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Environmental Monitoring & Audit Manual: Development at Former Marine Police Headquarters KIL 11161

(Ref No. 3.12/050/2006)

May 2007

Manual Certified by the Environmental Team Leader: _____

Manual Verified by the Independent Environmental Checker: _____

CONTENTS

1. INTRODUCTION

Purpose of this Manual

1.1 For development at the Former Marine Police Headquarters, KIL 11161, an Environmental Monitoring and Audit ["EM&A"] Manual has been prepared and subsequently approved by the Government's Environmental Protection Department ["EPD"] in July 2004 to guide the EM&A programme with the following objectives:

- To ensure compliance with the requirements in the Environmental Permit – EP-184/2004 (Hereinafter referred to as 'the EP') and the Project Profile (Register No.: PP-204/2003) on "Development at the Former Marine Police Headquarters, KIL 11161"
- To assess the effectiveness of the recommended mitigation measures, and
- To identify any further need for additional mitigation measures or remedial action.

1.2 Due to project changes as will be described in paragraphs 1.8 – 1.16, the EM&A Manual has been revised once in April 2006. Further revision of the Manual is now needed as the Site Formation Contractor completed the first phase of the project and a new Contractor on superstructure and remaining formation/foundation work will commence on the next phase. The present revised Manual therefore presents the monitoring and audit programme to be undertaken for the Project taken account of the project progresses. It aims to provide systematic procedures for monitoring; auditing and alleviating the environmental impacts associated with the construction works.

1.3 Hong Kong environmental regulations for air quality, water quality, noise, waste, cultural heritage, landscape and visual; and recommendations in the Project Profile have served as guidelines in the preparation of this Manual.

1.4 This Manual contains the following:

a. Duties of the Environmental Team ["ET"] and Independent Environmental Checker ["IEC"] with respect to the environmental monitoring and audit requirements during construction

b. Information on project organisation and programming of construction and operational activities for the project

c. Requirements with respect to the construction schedule and the necessary environmental monitoring and audit programme to track the varying environmental impact

d. Definition of Action and Limit levels

e. Establishment of event and action plans

f. Requirements of reviewing pollution sources and working procedures required in the event of non-compliance of the environmental criteria

g. Requirements of presentation of environmental monitoring and audit data and appropriate reporting procedures

1.5 For the purpose of this Manual, the "Architect" should refer to the Architect as defined in the Contract and the Architect's Representative ["AR"], in cases where the Architect's powers have been delegated to the AR, in accordance with the

Contract. The ET leader, who should be responsible for and in charge of the ET, should refer to the person, delegated the role of executing the environmental monitoring and audit requirements.

1.6 The Contractor refers to the present Superstructure Contractor when they took over the site from the Site Formation Contractor.

1.7 The ET is the same body employed by the Site Formation Contractor in the first phase of construction works as continuity of responsibility is desirable.

Background of the Project

1.8 The HKSAR Government has invited the private sector to submit proposals for the development of the Former Marine Police Headquarters ["FMPHQ"] in Tsim Sha Tsui into a heritage tourism facility. A tender for Kowloon Inland Lot No. 11161 was issued in early 2003 to develop the lot, which comprised the FMPHQ and other existing buildings erected thereon. The successful proponent is to be responsible for implementing the development in accordance with the proposed concept in the tender and also for the future management, operation and maintenance of the proposed development for fifty years.

1.9 It is a requirement in the tender document to preserve the colonial architecture and historical character of the landscape. The Project will be developed in accordance with the planning parameters and development requirements set out in the Planning Brief, which was endorsed by the Town Planning Board on 24 May 2002. In the tender submitted by the Project Proponent – Flying Snow Limited ["FSL"], the FMPHQ compound was proposed to be conserved. The area in the southern half of the Subject Site will be developed into a series of heritage tourism facilities.

1.10 The tender was subsequently awarded to the Project Proponent in June 2003. According to the Tender Document, the Project Proponent is responsible for all statutory obligations as required under the relevant legislation including inter alia, the Antiquities and Monuments Ordinance (Cap. 53), the Town Planning Ordinance (Cap. 131), the Environmental Impact Assessment Ordinance (Cap. 499) and the Buildings Ordinance (Cap. 123) before commencement of work.

1.11 The Subject Site is located at Tsim Sha Tsui - Kowloon Inland Lot No. 11161 and is flanked by Salisbury Road, Canton Road and Kowloon Park Drive to the south, west and east respectively. To the immediate north of the Subject Site is a commercial building, No. 1 Peking Road. The central and northern portion of the Subject Site is at an elevation of about +14.5 mPD. The project location and historic buildings / structures to be preserved is shown in Figure 1.1.

1.12 In the neighbourhood of the Subject Site, there situates the Hong Kong Cultural Centre to the south, the Star House and a hotel to the west, YMCA Guest House and the Consumer Education Information Centre to the east, and a commercial building (No. 1, Peking Road) to the immediate north.

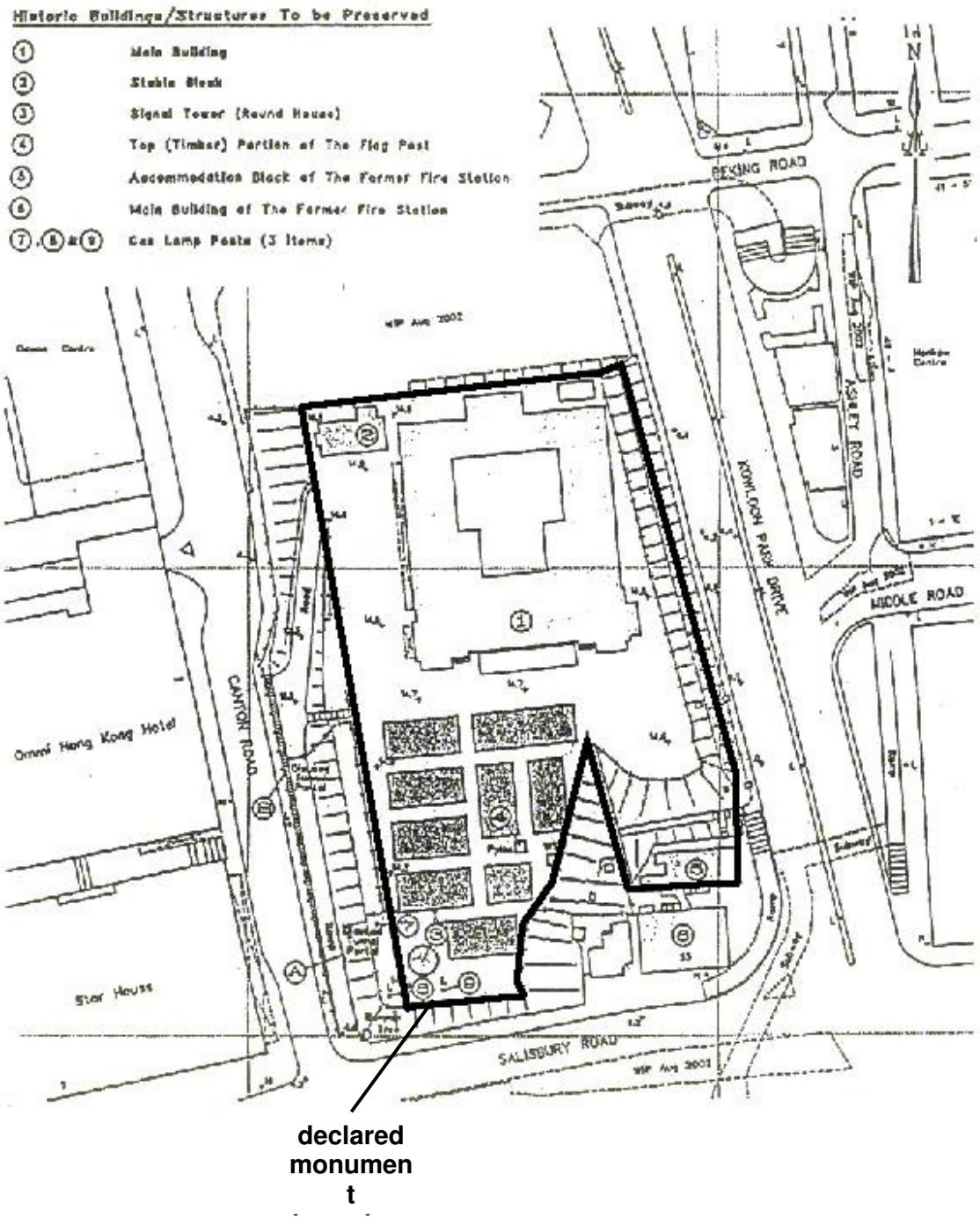

Figure 1.1	Project location and historic buildings / structures to be preserved	Scale: N.T.S

1.13 The Subject Site measures some 1.17ha in area with the FMPHQ Main Building, Stable Block and Signal Tower situated at an elevation of about 14.5mPD whereas the Fire Station Accommodation Building is located at about 4mPD at the same level of Salisbury Road.

1.14 All of the monument buildings including but not limited to the Main Building will be preserved and renovated. The southern portion of the Subject Site will be excavated and built upon to form a landscaped garden deck in front of the Main Building. In addition, the Canton Road will be widened as part of the requirements in the land lease.

1.15 Since the project is a Designated Project under Q.1 in Category Q Miscellaneous in Schedule 2, Part I of the Environmental Impact Assessment Ordinance ["EIAO"], which specifies that earthworks and other building works in an existing Site of Cultural Heritage without satisfying the exemption clauses is a designated project. The "Former Marine Police Headquarters Compound" is a declared monument under the Antiquities and Monuments Ordinance and is therefore a site of cultural heritage under EIAO. The exercise of the powers under the EIAO for this project is to control the earthworks and building works for the purpose of and in relation to the protection of this site of cultural heritage. An Environmental Permit ["EP"] is required for its construction. The Project Profile was submitted in November 2003 under the EIAO for direct application of the EP and the EP No. EP-184/2004 was granted in February 2004.

1.16 In November 2005, an amendment of the Master Layout Plan ["MLP"] for the development was proposed and subsequently approved by the Town Planning Board ["TPB"]. The latest approved MLP of the Project is shown in Figure 1.2. The major amendments to the previously approved scheme can be summarized as:

a. Construction of a lawn bridge to connect the Main Building area with the Signal Tower area
b. Changing the shape of the Grand Piazza from circular to elliptical
c. Construction of a new Heritage Hall
d. Construction of new basements
e. Construction of a new glass atrium structure
f. Provision of a new connection at the south-eastern corner of the Site to the existing pedestrian subway and changing the existing ramp of the subway
g. Addition of one tree to be retained and one tree to be transplanted, and the reduction of two trees to be felled, which have already been incorporated into the Landscape Mitigation and Tree Preservation Proposal that was submitted and approved under EP Condition 2.5 in August 2004
h. Underpinning of Tree T96 (near Canton Road) for utilization of the underlying space

1.17 The location and extent of the newly proposed basement areas is shown in Figure 1.3 while the section layout, in Figure 1.4. These figures are adopted from the latest approved MLP.

1.18 In view of the latest amendments of the MLP approved by TPB, an Environmental Review has been carried out to assess the potential environmental impacts arising from the latest MLP. It concluded that the proposed project changes would not result in a material change to the environmental impacts of the project with mitigation measures in place, and the criteria and guidelines specified in the EIAO-TM would be satisfied. The Environmental Review also concluded that with the implementation of mitigation measures recommended in the approved Project Profile, no additional mitigation measures were considered necessary.

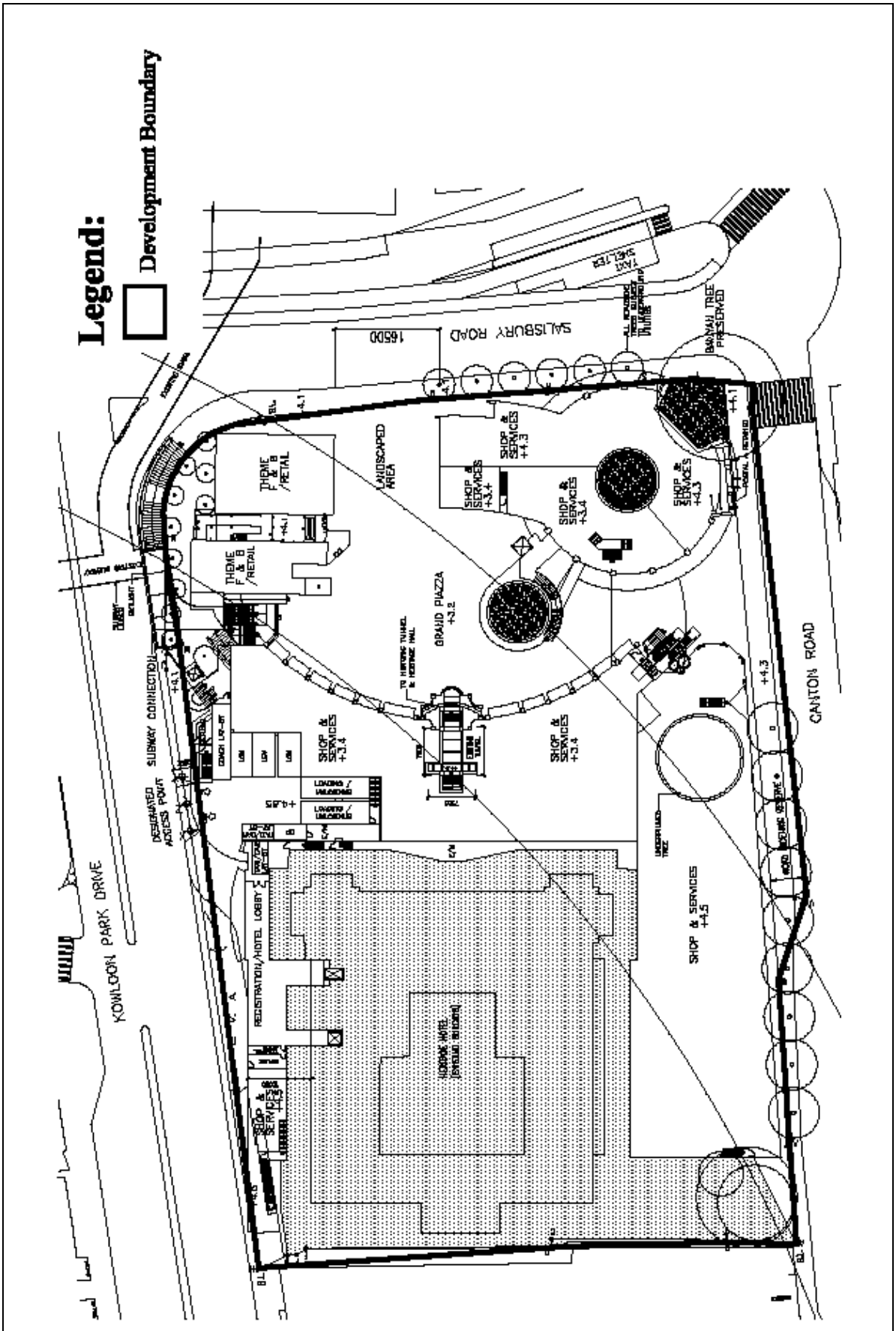

Figure 1.2 Latest Approved Master Layout Plan | Scale: N.T.S

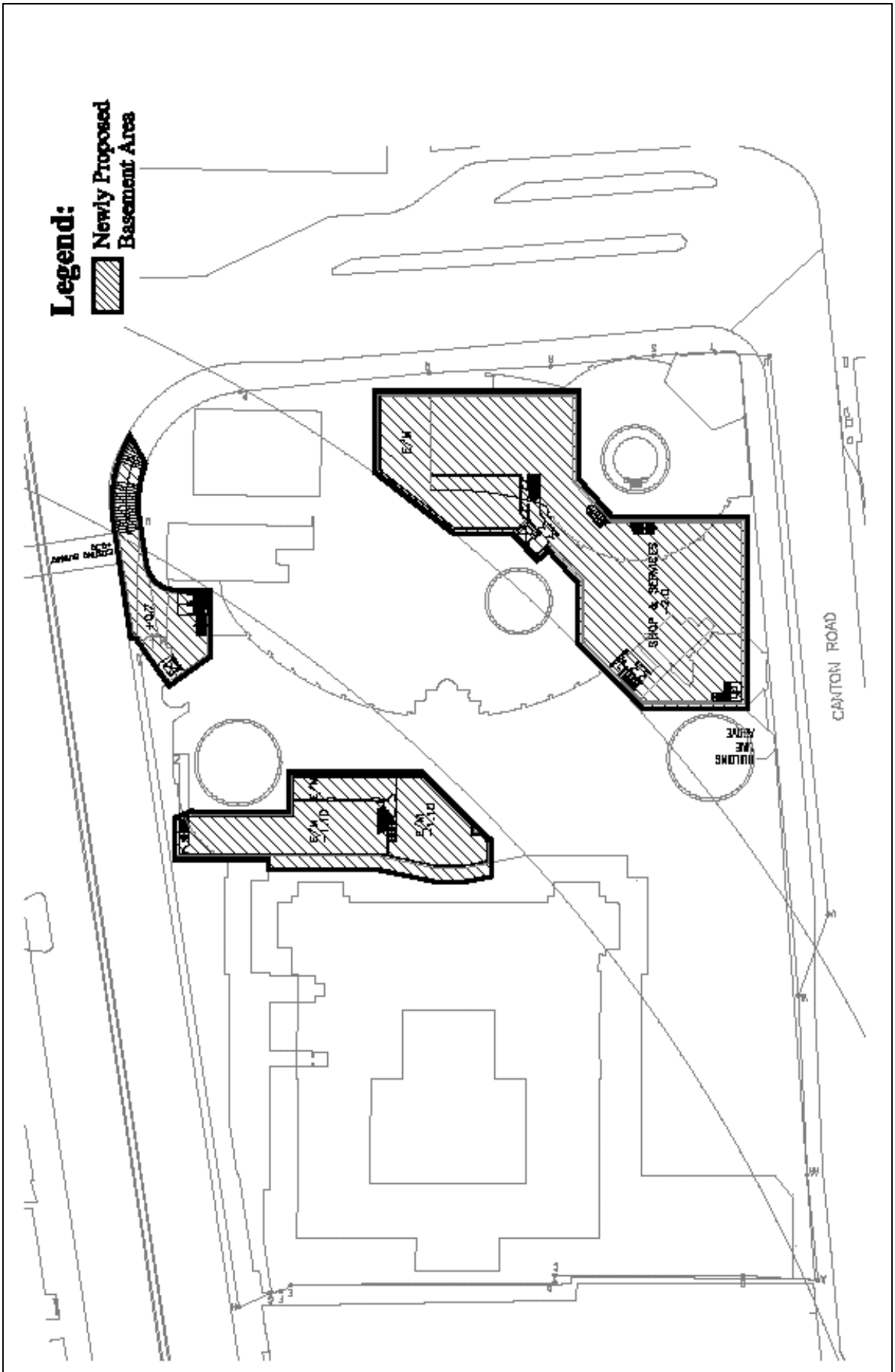

Figure 1.3 Location and Extent of the Newly Proposed Basement Areas	Scale: N.T.S

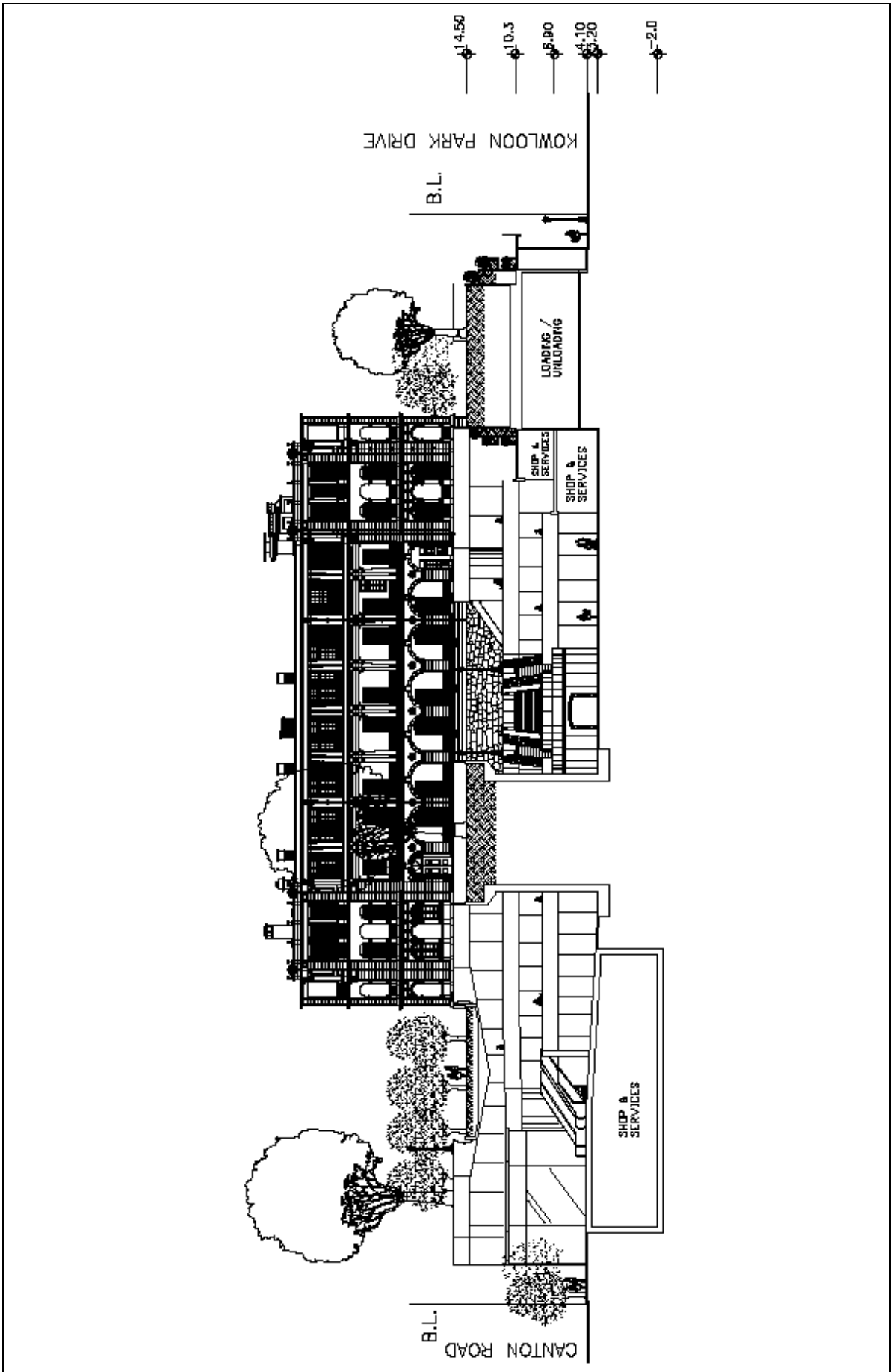

Figure 1.4 Section Layout of the Newly Proposed Basement Areas | Scale: N.T.S

Environmental Monitoring and Audit Requirements

1.19 The construction and operational phase impacts of the project have been assessed and presented in the Project Profile issued in January 2004. The Project Profile also specified the recommended environmental mitigation measures to minimise the potential adverse environmental impacts identified. An implementation schedule of the recommended environmental mitigation measures is prepared as part of the Project Profile is contained in Appendix A of this Manual.

1.20 In order to ensure that the mitigation measures recommended in the Project Profile are implemented fully and resulted in the expected effectiveness, this Manual defines the scope of EM&A requirements for the construction of the FMPHQ project to achieve satisfactory environmental performance. The EM&A requirements are prepared in accordance with the requirements stipulated in Annex 21 of the TM on EIA Process.

Project Organization

1.21 The project organisation and general lines of communication with respect to environmental protection works are shown in Figure 1.5 and the key contacts are given in Table 1.1. Notwithstanding the communication channels shown in Figure 1.5, Environmental Protection Department ["EPD"] is the control authority and may contact any party where necessary for their statutory duties. The roles and responsibilities of the various parties and the supporting specialists involved are described in following sections.

Table 1.1 Key Contacts of the Project Team

Party	Company	Contact Person	Phone
Permit Holder	Flying Snow Ltd.	Mr H S Chan	21122634
Project Architect ["AR"]	A+T Design Ltd.	Mr Daniel Lin	28584778
Contractor	Hien Lee Engineering Co., Ltd.	Mr Howard Lui	91083955 / 23662812
Independent Environmental Checker [IEC"]	CH2M HILL Hong Kong Ltd.	Mr Billy Yu	28722929
Environmental Team ["ET"] Leader	Nature & Technologies (HK) Ltd.	Ir Dr Gabriel C K Lam	28773122

Environmental Team

1.22 The ET leader and the ET, though employed by the Contractor, should not be in any way an associated body of the Contractor and the IEC. The ET should be led and managed by the ET leader. The ET leader should have at least 7 years' experience in EM&A or environmental management subject to approval by the Architect and the Director of Environmental Protection ["DEP"].

1.23 Suitably qualified staff should be included in the ET, and resources for the implementation of the EM&A programme should be allocated in time under the Contract, to enable fulfillment of the project's EM&A requirements as specified in the EM&A Manual during construction and operation.

1.24 The ET leader and the ET are employed to conduct the EM&A programme and ensure the Contractor's compliance with the project's environmental performance

requirements during construction and operation. The duties are:

a. Sampling, analysis and statistical evaluation of monitoring parameters with reference to the Project Profile recommendations and requirements
b. Environmental site surveillance
c. Audit of compliance with environmental protection, and pollution prevention and control regulations
d. Monitor the implementation of environmental mitigation measures
e. Monitor compliance with the environmental protection clauses/specifications in the Contract
f. Review construction and operation programme and comment as necessary
g. Review construction and operation methodology and comment as necessary
h. Complaint investigation, evaluation and identification of corrective measures
i. Liaison with IEC on all environmental performance matters, and timely submission of all relevant EM&A proforma for the approval by IEC
j. Advice to the Contractor on environment improvement, awareness, enhancement matters, etc.
k. Timely submission of the EM&A report to the project proponent and the DEP
l. The ET Leader will keep a contemporaneous log-book each and every instance or circumstance or change of circumstances with may recommendations of the Project Profile or the EP. The ET Leader will notify the IEC within one working day of the occurrence of any such instance or circumstance or change of circumstance as far as possible. The ET Leader's log-book will be kept readily available for inspection by all persons assisting in supervision of the implementation of the Project Profile recommendations

Contractor

1.25 The term "Contractors" should be taken to mean all construction contractors, operators and sub-contractors, working on site at any one time. This project will be constructed in different phases with different contractors responsible for construction phases or periods. Besides reporting to the Architect, the Contractors should:

a. Work within the scope of the relevant contract and other tender conditions
b. Participate in the site inspections undertaken by the ET, as required, and undertake any correction actions instructed by the Architect
c. Provide information/advice to the ET regarding works activities which may contribute, or be continuing to the generation of adverse environmental conditions
d. Implement measures to reduce impact whenever Action and Limit Levels are exceeded
e. Take responsibility and strictly adhere to the guidelines of the EM&A programme and complementary protocols developed by their project staff

Architect or Architect's Representative

1.26 The term Architect, or Architect's Representative ["AR"], refers to the organisation responsible for overseeing the construction works or operation of the FMPHQ project and 'monitoring' the works undertaken by the various Contractors, and for ensuring that they are undertaken by the Contractors in accordance with the specification and contractual requirements. The AR should:

a. Monitor the Contractors' compliance with contract specifications, including the implementation and operation of environmental mitigation measures and ensure their effectiveness, and other aspects of the EM&A programme

b. Comply with the agreed Event and Action Plan in the event of any exceedance

c. Provide assistance to the ET as necessary in the implementation of the environmental monitoring and auditing programme

d. Instruct the Contractors to follow the agreed protocols or those in the Contract Specifications in the event of exceedances or complaints

Independent Environmental Checker

1.27 Given the potential public concern of the environmental performance of the proposed FMPHQ project, the IEC can serve as an individual independent of the Contractors to audit the overall EM&A program and report to the AR and FSL directly.

1.28 The IEC should advise the AR on environmental issues related to the project. The role of the IEC should be independent from the management of construction and operation activities, but he/she should be empowered to audit the environmental performance of construction and operation.

1.29 The IEC should be employed prior to commencement of construction of FMPHQ project. The IEC should have at least 7 years experience in EM&A or environmental management. The appointment of the IEC is subject to the approval of the AR.

1.30 The IEC should audit the overall EM&A programme including the implementation of all environmental mitigation measures, submissions relating to EM&A, and any other submission required under the this Manual.

1.31 In addition, the IEC should be responsible for verifying the environmental acceptability of permanent and temporary works, and relevant design plans.

1.32 The IEC should arrange and conduct monthly general site inspections of FMPHQ project during the construction and operational periods.

1.33 The IEC should ensure the impact monitoring is conducted according to the prescribed schedule at the correct locations.

1.34 The IEC should report the findings of the site inspections and other environmental performance reviews to EPD.

1.35 Appropriate resources should also be allocated under the Contractor and the AR to fulfill their duties specified in this Manual.

1.36 The main duty of the IEC is to carry out environmental audit of the construction of the FMPHQ project; this should include, inter alia, the followings:

a. Review and audit in an independent, objective and professional manner in all aspects of the EM&A programme

b. Validate and confirm the accuracy of monitoring results, monitoring equipment, monitoring locations, monitoring procedures and locations of sensitive receivers

c. Carry out random sample check and audit on monitoring data and sampling procedures, etc.

d. Conduct random site inspection

e. Audit the Project Profile recommendations and requirement against the status of implementation of environmental protection measures on site

f. Review the effectiveness of environmental mitigation measures and project environmental performance

g. On a need basis, verify and certify the environmental acceptability of the permit holder's construction methodology (both temporary and permanent works), relevant design plans and submissions under the EP. Where necessary, the IEC shall seek the least impact alternative in consultation with ET leader and the permit holder

h. Verify the investigation results of complaint cases and the effectiveness of corrective measures

i. Verify EM&A report that has been certified by the ET leader

j. Verify the ET's contemporaneous log-book in accordance to with Conditions 2.1 and 2.2 of the EP

l. Feedback audit results to ET/Permit Holder according to Event/Action Plan in the EM&A manual

Supporting Specialists

1.37 The supporting specialists include the following:

- Heritage Specialist whose role is to continuously monitor the integrity of the declared monument buildings within the declared monument boundary, advise ET on heritage conservation aspects and provide specialist input to the EM&A report compilation.

- Landscape Architect will closely monitor the health and condition of the preserved trees, and the tree protection measures, advise on landscape and visual impact, and tree preservation and protection aspects, provide specialist inputs to the EM&A reports and ensure that the proposed landscape mitigation measures for the construction and operational phases of the project are fully implemented.

- Structural Engineer will support the Heritage Specialist to closely monitor possible deteriorations to the monument structures during the course of construction for the development. He will design the structural monitoring system and supervise the monitoring works.

- Tree Specialist will provide specialist advice to the Landscape Architect on the tree preservation and protection aspects.

1.38 The above specialists are reporting directly to the AR but will provide input to ET for

compilation of the EM&A reports through AR and the Contractor.

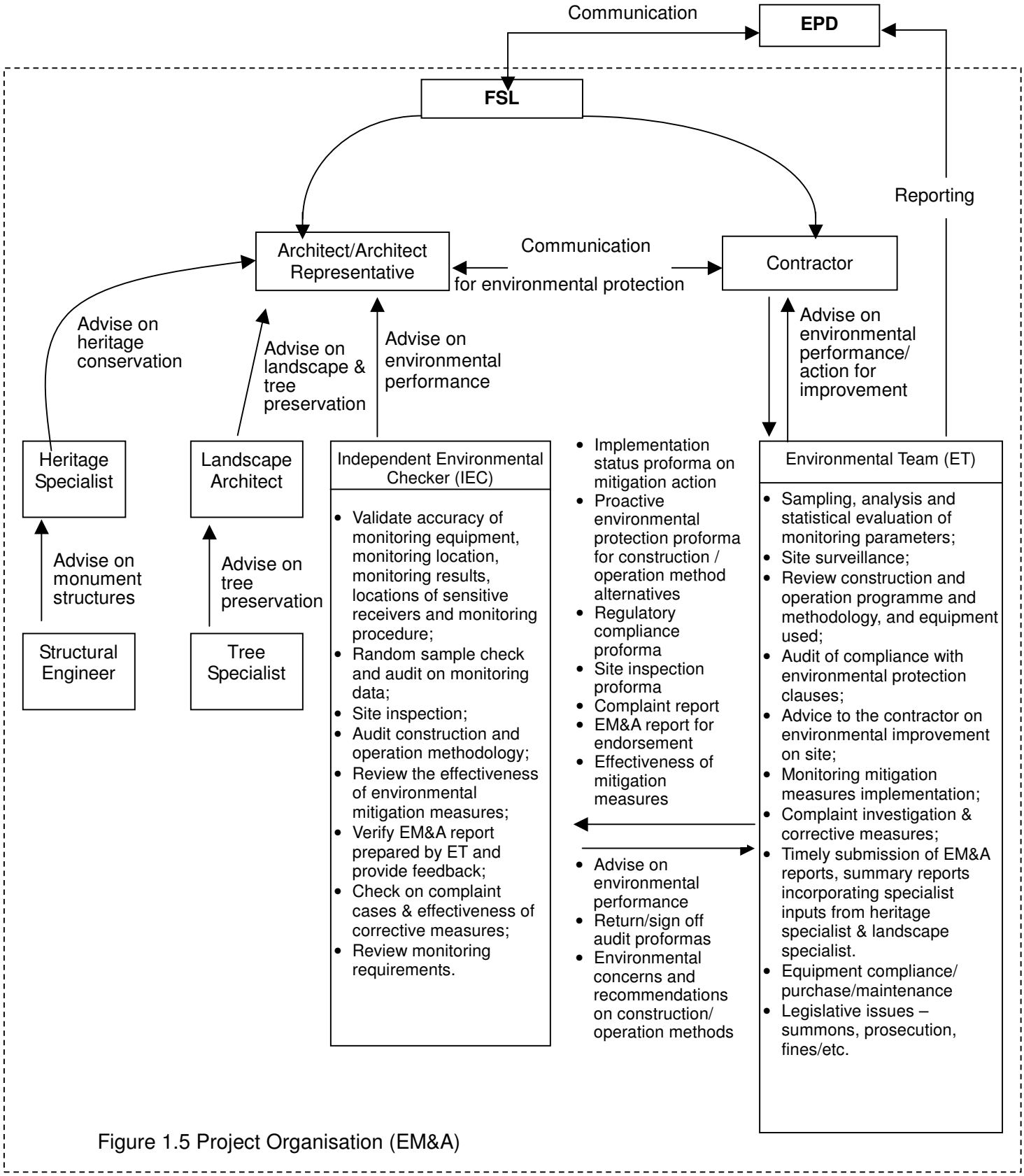

Figure 1.5 Project Organisation (EM&A)

Construction Programme

1.39 The actual construction programme for the Project is subject to agreement between the Employer and the Contractor. Normally, construction work is to be carried out during non-restricted hours (i.e. 0700-1900 hours from Monday to Saturday other than public holiday). The exact schedule of construction and working hours depend upon factors such as the granting of necessary Construction Noise Permit (CNP) from the Authority for its construction and award of the contract to the Contractor.

1.40 The construction programme is generally divided into three main phases including site formation work, formation of building foundation as well as superstructure construction works. This EM&A program may therefore straddle at least 2 contracts in succession. Updated construction programme of the project is shown in Appendix B.

Site Formation

1.41 Site formation includes mainly bulk excavation, demolition of existing temporary structure and construction of retaining wall. Designated trees to be retained as well as protection of the historic buildings by retaining wall.

Building Foundation

1.42 The construction of building foundation may involve shallow foundation work and installation of mini-piles to support the future new buildings. Replacement pile or shallow foundation on reliable stratum appears to be suitable to support the future buildings composed of retail facilities.

Superstructure Works

1.43 Conventional reinforced concrete structure may be adopted for the new building. Structural system adopting a beam/slab or flat slab arrangement with column frames and shear walls appears to be feasible. The works may involve erection of formwork and falsework, fixing of reinforcement and concreting.

1.44 The ET leader should make reference to the actual works progress and programme during the construction stage to schedule the EM&A works, and the Contractor should provide the respective information to the ET leader for formulating the EM&A schedule.

2. AIR QUALITY

Introduction

2.1 Fugitive dust impact would be the anticipated air quality impact during the construction phase of the project. The following sections detailed the approaches, criteria and guidelines on monitoring and managing dust impact as well as the associated event and action plans and the recommended mitigation measures.

Construction Phase Dust Monitoring

General

2.2 Fugitive dust impact would be the major air quality impact during the construction phase of the project. It is necessary to monitor the dust generates from the construction activities after timely implementation of the dust mitigation measures listed in this Manual. The purpose of monitoring is to ascertain that the dust levels would comply with the 1-hour average and 24-hour average Total Suspended Particulate (TSP) criteria at the sensitive receivers, and that the recommended mitigation measures are effective in suppressing dust levels.

2.3 The objectives of the monitoring are:

a. To identify the extent of construction dust impacts on nearby sensitive receivers

b. To determine the effectiveness of the recommended dust mitigation measures to control dust from construction activities

c. To recommend further mitigation measures where necessary

d. To ascertain that the dust levels would comply with the 1-hour average and 24-hour average Total Suspended Particulates ["TSP'] criteria at nearby sensitive receivers as defined in this EM&A Manual

Air Quality Parameters

2.4 Monitoring and audit of the TSP levels should be carried out by the ET Leader to ensure that any deteriorating air quality could be readily detected and timely and appropriate action undertaken to rectify the situation.

2.5 1-hour and 24-hour TSP levels should be measured to indicate the impacts of dust on air quality. The TSP levels should be measured by following the standard high volume sampling method as set out in the *Title 40 of the Code of Federal Regulations, Chapter 1 (Part 50), Appendix B*. Upon approval of the AR and IEC, 1-hour TSP levels can be measured by direct reading methods, which are capable of producing comparable results as that by the high volume sampling method, to indicate short event impacts.

2.6 All relevant data including temperature, pressure, weather conditions, elapsed-time meter reading for the start and stop of the sampler, identification and weight of the filter paper, other local atmospheric factors affecting or affected by site conditions and work progress of the concerned site etc. should be recorded down in details. A sample data record sheet is shown in Appendix C for reference.

Monitoring Equipment

2.7 High volume sampler ["HVS"] in compliance with the following specifications should be used for carrying out the 1-hour and 24-hour TSP monitoring:

a. 0.6-1.7m^3/min (20-60 SCFM) adjustable flow range

b. equipped with a timing/control device with +/- 5 minutes accuracy for 24 hours operation

c. installed with elapsed-time meter with +/- 2 minutes accuracy for 24 hours operation

d. capable of providing a minimum exposed area of 406cm^2 (63in^2)

e. flow control accuracy: +/- 2.5% deviation over 24-hour sampling period

f. equipped with a shelter to protect the filter and sampler

g. incorporated with an electronic mass flow rate controller or other equivalent devices

h. equipped with a flow recorder for continuous monitoring

i. provided with a peaked roof inlet

j. incorporated with a manometer

k. able to hold and seal the filter paper to the sampler housing at horizontal position

l. easy to change the filter

m. capable of operating continuously for 24-hour period

2.8 The ET Leader should be responsible for provision of the monitoring equipment. He/she should ensure that sufficient number of HVSs with an appropriate calibration kit is available for carrying out the baseline monitoring, regular impact monitoring and ad hoc monitoring. The HVSs should be equipped with an electronic mass flow controller and be calibrated against a traceable standard at regular intervals. All the equipment, calibration kit, filter papers, etc. should be clearly labelled.

2.9 Initial calibration of dust monitoring equipment should be conducted by the ET upon installation and thereafter at bi-monthly intervals. The transfer standard should be traceable to the internationally recognised primary standard and be calibrated annually. The calibration data should be properly documented for future reference by the concerned parties such as the IEC. All the data should be converted into standard temperature and pressure condition.

2.10 The flow-rate of the sampler before and after the sampling exercise with the filter in position should be verified to be constant and be recorded down in the data sheet (see Appendix C).

2.11 Direct reading dust meter will be used to measure 1-hour TSP levels. The ET Leader should submit sufficient information to the IEC to show that the instrument is capable of achieving a comparable result as that of the HVS and may be used for the 1-hour sampling. The instrument should also be calibrated regularly.

2.12 Sampling should be made at representative air sensitive receiver ["ASR"] locations. Sampling locations around the construction site should be selected so as to allow measurements be taken approximately upwind and downwind of the site at any time. Such arrangement will provide information required for analyzing the

contribution of the site to dust levels at these locations. Furthermore, wind data for analysis of possible episode of high recorded dust levels will be taken from the Hong Kong Observatory at Tsim Sha Tsui. The wind data collected at Hong Kong Observatory will be of highest quality and representative of the transporting wind of the area.

Laboratory Measurement / Analysis

2.13 A clean laboratory with constant temperature and humidity control and equipped with necessary measuring and conditioning instruments to handle the dust samples collected, should be available for sample analysis, and equipment calibration and maintenance. The laboratory should be HOKLAS accredited or other internationally accredited laboratory.

2.14 The IEC should conduct regular audit to the measurement performed by the laboratory so as to ensure the accuracy of measurement results. The ET Leader should provide the AR with one copy of the *Title 40 of the Code of Federal Regulations, Chapter 1 (Part 50), Appendix B* for his/her reference.

2.15 Filter paper of size 8"x10" should be labelled before sampling. It should be a clean filter paper with no pinholes, and should be conditioned in a humidity-controlled chamber for over 24-hour and be pre-weighed before use for the sampling.

2.16 After sampling, the filter paper loaded with dust should be kept in a clean and tightly sealed plastic bag. The filter paper is then returned to the laboratory for reconditioning in the humidity-controlled chamber followed by accurate weighing by an electronic balance with readout down to 0.1mg. The balance should be regularly calibrated against a traceable standard.

2.17 All the collected samples should be kept in a good condition for 6 months before disposal.

Monitoring Locations

2.18 Impact monitoring of dust shall be carried out at representative ASRs whenever there is ongoing construction work during construction phase of FMPHQ project. Four dust monitoring stations are proposed as shown in Figure 2.1 and briefly described below:

- A1 is located on the rooftop of the Consumer Council office east of the construction site.
- A2 is at the Studio Theatre podium level south of the construction site. Due to time needed to obtain permission to carry out monitoring at this location, an alternative location A2a on the south boundary of the site is to be used for monitoring on temporary basis.
- A3 is at the west site boundary of the construction site on top of the existing hoarding. This position is slightly different to that originally proposed in the Project Profile due to the inability to obtain permission to gain access to the building at Star House or Marco Polo Hongkong Hotel for measurement and that the present revised position will provide a more conservative measurement for environmental protection.
- A4 is at the site boundary north of the construction site on top of the existing hoarding

2.19 Exact monitoring point for sensitive receivers shall be selected as close as is

practical to the construction work boundary. The status and locations of dust sensitive receivers may change after issuing this Manual. If such cases exist, the ET Leader should propose updated monitoring locations and seek approval from AR and agreement from the IEC.

2.20 When alternative monitoring locations are proposed, the following criteria, as far as practicable, should be followed:

a. at the site boundary or such locations close to the major dust emission source

b. close to the air sensitive receivers;

c. Proper position/sitting and orientation of the monitoring equipment

d. take into account the prevailing meteorological conditions

2.21 The ET Leader should agree with the AR in consultation with the IEC the position of the HVS for installation of the monitoring equipment. When positioning the samplers, the following points should be noted:

a. a horizontal platform with appropriate support to secure the samplers against gusty wind should be provided;

b. no two samplers should be placed less than 2 meter apart

c. the distance between the sampler and an obstacle, such as buildings, must be at least twice the height that the obstacle protrudes above the sampler

d. a minimum of 2 metres of separation from walls, parapets and penthouses is required for rooftop samplers

e. a minimum of 2 metre separation from any supporting structure, measured horizontally is required

f. no furnace or incinerator flue is nearby and any wire fence and gate, to protect the sampler, should not cause any obstruction during monitoring

g. airflow around the sampler is unrestricted

h. the sampler is more than 20 metres from the dripline

i. permission must be obtained to set up the samplers and to obtain access to the monitoring stations, and to install a secured electricity supply

Baseline Monitoring

2.22 The ET Leader should carry out baseline monitoring at all of the designated monitoring locations for at least 14 consecutive days prior to the commissioning of the construction works to obtain daily 24-hour TSP samples. 1-hour sampling should also be done at least 3 times per day while the highest dust impact is expected. Before commencing the baseline monitoring, the ET Leader should inform the IEC of the baseline monitoring programme such that the IEC can conduct on-site audit to ensure accuracy of the baseline monitoring results.

2.23 During the baseline monitoring, there should not be any construction or dust generation activities in the vicinity of the monitoring stations.

2.24 In case the baseline monitoring cannot be carried out at the designated monitoring locations during the baseline monitoring period, monitoring at alternative locations which can effectively represent the baseline conditions at the impact monitoring

locations can be made. The alternative baseline monitoring locations should be approved by the AR and agreed with IEC.

2.25 In exceptional case, when insufficient baseline monitoring data or questionable results are obtained, the ET Leader should liaise with the IEC and EPD to agree on an appropriate set of data to be used as a baseline reference and submit to AR for approval.

2.26 Ambient conditions may vary seasonally and should be reviewed at three monthly intervals. If the ET leader considers that the change in ambient conditions entails a repeat of the baseline monitoring, the monitoring should be at times when the contractor's activities are not generating dust, at least in the proximity of the monitoring stations. The possible updated and revised baseline levels and air quality criteria should be agreed with the IEC and EPD.

Impact Monitoring

2.27 The ET Leader should carry out impact monitoring during construction phase of FMPHQ project. For 24-hour TSP monitoring, the sampling frequency should be at least once in every six-days. For 1-hour TSP monitoring, the sampling frequency of at least three times in every six-days should be undertaken when the highest dust impact occurs. Before commencing the impact monitoring, the ET Leader should inform the IEC of the impact monitoring programme. The IEC can then conduct on-site audit on the impact monitoring results.

2.28 The specific time to start and stop the 24-hour TSP monitoring should be clearly defined for each location and be strictly followed by the field operator.

2.29 In case of non-compliance with the air quality criteria, more frequent monitoring, as specified in the Action Plan in Section 2.31 of this Manual, should be conducted within 24 hours after the result is obtained. This additional monitoring should be continued until the excessive dust emission or the deterioration in air quality is rectified.

Event and Action Plan for Construction Phase Air Quality

2.30 The baseline monitoring results form the basis for determining the air quality criteria for the impact monitoring. The ET Leader should compare the impact monitoring results with air quality criteria set up for 24-hour TSP and 1-hour TSP. Table 2.1 shows the air quality criteria, namely Action and Limit levels to be used. Should non-compliance of the air quality criteria occurs, the ET Leader, AR, and Contractor should undertake relevant actions in accordance with the Action Plan as stated Table 2.2.

Table 2.1 Action and Limit Levels for Air Quality (Dust)

Parameters	Action	Limit
24 Hour TSP Level in $\mu g/m^3$	For baseline level ≤ 200$\mu g/m^3$, Action Level = (Baseline level * 1.3 + Limit level)/2 For baseline level > 200$\mu g/m^3$, Action level = Limit level	260
1 Hour TSP Level in $\mu g/m^3$	For baseline level ≤ 384$\mu g/m^3$, Action Level = (Baseline level * 1.3 + Limit level)/2 For baseline level > 384$\mu g/m^3$, Action level = Limit level	500

Table 2.2 Event/Action Plan for Air Quality (Dust)

EVENT	ACTION (to be taken as immediate as practicable)			
	ET	IEC	AR	CONTRACTOR
Action Level being exceeded for one sample	1. Identify source; 2. Inform IEC and AR; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily	1. Check monitoring data submitted by ET; 2. Check Contractor's working method.	1. Notify Contractor.	1. Rectify any unacceptable practice; 2. Amend working methods if appropriate.
Action Level being exceeded for two or more consecutive samples	1. Identify source; 2. Inform IEC and AR; 3. Repeat measurements to confirm findings' 4. Increase monitoring frequency to daily; 5. Discuss with IEC and Contractor on remedial actions required; 6. If exceedance continues, arrange meeting with IEC and AR; 7. If exceedance stops, cease additional monitoring.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the AR on the effectiveness of the proposed remedial measures; 5. Supervise implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Ensure remedial measures are properly implemented.	1. Submit proposals for remedial actions to IEC within 3 working days of notification; 2. Implement the agreed proposals; 3. Amend proposal if appropriate.
Limit Level being exceeded for one sample	1. Identify source; 2. Inform IEC, AR and EPD; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily; 5. Assess effectiveness of Contractor's remedial actions; 6. Keep EPD and AR informed of the results.	1. Checking monitoring data submitted by ET and Contractor's method; 2. Discuss with Contractor on the possible mitigation measures; 3. Advise AR on the effectiveness of mitigation measures and supervise their implementation.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Check monitoring data and Contractor's working methods; 4. Discuss with IEC, ET and Contractor potential remedial actions; 5. Ensure remedial actions properly implemented.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to AR within 3 working days of notification; 3. Implement the agreed proposals; 4. Amend proposal if appropriate.
Limit Level being exceeded for two or more consecutive samples	1. Identify source; 2. Inform AR and EPD the causes & actions taken for the exceedances; 3. Repeat measurement to confirm findings; 4. Increase monitoring frequency to daily; 5. Investigate the causes of exceedance 6. Arrange meeting with EPD and AR to discuss the remedial actions to be taken; 7. Assess effectiveness of Contractor's remedial actions and keep EPD and AR informed of the results; 8. If exceedance stops, cease additional monitoring.	1. Checking monitoring data submitted by ET and Contractor's method; 2. Discuss with Contractor on the possible mitigation measures; 3. Review the proposed mitigation measures submitted by Contractor and advise the AR accordingly; 4. Supervise the implementation of mitigation measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 4. Discuss amongst IEC, ET and the Contractor potential remedial actions; 5. Review Contractor's remedial actions whenever necessary to assure their effectiveness; 6. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to AR within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not resolved; 5. Stop the relevant portion of works as determined by the AR until the exceedance is abated.

Mitigation Measures during Construction Phase

2.31 In order to ensure that dust emission is minimised during the construction phase of the project, relevant dust control requirements set out in the *Air Pollution Control (Construction Dust) Regulation* should be met. The site agent of the Contractor is required to adopt dust reduction measures while carrying out construction works. In particular, the mitigation measures listed below should be adopted where applicable. With the implementation of effective dust control measures, adverse dust impacts from the construction works of the project is not expected.

2.32 As presented in the Project Profile Section 4.1.2.10, recommended dust mitigation measures to minimise dust and the effects of dust on sensitive receivers during construction of the project shall be adopted and are detailed as follows:

- Site hoarding of at least 2.4m high have already been erected by the Hoarding Contractor along the boundaries of the Site (particularly along the northern boundary adjacent to No. 1, Peking Road) except at the site entrance/ exit;
- Truck speed to be controlled within 8 km/hr. Dusty vehicle loads transported to and from the work location to be covered by tarpaulin sheets and not to be overloaded;
- Vehicle wheel washing facilities including high pressure water jets to be provided at designated vehicle exit points;
- Side enclosure and covering, by impervious sheeting where practicable, of any aggregate or other dusty material storage piles, placing of stockpiles in an area to be sheltered on the top and the three sides, and/or sprayed with water. Demolished items to be covered by impervious sheeting or placed in area sheltered on the top and the three sides within a day of demolition;
- All dusty material to be sprayed with water prior to loading, unloading or transfer so as to maintain the fill material wet;
- Frequent watering (at least 4 times per day) of the worksites with active dusty operations and watering of all dust emission sources when necessary. The frequency shall be increased when the weather is dry;
- Drop height of excavated materials to be controlled to a minimum to limit fugitive dust generation from unloading as far as practicable.

2.33 The Contractor should be responsible for the design and implementation of these measures. If the recommended mitigation measures are not sufficient to restore the air quality to acceptable levels upon the advice of ET, the Contractor should liaise with the ET on some other mitigation measures, propose to AR for approval, and implement the mitigation measures.

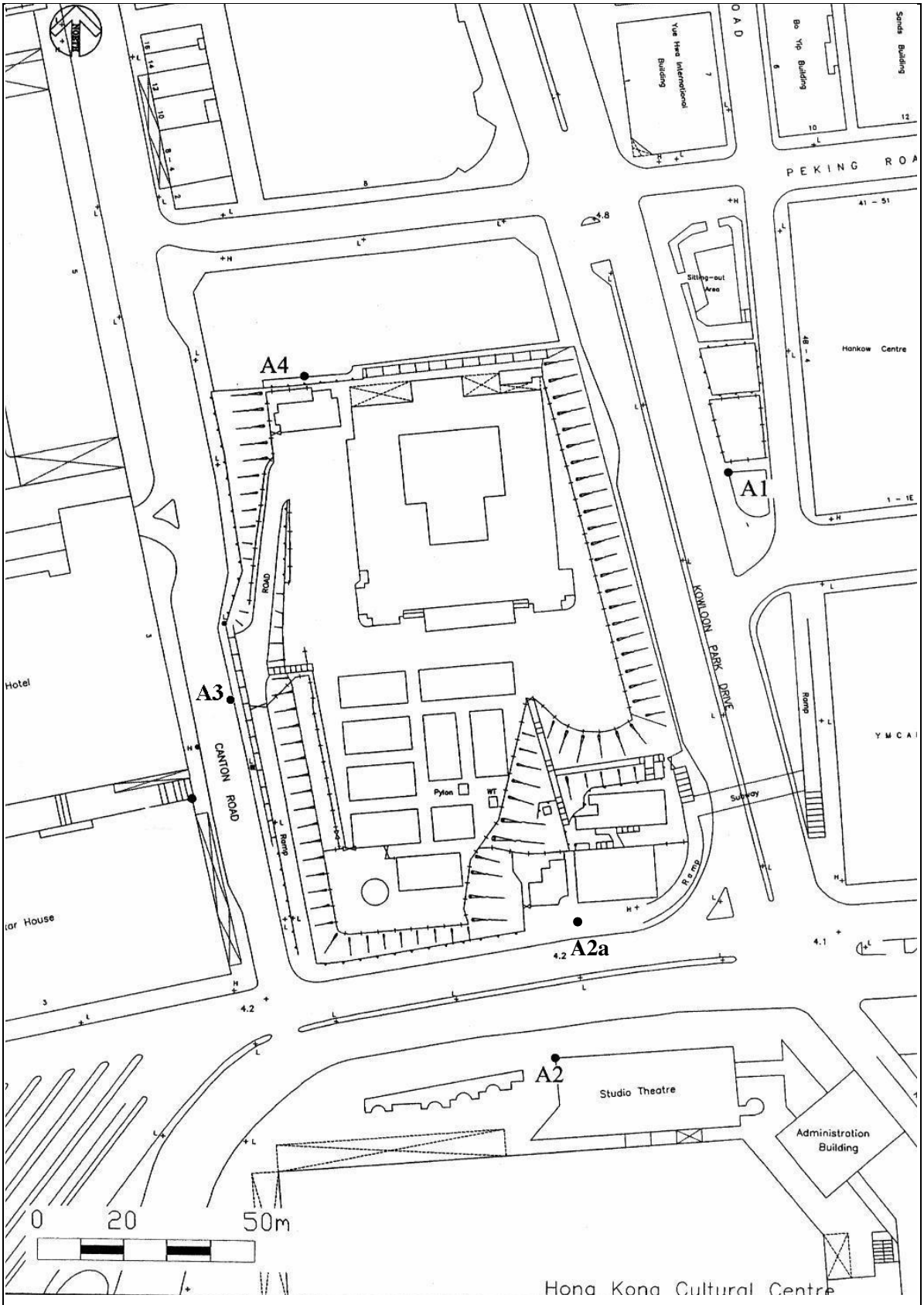

Figure 2.1 Dust Monitoring Locations (A1 is on building rooftop about 11m above ground, A2, on podium level about 5m above ground, A2a, A3 and A4 on hoarding top about 6m, 5m and 13m above ground respectively)	Scale: N.T.S

3. NOISE

Introduction

3.1 The Project Profile points out that there is a need for construction phase EM&A programme to proactively monitor construction noise impact and take necessary action against any unacceptable impact. The EM&A requirements for construction noise are described in Sections 3.2 to 3.29 below. Specific mitigation measures for both construction and operational phase are recommended in the Project Profile and are extracted in Appendix A of this Manual for reference.

Noise Parameters

3.2 Monitoring and audit of noise levels should be carried out by the ET to ensure acceptable noise impacts of the construction works.

3.3 The construction noise level shall be measured in terms of the A-weighted equivalent continuous sound pressure level (L_{eq}). $L_{eq\ (30\ min)}$ shall be used as the monitoring parameter for the time period between 0700-1900 hours on normal weekdays. For all other time periods, $L_{eq\ (5\ min)}$ shall be employed for comparison with the Noise Control Ordinance ["NCO"] criteria.

3.4 As supplementary information for data auditing, statistical results such as L_{10} and L_{90} shall also be obtained for reference. A sample data record sheet is shown in Appendix C for reference.

Monitoring Equipment

3.5 As referred to in the Technical Memorandum ["TM"] issued under the NCO, sound level meters in compliance with the *International Electrotechnical Commission Publications 651: 1979 (Type 1) and 804: 1985 (Type 1)* specifications shall be used for carrying out the noise monitoring. Immediately prior to and following each noise measurement the accuracy of the sound level meter shall be checked using an acoustic calibrator generating a known sound pressure level at a known frequency. Measurements may be accepted as valid only if the calibration level from before and after the noise measurement agree to within 1.0 dB.

3.6 Noise measurements should not be made in the presence of fog, rain, wind with a steady speed exceeding 5 m/s or wind with gusts exceeding 10 m/s. The wind speed shall be checked with a portable wind speed meter capable of measuring the wind speed in m/s.

3.7 The ET Leader should be responsible for the provision of the monitoring equipment. He/she should ensure that sufficient noise measuring equipment and associated instrumentation are available for carrying out the baseline monitoring, regular impact monitoring and ad hoc monitoring. All the equipment and associated instrumentation should be clearly labelled. The equipment installation location should be proposed by the ET Leader and agreed with the AR and EPD in consultation with the IEC.

Monitoring Locations

3.8 Two noise monitoring stations were proposed for the construction phase. The locations of the proposed noise monitoring stations are shown in Figure 3.1. These stations were initially chosen to be CN1 and CN2 located on the podium of Hankow Centre east of the construction site. It is to be noted that the position of CN2 is different to the original position suggested in the Project Profile. The position is closer and more exposed to the construction site and hence can provide a more conservative measurement for environmental protection. However, after baseline noise monitoring has been carried out for one week, the building management of Hankow Centre stopped to grant access to the measuring points. Alternative measurement locations have been identified to be CN1a and CN2a located on the rooftop of Po Yip Building and 4/F YMCA respectively. The alternative measurement locations also shown in Figure 3.1 and permissions for the respective building management are being sought.

3.9 The status and locations of noise sensitive receivers (NSRs) may change after issuing this Manual. If such cases exist, the ET Leader should propose updated monitoring locations and seek approval from AR and agreement from the IEC and EPD of the proposal.

3.10 When alternative noise monitoring locations are proposed, the monitoring locations should be chosen based on the following criteria:

a. at locations close to the major site activities which are likely to have noise impacts, with proper position/siting and orientation of the monitoring equipment ensured;

b. close to the noise sensitive receivers (any domestic premises, hotel, hostel, temporary housing accommodation, hospital, medical clinic, educational institution, place of public worship, library, court of law, performing art centre should be considered as noise sensitive receiver); and

c. for monitoring locations located in the vicinity of the sensitive receivers, care should be taken to cause minimal disturbance to the occupants during monitoring.

3.11 Measurement should normally be at a point 1m from the exterior of the sensitive receivers building façade but may be at other point considered to be appropriate and agreed by IEC. Where the measurement is to be made of noise being received at a place other than a building, the measurement point should be at a position 1.2m above ground, and at a particular point considered appropriate and agreed by IEC. Once the measurement positions for the monitoring stations are chosen, the baseline monitoring and the impact monitoring should be carried out at the same positions unless there are practical constraints and the revised positions should be agreed with the IEC.

Baseline Monitoring

3.12 The ET Leader should carry out baseline noise monitoring prior to the commencement of the construction works. The baseline monitoring should be carried out daily for a period of at least two weeks. A schedule on the baseline monitoring should be submitted to the IEC for approval before the monitoring starts.

3.13 During the baseline monitoring, there should not be any construction activities in the vicinity of the monitoring stations.

3.14 In exceptional cases, when insufficient baseline monitoring data or questionable results are obtained, the ET Leader should liaise with EPD and in consultation with IEC/AR to agree on an appropriate set of data to be used as a baseline reference.

Impact Monitoring

3.15 Noise monitoring should be carried out at all the designated monitoring stations for the construction phase. Given that the operating hours during construction and operational phases of the project will be restricted and no noise-generating activities would be expected during 1900 to 0700 hours all days or any time on Sundays or general holidays, noise monitoring will only be carried out during 0700 to 1900 hours on normal weekdays.

3.16 The monitoring frequency should depend on the scale of construction activities. As an initial guide, one set of measurements between 0700 to 1900 hours on normal weekdays should be carried out for each station on a per week basis when noise-generating activities are underway. One set of measurements should at least include 6 consecutive $L_{eq(5\ min)}$ results (i.e. a minimum of 30 minutes).

Construction Noise Monitoring

3.17 Construction noise monitoring shall be carried out at all the designated monitoring stations. It was assumed in the Project Profile Report that no night-time work would be carried out under the proposed construction programme. However, the monitoring frequency shall depend on the scale of the construction and the actual timing of activities. The following is an initial guide on the regular monitoring frequency for each station on a per week basis when noise generating activities are underway:

a. one set of measurements between 0700-1900 hours on normal weekdays

b. one set of measurements between 1900-2300 hours (if there is construction work)

c. one set of measurements between 2300-0700 hours of next day (if there is construction work)

d. one set of measurements between 0700-1900 hours on holidays (if there is construction work)

3.18 For the measurements (b), (c) & (d) above, one set of measurements shall at least include three consecutive $L_{eq(5\ min)}$ results and shall only be carried out when there are construction activities scheduled during those periods.

Noise Measurement To Verify Potential Off-site Ground-borne Noise Impact

3.19 As identified in the Project Profile, there are concerns from the Hong Kong Cultural Centre ["HKCC"] and the Hong Kong Space Museum ["HKSM"] that ground-borne noise could be a nuisance to the performance that would demand a more stringent noise criterion to ensure enjoyment of the audience.

3.20 Prior to the commencement of any piling works of the Project, the ET Leader shall conduct a background noise measurement inside the HKCC and HKSM to verify the similar baseline noise level as given in Table 15 of the Project Profile.

3.21 Considering that piling works for *Site Formation – Retaining wall for Main Building* is the period with major concern on ground-borne noise impact, noise measurement inside the HKCC and HKSM had been conducted by the ET Leader and reported to the AR and IEC on a monthly basis during the period of piling works. For the present phase of the construction work, no ground-borne noise measurement should be needed unless piling resumes.

Event and Action Plan for Noise

3.22 Since the monitoring would be carried out near site boundary, the ET should predict the noise levels at the nearest NSRs using standard acoustic principles on the basis of the measured noise levels from monitoring. The predicted noise levels should then be compared with the action and limit levels in Tables 3.1.

3.23 The Action and Limit levels for noise are defined in Table 3.1. Should non-compliance of the criteria occur, action in accordance with the Action Plan in Table 3.2 should be carried out.

Table 3.1 Action and Limit Levels for Construction Noise

Time Period	Action Level	Limit Level
0700-1900 hrs on normal weekdays	When one documented complaint is received	75* dB(A)
0700-2300 hrs on holidays; and 1900-2300 hrs on all other days		65** dB(A)
2300-0700 hrs of next day		50** dB(A)

* reduce to 70 dB(A) for schools and 65 dB(A) during school examination periods.
** Based on Area Sensitivity Rating 'B'.

3.24 For off-site ground-borne noise transmitted to the HKCC and HKSM, the limit level is 60dB(A). The action level should be when one documented complaint is received.

Table 3.2 Event/Action Plant for Construction Noise

EVENT	ACTION (to be taken as immediate as practicable)			
	ET	IEC	AR	CONTRACTOR
Action level	1. Notify IEC and Contractor; 2. Carry out investigation; 3. Report the results of investigation to the IEC and Contractor; 4. Discuss with the Contractor and formulate remedial measures ; 5. Increase monitoring frequency to check the effectiveness of mitigation measures.	1. Review the analysed results submitted by the ET; 2. Review the proposed remedial measures by the Contractor and advise the AR accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; 4. Ensure mitigation measures are properly implemented.	1. Submit noise mitigation proposal to IEC; 2. Implement noise mitigation proposals.
Limit level	1. Notify IEC, AR, EPD & Contractor; 2. Identify source; 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 IEC, AR and EPD the causes and actions taken for the exceedances; 7. Assess the effectiveness of Contractor's remedial actions and keep IEC, EPD and AR informed of the results; 8. If exceedance stops, cease additional monitoring.	1. Discuss amongst AR, ET, and Contractor on the potential remedial actions; 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the AR accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; 4. Ensure mitigation measures are properly implemented; 5. If exceedances continue, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	1. Undertake immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by AR, until the exceedance is abated.

Mitigation Measures for Construction Noise Control

3.25 The Project Profile has recommended construction noise control and mitigation measures. The Contractor should be responsible for the design and implementation of these measures with the agreement from the ET, IEC and AR.

3.26 The following mitigation measures are to be adopted during the construction of the project to alleviate potential construction noise impact. It is by no means restrictive and lack of flexibility. In case the Contractor considers alternative measures that are equally effective in carrying out the actual site work. The Contractor should agree with the IEC and the AR, who will seek EPD's approval on their counter-proposed measures prior to implementation on-site.

- Restrict operation to within on-restricted hours only
- Use of quiet PME with lower sound power level
- Provide site hoarding of 4m to 6m high along the eastern boundary with sufficient surface density (10 to 15 kg/m^2) as noise barrier (refer to Appendix II-1B of the Project Profile), noise curtain or other mitigation measures as soon as Action Level is exceeded and confirmed to be due to the construction works
- Use of noise enclosure, noise curtain and temporary noise barriers with sufficient surface density (10 to 15 kg/m^2) (vertical and cantilevered types) (refer to Appendix II-1B of the Project Profile)
- Making use of the topography by carrying out excavation from west to east so that the original platform can act as effective noise barrier (refer to Appendix II-1B of the Project Profile)
- Implementation of good site practice and noise management through:
    - Before the commencement of any work, the Contractor shall submit to the Architect for approval the method of working, equipment and sound-reducing measures intended to be used at the site
    - Only well-maintained plants should be operated on-site
    - Plants should be serviced regularly during the construction programme
    - Machines that may be in intermittent use should be shut down or throttled down to a minimum between work periods
    - Silencers and mufflers on construction equipment should be utilised and should be properly maintained during the construction programme
    - Noisy activities can be scheduled to minimise exposure of nearby NSRs to high levels of construction noise. For example, noisy activities can be scheduled for midday or at times coinciding with periods of high background noise (such as during peak traffic hours)
    - Noisy equipment such as emergency generators shall always be sited as far away as possible from NSRs
    - Mobile plants should be sited as far away from NSRs as possible
    - Material stockpiles and other structures should be effectively utilised as noise barrier, where practicable

<u>Specific Mitigation Measures to avoid Adverse Cumulative Ground-borne Noise Impact</u>

3.27 The Project Profile has predicted that cumulative ground borne noise impact could have potential impact on the surroundings and has documented the Project Proponent's commitment to mitigate the ground-borne noise as far as practicable.

3.28 Following specific mitigation measures are proposed in the Project Profile (Section 4.2.1.23 and 4.2.1.81) to avoid adverse cumulative ground borne noise impact.

- No percussive piling (percussive piling does not mean the piling for the soldier pile, pipe pile, pre-bored H-pile/ socketted H-pile, soil nailing, ground anchor, minipile etc.) is allowed, so to eliminate possibility of generating any significant ground borne noise impact
- Subject to verification of the need by on-site measurement, avoid concurrent pipe piles driving near the tree ring and the Main Building when the pipes near the Main Building is about to penetrate the bedrock
- Conduct on-site noise measurement at the HKCC and the HKSM when the works at the FMPH commences to verify the level of transmitted ground-borne noise (Section 3.19 to 3.21 of this Manual referred)
- To establish a communication channel with HKCC and HKSM to stagger, if necessary, the ground-borne noise causing construction activities to avoid clashing with hours of performance at both venues

3.29 If the above measures are not sufficient to restore the noise quality to acceptable levels upon the advise of ET Leader, the Contractor should liaise with the ET Leader on some other mitigation measures, propose to AR for approval, and implement the mitigation measures.

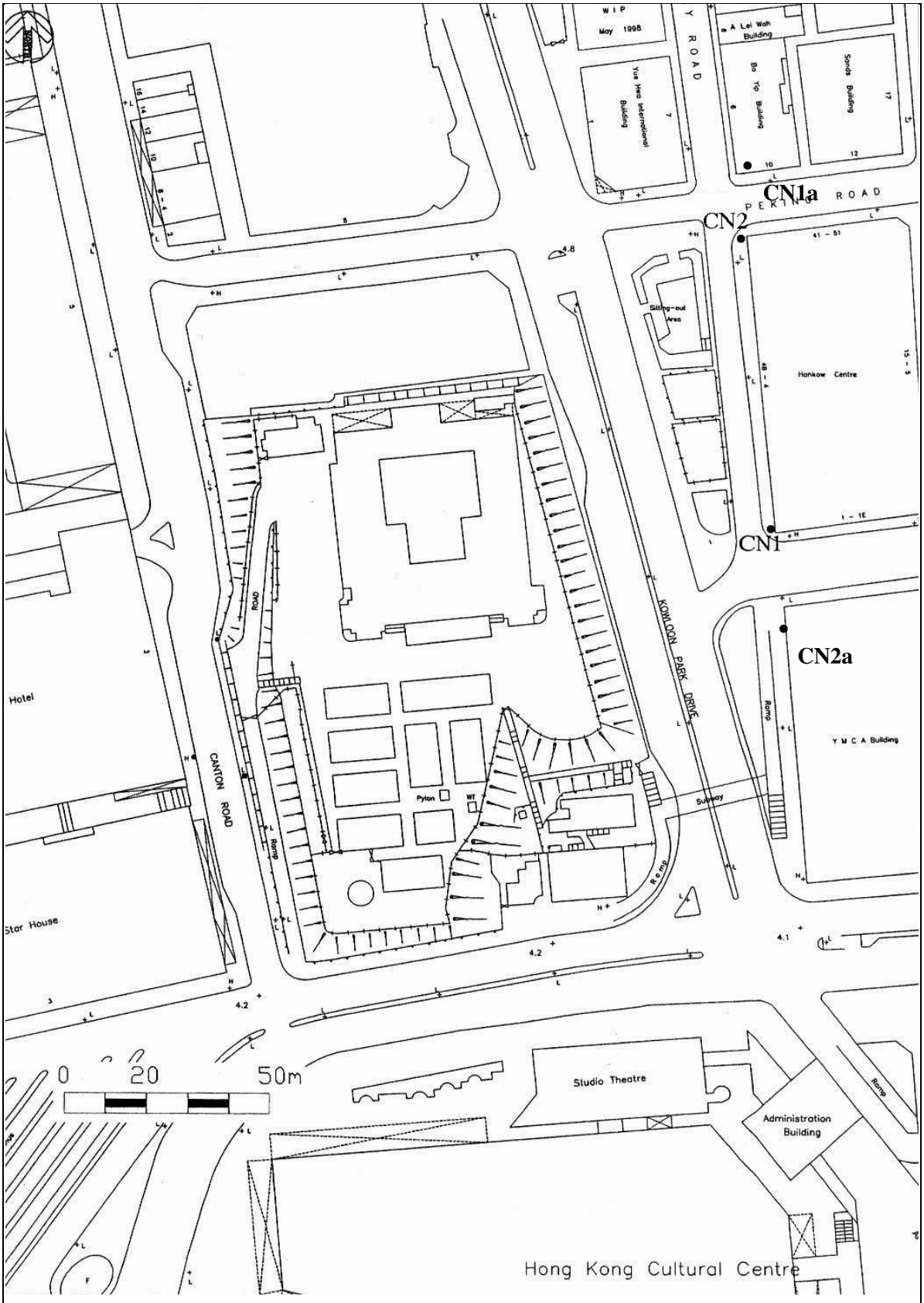

Figure 3.1 Proposed Noise Monitoring Stations (CN1 and CN2 are at podium level, about 15m above ground). Alternative measurement stations (CN1a and CN2a are about 33m and 11m above ground respectively).	Scale: N.T.S

4. WATER QUALITY

Introduction

4.1 Water quality impacts arising from the carrying out of constructional activities would be minimised by implementation of suitable mitigation measures and through good management practices as recommended in the Project Profile. No adverse water quality impact is anticipated due to the operation of the Project.

Construction Phase Mitigation Measures for Water Quality Control

4.2 The Contractor should comply with the Water Pollution Control Ordinance and its subsidiary regulations. Measures to reduce water quality impacts due to various construction activities such as construction site runoff, sewage from workforce, accidental spillage of chemicals and wastewater are as follows:

- To carry out the Works in such a manner as to minimise adverse impacts on the water quality during execution of the works. In particular he shall arrange his method of working to minimise the effects on the water quality within and outside the Site, on the transport routes and at the loading, dredging and dumping areas
- To follow the practices, and be responsible for the design, construction, operation and maintenance of all the mitigation measures as specified in the Professional Persons Environmental Consultative Committee Practice Note (ProPECC PN) 1/94 "Construction Site Drainage" issued by the Director of Environmental Protection. The design of the mitigation measures shall be submitted by the Contractor to the Architect for approval
- To contain within the Site all surface runoff generated from foundation works, dust control and vehicle washing, etc.
- To avoid discharge directly or indirectly or cause or permit or suffer to be discharged into any public sewer, stormwater drain, channel, stream-course or sea any trade effluent or foul or contaminated water or cooling or hot water without the prior written consent of the Architect in consultation with the Director of Environmental Protection, who may as a condition of granting his consent require the Contractor to provide, operate and maintain at the Contractor's own expense to the satisfaction of the Architect suitable works for the treatment and disposal of such trade effluent or foul or contaminated or cooling or hot water. The design of such treatment works, if it is required, shall be submitted to the Architect for approval not less than one month before the commencement of the relevant works.]
- To direct foul water effluent to a foul sewer or to a sewage treatment and disposal facility either directly or indirectly by means of pumping or other means approved by the Architect if any office, site canteen or toilet facilities is erected

4.3 Implementation of the aforesaid mitigation measures as recommended by the Project Profile (as attached in Appendix A of this Manual) should be monitored through the site audit programme as described in Section 8 of this Manual.

5. WASTE MANAGEMENT

5.1 The overall principles of construction waste management are to reduce waste generation and to reuse and recycle construction waste. The arrangement for avoidance, reuse, recovery and recycling, storage, collection, treatment and disposal of different categories of waste to be generated from the construction activities and the recommended mitigation measures are described in the Waste Management Plan ["WMP"].

5.2 The Permit Holder will, no later than one month after the commencement of construction of the Project, deposit with the Director of EPD three hard copies and one electronic copy of a WMP for the construction stage of the Project. The WMP shall be certified by the ET Leader and verified by the IEC as conforming to the information and recommendations contained in the Project Profile (Register No. PP-204/2003).

5.3 The WMP will describe the arrangements for avoidance, reuse, recovery and recycling, storage, collection, treatment and disposal of different categories of waste to be generated from the construction activities and will include the recommended mitigation measures on waste management in the Project Profile (Register No. PP-204/2003).

5.4 The WMP will indicate the disposal location(s) of all surplus excavated materials and wastes. A trip ticket system shall be included in the WMP. Surplus excavated materials and wastes shall only be disposed of at designated disposal locations unless otherwise approved by the Director. All measures recommended in the WMP shall be fully and properly implemented by the Contractor throughout the construction period.

5.5 No disposal of waste, spoil, soil, excavated materials or materials alike arising from the Project shall be allowed at any locations unless otherwise approved by the Director of EPD under Condition 3.1 of the EP.

5.6 The Contractor has to comply with the Waste Disposal Ordinance (Cap. 354) ["WDO"] and its subsidiary regulations in all circumstances and carry out appropriate waste management work.

5.7 The Contractor shall refer to the relevant booklets issued by the EPD to obtain relevant licence/permit such as the effluent discharge licence, the chemical waste producer registration, etc.

5.8 The implementation status of the following mitigation measures as recommended in the Project Profile (as attached in Appendix A of this Manual) should be monitored through the site audit programme as described in Section 8 of this Manual:

- To minimize the production of construction waste through careful design, planning, good site management, and control of ordering procedures, segregation and reuse of materials; To arrange for private contractors to collect used formwork materials for reuse
- To dispose of any chemical wastes such as lubricating oil or solvent in strict accordance with the Waste Disposal (Chemical Waste) (General) Regulation
- To assign a reliable waste collector to collect general refuse generated from the construction site on a daily basis to minimise the potential odour, pest and litter impacts

- To identify requirements on proper waste management for implementation during the operation of the Project

5.9 To ensure proper implementation of waste management strategies mentioned above, weekly site inspection and checking of waste flow records will be carried out by the ET. Advices on solid and liquid waste management will be given in the monthly EM&A monthly reports. The detailed requirements on waste management will be documented in the WMP to be finalized with EPD.

6. LANDSCAPE AND VISUAL

Landscape Mitigation and Tree Preservation Proposals

6.1 The Permit Holder will submit to the Director of the EPD for approval the Landscape Mitigation and Tree Preservation Proposal, at least 3 months before the commencement of the relevant section of earthworks and building works within the monument boundary. Together with other similar proposals covering the whole site area to other Authorities, these Proposals will include landscape layouts, sections, method statements, detailed treatment to preserve the trees on site, including retention and replanting of the existing trees on site, monitoring schedules for the tree preservation works during construction, and the maintenance of the trees preserved during the operational stage of the Project and a detailed compensatory tree planting proposal which shall include the maintenance of the compensatory trees during the operational stage of the Project.

6.2 All relevant measures recommended in such Proposals during the construction phase shall be fully and properly implemented on site by the Contractor with the advice of the qualified or registered landscape architect associated with the AR. In addition, the third party Tree Specialist shall review all designs and procedures for the protection and preservation of the existing trees, and provide an additional level of monitoring during the construction and establishment periods. A photographic record of the completed mitigation for landscape and tree preservation works shall be submitted at monthly intervals by the ET forming part of the monthly EM&A report which shall be certificated by the ET and verified by the IEC to the EPD for reference throughout the construction period. This photographic record shall include photographs to show the condition of the preserved trees, the tree protection measures and any site activities which might affect the preserved trees.

6.3 The ET shall place the monitoring reports for landscape mitigation and tree preservation works and the photographic records on the project web page (as described in Condition 6.2 of the EP) maintained by the Permit Holder as part of the monthly EM&A reports for the Project.

Mitigation Measures

6.4 Besides the Landscape Mitigation and Tree Preservation Proposal, the Landscape and Visual Assessment of the Project Profile recommended a series of mitigation measures to ameliorate the landscape and visual impacts of the project. These measures include the following:

<u>Construction Phase Mitigation Measures</u>

- To screen the works area during the construction phase through the use of decorative hoarding along the site boundary with unified edge treatment and interface
- Creation of precautionary area (Cordon Area) around trees to be retained equal to the spread of the trees canopy diameter. Cordon Area to be fenced. Following the completion of the piling operations Cordon Area will be based on the retained rootball
- Prohibition of the storage of materials including fuel, the movement of construction vehicles, and the refuelling and washing of equipment including concrete mixers within the Cordon Area

- Phased segmental root pruning for trees to be retained over a six-month period prior to or site formation works, which affect the existing rootball of trees identified for retention. The extent of the pruning shall be based on a minimum half canopy and has been determined on a tree by tree basis
- Phased segmental root pruning over a three-month period prior to lifting the tees identified for transplantation
- Pruning of the branches of existing trees identified for transplantation and retention to be based on the principle of crown thinning maintaining their form and amenity value
- The watering of existing vegetation particularly during periods of excavation when the water table beneath the existing vegetation is lowered
- The rectification and repair of damaged vegetation following the construction phase to it's original condition prior to the commencement of the works or replacement using specimens of the same species, size and form where appropriate to the design intention of the area affected

6.5 All works affecting the trees identified for retention and transplantation shall be carefully monitored. This includes the key stages in the preparation of the trees, the implementation of protection measures and health monitoring throughout the construction period. This monitoring shall ensure compliance with the tree preservation proposal and method statements to protect the retained trees submitted under the EIAO.

6.6 All landscape and visual mitigation works will be funded, implemented, managed and maintained by the project proponent. A qualified or registered landscape architect will be involved in the design, construction supervision and monitoring, and maintenance period to oversee the implementation of the recommended landscape and visual mitigation measures including the tree preservation and landscape works on site.

7. CULTURAL HERITAGE

Introduction

7.1 The Subject Site contains a Declared Monument Site in which the former Marine Police Headquarters ["FMPHQ"] Compound was gazetted under the Antiquities and Monuments Ordinance (Cap. 53) on December 14, 1994. The FMPHQ Compound includes an inventory of historic buildings, artefacts and landscape features:

- The Historic Buildings comprises:
  (a) Main Building
  (b) Stable Block
  (c) Signal Tower
  (d) Accommodation Block of the Former Fire Station and
  (e) Main Building of the Former Fire Station
- The retaining wall along Canton Road constructed of Historic Granite Stonework Blocks which is outside the declared monument boundary under Antiquities and Monument Ordinance
- The historic Disused Tunnels and their Portals that lead to the underground areas of the site

7.2 Under Section 6 of the same Ordinance, necessary permits need be granted from Secretary for Home Affairs ["SHA"] for any construction and maintenance work within the site of cultural heritage. An approval condition of the EP also requires the Permit Holder to submit for approval a Method Statement Detailing the Protective Measures on the Declared Monument Buildings (the Method Statement).

7.3 All measures recommended in the approved Method Statement shall be fully and properly implemented and maintained by relevant personnel, including the Contractor throughout the relevant construction period. The division of responsibility shall be referred to the Implementation Schedule contained in Appendix A of this EM&A Manual.

7.4 The performance of protective measures described in the Method Statement detailing the Protective Measures on declared Monument Buildings' will be checked by a structural monitoring system. A summary of such monitoring data and interpretation will be included in the monthly EM&A reports for reference only.

7.5 Following mitigation measures as recommended by the Project Profile (as attached in Appendix A of this Manual) should also be implemented:

<u>Before and during Construction Phase</u>

- All necessary precautions during construction and excavation work will be taken to prevent any damage to the Historic Buildings. Structural monitoring system will be designed and supervised by a Registered Structural Architect during the whole of construction works on the site
- Principles contained in the Charter of Venice ["ICOMOS"] and the Burra Charter ["ICOMOS Australia"] would be observed
- The acceptability of the mitigation measures described above as well as other possible mitigation measures is governed under the Antiquities and Monuments Ordinance so that detailed assessment will be prepared and submitted for approval before commencement of work under the same Ordinance

8. SITE ENVIRONMENTAL AUDIT

Site Surveillance

8.1 Site surveillance provides a direct means to assess whether the project's environmental protection and pollution control measures are in compliance with the contractual specifications. It should be undertaken regularly and routinely by the ET and IEC to inspect the construction activities of the FMPHQ project in order to ensure that appropriate environmental protection and pollution control mitigation measures are properly implemented in accordance with Project Profile recommendations and EP requirements. With well-defined pollution control and impact mitigation specifications and a well-established efficient and remedial action reporting system, site inspection is an effective "tool" to ensure acceptable environmental performance on the site.

8.2 The ET Leader is responsible for formulation of the environmental site inspection, deficiency and remedial action reporting system, and for carrying out the site inspection works. He/she should in consultation with the IEC, prepare a procedure for the site inspection, deficiency and remedial action reporting requirements; and submit to the Contractor for agreement and to the AR for approval, within 21 days of the commencement of the contract.

8.3 Regular site inspections should be carried out at least once per week by the ET and at least once per month by the IEC for all work areas during construction phase of the FMPHQ project. The inspections should cover the environmental situation, pollution control and mitigation measures within the site. They should 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 should make reference to the following information in conducting the inspection:

- Project Profile recommendations and requirements on environmental protection and pollution control mitigation measures
- Works progress, programme, site/aerial photos and site plans
- Individual works methodology proposals (which should include proposals on associated pollution control measures, and the landscape mitigation and tree preservation proposal)
- The contract specifications on environmental protection and pollution prevention control
- The relevant environmental protection and pollution control laws, ProPECC Notes
- Previous site inspection results

8.4 The Contractor should update the ET Leader with all relevant information of the contract for him/her to carry out the site inspections. The inspection report results and its recommendations for any necessary improvements in the project's environmental performance should be submitted, in a site inspection proforma, to the IEC and the Contractor within 24 hours, for reference and the taking of immediate remedial action. The Contractor should follow the procedures and time frame as stipulated in the environmental site inspection, deficiency and remedial action reporting system, which is formulated by the ET Leader to report on any remedial measures subsequent to the site inspections.

8.5 *Ad-hoc* site inspections should also be carried out by the ET and/or IEC if major unacceptable or unforeseen 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 environmental monitoring and audit.

Compliance with Legal and Contractual Requirements

8.6 There are contractual environmental protection and pollution control requirements as well as environmental protection and pollution prevent and control laws in Hong Kong that the construction and operation of the FMPHQ project should comply with.

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

8.8 The ET Leader should also 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.

8.9 After reviewing the document, the ET Leader should advise the Contractor of any non-compliance with the project contractual and legislative requirements on environmental protection and pollution control for them to take follow-up and appropriate remedial actions. If the ET Leader's review concludes that the current status on licence/permit application and any planned environmental protection and pollution control works may not cope with the works programme, or may result in potential violation of environmental protection and pollution control requirements, the ET leader should also advise the Contractor and the AR accordingly. The review should be copied to IEC for any follow-up action.

8.10 Upon receipt of the advice, the Contractor should undertake immediate action to remedy the situation. The AR should follow up to ensure that appropriate actions have been taken by the Contractor in order that the project's environmental protection and pollution control requirements are fulfilled.

Environmental Complaints

8.11 Complaints should be referred to the ET Leader for carrying out complaint investigation procedures. The ET Leader should undertake the following procedures upon receipt of the complaints. EPD (Local Control Office), the Permit Holder, the Contractor and other relevant parties should also be informed as soon as possible on the receipt of any environmental complaints.

a. Log complaint and date of receipt onto the complaint database and inform the IEC 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 project works, identify mitigation measures and in consultation with the IEC

d. If mitigation measures are required, advise the Contractor accordingly

e. Review the Contractor's implementation of the identified and required mitigation measures, and the current 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 complaint if necessary, and ensure that any valid reason for complaint does not recur through proposed amendments to work methods, procedures, machines and/or equipment, etc.

h. Report the investigation results and the subsequent actions to the complainant (if the source of complaint is identified through EPD, the results should be reported within the time frame assigned by EPD)

i. Log a record of the complaint, investigation, the subsequent actions and the results in the monthly EM&A reports

8.12 During the complaint investigation work, the Contractor and the AR should 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 IEC) are required following the investigation, the Contractor should promptly carry out the measures. The IEC and AR should ensure that the measures have been properly carried out by the Contractor.

8.13 A flow chart of the complaint response procedures is shown in Figure 8.1.

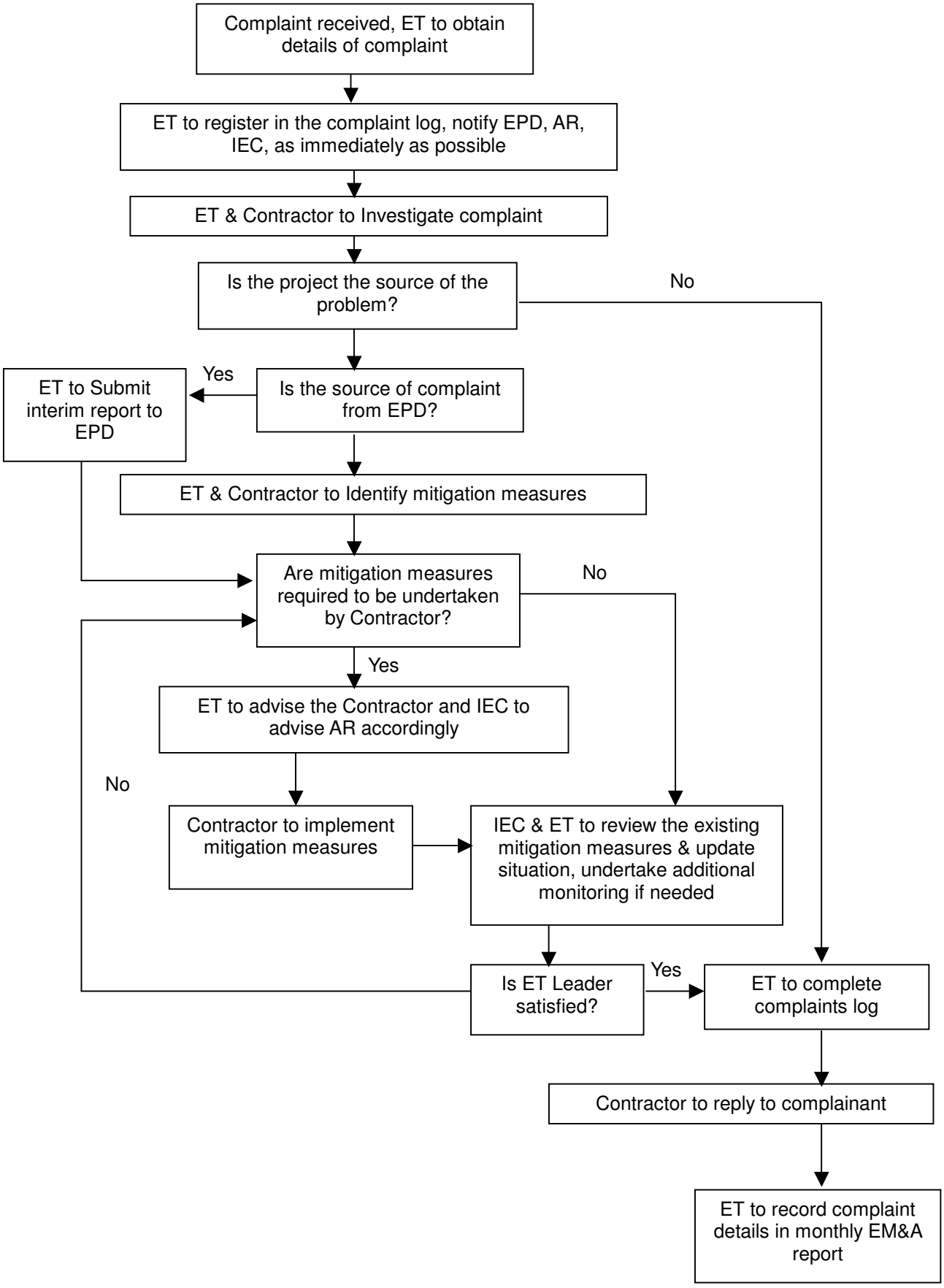

Figure 8.1 Complaint Response Procedures

9. REPORTING

General

9.1 Monitoring results through dedicated internet website are required under Conditions 5.5, 6.1 – 6.3 of the EP. An electronic communication and data recording system for the EM&A programme is required to facilitate the rapid and effective communication of the site environmental status, as well as serving as a management tool for the Contractors. Reporting of monitoring data for the Project through a dedicated internet website is recommended. This can achieve real-time monitoring and notify the Architect any exceedance of the pre-set environmental quality so as to trigger immediate remedial actions, thus increasing the efficiency in resolving the environmental problems. The system will also track the actions undertaken by relevant parties. The system could also function as a database for the entry of all recorded monitoring and audit information.

9.2 In addition, the system could:

- automatically issues Notifications of Exceedances and track their completion
- instigate Event and Action Plans and track their completion;
- store details of complaints
- store details of licenses, permits and notify forthcoming expiry dates
- store construction / operation activity details and other relevant site information and link these to the EM&A Implementation Schedule
- allow retrieval of electronic versions of the EM&A Manual and other documents

9.3 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 AR and EPD. This would enable a transition from a paper/historic and reactive approach to an electronic/real time proactive approach.

Baseline Monitoring Report

9.4 The Contractor/ ET leader should prepare and submit a Baseline Environmental Monitoring Report within 10 working days of completion of the baseline monitoring. Five hard copies and one electronic copy of the reports should be submitted to EPD.

9.5 The baseline monitoring report should include, but not 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 types 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 (AL Levels) for each monitoring parameter and statistical analysis of the baseline data; the analysis should conclude if there is any statistical difference between control and impact stations for the parameters monitored
h. revisions for inclusion in the EM&A Manual
i. comments and conclusions

EM&A Reports

9.6 The results and findings of all EM&A work required in this Manual should be recorded in the monthly EM&A reports prepared by the ET leader. The EM&A report should be prepared by ET leader and endorsed by the IEC and submitted within 2 weeks after the end of each reporting month, with the first report due in the month after construction commences. Five hard copies and one electronic copy of the reports should be submitted to EPD.

9.7 The ET leader should 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.

First Monthly EM&A Report

9.8 As required by the Condition 5.2 of the EP, the first monthly EM&A report should include at least but not be limited to the following:

a. Executive summary in 1-2 pages
   - breaches of AL 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 tuning of construction activities showing the interrelationship with environmental protection/mitigation measures for the month
   - management structure
   - works undertaken during the month

c. Environmental status
   - works undertaken during the month with illustrations showing location of works
   - drawing showing the project area, any environmental sensitive receivers and the locations of the monitoring and control 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 Profile
   - 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 Project Profile, summarised in the updated implementation schedule
- status of submission required under the EP

f. Monitoring results
To provide monitoring results (in both hard and diskette copies) together with the following information:
- monitoring methodology
- name of laboratory and types of equipment used and calibration details
- parameters monitored
- monitoring locations (and depth)
- monitoring date, time, frequency, and duration
- weather conditions during the period
- graphical plots of the monitored parameters in the month annotated against the major activities being carried out on site during the period
- weather conditions that may affect the results and other factors which might affect the monitoring results
- QA/QC results and detection limits
- summary of types, quantities and disposal locations of all surplus excavated materials and wastes arising from the Project
- monitoring report and photo records of landscape and tree preservation works

g. Report on non-compliance, complaints, notifications of summons and successful prosecutions
- record and summarise of all non-compliance (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 occasions 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 non-compliance and deficiency reporting and any follow-up procedures related to earlier non-compliance

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
- submission of implementation status proforma, proactive environmental protection proforma, regulatory compliance proforma, data recovery schedule and complaint log summarizing the EM&A of the period

Subsequent EM&A Reports

9.9 As required by the Condition 5.2 of the EP, the subsequent monthly EM&A reports should include the following:

a. Executive summary (1-2 pages)

- breaches of AL levels
- complaint log
- notifications of any summons and successful prosecutions
- reporting changes
- future key issues

b. Environmental status
   - construction / operation programme with fine tuning of construction / operation 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 and control stations

c. Implementation status
   - advice on the implementation status of environmental protection and pollution control/mitigation measures, as recommended in the Project Profile, summarised in the updated implementation schedule
   - status of submission required under the EP

d. Monitoring results
   To provide monitoring results (in both hard and diskette copies) together with the following information:
   - monitoring methodology
   - name of laboratory and types of equipment used and calibration details
   - parameters monitored
   - monitoring locations (and depth)
   - monitoring date, time, frequency, and duration
   - weather conditions during the period
   - graphical plots of the monitored parameters in the month annotated against the major activities being carried out on site during the period
   - weather conditions that may affect the results and other factors which might affect the monitoring results
   - QA/QC results and detection limits
   - summary of types, quantities and disposal locations of all surplus excavated materials and wastes arising from the Project
   - monitoring report and photo records of landscape and tree preservation works

e. Report of non-compliance, complaints, notifications of summons and successful prosecutions
   - record of all non-compliance (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 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 non-compliance and deficiency reporting and any follow-up procedures related to earlier non-compliance

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
- status of various environmental licences and permits
- review of project impact predictions and effectiveness of the environmental management practices and procedures

g. Appendix
   - AL 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
     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

Quarterly EM&A Summary Reports

9.10 As required by the Condition 5.2 of the EP, the quarterly EM&A summary report which should generally be around 5 pages (including about 3 of text and tables and 2 of figures) should contain at least the following listed information. Apart from these, the first quarterly summary report should 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:

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 Profile

d. advice on the implementation status of environmental protection and pollution control/mitigation measures, as recommended in the Project Profile, summarised in the updated implementation schedule
e. status of submission required under the EP
f. drawings showing the project area, any environmental sensitive receivers and the locations of the monitoring and control stations
g. 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
h. a summary of disposal of surplus excavated materials and wastes, advice on the solid and liquid waste management status and status of various environmental licences and permits
i. a summary of non-compliance (exceedances) of the environmental quality performance limits (Action and Limit levels)

j. a brief review of the reasons for and the implications of non-compliance including review of pollution sources and working procedures
k. a summary description of the actions taken in the event of non-compliance and any follow-up procedures related to earlier non-compliance
l. a summary record of all complaints received (written or verbal) for each media, liaison and consultation undertaken, actions and follow-up procedures taken
m. a summary of notification 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
n. comments (e.g. effectiveness and efficiency of the mitigation measures, accuracy of project impact predictions, effectiveness of environmental management practices and procedures), recommendations (e.g. any improvement in the EM&A programme) and conclusions for the quarter
o. proponents' contacts and any hotline telephone number for the public to make enquiries

Final EM&A Summary Report

9.11 As required by the Condition 5.2 of the EP, the termination of EM&A programme should be determined on the following basis:

a. completion of construction and operation activities and insignificant environmental impacts of the remaining outstanding activities
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

9.12 The proposed termination may be required to consult related local community such as District Board and the proposal should be endorsed by the IEC, AR and the project proponent prior to Final approval from the Director of Environmental Protection.

9.13 As required by the Condition 5.2 of the EP, the Final EM&A summary report should include, inter alia, the following:

a. An 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 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 Profile
d. Advice on the implementation status of environmental protection and pollution control/mitigation measures, as recommended in the Project Profile, summarised in the updated implementation status proforma
e. Status of submission required under the EP
f. Drawings showing the project area, any environmental sensitive receivers and the locations of the monitoring and control stations
g. Graphical plots of the trends of monitored parameters over the construction and operation period 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

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

Documentation

9.14 All documentation is required to be filed in a traceable and systematically manner. Site document, such as, monitoring field records, laboratory analysis records, meeting minutes, correspondences etc., should be cross-referenced by the ET leader and be ready for inspection upon request. All EM&A results and findings should be documented in the EM&A reports prepared by the ET and endorsed by the IEC prior to disseminate to the Contractor, AR and the DEP.

9.15 All documentation to the DEP should be in paper form and/or electronic form (in the format in agreement with the DEP) upon request. All documents and data should be kept for at least one year after the completion of the contract. All submissions namely reports, data, and correspondences, etc., to the DEP should be liable to use freely for the purposes of communicating environmental data and the owner of information should claim no copyright. Any request to treat all or part of a submission in confidence would be respected, but if no such request is made it would be assumed that the submission is not intended to be confidential.

Electronic Reporting of EM&A Information

9.16 To facilitate public inspection of the monthly EM&A Reports via the Environmental Impact Assessment (EIA) Ordinance Internet Website and at the EIA Ordinance Register Office, electronic copies of these Reports shall be prepared by the ET in Hyper Text Markup Language (HTML) (version 4.0 or later) and in Portable Document Format (PDF version 4.0 or later), unless otherwise agreed by the Director the EPD and shall be submitted by the ET at the same time as the hard

copies as described in Condition 4.2 of the EP.

9.17 For the HTML version, a content page capable of providing hyperlink to each section and sub-section of the EM&A Reports shall be included in the beginning of the document. Hyperlinks to all figures, drawings and tables in the EM&A Reports shall be provided in the main text from where the respective references are made. All graphics in the report shall be in interlaced GIF format unless otherwise agreed by the Director of EPD. The content of the electronic copies of these Reports shall be the same as the hard copies.

9.18 The Contractor/ET shall pass all environmental monitoring data and results described in Conditions 2.6 and 4.2 of the EP to the AR who will set up a dedicated web site and notify the Director of EPD in writing the internet address where the environmental monitoring and project data is to be placed, within 6 weeks after the commencement of the Project.

9.19 All these environmental monitoring data and results described in Conditions 2.6 and 4.2 of the EP will be made available to the public via a dedicated web site to be set up by the AR.

9.20 The internet website as described in Condition 6.2 above will enable user-friendly public access to the monitoring data and project data including the Project Profile and the environmental permit(s) of the Project. The internet website shall have features capable of: -

a. Providing access to all environmental monitoring data collected since the commencement of work
b. Searching by date
c. Searching by types of monitoring data (air quality and construction waste)
d. Hyperlinks to relevant monitoring data after searching; or otherwise as agreed by the Director

Interim Notifications of Environmental Quality Limit Exceedances

9.21 With reference to Event/Action Plans in this Manual, when the environmental quality limits are exceeded, the ET leader should immediately notify the IEC, the AR and EPD, as appropriate. The notification should be followed up with advice to EPD on the results of the investigation, proposed action and success of the action taken, with any necessary follow-up proposals. A sample template for the interim notifications is shown in Appendix C.

10. SUMMARY EM&A REQUIREMENTS

10.1 The environmental monitoring requirements given in this manual can be summarised as follows:

Table 10.1 Environmental Monitoring Summary Requirements

1.	Air monitoring for TSP-24hr with high volume samplers at four locations • Baseline – continuously for14 consecutive days • Impact – once every six-days
2.	Air monitoring for TSP-1hr with portable equipment at four locations • Baseline - 3 times per day for 14 days • Impact - 3 times per day, one day for every six-days
3.	Noise measurement at two noise sensitive receiver locations ($L_{eq,30\ min}$, $L_{eq,5\ min}$, L_{10} and L_{90}) • Baseline - daily between 0700-1900 for 2 weeks • Impact – weekly between 0700-1900 hours on a normal weekday
4.	Ground-borne noise measurement inside HKSM and HKCC ($L_{eq,30\ min}$ / $L_{eq,5\ min}$) • Baseline – one time before commencement of piling works • Impact – once per month on a normal weekday
5.	Building Settlement Marker • Baseline – one time before commencement of piling works • Impact – once per two days on a normal weekday
6.	Ground Settlement Marker • Baseline – one time before commencement of piling works • Impact – once per two days on a normal weekday
7.	Crack Monitoring (Tell-Tale Device) • Baseline – one time before commencement of piling works • Impact –once per two days on a normal weekday

10.2 Site inspection by the ET should be carried out at least once per week. Report submissions should include Baseline Monitoring Report, Monthly, Quarterly and Final EM&A Reports. These reports should include photographic records for landscape and tree preservation, and monument structure monitoring records for heritage protection.

APPENDIX A: Implementation Schedule for Recommended Mitigation Measures

Implementation Schedule
Redevelopment of Former Marine Police Headquarters, KIL11161

Project Profile Ref.:	Recommended Mitigation Measures	Location of the measure	Who to implement the measure	When to implement the measures	What requirements or standards for the measure to achieve*	Objectives of the Recommended Measure & Main Concern to address
	Fugitive Dust Impact on the Surrounding Sensitive Uses					
4.1.2.10	To erect site hoarding of at least 2.4m high along the boundaries of the Project Site (particularly along the northern boundary adjacent to No. 1, Peking Road) except at the site entrance/ exit	Site (site boundary)	Site Formation Contractor (for maintenance or improvement as the hoarding was already erected by the Hoarding Contractor earlier)	Construction Phase (prior to construction)	TM-EIA, APC(CD)R & AQO in APCO	To control fugitive dust emissions in accordance with the requirements of Air Pollution Control (Construction Dust) Regulation in principle; Provide shielding against dispersion of fugitive dust
	To control truck speed to within 8 km/hr and that dusty vehicle loads transported to and from the work location should be covered by tarpaulin sheets and should not be overloaded	Site	Site Formation Contractor	Construction Phase	TM-EIA, APC(CD)R & AQO in APCO	To control fugitive dust emissions in accordance with the requirements of Air Pollution Control (Construction Dust) Regulation in principle; Reduce fugitive emission wherever possible
	To provide vehicle wheel washing facilities including high pressure water jets at designated vehicle exit points	Site	Site Formation Contractor	Construction Phase	TM-EIA, APC(CD)R & AQO in APCO	To control fugitive dust emissions in accordance with the requirements of Air Pollution Control (Construction Dust) Regulation in principle; Reduce fugitive emission wherever possible
	To use impervious sheeting where practicable for side enclosure and covering of any aggregate or other dusty material storage piles, to place stockpiles in an area sheltered on the top and the three sides, and/or to spray with water	Site	Site Formation Contractor	Construction Phase	TM-EIA, APC(CD)R & AQO in APCO	To control fugitive dust emissions in accordance with the requirements of Air Pollution Control (Construction Dust) Regulation in principle; Reduce fugitive emission wherever possible
	To cover the demolished items by impervious sheeting or to place in area sheltered on the top and the three sides within a day of demolition.	Site	Site Formation Contractor	Construction Phase	TM-EIA, APC(CD)R & AQO in APCO	To control fugitive dust emissions in accordance with the requirements of Air Pollution Control (Construction Dust) Regulation in principle; Reduce fugitive emission wherever possible

Project Profile Ref.:	Recommended Mitigation Measures	Location of the measure	Who to implement the measure	When to implement the measures	What requirements or standards for the measure to achieve*	Objectives of the Recommended Measure & Main Concern to address
	To spray all dusty material with water prior to loading, unloading or transfer so as to maintain the C&D material wet	Site	Site Formation Contractor	Construction Phase	TM-EIA, APC(CD)R & AQO in APCO	To control fugitive dust emissions in accordance with the requirements of Air Pollution Control (Construction Dust) Regulation in principle; Reduce fugitive emission wherever possible
	To apply wet suppression at least four times per day at the worksites with active dusty operations and to water all dust emission sources when necessary. The frequency shall be increased when the weather is dry	Site	Site Formation Contractor	Construction Phase	TM-EIA, APC(CD)R & AQO in APCO	To control fugitive dust emissions in accordance with the requirements of Air Pollution Control (Construction Dust) Regulation in principle; Reduce fugitive emission wherever possible
	To control the drop height of excavated materials to a minimum to limit fugitive dust generation from unloading as far as practicable	Site	Site Formation Contractor	Construction Phase	TM-EIA, APC(CD)R & AQO in APCO	To control fugitive dust emissions in accordance with the requirements of Air Pollution Control (Construction Dust) Regulation in principle; Reduce fugitive emission wherever possible
5.2.1.3	To carry out EM&A programme	Site	Site Formation Contractor & Superstructure Contractor	Pre-Construction and Construction Phase	TM-EIA & AQO in APCO	To proactively monitor fugitive dust impact and take necessary action against any unacceptable impact
	Construction Noise Impact on the Surrounding Sensitive Uses					
4.2.1.5	To restrict operation to within non-restricted hours only	Site	Site Formation Contractor & Superstructure Contractor	Construction Phase	NCO	To avoid generation of noise during restricted hours under NCO
4.2.1.11	To use quiet PME with lower sound power level	Site	Site Formation Contractor & Superstructure Contractor	Construction Phase	TM-EIA	To reduce noise generation and in turn the construction noise impact
	To provide site hoarding of 4m to 6m high along the eastern boundary with sufficient surface density (10 to 15 kg/m^2), use of noise curtain or other mitigation measures for noise abatement as soon as Action Level is exceeded and confirmed to be due to the construction works	Site	Site Formation Contractor & Superstructure Contractor	Construction Phase	TM-EIA	To provide noise shielding or equivalent measures to reduce construction noise impact as per @ or equivalent subject to IEC/ AR's agreement.

Project Profile Ref.:	Recommended Mitigation Measures	Location of the measure	Who to implement the measure	When to implement the measures	What requirements or standards for the measure to achieve*	Objectives of the Recommended Measure & Main Concern to address
	To adopt noise enclosure and temporary noise barriers with sufficient surface density (10 to 15 kg/m^2) (vertical and cantilevered types)	Site	Site Formation Contractor & Superstructure Contractor	Construction Phase	TM-EIA	To provide noise shielding to reduce construction noise impact or equivalent measures subject to IEC/ AR's agreement.
	To make use of the topography by carrying out excavation from west to east so that the original platform can act as effective noise barrier	Site	Site Formation Contractor	Construction	TM-EIA	To provide noise shielding to reduce construction noise impact or equivalent measures subject to IEC/ AR's agreement.

Project Profile Ref.:	Recommended Mitigation Measures	Location of the measure	Who to implement the measure	When to implement the measures	What requirements or standards for the measure to achieve*	Objectives of the Recommended Measure & Main Concern to address
4.2.1.12	To implement good site practice and noise management ▪ To submit to the Engineer for approval the method of working, equipment and sound-reducing measures intended to be used at the site before the commencement of any work ▪ To allow only well-maintained plants to operate on-site; ▪ To service the plants regularly during the construction program; ▪ To shut down or throttle down machines that may be in intermittent use to a minimum between work periods; ▪ To utilize and maintain silencer and mufflers on construction equipment during the construction program; ▪ To schedule noisy activities to minimise exposure of nearby NSRs to high levels of construction noise. For example, noisy activities can be scheduled for midday or at times coinciding with periods of high background noise (such as during peak traffic hours); ▪ To site noisy equipment such as emergency generators as far away as possible from NSRs; ▪ To site mobile plants as far away from NSRs as possible; and ▪ To utilize material stockpiles and other structures as noise barrier, where practicable.	Site	Site Formation Contractor & Superstructure Contractor	Construction Phase	NCO & TM-EIA	To reduce noise generation and its impact in accordance with NCO and its subsidiary regulations
4.2.1.23	No percussive piling	Site	Site Formation Contractor	Construction Phase	TM-EIA & NCO	To eliminate possibility of generating any significant ground borne noise impact

Project Profile Ref.:	Recommended Mitigation Measures	Location of the measure	Who to implement the measure	When to implement the measures	What requirements or standards for the measure to achieve*	Objectives of the Recommended Measure & Main Concern to address
4.2.1.81	To avoid concurrent pipe piles driving near the tree ring and the Main Building when the pipes near the Main Building is about to penetrate the bedrock	Site	Site Formation Contractor	Construction Phase	TM-EIA & NCO	To avoid adverse cumulative ground borne noise impact
	To conduct on-site noise measurement at the HKCC and the HKSM when the works at the FMPH commences to verify the level of transmitted ground-borne noise	Site	Site Formation Contractor	Construction Phase	TM-EIA & NCO	To avoid adverse cumulative ground borne noise impact
	To establish a communication channel with HKCC and HKSM to stagger, if necessary, the ground-borne noise causing construction activities to avoid clashing with hours of performance at both venues	Site	Site Formation Contractor	Construction Phase	TM-EIA & NCO	To avoid adverse cumulative ground borne noise impact

Project Profile Ref.:	Recommended Mitigation Measures	Location of the measure	Who to implement the measure	When to implement the measures	What requirements or standards for the measure to achieve*	Objectives of the Recommended Measure & Main Concern to address
5.2.1.3	To carry out EM&A program	Site	Site Formation Contractor & Superstructure Contractor	Pre-Construction and Construction Phase	TM-EIA	To proactively monitor construction noise impact and take necessary action against any unacceptable impact
	Construction Phase Water Quality Impact					
4.3.1.7	To carry out the Works in such a manner as to minimize adverse impacts on the water quality during execution of the works. In particular he shall arrange his method of working to minimize the effects on the water quality within and outside the Site, on the transport routes and at the loading, dredging and dumping areas.	Site	Site Formation Contractor & Superstructure Contractor	Construction Phase	WPCO	To comply with the Water Pollution Control Ordinance and its subsidiary regulation.

Project Profile Ref.:	Recommended Mitigation Measures	Location of the measure	Who to implement the measure	When to implement the measures	What requirements or standards for the measure to achieve*	Objectives of the Recommended Measure & Main Concern to address
	To follow the practices, and be responsible for the design, construction, operation and maintenance of all the mitigation measures as specified in the Professional Persons Environmental Consultative Committee Practice Note (ProPECC PN) 1/94 "Construction Site Drainage" issued by the Director of Environmental Protection. The design of the mitigation measures shall be submitted by the Contractor to the Engineer for approval.	Site	Site Formation Contractor & Superstructure Contractor	Construction Phase	ProPECC PN1/94 & WPCO	To comply with the Water Pollution Control Ordinance and its subsidiary regulation.
	To contain within the Site all surface runoff generated from foundation works, dust control and vehicle washing, etc.	Site	Site Formation Contractor & Superstructure Contractor	Construction Phase	WPCO	To comply with the Water Pollution Control Ordinance and its subsidiary regulation.
	To avoid discharge directly or indirectly or cause or permit or suffer to be discharged into any public sewer, stormwater drain, channel, stream-course or sea any trade effluent or foul or contaminated water or cooling or hot water without the prior written consent of the Engineer in consultation with the Director of Environmental Protection and Director of Water Supplies, who may as a condition of granting his consent require the Contractor to provide, operate and maintain at the Contractor's own expense to the satisfaction of the Engineer suitable works for the treatment and disposal of such trade effluent or foul or contaminated or cooling or hot water. [The design of such treatment works shall be submitted to the Engineer for approval not less than one month before the commencement of the relevant works.]	Site	Site Formation Contractor & Superstructure Contractor	Construction Phase	WPCO	To comply with the Water Pollution Control Ordinance and its subsidiary regulation.

Project Profile Ref.:	Recommended Mitigation Measures	Location of the measure	Who to implement the measure	When to implement the measures	What requirements or standards for the measure to achieve*	Objectives of the Recommended Measure & Main Concern to address
	To direct foul water effluent to a foul sewer or to a sewage treatment and disposal facility either directly or indirectly by means of pumping or other means approved by the Engineer if any office, site canteen or toilet facilities is erected	Site	Site Formation Contractor & Superstructure Contractor	Construction Phase	WPCO	To comply with the Water Pollution Control Ordinance and its subsidiary regulation.
	Operational Phase Water Quality Impact					
4.3.2.1	To discharge sewage/wastewater generated from the Project to the nearby public sewers	Site	Project Proponent/Operator	Design / Operational Phase	WPCO	To meet the requirement as stipulated in the Technical Memorandum on Water Pollution Control Ordinance
	Waste Management					
4.5.1.7	To minimize the production of construction waste through careful design, planning, good site management, and control of ordering procedures, segregation and reuse of materials; To arrange for private contractors to collect used formwork materials for reuse.	Site	Site Formation Contractor & Superstructure Contractor	Construction Phase	WDO	To follow relevant regulations (Waste Disposal Ordinance) in all circumstances.
4.5.1.8	To dispose of any chemical wastes such as lubricating oil or solvent in strict accordance with the Waste Disposal (Chemical Waste) (General) Regulation	Site	Site Formation Contractor & Superstructure Contractor	Construction Phase	WDO	To follow relevant regulations (Waste Disposal Ordinance) in all circumstances.

Project Profile Ref.:	Recommended Mitigation Measures	Location of the measure	Who to implement the measure	When to implement the measures	What requirements or standards for the measure to achieve*	Objectives of the Recommended Measure & Main Concern to address
4.5.1.9	To assign a reliable waste collector to collect general refuse generated from the construction site on a daily basis to minimise the potential odour, pest and litter impacts.	Site	Site Formation Contractor & Superstructure Contractor	Construction Phase	WDO	To follow relevant regulations (Waste Disposal Ordinance) in all circumstances.
4.5.2.1	To identify requirements on proper waste management for implementation during the operation of the Project	Site	Operator	Operational Phase	WDO	To follow relevant regulations (Waste Disposal Ordinance) in all circumstances.
	Construction Phase Landscape and Visual Impact					
4.6.2.2	To screen the works area during the construction phase through the use of decorative hoarding along the site boundary with unified edge treatment and interface	Site	Site Formation Contractor & Superstructure Contractor	Construction Phase	A&MO, TM-EIA, Project Profile ["PP"], Landscape Mitigation and Tree Preservation Proposal ["LMTPP"] & WBTC No. 14/2002	Interim measures designed to ensure acceptable landscape and visual impact on completion. Implementation of the LMTPP to the mature trees during the construction period.
4.6.2.11	Creation of precautionary area (Cordon Area) around trees to be retained equal to the spread of the trees canopy diameter. Precautionary area to be fenced. Following the completion of the piling the Cordon Area would be based on the retained rootball.	Site	Specialist Landscape Contractor	Construction Phase	A&MO, TM-EIA, PP, LMTPP & WBTC No. 14/2002	Interim measures designed to ensure acceptable landscape and visual impact on completion. Implementation of the LMTPP to the mature trees during the construction period.
	Prohibition of the storage of materials including fuel, the movement of construction vehicles, and the refuelling and washing of equipment including concrete mixers within the Cordon Area.	Site	Site Formation Contractor & Superstructure Contractor	Construction Phase	A&MO, TM-EIA, PP, LMTPP & WBTC No. 14/2002	Interim measures designed to ensure acceptable landscape and visual impact on completion. Implementation of the LMTPP to the mature trees during the construction period.

Project Profile Ref.:	Recommended Mitigation Measures	Location of the measure	Who to implement the measure	When to implement the measures	What requirements or standards for the measure to achieve*	Objectives of the Recommended Measure & Main Concern to address
	Phased segmental root pruning for trees to be retained over a six-month period prior to or site formation works, which affect the existing rootball of trees identified for retention. The extent of the pruning shall be based on a minimum half canopy and has been determined on a tree by tree basis. Phased segmental root pruning over a three-month period prior to lifting the tees identified for transplantation.	Site	Specialist Landscape Contractor	Construction Phase	A&MO, TM-EIA, PP, LMTPP & WBTC No. 14/2002	Interim measures designed to ensure acceptable landscape and visual impact on completion. Implementation of the LMTPP to the mature trees during the construction period.
	Pruning of the branches of existing trees identified for transplantation and retention to be based on the principle of crown thinning maintaining their form and amenity value	Site	Specialist Landscape Contractor	Construction Phase	A&MO, TM-EIA, PP, LMTPP & WBTC No. 14/2002	Interim measures designed to ensure acceptable landscape and visual impact on completion. Implementation of the LMTPP to the mature trees during the construction period.
	The watering of existing vegetation particularly during periods of excavation when the water table beneath the existing vegetation is lowered.	Site	Specialist Landscape Contractor	Construction Phase	A&MO, TM-EIA, PP, LMTPP & WBTC No. 14/2002	Interim measures designed to ensure acceptable landscape and visual impact on completion. Implementation of the LMTPP to the mature trees during the construction period.
	The rectification and repair of damaged vegetation following the construction phase to it's original condition prior to the commencement of the works or replacement using specimens of the same species, size and form where appropriate to the design intention of the area affected	Site	Specialist Landscape Contractor	Construction Phase	A&MO, TM-EIA, PP, LMTPP & WBTC No. 14/2002	Interim measures designed to ensure acceptable landscape and visual impact on completion. Implementation of the LMTPP to the mature trees during the construction period.
	All works affecting the trees identified for retention and transplantation will be carefully monitored. This includes the key stages in the preparation of the trees, the implementation of protection measures and health monitoring through out the construction period	Site	Specialist Landscape Contractor	Construction Phase	A&MO, TM-EIA, PP, LMTPP & WBTC No. 14/2002	Interim measures designed to ensure acceptable landscape and visual impact on completion. Implementation of the LMTPP to the mature trees during the construction period.

Project Profile Ref.:	Recommended Mitigation Measures	Location of the measure	Who to implement the measure	When to implement the measures	What requirements or standards for the measure to achieve*	Objectives of the Recommended Measure & Main Concern to address
	The tree transplanting and planting works should be implemented by approved Landscape Contractors and inspected and approved on site by a qualified Landscape Architect. A tree protection / transplanting specification would be included within the contract documents. Tree preservation proposals and procedures for the protection and preservation of the existing trees to be reviewed by third party Tree Specialist including the provision of an additional level of monitoring during the construction phase.	Site	Specialist Landscape Contractor	Construction Phase	A&MO, TM-EIA, PP, LMTPP & WBTC No. 14/2002	Interim measures designed to ensure acceptable landscape and visual impact on completion. Implementation of the LMTPP to the mature trees during the construction period.

Project Profile Ref.:	Recommended Mitigation Measures	Location of the measure	Who to implement the measure	When to implement the measures	What requirements or standards for the measure to achieve*	Objectives of the Recommended Measure & Main Concern to address
	Operational Phase Landscape and Visual Impact					
4.6.3.4	To retain trees that have historic value and contribute most to the landscape and visual amenity of the site and its immediate environs	Site	Project Proponent/ Operator	Design, Construction and Operational Phase	TPO, A&MO, TM-EIA, PP, LMTPP & WBTC No. 14/2002	Long term measures deigned to ensure creation of a high quality urban landscape
4.6.3.5	To restore the main buildings and to create landscaped gardens in order to beneficially affect the landscape character and quality of the area	Site	Project Proponent/ Operator	Design, Construction and Operational Phase	TPO, A&MO, TM-EIA, PP, LMTPP & WBTC No. 14/2002	Long term measures deigned to ensure creation of a high quality urban landscape
	To create the plaza to the south of the main colonial buildings to increase public access to the site and to open up views of the building façade	Site	Project Proponent/ Operator	Design, Construction and Operational Phase	TPO, A&MO, TM-EIA, PP, LMTPP & WBTC No. 14/2002	Long term measures deigned to ensure creation of a high quality urban landscape
	To provide where conditions allow new street planting along Canton Road, from No. 1 Peking Road to the intersection at Salisbury Road, and along the Salisbury Road frontage in order to create a boulevard type landscape to partially screen the development, and to enhance the green edge effect that is a dominant feature of both the site and its urban context.	Site	Project Proponent/ Operator	Design, Construction and Operational Phase	TPO, A&MO, TM-EIA, PP, LMTPP & WBTC No. 14/2002	Long term measures deigned to ensure creation of a high quality urban landscape

Project Profile Ref.:	Recommended Mitigation Measures	Location of the measure	Who to implement the measure	When to implement the measures	What requirements or standards for the measure to achieve*	Objectives of the Recommended Measure & Main Concern to address
	To conduct new paving works at the street level as a result of the development and the widening of Canton Road which will lead to a significant improvement in the landscape and visual amenity of the streetscape within the study area	Site	Project Proponent/ Operator	Design, Construction and Operational Phase	TPO, A&MO, TM-EIA, PP	Long term measures deigned to ensure creation of a high quality urban landscape
	Detailed landscape and tree preservation proposals will be submitted to the relevant government departments for approval under the lease conditions and in accordance with WBTC No. 14/2002.	Site	Project Proponent/ Operator	Design, Construction and Operational Phase	TPO, A&MO, TM-EIA, PP & WBTC No. 14/2002	Long term measures deigned to ensure creation of a high quality urban landscape
4.6.3.8	All landscape and visual mitigation works will be funded, implemented managed and maintained by the project proponent.	Site	Project Proponent/ Operator	Design, Construction and Operational Phase	TPO, A&MO, TM-EIA, PP & WBTC No. 14/2002	Long term measures deigned to ensure creation of a high quality urban landscape
	A qualified or registered landscape architect will be involved in the design, construction supervision and monitoring, and maintenance period to oversee the implementation of the recommended landscape and visual mitigation measures including the tree preservation and landscape works on site. Tree preservation proposals to be reviewed by third party Tree Specialist including monitoring during the establishment period.	Site	Project Proponent/ Operator	Design, Construction and Operational Phase	TPO, A&MO, TM-EIA, PP & WBTC No. 14/2002	Long term measures deigned to ensure creation of a high quality urban landscape

Project Profile Ref.:	Recommended Mitigation Measures	Location of the measure	Who to implement the measure	When to implement the measures	What requirements or standards for the measure to achieve*	Objectives of the Recommended Measure & Main Concern to address
	Cultural Heritage Impact					
4.7.1.1	All monuments within the site will be preserved to an extent given according to the in the tender requirement	Site	Project Proponent	Design, Construction and Operational Phase	Tender Document	To preserve the monument
4.7.4.1	To prepare and submit a detailed study report comprising the historic archives, measured drawings, photographic records and full bibliography in support of the historic evidence prepared by experts in cultural heritage for their approval under the Antiquities and Monuments Ordinance (Cap. 53)	Site	Project Proponent	Design Phase	A&MO	To observed principles in the Charter of Venice (ICOMOS) and the Burra Charter (ICOMOS Australia) and requirement of A&MO
4.7.4.2	To submit detailed descriptions, plans for building and mitigation works and implementation programme to AMO for their approval and monitoring before commencement of works.	Site	Project Proponent	Design Phase	A&MO	To observed principles in the Charter of Venice (ICOMOS) and the Burra Charter (ICOMOS Australia) and requirement of A&MO
4.7.4.3	To preserve the Historic Buildings to meet international standard. Relevant legislations, standards, Charters and planning guidelines will be observed.	Site	Project Proponent	Design, Construction & Operational Phase	A&MO	To observed principles in the Charter of Venice (ICOMOS) and the Burra Charter (ICOMOS Australia) and requirement of A&MO
4.7.4.4	To allow only alteration or addition works to the Historic Buildings, which are reversible except those, considered to be minor by AMO.	Site	Superstructure Contractor	Construction Phase	A&MO	To observed principles in the Charter of Venice (ICOMOS) and the Burra Charter (ICOMOS Australia) and requirement of A&MO
4.7.4.5	To take necessary precautions during construction and excavation work to prevent any damage to the Historic Buildings. Structural monitoring system will be designed and supervised by a Registered Structural Engineer during the whole of construction works on the site.	Site	Site Formation Contractor & Superstructure Contractor	Construction Phase	A&MO	To prevent any damage to the historic buildings and structures during the site formation.

Project Profile Ref.:	Recommended Mitigation Measures	Location of the measure	Who to implement the measure	When to implement the measures	What requirements or standards for the measure to achieve*	Objectives of the Recommended Measure & Main Concern to address
4.7.4.8	A comprehensive management plan including a heritage building maintenance guideline for the operation of FMPHQ would be prepared by conservation experts.	Site	Agent appointed by Project Proponent	Prior to Operational Phase	A&MO	To maintain the historic site and buildings in a proper manner
4.7.4.9	Periodic site inspection to heritage buildings on external areas, interior decoration and covered-up areas to ensure a constant monitoring of building condition is conducted.	Site	Agent appointed by Project Proponent	Operational Phase	A&MO	To maintain the historic site and buildings in a proper manner
4.7.4.10	The Permit on routine maintenance would be applied to AMO under the A & M Ordinance.	Site	Agent appointed by Project Proponent	Operational Phase	A&MO	To maintain the historic site and buildings in a proper manner

*Abbreviation
TM-EIA – Technical Memorandum on Environmental Impact Assessment Process
AQO – Air Quality Objectives
APCO – Air Pollution Control Ordinance
APC(CD)R - Air Pollution Control (Construction Dust) Regulation
HKPSG – Hong Kong Planning Standards and Guidelines
TPO – Town Planning Ordinance
NCO – Noise Control Ordinance
WPCO – Water Pollution Control Ordinance
PN1/94 - Professional Persons Environmental Consultative Committee Practice Note (ProPECC PN) 1/94 "Construction Site Drainage"
WDO – Waste Disposal Ordinance
A&MO - Antiquities and Monuments Ordinance

APPENDIX B: Updated Construction Programme of the Project

Updated Construction Programme

Phase	Description	2004		2005												2006		2007												2008											
		6	…	1	2	3	4	5	6	7	8	9	10	11	12	1	…	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
1	Site Formation																																								
1.1	Site Formation - Tree Retaining, Underpinning & Tree Column																																								
1.2	Site Formation - Retaining wall for Main Building																																								
1.3	Site Formation - Open Cut Excavation																																								
1.4	Site Formation - Remaining Excavation																																								
2	Building Foundation																																								
3	Superstructure & Furnishing																																								

General Mitigation Measures

7/6/2004: All mitigation measures in place except wheel washing pond & barrier mat
25/6/2004: Sound barrier mat ready
9/7/2004: Wheel washing pond provided

Wastewater Discharge

June 2004: Zero discharge From site
9/7/2004: Discharge Licence approval

Construction Noise Permit

19/10/2005: Construction Noise Permit [“CNP”] for submersible pumps
22/2/2006: CNP renewed

APPENDIX C: Sample Forms for EM&A Programme

Data Sheet for TSP Monitoring

Monitoring Location		
Details of Location		
Sampler Identification		
Date & Time of Sampling		
Elapsed-time Meter Reading	Start (min.)	
	Stop (min.)	
Total Sampling Time (min.)		
Weather Conditions		
Site Conditions		
Initial Flow Rate, Qsi	Pi (mmHg)	
	Ti (°C)	
	Hi (in.)	
	Qsi (Std. M^3)	
Final Flow Rate, Qsf	Pf (mmHg)	
	Tf (°C)	
	Hf (in.)	
	Qsf (Std. M^3)	
Average Flow Rate (Std. m^3)		
Total Volume (Std. m^3)		
Filter Identification No.		
Initial Wt. of Filter (g)		
Final Wt. of Filter (g)		
Measured TSP Level ($\mu g/m^3$)		

	Name & Designation	Signature	Date
Field Operator:			
Laboratory Staff:			
Checked By:			

Noise Monitoring Field Record Sheet

Date:		Weather Condition:	Sunny / Cloudy / Windy / Rainy
Time:		Wind Speed:	m/s
Sound Level Meter Model:		Wind Speed Sensor Model	
Sound Level Meter SN:			
Calibrator Model:			
Calibrator SN:			

Site	Site ID:		Façade Correction needed:	Yes / No
	Monitoring Location:			
	Elevation:			

Calibration	Before	dB(A)	After	dB(A)

Measurement Results	Start Time:		End Time:	
	L_{eq}:	dB(A)		
	L_{90}:	dB(A)		
	L_{10}:	dB(A)		

Remarks	

	Name	Signature
Recorded by:		
Checked by:		

Sample Template for Interim Notifications of Environmental Quality Limits Exceedances

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: