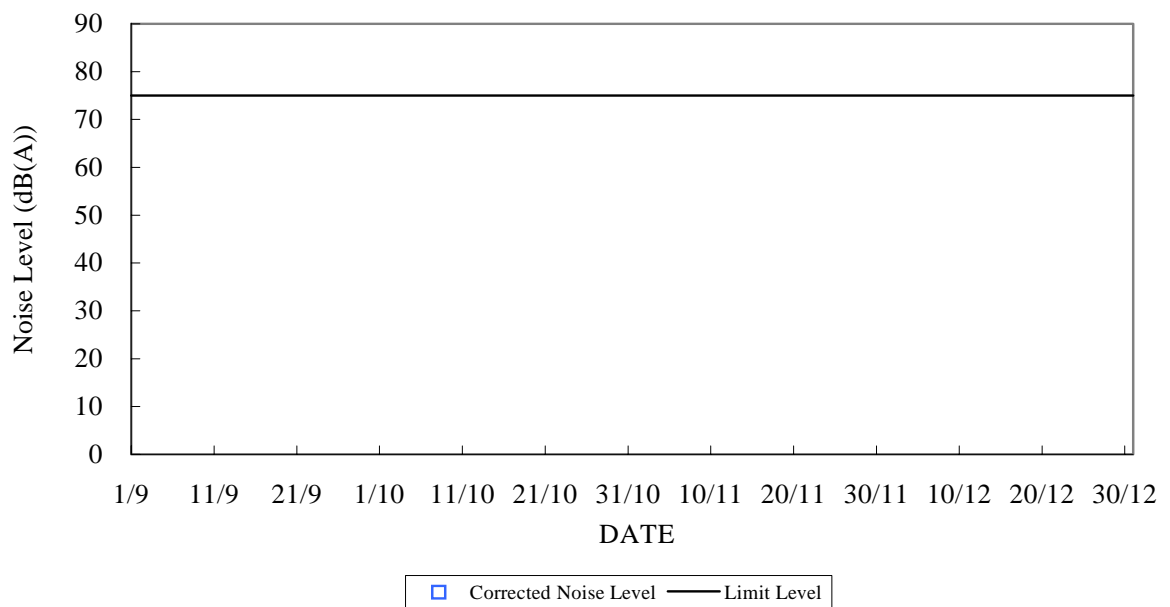
Construction Noise Monitoring in September 2006 - December 2006

NSR at N4 - Pak Kok Tsui No. 2
07:00 -19:00 hrs on Normal Weekdays



Construction Noise Monitoring in September 2006 - December 2006

NSR at N5 - Pak Kok Tsui No. 8
07:00 -19:00 hrs on Normal Weekdays



Appendix E

The QA/QC Procedures and Results

Equipment Calibration Record for December 2006

Site: Civil works for 275kV Cable Route from Lamma Island to Cyberport

Noise Equipment Used: Rion NL-31

Calibrator Used: Rion NC-74

Measurement Location: N4 – Pak Kok Tsui No. 2

Date	Calibration Level before Measurement (dB(A))	Calibration Level after Measurement (dB(A))	Calibrated by
01/12/2006	94.0	94.0	C K Siu
05/12/2006	94.0	94.0	Anthony Tang
08/12/2006	94.0	94.0	Anthony Tang
12/12/2006	94.0	94.0	C K Siu
15/12/2006	94.0	94.0	C K Siu
19/12/2006	94.0	94.0	C K Siu
22/12/2006	94.0	94.0	C K Siu
27/12/2006	94.0	94.0	Anthony Tang
29/12/2006	94.0	94.0	Anthony Tang

Measurement Location: N5 – Pak Kok Tsui No. 8

Date	Calibration Level before Measurement (dB(A))	Calibration Level after Measurement (dB(A))	Calibrated by
01/12/2006	94.0	94.0	C K Siu
05/12/2006	94.0	94.0	Anthony Tang
08/12/2006	94.0	94.0	Anthony Tang
12/12/2006	94.0	94.0	C K Siu
15/12/2006	94.0	94.0	C K Siu
19/12/2006	94.0	94.0	C K Siu
22/12/2006	94.0	94.0	C K Siu
27/12/2006	94.0	94.0	Anthony Tang
29/12/2006	94.0	94.0	Anthony Tang

Note: Measurement accepted as valid only if the calibration levels from before and after the noise measurement agreed to within 1.0 dB.

Appendix F Event/Action Plans

Table F.1 Event and Action Plans for Construction Noise

Exceedance	ET Leader	IEC	Engineer	Contractor
Action Level	Undertake noise measurement/check monitoring data to establish validity of complaint.	Review the analysed results submitted by the ET.	Notify Contractor of the complaint if proven.	Submit proposals for remedial actions to Engineer.
	If the complaint is valid, inform Engineer and IEC verbally.	Review the remedial measures proposed by the Contractor and advise the Engineer and ET accordingly.	Check Contractor's working methods and advise IEC and ET accordingly.	Amend proposals if required by the Engineer.
	Identify the source(s) of the noise.	Verify the implementation of the remedial measures.	Remind the Contractor of his contractual obligations and discuss remedial actions.	Implement the remedial actions immediately upon instruction from the Engineer.
	Discuss remedial actions required with Contractor and Engineer.		Keep the Contractor informed of the efficacy of remedial actions.	Liaise with the Engineer to optimise the effectiveness of the agreed mitigation.
	Increase manual monitoring frequency to assess efficacy of remedial measures.			
	If exceedance continues, review implementation of appropriate mitigation measures.			
Limit Level	Repeat manual measurement/check monitoring data to confirm findings.	Agree potential remedial actions with Engineer, ET and Contractor.	Notify Contractor of exceedance.	Take immediate action to avoid further exceedance.
	Identify the source(s) of the impact. If the exceedance is found to be valid and due to the Construction works, verbally advise the Contractor, Engineer and IEC, and inform the EPD of the exceedance, as soon as practicable.	Review Contractor's remedial actions / measures to ensure their effectiveness and advise the Engineer and ET accordingly.	Check Contractor's working methods and advise IEC and ET accordingly.	Submit proposals for remedial actions to Engineer.
	Discuss remedial actions required with Engineer.	Verify the implementation of the remedial measures	Discuss with Contractor the remedial actions to be implemented.	Amend proposals if required by the Engineer.
	Increase manual monitoring frequency to assess efficacy of remedial measures.		Keep the Contractor informed of the efficacy of remedial actions. If the exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop the portion of work until the exceedance is abated	Implement remedial actions immediately upon instruction from the Engineer. If the exceedance continues, consider what portion of the work is responsible and, as instructed by the Engineer, stop the portion of work until the exceedance is abated

Appendix G

Site Audit Summary

(In order to save paper, the weekly inspection checklists are provided only in electronic format in the CD-ROM enclosed.)

The Hongkong Electric Co. Ltd.
Lamma Power Station Extension – Construction of Transmission System
Weekly Site Inspection Checklist

Inspection date Time Inspected by

 Site Transmission Route (Civil Work)

Weather

Condition Sunny Fine Overcast Hazy Drizzle Rain Storm
Temperature °C **Humidity** High Moderate Low
Wind Calm Light Breeze Strong

GENERAL

Ref.	Checklist Condition	N/A	Yes	No	Unk	Remarks
VEP 1.5	Has a copy of the most updated Environmental Permit been displayed at all vehicular site entrances/exits for public information?		✓			
VEP 1.6	Is a copy of EIA report kept in Engineers' and Contractors' offices on site?		✓			

AIR QUALITY

Ref.	Checklist Condition	N/A	Yes	No	Unk	Remarks
General Requirements						
Cap311R:	Has the contractors notified EPD of the construction site which is classified as a notifiable work in a specified form? If there is any change in the notice? If yes, did the contractors notify EPD of the change?	✓				
Cap311R: Sch 12(3)	A compressed air jet shall not be used for cleaning or clearing dust from any vehicle, equipment, other materials or person. Has this been observed?	✓				
Stockpiling of dusty materials						
Cap311R: Sch 18 EM&A:J1	Are stockpiles of dusty materials entirely covered with impervious sheets or sheltered on the top and 3 sides or sprayed with water to maintain the entire surface wet to prevent dust emission?		✓			
Use of vehicles						
Cap311R: Sch 21(2)	Is every load of dusty material on the vehicles leaving the construction site covered entirely by clean impervious sheeting?	✓				
Miscellaneous						
Cap311R: Sch 16	Are completed earthworks sealed and hydroseeded and planted as soon as possible?	✓				

Ref.	Checklist Condition	N/A	Yes	No	Unk	Remarks
Cap3110	Is open burning prohibited?		✓			
Cap311	Is black smoke emission from plant/equipment avoided?		✓			

WASTE/CHEMICAL WASTE MANAGEMENT

Ref	Checklist Condition	N/A	Yes	No	Unk	Remarks
Dredged Materials						
Cap466	Does the appropriate contractor possess valid dumping permits for dredged marine mud and have them available for inspection?	✓				
Cap466	Are wastes disposed of at licensed sites?	✓				
Construction Waste and Excavated Materials						
Cap354	Does the Contractor possess a valid Public Dumping License for construction waste and excavated materials and make it available for inspection?	✓				
Cap354	Are wastes disposed of at licensed sites?	✓				
Chemical Waste						
Cap354C	Has the contractor obtained the necessary disposal permits from the relevant authority, if required, according to Waste Disposal (Chemical Waste) (General Regulation)?	✓				
Cap354C	Has the Contractor registered as a chemical waste producer?		✓			
Cap354C	Is chemical waste handled according to the "Code of Practice on the Packaging, Handling and Storage of Chemical Waste"?	✓				

MARINE ECOLOGY

Ref	Checklist Condition	N/A	Yes	No	Unk	Remarks
EM&A: MI	Are rubble mound seawalls constructed for the landing and launching points at Lamma Island?	✓				

NOISE

Ref	Checklist Condition	N/A	Yes	No	Unk	Remarks
EM&A: L1	Are quiet PME's or standard PME's with modest source noise controls used at the cable route from N4 to N5?	✓				
EM&A: L2 ~ L5	Are quiet PME's (particularly the barge-mounted crane) or PME's with comparably effective source noise controls used at landing point N5?	✓				
NCO	Are valid construction noise permits, if required, available for inspection?	✓				
NCO	Are conditions of construction noise permits, if any, for the relevant part(s) of the works implemented accordingly?	✓				
NCO	Are valid noise emission labels fixed at air compressors and hand held percussive breakers?	✓				

TERRESTRIAL ECOLOGY

Ref	Checklist Condition	N/A	Yes	No	Unk	Remarks
EM&A: O1	Are the construction activities at landing points N4 & N5 closely monitored to avoid impact on the uncommon and rare plant species <i>Celtis biondii</i> , <i>Pteris dispar</i> and <i>Ardicia pusilla</i> , and the restricted plants <i>Vitis balansaeana</i> , <i>Pterospermum heterophyllum</i> and <i>Rhapis excelsa</i> ?		✓			
EM&A: O2	Are fences erected in accordance with the Hoarding Plan and kept in good condition along the boundary of construction sites to prevent tipping, vehicle movements, and encroachment of personnel into adjacent wooded areas, particularly where the rare, uncommon and restricted plant species are located?		✓			
EM&A: Q3	Has regular checking been performed to ensure that the work site boundaries are not exceeded and that no damage occurs to surrounding areas?		✓			
EM&A: Q4	Is open fire prohibited and prevented within the work site boundary during construction? Is temporary fire fighting equipment provided in the work area during construction?		✓			
	Major noise source(s)		✓			Construction activities inside the site
						Others:

The Hongkong Electric Co. Ltd.
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Weekly Site Inspection Checklist

Inspection date Time Inspected by

 Site Transmission Route (Civil Work)

Weather

Condition Sunny Fine Overcast Hazy Drizzle Rain Storm
Temperature °C **Humidity** High Moderate Low
Wind Calm Light Breeze Strong

GENERAL

Ref.	Checklist Condition	N/A	Yes	No	Unk	Remarks
VEP 1.5	Has a copy of the most updated Environmental Permit been displayed at all vehicular site entrances/exits for public information?		✓			
VEP 1.6	Is a copy of EIA report kept in Engineers' and Contractors' offices on site?		✓			

AIR QUALITY

Ref.	Checklist Condition	N/A	Yes	No	Unk	Remarks
General Requirements						
Cap311R:	Has the contractors notified EPD of the construction site which is classified as a notifiable work in a specified form? If there is any change in the notice? If yes, did the contractors notify EPD of the change?	✓				
Cap311R: Sch 12(3)	A compressed air jet shall not be used for cleaning or clearing dust from any vehicle, equipment, other materials or person. Has this been observed?	✓				
Stockpiling of dusty materials						
Cap311R: Sch 18 EM&A:J1	Are stockpiles of dusty materials entirely covered with impervious sheets or sheltered on the top and 3 sides or sprayed with water to maintain the entire surface wet to prevent dust emission?		✓			
Use of vehicles						
Cap311R: Sch 21(2)	Is every load of dusty material on the vehicles leaving the construction site covered entirely by clean impervious sheeting?	✓				
Miscellaneous						
Cap311R: Sch 16	Are completed earthworks sealed and hydrosceded and planted as soon as possible?	✓				

Ref.	Checklist Condition	N/A	Yes	No	Unk	Remarks
Cap311O	Is open burning prohibited?		✓			
Cap311	Is black smoke emission from plant/equipment avoided?		✓			

WASTE/CHEMICAL WASTE MANAGEMENT

Ref	Checklist Condition	N/A	Yes	No	Unk	Remarks
Dredged Materials						
Cap466	Does the appropriate contractor possess valid dumping permits for dredged marine mud and have them available for inspection?	✓				
Cap466	Are wastes disposed of at licensed sites?	✓				
Construction Waste and Excavated Materials						
Cap354	Does the Contractor possess a valid Public Dumping License for construction waste and excavated materials and make it available for inspection?	✓				
Cap354	Are wastes disposed of at licensed sites?	✓				
Chemical Waste						
Cap354C	Has the contractor obtained the necessary disposal permits from the relevant authority, if required, according to Waste Disposal (Chemical Waste) (General Regulation)?	✓				
Cap354C	Has the Contractor registered as a chemical waste producer?		✓			
Cap354C	Is chemical waste handled according to the "Code of Practice on the Packaging, Handling and Storage of Chemical Waste"?	✓				

MARINE ECOLOGY

Ref	Checklist Condition	N/A	Yes	No	Unk	Remarks
EM&A: M1	Are rubble mound seawalls constructed for the landing and launching points at Lamma Island?	✓				

NOISE

Ref	Checklist Condition	N/A	Yes	No	Unk	Remarks
EM&A: L1	Are quiet PMEs or standard PMEs with modest source noise controls used at the cable route from N4 to N5?	✓				
EM&A: L2 ~ L5	Are quiet PMEs (particularly the barge-mounted crane) or PMEs with comparably effective source noise controls used at landing point N5?	✓				
NCO	Are valid construction noise permits, if required, available for inspection?	✓				
NCO	Are conditions of construction noise permits, if any, for the relevant part(s) of the works implemented accordingly?	✓				
NCO	Are valid noise emission labels fixed at air compressors and hand held percussive breakers?	✓				

TERRESTRIAL ECOLOGY

Ref	Checklist Condition	N/A	Yes	No	Unk	Remarks
EM&A: O1	Are the construction activities at landing points N4 & N5 closely monitored to avoid impact on the uncommon and rare plant species <i>Celtis biondii</i> , <i>Pteris dispar</i> and <i>Ardicia pusilla</i> , and the restricted plants <i>Vitis balansaeana</i> , <i>Pterospermum heterophyllum</i> and <i>Rhapis excelsa</i> ?		✓			
EM&A: O2	Are fences erected in accordance with the Hoarding Plan and kept in good condition along the boundary of construction sites to prevent tipping, vehicle movements, and encroachment of personnel into adjacent wooded areas, particularly where the rare, uncommon and restricted plant species are located?		✓			
EM&A: Q3	Has regular checking been performed to ensure that the work site boundaries are not exceeded and that no damage occurs to surrounding areas?		✓			
EM&A: Q4	Is open fire prohibited and prevented within the work site boundary during construction? Is temporary fire fighting equipment provided in the work area during construction?		✓			

	Major noise source(s)	Traffic	✓	Construction activities inside the site		
		Construction activities outside the site		Others:		

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Weekly Site Inspection Checklist

Inspection date Time Inspected by

Site Transmission Route (Civil Work)

Weather

Condition Sunny Fine Overcast Hazy Drizzle Rain Storm

Temperature °C **Humidity** High Moderate Low

Wind Calm Light Breeze Strong

GENERAL

Ref.	Checklist Condition	N/A	Yes	No	Unk	Remarks
VEP 1.5	Has a copy of the most updated Environmental Permit been displayed at all vehicular site entrances/exits for public information?		✓			
VEP 1.6	Is a copy of EIA report kept in Engineers' and Contractors' offices on site?		✓			

AIR QUALITY

Ref.	Checklist Condition	N/A	Yes	No	Unk	Remarks
General Requirements						
Cap311R:	Has the contractors notified EPD of the construction site which is classified as a notifiable work in a specified form? If there is any change in the notice? If yes, did the contractors notify EPD of the change?	✓				
Cap311R: Sch 12(3)	A compressed air jet shall not be used for cleaning or clearing dust from any vehicle, equipment, other materials or person. Has this been observed?	✓				
Stockpiling of dusty materials						
Cap311R: Sch 18 EM&A:J1	Are stockpiles of dusty materials entirely covered with impervious sheets or sheltered on the top and 3 sides or sprayed with water to maintain the entire surface wet to prevent dust emission?		✓			
Use of vehicles						
Cap311R: Sch 21(2)	Is every load of dusty material on the vehicles leaving the construction site covered entirely by clean impervious sheeting?	✓				
Miscellaneous						
Cap311R: Sch 16	Are completed earthworks sealed and hydroseeded and planted as soon as possible?	✓				

Ref.	Checklist Condition	N/A	Yes	No	Unk	Remarks
Cap311O	Is open burning prohibited?		✓			
Cap311	Is black smoke emission from plant/equipment avoided?		✓			

WASTE/CHEMICAL WASTE MANAGEMENT

Ref	Checklist Condition	N/A	Yes	No	Unk	Remarks
Dredged Materials						
Cap466	Does the appropriate contractor possess valid dumping permits for dredged marine mud and have them available for inspection?	✓				
Cap466	Are wastes disposed of at licensed sites?	✓				
Construction Waste and Excavated Materials						
Cap354	Does the Contractor possess a valid Public Dumping License for construction waste and excavated materials and make it available for inspection?	✓				
Cap354	Are wastes disposed of at licensed sites?	✓				
Chemical Waste						
Cap354C	Has the contractor obtained the necessary disposal permits from the relevant authority, if required, according to Waste Disposal (Chemical Waste) (General Regulation)?	✓				
Cap354C	Has the Contractor registered as a chemical waste producer?		✓			
Cap354C	Is chemical waste handled according to the "Code of Practice on the Packaging, Handling and Storage of Chemical Waste"?	✓				

MARINE ECOLOGY

Ref	Checklist Condition	N/A	Yes	No	Unk	Remarks
EM&A: M1	Are rubble mound seawalls constructed for the landing and launching points at Lamma Island?	✓				

NOISE

Ref	Checklist Condition	N/A	Yes	No	Unk	Remarks
EM&A: L1	Are quiet PME's or standard PME's with modest source noise controls used at the cable route from N4 to N5?	✓				
EM&A: L2 ~ L5	Are quiet PME's (particularly the barge-mounted crane) or PME's with comparably effective source noise controls used at landing point N5?	✓				
NCO	Are valid construction noise permits, if required, available for inspection?	✓				
NCO	Are conditions of construction noise permits, if any, for the relevant part(s) of the works implemented accordingly?	✓				
NCO	Are valid noise emission labels fixed at air compressors and hand held percussive breakers?	✓				

TERRESTRIAL ECOLOGY

Ref	Checklist Condition	N/A	Yes	No	Unk	Remarks
EM&A: O1	Are the construction activities at landing points N4 & N5 closely monitored to avoid impact on the uncommon and rare plant species <i>Celtis biondii</i> , <i>Pteris dispar</i> and <i>Ardicia pusilla</i> , and the restricted plants <i>Vitis balansaeana</i> , <i>Pterospermum heterophyllum</i> and <i>Rhapis excelsa</i> ?		✓			
EM&A: O2	Are fences erected in accordance with the Hoarding Plan and kept in good condition along the boundary of construction sites to prevent tipping, vehicle movements, and encroachment of personnel into adjacent wooded areas, particularly where the rare, uncommon and restricted plant species are located?		✓			
EM&A: Q3	Has regular checking been performed to ensure that the work site boundaries are not exceeded and that no damage occurs to surrounding areas?		✓			
EM&A: Q4	Is open fire prohibited and prevented within the work site boundary during construction? Is temporary fire fighting equipment provided in the work area during construction?		✓			
	Major noise source(s)	Traffic	✓	Construction activities inside the site		
		Construction activities outside the site		Others:		

The Hongkong Electric Co. Ltd.
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Weekly Site Inspection Checklist

Inspection date Time Inspected by
 Contractor:
 Site Transmission Route (Civil Work)

Weather

Condition Sunny Fine Overcast Hazy Drizzle Rain Storm
Temperature °C **Humidity** High Moderate Low
Wind Calm Light Breeze Strong

GENERAL

Ref.	Checklist Condition	N/A	Yes	No	Unk	Remarks
VEP 1.5	Has a copy of the most updated Environmental Permit been displayed at all vehicular site entrances/exits for public information?		✓			
VEP 1.6	Is a copy of EIA report kept in Engineers' and Contractors' offices on site?		✓			

AIR QUALITY

Ref.	Checklist Condition	N/A	Yes	No	Unk	Remarks
General Requirements						
Cap311R:	Has the contractors notified EPD of the construction site which is classified as a notifiable work in a specified form? If there is any change in the notice? If yes, did the contractors notify EPD of the change?	✓				
Cap311R: Sch 12(3)	A compressed air jet shall not be used for cleaning or clearing dust from any vehicle, equipment, other materials or person. Has this been observed?	✓				
Stockpiling of dusty materials						
Cap311R: Sch 18 EM&A:J1	Are stockpiles of dusty materials entirely covered with impervious sheets or sheltered on the top and 3 sides or sprayed with water to maintain the entire surface wet to prevent dust emission?		✓			
Use of vehicles						
Cap311R: Sch 21(2)	Is every load of dusty material on the vehicles leaving the construction site covered entirely by clean impervious sheeting?	✓				
Miscellaneous						
Cap311R: Sch 16	Are completed earthworks scaled and hydroseeded and planted as soon as possible?	✓				

Ref.	Checklist Condition	N/A	Yes	No	Unk	Remarks
Cap311O	Is open burning prohibited?		✓			
Cap311	Is black smoke emission from plant/equipment avoided?		✓			

WASTE/CHEMICAL WASTE MANAGEMENT

Ref	Checklist Condition	N/A	Yes	No	Unk	Remarks
Dredged Materials						
Cap466	Does the appropriate contractor possess valid dumping permits for dredged marine mud and have them available for inspection?	✓				
Cap466	Are wastes disposed of at licensed sites?	✓				
Construction Waste and Excavated Materials						
Cap354	Does the Contractor possess a valid Public Dumping License for construction waste and excavated materials and make it available for inspection?	✓				
Cap354	Are wastes disposed of at licensed sited?	✓				
Chemical Waste						
Cap354C	Has the contractor obtained the necessary disposal permits from the relevant authority, if required, according to Waste Disposal (Chemical Waste) (General Regulation)?	✓				
Cap354C	Has the Contractor registered as a chemical waste producer?		✓			
Cap354C	Is chemical waste handled according to the "Code of Practice on the Packaging, Handling and Storage of Chemical Waste"?	✓				

MARINE ECOLOGY

Ref	Checklist Condition	N/A	Yes	No	Unk	Remarks
EM&A: M1	Are rubble mound seawalls constructed for the landing and launching points at Lamma Island?	✓				

NOISE

Ref	Checklist Condition	N/A	Yes	No	Unk	Remarks
EM&A: L1	Are quiet PMEs or standard PMEs with modest source noise controls used at the cable route from N4 to N5?	✓				
EM&A: L2 ~ L5	Are quiet PMEs (particularly the barge-mounted crane) or PMEs with comparably effective source noise controls used at landing point N5?	✓				
NCO	Are valid construction noise permits, if required, available for inspection?	✓				
NCO	Are conditions of construction noise permits, if any, for the relevant part(s) of the works implemented accordingly?	✓				
NCO	Are valid noise emission labels fixed at air compressors and hand held percussive breakers?	✓				

TERRESTRIAL ECOLOGY

Ref	Checklist Condition	N/A	Yes	No	Unk	Remarks
EM&A: O1	Are the construction activities at landing points N4 & N5 closely monitored to avoid impact on the uncommon and rare plant species <i>Celtis biondii</i> , <i>Pteris dispar</i> and <i>Ardicia pusilla</i> , and the restricted plants <i>Vitis balansaeana</i> , <i>Pterospermum heterophyllum</i> and <i>Rhapis excelsa</i> ?		✓			
EM&A: O2	Are fences erected in accordance with the Hoarding Plan and kept in good condition along the boundary of construction sites to prevent tipping, vehicle movements, and encroachment of personnel into adjacent wooded areas, particularly where the rare, uncommon and restricted plant species are located?		✓			
EM&A: Q3	Has regular checking been performed to ensure that the work site boundaries are not exceeded and that no damage occurs to surrounding areas?		✓			
EM&A: Q4	Is open fire prohibited and prevented within the work site boundary during construction? Is temporary fire fighting equipment provided in the work area during construction?		✓			
	Major noise source(s)	Traffic	✓	Construction activities inside the site		
		Construction activities outside the site		Others:		

Appendix H: Summary of EMIS

Transmission System – Civil Works (Part C of EIA Report)

Table H.1 Construction Phase Mitigation Measures and their Implementation

EM&A Log Ref.	Mitigation Measures	Implementation Status
	AIR QUALITY	
J1	To mitigate potential construction related dust impacts, the dust control measures stipulated under the Air Pollution Control (Construction Dust) Regulation shall be complied with, such as: <ul style="list-style-type: none"> all debris or materials shall be either covered or stored in a debris sheltered collection area; prior to any material handling, all dusty material shall be sprayed with water. 	
		C
		C
	WATER QUALITY	
K1	No mitigation measures are considered necessary.	N/A
	NOISE	
L1	N4-N5 Cable Route Selection and use of quiet PMEs, or use of modest source noise controls with standard PMEs	C
L2	N5 Landing Point Selection and use of quiet PMEs (particularly the barge-mounted crane), or use of comparably effective source noise controls with the PMEs;	C
L3	For non-percussive piling – use of equipment with a SWL of 113 dB(A) or less if there is no programme overlap of the piling with the site formation works, otherwise offsetting source noise controls shall be required.	N/A
L4	For percussive piling – use of equipment with a SWL of 115 dB(A) or less, otherwise, offsetting source noise controls shall be required.	N/A
L5	If non-percussive piling and site formation activities are to be carried out simultaneously then careful equipment selection and source controls shall be required for both activities to reduce each by approximately 3 dB(A).	N/A
	MARINE ECOLOGY	
M1	Construction of rubble mound seawalls for the landing and launching points at Lamma Island.	C
	FISHERIES	
N1	No fisheries-specific mitigation measures are required during the construction phase	N/A

EM&A Log Ref.	Mitigation Measures	Implementation Status
TERRESTRIAL ECOLOGY		
The following mitigation measures shall be implemented to protect the important plant species and minimizing disturbance to the surrounding environment through good construction practice, as recommended below:		
O1	Avoidance of impact on the uncommon and rare plant species <i>Celtis biondii</i> , <i>Pteris dispar</i> and <i>Ardicia pusilla</i> , and the restricted plants <i>Vitis balansaeana</i> , <i>Pterospermum heterophyllum</i> and <i>Rhapis excelsa</i> , by locating the landing points N4 & N5 and the connecting cable trough in areas outside where these plant species are located (Figures 9.4b & 9.4c, Part C, Volume 2), as well as close monitoring of the construction activity.	C
O2	The erection of fences along the boundary of construction sites before the commencement of works to prevent tipping, vehicle movements, and encroachment of personnel into adjacent wooded areas, particularly where the rare, uncommon and restricted plant species are located.	C
O3	Regular checking to ensue that the work site boundaries are not exceeded and that no damage occurs to surrounding areas.	C
O4	The prohibition and prevention of open fires within the work site boundary during construction and provision of temporary fire fighting equipment in the work area during construction.	C
LANDSCAPE AND VISUAL IMPACT		
P1	The visual impact of the Cable Landing Point II is considered negligible as it would have similar appearance as the existing sea wall and therefore no mitigation is required.	N/A
P2	The proposed landing points N2, N4 and N5, the following landscaping mitigation measures are recommended to minimize the potential impacts:	
	<ul style="list-style-type: none"> • Although the size of the landing points varies (N2 is 26x70m, N4 is 27x65m and N5 is 33x56m), each has a finished platform level at +6.00mPD. With the Low Water Level at +1.00mPD, the platforms shall be a maximum of some 5m above the water level at low tide. In order to minimize the visual impact of the landing points, the exposed sides of the platforms and the cable slipways shall be screened with irregularly arranged boulders of varying sizes to mimic the natural coastline features. The horizontal platform surface shall be finished with natural materials such as stone pavings or tiles. 	C
	<ul style="list-style-type: none"> • The cable trough in between Landing Points N4 and N5 is 5.5m wide and 260m long. The walkway that is formed above the cable trough shall be shielded by boulders (or, where practicable, shrub planting) from potential viewers from the sea and horizontal surfaces be finished with natural materials such as stone paving. 	N/A
<ul style="list-style-type: none"> • Appropriate compensatory landscaping shall be provided for any disruption to existing vegetation to blend in with the surrounding setting. 	N/A	

EM&A Log Ref.	Mitigation Measures	Implementation Status
	<ul style="list-style-type: none"> As a planning gain, parts of the landing points N4 and N5 and the cable trough between the landing points can be used for amenity and recreational purposes. Some low maintenance fixtures, matching with the natural environment, shall be built or placed on the landing points for public use. HEC shall resolve any management and maintenance requirements of the proposed mitigation measures during the processing stage of wayleave agreements. If required by Government, HEC commit to bear the management and maintenance responsibilities of these facilities. 	N/A

Remarks:

- C - Compliance with mitigation measure
- NC - Non-compliance with mitigation measure
- N/A - Not Applicable