

**CLP Power Hong Kong Limited**

**132kV Overhead Pole Line and  
Underground Cable from the Existing Po Lam  
Substation to the Existing Tui Min Hoi  
Substation – Circuit No. 2**

**Environmental Monitoring and Audit Manual  
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## **1 INTRODUCTION**

### **1.1 Purpose of the Manual**

The purpose of this Environmental Monitoring and Audit (EM&A) Manual is to provide systematic procedures for monitoring, auditing and minimising of the environmental impacts associated with the construction works, so as to ensure compliance with environmental performance requirements. Hong Kong environmental regulations for water quality, the Hong Kong Planning Standards and Guidelines, Environmental Impact Assessment Ordinance (EIAO), and recommendations in the Environmental Impact Assessment (EIA) Draft Report on the Project "132 kV Overhead Pole Line and Underground Cable from the Existing Po Lam Substation to the Existing Tui Min Hoi Substation – Circuit No.2" have served as environmental standards and guidelines in the preparation of this Manual.

This Manual contains the following:

- (a) Responsibilities of the Contractor, the Engineer or Engineer's Representative (ER), the Environmental Team (ET), and the Independent Checker (Environment) (IC(E)) with respect to the EM&A requirements during the course of the project
- (b) Information on project organisation and programming of construction activities for the project
- (c) Requirements with respect to the construction schedule and the necessary EM&A programme to track the varying environmental impact
- (d) Full details of the methodologies to be adopted, including all field, laboratory and analytical procedures, and details on quality assurance and quality control programme
- (e) The hypotheses of potential impacts that the monitoring programme is designed to answer
- (f) The rationale on which the environmental monitoring data will be evaluated and interpreted and the details of the statistical procedures that will be used to interpret the data
- (g) Definition of Action and Limit levels
- (h) Establishment of Event and Action Plans
- (i) Requirements of reviewing pollution sources and working procedures required in the event of non-compliance of the environmental criteria and complaints
- (j) Requirements of presentation of environmental monitoring and appropriate reporting procedures
- (k) Requirements for review of EIA predictions and effectiveness of the EM&A programme.

For the purpose of this manual, the "Engineer" shall refer to the Engineer as defined in the Contract and the Engineer's Representative (ER), in cases where the Engineer's powers have been delegated to the ER, in accordance with the Contract. The ET Leader, who shall be responsible for and in charge of the ET, shall refer to the person delegated the role of executing the EM&A requirements.

## **1.2 Review of the EM&A Manual**

It shall be noted that this EM&A Manual is subject to changes. The Manual shall be reviewed and updated later, where necessary, near the commencement of construction of the Project.

## **1.3 Background**

At present, the electricity supply to Sai Kung Town is mainly from the two primary substations at Tui Min Hoi and Wong Chuk Wan. They are in-fed by a single 132kV and two 33kV overhead pole lines respectively. In order to maintain a secure supply to and cater for the local growth of electricity in Sai Kung Town area, including the supply to the High Islands Pumping Station, it will be necessary to establish a new 132kV in-fed circuit to Sai Kung Town. Without the installation of this proposed circuit, the supply security to that area will not be improved and may even deteriorate due to the growing load demand.

The proposed 132 kV Overhead Pole Line and Underground Cable from the existing Po Lam Substation to the existing Tui Min Hoi Substation - Circuit No. 2 (hereafter referred to as the Project) commences from Tseung Kwan O, running along the ridges to Pak Kong Village in Sai Kung. The two ends of the route are linked to the existing substations by underground cables. Besides connecting the overhead pole line to the substations, underground cables will also be installed for crossing the Clear Water Bay Road at Pik Uk and the cultivation at Ho Chung. The route length of the proposed overhead pole line and underground cable are about 6.5km and 5.5km respectively. The locations of the routes are shown in Appendix A.

The proposed project is a Designated Project under the EIAO by virtue of Section Q.1 of Schedule 2 of the Ordinance. The project profile covers one designated project which is the construction and operation of 132kV overhead pole line and underground cable, parts of which lie within the Ma On Shan Country Park and Conservation Areas in Tseng Lan Shue, Ho Chung and Pak Kong. The Environmental Protection Department has issued an EIA Study Brief in June 1998 for the preparation of an EIA study.

Maunsell Environmental Management Consultants Limited in association Urbis Limited were commissioned by CLP Power Hong Kong Limited in October 1998 to conduct the EIA study. ERM was commissioned under a separate contract to conduct an Ecological Impact (Terrestrial) Assessment for the Project for incorporation into the Environmental Impact Assessment (EIA) study.

## 1.4 Environmental Monitoring and Audit Requirements

The EIA study identified the likely environmental impacts during construction and operational phases, including water quality, cultural heritage, ecology and landscape/visual. These impacts can be minimized to acceptable levels with the implementation of environmental mitigation measures. In order to ensure the its acceptability, baseline and compliance monitoring for water quality, as well as monitoring and audit requirements for cultural heritage, landscape/visual character and ecology, have been identified and is described in detail in the subsequent sections.

## 1.5 Project Organization

The proposed project organisation is shown in Figure 1.1. The responsibilities of respective parties are:

### The Contractor

- provide assistance to 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
- adhere to the procedures for carrying out complaint investigation in accordance with 6.3.

### The Engineer or Engineers Representative

- supervise the Contractors activities and ensure that the requirements in the EM&A Manual are fully complied with
- inform the Contractor when action is required to reduce impacts in accordance with the Event and Action Plans
- employ an IC(E) to audit the results of the EM&A works carried out by the ET
- adhere to the procedures for carrying out complaint investigation in accordance with 6.3.

### The Environmental Team

- monitor the various environmental parameters as required in the EM&A Manual
- analyse the EM&A data and review the success of EM&A programme to cost effectively confirm the adequacy of mitigatory measures implemented and the validity of the EIA predictions and to identify any adverse environmental impacts arising
- carry out site inspection to investigate and audit the Contractor' s site practice, equipment and work methodologies with respect to pollution control and environmental mitigation, and anticipate environmental issues for proactive action before problems arise
- audit and prepare audit reports on the environmental monitoring data and the site environmental conditions
- report on the EM&A results to the IC(E), Contractor, the ER, and the EPD
- recommend suitable mitigation measures to the Contractor in the case of exceedance of action

- and Limit levels in accordance with the Event and Action Plans
- adhere to the procedures for carrying out complaint investigation in accordance with 6.3.

The ET Leader shall have relevant professional qualifications, or have sufficient relevant EM&A experience subject to approval of the ER and the Environmental Protection Department (EPD).

#### Independent Checker (Environment)

- review the EM&A works performed by the ET
- audit the monitoring activities and results
- evaluate the EM&A reports submitted by the ET
- review the proposals for mitigation measures submitted by the Contractor in accordance with the Event and Action Plans
- adhere to the procedures for carrying out complaint investigation in accordance with 6.3.

Sufficient and suitably qualified professional and technical staff shall be employed by the respective parties to ensure full compliance with their duties and responsibility, as required under the EM&A programme for the duration of the project. The ET shall not be in any way an associated body of the Contractor.

## **1.6 Construction Programme**

Figure 1.2 is the tentative works programme for the project. This programme is for information of the ET Leader to get an initial idea of the projection of the works. The ET Leader shall make reference to the actual works progress and programme during the construction stage to schedule the EM&A works, and the Contractor shall provide the respective information to the ET Leader for formulating the EM&A schedule.

## 2 WATER QUALITY

### 2.1 Water Quality Parameters

Monitoring of suspended solids (SS) and dissolved oxygen (DO) in mg/l, and pH value shall be carried out by the ET to ensure that any deteriorating water quality could be readily detected and timely action be taken to rectify the situation. As no wastewater will be discharged from site, effluent indicative parameters (e.g. BOD, COD, oil and grease, MLSS and TKN) need not be monitored. The monitoring of SS, DO and pH will ensure that there will not be excessive impact from the construction activities. DO and pH shall be measured *in-situ* while SS shall be determined in laboratory.

In association with the water quality parameters, some relevant data shall also be measured, such as monitoring location, time, water temperature, weather conditions, and any special phenomena and work underway at the construction site etc.

A monitoring record sheet is presented in Appendix B for reference.

### 2.2 Monitoring Equipment

ET Leader shall provide the following monitoring equipment:

#### *Dissolved oxygen and temperature measuring equipment*

- (a) The instrument should be a portable, weatherproof dissolved oxygen measuring instrument complete with cable, sensor, comprehensive operation manuals, and use a DC power source. It should be capable of measuring:-
  - a dissolved oxygen level in the range of 0-20 mg/l and 0-200% saturation
  - a temperature of 0-45 degree Celsius.
- (b) It should have a membrane electrode with automatic temperature compensation complete with a cable. Sufficient stocks of spare electrodes and cables should be available for replacement where necessary. (e.g. YSI model 59 meter, YSI 5739 probe, YSI 5795A submersible stirrer with reel and cable or an approved similar instrument).
- (c) Should salinity compensation not be built-in in the DO equipment, in-situ salinity shall be measured to calibrate the DO equipment prior to each DO measurement.

#### *Sample Container and Storage*

- (a) A water sampler comprises a transparent PVC cylinder, with a capacity of not less than 2 litres, and can be effectively sealed with latex cups at both ends. The sampler shall have a positive latching system to keep it open and prevent premature closure until released by a messenger when the sampler is at the selected water depth (e.g. Kahlisco Water Sampler or an approved



similar instrument).

- (b) Water samples for suspended solids measurement shall be collected in high density polythene bottles, packed in ice (cooled to 4°C without being frozen), and delivered to the laboratory as soon as possible after collection.
- (c) A digital pH meter (Beckman Model  $\phi$  200 or equivalent) was used to measure the pH of the collected water samples.

#### *Calibration of In-situ Equipment*

All *in-situ* monitoring instrument shall be checked, calibrated and certified by a laboratory accredited under HOKLAS or any other international accreditation scheme before use, and subsequently re-calibrated at 3 monthly intervals throughout all stages of the water quality monitoring.

For the on site calibration of field equipment, the BS 1427:1993, "Guide to Field and on-site test methods for the analysis of waters" shall be observed.

Sufficient stocks of spare parts shall be maintained for replacements when necessary. Backup monitoring equipment shall also be made available so that monitoring can proceed uninterrupted even when some equipment some equipment is under maintenance, calibration, etc.

### **2.3 Laboratory Measurement / Analysis**

Analysis of suspended solids shall be carried out in a HOKLAS or other international accredited laboratory. Water samples of about 500 mL shall be collected at the monitoring stations for carrying out the laboratory SS determination. The SS determination work shall start within 24 hours after collection of the water samples. The SS determination shall follow APHA 17ed 2540D or equivalent methods subject to approval of DEP.

If a site laboratory is set up or a non-HOKLAS and non-international accredited laboratory is hired for carrying out the laboratory analysis, the laboratory equipment, analytical procedures, and quality control shall be approved by the DEP. All the analysis shall be witnessed by the ER.

The ET Leader shall provide the ER with one copy of the relevant chapters of the "Standard Methods for the Examination of Water and Wastewater" most recent edition and any other relevant document for his reference.

For the testing methods of other parameters as recommended by EIA or required by DEP, detailed testing methods, pre-treatment procedures, instrument use, Quality Assurance/Quality Control (QA/QC) details (such as blank, spike recovery, number of duplicate samples per batch, etc.), detection limits and accuracy shall be submitted to DEP for approval prior to the commencement of monitoring programme. The QA/QC shall be in accordance with the requirement of HOKLAS or

international accredited scheme. The QA/QC results shall be reported. EPD may also request the laboratory to carry out analysis of known standards provided by EPD for quality assurance. Additional duplicate samples may be required by EPD for inter laboratory calibration. Remaining samples after analysis shall be kept by the laboratory for 3 months in case repeat analysis is required. If in-house or non-standard methods are proposed, details of the method verification may also be required to submit to DEP. In any circumstance, the sample testing shall have comprehensive quality assurance and quality control programmes. The laboratory shall prepare to demonstrate the programmes to DEP or his representatives when requested.

## 2.4 Monitoring Locations

During the construction phase, the main sensitive receiver identified within the area of influence is the lower reach of the Ho Chung River. Two control monitoring stations upstream of the construction work, C1 and C2, and two impact monitoring stations downstream of the construction work, W1 and W2, have been proposed. Control stations are necessary to compare the water quality from potentially impacted sites with the ambient water quality. Control stations shall be located within the same body of water as the impact monitoring stations but shall be outside the area of influence of the works and, as far as practicable, not affected by any other works. These proposed water quality monitoring locations are shown in Figure 2.1.

When alternative monitoring locations are proposed, they shall be chosen based on the following criteria:

- (a) at locations close to and preferably at the boundary of the mixing zone of the major site activities as indicated in the EIA final report, which are likely to have water quality impacts;
- (b) close to the sensitive receptors which are directly or likely to be affected;
- (c) for monitoring locations located in the vicinity of the sensitive receptors, care shall be taken to cause minimal disturbance during monitoring;
- (d) at two or more control stations which shall be at locations representative of the project site in its undisturbed condition. Control stations shall be located, as far as practicable, both upstream and down stream of the works area.

Measurements shall be taken at mid-water depth.

## 2.5 Impact Monitoring

During the course of the cable laying work across Ho Chung Valley, three replicates of water samples at the monitoring stations shall be collected once per week and tested for SS. *In-situ* DO and pH measurements shall be conducted once per week during collection of water samples for SS test. Water samples shall be taken at mid-water depth.

The monitoring programme will be designed to test the Impact Hypothesis that the construction work does not have any significant impact on water quality downstream. This hypothesis will be tested by comparison of relevant water quality parameters at control stations upstream of the works and impact

stations downstream.

The details of the statistical analysis will be determined on completion of the baseline monitoring work. Subject to data compatibility, it is intended that a paired t-test will be used to compare the monitoring data for SS, DO and pH at the control stations upstream and the impact stations downstream to a significance level of 5%.

The baseline data will be carefully reviewed and, if necessary, the monitoring programme will be amended prior to implementation of the construction phase monitoring to ensure that a statistically valid assessment of the Impact Hypothesis can be made.

## 2.6 Event and Action Plan for Water Quality

The water quality criteria, namely Action and Limit levels are shown in Table 2.1. Shall the monitoring results of the water quality parameters at any designated monitoring stations indicate that the water quality criteria are exceeded, the actions in accordance with the Action Plan in Table 2.2 shall be carried out.

**Table 2.1 Action and Limit Levels for Water Quality**

<i>Parameters</i>	<i>Action</i>	<i>Limit</i>
DO in mg/l (Mid-depth)	1%-ile of baseline data or midway between 5%-ile of baseline data and limit level	4 mg/l
SS in mg/l (depth-averaged)	95%-ile of baseline data or 120% of upstream control station's SS, whichever the value is lower.	99%-ile of baseline or 130% of upstream control station's SS, whichever the value is lower.
pH	midway between average baseline data and Limit level	≥8.5

*Notes:*

- For SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.
- All the figures given in the table are used for reference only and the EPD may amend the figures whenever it is considered as necessary.

**Table 2.2 Event and Action Plan for Water Quality**

LIMIT LEVEL	ET LEADER	IC(E)	ER	CONTRACTOR
1. Limit level being exceeded by one sampling day	<ol style="list-style-type: none"> <li>Repeat measurement on next day of exceedance to confirm findings</li> <li>Identify source(s) of impact</li> <li>Inform IC(E), contractor, ER &amp; EPD</li> <li>Check monitoring data, all plant, equipment &amp; contractor's working methods</li> <li>Discuss mitigation measures with IC(E), Contractor &amp; ER.</li> </ol>	<ol style="list-style-type: none"> <li>Checking monitoring data submitted by ET &amp; Contractor's working method</li> <li>Discuss with ET &amp; Contractor on the possible mitigation measures</li> <li>Review the proposed mitigation measures submitted by Contractor &amp; advise the ER accordingly.</li> </ol>	<ol style="list-style-type: none"> <li>Confirm receipt of notification of failure in writing</li> <li>Discuss with IC(E), ET &amp; Contractor on the proposed mitigation measures</li> <li>Request Contractor to review the working methods.</li> <li>Ensure mitigation measures are properly implemented</li> </ol>	<ol style="list-style-type: none"> <li>Inform the ER &amp; confirm notification of the non-compliance in writing</li> <li>Rectify unacceptable practice</li> <li>Check all plant &amp; equipment &amp; consider changes of working methods</li> <li>Discuss with ET, IC(E) and ER and propose mitigation measures to ER and IC(E) within 3 working days</li> <li>Implement the agreed mitigation measures</li> </ol>
2. Limit level being exceeded by two or more consecutive sampling days	<ol style="list-style-type: none"> <li>Repeat measurement on the next day of exceedance to confirm findings</li> <li>Identify source(s) of impact</li> <li>Inform IC(E), Contractor, ER &amp; EPD</li> <li>Check monitoring data, all plant, equipment &amp; Contractor's working methods</li> <li>Discuss mitigation measures within IC(E), Contractor &amp; ER</li> <li>Ensure mitigation measures are implemented</li> <li>Increase the monitoring frequency to daily until no exceedance of Limit level for two consecutive days.</li> </ol>	<ol style="list-style-type: none"> <li>Checking monitoring data submitted by ET &amp; Contractor's working method</li> <li>Discuss with ET &amp; Contractor on potential remedial actions</li> <li>Review Contractor's mitigation measures whenever necessary to assure their effectiveness &amp; advise the ER accordingly</li> <li>Supervise the implementation of mitigation measures.</li> </ol>	<ol style="list-style-type: none"> <li>Discuss with IC(E), ET &amp; Contractor on the proposed mitigation measures</li> <li>Request Contractor to critically review the working methods</li> <li>Make agreement on the mitigation measures to be implemented</li> <li>Ensure mitigation measures are properly implemented</li> <li>Consider &amp; instruct, if necessary, the Contractor to slow down or to stop all or part of the construction activities until no exceedance of Limit level.</li> </ol>	<ol style="list-style-type: none"> <li>Take immediate action to avoid further exceedance</li> <li>Discuss with ET, IC(E) and ER and propose mitigation measures to ER and IC(E) within 3 working days</li> <li>Implement the agreed mitigation measures</li> <li>Resubmit proposals of mitigation measures if problem still not under control</li> <li>As directed by the Engineer, to slow down or to stop all or part of the construction activities until no exceedance of Limit level.</li> </ol>

## 2.7 Water Quality Mitigation Measures

The EIA report has recommended water quality control and mitigation measures. The Contractor shall be responsible for the design and implementation of these measures. The following is a summary of the recommended measures:

- removal of excavated soil from the construction sites;
- sediment removal facilities shall be maintained and the deposited sediment/grit removed regularly to ensure that these facilities are functioning properly at all times;
- all runoff from the study area during construction shall be routed through oil/grit separators and/or sediment basins/traps before being allowed to discharge;
- all stockpiled areas shall be covered (e.g. with tarpaulin) and intercepting drains provided to prevent stormwater runoff from washing across exposed soil surfaces or stockpiled areas;
- construction shall be scheduled to be undertaken between September and April to minimise soil erosion during rainy season;
- portable toilets shall be provided for the on-site construction workforce; and
- monitoring of the SS and DO levels is recommended to audit potential increase in SS level and potential decrease in DO content.

If the above measures are not sufficient to restore the water quality to an acceptable levels upon the advice of the ET Leader, the Contractor shall liaise with the ET Leader on some other mitigation measures, propose to IC(E) and ER for approval, and carry out the mitigation measures.

The implementation schedule of mitigation measures is presented in Appendix C.

### 3 ECOLOGY

The direct ecological impact are considered to be limited to the construction period. In order to ensure the ecological mitigation measures recommended in the EIA Report are implemented and enforced, the environmental audit programme designed for the Project shall pay particular attention to avoid any unnecessary impact to the surrounding habitats caused by associated construction activities. The audit shall ensure the following mitigation measures are enforced.

- Minor on-site adjustment of pole positions, especially for Pole A25a at Ho Chung Valley, where rare tree species *Acmena acuminatissima* and protected tree *Tutcheria championii* will be directly affected, should be carried out to minimize the number of tree that would require felling, and if avoidance is not possible due to engineering constraints, collection of the rare/protected tree individuals for transplanting to similar habitats in the vicinity;
- Loss of habitats should be minimized by reducing the area of temporary disturbance within the proposed route. Any unnecessary disturbance or clearance of vegetation should not be allowed. Felling of any tree or removal of any rare or protected plant individuals has to be under close supervision;
- The 1m wide maintenance path normally required beneath the powerline should be avoided or reduced in width so as to reduce the effect of forest fragmentation. Crew access and transportation of equipment should be confined to existing paths and roads. Short path "teeing off" from nearby existing path or road should be used rather than a long continuous path beneath the new line. The routing of the maintenance footpaths should avoid any animal burrows when encountered during access;
- Re-establishment of trees and shrubs of native species, preferably those species that were cleared for construction works, will be conducted at each pole location after the construction phase as part of the landscape restoration works as well as prevention of erosion. Periodic trimming of vegetation will be necessary for maintenance and safety thereafter;
- Duct laying work at the existing stream at Ho Chung should be carried out in the dry season to minimise disturbance, and the affected stream bed should be reinstated to its original condition using natural substratum after cable duct construction;
- Regular checking to ensure that the work site boundaries are not exceeded and that no damage occurs to surrounding areas; and
- Prohibition and prevention of open fires within the work site boundary during construction.

The implementation schedule of mitigation measures is presented in Appendix C.

#### 4 CULTURAL HERITAGE

The archaeological impact assessment has indicated that the predicted impact of the overhead/underground cable construction on archaeological sites generally is very low. The only area of any archaeological potential is that of the Ho Chung Valley, where a proposed underground section of cable will be laid. An impact of low intensity is predicted, based on present evidence. That is, the trenching work may unearth isolated artifacts (not *in situ*) of prehistoric and early historical periods, but it is deemed unlikely that significant cultural deposits will be impacted by the proposed trench. This view is supported by observations of existing stratigraphy in the stream bed on the valley floor.

Due to low archaeological potential of the project site, it is not recommended to implement an EM&A programme to monitor the construction works in the whole project site including the trenching work across Ho Chung Valley. However, since the chance that the trench area may contain *in situ* cultural deposits cannot be eliminated, it will be advisable to carry out a rescue excavation prior to the commencement of the construction work to salvage the cultural relics. The project proponent, CLP Power, is committed to allow sufficient time in the Project Programme to conduct such rescue excavation. No laying of cables across Ho Chung Valley can be carried out until the rescue excavation is completed to the satisfaction of the Antiquities & Monuments Office. CLP Power will directly liaise with AMO with regard to the size and alignment of rescue excavation to accommodate the cables to be laid as far as practicable.

The implementation schedule of mitigation measures is presented in Appendix C.

## 5 LANDSCAPE AND VISUAL ISSUES

Landscape and visual impact mitigation measures were proposed during the environmental impact assessment (EIA) stage of the project and the results are presented in the EIA report. These include: (a) revegetation of native shrub species at each pole location; (b) minor on-site adjustment of pole positions; (c) painting pole structures in a colour of low chromatic intensity (B.S. Colour Code 10B25) to reduce the potential contrast between the structures and their background; and (d) removal of two pairs of existing 33kV powerline from within the Ma On Shan Country Park.

The proposed painting of the poles shall be completed prior to the powerline being energised. In addition, two pairs of existing 33kV powerlines will be removed from within the Ma On Shan Country Park within 2 years after commissioning of the proposed 132kV powerline.

In view of a small scale of the proposed construction work and associated minimal impacts (i.e. only 13 common trees to be felled over 6.5km overhead pole line and 5.5km underground cable), no monitoring work is therefore considered required.

The implementation schedule of mitigation measures is presented in Appendix C.



## **6 HEALTH**

The measurements of similar designed circuits and calculations of EMF for the proposed overhead lines and underground cables demonstrated that the predicted values would be well under the stipulated guideline limits issued by ICNIRP. In order to verify compliance with the ICNIRP guideline levels, field measurements will be carried out within 6 months after commissioning of this circuit. CLP Power will directly make arrangement with EMSD for the necessary measurements at critical locations at both ends close to the respective Substations and Ho Chung area.

## 7 SITE ENVIRONMENTAL AUDIT

### 7.1 Site Inspections

Site inspections provide a direct means to trigger and enforce the specified environmental protection and pollution control measures. They shall be undertaken routinely to inspect the construction activities in order to ensure that appropriate environmental protection and pollution control mitigation measures are properly implemented. With well defined pollution control and mitigation specifications and a well established site inspection, deficiency and action reporting system, the site inspection is one of the most effective tools to enforce the environmental protection requirements on the construction site.

The ET Leader is responsible for formulation of the environmental site inspection, deficiency and action reporting system, and for carrying out the site inspection works. He shall submit a proposal on the site inspection, deficiency and action reporting procedures within 21 days of the construction contract commencement to the Contractor for agreement and to the ER for approval. The ET's proposal for rectification will be made known to the IC(E).

Regular site inspections shall be carried out at least once every two weeks. The areas of inspection shall not be limited to the environmental situation, pollution control and mitigation measures within the site; it shall also review the environmental situation outside the site area which is likely to be affected, directly or indirectly, by the site activities. The ET Leader shall make reference to the following information in conducting the inspection:

- (a) The EIA recommendations on environmental protection and pollution control mitigation measures
- (b) Works progress and programme
- (c) Individual works methodology proposals (which shall include proposal on associated pollution control measures)
- (d) The contract specifications on environmental protection
- (e) The relevant environmental protection and pollution control laws
- (f) Previous site inspection results.

The Contractor shall update the ET Leader with all relevant information of the construction contract for him to carry out the site inspections. The inspection results and its associated recommendations on improvements to the environmental protection and pollution control works shall be submitted to the IC(E) and the Contractor within 24 hours, for reference and for taking immediate action. The Contractor shall follow the procedures and time-frame as stipulated in the environmental site inspection, deficiency and action reporting system formulated by the ET Leader to report on any remedial measures subsequent to the site inspections.

*Ad hoc* site inspections shall also be carried out if significant environmental problems are identified.

Inspections may also be required subsequent to receipt of an environmental complaint, or as part of the investigation work, as specified in the Action Plan for EM&A.

A mitigation implementation status proformas and a site inspection proforma are provided in Appendix D1 and D2 respectively.

## **7.2 Compliance with Legal and Contractual Requirements**

There are contractual environmental protection and pollution control requirements as well as environmental protection and pollution control laws in Hong Kong which the construction activities shall comply with.

In order that the works are in compliance with the contractual requirements, all the works method statements submitted by the Contractor to the ER for approval shall be sent to the ET Leader for vetting to see whether sufficient environmental protection and pollution control measures have been included.

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

The Contractor shall regularly copy relevant documents to the ET Leader so that the checking work can be carried out. The document shall at least include the updated Work Progress Reports, the updated Works Programme, the application letters for different licence/permits under the environmental protection laws, and all the valid licence/permit. The site diary shall also be available for the ET Leader's inspection upon his request.

After reviewing the document, the ET Leader shall advise the ER and the Contractor 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 Leader's review concludes that the current status on licence/permit application and any environmental protection and pollution control preparation works may not cope with the works programme or may result in potential violation of environmental protection and pollution control requirements by the works in due course, he shall also advise the Contractor and the ER accordingly.

Upon receipt of the advice, the Contractor shall undertake immediate action to remedial the situation. The ER shall follow up to ensure that appropriate action has been taken by the Contractor in order that the environmental protection and pollution control requirements are fulfilled.

A regulatory compliance proforma is presented in Appendix D3.

## **7.3 Environmental Complaints**

Complaints shall be referred to the ET Leader for carrying out complaint investigation procedures. The ET Leader shall undertake the following procedures upon receipt of the complaints:

- (a) Log complaint and date of receipt onto the complaint database and inform the IC(E) immediately
- (b) Investigate the complaint to determine its validity, and to assess whether the source of the problem is due to works activities
- (c) If a complaint is valid and due to works, identify effective mitigation measures in consultation with the IC(E)
- (d) If mitigation measures are required, advise the Contractor accordingly
- (e) Review the Contractor's response on the identified mitigation measures, and the updated situation
- (f) If the complaint is transferred from EPD, submit interim report to EPD on status of the complaint investigation and follow-up action within the time frame assigned by EPD
- (g) Undertake additional monitoring and audit to verify the situation if necessary, and review that any valid reason for complaint does not recur
- (h) Report the investigation results and the subsequent actions to the source of complaint for responding to complainant (If the source of complaint is EPD, the results shall be reported within the time frame assigned by EPD)
- (i) Record the complaint, investigation, the subsequent actions and the results in the monthly EM&A reports.

During the complaint investigation work undertaken by the ET, the Contractor and ER shall cooperate with the ET Leader in providing all the necessary information and assistance for completion of the investigation. If mitigation measures (in consultation with the IC(E) are identified in the investigation, the Contractor shall promptly carry out the mitigation. The ER shall ensure that the measures have been carried out by the Contractor.

A complaint log sheet is provided in Appendix D4. A flow chart of the complaint response procedure is shown in Figure 5.1.

ET Leader shall provide a flow chart of the complaint response procedures. This shall address complaint receiving channels, responsible parties/contacts for information/action, the investigation processes, procedures for the implementation of mitigation measures, guidelines for communication and public relation with the complainant.

## **8 REPORTING**

### **8.1 General**

The following reporting requirements based upon a paper documented approach. However, the same information can be provided in an electronic medium upon agreeing the format with the ER and EPD.

All the monitoring data (baseline and impact) shall also be submitted in diskettes in a format agreed by ER and EPD.

### **8.2 Baseline Monitoring Report**

The ET Leader shall prepare and submit a Baseline Environmental Monitoring Report (where appropriate) within 10 working days of completion of the baseline monitoring. Copies of the Baseline Environmental Monitoring Report shall be submitted to each of the three parties: the Contractor, the IC(E), the ER and the EPD. The ET Leader shall liaise with the relevant parties on the exact number of copies of copies they want. The form and content of the report, and the representation of baseline monitoring data shall be in a format to the satisfaction of EPD and include, but not be limited to the following:

- (a) Up to half a page executive summary
- (b) Brief project background information
- (c) Drawings showing locations of the baseline monitoring stations
- (d) An updated construction programme with milestones of environmental protection/mitigation activities annotated
- (e) Monitoring results (in both hard and diskette copies) together with the following information:
  - monitoring methodology
  - name of laboratory and type of equipment used and calibration details;
  - parameters monitored
  - monitoring locations (and depth)
  - monitoring date, time, frequency and duration
  - QA/QC results and detection limits
- (f) Details on influencing factors, including:
  - major activities, if any, being carried out on the site during the period;
  - weather conditions during the period
  - other factors which might affect the results
- (g) Determination of the Action and Limit Levels for each monitoring parameter and statistical analysis of the baseline data
- (h) Revisions for inclusion in the EM&A Manual
- (I) Comments and conclusions.

### **8.3 EM&A Reports**

The results and findings of all EM&A work required in the Manual shall be recorded in the monthly EM&A reports prepared by the ET Leader. The EM&A report shall be prepared and submitted within 10 working days of the end of each reporting month, with the first report due in the month after construction commences. Commencement of construction is defined as the occurrence of any physical activity undertaken within the site boundary. A maximum of 4 copies of each monthly EM&A report shall be submitted to each of the four parties: the Contractor, the IC(E), the ER and the EPD. Before submission of the first EM&A report, the ET Leader shall liaise with the parties on the exact number of copies and format of the monthly reports in both hard copy and electronic medium requirement. The ET Leader shall review the number and location of monitoring stations and parameters to monitor every 6 months or on an as needed basis in order to cater for the changes in surrounding environment and nature of works in progress.

### 8.3.1 First Monthly EM&A Report

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

- (a) Executive summary (1-2 pages)
  - breaches of Action and Limit levels
  - 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 turning of construction activities showing the interrelationship with environmental mitigation measures for the month
  - management structure
  - works undertaken during the month
- (c) Environmental status
  - works undertaken during the month with illustrations such as location of works
  - drawing showing the project area, any environmental sensitive receivers and the locations of the monitoring stations.
- (d) Summary of EM&A requirements
  - all monitoring parameters
  - environmental quality performance limits (Action and Limit levels)
  - Event-Action Plans
  - environmental mitigation measures, as recommended in the project EIA study final report
  - environmental requirements in contract documents.

- (e) Implementation status
  - advice on the implementation of environmental protection and pollution control/mitigation measures, as recommended in the project EIA study report, summarised in the updated implementation schedule.
  
- (f) Monitoring results (in both hard and diskette copies)
  - monitoring methodology
  - name of laboratory and types of equipment used and calibration details;
  - parameters monitored
  - monitoring locations
  - monitoring date, time, frequency, and duration
  - weather conditions during the period
  - any other factors which might affect the monitoring results
  - QA/QC results and detection limits.
  
- (g) Report on Non-compliance, Complaints, Notifications of Summons and Successful Prosecutions
  - record of all noncompliance (exceedances) of the environmental quality performance limits (Action and Limit levels)
  - 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 all notifications of summons and successful prosecutions for breaches of the current environmental protection/pollution control legislations, 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
  - description of the actions taken in the event of noncompliance and deficiency reporting and any follow-up procedures related to earlier noncompliance.
  
- (h) Others
  - an account of the future key issues as reviewed from the works programme and work method statements;
  - advice on the solid and liquid waste management status; and
  - submission of implementation status proforma, environmental protection proforma, regular compliance proforma, site inspection proforma and complaint log, etc, summarising EM&A of the period.

### 8.3.2 Subsequent EM&A Reports



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

- (a) Executive Summary (1-2 pages)
  - breaches of Action and Limit levels
  - complaint log
  - notification of any summons and successful prosecutions
  - reporting changes
  - future key issues.
  
- (b) Environmental status
  - construction programme with fine tuning of construction activities showing the interrelationship with environmental protection/mitigation measures for the month
  - works undertaken during the month with illustrations including key personnel contact names and telephone numbers
  - drawing showing the project area, any environmental sensitive receivers and the locations of the monitoring stations.
  
- (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) Monitoring results (in both hard and diskette copies)
  - monitoring methodology
  - name of laboratory and types of equipment used and calibration details;
  - parameters monitored
  - monitoring locations
  - monitoring date, time, frequency, and duration
  - weather conditions during the period
  - any other factors which might affect the monitoring results
  - QA/QC results and detection limits.
  
- (e) Report on Non-compliance, Complaints, Notifications of Summons and Successful Prosecutions
  - record of all noncompliance (exceedances) of the environmental quality performance limits (Action and Limit levels)
  - 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 all notifications of summons and successful prosecutions for breaches of the current environmental protection/pollution control legislations, 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
  - a description of the actions taken in the event of noncompliance and deficiency reporting and any follow-up procedures related to earlier noncompliance.
- (f) Others
- an account of the future key issues as reviewed from the works programme and work method statements
  - advice on the solid and liquid waste management status.
- (g) Appendix
- Action and Limit levels
  - graphical plots of trends of monitored parameters at key stations over the past four reporting periods for representative monitoring stations annotated against the following:
    - i) major activities being carried out on site during the period;
    - ii) weather conditions during the period; and
    - iii) any other factors which might affect the monitoring results
  - monitoring schedule for the present and next reporting period
  - cumulative statistics on complaints, notifications of summons and successful prosecutions
  - outstanding issues and deficiencies

### 8.3.3 Quarterly EM&A Summary Reports

The quarterly EM&A summary report which shall generally be around 5 pages (including about 3 of text and tables and 2 of figures) shall contain at least the following information. Apart from these, the first quarterly summary report shall also confirm that the monitoring work is proving effective and that is generating data with the necessary statistical power to categorically identify or confirm the absence of impact attributable to the works.

- (a) Up to half a page executive summary
- (b) Basic project information including a synopsis of the project organisation, programme, contacts of key management, and a synopsis of work undertaken during the quarter
- (c) A brief summary of EM&A requirements including:
  - monitoring parameters
  - environmental quality performance limits (Action and Limit levels)
  - environmental mitigation measures, as recommended in the project EIA study final report

- (d) 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
- (e) Drawings showing the project area, any environmental sensitive receivers and the locations of the monitoring and control stations
- (f) Graphical plots of the trends of monitored parameters over the past 4 months (the last month of the previous quarter and the present quarter) for representative monitoring stations annotated against:
  - the major activities being carried out on site during the period
  - weather conditions during the period
  - any other factors which might affect the monitoring results
- (g) Advice on the solid and liquid waste management status
- (h) A summary of noncompliance (exceedances) of the environmental quality performance limits (Action and Limit levels)
- (i) A brief review of the reasons for and the implications of non-compliance including review of pollution sources and working procedures
- (j) A summary description of the actions taken in the event of non-compliance and any follow-up procedures related to earlier non-compliance
- (k) A summary record of all complaints received (written or verbal) for each media, liaison and consultation undertaken, actions and follow-up procedures taken
- (l) A summary record of notifications of summons and successful prosecutions for breaches of the current environmental protection/pollution control legislation, locations and nature of the breaches, investigation, follow-up actions taken and results
- (m) Comments (e.g. effectiveness and efficiency of the mitigation measures), recommendations (e.g. any improvement in the EM&A programme) and conclusions for the quarter
- (n) Proponents' contacts and any hotline telephone number for the public to make enquiries.

Apart from the above, the first quarterly summary report shall also confirm that the monitoring work is proving effective and that it is generating data with the necessary statistical power to categorically identify or confirm the absence of impact attributable to the works.

#### 8.3.4 Final EM&A Review Report

The termination of EM&A programme shall be determined on the following basis:

- (a) Completion of construction activities and insignificant environmental impacts of the remaining outstanding construction works
- (b) Trends analysis to demonstrate the narrow down of monitoring exceedances due to construction activities and the return of ambient environmental conditions in comparison with baseline data
- (c) No environmental complaint and prosecution involved.

The proposal termination shall be endorsed by the IC(E), A/ER and the project proponent prior to final approval from the DEP.

The final EM&A report shall contain at least the following information:

- (a) Executive summary (1-2 pages)
- (b) Basic project information including a synopsis of the project organisation, contacts of key management, and a synopsis of work undertaken during the entire construction period
- (c) A brief summary of EM&A requirements including:
  - monitoring parameters
  - environmental quality performance limits (Action and Limit levels)
  - environmental mitigation measures, as recommended in the project EIA study final report
- (d) 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 proformas
- (e) Drawings showing the project area, any environmental sensitive receivers and the locations of the monitoring stations
- (f) Graphical plots and the statistical analysis of the trends of monitored parameters over the construction project for representative monitoring stations annotated against:
  - the major activities being carried out on site during the period
  - weather conditions during the period
  - any other factors which might affect the monitoring results
  - the return of ambient environmental conditions in comparison with baseline data
- (g) Compare and contrast the EM&A data with the EIA predictions and annotate with explanation for any discrepancies

- (h) Provide clear-cut decisions on the environmental acceptability of the project with reference to the specific impact hypothesis
- (i) Advice on the solid and liquid waste management status
- (j) A summary of noncompliance (exceedances) of the environmental quality performance limits (Action and Limits levels)
- (k) A brief review of the reasons for and the implications of non-compliance including review of pollution sources and working procedures as appropriate
- (l) A summary description of the actions taken in the event of non-compliance and any follow-up procedures related to earlier non-compliance
- (m) A summary record of all complaints received (written or verbal) for each media, liaison and consultation undertaken, actions and follow-up procedures taken
- (n) Review the monitoring methodology adopted and with the benefit of hindsight, comment on its effectiveness (including cost effectiveness)
- (o) A summary record of notifications of summons and successful prosecutions for breaches of the current environmental protection/pollution control legislations, locations and nature of the breaches, investigation, follow-up actions taken and results
- (p) Review the practicality and effectiveness of the EIA process and EM&A programme (e.g. effectiveness and efficiency of the mitigation measures), recommend any improvement in the EM&A programme
- (q) A conclusion to state the return of ambient and/or the predicted scenario as per EIA findings

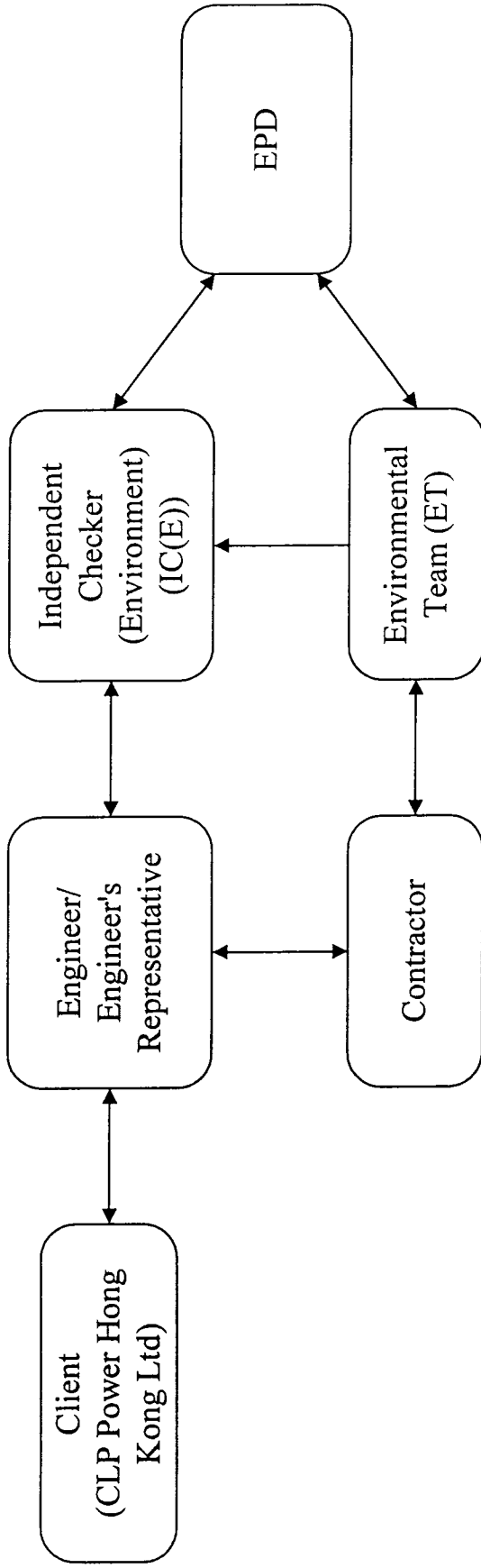
#### **8.4 Data Keeping**

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

#### **8.5 Interim Notifications of Environmental Quality Limit Exceedances**

With reference to Event/Action Plans in Table 2.2, when the environmental quality limits are exceeded, the ET Leader shall immediately notify the IC(E) & EPD, as appropriate. The notification shall be followed up with advice to IC(E) and EPD on the results of the investigation, proposed action and success of the action taken, with any necessary follow-up proposals. An interim notification form is shown in Appendix E for reference.

# FIGURES



<b>Maunsell</b>	TITLE			PROJECT NO		FIGURE NO		DATE	
	Project Organisation			A15398		A15398		Figure 1.1	
MAUNSELL ENVIRONMENTAL MANAGEMENT CONSULTANTS LTD			DESIGNED/ CHECKED		DATE		May 1999		



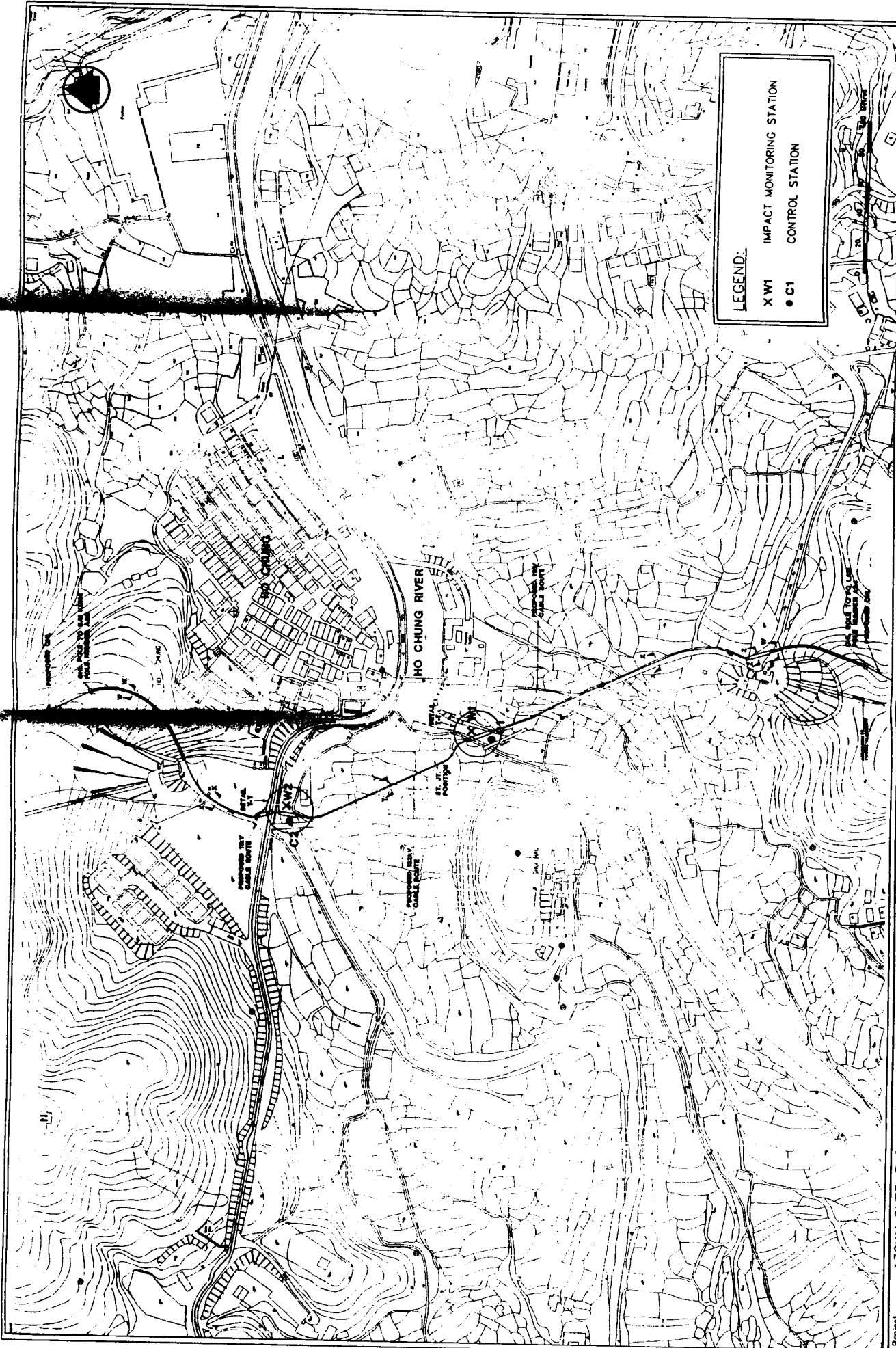
**PROPOSED 132KV OVERHEAD POLE LINE AND UNDERGROUND CABLE  
FROM EXISTING PO LAM S/S TO EXISTING TUI MIN HOI S/S NO.2**

ID	Task Name	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14	M15	M16	M17	M18	M19	M20	M21	M22
1	OHL construction																						
2	Underground cable construction																						

Project: 16-340  
Date: Jul 9 '99

Task

Figure 1.2 Tentative Construction Programme



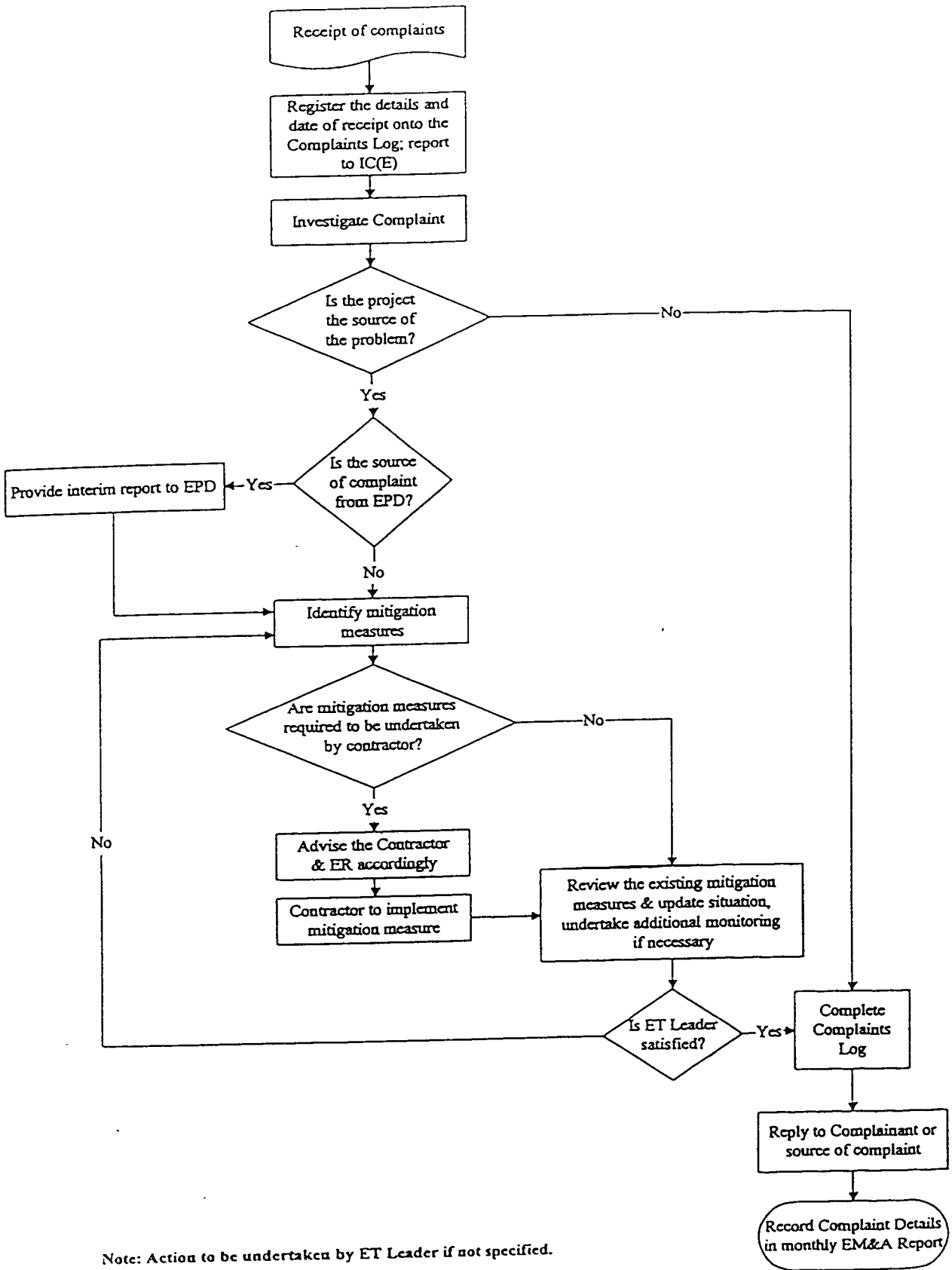
LEGEND:  
 X W1 IMPACT MONITORING STATION  
 ● C1 CONTROL STATION

Project 132KV OVERHEAD POLE LINE & UNDERGROUND CABLE FROM THE EXISTING PO LAM SUBSTATION TO THE EXISTING TUI MIN HOI SUBSTATION - CIRCUIT NO. 2

Figure 2.1  
 Scale AS SHOWN  
 Date MAY 1999

**Maunsell**  
 MAUNSELL ENVIRONMENTAL  
 MANAGEMENT CONSULTANTS LTD

PROPOSED WATER QUALITY MONITORING STATIONS



Note: Action to be undertaken by ET Leader if not specified.

FLOW CHART OF THE COMPLAINT RESPONSE PROCEDURE

FIGURE 6.1  
SCALE n/a

# APPENDICES

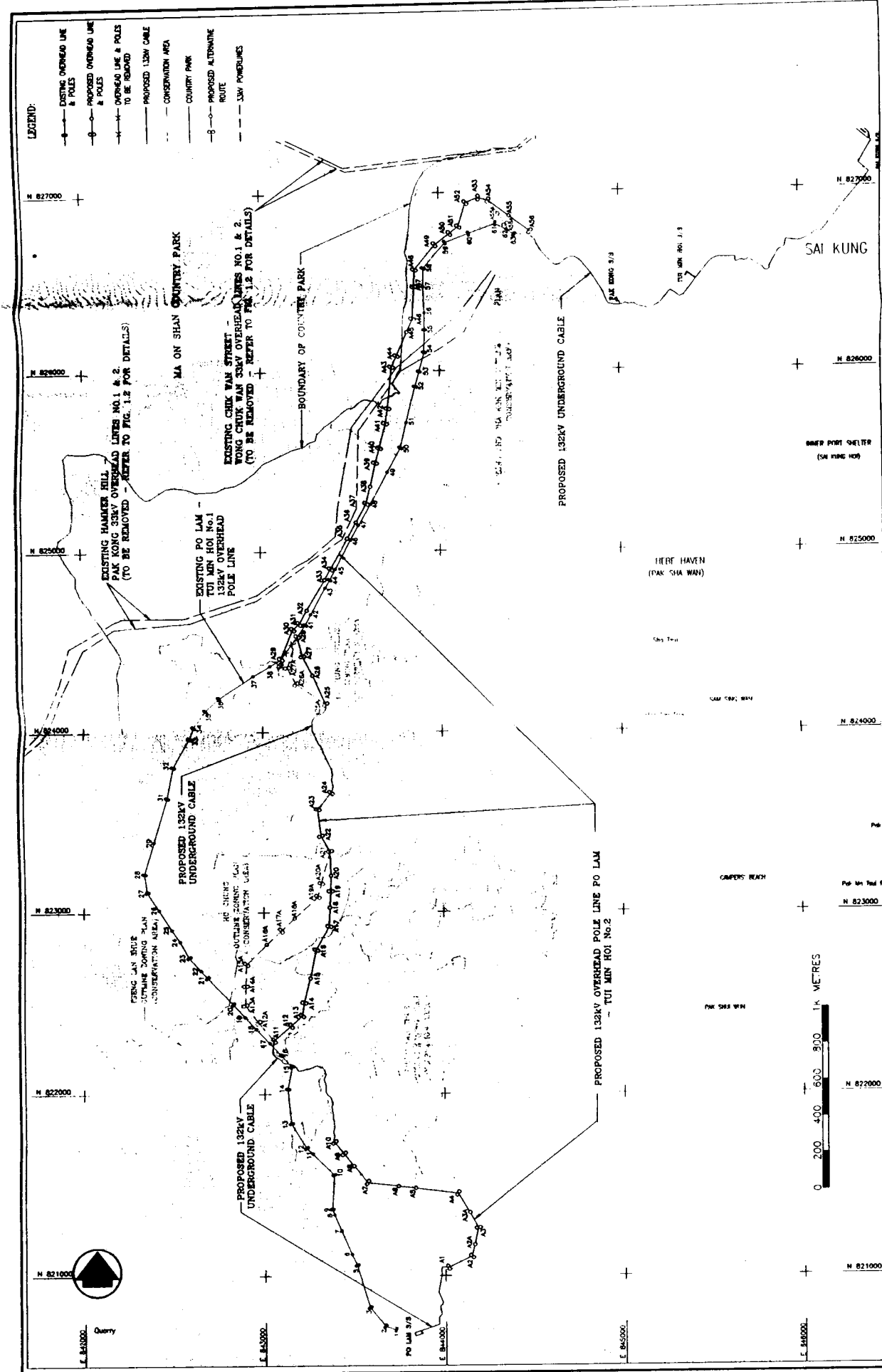


Figure	APPENDIX A
Scale	AS SHOWN
Date	OCT 1993

Project 132KV OVERHEAD POLE LINE & UNDERGROUND CABLE FROM THE EXISTING PO LAM SUBSTATION TO THE EXISTING TUI MIN HOI SUBSTATION - CIRCUIT NO. 2

Title LOCATION PLAN OF THE PROPOSED OVERHEAD POLE LINE & UNDERGROUND CABLE

**APPENDIX B**  
**Water Quality Monitoring Data Record Sheet**

Location		
Date		
Start Time	(hh:mm)	
Weather		
Water Depth	(m)	
Temperature	(°C)	
Turbidity	(NTU)	
Sample Identification		
SS	(mg/l)	
Oil and grease	(mg/l)	
COD	(mg/l)	
Observed Construction Activities	<100m from location	
	>100m from location	
Other Observations		

	<u>Name &amp; Designation</u>	<u>Signature</u>	<u>Date</u>
Recorded By	: _____	_____	_____
Checked by	: _____	_____	_____

Note: The SS results are to be filled up once they are available from the laboratory.

**APPENDIX C**

**Implementation Schedule of Recommended Mitigation Measures**

EM&A Ref.	EIA Ref.	Mitigation Measures	Location	Timing for Implementation	Implementation Agent	Requirements
<b>Water Quality Impact</b>						
S2.7	S6.7	<p>All construction activities in general</p> <p>Proper site management and good housekeeping practices to minimise surface water runoff, and ensure that debris and rubbish cannot enter water bodies.</p> <p><i>Trenching</i></p> <ul style="list-style-type: none"> <li>The duct laying work in the river sections shall be carried out in dry season;</li> <li>Filter stand shall be temporarily built prior to trench excavation in stream bed to prevent sediment flowing down to lower sections of Ho Chung River;</li> <li>Containment of sediments, via diversion of channel with barriers, shall be employed to allow works to be carried out within a confined area.</li> </ul> <p><i>Spoil Disposal</i></p> <ul style="list-style-type: none"> <li>Removal of excavated spoil from the construction sites;</li> <li>Sediment removal facilities shall be maintained and the deposited sediment/grit removed regularly to ensure that these facilities are functioning properly at all times.</li> </ul> <p><i>Construction Site Runoff</i></p> <ul style="list-style-type: none"> <li>All runoff from the study area during construction shall be routed through oil/grit separators and/or sediment basins/traps before being allowed to discharge;</li> <li>All stockpiled areas shall be covered (e.g. with tarpaulin) and intercepting drains provided to prevent stormwater runoff from washing across exposed soil surfaces or stockpiled areas;</li> <li>Construction shall be scheduled to be undertaken between September and April to minimise soil erosion during rainy season.</li> </ul> <p><i>Sewage Treatment and Disposal</i></p> <p>Portable toilets shall be provided for the on-site construction workforce.</p>	Works site	During construction period	CLP' s Contractor	A site manager shall be nominated to be responsible for good site practices and management.
			River sections where underground cables will be laid	During laying of underground cables across the Ho Chung River	CLP' s Contractor	A site manager shall be nominated to be responsible for ensuring proper implementation of recommended construction methods.
			Works site	During construction period	CLP' s Contractor	Excavated spoil shall be reused as far as possible. Any remaining quantity shall be disposed of in approved dumping grounds.
			Works site	During construction period	CLP' s Contractor	All sewage discharges are regulated under the <i>Technical Memorandum on Standards for Effluents Discharged into Drains and Sewerage Systems, Inland and Coastal Waters</i> , issued under Section 21 of the WPCO.
			Works site	During construction period	CLP' s Contractor	All sewage discharges are regulated under the <i>Technical Memorandum on Standards for Effluents Discharged into Drains and Sewerage Systems, Inland and Coastal Waters</i> , issued under Section 21 of the WPCO.

EM&A Ref.	EIA Ref.	Mitigation Measures	Location	Timing for Implementation	Implementation Agent	Requirements
		<i>Monitoring and Audit</i> Monitoring of the SS and DO levels is recommended to audit potential increase in SS and DO levels.	The immediate areas upstream and downstream of the work sites along the Ho Chung River	During laying of underground cables across the Ho Chung River.	CLP's Environmental Team	The monitoring and audit programme shall be implemented by qualified professionals and laboratory.
<b>Ecological Impact</b>						
S3	S3.6	Minor On-site adjustment of pole positions.	Pole A25a at Ho Chung Valley	During construction period	CLP's Engineer	Excavation of footings shall be avoided where rare tree species <i>Acmena acuminatissima</i> and protected tree <i>Tutcheria championii</i> will be directly affected.
		Re-establishment of trees and shrubs of native species to original conditions as far as applicable.	At each pole location	After construction period	CLP's Contractor	Plant species used for replanting shall take reference from the species present in the surrounding.
		Regular checking of work site boundaries, minimize unnecessary habitat loss and disturbance due to crew access and transportation of equipment, as well as prevent open fire.	Work site	During construction period	CLP's Contractor	Implementation of the ecological mitigation measures shall be checked as part of the environmental audit procedures by Environmental Team.
		The routing of the maintenance footpaths should avoid any animal burrows when encountered during access.	Along the whole alignment	During operational phase	CLP	-
		The affected stream bed of stream at Ho Chung should be reinstated to its original condition.	River sections where underground cables will be laid	After construction phase	CLP's Contractor	Natural substratum should be used in reinstatement of the stream bed.
<b>Visual and Landscape Impact</b>						
S5	S5.10	Minor on-site adjustment of pole positions.	Pole A25a at Ho Chung Valley	During construction period	CLP's Engineer	Excavation of footings shall be avoided where rare tree species <i>Acmena acuminatissima</i> and protected tree <i>Tutcheria championii</i> will be directly affected.
		Re-establishment of trees and shrubs of native species to original conditions as far as applicable.	At each pole location	After construction period	CLP's Contractor	Plant species used for replanting shall take reference from the species present in the surrounding. CLP will take up the establishment works for a period of 2 years.
		Pole structures shall be painted a colour of low chromatic intensity rather than leaving a reflective steel surface exposed.	All proposed powerline poles within the works site.	Painting shall be started during or immediately after the powerline construction period, and shall be completed before the powerline is energised.	Painting by CLP's Contractor	CLP will be responsible for the funding, management and maintenance of this proposed mitigation measure.
		Removal of the existing two pairs of 33kV parallel powerlines.	Areas where the two pairs of 33kV powerlines were installed.	Within 2 years after the commissioning of the proposed 132kV powerline.	CLP's engineer	-



EM&A Ref.	EIA Ref.	Mitigation Measures	Location	Timing for Implementation	Implementation Agent	Requirements
<b>Impact on Cultural Heritage</b>						
S4	S7.5	Carry out rescue excavation	Archaeological Site in Ho Chung Valley where underground cables will be laid.	Prior to laying of underground cables.	CLP' s Consultant	CLP and CLP' s Consultant to liaise with AMO to appoint a qualified archaeologist with the provision for rescue excavation prior to laying of cables across the Ho Chung Valley. Sufficient time should be allowed in the Project Programme for carrying out the rescue excavation subject to agreement of AMO.
S6	S4.5	Carry out field measurements at critical locations	Both ends close to the respective Substations and Ho Chung area.	Within 6 months after the commissioning of the proposed 132kV powerline.	CLP' s engineers	Exact time for measurement to be agreed between EMSD and CLP Power.

Note 1. The 5 “W s” have been presented as “Mitigation Measures”, “Location”, “Timing for Implementation”, “Implementation Agent” and “Requirements” respectively.  
2. The Environmental Team should be responsible for ensuring that the recommended mitigation measures are properly implemented.

Signed by Project Proponent: \_\_\_\_\_ Date: \_\_\_\_\_

## APPENDIX D1 IMPLEMENTATIONS STATUS PROFORMA

Ref: \_\_\_\_\_

Ref**	Environmental Protection Measures*	Implementation Status

\* All recommendations and requirements resulted during the Course of EIA/Ea Process, including ACE and for accepted public comment to the proposed project  
 \*\* EIA Ref/EM&A Log Ref/Design Document Ref

Signed by Environmental Team Leader: \_\_\_\_\_

Date: \_\_\_\_\_

Audited by Independent Checker (Environment): \_\_\_\_\_

Date: \_\_\_\_\_

## APPENDIX D2 SITE INSPECTION PROFORMA

Ref: \_\_\_\_\_

Date	Location	Req <input type="checkbox"/> Ref.*	Observation/Deficiency	Mitigation Action** (Responsible Agency)	Date*** of Confirmation

- \* EIA Ref/EM&A Log Ref/Design Document Ref/Environmental Protection Contract Clause
- \*\* Specific Environmental Mitigation Measures should be stated, such as, equipment, process, systems, practices or technologies
- \*\*\* The required completion date to confirm the specified Environmental Protection Action

This Proforma is an Environmental Protection Instruction for: \_\_\_\_\_ on \_\_\_\_\_

Signed by Environmental Team Leader: \_\_\_\_\_ Date: \_\_\_\_\_

Copy to Independent Checker (Environment)

**APPENDIX D3 REGULATORY COMPLIANCE PROFORMA**

Ref: \_\_\_\_\_

Ref**	Environmental License/Permit*	Control Area/Facility/Location	Effective Date

\* Name of Applicant, Business Corporation, relevant regulation and remark of license permit conditions  
\*\* File reference of the license permittee

Recorded by Environmental Team Leader: \_\_\_\_\_ Date: \_\_\_\_\_

Signed by Independent Checker (Environment): \_\_\_\_\_ Date: \_\_\_\_\_

**APPENDIX D4 COMPLAINT LOG**

Ref: \_\_\_\_\_

Log Ref	Date/Location	Complainant/ Date of Contact	Details of Complaint	Investigation/ Mitigation Action	File Closed

Filed by Environmental Team Leader: \_\_\_\_\_ Date: \_\_\_\_\_

Incident Report on Action Level or Limit Level Non-compliance

Project	
Date	
Time	
Monitoring Location	
Parameter	
Action & Limit Levels	
Measured Level	
Possible reason for Action or Limit Level Non-compliance	
Actions taken / to be taken	
Remarks	

**Location Plan**

**Prepared by :** \_\_\_\_\_

**Designation :** \_\_\_\_\_

**Signature :** \_\_\_\_\_

**Date :** \_\_\_\_\_