



Capco 青山發電有限公司
Castle Peak Power Co. Ltd.

A Commercial Scale Wind Turbine Pilot Demonstration at Hei Ling Chau:

Environmental Monitoring and Audit Manual

ExxonMobil

November 2006

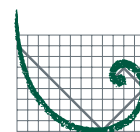
中華電力

CLPPower



Environmental Resources Management
21/F Lincoln House
Taikoo Place 979 King's Road
Island East Hong Kong
Telephone 2271 3000
Facsimile 2723 5660

www.erm.com



ERM

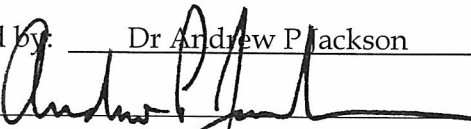
Delivering sustainable solutions in a more competitive world

CAPCO

A Commercial Scale Wind Turbine
Pilot Demonstration at Hei Ling Chau:
*Environmental Monitoring and Audit
Manual*

November 2006

Reference 0019313

For and on behalf of Environmental Resources Management	
Approved by:	Dr Andrew P Jackson
Signed:	
Position:	Managing Director
Date:	22 nd November 2006

This report has been prepared by Environmental Resources Management the trading name of 'ERM Hong-Kong, Limited', with all reasonable skill, care and diligence within the terms of the Contract with the client, incorporating our General Terms and Conditions of Business and taking account of the resources devoted to it by agreement with the client.

We disclaim any responsibility to the client and others in respect of any matters outside the scope of the above.

This report is confidential to the client and we accept no responsibility of whatsoever nature to third parties to whom this report, or any part thereof, is made known. Any such party relies on the report at their own risk.

CONTENTS

1	INTRODUCTION	1
1.1	PURPOSE OF THE MANUAL	1
1.2	PROJECT DESCRIPTION	1
1.3	OBJECTIVES OF THE EM&A PROGRAMME	2
1.4	SCOPE OF THE EM&A PROGRAMME	3
1.5	ORGANISATION AND STRUCTURE OF THE EM&A	4
1.6	STRUCTURE OF THE EM&A MANUAL	7
2	EM&A GENERAL REQUIREMENTS	8
2.1	INTRODUCTION	8
2.2	EM&A	8
3	NOISE	12
3.1	INTRODUCTION	12
3.2	NOISE GENERATION ACTIVITIES	12
3.3	ENVIRONMENTAL MONITORING AND AUDIT	13
4	ECOLOGY	22
4.1	INTRODUCTION	22
4.2	MITIGATION MEASURES	22
4.3	ENVIRONMENTAL MONITORING AND AUDIT	23
5	LANDSCAPE AND VISUAL	26
5.1	GENERAL	26
5.2	LANDSCAPE	26
5.3	VISUAL	27
6	WATER QUALITY	28
6.1	INTRODUCTION	28
6.2	ENVIRONMENTAL MONITORING AND AUDIT	28
6.3	MITIGATION MEASURES	28
7	WASTE MANAGEMENT	30
7.1	GENERAL	30
7.2	MITIGATION MEASURES	30
7.3	SITE AUDIT/INSPECTION	31
8	SITE ENVIRONMENTAL AUDIT	32
8.1	SITE INSPECTION	32
8.2	COMPLIANCE WITH LEGAL AND CONTRACTUAL REQUIREMENTS	33

9	<i>REPORTING</i>	34
9.1	<i>GENERAL</i>	34
9.2	<i>MONTHLY EM&A REPORTS (CONSTRUCTION PHASE)</i>	34
9.3	<i>OPERATION PHASE MONITORING</i>	37
9.4	<i>FINAL EM&A SUMMARY REPORT</i>	37
9.5	<i>DATA KEEPING</i>	38
9.6	<i>INTERIM NOTIFICATION OF ENVIRONMENTAL QUALITY LIMIT EXCEEDANCES</i>	39

ANNEXES

<i>Annex A</i>	<i>Implementation Schedule</i>
<i>Annex B</i>	<i>Complaint Proforma</i>

1.1 PURPOSE OF THE MANUAL

This Environmental Monitoring and Audit (EM&A) Manual (“the Manual”) has been prepared by ERM-Hong Kong, Limited (ERM) on behalf of Castle Peak Power Company Limited (CAPCO). The Manual is a supplementary document of the EIA Study of the project entitled “A Commercial Scale Wind Turbine Pilot Demonstration at Hei Ling Chau” (hereafter referred to as the Project).

The Manual has been prepared with reference to the *EIA Study Brief* (No. ESB-145/2006) and the *Technical Memorandum of the Environmental Impact Assessment Process (EIAO TM)*. The purpose of the Manual is to provide information, guidance and instruction to personnel charged with environmental duties and those responsible for undertaking EM&A work during construction and operation of the wind turbine. It provides systematic procedures for monitoring and auditing of potential environmental impacts that may arise from the works.

1.2 PROJECT DESCRIPTION

1.2.1 Background to the Study

CAPCO recognises the Government of the Hong Kong Special Administrative Region (HKSARG)’s efforts in exploring alternative power sources, including renewable energy, and in promoting public awareness of these alternatives. To this end, CAPCO has launched a commercial scale wind turbine pilot demonstration (hereafter referred to as wind turbine) to collect engineering and environmental information required, to investigate the economic, environmental and technical feasibility and practicality of wind energy application and to educate and raise the community’s awareness of the issues, costs, constraints, benefits, etc of wind energy generation in Hong Kong.

A rigorous site selection process has been conducted to identify suitable areas for the development of the wind turbine considering factors such as wind resource, environmental, physical, social and engineering considerations. The Hei Ling Chau site was identified as the preferred site for the wind turbine pilot demonstration.

The construction and operation of a wind turbine with capacity between 800kW and 1.3MW with design lifetime of 20 years in Hong Kong is classified as a Designated Project by virtue of Item D.1 of Part I of Schedule 2 under the *Environmental Impact Assessment Ordinance (Cap. 499) (EIAO)* and will therefore require an Environmental Permit (EP).

1.2.2

The Project

The works that are the subject of the EIA Study include the construction and operation of a 800kW to 1.3MW commercial scale wind turbine at the Project site at Hei Ling Chau (see *Figure 1.2a*). The key components of the Project include the following:

- site clearance and formation;
- pre-bored H-piling and construction of reinforced concrete foundation (about 9m x 9m x 2m) for the wind turbine;
- erection of wind turbine tower (up to 60m height, hub height about +130mPD, and tip blade height about 160mPD) by assembling pre-fabricated steel tower sections (in 3 sections, vary from about 17m to 23m each);
- installation of nacelle (up to 12m(l) x 4.5 m (h) x 3.6m (w)) and rotor blades (3-bladed with diameter of 30m) using the cranes;
- installation of step up transformer and substation;
- installation of transmission cables between the substation and the 11 kV supply grid; and
- testing and commissioning of the wind turbine system; and
- operation and maintenance of the wind turbine system.

In addition, minor enabling works are required to upgrade some sections of existing roads and creation of temporary access for the delivery of construction materials and equipment.

No marine works will be required for the construction and operation of the wind turbine.

1.2.3

Construction Programme

Once the EIA has been formally approved by Government, CAPCO will obtain an EP for construction and operation of the Project. It is scheduled to commence the construction works in 2007 and anticipated that the wind turbine will start operation in 2008.

1.3

OBJECTIVES OF THE EM&A PROGRAMME

The construction and operational impacts resulting from the implementation of the Project are specified in the *EIA Report*. The *EIA Report* also specifies mitigation measures that need to be implemented to ensure compliance with the required environmental criteria. These mitigation measures and their implementation requirements are presented in the Implementation Schedule (see *Annex A*). The EIA recommends that an environmental monitoring and

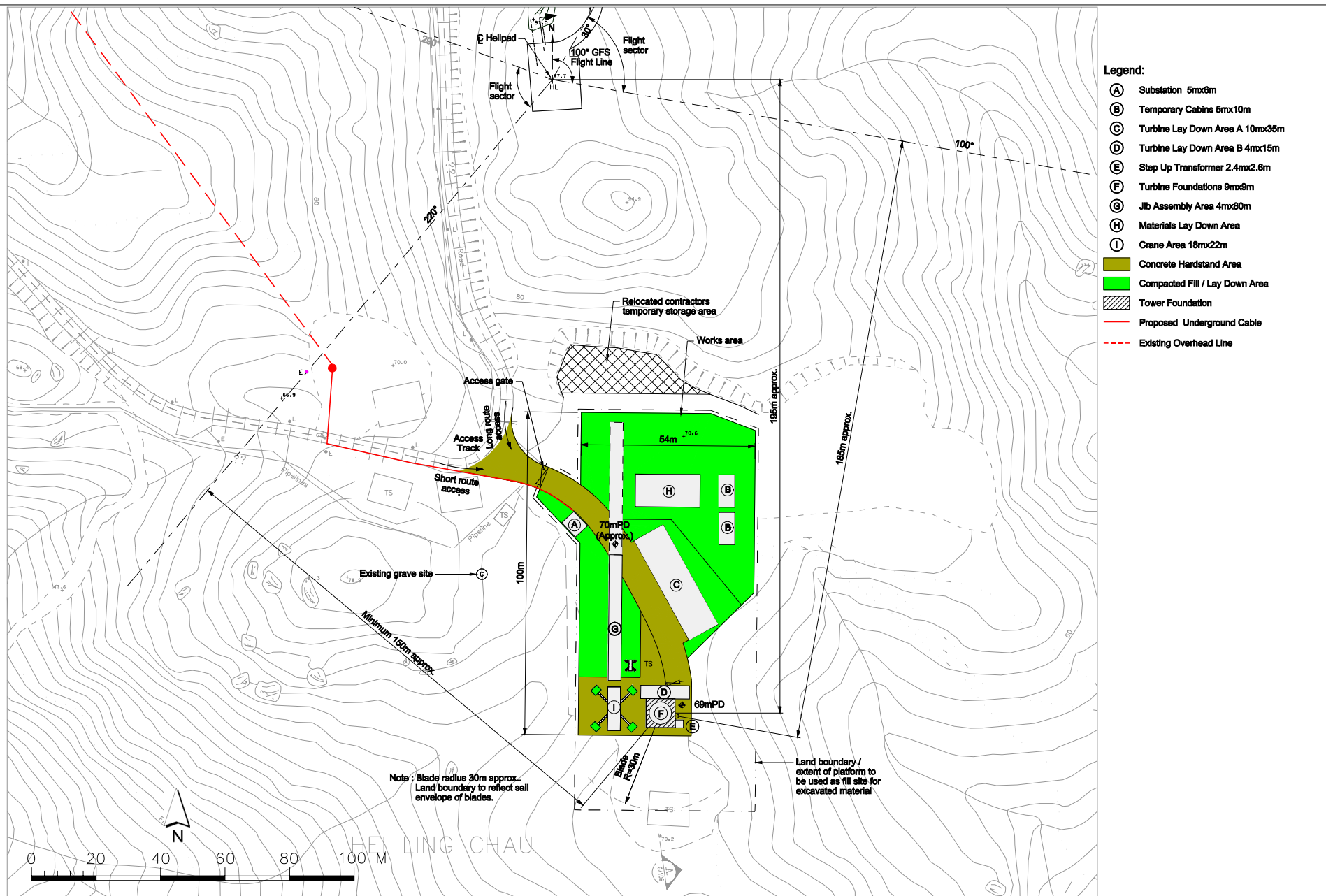


FIGURE 1.2a

Commercial Scale Wind Turbine Pilot Demonstration
Preliminary Site Arrangement for Hei Ling Chau Project Site

audit programme be implemented to assess the effectiveness of measures and to confirm that there will be no adverse environmental impacts during both construction and operation of the Project (particularly related to noise and ecology). It is also recommended that regular site audits be undertaken during construction phase to check whether the good construction site practices to prevent adverse waste and water quality impacts are properly implemented. Any activities which have a potential to cause adverse environmental impacts are identified before the adverse impacts occurred. Ad-hoc visits to the impacted sites will also be undertaken in response to any complaints or reported non-compliance on environmental standards in order to enable prompt actions to rectify any malpractice.

This Manual provides the EM&A requirements that have been recommended in the *EIA Report* in order to ensure compliance with the specified mitigation measures. The main objectives of the EM&A programme are to:

- provide a database against which any short or long term environmental impacts of the Project can be determined;
- provide an early indication should any of the environmental control measures or practices fail to achieve the acceptable standards;
- monitor the performance of the Project and the effectiveness of mitigation measures;
- verify the environmental impacts predicted in the *EIA Report*;
- determine Project compliance with regulatory requirements, standards and government policies;
- take remedial action if unexpected problems or unacceptable impacts arise; and
- provide data against which environmental audits may be undertaken.

1.4 SCOPE OF THE EM&A PROGRAMME

The scope of the EM&A programme is to:

- implement monitoring and site audit requirements for noise monitoring programme;
- implement monitoring and site audit requirements for ecology monitoring programme;
- implement inspection requirements for mitigation measures;
- liaise with, and provide environmental advice (as requested or when otherwise necessary) to construction site staff on the comprehension and consequences of the environmental audit;

- identify and resolve environmental issues and other functions as they may arise from the construction works;
- check and quantify the Contractor's overall environmental performance, and remedial actions taken to mitigate adverse environmental effects as they may arise from the works;
- conduct monthly reviews of monitored impact data as the basis for assessing compliance with the defined criteria and to ensure that necessary mitigation measures are identified and implemented, and to undertake additional *ad hoc* monitoring and auditing as required by special circumstances;
- evaluate and interpret all environmental monitoring data to provide an early indication should any of the environmental control measures or practices fail to achieve the acceptable standards, and to verify the environmental impacts predicted in the *EIA Report*;
- manage and liaise with other individuals or parties concerning other environmental issues deemed to be relevant to the construction process;
- conduct regular site audits/inspections of a formal or informal nature to assess:
 - the level of the Contractor's general environmental awareness;
 - the Contractor's implementation of the recommendations in the *EIA Report*;
 - the Contractor's performance as measured by the EM&A;
 - the need for specific mitigation measures to be implemented or the continued usage of those previously agreed;
 - to advise the site staff of any identified potential environmental issues; and
 - submit monthly EM&A reports which summarise project monitoring and auditing data, with full interpretation illustrating the acceptability or otherwise of any environmental impacts and identification or assessment of the implementation status of agreed mitigation measures.

1.5 ORGANISATION AND STRUCTURE OF THE EM&A

1.5.1 General

The Proponent (CAPCO) will appoint an Environmental Team (ET) to conduct monitoring and auditing works and to provide specialist advice on undertaking and implementation of environmental responsibilities.

The ET will have previous relevant experience with managing similarly sized EM&A programmes, particularly concerning noise and ecological impacts,

and the Environmental Team Leader (ET Leader) will be a recognized environmental professional, preferably with a minimum of seven years relevant experience in impact assessments and impact monitoring programmes.

With the consideration of the reasons listed below, as well as the small-scale nature of the Project and low magnitude of expected impacts, it is not considered necessary to appoint an Independent Environmental Consultant to act as an “Independent Environmental Checker” (IEC) to verify and validate the environmental performance of the Contractor and the Environmental Team appointed by the Proponent:

- Low complexity, reliability and implementation experience of proposed mitigation measures;
- Low significance, short duration and reversibility of the impacts due to the Project; and
- No complicated monitoring and auditing exercise and results to validate.

1.5.2 Project Organisation

The roles and responsibilities of the various parties involved in the EM&A process are further expanded in the following sections. The ET Leader will be responsible for, and in charge of, the Environmental Team; and will be the person responsible for executing the EM&A requirements.

CAPCO

CAPCO will:

- appoint an ET, as necessary, to undertake monitoring, audit works and reporting of the EM&A requirements outlined in this Manual;
- provide assistance to the ET in conducting the required environmental monitoring;
- participate in the site inspections undertaken by the ET, as required, and undertake any necessary corrective actions;
- provide information/advice to the ET regarding works activities which may contribute, or be contributing to the generation of adverse environmental conditions;
- implement measures to reduce impact where any applicable Action and Limit levels are exceeded; and
- take responsibility and strictly adhere to the guidelines of the EM&A programme and complementary protocols developed by their project staff.

The Contractor(s)

The Contractor(s) will:

- work within the scope of the construction contract and other tender conditions;
- provide assistance to the ET in carrying out monitoring;
- submit proposals on mitigation measures in case of exceedances of Action and Limit levels in accordance with the Event and Action Plans;
- implement measures to reduce impact where Action and Limit levels are exceeded;
- implement measures to reduce impact where Action and Limit levels are exceeded;
- implement the corrective actions instructed by CAPCO and the ET;
- participate in the site inspections undertaken by the ET and undertake any corrective actions instructed by CAPCO and the ET Leader; and
- adhere to the procedures for carrying out complaint investigation.

Environmental Team

The duties of the ET are to:

- monitor the various environmental parameters as required by this or subsequent revisions to the Manual;
- assess the EM&A data and review the success of the EM&A programme determining the adequacy of the mitigation measures implemented and the validity of the EIA predictions as well as identify any adverse environmental impacts before they arise;
- conduct site inspections to investigate and inspect the construction equipment and work methodologies with respect to pollution control and environmental mitigation, monitor compliance with environmental protection specifications, and to anticipate environmental issues that may require mitigation before the problem arises;
- audit the environmental monitoring data and report the status of the general site environmental conditions and the implementation of mitigation measures resulting from site inspections;
- review working programme and methodology, and comment as necessary;
- investigate and evaluate complaints, and identify corrective measures;

- advice to the on environmental improvement, awareness, enhancement matters, etc, on site;
- report on the environmental monitoring and audit results and the wider environmental issues and conditions to the Contractor(s), CAPCO and the EPD;
- adhere to the agreed protocols or those in the Contract Specifications in the event of exceedances or complaints; and
- the ET Leader will keep a contemporaneous log-book and record each and every instance or circumstance or change of circumstances which may affect the environmental impact assessment and every non-conformance with the recommendations of the EIA Reports or the EPs.

The ET will be led and managed by the ET Leader. The ET Leader will have relevant education, training, knowledge, experience and professional qualifications. Suitable qualified staff will be included in the ET, and the ET should not be in any way an associated body of the Contractor(s).

1.6 *STRUCTURE OF THE EM&A MANUAL*

The remainder of the Manual is set out as follows:

- *Section 2* sets out the EM&A general requirements;
- *Section 3* details the requirements for noise monitoring;
- *Section 4* details the requirements for ecology impact monitoring, and lists relevant monitoring methodologies, submissions, compliance and Event and Action Plans (EAPs);
- *Section 5* details the requirements for landscape and visual impacts mitigation measures;
- *Section 6* details the requirements for controlling water quality impacts;
- *Section 7* details the requirements for waste management;
- *Section 8* describes the scope and frequency of site auditing; and
- *Section 9* details the EM&A reporting requirements.

The Manual is an evolving document that should be updated to maintain its relevance as the Project progresses. The primary focus for these updates will be to ensure the impacts predicted and the recommended mitigation measures remain consistent and appropriate to the manner in which the works are to be carried out.

2.1 INTRODUCTION

In this section, the general requirements of the EM&A programme are presented with reference to the findings and recommendations of the *EIA Report* that have formed the basis of the scope and content of the programme.

2.2 EM&A

Key environmental issues associated with the construction of the Project will be addressed through monitoring and controls specified in the Manual and Contract Specification. Noise and ecology will be subject to EM&A, the details of which are outlined in *Sections 3 and 5*, respectively.

The monitoring of the effectiveness of the mitigation measures will be achieved through site inspections/audits. The inspections will include within their scope, mechanisms to review and assess the Contractor's environmental performance, ensuring that the recommended mitigation measures have been properly implemented, and that timely resolution of received complaints are managed and controlled in a manner consistent with the recommendations of the *EIA Report*.

2.2.1 Environmental Monitoring

Impact and operational monitoring will be carried out by the Environmental Team. Monitoring work is focussed on construction and operational noise impact to identified noise sensitive receivers and on ecology, specifically construction phase impacts to the Common Rat Snake and Bodagek's Burrowing Lizard and operation phase impacts to birds. These are discussed in *Sections 3 and 4* of this Manual.

2.2.2 Event and Action Plans

The purpose of the Event and Action Plans (EAPs) is to provide, in association with the monitoring and audit activities, procedures for ensuring that if any significant environmental incident (either accidental or through inadequate implementation of mitigation measures on the part of the Contractor) does occur, the cause will be quickly identified and remediated, and the risk of a similar event recurring is reduced.

2.2.3 Site Inspections/Audits

In addition to monitoring ecology and noise as a means of assessing the ongoing performance of the construction works, the ET will undertake site inspections and audits of on-site practices and procedures. The primary objective of the inspection and audit programme will be to assess the effectiveness of the environmental controls established by the construction

team(s) and the implementation of the environmental mitigation measures recommended in the *EIA Report*.

The findings of site inspections and audits will be made known to the Contractor at the time of the inspection to enable the rapid resolution of identified non-compliances. Non-compliances, and the corrective actions undertaken, shall also be reported in the monthly EM&A reports.

Section 8 of this Manual presents details of the scope and frequency of on-site inspections and defines the range of issues that the audit protocols should be designed to address.

2.2.4 *Enquiries, Complaints and Requests for Information*

Enquiries, complaints and requests for information can be expected from a wide range of individuals and organisations including members of the public, Government departments, the press and television media and community groups.

All enquiries concerning the environmental effects of the works, irrespective of how they are received, will be reported to CAPCO and directed to the ET who will set up procedures for handling, investigation and storage of such information. The following steps will then be followed:

- 1) The ET Leader will notify CAPCO of the nature of the enquiry.
- 2) An investigation will be initiated to determine the validity of the complaint and to identify the source of the problem.
- 3) The Contractor(s) will undertake the following steps, as necessary:
 - investigate and identify source of the problem;
 - if considered necessary by CAPCO, undertake additional monitoring to verify the existence and severity of the alleged complaint;
 - identify necessary remedial measures and implement as soon as possible;
 - repeat the monitoring to verify effectiveness of mitigation measures; and
 - repeat review procedures to identify further possible areas of improvement if the repeat monitoring results continue to substantiate the complaint.
- 4) The outcome of the investigation and the action taken will be documented on a complaint proforma (see *Annex B*). A formal response to each complaint received will be prepared by the Contractor(s) within a maximum of five working days and submitted to CAPCO, in order to notify the concerned person(s) that action has been taken.

- 5) All enquiries which trigger this process will be reported in the monthly reports which shall include results of inspections undertaken by the contractor, and details of the measures taken, and additional monitoring results (if deemed necessary). It should be noted that the receipt of complaint or enquiry will not be, in itself, a sufficient reason to introduce additional mitigation measures.

In all cases the complainant will be notified of the findings, and audit procedures shall be put in place to ensure that the problem does not recur.

2.2.5 *Reporting*

With respect to the identified potential impacts and the nature (including general site audits at monthly intervals during construction phase, noise monitoring for both construction and operation phases, and bird collision monitoring during the operation phase, see below) and frequency (weekly, biweekly or monthly) of the monitoring and audit to be undertaken, it is considered that real-time reporting of the monitoring data is not applicable.

Monthly reports submitted to the Contractor(s), CAPCO, EPD and AFCD will be prepared by the ET and verified by the ET Leader. The monthly reports will be prepared and submitted within 10 working days of the end of each reporting month. Additional details on reporting protocols are presented in *Section 9*.

2.2.6 *Cessation of EM&A*

The ET will continue to carry out environmental monitoring and site inspection/audit until completion of the construction works and the specified operation phase monitoring period.

This page is intentionally left blank.

3.1 INTRODUCTION

The general requirements, methodology, equipment, and mitigation measures for the monitoring and audit of noise impacts associated with the construction and operation of the Project are described below.

3.2 NOISE GENERATION ACTIVITIES

3.2.1 Construction Phase

The main construction activities to cause noise impacts are:

- Construction of the temporary steel platform and bridge at the Short Access Route;
- Enabling works along the Long Access Route; and
- Construction works at Project Site.

3.2.2 Operational Phase

The sources of noise emitted from the operating the wind turbine include the rotation of mechanical and electrical equipment and aerodynamic noise originating from the flow of air around the blades.

3.2.3 Noise Sensitive Receivers

All NSRs, as defined by EIAO-TM, and the nearest NSRs have been identified. The locations of the NSRs have been shown in *Figure 3.2a* and *Table 3.2a*. No planned NSR is identified within 2 km of the Project Site.

Table 3.2a Identified Noise Sensitive Receivers

NSR	Location	No. of Floors	Distance to the Project Site (m)
N1	Hei Ling Chau Correctional Institution	1	740m
N2	Hei Ling Chau Addiction Treatment Centre (Annex)	1	380m
N3 (a)	Staff Quarters	1	Approx. 2,000m
Note:			
(a) Only applicable for assessment of the construction noise impacts associated with the enabling works along the Long Access Route. It is a bungalow type accommodation not designed for family units. Site visit indicated that the quarter has not been occupied for sometime			

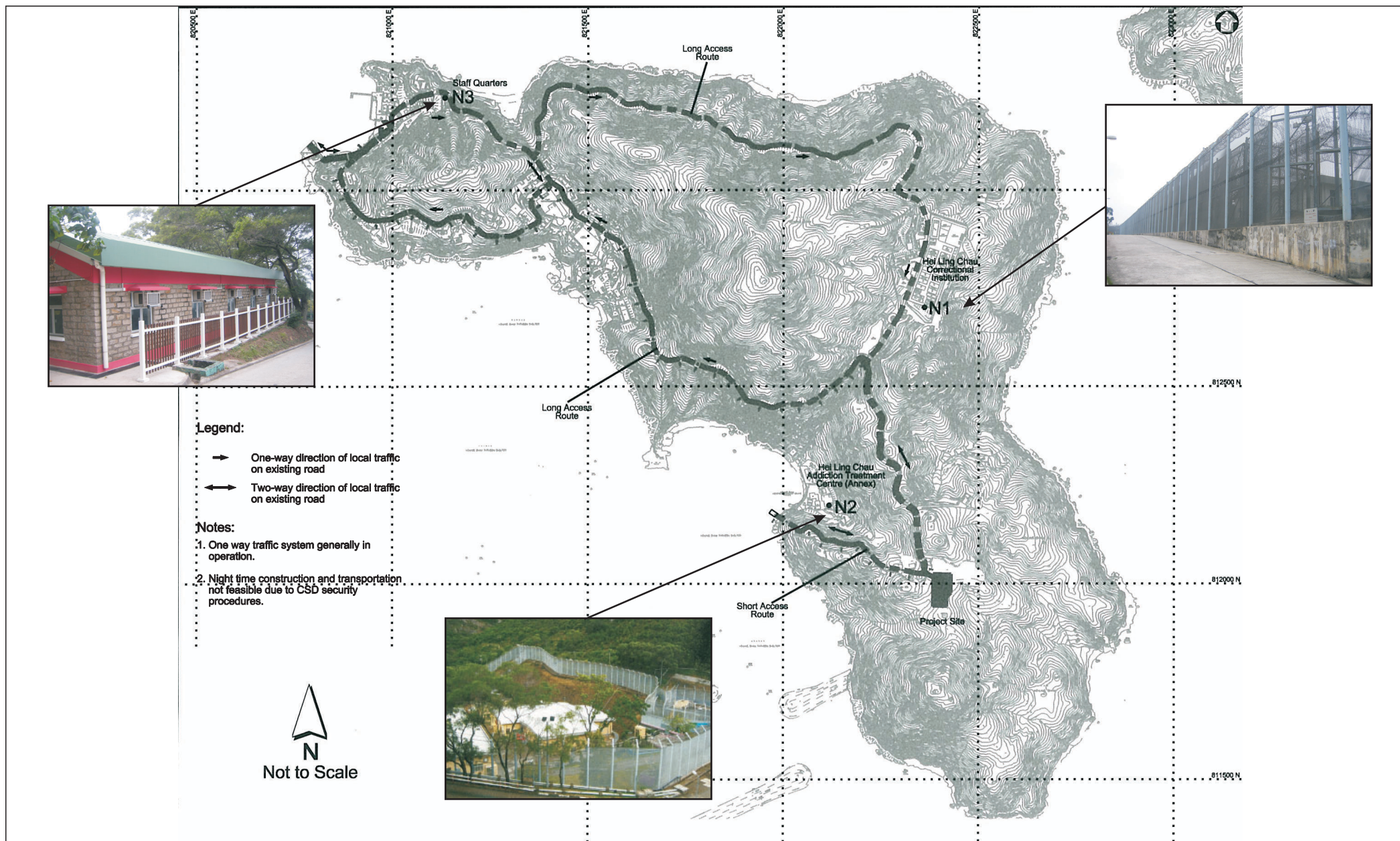


Figure 3.2a

Location of Noise Sensitive Receivers (NSRs)

3.3 ENVIRONMENTAL MONITORING AND AUDIT

3.3.1 Methodology and Criteria

Construction Phase

The construction noise level will be measured in terms of the A-weighted equivalent continuous sound pressure level (L_{eq}) for a period of 30 minutes between 07:00 and 19:00 hours on normal weekdays. For all other time periods, $L_{eq, 15 \text{ minutes}}$ will be employed for comparison with the *Noise Control Ordinance (NCO)* criteria.

Whilst the *NCO* does not provide the statutory control of construction activities occurring on weekdays during normal working hours (i.e. Monday to Saturday inclusive 07:00-19:00 hours), a day-time standard of 75dB(A) $L_{eq, 30 \text{ minute}}$ stipulated in Annex 5 of the *Technical Memorandum on Environmental Impact Assessment Process (EIAO-TM)* shall be used as the appropriate criterion for all residential dwellings.

The *NCO* provides statutory controls on general construction works during restricted hours (i.e. 19:00-07:00 hours Monday to Saturday and at any time on Sundays and public holidays). The Acceptable Noise Levels (ANLs) for evenings and holidays and for night-time are dependent on the Area Sensitivity Rating at the NSR. The relevant ANLs are provided in *Table 3.3a*.

Table 3.3a ANLs to be used as Construction Noise Criteria

Time period	Area Sensitivity Rating (dB(A))		
	A	B	C
All days during the evening (ie 19:00-23:00 hrs) and general holidays (including Sundays) during the day and evening (ie 07:00-23:00 hrs)	60	65	70
All days during the night-time (ie 23:00-07:00 hrs)	45	50	55

As the Project Site is located in a rural area and no influencing factors affect the NSRs, an ASR of "A" has been assigned.

Operational Phase

The *EIAO-TM* and *Technical Memorandum on Noise From Places Other than Domestic Premises, Public Places or Construction Sites (IND-TM)* specifies the applicable Acceptable Noise Levels (ANLs) for operational noise of wind turbine system. The ANLs are dependent on the Area Sensitivity Rating (ASR) and the time of the day and are presented in *Table 3.3b*.

Table 3.3b ANLs to be used as Operation Noise Criteria

Time Period	$L_{Aeq 30min}$ (dB(A))		
	ASR "A"	ASR "B"	ASR "C"
Daytime 07:00-19:00	60	65	70
Evening 19:00-23:00	60	65	70
Night-time 23:00-07:00	50	55	60

Fixed Plant Noise

Noise associated with the operation of wind turbine is controlled under Section 13 of the *NCO* and the predictions will be undertaken in accordance with the *IND-TM*. The criteria noise limits are set out in the *EIAO-TM* as follows:

- the total fixed source noise level at the facade of the nearest NSR is at least 5 dB(A) lower than the appropriate ANL (as shown in *Table 5.4*) as specified in the *Technical Memorandum on Noise from Places other than Domestic Premises, Public Places or Construction Sites (IND-TM)*; or,
- where the prevailing noise level in the area is 5 dB(A) or more below the appropriate ANL, the total fixed source noise level must not exceed this noise level.

The criteria noise limits stipulated in the *IND-TM* are dependent on the Area Sensitivity Rating (ASR) of the NSRs as shown in *Table 3.3b*.

As the Project Site is located in a rural area and no influencing factors affect the NSRs, an ASR of "A" has been assigned. Background noise measurement has been conducted to investigate the prevailing noise level in the Study Area. A 24-hour continuous measurement of prevailing free field noise levels in the vicinity of Hei Ling Chau Correctional Institution (N1) gave levels in the range 42 to 56 dB(A) $L_{eq, 30min}$. With the inclusion of façade correction, the measured prevailing noise level will be equal to the (ANL – 5) criterion, and therefore the (ANL – 5) criterion, ie 45 dB(A) $L_{eq, 30min}$ for night-time period will be considered as the stipulated noise limit for the assessment of operational noise impact.

3.3.2 Monitoring Equipment

The Environmental Team (ET) will be responsible for providing and maintaining a sufficient number of sound level meters to conduct the necessary impact monitoring and *ad hoc* monitoring at the agreed monitoring location.

Sound level meters and calibrators will comply with the *International Electrotechnical Commission (IEC) Publication 651 : 1979 (Type 1) and 804 : 1985 (Type 1)* specification as referred to in the *GW-TM & IND-TM*. The sound level meters will be supplied and used with the manufacturers recommended wind shield and with a tripod.

The calibration of the sound level meters will be carried out in accordance with the manufacturer's requirements. The sound level meters, including the calibrators, will be verified by the manufacturers once every two years to ensure that they perform to the same level of accuracy as stated in the manufacturers specifications. Calibrated hand-held anemometers capable of measuring the wind speed in $m s^{-1}$ will also be supplied for the measurement of wind speeds during noise monitoring periods. The anemometers will be used and calibrated in accordance with the manufactures recommendations.

Sound level meters will be calibrated using a portable calibrator before and after each measurement. The calibration levels will be noted with the

measurement results and where the difference between the calibration levels is greater than 1 dB(A) the measurement will be repeated.

The ET Leader will ensure the equipment will be kept in a good state of repair in accordance with the manufacturer's recommendations and maintained in proper working order with sufficient spare equipment available in the event of breakdown to maintain the planned monitoring programme.

Noise measurements will not be made in the presence of fog, rain, wind with a steady speed exceeding 5 m s⁻¹ or wind with gusts exceeding 10 m s⁻¹. The wind speed will be checked with the hand-held anemometers.

3.3.3 *Monitoring Locations*

The ET will be responsible for conducting noise monitoring at the following representative monitoring locations, as defined in *Tables 3.3c* and *3.3d* during construction and operational phases respectively.

Table 3.3c *Representative Monitoring Locations during Construction Phase*

NSR No.	Description
N2	Hei Ling Chau Addiction Treatment Centre (Annex)
N3	Staff Quarters ^(a) ^(b)
Notes:	
(a)	Noise monitoring at NSR N3 will be discontinued after the completion of the enabling works at this location.
(b)	If CSD could arrange not to use this staff quarter, there will be no potential noise impact to this NSR. Noise monitoring will not be required at this location

Table 3.3d *Representative Monitoring Location during Operational Phase*

NSR No.	Description
N2	Hei Ling Chau Addiction Treatment Centre (Annex)

The monitoring location will normally be at a point 1 m from the exterior of the sensitive receiver building façade and at a height approximately 1.2 m above the ground or at the height that has the least obstructed view of the construction activity in relation to the receiver. For reference, a correction of +3 dB(A) will be made to the free field measurements.

3.3.4 *Baseline Monitoring*

The ET will carry out baseline noise monitoring prior to the commencement of the construction works. The baseline monitoring will be measured for a continuous period of at least 14 consecutive days at a minimum logging interval of 30 minutes for day-time (between 07:00 and 19:00 hours of normal weekdays) and 15 minutes (as three consecutive $L_{eq, 5 \text{ minutes}}$ readings) for evening time (between 19:00 and 23:00 hours of normal weekdays), general holidays including Sundays (between 07:00 and 23:00 hours) and night-time (between 23:00 and 07:00 of all days). The L_{eq} , L_{10} and L_{90} will be recorded at the specified interval. A schedule on the baseline monitoring will be submitted to the EPD for information before the monitoring starts.

There will not be any construction activities in the vicinity of the stations during the baseline monitoring. Appropriate set of data will be used as a baseline reference and will be submitted to EPD for information.

3.3.5 *Impact Monitoring*

Construction Phase

Noise monitoring will be undertaken at the identified NSRs during the construction phase to ensure the compliance to acceptable noise levels. Noise monitoring will be undertaken at the two representative monitoring locations with a frequency of once a week to obtain one set of 30-minute measurement between 07:00 and 19:00 hours on normal weekdays. Regular site audits (ie once a month) will be conducted to ensure that the proposed mitigation measures are implemented properly and that the plant inventory used on site is consistent with the assumptions used in the *EIA Report*.

If construction works are extended to include works during the hours of 19:00 – 07:00 hours, or general holidays and Sundays, impact monitoring in terms of 3 consecutive $L_{eq, 5 \text{ minutes}}$ will be carried out at a minimum frequency of once a week during evening, general holiday or night-time works. Applicable CNP under NCO will be obtained by the Contractor.

In case of non-compliance with the construction noise criteria, more frequent monitoring, as specified in Event/ Action Plan in *Table 3.3g* will be carried out. Additional monitoring will be continued until the recorded noise levels are rectified or proved to be irrelevant to the construction activities.

Operation Phase

Noise monitoring will be undertaken at the nearest NSR (ie Hei Ling Chau Addiction Treatment Centre (Annex) (N2)) during the night-time period at the agreed monitoring location to ensure the compliance with the stipulated noise criterion. As wind speed will vary throughout the year and hence the potential noise impacts. It is recommended to monitor noise levels at monthly intervals for the first 12 months of the operation of the wind turbine. The monitoring frequency will increase to biweekly intervals during the higher wind speed months (ie winter months - from December to January), and storm season – (July).

Two types of measurement will be carried out:

- (a) Broadband measurement of $LA_{eq(t)}$. Note that the measurement period (t) shall normally be 30 minutes (six consecutive 5-minute measurements). However, if it can be demonstrated that the noise level is constant, then a shorter measurement period (no less than 5 minutes) may be used.
- (b) Frequency analysis between 31.5 and 16 kHz measured at 1/3 octave intervals. If the noise emanating from the wind turbine is found to be tonal (as defined in *IND-TM*) then an appropriate tonal correction will be applied to the measured noise level (MNL) to achieve the corrected noise level (CNL). This CNL will be compared with the noise criterion.

3.3.6

Event and Action Plan

Construction Noise

The action and limit levels for construction noise are defined in *Table 3.3e*. Should non-compliance of the criteria occurs, action in accordance with the Event/ Action Plan in *Table 3.3g* will be carried out. If exceedances are resulted from cumulative impacts, all steps stipulated in the Event/ Action Plan will be carried out.

Table 3.3e *Action and Limit Levels for Construction Noise*

Time Period	Action Level	Limit Level
07:00 – 19:00 hours on normal weekdays	When one documented complaint is received from any one of the sensitive receivers	75 dB(A)
19:00-23:00 hours on all days and 07:00-23:00 hours on general holidays (including Sundays)		60dB(A)
23:00-07:00 hours on all days		45dB(A)

Operational Noise

The action and limit levels for the operational noise for every 30 minutes are defined in *Table 3.3f*. Should non-compliance of the criteria occurs, action in accordance with the Event/ Action Plan in *Table 3.3h* will be undertaken. If exceedances are resulted from cumulative impacts, all steps stipulated in the Event/ Action Plan will be carried out.

Table 3.3f *Action and Limit Levels for Operational Noise*

Time Period	Action Level	Limit Level
Day-time (ie 07:00-19:00 hrs)	When one documented complaint is received from any one of the sensitive receivers; or	55 dB(A)
Evening (ie 19:00-23:00 hrs)		55 dB(A)
Night-time (ie 23:00-07:00 hrs)	Noise monitoring results indicate tonal, impulsive or intermittent characteristics.	45 dB(A)

Table 3.3g *Event/ Action Plan for Construction Noise*

		Action	
Event	ET Leader	CAPCOER	Contractor
Action Level	<ol style="list-style-type: none"> 1. Notify the Contractor. 2. Carry out investigation. 3. Report the results of investigation to the Contractor. 4. Discuss with the Contractor and formulate remedial measures. 5. Increase monitoring frequency to check mitigation measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of exceedance in writing. 2. Notify the Contractor. 3. Require the Contractor to propose remedial measures for the analysed noise problem. 4. Ensure remedial measures are properly implemented. 	<ol style="list-style-type: none"> 1. Submit noise mitigation proposals to the CAPCOER. 2. Implement noise mitigation proposals.
Limit Level	<ol style="list-style-type: none"> 1. Identify the source. 2. Notify CAPCOER, EPD and the Contractor. 3. Repeat measurement to confirm findings. 4. Increase monitoring frequency. 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented. 6. Inform CAPCOER and EPD the causes & actions taken for the exceedances. 7. Assess effectiveness of the Contractor's remedial actions and keep EPD and CAPCOER informed of the results. 8. If exceedance stops, cease additional monitoring 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of exceedance in writing. 2. Notify the Contractor. 3. Require the Contractor to propose remedial measures for the analysed noise problem. 4. Ensure remedial measures are properly implemented. 5. If exceedance continues, consider what activity of the work is responsible and instruct the Contractor to stop that activity of work until the exceedance is abated. 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance. 2. Submit proposals for remedial actions to CAPCOER within 3 working days of notification. 3. Implement the agreed proposals. 4. Resubmit proposals if problem still not under control. 5. Stop the relevant activity of works as determined by CAPCOER until the exceedance is abated.
Notes:			
(a) CAPCOER = Engineering representative of CAPCO			

Table 3.3h **Event/ / Action Plan for Operational Noise**

		Action
Event	ET Leader	CAPCO
Action Level	<ol style="list-style-type: none"> 1. Identify source. 2. Notify EPD and CAPCO 3. Conduct additional noise monitoring and investigate the causes. 4. Report the investigation results to the EPD and CAPCO. 5. If the exceedance is related to the wind turbine, conduct additional monitoring for checking mitigation effectiveness and report the findings and results to EPD and CAPCO. 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance. 2. Prepare proposal for remedial actions within 3 calendar days of notification. 3. Implement the agreed remedial actions immediately.
Limit Level	<ol style="list-style-type: none"> 1. Identify source. 2. Notify EPD and CAPCO. 3. Analyse the performance of the wind turbine and the setting in order to investigate the causes of exceedance. 4. Provide interim report to EPD and CAPCO the causes of the exceedances. 5. If the exceedance is related to the wind turbine, assess effectiveness by additional monitoring. 6. Report the remedial action implemented and the additional monitoring results to EPD and CAPCO. 7. If exceedance stops, cease additional monitoring. 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance. 2. Assist ET to analyse the performance of the wind turbine and the setting. 3. Determine possible mitigation to be implemented and prepare proposal for remedial actions within 3 calendar days of notification. 4. Implement the agreed remedial actions immediately. 6. Prepare further proposal if the problems is still not under control.

3.3.7 **Mitigation Measures**

Construction Phase

The contractor is required to adopt site specific direct technical measures as specified below for the enabling works along the Long Access Route near NSR N3.

- Avoid or reduce concurrent operation of construction equipment;
- Use of quiet construction plant;
- Use of site hoarding barriers with a minimum height of 3m. In general, this would provide a minimum 10 dB(A) attenuation for the low-rise receivers. The barriers should not have openings or gaps and have a superficial surface density of at least 10 kgm⁻². The location and extent of the proposed barrier are shown in *Figure 3.3a*;
- As a last resort, indirect mitigation measures in the form of window insulation and air-conditioning (air-conditioners have been provided for the staff quarters) are recommended to mitigate the residual noise impact.

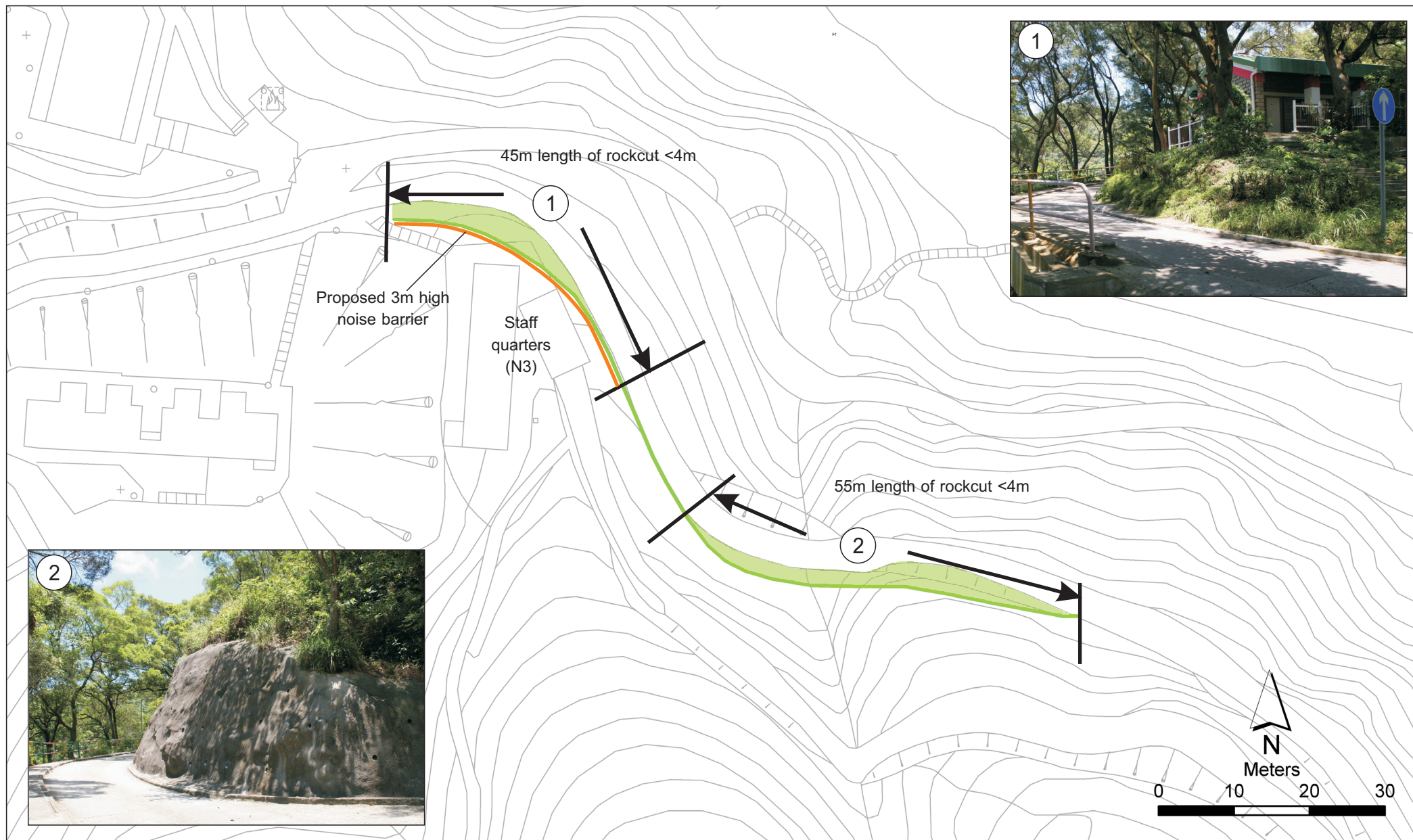


Figure 3.3a

Proposed Temporary Noise Barrier During Construction Phase

In general, this would provide a minimum 10 dB(A) attenuation for the receivers.

- After consultation with CSD, agreed mitigation measures would be implemented (eg the use of air-conditioners and avoidance of use of the affected staff quarter during the period when works are undertaking in the area). The Contractor will closely liaise with the CSD to programme the noisy construction works such that the noise impact to the CSD staff will be avoided or reduced. Prior to commencement of the construction, CSD will be notified with the programme of the works, the planned construction activities, the potential impacts to the Staff Quarters, the measures to mitigate the impacts, the monitoring programme to check the efficiency of the measures, and the communication channels between CSD and the Site Engineer.

Operation Phase

Noise reduction methods for wind turbines include special finishing of gear teeth, using low speed cooling fans and adding baffles and acoustic insulation to the nacelle. The detailed methods to be employed vary from supplier to supplier. It is practicable and achievable to reduce the wind turbine with typical sound power level to 104 dB(A) during the detailed design stage of the wind turbine. The tender specification of the Project will specify that the wind turbine will have a maximum operational noise level of 104 dB(A) with no tonality, impulsiveness and intermittency characteristics.

The noise assessment indicates that under the worst-case scenario (covering a full range of operation including start-up, shut-down, cut-in, cut-out, braking and yawing; and the full range of wind speeds), with a wind turbine with typical sound power level of 104 dB(A) and with no tone, impulse and intermittence characteristics, the predicted facade noise levels at the identified NSRs will comply with the day-time and night-time noise limits at all NSRs.

3.3.8

Site Audit/Inspection

Monthly site audits/inspections will be conducted to ensure that the proposed mitigation measures are implemented properly and that the plant inventory used on site is consistent with the assumptions used in the *EIA Report*.

This page is intentionally left blank.

4.1 INTRODUCTION

Potential ecological impacts associated with the construction and operation of the wind turbine have been identified in the *EIA Report*. The following measures have been developed in accordance with this approach to minimise and mitigate the impacts.

4.2 MITIGATION MEASURES

4.2.1 *Measures for Common Rat Snake and Bodagek's Burrowing Lizard*

A search of the Common Rat Snake and Bodagek's Burrowing Lizard will be undertaken within the Project Site and along the impacted sections of Long and Short Access Routes immediately prior to the commencement of the construction works. Due to the small size of the Project Site and given that there are no optimal habitats for Common Rat Snake and Bodagek's Burrowing Lizard, one day-time search is considered sufficient. The surveyor(s) will actively search within the Project Site and along the impacted sections of Long and Short Access Routes and pay special attention to the leave litters and rocks. All Common Rat Snake and Bodagek's Burrowing Lizard found will be caught by hand and translocated to the shrubland at the north of the Hei Ling Chau Correctional Centre (Annex), which is the less disturbed shrubland habitat within the Study Area, immediately after the search. The search and translocation works will be undertaken by a qualified ecologist with relevant experience in faunal translocation works.

4.2.2 *Measures for Controlling Construction Site Runoff*

Surface run-off from the construction site will be directed into existing drainage channel via adequately designed sand/silt removal facilities such as sand traps, silt traps and sediment basins. Channels, earth bunds or sand bag barriers will be provided on site to properly direct stormwater to such silt removal facilities.

4.2.3 *Good Construction Site Practice*

The following good construction site practice will be implemented to avoid potential water quality impacts.

- Erect fences along the boundary of the Project Site before the commencement of works to prevent vehicle movements, and encroachment of personnel, onto adjacent areas;
- Regularly check the work site boundaries to ensure that they are not breached and that damage does not occur to surrounding areas; and,

- Reinstatement of temporary impacted area, after completion of construction works, ie through on-site tree/shrub planting. Tree/shrub species used should make reference from those in the surrounding area and/or *Annex B* of the *EIA Report*.

4.3 ENVIRONMENTAL MONITORING AND AUDIT

4.3.1 Construction

The implementation of the ecological mitigation measures stated in *Section 4.2* above should be checked as part of the environmental monitoring and audit procedures during the construction period.

4.3.2 Operation

Monitoring for bird collision during operation phase is required. The purpose of the monitoring is to confirm that the operation of the wind turbine at Hei Ling Chau will not cause adverse impact (via collisions) on birds. During the operation of the wind turbine, monitoring will be undertaken at monthly intervals for a period of 12 months. An area of 50m radius will be searched around the base of the wind turbine. After this 12-month period, the monitoring result will be reviewed. Should any bird mortality or injury be confirmed as due to the wind turbine, relevant government departments (ie Environmental Protection Department (EPD) and Agriculture, Fisheries and Conservation Department (AFCD)) would be notified. If the bird collision event persists more than 3 times, CAPCO will discuss remedial action with government and implement any agreed actions to solve the event. The effectiveness of the proposed remedial action will be verified and evaluated with discussion with EPD/AFCD.

A simple Event and Action Plan during the first 12 months of operation of the wind turbine is recommended in *Table 4.3a*.

Table 4.3a *Event and Action Plan during Operation of Wind Turbine*

Monitoring Criteria	Event	Action	
		Environmental Team Leader/ Environmental Manager (employed by CAPCO's Operator CLP Power)	CAPCO's Operator CLP Power
Bird Collision	Bird injury or mortality recorded in the vicinity of the wind turbine (50m radius from the wind turbine) and confirmed due to the operation of the wind turbine.	1. Notify CAPCO's Operator CLP Power and check the wind turbine site to find out the cause of the event(s).	1. Identify and report the cause(s) of the event if bird mortality or injury confirmed due to the operation of the wind turbine.
		2. Undertake weekly bird monitoring (observing the influence of the wind turbine on the behaviour of birds). The normal monitoring schedule will be resumed if the cause(s) of the event have been identified.	2. Submit proposals to relevant government departments (ie EPD and AFCD) for remedial action and implement the action to solve the event if the collision event persists more than 3 times.

If, after the 12-month monitoring period, insignificant number of bird collisions have been reported then the monitoring will be ceased, as it will have been confirmed that the wind turbine is not having an adverse impact on bird species.

This page is left intentionally blank.

5.1 GENERAL

Details of all mitigation measures will be further developed at the detailed design stage. The recommended mitigation measures will be included into the contract document where the Contractor is responsible for their implementation as recommended in the *EIA Report*. During the EM&A site audits, the ET Leader will be responsible for ensuring that landscape and visual mitigation measures are fully implemented by the Contractor, as per the construction programme. The following key mitigation measures are recommended.

5.2 LANDSCAPE

Of the eight Landscape Resources (LR) on Hei Ling Chau there will only be residual construction phase impacts on the Shrubland resources. This will result in a residual impact of 0.15 ha of Shrubland. This un-mitigated impact is classified as *slight adverse*. The impacts on the developed areas after construction will be negligible as they will be replaced by new developed areas (ie wind turbine site). The recommended mitigation measures are stated in *Table 5.2a*.

The impacts on the Landscape Character Areas of Hei Ling Chau will vary from slight for LCAs 2 to 5 to moderate for LCA1 during construction and operation.

As there are no significant impacts on LRs and LCAs, the potential landscape impacts associated with the construction and operation of the wind turbine are considered acceptable.

Table 5.2a *Landscape Mitigation Measures Recommended in the EIA Report*

Mitigation Measures No.	Measures	Description
<i>LMM 1</i>	Cultivation of areas impacted during construction	Areas impacted during the construction phase that are not required during the operation phase, are to be cultivated to a depth of 300mm in accordance with the future Landscape Specification.
<i>LMM 2</i>	Soil stabilisation and embankment planting	During the design process a soil stabilisation and embankment planting strategy will ensure that all land affected by slope excavation can be replanted, wherever practicable. All soil preparation and the selection and provision of a suitable growing medium is to be completed in accordance with the relevant best practice guidelines. This mitigation measure will require long-term maintenance and management which is the responsibility of the Project Proponent.
<i>LMM 3</i>	Tree and shrub planting	All planting of trees and shrubs is to be carried out in accordance with the relevant best practice guidelines. Plant densities are to be provided in future detailed design documents and are to be selected so as to achieve a finished landscape that matches the surrounding, undisturbed, equivalent landscape types. This mitigation measure will require establishment maintenance which is the responsibility of the Project Proponent.

5.3

VISUAL

The wind turbine with the proposed aviation warning marking scheme (ie alternative orange and white bands) as required by CAD for aviation safety purposes may result in contrasting effect to the surrounding natural landscape. For Disneyland Hong Kong (VSR11) the visual impact will be negligible. VSRs from Discovery Bay, Cheung Chau – Mui Wo Ferry, Lamma Island and Hong Kong Island will experience slight to moderate adverse impact. VSRs from Cheung Chau, Peng Chau, Mui Wo, Chi Ma Wan Peninsula and Lantau Hikers will experience moderate visual impacts. VSRs on Hei Ling Chau will expect to experience moderate – significant adverse impacts.

Although the visual impact to VSRs on Hei Ling Chau is unable to mitigate practically, the adverse effects are not considered too excessive in view of the size of land take and form of the structure. Hence, the visual impact is not unacceptable. There are no significant visual impacts for other VSRs and there will be no interference with key views. Therefore, the visual impacts will be acceptable.

6.1 INTRODUCTION

This section presents the EM&A recommendations for auditing the water quality mitigation measure during the construction phase of the Project.

6.2 ENVIRONMENTAL MONITORING AND AUDIT

As stated in the *EIA Report*, no water quality monitoring will be required for the construction phase. However, as the part of the monthly site audit procedures, it is recommended that the ET Leader confirms that the Contractor has implemented the drainage management plan and the good construction site practices, as described in *Sections 7.5 and 7.6 of the EIA Report*.

6.3 MITIGATION MEASURES

The Contractor will implement the following good construction site practices to avoid or minimise potential water quality impacts associated with land based construction.

6.3.1 Construction Runoff and Drainage

Construction site runoff and drainage will be prevented or reduced in accordance with the guidelines stipulated in the EPD Practice Note for Professional Persons, *Construction Site Drainage (ProPECC PN 1/94)*. The good practices include:

- Provision of perimeter channels to intercept stormwater run-off from outside the site. These will be constructed prior to the site formation works and other earthworks at the Project Site.
- Exposed soil surfaces will be covered by a tarpaulin as soon as possible to reduce the potential for soil erosion.
- Open stockpiles of construction materials on site will be covered with tarpaulin or similar fabric during rainstorms.
- Surface run-off from the construction site will be directed into an existing stream channel via adequately designed sand/silt removal facilities such as sand traps, silt traps and sediment basins. Channels, earth bunds or sand bag barriers will be provided on site to properly direct stormwater to such silt removal facilities.
- Silt removal facilities, channels and manholes will be maintained and the deposited silt and grit will be removed regularly, at the onset of and after

each rainstorm to ensure that these facilities are functioning properly at all times.

- During excavation in the wet season, temporarily exposed soil surfaces will be covered, eg by tarpaulin, and temporary access roads will be protected by crushed stone or gravel, as excavation proceeds. Intercepting channels will be provided (eg along the crest/edge of the excavation) to prevent storm runoff from washing across exposed soil surfaces. Arrangements will always be in place to ensure that adequate surface protection measures can be safely carried out well before the arrival of a rainstorm.
- Earthworks final surfaces will be well compacted and the subsequent permanent work or surface protection will be carried out as soon as practical after the final surface are formed to prevent erosion caused by rainstorms. Appropriate intercepting channels will be provided, where necessary. Rainwater pumped out from trenches or foundation excavations will be discharged into storm drains via silt removal facilities.
- The contractor(s) concerned should apply for and obtain all the necessary discharge licences.

6.3.2 *General Construction Activities*

Debris and rubbish generated on-site will be collected, handled and disposed of properly to avoid entering the nearby stormwater drains and open drainage channels. All fuel tanks and storage areas will be provided with locks and be sited on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank. Open stormwater drains and culverts near the works area will be covered to block the entrance of large items of debris and refuse.

6.3.3 *Sewage from Workforce*

Temporary sanitary facilities, such as portable chemical toilets, will be employed. A licensed contractor would be responsible for appropriate disposal and maintenance of these facilities.

7.1 GENERAL

The anticipated quantities of construction waste (400 m³), chemical wastes (a few hundred litres, mainly are used lube oils), sewage (1 m³ per day) and general refuse (26 kg per day) to be generated during the construction phase of the Project will be small. With the implementation of the general good construction site practices, the construction of the Project will not cause adverse waste management or environmental impacts with respect to the criteria specified in the EIAO-TM.

The good construction site practices are further described below and the Contractor must ensure that all the necessary waste disposal permits or licences are obtained prior to the commencement of the construction works.

7.2 MITIGATION MEASURES

7.2.1 Construction Waste

Wherever practicable, the excavated soil will be segregated from other wastes to avoid contamination, and reused on-site for the site formation works to reduce the amount of construction waste to be disposed off-site.

The Contractor must ensure that no waste, spoil or excavated materials arising from the Project will be improperly dumped in the Hei Ling Chau Island, in particular the environmental sensitive area/ecological habitat identified in the *Section 5* of the *EIA Report*.

7.2.2 Chemical Waste

The construction contractor will be registered as a chemical waste producer with the EPD. Chemical waste will be handled in accordance with the *Code of Practice on the Packaging, Handling and Storage of Chemical Wastes*.

7.2.3 Management of Waste Disposal

The construction contractor will open a billing account with the EPD in accordance with the *Waste Disposal (Charges for Disposal of Construction Waste) Regulation*. Every construction waste or public fill load to be transferred to the Hei Ling Chau Refuse Transfer Station will require a valid "chit".

A trip-ticket system will also be established in accordance with *Works Bureau Technical Circular No.31/2004* to monitor the disposal of construction waste at the Hei Ling Chau Refuse Transfer Station, and to control fly-tipping. The trip-ticket system will be included as one of the contractual requirements and implemented by the Contractor.

7.2.4 *Staff Training*

At the commencement of the construction works, training will be provided to workers on the concepts of site cleanliness and on appropriate waste management procedures, including waste reduction, reuse and recycling.

7.3 *SITE AUDIT/INSPECTION*

Monthly site audits of the waste management practices will be carried out during the construction phase to determine if wastes are being managed in accordance with the good site practices described in this *EIA Report*. The audits will examine all aspects of waste management including waste generation, storage, recycling, transport and disposal.

8.1 SITE INSPECTION

Site inspections provide a direct means to track and ensure the enforcement of specified environmental protection and pollution control measures. The inspections will be undertaken on a month basis by the ET to ensure that appropriate environmental protection and pollution control mitigation measures are properly implemented. Additionally, the ET will be responsible for defining the scope of the inspections, detailing any deficiencies that are identified, and reporting any necessary action or mitigation measures that were implemented as a result of the inspection; the results of the inspections shall be made available to CAPCO.

The areas of inspection should include the general environmental conditions in the vicinity of the site and pollution control and mitigation measures within the site; it should also review the environmental conditions outside the site area which are likely to be affected, directly or indirectly, by site activities. The ET will make reference to the following information in conducting the inspections:

- the EIA and EM&A recommendations on environmental protection and pollution control mitigation measures;
- ongoing results of the EM&A programme;
- works progress and programme;
- individual works method statements which will include proposals on associated pollution control measures;
- the contract specifications on environmental protection; and
- the relevant environmental protection and pollution control laws.

The ET's inspection results and their associated recommendations on improvements to the environmental protection and pollution control works will be submitted to CAPCO and the Contractor(s) within 24 hours, for reference and for taking immediate action. They will also be presented, along with the remedial actions taken, in the monthly EM&A reports. The Contractor(s) will follow the procedures and time-frames stipulated in the environmental site inspection for the implementation of mitigation proposals. An action reporting system will be formulated and implemented to report on any remedial measures implemented subsequent to the site inspections.

Ad hoc site inspections will also be carried out by the ET if significant environmental problems are identified. Inspections may also be required

subsequent to receipt of an environmental complaint, or as part of the associated investigation work.

8.2

COMPLIANCE WITH LEGAL AND CONTRACTUAL REQUIREMENTS

There will be contractual environmental protection and pollution control requirements as well as Hong Kong's environmental protection and pollution control laws which the construction activities will comply with.

The ET will review the progress and programme of the works to check that relevant environmental laws have not been violated, and that any foreseeable potential for violating the laws can be prevented.

The Contractor(s) will also regularly copy relevant documents to the ET so that the checking work can be carried out. The relevant documents are expected to include the updated Work Progress Reports, the updated Works Programme, the application letters for different licences/permits under the environmental protection laws, and all the valid licences/permit. The site diary should also be available, upon request, to the ET during his site inspection.

After reviewing the documentation, the ET will advise CAPCO and the Contractor(s) of any non-compliance with the contractual and legislative requirements on environmental protection and pollution control for them to take follow-up actions. If the ET's review concludes that the current status on licence/permit application and any environmental protection and pollution control preparation works is incompatible with the works programme or may result in potential violation of environmental protection and pollution control requirements by the works in due course, he will also advise CAPCO and the Contractor(s) accordingly.

Upon receipt of the advice, the Contractor(s) will undertake immediate action to remedy the situation. The ET and CAPCO will follow up to ensure the appropriate action will be taken by the Contractor(s) in order that the environmental protection and pollution control requirements are fulfilled.

9.1 GENERAL

Reports can be provided in an electronic medium upon agreeing the format with CAPCO and the EPD. All the monitoring data will also be submitted on diskettes or CD Rom.

9.2 MONTHLY EM&A REPORTS (CONSTRUCTION PHASE)

The results and findings of all EM&A work (mainly noise, ecology and site audits) required in the Manual will be recorded in the monthly EM&A Reports and be prepared by the ET and verified by the ET Leader. The reports will be submitted to the Contractor(s), CAPCO, EPD and copied to AFCD within two weeks of the end of each calendar month, with the first report due in the month after construction works commence. The ET will liaise with the relevant parties to confirm the exact number and format of monthly reports in both hard copy and electronic format. The report will include, but not be limited to, the following elements:

9.2.1 First Monthly EM&A Report

The first monthly EM&A report will include at least but not be limited to the following :

(a) Executive Summary (1-2 pages);

- Complaint Log;
- Notifications of any summons and successful prosecutions;
- Reporting Changes;
- Future key issues.

(b) Basic Project Information

- Project organisation including key personnel contact names and telephone numbers;
- Construction Programme with fine tuning of construction activities showing the inter-relationship with environmental protection/mitigation measures for the month; and
- Works undertaken during the month.

(c) Environmental Status

- Works undertaken during the month with illustrations (such as

location of works); and

- Drawing showing the Project area, any environmental sensitive receivers.

(d) Summary of EM&A requirements including:

- Environmental mitigation measures, as recommended in the *EIA Report* ;
- Environmental requirements in contract documents;

(e) Implementation Status

Advice on the implementation status of environmental protection and pollution control/mitigation measures, as recommended in the *EIA Report*, summarised in the updated implementation schedule.

(f) Site Audit Report

(g) Monitoring results (in both hard and diskette copies) together with the following information:

- Monitoring methodology;
- Name of laboratory and equipment used and calibration details;
- Parameters monitored;
- Monitoring locations (and depth); and
- Monitoring date, time, frequency, and duration.

(h) Report on Complaints, Notifications of Summons and Successful Prosecutions

- Record of all complaints received (written or verbal) for each media, including locations and nature of complaints investigation, liaison and consultation undertaken, actions and follow-up procedures taken, results and summary;
- Record of notifications of summons and successful prosecutions for breaches of the current environmental protection/pollution control legislation's, including locations and nature of the breaches, investigation, follow-up actions taken, results and summary;
- Review of the reasons for and the implications of non-compliance, complaints, summons and prosecutions including review of pollution sources and working procedures; and
- Description of the actions taken in the event of non-compliance and deficiency reporting and any follow-up procedures related to earlier

non-compliance.

(i) Others

- An account of the future key issues as reviewed from the works programme and work method statements; and
- Submission of implementation status proforma, proactive environmental protection proforma, regulatory compliance proforma, site inspection proforma, data recovery schedule and complaint log summarising the EM&A of the period.

9.2.2 Subsequent Monthly EM&A Reports

The subsequent monthly EM&A reports shall include the following:

(a) Executive Summary (1-2 pages)

- Complaint Log
- Notifications of any summons and successful prosecutions;
- Reporting Changes
- Future key issues

(b) Environmental Status

- Construction Programme with fine tuning of construction activities showing the inter-relationship with environmental protection/mitigation measures for the month;
- Works undertaken during the month with illustrations including key personnel contact names and telephone numbers; and
- Drawing showing the project area, any environmental sensitive receivers.

(c) Implementation Status

Advice on the implementation status of environmental protection and pollution control/mitigation measures, as recommended in the project EIA study report, summarised in the updated implementation schedule.

(d) Report on Complaints, Notifications of Summons and Successful Prosecutions

- Record of all complaints received (written or verbal) for each media, including locations and nature of complaints investigation, liaison and consultation undertaken, actions and follow-up procedures taken, results and summary;

- Record of notifications of summons and successful prosecutions for breaches of the current environmental protection/pollution control legislation's, including locations and nature of the breaches, investigation, follow-up actions taken, results and summary;
- Review of the reasons for and the implications of non-compliance, complaints, summons and prosecutions including review of pollution sources and working procedures; and
- Description of the actions taken in the event of non-compliance and deficiency reporting and any follow-up procedures related to earlier non-compliance.

(e) Others

- An account of the future key issues as reviewed from the works programme and work method statements.

(e) Appendix

- Outstanding issues and deficiencies.

9.3 *OPERATION PHASE MONITORING*

9.3.1 *Monthly Report on Noise Monitoring*

The ET will prepare and submit a Monthly Report on Noise Monitoring which will be verified by the ET Leader, for a period of 12 months, during the operation of the wind turbine. Copies of the Monthly Report on Noise Monitoring will be submitted to CAPCO and EPD. The exact number of copies required by EPD will be established through liaison.

9.3.2 *Monthly Report on Bird Monitoring*

CAPCO will prepare and submit a Monthly Report on Bird Monitoring, for a period of 12 months, during the operation of the wind turbine. Copies of the Monthly Report on Bird Monitoring will be submitted to CAPCO, AFCD and EPD. The exact number of copies required by AFCD and EPD will be established through liaison.

9.4 *FINAL EM&A SUMMARY REPORT*

The EM&A programme will be terminated upon completion of those construction and operation activities that have the potential to result in a significant environmental impact and conclusion of the post-project monitoring.

The final EM&A summary report will include, *inter alia*, the following:

- (a) an executive summary;

- (b) basic project information including a synopsis of the project organisation, programme, contracts of key management, and a synopsis of work undertaken during the entire construction period;
- (c) a brief summary of EM&A requirements including: environmental mitigation measures, as recommended in the *EIA Report*;
- (d) advice on the implementation status of environmental protection and pollution control/mitigation measures, as recommended in the *EIA Report*, summarised in the updated implementation schedule;
- (e) drawings showing the project area, any environmental sensitive receivers;
- (f) provide clear-cut decisions on the environmental acceptability of the Project with reference to the specific impact hypothesis;
- (g) a summary description of the actions taken in the event of non-compliance and any follow-up procedures related to earlier non-compliance;
- (h) a summary record of all complaints received (written or verbal) for each media, liaison and consultation undertaken, actions and follow-up procedures taken;
- (i) a summary record of notification of summons and successful prosecutions for breaches of the current environmental protection/pollution control legislation's, locations and nature of the breaches, investigation, follow-up actions taken and results;
- (j) review the practicality and effectiveness of the EIA process and EM&A programme (eg effectiveness and efficiency of the mitigation measures) recommend any improvement in the EM&A programme; and
- (k) a conclusion to state the return of ambient and/or the predicted scenario as per EIA findings.

9.5

DATA KEEPING

Documentation such as the monitoring field records, site inspection forms, etc. are not required to be included in the monthly EM&A reports for submission. However, such documents should be well kept by the ET Leader and should be available for EPD inspection upon request. All relevant information will be clearly and systematically recorded in the documents. The monitoring data will also be recorded in magnetic media form, and the software copy can be available upon request. All the documents and data will be kept for at least one year after completion of the construction contract.

Interim notifications of bird collision event during the operation of the wind turbine will be issued to CAPCO, EPD and AFCD if significant bird fatality due to collision onto the wind turbine is recorded within the 12-month monitoring period. The notification will be followed up with advice to CAPCO, EPD and AFCD on the results of the investigation, proposed actions and success of the actions taken, with any necessary follow-up proposals. The Monthly Reports will contain all available details concerning measures exceedances and complaints, their causes and those steps taken to control impacts and prevent their recurrence.

Annex A

Implementation Schedule

A1 IMPLEMENTATION SCHEDULE

A1.1 INTRODUCTION

This *Annex* summarises all the mitigation measures recommended in the *EIA Study* and presents them in the form of an Implementation Schedule in accordance with the requirements of Section 3.4.9.3 of the *EIA Study Brief No. ESB-145/2006*.

The Implementation Schedule has the following column headings:

EIA Ref

This denotes the section number or reference from the EIA Report Main text.

EM&A Ref

This denotes the sequential number of each of the recommended mitigation measures specified in the Implementation Schedule.

Recommended Mitigation Measures

This denotes the recommended mitigation measures, courses of action or subsequent deliverables that are to be adopted, undertaken or delivered to avoid, reduce or ameliorate predicted environmental impacts.

Objectives of the Recommended Measure and Main Concerns to be Addressed

This denotes the objectives of the recommended mitigation measures and main concerns to address.

Location/Duration of Measures/Timing of Completion of Measures

This indicates the spatial area in which the recommended mitigation measures are to be implemented together with details of the programming or timing of their implementation.

Implementation Agent

This denotes where the responsibility lies for the implementation of the recommended mitigation measures.

Implementation Stage

This denotes the stage at which the recommended mitigation measures are to be implemented either during the Design, Construction, Operation or Decommissioning phases.

Relevant Legislation

This defines the controlling legislation that is required to be complied with.

Table A1.1a Implementation Schedule

EIA Ref.	EM&A Ref	Environmental Protection Measures	Objectives of the Recommended Measure & Main Concerns to address	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	Implementation Stage				Relevant Legislation Guidelines
						Des	C	O	Dec	
Noise – Construction Phase										
4.7.1	1	<ul style="list-style-type: none">Avoid or reduce concurrent operation of construction equipment;Use of quiet construction plant;Use of site hoarding barriers ⁽¹⁾ with a minimum height of 3m. In general, this would provide a minimum 10 dB(A) attenuation for the low-rise receivers. The barriers should not have openings or gaps and have a superficial surface density of at least 10 kgm⁻². The location and extent of the proposed barrier are shown in <i>Figure 4.7a</i>;As a last resort, indirect mitigation measures in the form of window insulation and air-conditioning (air-conditioners have been provided for the staff quarters) are recommended to mitigate the residual noise impact. In general, this would provide a minimum 10 dB(A) attenuation for the receivers.Close liaison with the CSD to programme the noisy construction works. Prior to commencement of the construction, CSD will be	To minimise potential noise nuisance arising from the enabling works to CSD’s Staff Quarters (NSR N3).	During construction of enabling works near CSD’s Staff Quarters (NSR N3)	Construction contractor			✓		Noise Control Ordinance (NCO) and Annex 5 of the EIAO-TM

(1) If CSD could arrange not to use this staff quarter during the construction period, there will be no noise impact to this NSR. It will not be necessary to provide a noise barrier at this location.

EIA Ref.	EM&A Ref	Environmental Protection Measures	Objectives of the Recommended Measure & Main Concerns to address	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	Implementation Stage				Relevant Legislation Guidelines
						Des	C	O	Dec	
		notified with the programme of the works, the planned construction activities, the potential impacts to the Staff Quarters, the measures to mitigate the impacts, the monitoring programme to check the efficiency of the measures, and the communication channels between CSD and the Site Engineer.								
Noise – Operational Phase										
4.7.2	2	A wind turbine with typical sound power level of 104 dB(A) with no tone, impulse and intermittence characteristics shall be adopted.	To minimise potential noise nuisance arising from operation of wind turbine.	During detailed design stage	CAPCO	✓		✓		Noise Control Ordinance (NCO) and Annex 5 of the ELAO-TM
4.8.2	3	During the operation phase, noise monitoring will be undertaken at the nearest NSR (ie Hei Ling Chau Addiction Treatment Centre (Annex) (N2)) during the night-time period at the agreed monitoring location to ensure the compliance with the stipulated noise criterion. As wind speed will vary throughout the year and hence the potential noise impact. It is recommended to monitor the noise levels at monthly intervals for first 12 months of the operation of the wind turbine. The monitoring frequency will be increased to biweekly intervals for the higher wind speed months (ie winter months (from December to January) and storm season (July)).	To ensure that adverse environmental impacts are prevented	At NSR N2 for the first 12 months of operation of the wind turbine	CAPCO			✓		

EIA Ref.	EM&A Ref	Environmental Protection Measures	Objectives of the Recommended Measure & Main Concerns to address	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	Implementation Stage				Relevant Legislation Guidelines
						Des	C	O	Dec	
Ecology – Construction Phase										
5.10.2	4	To minimise the loss of Common Rat Snake and Bodagek’s Burrowing Lizard due to the development of wind turbine, a search of the Common Rat Snake and Bodagek’s Burrowing Lizard within the Project Site and along the impacted sections of the Long and Short Access Routes will be conducted prior to the commencement of the construction works. Due to the small size of the Project Site and given that there are no optimal habitats for Common Rat Snake and Bodagek’s Burrowing Lizard, one day-time survey is considered sufficient. The impacted areas will be actively searched with special attention to the leave litters and rocks. All recorded Common Rat Snake and Bodagek’s Burrowing Lizard will be caught by hand and translocated to the shrubland at the north of the Hei Ling Chau Correctional Centre (Annex), which is the less disturbed shrubland habitat within the Study Area, immediately after the search. The search and the translocation (if required) will be undertaken by a qualified ecologist with relevant experience in faunal translocation works.	To minimise the loss of Common Rat Snake and Bodagek’s Burrowing Lizard (if any) due to the development of wind turbine	Prior to commencement of construction work	Construction contractor	✓				Annex 16 of the EIAO-TM
5.10.2	5	<u>Construction Runoff:</u> Storm water run-off from the construction sites will be directed into existing drainage channel via adequately designed sand/silt removal facilities such as sand traps, silt traps and sediment basins. Channels, earth bunds or sand bag barriers will be provided on site to properly direct storm water to such silt removal	To minimise potential ecological impacts arising from the works.	During construction phase for all construction work sites	Construction contractor		✓			Annex 16 of the EIAO-TM

EIA Ref.	EM&A Ref	Environmental Protection Measures	Objectives of the Recommended Measure & Main Concerns to address	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	Implementation Stage				Relevant Legislation Guidelines
						Des	C	O	Dec	
		facilities.								
5.10.2	6	<u>Good Construction Practice:</u> <ul style="list-style-type: none"> Erect fences along the boundary of the Project Site before the commencement of works to prevent vehicle movements, and encroachment of personnel, onto adjacent areas; Regularly check the work site boundaries to ensure that they are not breached and that damage does not occur to surrounding areas; and, Reinstate temporary impacted area, immediately after completion of construction works. 	To minimise potential ecological impacts arising from the works.	During construction phase	Construction contractor		✓			Annex 16 of the EIAO-TM
5.10.3	7	Some trees within the work areas of the proposed road upgrading works may need to be removed during construction. The actual number of trees affected will be determined in the Tree Survey during the detailed design. The impacted trees will either be transplanted or compensated by tree planting along the access routes or within the Project Site.	To compensate for the trees removed due to the construction works.	During construction phase	Construction contractor		✓			Annex 16 of the EIAO-TM
Ecology – Operational Phase										
5.12.2	8	During the operation of the wind turbine, bird collision monitoring will be undertaken at monthly intervals for a period of 12 months. An area of 50m radius will be searched around the base of the wind turbine. If, after the 12-months monitoring period, insignificant number of bird collisions have been reported then the monitoring will be ceased.	To minimise the ecological impacts arising from the works	Project Site/12 months from the commencement of operation phase and until no bird collisions have been reported	CAPCO		✓			Annex 16 of the EIAO-TM

EIA Ref.	EM&A Ref	Environmental Protection Measures	Objectives of the Recommended Measure & Main Concerns to address	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	Implementation Stage				Relevant Legislation Guidelines
						Des	C	O	Dec	
Landscape and Visual – Construction Phase										
6.4.8	9	Landscape Mitigation Measures:								
		<ul style="list-style-type: none">LMM 1 – Cultivation of areas impacted during construction. Areas impacted during the construction phase that are not required during the operation phase, are to be cultivated to a depth of 300mm.	To minimise the impact on the Landscape Resources (LRs).	Impacted area during construction phase	Construction contractor		✓			Annexes 10 and 18 of EIAO-TM and EIAO Guidance Note 8/2002
		<ul style="list-style-type: none">LMM 2 – Soil stabilisation and embankment planting. During the design process a soil stabilisation and embankment planting strategy will ensure that all land affected by slope excavation can be replanted, wherever practicable. All soil preparation and the selection and provision of suitable growing medium is to be completed in accordance with the relevant best practice guidelines.	To minimise the impact on the LR.	Enabling works area and Project Site/ during detailed design phase	CAPCO/ Construction contractor		✓	✓		Annexes 10 and 18 of EIAO-TM and EIAO Guidance Note 8/2002
		<ul style="list-style-type: none">LMM 3 – Tree and shrub planting. All planting of trees and shrubs is to be carried out in accordance with the relevant best practice guidelines. Plant densities are to be provided in future detailed design documents and are to be selected so as to achieve a finished landscape that matches the surrounding, undisturbed, equivalent landscape types.	To minimise the impact on the LR.	Enabling works area and Project Site /during construction	Construction contractor			✓		Annexes 10 and 18 of EIAO-TM and EIAO Guidance Note 8/2002
6.4.10	10	There will be moderate to significant visual impact from the VSR of Hei Ling Chau among the eleven VSRs. Although the visual impact is unable to mitigate practically, the adverse effects are not considered too excessive in view of the size of landtake								

EIA Ref.	EM&A Ref	Environmental Protection Measures	Objectives of the Recommended Measure & Main Concerns to address	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	Implementation Stage				Relevant Legislation Guidelines
						Des	C	O	Dec	
		and form of the structure. Hence, the visual impact is not unacceptable. There are no significant visual impacts for other VSRs and there will be no interference with key views. Therefore, the landscape and visual impacts will be acceptable.								
Landscape and Visual – Operational Phase										
6.4.8 & 6.4.10	11	The impacts on landscape resource will mainly be associated with the construction phase. With the implementation of the recommended landscape mitigation measures, the long term impacts of the Project on landscape resource of Hei Ling Chau will be negligible. The Project Proponent will maintain the landscape mitigation measures (see EM&A Ref. Item no. 9) during the operation phase.	To minimise the impact on the LR.	Enabling works area and Project Site /during operation	CAPCO				✓	Annexes 10 and 18 of EIAO-TM and EIAO Guidance Note 8/2002
6.5.15	12	There will be moderate to significant visual impact from the VSR of Hei Ling Chau among the eleven VSRs. Although the visual impact is unable to mitigate practically, the adverse effects are not considered too excessive in view of the size of landtake and form of the structure. Hence, the visual impact is not unacceptable. There are no significant visual impacts for other VSRs and there will be no interference with key views. Therefore, the landscape and visual impacts will be acceptable.								

EIA Ref.	EM&A Ref	Environmental Protection Measures	Objectives of the Recommended Measure & Main Concerns to address	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	Implementation Stage				Relevant Legislation Guidelines
						Des	C	O	Dec	
Water Quality – Construction Phase										
7.5.1	13	<u>Establishment of a drainage management plan</u>	To ensure discharges from the Project Site drainage system in compliance with the <i>Water Pollution Control Ordinance</i> .	Project Site and associated enabling works/during construction phase	Construction contractor	✓				<i>Water Pollution Control Ordinance</i>
7.6.1	14	<u>Construction Runoff and Drainage</u>								
		<ul style="list-style-type: none">Provision of perimeter channels to intercept stormwater run-off from outside the site. These will be constructed prior to the site formation works and other earthworks at the Project Site.	To minimise potential water quality impacts arising from the construction works	All construction works areas/ during construction phase	Construction contractor	✓				EPD Practice Note for Professional Persons, <i>Construction Site Drainage</i> (ProPECC PN 1/94)
		<ul style="list-style-type: none">Exposed soil surfaces will be covered by a tarpaulin as soon as possible to reduce the potential for soil erosion.						✓		
		<ul style="list-style-type: none">Open stockpiles of construction materials on site will be covered with tarpaulin or similar fabric during rainstorms.						✓		
		<ul style="list-style-type: none">Storm water run-off from the construction site will be directed into an existing stream channel via adequately designed sand/silt removal facilities such as sand traps, silt traps and sediment basins. Channels, earth bunds or sand bag barriers will be provided on site to properly direct storm water to such silt removal facilities.				✓		✓		
		<ul style="list-style-type: none">Silt removal facilities, channels and manholes will be maintained and the deposited silt and grit will be removed regularly, at the onset of and after						✓		

EIA Ref.	EM&A Ref	Environmental Protection Measures	Objectives of the Recommended Measure & Main Concerns to address	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	Implementation Stage				Relevant Legislation Guidelines
						Des	C	O	Dec	
		each rainstorm to ensure that these facilities are functioning properly at all times.								
		<ul style="list-style-type: none"> During excavation in the wet season, temporarily exposed soil surfaces will be covered, eg by tarpaulin, and temporary access roads will be protected by crushed stone or gravel, as excavation proceeds. Intercepting channels will be provided (eg along the crest/edge of the excavation) to prevent storm runoff from washing across exposed soil surfaces. Arrangements will always be in place to ensure that adequate surface protection measures can be safely carried out well before the arrival of a rainstorm. 						✓		
		<ul style="list-style-type: none"> Earthworks final surfaces will be well compacted and the subsequent permanent work or surface protection will be carried out as soon as practical after the final surface are formed to prevent erosion caused by rainstorms. Appropriate intercepting channels will be provided, where necessary. Rainwater pumped out from trenches or foundation excavations will be discharged into storm drains via silt removal facilities. 						✓		
		<ul style="list-style-type: none"> The contractor(s) concerned will apply for and obtain all the necessary discharge licences. 								
7.6.2	15	<u>General Construction Activities</u>								
		<ul style="list-style-type: none"> Debris and rubbish generated on-site will be collected, handled and disposed of properly to avoid entering the nearby storm water drains and 	To minimise potential water quality impacts arising from the	All construction works areas/ during construction phase	Construction contractor			✓		EPD Practice Note for Professional Persons, <i>Construction</i>

EIA Ref.	EM&A Ref	Environmental Protection Measures	Objectives of the Recommended Measure & Main Concerns to address	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	Implementation Stage				Relevant Legislation Guidelines
						Des	C	O	Dec	
		open drainage channels.	construction works							<i>Site Drainage (ProPECC PN 1/94)</i>
		<ul style="list-style-type: none"> All fuel tanks and storage areas will be provided with locks and be sited on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank. Open storm water drains and culverts near the works area will be covered to block the entrance of large items of debris and refuse. 						✓		
7.6.3	16	<u>Sewage from Workforce</u> Portable chemical toilet will be provided at the work areas. A licensed contractor will be employed to collect and dispose the sewage.	To minimise potential water quality impacts arising from the works	Work areas/ during construction	Construction contractor			✓		EPD Practice Note for Professional Persons, <i>Construction Site Drainage (ProPECC PN 1/94)</i>
7.8	17	<ul style="list-style-type: none"> To carry out monthly site audits to the works areas to monitor the environmental performance of the Project and to enable prompt actions to rectify any malpractice which may give rise to water pollution problem. To carry out ad-hoc visits to the impacted sites in responses to any complaints or reported non-compliance on water quality aspect. 	To minimise potential water quality impacts arising from the works	All work areas /throughout construction phase	Construction contractor/ CAPCO			✓		

EIA Ref.	EM&A Ref	Environmental Protection Measures	Objectives of the Recommended Measure & Main Concerns to address	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	Implementation Stage				Relevant Legislation Guidelines
						Des	C	O	Dec	
Waste Management – Construction Phase										
8.5	18	All the necessary waste disposal permits are obtained prior to the commencement of construction work.	To ensure that adverse environmental impacts are prevented	Before construction works commence	Construction contractor			✓		
8.5.1	19	<u>Construction Waste</u> Wherever practicable, the excavated soil will be segregated from other wastes to avoid contamination and reused on-site for the site formation works to reduce the amount of construction waste to be disposed off-site. The Contractor must ensure that no waste, spoil or excavated materials arising from the Project will be improperly dumped in the Hei Ling Chau Island, in particular the environmental sensitive area/ecological habitat identified in the <i>Section 5</i> of the EIA report.	To ensure that adverse environmental impacts are prevented	All work areas /throughout construction phase	Construction contractor			✓		
8.5.2	20	<u>Chemical Waste</u> The construction contractor will be registered as a chemical waste producer with the EPD. Chemical waste will be handled in accordance with the <i>Code of Practice on the Packaging, Handling and Storage of Chemical Wastes</i> .	To ensure proper handling of chemical waste	All work areas /throughout construction phase	Construction contractor			✓		<i>Code of Practice on the Packaging, Handling and Storage of Chemical Wastes</i>
8.5.3	21	<u>Management of Waste Disposal</u> The construction contractor will open a billing account with the EPD in accordance with the <i>Waste Disposal (Charges for Disposal of Construction Waste) Regulation</i> . Every construction waste or public fill load to be	To ensure that adverse environmental impacts are prevented	All work areas /throughout construction phase	Construction contractor			✓		<i>Waste Disposal (Charges for Disposal of Construction Waste) Regulation</i>

EIA Ref.	EM&A Ref	Environmental Protection Measures	Objectives of the Recommended Measure & Main Concerns to address	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	Implementation Stage				Relevant Legislation Guidelines
						Des	C	O	Dec	
		transferred to the Hei Ling Chau Refuse Transfer Station will produce a valid "chit". A trip-ticket system will also be established in accordance with <i>Works Bureau Technical Circular No.31/2004</i> to monitor the disposal of construction waste at the Hei Ling Chau Refuse Transfer Station, and to control fly-tipping. The trip-ticket system will be included as one of the contractual requirements and implemented by the contractor.								<i>Works Bureau Technical Circular No.31/2004</i>
8.5.4	22	<u>Staff Training</u> At the commencement of the construction works, training will be provided to workers on the concepts of site cleanliness and on appropriate waste management procedures, including waste reduction, reuse and recycling.	To ensure that adverse environmental impacts are prevented	All work areas /throughout construction phase	Construction contractor			✓		
8.7	23	<u>Environmental Monitoring & Audit Requirements</u> Monthly audits of the waste management practices will be carried out during the construction phase to determine if wastes are being managed in accordance with the good site practices described in this <i>EIA Report</i> . The audits examine all aspects of waste management including waste generation, storage, recycling, transport and disposal.	To ensure that adverse environmental impacts are prevented	All work areas /throughout construction phase	Construction contractor			✓		

EIA Ref.	EM&A Ref	Environmental Protection Measures	Objectives of the Recommended Measure & Main Concerns to address	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	Implementation Stage				Relevant Legislation Guidelines
						Des	C	O	Dec	
Cultural Heritage – Construction Phase										
9.6	24	Since the Project will not impose any direct or indirect impact on identified cultural heritage resources, no mitigation measures are required.								
Cultural Heritage – Operational Phase										
9.6	25	Since the Project will not impose any direct or indirect impact on identified cultural heritage resources, no mitigation measures are required.								

Annex B

Complaint Proforma

COMPLAINT PROFORMA

REPORT FORM FOR COMPLAINTS		SHEET__Of __	
		UNIT REFERENCE: _____	
RECIPIENT			
<div style="display: flex; justify-content: space-between;"> NAME: LOCATION: TEL.: </div>			
COMPLAINANT			
<div style="display: flex; justify-content: space-between;"> NAME: TEL.: FAX: </div>			
ADDRESS:			
COMPLAINT			
TYPE:NOISE/OTHER			
<div style="display: flex; justify-content: space-between;"> DATE: TIME: LOCATION: </div>			
DESCRIPTION			
COPY FAX TO:		ORIGINAL TO:	
DATE		DATE	
REVIEW RESULTS			
<div style="display: flex; justify-content: space-between;"> SIGNED: DATE </div>			
RECOMMENDATIONS			
<div style="display: flex; justify-content: space-between;"> SIGNED: DATE: </div>			
ATTACHMENTS			
<div style="display: flex; justify-content: space-between;"> COPY TO: DATE/TIME: </div>			