Construction of a Secondary Boundary Fence and New Sections of Primary Boundary Fence and Boundary Patrol Road

Environmental Monitoring & Audit Manual (Final)

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1. INTRODUCTION

1.1 Project Background

1.1.1 The Frontier Closed Area (FCA) is an integral part of the package of measures for maintaining the integrity of the Hong Kong SAR's boundary with the Mainland and for combating illegal immigration and other cross-boundary criminal activities. Following a recent review, the Government has concluded that with the erection of a secondary boundary fence (SBF) along the boundary patrol road (BPR) and construction of new sections of the BPR and primary boundary fence (PBF) at certain sections along the boundary, the FCA coverage can be substantially reduced without affecting the objective of maintaining the integrity of the boundary. The PBF and SBF will be erected along the northern and southern curbs of the realigned BPR respectively to facilitate the Police in combating cross-boundary criminal activities. The reduced FCA will comprise a narrow strip of land covering the realigned BPR and areas to its north, together with the points of crossing the boundary (i.e. the Boundary Control Points and Sha Tau Kok town). Areas south of the SBF will generally be excised from the FCA.

1.1.2 The Project mainly comprises the construction of an SBF along the southern edge of the existing BPR (approximately 21.7km) from west (Pak Hok Chau) to east (Sha Tau Kok). For sections where the existing PBF runs along the southern edge of the BPR, a new fence with sensor alarm system will be constructed on the northern edge of the BPR as part of the PBF whereas the existing PBF will become the SBF. The project also includes the conversion of the existing maintenance services road along the Shenzhen River bank to the north of the Lok Ma Chau Loop and Hoo Hok Wai into a new section of the BPR with a PBF and an SBF; and construction of two new sections of the BPR with a PBF and an SBF along the Shenzhen River side to the north of Pak Fu Shan and northwest of Lin Ma Hang Village. In addition, the Project includes the construction of a checkpoint at the entrance to the Sha Tau Kok town (i.e. location of "Gate One") and replacement of the existing checkpoint at Pak Hok Chau, removal of the existing checkpoints at Lok Ma Chau, Sha Ling, Ping Che and Shek Chung Au, and removal of the existing PBF along those sections of the existing BPR which will be replaced by new sections of the BPR.

1.1.3 The Project is a designated project (DP) under item Q.1, Part I, Schedule 2 of the Environmental Impact Assessment Ordinance (EIAO) (Cap. 499) which *reads "All projects including new access roads, railways, sewers, sewage treatment facilities, earthworks, dredging works and other building works partly or wholly in an existing or gazetted proposed country park or special area, a conservation area, an existing or gazetted proposed marine park or marine reserve, a site of cultural heritage, and a site of special scientific interest."*

1.2 Extend of Works Required

1.2.1 The entire length of the Project is about 21.7km from west of Pak Hok Chau to east of Sha Tau Kok and is divided into four sections as shown in **Figure 1.1**. The project scope of each section is described below.

Section 1 – Mai Po to Lok Ma Chau Control Point

(i) To erect an SBF along the existing BPR (approximately 4.1km); and

(ii) To replace the existing checkpoint at Pak Hok Chau.

Section 2 – Lok Ma Chau Control Point to Ng Tung River

(i) To convert the maintenance services road of Drainage Services Department along the Shenzhen River bank to the north of the Lok Ma Chau Loop and Hoo Hok Wai into a new section of the BPR (approximately 5.6km);

(ii) To erect a new PBF with the sensor alarm system and an SBF respectively along the northern and southern side of the converted road;

(iii) To remove the original PBF and the sensor alarm system thereon along the existing BPR south of the Lok Ma Chau Loop and Hoo Hok Wai; and

(iv) To remove the existing checkpoint at Lok Ma Chau Road.

Section 3 – Ng Tung River to Lin Ma Hang Village

(i) To erect an SBF along the existing BPR except the sections to the north of Pak Fu Shan and northwest of Lin Ma Hang Village (approximately 7.5km);

(ii) To construct new sections of the BPR along the Shenzhen River side to the north of Pak Fu Shan and northwest of Lin Ma Hang Village without necessitating river training (approximately 4.0km);

(iii) To erect a new PBF with the sensor alarm system and an SBF along the northern and southern sides of the new sections of BPR respectively;

(iv) To remove the original PBF and the sensor alarm system thereon along the existing BPR near Pak Fu Shan and Lin Ma Hang Village; and

(v) To remove the existing checkpoints at Sha Ling and Ping Che.

Section 4 – Lin Ma Hang Village to Sha Tau Kok

(i) To erect an SBF from the entrance of the Sha Tau Kok town (i.e. the location of “Gate One”) to the Sha Tau Kok Control Point (approximately 0.5km);

(ii) To provide a new checkpoint at “Gate One”; and

(iii) To remove the existing checkpoint at Shek Chung Au.

1.3 Construction Programme

The construction works are expected to commence in late 2009 for completion in late 2012 and tentative construction programme is shown in **Appendix A**.

1.4 Objectives of this EM&A Programme

1.4.1 The main objectives of this EM&A Manual are:

1. To provide a database during the construction phase of the Project for subsequent checking against the baseline environmental quality;
2. To provide information at an early stage for identification of potential problem areas and formulation of additional environmental mitigation measures where necessary should any of the environmental control measures or practices fail to achieve the target standards;
3. To verify the environmental impacts predicted in the EIA for the project, if necessary;
4. To determine project compliance with relevant regulatory standards, requirements and guidelines;
5. To outline remedial measures to be undertaken if unexpected problems or unacceptable impacts arise; and
6. To provide data against which environmental audits may be undertaken effectively.

1.5 Contents

1.5.1 The recommended EM&A programme in this Manual contains the following information:

1. Duties of the various project staff and their respective responsibilities with regards to the EM&A requirements during construction;
2. Information on project organisation, work schedule and activities;
3. Requirements with respect to the work schedule and the necessary EM&A programme to detect the various possible environmental impacts;
4. Definition of Action/ Limit Levels and the establishment of Event/Action Plans;
5. Requirements for reviewing potential sources of pollution and assessing working procedures in the event of non-compliance with the environmental criteria;
6. Requirements for the presentation of EM&A data and appropriate reporting procedures; and
7. Proposed field data forms to be adopted during the various phases of the works.

1.5.2 An Implementation Schedule (IS) of the environmental mitigation measures has been developed and presented in **Appendix B** in accordance with the requirements of Clause 3.4.9.3 of the EIA Study Brief.

1.5.3 This EM&A Manual shall form the basis and be regarded as an evolving document that should be updated whenever necessary to reflect the EP requirements and activities on-site. Any updated EM&A Manual (if necessary) shall be certified by ET Leader, verified by the Independent Environmental Checker ("IEC") and finally submitted to the Engineer's Representative (ER) and EPD for agreement.

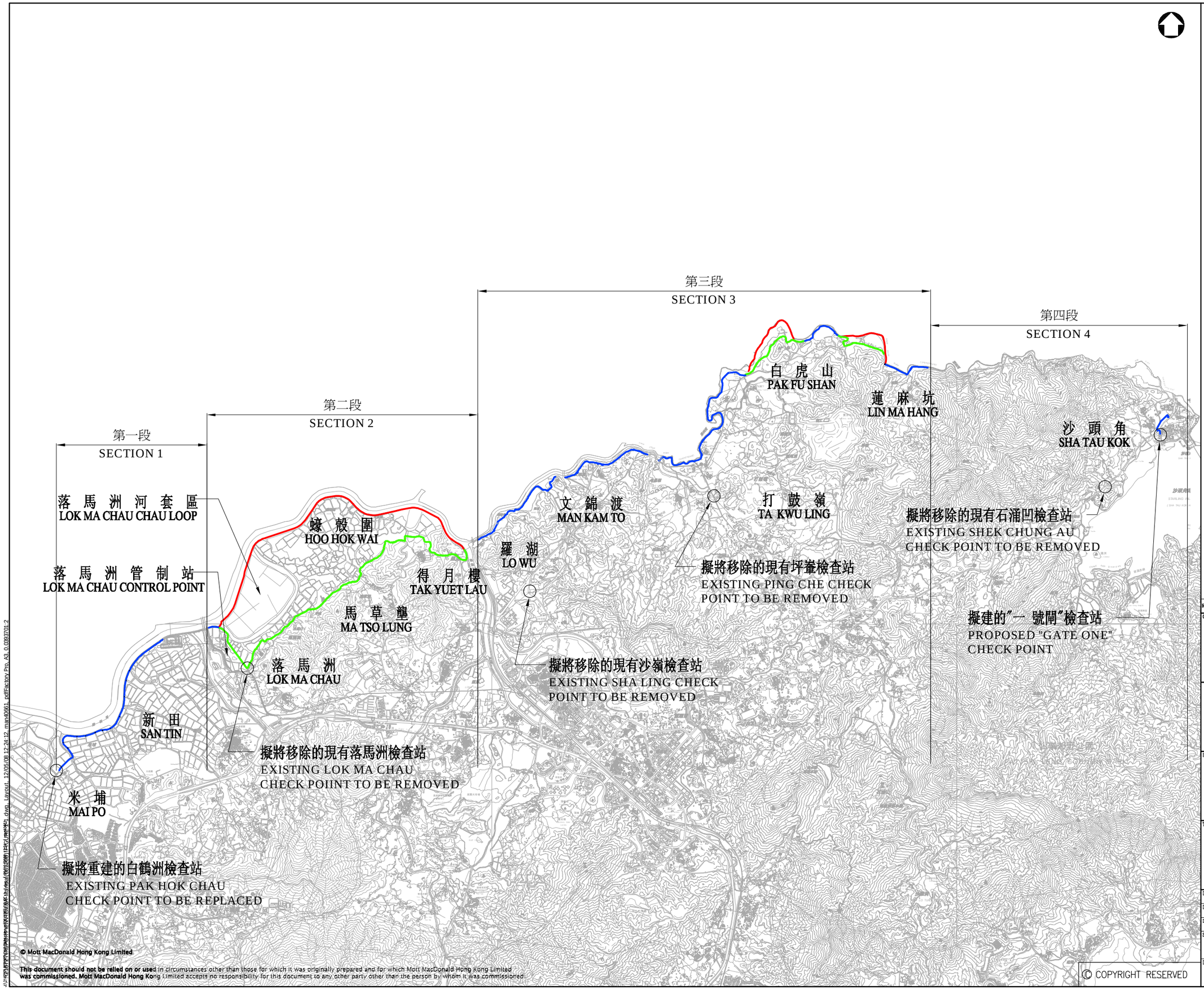

圖 例 :
LEGEND:

建議於現有邊界巡邏道路興建的輔助邊界圍網
PROPOSED SECONDARY BOUNDARY FENCE ALONG EXISTING BOUNDARY PATROL ROAD

建議的主要及輔助邊界圍網及新邊界巡邏道路
PROPOSED NEW BOUNDARY PATROL ROAD WITH PRIMARY AND SECONDARY BOUNDARY FENCES

擬將移除的現有邊界圍網
EXISTING BOUNDARY FENCE TO BE REMOVED

Rev	Date	Drawn	Description	Ch'k'd	App'd

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Project

CONSTRUCTION OF A SECONDARY BOUNDARY FENCE AND NEW SECTIONS OF PRIMARY BOUNDARY FENCE AND BOUNDARY PATROL ROAD

Title

概 覽 圖
GENERAL LAYOUT PLAN

Designed	----		Eng.Chk.	----	
Drawn	----		Coordination	----	
Dwg.Chk.	----		Approved	----	
Scale	N.T.S.	Project	216727	Status	INF
		CAD File	J:\216727\REPORT\DM\EMBA-Manual(081208)\FIGURE 1-1.dwg		
Drawing No.	Figure 1.1 (圖 1.1)			Rev	–

2. PROJECT ORGANISATION

2.1 Key Parties and Organisation Chart

2.1.1 Involvement of relevant parties in a collaborative and interactive manner is essential for the implementation of the recommended EM&A programme. The key parties in an EM&A programme include:

- Architectural Services Department (ArchSD) - Project Proponent
- Environmental Protection Department (EPD) - Environmental Authority
- The Engineer and Engineer's Representative (ER) – to be employed under by ArchSD
- The Independent Environmental Checker (IEC) – to be employed by ArchSD or the Engineer
- The Environmental Team (ET) – to be employed by ArchSD or the Engineer or the Contractor
- The Contractor.

2.1.2 A typical organisation chart that shows the relationship amongst the key parties is presented in **Figure 2.1**. Role of each key party is briefly described in the following sections.

2.2 Architectural Services Department

2.2.1 Architectural Services Department ("ArchSD") is the project proponent and works department and hence will assume overall responsibility for the project. ArchSD shall liaise with EPD on environmental issues associated with the project with IEC's advices.

2.3 Environmental Protection Department

2.3.1 Environmental Protection Department ("EPD") is the statutory enforcement body for environmental protection matters in Hong Kong.

2.4 Engineer's Representatives

2.4.1 The Engineer's Representative ("ER") shall be responsible for overseeing the operations of the Contractor and the ET, if under his employment. He shall advise, co-ordinate and give instruction when appropriate for efficient implementation of any specific environmental mitigation measures identified by the Contractor, and/or outstanding EM&A works required to be carried out by ET in consultation with the IEC. The ER shall supervise the Contractor's activities and ensure that the requirements in the Environmental Permit (EP), EIA Report, EM&A Manual and other government's standards are fully complied with.

2.4.2 The ER shall inform the Contractor when action is required to reduce impacts in accordance with the Event/Action Plans. The ER shall review the EM&A Reports submitted by the ET and follow up the recommendations. He shall ensure that the Contractor is implementing the environmental controls and mitigation measures as set out in the EIA report and EM&A

Manual, as well as additional measures necessary for compliance with the relevant environmental standards.

2.4.3 In the event that the ET needs to undertake complaint investigation work, the ER and the Contractor shall co-operate with the ET Leader in providing all the necessary information and assistance for completion of the investigation. If mitigation measures are required following the investigation, the ER shall ensure that the Contractor has carried them out.

2.5 Independent Environmental Checker

2.5.1 The Independent Environmental Checker ("IEC") shall preferably be employed by ArchSD or the Engineer and shall advise the ER on environmental issues related to the project. The IEC shall preferably be established one month before commencement of major construction works. The IEC shall not be in any way an associated body of the ER, the Contractor or the ET for the project. The IEC shall be empowered to audit from an independent viewpoint the environmental performance during the construction of the project. The IEC shall be a person who has relevant professional qualifications in environmental control and at least 7 years experience in EM&A and environmental management.

2.5.2 The IEC shall be responsible for the duties defined in this EM&A Manual, and shall audit the overall EM&A programme, including the implementation of all environmental mitigation measures, submissions required in this EM&A Manual, as well as any other relevant submissions required under the Environmental Permit. The IEC shall be responsible for verifying the environmental acceptability of permanent and temporary works, relevant design plans and submissions under the EP. The IEC shall verify the logbook prepared and kept by the ET Leader. The IEC shall notify EPD by fax, within 24 hours of receipt of notification from the ET Leader of any such instance or circumstance or change of circumstances or non-compliance with the EIA Report or the EP, which might affect the monitoring or control of adverse environmental impact.

2.5.3 The main duty of the IEC is to carry out independent environmental audit of the project. This shall include, inter alias, the following:

1. Review and audit in an independent, objective and professional manner in all aspects of the EM&A programme;
2. Validate and confirm the accuracy of monitoring results, appropriateness of monitoring equipment, monitoring locations with reference to the locations of the nearby sensitive receivers, and monitoring procedures;
3. Carry out random sample check and audit on monitoring data and sampling procedures, etc;
4. Conduct random site inspection (at least once a month);
5. Audit the EIA recommendations and EP requirements against the status of implementation of environmental protection measures on site;
6. Review the effectiveness of environmental mitigation measures and project environmental performance;
7. On an as-need basis, verify and certify the environmental acceptability of the construction methodology (both temporary and permanent works), relevant design plans and submissions under the environmental permit. Where necessary, the IEC

shall agree in consultation with the ET Leader and the Contractor the least impact alternative;

8. Verify investigation results of complaint cases and the effectiveness of corrective measures;
9. Verify EM&A report submitted and certified by the ET Leader; and
10. Feedback audit results to ER/ ET by signing according to the Event/Action Plans specified in this EM&A Manual.

2.6 Environmental Team

2.6.1 An Environmental Team ("ET") headed by an ET Leader shall preferably be appointed by ArchSD or the Contractor to carry out the recommended EM&A programme for this project. The ET Leader shall preferably be established one month before commencement of major construction works. Neither the ET Leader nor the ET shall be in any way an associated body of the IEC or the Contractor. The ET Leader[1] shall plan, organise and manage the implementation of the EM&A programme, and ensure that the EM&A works are undertaken to the required standards. The ET Leader shall have relevant professional qualifications in environmental control and possess at least 7 years experience in EM&A and/or environmental management subject to the approval by his employer.

2.6.2 The ET Leader shall be responsible for the implementation of the EM&A programme in accordance with the EM&A requirements specified in this Manual and the EP. The ET Leader shall keep a contemporaneous logbook for recording each and every instance or circumstance or change of circumstances that may affect the compliance with the recommendations of the EIA report. This logbook shall be kept readily available for inspection by the IEC, and Director of Environmental Protection (DEP) or his authorised officers.

2.6.3 Sufficient and suitably qualified professional and technical staff shall be employed by the respective parties to ensure full compliance with their duties and responsibility, as required under the EM&A programme for the duration of the project. The broad categories of works of the ET comprise the following:

1. Sampling, analysis and statistical evaluation of monitoring parameters with reference to the EIA study recommendations and requirements;
2. Environmental site surveillance;
3. Inspection and audit of compliance with environmental protection, and pollution prevention and control regulations;
4. Inspection and audit of compliance with procedures established to enable an effective response to environmental incidents, exceedances or non-compliance;
5. Assess the effectiveness of the environmental mitigation measures implemented;
6. Monitor the implementation of environmental mitigation measures;
7. Monitor compliance with the environmental protection clauses/specifications in the Contract;

[1] The Environmental Team (ET) leader refers to the person delegated the role of executing the environmental monitoring and audit requirements, and who shall be responsible for, and in charge of, the ET.

8. Review the construction schedule and provide comments as necessary;
9. Review work methodologies which may affect the extent of environmental impact during the construction phase and comment as necessary;
10. Complaint investigation, evaluation and identification of corrective measures;
11. Liaison with the IEC on all environmental performance matters, and timely submission of all relevant EM&A proforma for IEC's approval;
12. Advice to the Contractor on environmental improvement, awareness, enhancement matters, etc. and;
13. Timely submission of the EM&A Report to the Project Proponent and the EPD.

2.6.4 In the event of any exceedance in Action/Limit levels, the ET shall inform the IEC, ER and the Contractor within one working day (Monday to Friday except public holidays) of the occurrence of each and every occurrence, change of circumstances or non-compliance with the EIA Report so that appropriate remedial action can be undertaken by the Contractor promptly.

2.6.5 The ET is also responsible for the preparation of the monthly EM&A reports for submission to the EPD and copy to the Project Proponent, IEC, the ER and Contractor.

2.6.6 The ET shall assist the Contractor through the ER in formulating any necessary corrective actions and/or additional mitigation measures, and liaise with relevant Government Departments where necessary.

2.7 The Contractor

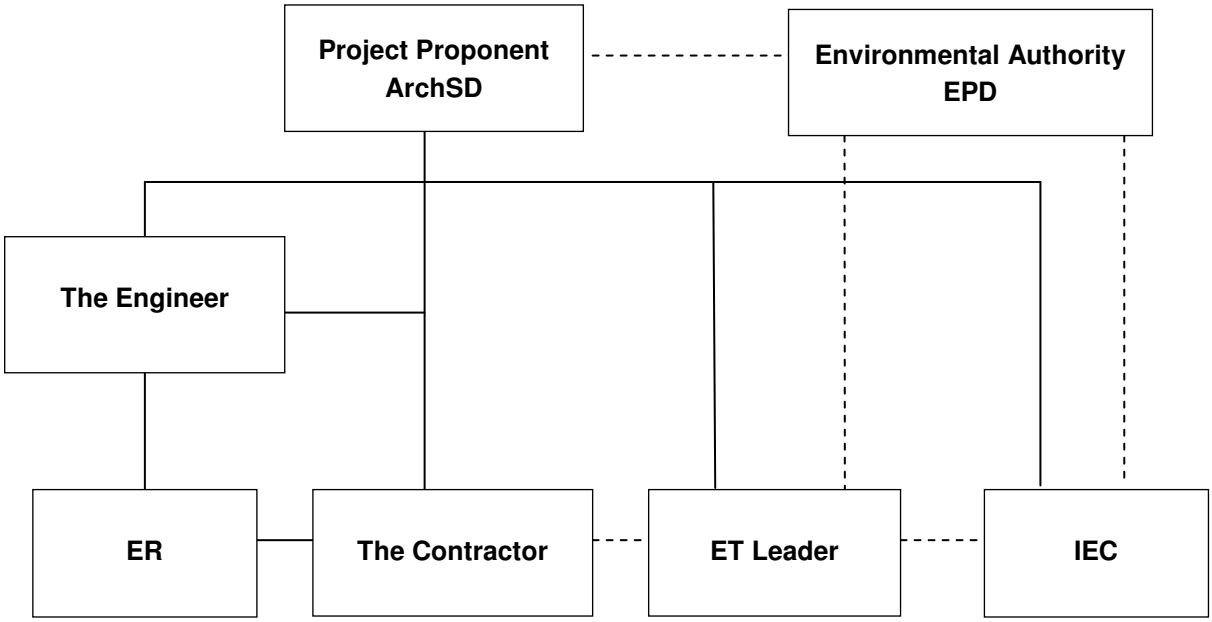
2.7.1 Upon the commencement of the project, the Contractor shall prepare and submit an Environmental Management Plan ("EMP") for the ER's approval, further to the IEC's verification. The EMP shall comprise of the appropriate extracts from (and references to) ETWB TCW No. 19/2005, the project EIA report, EM&A Manual and other relevant latest government's standards.

2.7.2 The Contractor is responsible for providing requested information to the ET in the event of any exceedance in the environmental criteria (Action/Limit levels) specified in this Manual or other current environmental standards and to rectify unacceptable practices. The Contractor shall discuss with the ET Leader, IEC and ER on any additional mitigation measures identified to be necessary by the ET and implement the agreed measures to alleviate any identified environmental impact to acceptable levels. The design and implementation of the control and mitigation measures shall be the responsibility of the Contractor.

2.7.3 In the event that the ET needs to undertake complaint investigation work, the Contractor and the ER shall co-operate with the ET Leader in providing all the necessary information and assistance for completion of the investigation. If mitigation measures are required following the investigation, the Contractor shall promptly carry out these measures.

2.7.4 The Contractor shall provide information to the ET Leader on the action(s) undertaken targeting at environmental protection for inclusion in the monthly EM&A report to be prepared by the ET.

Figure 2.1 Typical Organisation Chart



3. AIR QUALITY

3.1 Introduction

3.1.1 Based on the air quality impact assessment in the EIA, it has been identified that no significant impacts could arise from the construction and operation of the project through proper implementation of dust control measures required under the Air Pollution Control (Construction Dust) Regulation. While no other specific control measures have been recommended, general air quality control measures are recommended for implementation as good site practices in the EIA report. The ET shall check the Contractor's implementation of air quality control measures during the regular site environmental audit.

3.2 Environmental Audit

3.2.1 As mentioned in Section 10.1.2 of this Manual, the ET Leader is responsible for formulating an environmental site inspection, deficiency and action reporting system, and for carrying out site inspections under the EM&A programme.

3.2.2 In order to check that the air quality control measures have been implemented by the Contractor as good site practices, the ET shall include but not limited to the following items as part of their site inspections:

- any excavated dusty materials or stockpile of dusty materials should be covered entirely by impervious sheeting or sprayed with water so as to maintain the entire surface wet, and recovered or backfilled or reinstated within 24 hours of the excavation or unloading;
- the working area of excavation should be sprayed with water immediately before, during and immediately after the operations so as to maintain the entire surface wet;
- dusty materials carried by vehicle leaving a construction site should be covered entirely by clean impervious sheeting;
- the area where vehicle washing takes place and the section of the road between the washing facilities and the exit point should paved with concrete, bituminous materials or hardcores;
- the portion of road leading only to a construction site that is within 30m of designated vehicle entrance or exit should be kept clear of dusty materials;
- all dusty materials should be sprayed with water prior to any loading, unloading or transfer operation;
- vehicle speed should be limited to 10kph except on completed access roads; and
- every vehicle should be washed to remove any dusty materials from its body and wheels before leaving the construction sites.

4. NOISE

4.1 Introduction

4.1.1 The monitoring programme shall be carried out by the ET to ensure that the noise level of construction works complies with the 75dB(A) criterion for domestic premises, with 70 dB(A) for school and with a further reduction to 65dB(A) during examination periods.

4.2 Noise Parameters

4.2.1 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.

4.2.2 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.

4.3 Monitoring Equipment

4.3.1 As refer to the Technical Memorandum (TM) issued under the Noise Control Ordinance (NCO), sound level metres 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. The calibration of the sound level meters and their respective calibrators shall be carried out in accordance with the manufacturer's requirements.

4.3.2 Noise measurements shall not be made in the presence of fog, rain, wind with a steady speed exceeding 5 ms^{-1} or wind with gusts exceeding 10 ms^{-1}.

4.3.3 The ET Leader is responsible for the provision and maintenance of the monitoring equipment. He shall 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 shall be clearly labelled. The location of equipment installation should be proposed by the ET Leader and agreed with the ER in consultation with the IEC.

4.4 Monitoring Locations

4.4.1 The noise monitoring locations (Refer to **Figure 4.1 - 4.8**) are summarised in **Table 4-1**. The status and locations of noise sensitive receivers may change after issuing this manual. If such cases exist, the ET Leader shall propose updated monitoring locations and seek agreement from ER, IEC and EPD.

Table 4-1 Noise Monitoring Stations

Monitoring Station	Description
VH01	Village House at Mai Po
VH03	Village House at Mai Po
MTL01	Village House at Ma Tso Lung
LW02	House No. 39 at Lo Wu
MW02	House No. 11, Muk Wu Chuen Yiu
CY01	House No. 19, Chuk Yuen
WL01	Village House at Wang Lek
WL03	Village House at Wang Lek
STK03	Block 1, Sha Tau Kok Estate
STK05	Village House at Sha Tau Kok

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

a) at locations close to the major project activities which are likely to have noise impacts;

b) close to the noise sensitive receivers (any domestic premises, temporary housing accommodation, educational institution, place of public worship, shall be considered as a noise sensitive receiver); and

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

4.4.2 The monitoring station shall normally be at a point 1m from the exterior of the sensitive receivers building facade and be at a position 1.2m above the ground. If there is a problem with access to the normal monitoring position, an alternative position may be chosen, and a correction to the measurements shall be made. For reference, a correction of +3dB(A) shall be made to the free field measurements. The ET Leader shall agree with the IEC on the monitoring positions and the correction adopted. Once the positions for the monitoring stations are chosen, the baseline monitoring and the impact monitoring shall be carried out at the same positions.

4.5 Baseline Monitoring

4.5.1 The ET shall carry out baseline noise monitoring prior to the commencement of the construction works. There shall not be any construction activities in the vicinity of the stations during the baseline monitoring. Continuous baseline noise monitoring for the A-weighted levels L_{Aeq}, L_{A10} and L_{A90} shall be carried out daily for a period of at least two weeks in a sample period of 30 minutes between 0700 and 1900. A schedule on the baseline monitoring shall be submitted to the ER and IEC for approval before the monitoring starts.

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

4.6 Impact Monitoring

4.6.1 During normal construction working hour (0700-1900 Monday to Saturday), monitoring of $L_{Aeq,\ 30min}$ noise levels (or as six consecutive $L_{Aeq,\ 5min}$ readings) shall be carried out at the agreed monitoring locations once every week in accordance with the methodology in the TM.

4.6.2 Other noise sources such as road traffic may make a significant contribution to the overall noise environment. Therefore, the results of noise monitoring activities will take into account such influencing factors, which may not be presented during the baseline monitoring period.

4.6.3 In case of non-compliance with the construction noise criteria, more frequent monitoring as specified in the Event and Action Plan in Section 4.7 shall be carried out. This additional monitoring shall be continued until the recorded noise levels are rectified or proved to be irrelevant to the construction activities.

4.7 Event and Action Plan for Noise

4.7.1 The AL Levels for construction noise are defined in **Table 4-2**. Should non-compliance of the criteria occurs, action in accordance with the Event and Action Plan in **Table 4-3** shall be carried out.

Table 4-2 Action and Limit Levels for Construction Noise

Time Period	Action	Limit
Daytime (0700-1900) except general holidays and Sunday *Measurements in L_{eq} (30min)*	When one documented complaint is received.	75 dB(A)

Table 4-3 Event and Action Plan for Construction Noise

Event	Action			
	ET Leader	**IEC**	**ER**	**Contractor**
Action Level	1. Notify IEC and the Contractor. 2. Carry out investigation. 3. Report the results of investigation to IEC and the Contractor. 4. Discuss with the Contractor and formulate remedial measures. 5. Increase monitoring frequency to check mitigation measures.	1. Review with analyzed results submitted by ET. 2. Review the proposed remedial measures by the Contractor and advise ER accordingly. 3. Supervise the implement of remedial measures.	1. Confirm receipt of notification of exceedance in writing. 2. Notify the Contractor. 3. Require the Contractor to propose remedial measures for the analyzed noise problem. 4. Ensure remedial measures are properly implemented.	1. Submit noise mitigation proposals to IEC. 2. Implement noise mitigation proposals.
Limit Level	1. Identify the source. 2. Notify IEC, ER, EPD and the Contractor. 3. Repeat measurement to confirm findings. 4. Increase monitoring frequency. 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented. 6. Inform IEC, ER, and EPD the causes & actions taken for the exceedances. 7. Assess effectiveness of the Contractor's remedial actions and keep IEC, EPD and ER informed of the results. 8. If exceedance stops, cease additional monitoring.	1. Discuss amongst ER, ET Leader and the Contractor on the potential remedial actions. 2. Review the Contractor's remedial actions whenever necessary to assure their effectiveness and advise ER accordingly. 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of exceedance in writing. 2. Notify the Contractor. 3. Require the Contractor to propose remedial measures for the analyzed noise problem. 4. Ensure remedial measures are properly implemented. 5. If exceedance continues, consider what activity of the work is responsible and instruct the Contractor to stop that activity of work until the exceedance is abated.	1. Take 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 activity of works as determined by the ER until the exceedance is abated.

4.8 Noise Mitigation Measures

4.8.1 It is recommended that the Contractor should also adopt good working practices in order to minimise construction noise as far as possible, e.g.:

Good Site Practice

- The Contractor shall adopt the Code of Practice on Good Management Practice to Prevent Violation of the Noise Control Ordinance (Chapter 400) (for Construction Industry) published by EPD;
- The Contractor shall observe and comply with the statutory and non-statutory requirements and guidelines;
- Before commencing any work, the Contractor shall submit to the Engineer Representative for approval the method of working, equipment and noise mitigation measures intended to be used at the site;
- The Contractor shall devise and execute working methods to minimise the noise impact on the surrounding sensitive uses, and provide experienced personnel with suitable training to ensure that those methods are implemented;
- Noisy equipment and noisy activities should be located as far away from the NSRs as is practical;
- Unused equipment should be turned off. PME should be kept to a minimum and the parallel use of noisy equipment / machinery should be avoided;
- Regular maintenance of all plant and equipment; and
- Material stockpiles and other structures should be effectively utilised as noise barriers, where practicable.

4.8.2 Other than good site practice, the Contractor is required to adopt Levels 1 and 2 site-specific direct mitigation measures as specified below during the construction phase.

4.8.3 With construction / demolition work undertaken at a distance of 60m or less to the NSRs, below mitigation measures should be included:

Level 1 – Use of Quiet Plant and Movable Noise Barrier

- The Contractor shall obtain particular models of plant that are quieter than standards given in GW-TM.
- Purpose-built movable noise barriers should be used to mitigate construction noise directly at sources that are not usually mobile provide that the direct line of sight to the source is blocked. A typical section of movable noise barrier is shown in **Figure 4.9**.

4.8.4 In addition to the use of quiet plant and movable noise barrier, alternative demolition method of existing boundary fence at Section 2-3 shall be used where demolition works would be undertaken at a distance of 12m or less to the NSRs. These particular mitigation measures should be included:

Level 2 – Alternative Demolition Method of Existing Boundary Fence

- The use of welder is recommended to replace the use of hand-held driller;
- The use of hand-held breaker with movable noise barrier is recommended to replace the use of mini-robot mounted breaker; and the duration for the use of hand-held breaker is minimal as only the surface level of the footing to be broken; and
- The removal of the footing of the existing boundary fence should be carried by concrete crusher mini-robot mounted after the surface level broken by hand-held breaker.

4.8.5 If the above measures are still not sufficient to reduce the construction noise impact to acceptable levels, the Contractor shall liaise with the ET Leader on some other mitigation measures, propose them to ER for approval, and carry out the mitigation measures.

SECTION 1

SECTION 2

SECTION 3

SECTION 4

FIGURE 4.2

FIGURE 4.3

FIGURE 4.4

FIGURE 4.5

FIGURE 4.6

FIGURE 4.7

FIGURE 4.8

EXISTING PAK HOK CHAU CHECK POINT TO BE REPLACED

EXISTING LOK MA CHAU CHECK POINT TO BE REMOVED

EXISTING SHA LING CHECK POINT TO BE REMOVED

EXISTING PING CHE CHECK POINT TO BE REMOVED

EXISTING SHEK CHUNG AU CHECK POINT TO BE REMOVED

PROPOSED "GATE ONE" CHECK POINT

LEGEND :

- 300m ASSESSMENT AREA
- PROPOSED SECONDARY BOUNDARY FENCE ALONG EXISTING BOUNDARY PATROL ROAD
- PROPOSED NEW BOUNDARY PATROL ROAD WITH PRIMARY AND SECONDARY BOUNDARY FENCES
- EXISTING BOUNDARY FENCE TO BE REMOVED

Rev	Date	Drawn	Description	Ch'k'd	App'd
P2	DEC 08	MING	FORMAL SUBMISSION	BL	AFK
P1	NOV 08	MING	ISSUE FOR COMMENT	BL	AFK

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Project

CONSTRUCTION OF A SECONDARY BOUNDARY FENCE AND NEW SECTIONS OF PRIMARY BOUNDARY FENCE AND BOUNDARY PATROL ROAD

Title

STUDY AREA

Designed	BL		Eng.Chk.	WHC	
Drawn	MING		Coordination	WHC	
Dwg.Chk.	BL		Approved	AFK	

Scale: 1 : 35000@A1

Project: 216727

CAD File: z:\216727\REPORT\ENV\EMBA-Manual(081208)\FIGURE 4-1.dwg

Status: PRE

Drawing No.: FIGURE 4.1

Rev: P2

0 500 1000 1500 2000m
1 : 35 000 SCALE BAR

z:\216727\REPORT\ENV\EMBA-Manual(081208)\FIGURE 4-1.dwg, Layout1, 12/05/08 12:26:40, marvk0061, pdfFactory Pro, A3, 0.0393701:2

821 500 E
841 000 N
822 000 E
841 500 N
822 500 E
823 000 E
842 000 N
823 500 E
842 500 N
824 000 E
840 500 N
824 500 E
840 000 N
839 500 N
839 000 N
838 500 N
825 000 E
841 000 N
825 500 E

MATCH LINE
FOR CONTINUATION
SEE DWG FIGURE 4.3

VH01
VH03
EXISTING PAK HOK CHAU CHECK POINT TO BE REPLACED

SHAM CHUN RI (SHENZHEN HE)
MAI PO
SHEK SHAN
SAN TIN

LEGEND :

- 300m ASSESSMENT AREA
- NOISE SENSITIVE RECEIVER
- FACADE FACING

0 50 100 150 200 250 m
1 : 5 000 SCALE BAR

Rev	Date	Drawn	Description	Ch'k'd	App'd
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Project

CONSTRUCTION OF A SECONDARY BOUNDARY FENCE AND NEW SECTIONS OF PRIMARY BOUNDARY FENCE AND BOUNDARY PATROL ROAD

Title

LOCATION OF NOISE MONITORING STATIONS

(SHEET 1 OF 7)

Designed	BL		Eng.Chk.	WHC	
Drawn	MING		Coordination	WHC	
Dwg.Chk.	BL		Approved	AFK	

Scale: 1 : 5000@A1

Project: 216727

CAD File: z:\216727\REPORT\DW\EMBA-Manual(081208)\FIGURE 4-2.dwg

Status: PRE

Drawing No.: FIGURE 4.2

Rev: P2

824 000 E
842 500 N
824 500 E
843 000 N
825 000 E
843 500 N
825 500 E
844 000 N
826 000 E
826 500 E
827 000 E
827 500 E
828 000 E
842 000 N
841 500 N
841 000 N
840 500 N

MATCH LINE
FOR CONTINUATION
SEE DWG FIGURE 4.2

MATCH LINE
FOR CONTINUATION
SEE DWG FIGURE 4.4

SHAM CHUN RIVER (SHENZHEN HE)

EXISTING LOK MA CHAU CHECK POINT TO BE REMOVED

LEGEND :

- 300m ASSESSMENT AREA
- NOISE SENSITIVE RECEIVER
- FACADE FACING

Rev	Date	Drawn	Description	Ch'k'd	App'd
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Project

CONSTRUCTION OF A SECONDARY BOUNDARY FENCE AND NEW SECTIONS OF PRIMARY BOUNDARY FENCE AND BOUNDARY PATROL ROAD

Title

LOCATION OF NOISE MONITORING STATIONS

(SHEET 2 OF 7)

Designed	BL		Eng.Chk.	WHC	
Drawn	MING		Coordination	WHC	
Dwg.Chk.	BL		Approved	AFK	

Scale: 1 : 5000@A1

Project: 216727

Status: PRE

CAD File: z:\216727\REPORT\ENV\EMBA-Manual(081208)\FIGURE 4-3.dwg

Drawing No.: FIGURE 4.3

Rev: P2

0 50 100 150 200 250 m
1 : 5,000 SCALE BAR

z:\216727\REPORT\ENV\EMBA-Manual(081208)\FIGURE 4-3.dwg, Layout1, 12/05/08 12:31:07, man40661, pdfFactory Pro, A3, 0.03937012

Rev	Date	Drawn	Description	Ch'k'd	App'd
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Project

CONSTRUCTION OF A SECONDARY BOUNDARY FENCE AND NEW SECTIONS OF PRIMARY BOUNDARY FENCE AND BOUNDARY PATROL ROAD

Title

LOCATION OF NOISE MONITORING STATIONS

(SHEET 3 OF 7)

Designed	BL		Eng.Chk.	WHC	
Drawn	MING		Coordination	WHC	
Dwg.Chk.	BL		Approved	AFK	
Scale	1 : 5000@A1	Project	216727		Status PRE
		CAD File	J:\216727\REPORT\DWG\EM&A-Manual(081208)\FIGURE 4-4.dwg		
Drawing No.	FIGURE 4.4				Rev P2

LEGEND :

- 300m ASSESSMENT AREA
- NOISE SENSITIVE RECEIVER
- FACADE FACING

Rev	Date	Drawn	Description	Ch'k'd	App'd
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Project

CONSTRUCTION OF A SECONDARY BOUNDARY FENCE AND NEW SECTIONS OF PRIMARY BOUNDARY FENCE AND BOUNDARY PATROL ROAD

Title

LOCATION OF NOISE MONITORING STATIONS

(SHEET 4 OF 7)

Designed	BL		Eng.Chk.	WHC	
Drawn	MING		Coordination	WHC	
Dwg.Chk.	BL		Approved	AFK	

Scale	Project	Status
1 : 5000@A1	216727	PRE
	CAD File: J:\216727\REPORT\DWG\EM&A-Manual(081208)\FIGURE 4-5.dwg	

Drawing No. FIGURE 4.5

Rev P2

J:\216727\REPORT\DWG\EM&A-Manual(081208)\FIGURE 4-5.dwg, Layout1, 12/05/08 12:38:40, manu0661, pdfFactory Pro, A3, 0.0393701:2

LEGEND :

- 300m ASSESSMENT AREA
- NOISE SENSITIVE RECEIVER
- FACADE FACING

Rev	Date	Drawn	Description	Ch'k'd	App'd
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Project

CONSTRUCTION OF A SECONDARY BOUNDARY FENCE AND NEW SECTIONS OF PRIMARY BOUNDARY FENCE AND BOUNDARY PATROL ROAD

Title

LOCATION OF NOISE MONITORING STATIONS

(SHEET 5 OF 7)

Designed	BL		Eng.Chk.	WHC	
Drawn	MING		Coordination	WHC	
Dwg.Chk.	BL		Approved	AFK	

Scale	Project	Status
1 : 5000@A1	216727	PRE
	CAD File: J:\216727\REPORT\DWG\EM&A-Manual(081208)\FIGURE 4-6.dwg	
Drawing No. FIGURE 4.6		Rev P2

834 500 E
835 000 E
835 500 E
836 000 E
836 500 E
837 000 E
837 500 E
848 000 N
847 500 N
847 000 N
846 500 N
846 000 N
845 500 N
845 000 N

深圳市
SHENZHEN SHI

WL01
WL02
WL03

PAK FU SHAN
WONG MAU TANG SHAN

MATCH LINE
FOR CONTINUATION
SEE DWG T1459/E/4-6

LEGEND :

300m ASSESSMENT AREA

NOISE SENSITIVE RECEIVER

FACADE FACING

0 50 100 150 200 250 m
1 : 5 000 SCALE BAR

Rev	Date	Drawn	Description	Ch'k'd	App'd
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Project

CONSTRUCTION OF A SECONDARY BOUNDARY FENCE AND NEW SECTIONS OF PRIMARY BOUNDARY FENCE AND BOUNDARY PATROL ROAD

Title

LOCATION OF NOISE MONITORING STATIONS

(SHEET 6 OF 7)

Designed	BL		Eng.Chk.	WHC	
Drawn	MING		Coordination	WHC	
Dwg.Chk.	BL		Approved	AFK	

Scale: 1 : 5000@A1

Project: 216727

CAD File: d:\216727\REPORT\DW\EM&A-Monual(081208)\FIGURE 4-7.dwg

Status: PRE

Drawing No.: FIGURE 4.7

Rev: P2

LEGEND :

- 300m ASSESSMENT AREA
- NOISE SENSITIVE RECEIVER
- FACADE FACING

Rev	Date	Drawn	Description	Ch'k'd	App'd
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P1	NOV 08	MING	ISSUE FOR COMMENT	BL	AFK

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Project

CONSTRUCTION OF A SECONDARY BOUNDARY FENCE AND NEW SECTIONS OF PRIMARY BOUNDARY FENCE AND BOUNDARY PATROL ROAD

Title

LOCATION OF NOISE MONITORING STATIONS

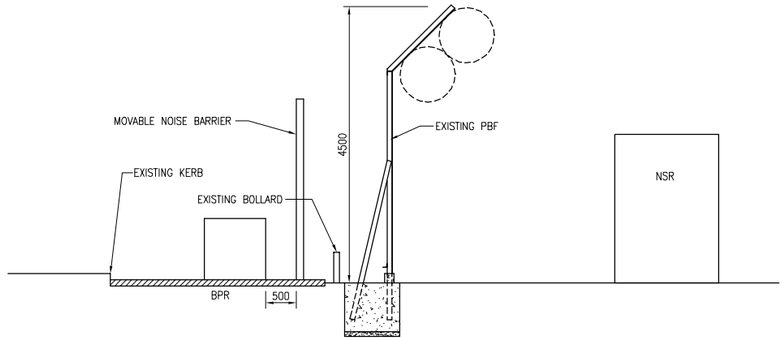
(SHEET 7 OF 7)

Designed	BL		Eng.Chk.	WHK	
Drawn	MING		Coordination	WHK	
Dwg.Chk.	BL		Approved	AFK	

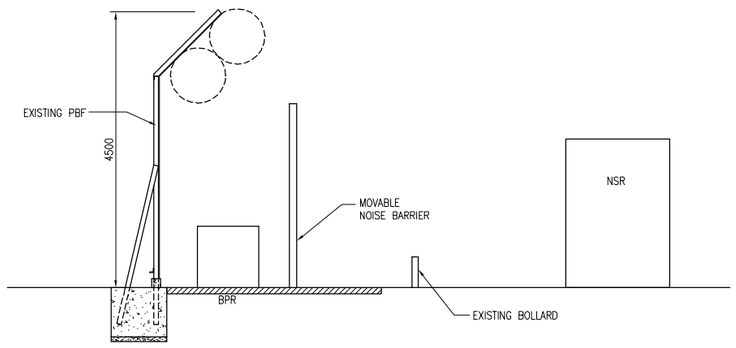
Scale	Project	Status
1 : 5000@A1	216727	PRE
	CAD File: z:\216727\REPORT\EM\EMbA-Manual(081208)\FIGURE 4-8.dwg	

Drawing No.: FIGURE 4.8

Rev: P2



TYPICAL SECTION OF MOVABLE NOISE BARRIER
DURING EXCAVATION, FOOTING CONSTRUCTION
AND ROAD CONSTRUCTION



TYPICAL SECTION OF MOVABLE NOISE BARRIER
DURING DEMOLITION OF EXISTING BOUNDARY FENCE

GENERAL NOTES :

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
2. ALL SIZES AND DIMENSIONS ARE TO BE VERIFIED ON SITE PRIOR TO FABRICATION AND INSTALLATION.

Rev	Date	Drawn	Description	Ch'k'd	App'd
P1	DEC 08	MING	FORMAL SUBMISSION	CWK	AFK

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Project

CONSTRUCTION OF A SECONDARY BOUNDARY FENCE AND NEW SECTIONS OF PRIMARY BOUNDARY FENCE AND BOUNDARY PATROL ROAD

Title

TYPICAL SECTION OF MOVABLE NOISE BARRIER

Designed	CWK		Eng.Chk.	WHC	
Drawn	LP		Coordination	WHC	
Dwg.Chk.	CWK		Approved	AFK	

Scale	Project	Status
1 : 50@A1	216727	PRE
	CAD File: J:\216727\REPORT\ENV\EM&A-Manual(081208)\FIGURE 4-9.dwg	
Drawing No. FIGURE 4.9		Rev P1

0 500 1000 1500 2000 2500 mm
1 : 50 SCALE BAR

5. WATER QUALITY

5.1 Introduction

5.1.1 Water quality impacts during the construction phase will be controlled through the implementation of good site practice. With appropriate mitigation and precautions measures in place during construction, there should be relatively minor impacts associated with this project during or following construction. In the operation phase, the impact from sanitary facilities is anticipated to be negligible.

5.2 Environmental Audit

5.2.1 A site auditing programme at weekly intervals is proposed to ensure mitigation measures during construction phase will be implemented to protect the water environment in the sensitive area from being further degraded.

5.3 Mitigation Measures

Construction Phase

5.3.1 Potential water quality impacts primarily relate to the uncontrolled surface runoff and discharge of silts during construction. Good site practices in addition to the implementation of mitigation measures would minimize the impact to the surrounding water environment.

General Prevention and Precaution Measures

- The site should be confined to avoid silt runoff from the site;
- No discharge of silty water into the river, stream or drainage channel within and in the vicinity of the site;
- Any soil contaminated with chemicals/oils shall be removed from site and the void created shall be filled with suitable materials;
- Stockpiles to be covered by tarpaulin to avoid spreading of materials during rainstorms;
- Suitable containers shall be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport;
- Chemical waste containers shall be labelled with appropriate warning signs in English and Chinese to avoid accidents. There shall also be clear instructions showing what action to take in the event of an accidental;
- Storage areas shall be selected at safe locations on site and adequate space shall be allocated to the storage area;
- Any construction plant which causes pollution to the water system due to leakage of oil or fuel shall be removed off-site immediately;
- Spillage or leakage of chemical waste to be controlled using suitable absorbent materials;
- Chemicals will always be stored on drip trays or in bunded areas where the volume is 110% of the stored volume;

- Regular clearance of domestic waste generated in the temporary sanitary facilities to avoid waste water spillage; and
- Temporary sanitary facilities to be provided for on-site workers during construction.

Concreting Work

5.3.2 A temporary drainage channel and associated facilities should be provided to collect the runoff generated and prevent concrete-contaminated water from entering watercourses. Adjustment of pH can be achieved by adding a suitable neutralising reagent to wastewater prior to discharge.

5.3.3 For the fence footing works site in the proximity of Lin Ma Hang Stream SSSI, the concreting works should be temporarily isolated with proper methods, such as by placing of sandbags or silt curtains with lead edge at bottom and properly supported props, to prevent adverse impacts on the water quality of the natural stream.

Soil Excavation and Stockpiling

5.3.4 Excavated soil which needs to be temporarily stockpiled should be stored in a specially designated area and provided with a tarpaulin cover to avoid runoff into the drainage channels.

Site Depot

5.3.5 All compounds in works areas should be located on areas of hard standing with provision of drainage channels and settlement ponds where necessary to allow interception and controlled release of settled/treated water. Hard standing compounds should drain via an oil interceptor. The oil interceptor should be regularly inspected and cleaned to avoid wash-out of oil during storm conditions. A bypass should be provided to avoid overload of the interceptor's capacity. Any contractor generating waste oil or other chemicals as a result of his activities should register as a chemical waste producer. Disposal of the waste oil should be done by a licensed collector.

5.3.6 Good housekeeping practices should be implemented to minimise careless spillage and to keep the storage and the work space in a tidy and clean condition. Appropriate training including safety codes and relevant manuals should be given to the personnel who regularly handle the chemicals on site.

Construction of Checkpoints

5.3.7 Sewage system should be constructed to divert domestic sewage, which will be generated from the sanitary facilities provided in the new checkpoint at Shek Chung Au, to public sewer connected to government sewage treatment facilities.

Operation Phase

5.3.8 With a sewage system constructed, no direct discharge or accidental spillage of domestic sewage would be expected during the operation of the new Checkpoint at Shek Chung Au. No additional pollution loads on Mirs Bay would be anticipated. Thus, no impact is anticipated during the operation of the Project.

6. WASTE MANAGEMENT

6.1 Introduction

6.1.1 The Contractor shall prepare a plan to control the waste generated from the construction activities. Besides removal of waste material produced and implementation of recommended mitigation measures to minimise waste problems arising, a site waste inventory record should be maintained. The Contractor shall mention good site practice to ensure that the waste impacts are minimised and shall make sure that relevant disposal permits are obtained.

6.1.2 For the waste to be disposed appropriately, it is recommended that, if practical, the waste should be separated by category on-site by the Contractor. The following categories shall be adopted:

- Site clearance waste;
- Construction and demolition materials;
- Chemical waste; and
- General refuse.

6.2 Audit Requirements

6.2.1 It is recommended that auditing of each waste stream should be carried out periodically by the contractor to determine if wastes are being managed in accordance with approved procedures and the site waste management plan. The audits should look at all aspects of waste management including waste generation, storage, recycling, treatment, transport and disposal. An appropriate audit programme would be to undertake the first audit at the commencement of the construction works, and then to audit weekly thereafter.

6.3 Mitigation Measures

Good Site Practices

6.3.1 Good site practice shall be maintained and specific procedures in dealing with different kind of wastes shall be followed during construction. The Contractor shall make a thorough reference from the relevant Legislations (such as the *Waste Disposal Ordinance (Cap 354)*) and guidelines (such as the *Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes (1992)* by EPD).

Waste Management Hierarchy

6.3.2 Various waste management options are as follows:

- avoidance and minimisation, i.e. not generating waste through changing or improving practices and design;
- reuse of materials, thus avoiding disposal (generally with only limited reprocessing);
- recovery and recycling, this avoiding disposal (although reprocessing may be required);

and

- treatment and disposal, according to relevant laws, guidelines and good practice.

6.3.3 This hierarchy should be used to evaluate waste management options, thus allowing waste reduction measures to be introduced at the detailed design stage and carried through to the construction phase.

6.3.4 Training and instruction of construction staff should be given at the project area to increase awareness and draw attention to waste management issues and the need to minimise waste generation. The training requirement should be included in the site waste management plan.

Storage, Collection and Transport of Waste

6.3.5 Permitted waste haulers should be used to collect and transport wastes to the appropriate disposal points. Measures to minimise adverse impacts should be instigated as appropriate practical for example:

- handle and store wastes in a manner which ensures that they are held securely without loss or leakage, thereby minimising the potential for pollution.
- use waste haulers authorised or licensed to collect specific category of waste;
- remove wastes on a daily basis;
- maintain and clean waste storage areas daily;
- minimise windblown litter and dust during transportation by either covering trucks or transporting wastes in enclosed containers;
- obtain the necessary waste disposal permits from the appropriate authorities if they are required, in accordance with Waste Disposal Ordinance (Cap 354), Waste Disposal (Chemical Waste) (General) Regulation (Cap 354), the Land (Miscellaneous Provisions) Ordinance (Cap 28);
- Dispose of the waste at licensed waste disposal facilities
- Develop procedures such as ticketing system to facilities tracking of loads, particularly for chemical waste, and to ensure that illegal disposal of wastes does not occur, and
- Maintain records of the quantities of wastes generated, recycled and disposal.

Site Clearance

6.3.6 The topsoil and vegetation removed and excavated material may have to be temporarily stockpiled on-site. Control measures should be taken at the stockpiling area to prevent the generation of dust and pollution of stormwater channels. However, to eliminate the risk of blocking drains in the wet season, it is recommended that stockpiling of excavated materials during wet season should be avoided as far as practicable.

Dust:

- wetting the surface of the stockpiled soil with water when necessary especially during the dry season;
- covering the stockpiled soil with sheets;

- minimising disturbance of the stockpiled soil; and
- enclosure of stockpiling area.

Water Quality:

- installation of silt traps for the surface water drainage system; and
- covering stockpiled material with tarpaulin during heavy rainstorm.

6.3.7 In addition, potential dust impacts due to the haulage of excavated/imported filling materials should be minimised by undertaking the following control measures:

- dropping heights for those materials should be controlled to a practical height to minimise the fugitive dust arising from unloading;
- materials should not be loaded to a level higher than the side and tail boards, and should be dampened or covered before transport.
- the travelling speed should be reduced to 10 km hr-1 to reduce dust dispersion and re-suspension from the operating haul trucks;
- wheel washing facilities should also be installed and sued by all vehicles leaving the project area.

Construction & Demolition Materials

6.3.8 In order to minimise waste arisings and to keep environmental impacts within acceptable levels, environmental control measures are recommended.

- Careful design, planning and good site management can minimize over-ordering and generation of waste materials such as concrete, mortars and cement grouts. The design of formwork should maximize the use of standard wooden panels so that high reuse levels can be achieved. Alternatives such as steel formwork of plastic facing should be considered to increase the potential for reuse.
- The Contractor should recycle as much of the C&D material as possible on-site. Proper segregation of wastes on site will increase the feasibility of certain components of the waste stream by the recycling contractors.
- Trip-ticket system should be employed to monitor the disposal of C&D material and solid at public filling facilities and landfills, and to control fly-tipping. Government has established a differentiated charging scheme for the disposal of waste to landfill, construction waste sorting facilities and public fill facilities. This will provide additional incentives to reduce the volume of waste generated and to ensure proper segregation of wastes.

Chemical Waste

6.3.9 For those processes which generate chemical waste, it may be possible to find alternatives which generate reduced quantities or even no chemical waste, or less dangerous types of chemical waste.

6.3.10 Chemical waste that is produced, as defined by Schedule 1 of the Waste Disposal (Chemical Waste) (General) Regulation, should be handed in accordance with the Code of Practice on

the Packaging, Handling and Storage of Chemical Waste as follows:

6.3.11 Containers used for the storage of chemical wastes should:

- be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition, and securely closed:
- have a capacity of less than 450 litres unless the specification have been approved by the EPD; and
- display a label in English and Chinese in accordance with instructions prescribed in Schedule 2 of the Regulations.

6.3.12 The storage area for chemical wastes should:

- be clearly labelled and used solely for the storage of chemical waste;
- be enclosed on at least 3 sides;
- have an impermeable floor and bunding, of capacity to accommodate 110% of the volume of the largest container or 20% by volume of the chemical waste stored in that area whichever is the greatest;
- have adequate ventilation;
- be covered to prevent rainfall entering (water collected within the bund must be tested and disposed as chemical waste if necessary); and
- be arranged so that incompatible materials are adequately separated.

6.3.13 Disposal of chemical waste should:

- be via a licensed waste collector; and
- be to a facility licensed to receive chemical waste, such as the Chemical Waste Treatment Facility which also offers a chemical waste collection service and can supply the necessary storage containers, or
- to be re-user of the waste, under approval from the EPD.

6.3.14 The Centre for Environmental Technology operates a Waste Exchange Scheme which can assist finding receivers or buyers for the small quantity of chemical waste to be generated from the project.

General Refuse

6.3.15 General refuse should be stored in enclosed bins or compaction units separate from C&D materials and chemical wastes. The Contractor should employ a reputable waste collector to remove general refuse from the project area, separate from C&D materials and chemical wastes, on a regular basis to minimise odour, pest and litter impacts. Burning of refuse on construction sites is prohibited by law.

Construction Waste Management Plan

6.3.16 A construction waste management plan (CWMP) will need to be developed by the

contractor to ensure proper collection, treatment and disposal of waste on site. This CWMP will also take into account the requirement to provide chemical soil onsite which will need to be managed by a licensed waste collection contractor.

7. ECOLOGY

7.1 Introduction

7.1.1 The EIA has recommended ecological mitigation measures to avoid and minimize identified potential impacts arising from the proposed project. The implementation of these measures should be checked as part of the environmental monitoring and audit programme during the construction period.

7.2 Ecological Mitigation Measures

7.2.1 It is recommended that the Contractor should also adopt good working practices for controlling air quality, noise and water quality in order to minimise dust, construction noise and site runoff as far as possible. Details of these measures should refer to chapter 3, 4 and 5 of the EM&A Manual.

7.2.2 Erection of plant protective fencing is recommended to protect two individuals of flora species of conservation importance during costruction period.

7.2.3 No construction works using Power Mechanical Equipments should be carried out within Wetland Conservation Area, including Mai Po Inner Deep Bay Ramsar Site, between the 15th November and the 15th March inclusive in any consecutive years.

7.2.4 No excavation works should be carried out within 150m zone from the Tam Kong Chau Egretry between the 1st March to the 31st July inclusive in any consecutive years.

7.2.5 When construction work commence within the 150m buffer area of the egretry in August, the egretry should be inspected to ensure all the breeding ardeids have already left. Besides, AFCD's agreement should be obtained prior to the commencement of works should it be started in August.

7.3 Audit Requirements

7.3.1 It is recommended that auditing of these mitigation measures should be carried out periodically by the contractor to confirm these measures are well in place. The ecological mitigation implementation schedule is presented in **Appendix B**.

8. CULTURAL HERITAGE

8.1 Archaeological Resources

8.1.1 Based on the findings of the baseline study, no mitigation measures are required within the Study Area, except the proposed new boundary road alignments at Pak Fu Shan and Lin Ma Hang of Section 3 which are evaluated as having some archaeological potential. As part of those areas currently cannot be accessed, an archaeological survey should be undertaken after land resumption and before commencement of construction works.

8.1.2 A methodology of the archaeological survey has been submitted and agreed by the Antiquities and Monuments Office (AMO). The archaeological survey should be conducted by a professional archaeologist who should obtain a licence before commencement of archaeological survey in accordance with the Antiquities and Monuments Ordinance (Cap. 53).

8.1.3 If the archaeological survey has identified that there are archaeological interests in the works area, appropriate mitigation measures should be designed and implemented, such as:

- Preservation in situ
- Full-scale excavation prior to construction works
- Archaeological monitoring, whereby a professional archaeologist monitors the excavation works in area of archaeological interests in the course of excavation.

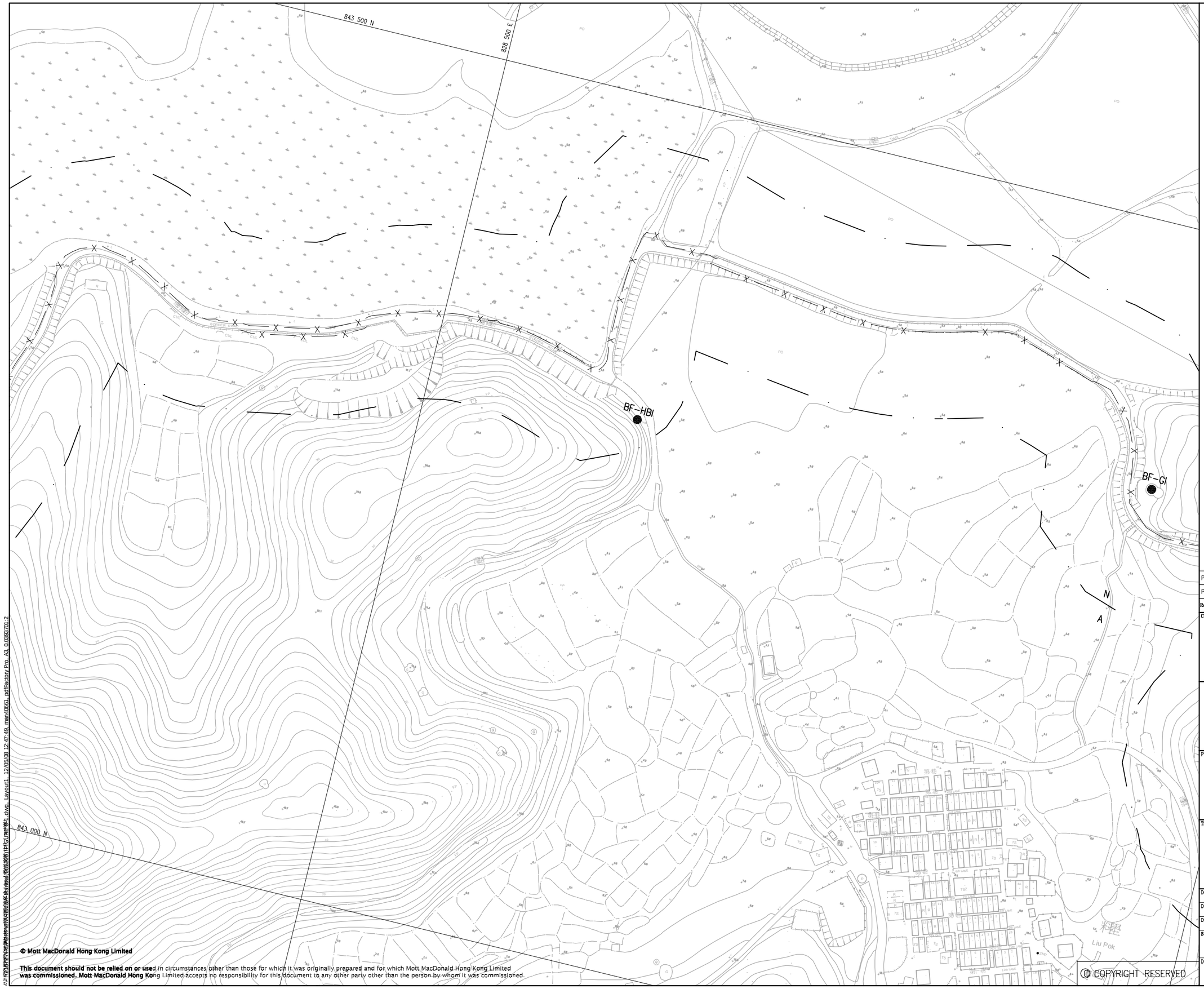
8.1.4 The project proponent should design and implement the mitigation measures in consultation with the Antiquities and Monuments Office.

8.2 Built Heritage Resources

8.2.1 No adverse impacts are expected to arise during the operational phase of the project. Mitigation in the form of buffer zones and safe public access have been proposed for one shrine (BF-HB1) and two graves (BF-G1 and G2) during construction phase as shown in **Figure 8.1** and **8.2**. The project will not cause any insurmountable impacts to built heritage resources if the mitigation measures as recommended are properly implemented. **Table 8-1** presents the required mitigation for the identified sites impacted by the proposed construction works.

Table 8-1 Mitigation Recommendations for Sites impacted by the proposed construction works

Resource	Mitigation Recommendation
BF-HB1	A buffer zone of a minimum distance of 1 metre should be established between the shrine and any construction works in close proximity. The buffer zone should be marked out by temporary fencing. Safe public access should be provided to the shrine during any construction works in close proximity.
BF-G1 and BF-G2	A buffer zone of a minimum distance of 1 metre should be established between the graves and any construction works in close proximity. The buffer zone should be marked out by temporary fencing. Safe public access should be provided to the graves during any construction works in close proximity.



LEGEND :

50m ASSESSMENT AREA

LOCATION OF BUILT HERITAGE

Rev	Date	Drawn	Description	Ch'k'd	App'd
P2	DEC 08	MING	FORMAL SUBMISSION	--	--
P1	NOV 08	CCH	ISSUE FOR COMMENT	--	--

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Project

CONSTRUCTION OF A SECONDARY BOUNDARY FENCE AND NEW SECTIONS OF PRIMARY BOUNDARY FENCE AND BOUNDARY PATROL ROAD

Title

LOCATIONS OF SHRINE (BF-HBI) AND GRAVE (BF-GI) NEAR LIU POK

Designed	CWK		Eng.Chk.	WHK	
Drawn	LP		Coordination	WHK	
Dwg.Chk.	CWK		Approved	AFK	

Scale: 1 : 1000@A1

Project: 216727

Status: INF

CAD File: z:\216727\REPORT\DW\EMBA-Manual(081208)\FIGURE 8-1.dwg

Drawing No.: FIGURE 8.1

Rev: P2

SHENZHEN SHI

SHAM CHUN RIVER (SHENZHEN HE)

836 000 E

846 500 N

BF-G2

LEGEND :

50m ASSESSMENT AREA

LOCATION OF BUILT HERITAGE

Rev	Date	Drawn	Description	Ch'k'd	App'd
P2	DEC 08	CCH	FORMAL SUBMISSION	--	--
P1	NOV 08	CCH	ISSUE FOR COMMENT	--	--

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Project

CONSTRUCTION OF A SECONDARY BOUNDARY FENCE AND NEW SECTIONS OF PRIMARY BOUNDARY FENCE AND BOUNDARY PATROL ROAD

Title

LOCATION OF GRAVE BF-G2 ON LIN MA HANG ROAD

Designed	CWK		Eng.Chk.	WHC	
Drawn	LP		Coordination	WHC	
Dwg.Chk.	CWK		Approved	AFK	

Scale	Project	Status
1 : 1000@A1	216727	INF
	CAD File: z:\216727\REPORT\DW\EMbA-Manual(081208)\FIGURE 8-2.dwg	

Drawing No. FIGURE 8.2

Rev P2

9. LANDSCAPE AND VISUAL

9.1 EM&A Requirements

9.1.1 Good site practices shall be employed including the protection of the existing trees and the monitoring of the works in terms of minimising potential; landscape and visual impacts. The progress of the engineering works should be regularly reviewed on site to identify the earliest practical opportunities for the landscape works to be undertaken.

9.1.2 A specialist Landscape Sub-Contractor should be employed by the Contractor for the implementation of landscape construction works and subsequent maintenance operations during the 12 month establishment period. It is proposed that the planting works be phased to coincide with the completion of each of the sections of the SBF and SBP so as to ensure that the affects of the mitigation measures are apparent at the earliest possible time. A minimum 12 month establishment period will be allowed for the planting works.

9.2 Recommended Mitigation Measures

9.2.1 The landscape mitigation measures described in this report are at a level which both demonstrates their ability to alleviate the potential landscape and visual impacts identified in the assessment and also to allow the proposals to be carried forward during the detailed design stage. The measures are designed to address both the construction and operational phases of the project. A more detailed landscape and compensatory planting proposals will be developed at a later stage during detailed design and construction phase of this project following the completion of the detailed Tree Survey Report. The tree survey report and the proposed strategy for the treatment of the existing trees will be submitted to the relevant departments for approval at that stage.

9.2.2 The landscape and visual mitigation measures are described both in a generic sense for measures, which apply to all of works area and in terms of the proposed landscape strategy for the roadside planting and amenity areas alongside of the boundary fence. The aim of the mitigation measures is to:

- Alleviate where possible those landscape and visual impacts which are unavoidable through the review of fence and patrol road alignment.
- Establish a coherent and integrated landscape framework for the proposed works drawing together the visually disparate components if any of the proposed works. However given the limited land acquisition designed to minmise the impact on the existing fishponds and wetlands which have a high ecological value and requirements for clearance requirement alongside of boundary fence for security reasons there will be limited opportunities for new tree and shrub planting.
- Enhance the existing landscape and visual context of the surrounding areas providing integration between the proposed works and its context.
- Provide a co-ordinated approach between the ecological and landscape mitigation proposals where there is an interface.

9.2.3 **Figures 9-1A** to **9-1D** respectively mapped the main landscape and visual mitigation

strategies and the application of design mitigation measures including integrated design approach, compensatory and new planting proposals.

General Mitigation Measures

9.2.4 In accordance with the EIAO-TM, the hierarchy for landscape and visual impact mitigation is first avoidance of impact, then minimisation of impact and finally compensation of impact. As has been described in the Project description in this report, the current proposals have been undertaken to fulfil the following objectives:

- Minimisation of potential impacts on landscape resources such as watercourses and existing trees by review the alignment and location of check point facilities through preserving wooded knolls including those adjacent at Ma Tso Lung, Sandy Ridge and Lin Ma Hang, avoid impact to the Mai Po SSSI and the fishponds with high ecological value at Sham Po Shue.
- Restoration and enhancement of existing rural landscapes through the planting of trees, where the space and security concerns allow, following the completion of the construction phase of the project. This will help to reduce the horizontal emphasis of the fence alignment and integrate it within its landscape context.
- Review the site area for the proposed fence and patrol road to ensure that sufficient space is reserved for compensatory planting and other landscape works.
- Carefully locate the proposed check point and associated structures to minimise the potential ecological, visual and landscape impacts.

9.2.5 In accordance with the EIAO-TM, mitigation measures for the construction and operational phases of the project have been designed to minimise predicted landscape and visual impacts, and to compensate for lost landscape resources as far as is possible given the Project constraints.

Specific Mitigation Measures

9.2.6 A series of mitigation measures have been designed to alleviate the potential landscape and visual impacts and where possible compensate for the loss of landscape resources, change of landscape character and visual amenity for VSRs resulting from the construction and operational phases of the project. The implementation, funding, and management and maintenance for the amenity landscape areas associated with the proposed works will be undertaken by relevant departments.

9.2.7 The mitigation measures are summarised in **Table 9-1** and **Table 9-2**.

Table 9-1 Proposed Construction Phase Mitigation Measures

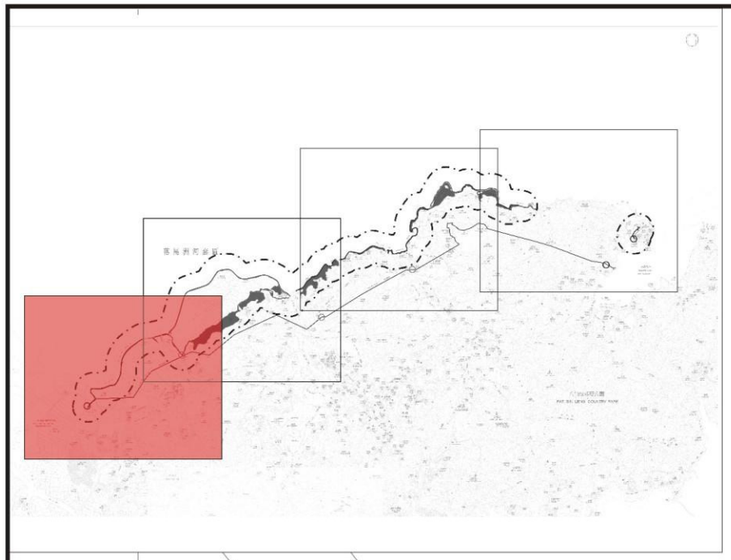
Mitigation Code	Mitigation Measure
CP1	Preservation of Existing Vegetation - The proposed works should avoid disturbance to the existing trees as far as practicable within the works areas. It is recommended that a full tree survey and felling application will be undertaken and submitted for approval by the relevant government departments in accordance with ETWB TCW No. 3/2006, 'Tree Preservation' during the detailed design phase of the project. Where possible all trees which are not in conflict with the proposals would be retained and shall be protected by means of fencing where appropriate to prevent potential damage to tree canopies and root zones from vehicles and storage of materials. Specifications for the protection of existing trees will be circulated for approval by the relevant government authorities during the preparation of the detailed tree survey at detailed design and construction

Mitigation Code	Mitigation Measure
	stage.
CP2	Preservation of Existing Topsoil - Topsoil disturbed during the construction phase will be tested using a standard soil testing methodology and where it is found to be worthy of retention stored for re-use. The soil will be stockpiled to a maximum height of 2 m and will be either temporarily vegetated with hydroseeded grass during construction or covered with a waterproof covering to prevent erosion. The stockpile should be turned over on a regular basis to avoid acidification and the degradation of the organic material, and reused after completion. Alternatively, if this is not practicable, it should be considered for use elsewhere, including other projects.
CP3	Works Area and Temporary Works Areas - The landscape of the works areas shall be restored to their original state (or where appropriate adopt a new enhanced amenity) following the completion of the construction phase. Construction site controls shall be enforced, where possible, to ensure that the landscape and visual impacts arising from the construction phase activities are minimised including the storage of materials, the location and appearance of site accommodation and the careful design of site lighting to prevent light spillage. Screen hoarding may not be practicable for this project due to the close viewing distances involved and spatial constraints of the works area
CP4	Mitigation Planting - Replanting of disturbed vegetation should be undertaken at the earliest possible stage of the construction phase of the project and this should use predominantly native and/or ornamental plant species.
CP5	Transplantation of Existing Trees - Existing trees which are recommended to be transplanted due to a conflict with the works will as far as possible be relocated to final recipient sites adjacent to their current locations. His will maintain their contribution to the local landscape context. The potential recipient sites will be finalised following the completion of the detailed tree survey report and approval of the formal felling application by the relevant government departments. The implementation programme of the proposed works should reserve enough time for advance tree transplanting preparation works to enhance the survival of these transplant trees. Transplanting proposals will subject to the findings of the detailed tree survey and felling application at the detailed design stage and upon to the approval by relevant departments.

Table 9-2 Proposed Operational Phase Mitigation Measures

Mit. Code	Mitigation Measure
OP1	Design of Boundary Fence, Boundary Patrol Road and Police Check Point – These structural elements will be designed in accordance with security requirement from Police Force and incorporate design features as part of design mitigation measures including: 1. Integrated design approach – the boundary fence should integrated, as far as technically feasible, with existing built structures such as existing road, footpath and track and embankment of fishponds, river and drainage channel as part of design mitigation measures to reduce the potential cumulative impact of the proposed works. The location and orientation of the police check points should be away from landscape and visually sensitive areas such wetland, fishpond and agricultural field. 2. Building massing - the proposed use of simple responsive design for the built structures with a low building height profile to reduce the potential visual mass of the structure within a rural context. 3. Treatment of built structures - the architectural design should seek to reduce the apparent visual mass of the facilities further through the use of natural materials such as wooden frame, vertical greening or other

Mit. Code	Mitigation Measure
	sustainable materials such as recycled plastic. 4. Responsive building and fence finishes - In terms of the proposed finishes natural tones should be considered for the colour palette with non-reflective finishes are recommended to reduce glare effect. The use of colour blocking on the proposed fence could be used to break up the visual mass of the structure. 5. Responsive lighting design – Aesthetic design of architectural and track lighting with following glare design measures: ▪ Directional and full cut off lighting is recommended particularly for areas adjacent to existing village to minimise light spillage. ▪ Minimise geographical spread of lighting, only applied for safety and security reasons; ▪ Limited lighting intensity to meet the minimum safety and operation requirement; and ▪ High-pressure sodium road lighting is recommended for more stringent light control reducing spillage and thus visual impacts.
OP2	Tree and Shrub Planting – Given the rural nature of the proposed alignment it is recommended that the where possible tree and shrub species which are native to Hong Kong be used. In addition where possible the planting of new trees and shrubs will aim to link together existing woodland areas and small tree groups to improve the connectivity between habitats and create more coherent landscape framework. The planting of small groups of trees along the alignment of the proposed fence will serve to de-emphasise the horizontality of the fence structure and provide for better sense of visual integration with the landscape context. Where practicable vertical greening measures should also be considered on engineering structures.
OP3	Compensatory Planting Proposals – Given the works extent is largely limited along existing roadside embankment to minimise impact to existing village settlements and valuable landscape resources such as wetland, fishpond, stream course and existing trees, and considered the importance of tree retention within the works area, new tree planting will concentrate in selected new amenity areas along the alignment, infilling between retained and transplanted trees. The preliminary planting proposals for the proposed works include the planting of some 357 new trees utilising a combination of mature to light standard sized stock (i.e. approximately 15% of mature trees, 75% of standard trees, and 10% light standard trees). These trees will be planted in woodland clumps and small tree groups at strategic locations to de-emphasise the horizontality of the fence alignment. Based on preliminary findings the proposed planting will result in a compensatory planting ratio of 1:1 (new planting: trees recommended for felling). This compares favourably with the report's assertion that some 357 trees would be felled due to the proposed works. With the proposed preservation of existing trees, transplantation of trees in conflict with the proposals and the planting of new trees the project area will contain approximately 2000 trees. Trees forming part of the new planting will provide screening to neighbourhood villagers and will utilise species native to Hong Kong. These proposals will be subject to review at detailed design stage of the project.



KEY PLAN

OP2 and OP3

CP1

Legend

- 500M Study Area
- Frontier Closed Area
- Proposed secondary boundary fence along existing boundary patrol road
- Proposed new boundary patrol road with primary and secondary boundary fences
- Existing boundary fence to be removed
- Existing check point to be removed
- Proposed new check point
- Existing Mature Vegetation to be preserved
- Potential Location for Compensatory and Screening Planting
- CP1 — Mitigation Code of Recommended Mitigation Measures

Proposed Construction Phase Mitigation Measures

CP1 Preservation of Existing Vegetation
CP2 Preservation of Existing Topsoil
CP3 Works Area and Temporary Works Areas
CP4 Mitigation Planting
CP5 Transplantation of Existing Trees
All above measures are apply to whole alignment.

Proposed Operational Phase Mitigation Measures

OP1 Design of Boundary Fence and Check Point (apply to whole alignment)
OP2 Roadside and Amenity Planting
OP3 Compensatory Planting Proposals

0 250 500 750 1250 m

Rev	Date	Drawn	Description	Ch'k'd	App'd

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Project

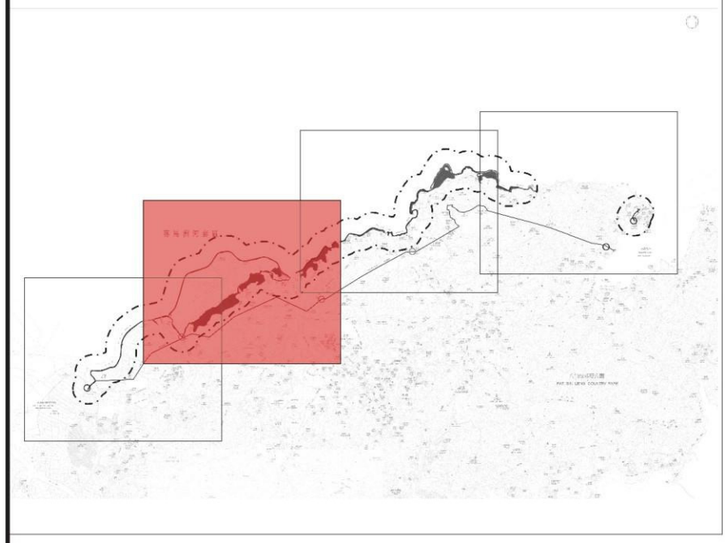
CONSTRUCTION OF A SECONDARY BOUNDARY FENCE AND NEW SECTIONS OF PRIMARY BOUNDARY FENCE AND BOUNDARY PATROL ROAD

Title

Recommended Landscape Mitigation Measures

Designed	TEAM		Eng.Chk.	---	
Drawn	EIK		Coordination	---	
Dwg.Chk.	ELK		Approved	CJF	
Scale	N.T.S.	Project	216727		Status
		CAD File	---		
Drawing No.					Rev

Figure 9-1A



KEY PLAN

河 套 區

CP1

CP1

CP1

CP1

CP1

OP2 and OP3

CP1

OP2 and OP3

Proposed Construction Phase Mitigation Measures

CP1 Preservation of Existing Vegetation
CP2 Preservation of Existing Topsoil
CP3 Works Area and Temporary Works Areas
CP4 Mitigation Planting
CP5 Transplantation of Existing Trees
All above measures are apply to whole alignment.

Proposed Operational Phase Mitigation Measures

OP1 Design of Boundary Fence and Check Point (apply to whole alignment)
OP2 Roadside and Amenity Planting
OP3 Compensatory Planting Proposals

0 250 500 750 1250 m

Legend

- 500M Study Area
- Frontier Closed Area
- Proposed secondary boundary fence along existing boundary patrol road
- Proposed new boundary patrol road with primary and secondary boundary fences
- Existing boundary fence to be removed
- Existing check point to be removed
- Proposed new check point
- Existing Mature Vegetation to be preserved
- Potential Location for Compensatory and Screening Planting
- CP1 Mitigation Code of Recommended Mitigation Measures

Rev	Date	Drawn	Description	Ch'k'd	App'd

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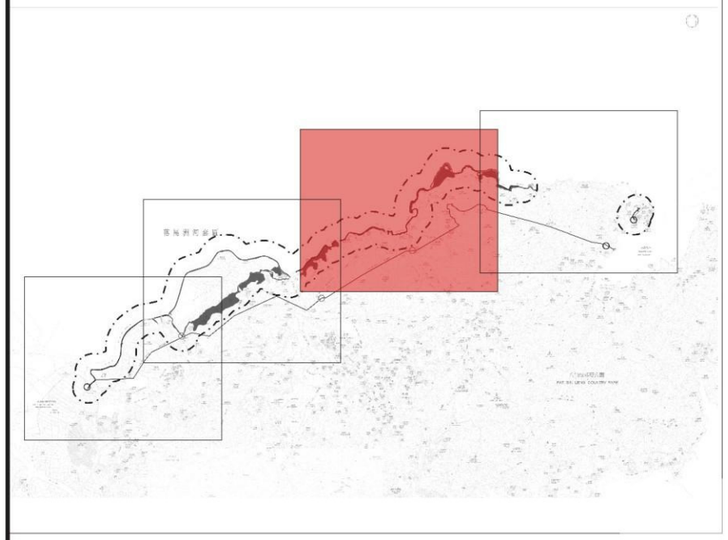
Project: CONSTRUCTION OF A SECONDARY BOUNDARY FENCE AND NEW SECTIONS OF PRIMARY BOUNDARY FENCE AND BOUNDARY PATROL ROAD

Title: Recommended Landscape Mitigation Measures

Designed	TEAM		Eng.Chk.	---	
Drawn	EIK		Coordination	---	
Dwg.Chk.	ELK		Approved	CJF	
Scale: N.T.S.		Project: 216727			Status
		CAD File: ---			
Drawing No.					Rev

Figure 9-1B



KEY PLAN

OP2 and OP3
CP1
CP1
CP1
OP2 and OP3
OP2 and OP3
CP1
OP2 and OP3
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CP1
CP1
CP1
OP2 and OP3
OP2 and OP3
CP1
CP1
OP2 and OP3
CP1
OP2 and OP3

N

0 250 500 750 1250 m

Legend

- 500M Study Area
- Frontier Closed Area
- Proposed secondary boundary fence along existing boundary patrol road
- Proposed new boundary patrol road with primary and secondary boundary fences
- Existing boundary fence to be removed
- Existing check point to be removed
- Proposed new check point
- Existing Mature Vegetation to be preserved
- Potential Location for Compensatory and Screening Planting
- CP1 — Mitigation Code of Recommended Mitigation Measures

Proposed Construction Phase Mitigation Measures

CP1 Preservation of Existing Vegetation
CP2 Preservation of Existing Topsoil
CP3 Works Area and Temporary Works Areas
CP4 Mitigation Planting
CP5 Transplantation of Existing Trees
All above measures are apply to whole alignment.

Proposed Operational Phase Mitigation Measures

OP1 Design of Boundary Fence and Check Point (apply to whole alignment)
OP2 Roadside and Amenity Planting
OP3 Compensatory Planting Proposals

Rev	Date	Drawn	Description	Ch'k'd	App'd

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Project
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Title
Recommended Landscape Mitigation Measures

Designed	TEAM		Eng.Chk.	---	
Drawn	EIK		Coordination	---	
Dwg.Chk.	ELK		Approved	CJF	
Scale	N.T.S.	Project	216727		Status
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Drawing No.					Rev

Figure 9-1C

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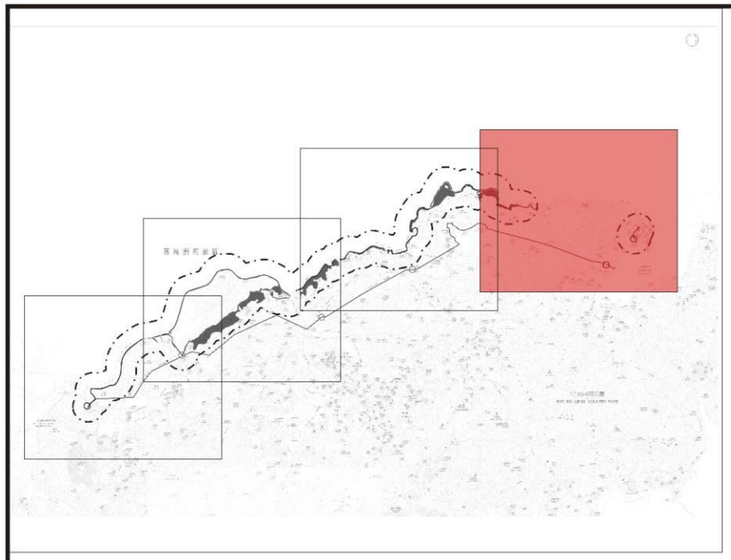
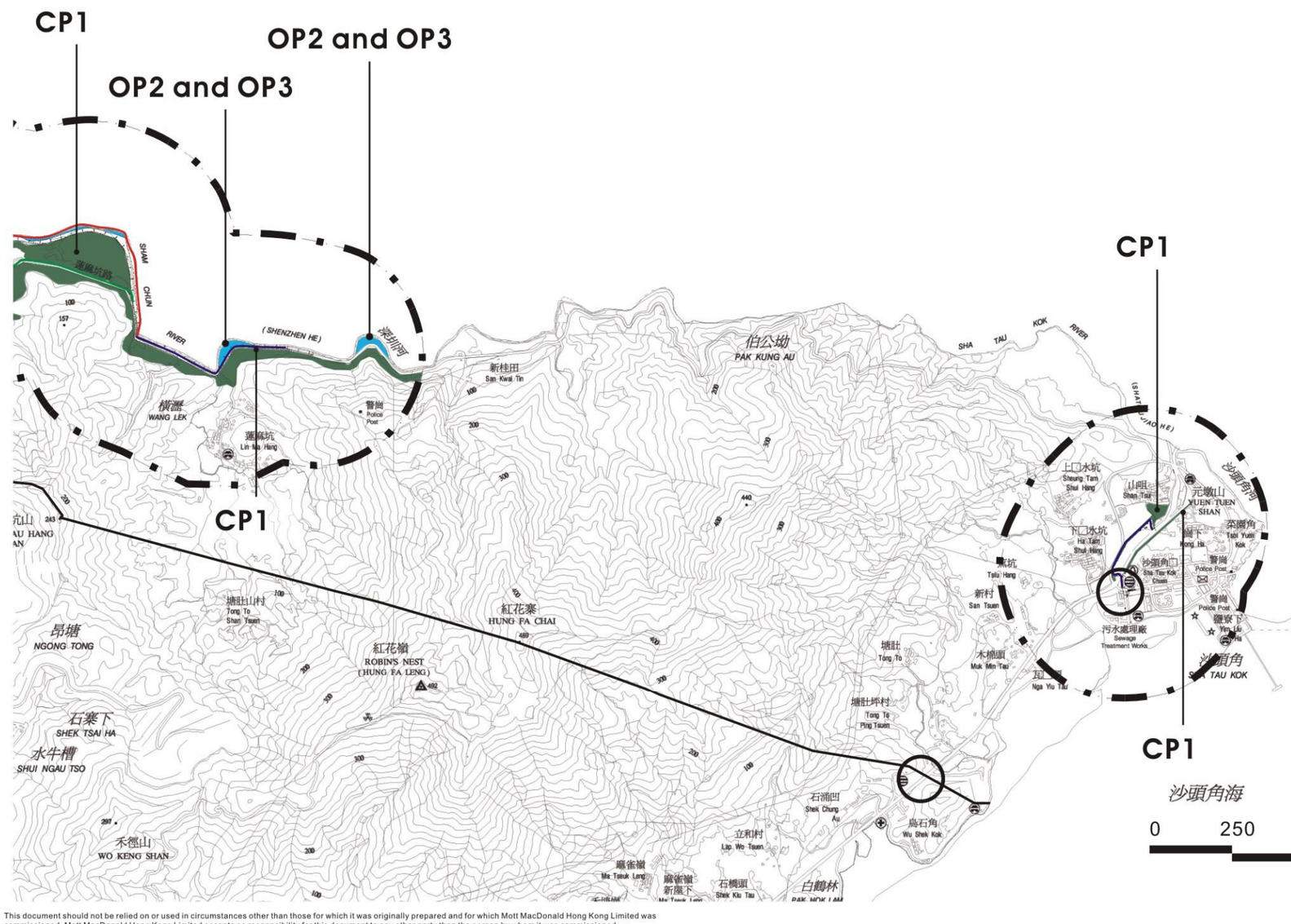


KEY PLAN



Proposed Construction Phase Mitigation Measures

CP1 Preservation of Existing Vegetation
CP2 Preservation of Existing Topsoil
CP3 Works Area and Temporary Works Areas
CP4 Mitigation Planting
CP5 Transplantation of Existing Trees
All above measures are apply to whole alignment.

Proposed Operational Phase Mitigation Measures

OP1 Design of Boundary Fence and Check Point (apply to whole alignment)
OP2 Roadside and Amenity Planting
OP3 Compensatory Planting Proposals

N

Legend

- 500M Study Area
- Frontier Closed Area
- Proposed secondary boundary fence along existing boundary patrol road
- Proposed new boundary patrol road with primary and secondary boundary fences
- Existing boundary fence to be removed
- Existing check point to be removed
- Proposed new check point
- Existing Mature Vegetation to be preserved
- Potential Location for Compensatory and Screening Planting
- CP1 Mitigation Code of Recommended Mitigation Measures

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Project

CONSTRUCTION OF A SECONDARY BOUNDARY FENCE AND NEW SECTIONS OF PRIMARY BOUNDARY FENCE AND BOUNDARY PATROL ROAD

Title

Recommended Landscape Mitigation Measures

Designed	TEAM		Eng.Chk.	---	
Drawn	EIK		Coordination	---	
Dwg.Chk.	ELK		Approved	CJF	
Scale	N.T.S.	Project	216727		Status
		CAD File	---		
Drawing No.					Rev

Figure 9-1D

10. SITE ENVIRONMENTAL AUDIT

10.1 Site Surveillance

10.1.1 Site surveillance provides a direct means to trigger and enforce the specified environmental protection and pollution control measures necessary to comply with contract specifications. They shall be undertaken regularly and routinely by the ET to inspect the activities at the works site in order to ensure that appropriate environmental protection and pollution control mitigation measures are properly implemented by the Contractor in accordance with the EM&A recommendations. With well-defined pollution control and mitigation specifications and a well-established site inspection, deficiency and action reporting system, site inspection is one of the most effective tools to enforce the environmental protection requirements on the site.

10.1.2 The ET Leader is responsible for formulation of the environmental site inspection, deficiency and action reporting system, and for carrying out the site inspections under the EM&A works. He/she shall prepare and submit a proposal on the site inspection, deficiency and action reporting procedures within 21 days of the construction contract commencement to the ER, Contractor and IEC for agreement. A preliminary site inspection, deficiency and action reporting system in the form of a flowchart has been prepared for reference, and is presented in **Figure 10.1** for review and refinement by the ET at the commencement of the project.

10.1.3 The ET shall conduct a site inspection at least once a week during the construction period of the project. The areas of inspection shall include, but shall not be limited to, the environmental situation, and pollution control and mitigation measures within the site. It should also review the environmental situation outside the site area that is likely to be affected, directly or indirectly, by the site activities. The ET Leader shall make reference to the following information in conducting the inspection:

1. The EIA recommendations on environmental protection and pollution control mitigation measures;
2. On-going results of the EM&A programme;
3. Works progress and programme;
4. Individual works methodology proposals (which shall include proposals on associated pollution control measures);
5. The contract specifications on environmental protection and pollution prevention;
6. The relevant environmental protection and pollution control laws, ProPECC Notes; and
7. Previous site inspection results.

10.1.4 The ER/ Contractor shall update the ET with all relevant information of the contract for him/ her to carry out the site inspections. The inspection results and its associated recommendations on improvements to the environmental protection and pollution control works shall be submitted to the IEC and the ER in a site inspection proforma within 24 hours, for reference and for taking immediate action.

10.1.5 The Contractor shall follow the procedures and time frame as stipulated in the environmental site inspection, deficiency and action reporting system formulated by the ET to report on any remedial measures subsequent to the site inspections.

10.1.6 The ET shall conduct ad-hoc site inspections if significant environmental problems are identified. The IEC shall also conduct independent site audits. Inspections may also be required subsequent to receipt of any environmental complaints, or as part of the investigation work, as specified in the Event/Action Plan for environmental monitoring and audit.

10.2 Compliance with Legal and Contractual Requirements

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

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

10.2.3 After reviewing the document, the ET Leader shall advise the ER and the Contractor of any non-compliance with the contractual and legislative requirements on environmental protection and pollution control for them to take follow-up actions. If the ET Leader's review concludes that the current status on licence/ permit application and any environmental protection and pollution control preparation works may not cope with the works programme or may result in potential violation of environmental protection and pollution control requirements by the works in due course, he shall also advise the Contractor and the ER accordingly. The review shall be copied to IEC for any follow-up action.

10.2.4 Upon receipt of the advice, the Contractor shall undertake immediate action to remedy the situation. The ER shall check that the Contractor has taken appropriate action in order that the environmental protection and pollution control requirements are fulfilled.

10.3 Environmental Complaints

10.3.1 Complaints reviewed on environmental issues shall be referred to the ET Leader for carrying out complaint investigation procedures. Upon receipt of complaints the ET shall undertake the tasks outlined below. The complaint investigation procedures are also presented in form of a flow chart in **Figure 10-2** for ease of reference.

1. Log complaint and date of receipt onto the complaint database and inform the IEC immediately;
2. Investigate the complaint to determine its validity, and to assess whether the source of the problem is due to works activities;
3. If a complaint is valid and due to works, identify mitigation measures in consultations with the IEC;

4. If mitigation measures are required, advise the Contractor accordingly;
5. Review the Contractor's implementation of the identified mitigation measures, and the concurrent situation;
6. If the complaint is transferred from EPD, submit interim report to EPD on status of the complaint investigation an follow-up action within the time frame assigned by EPD;
7. 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;
8. Report the investigation results and the subsequent actions to the source of complaint. (If the source of complaint is identified through EPD, the results should be reported within the time frame assigned by EPD); and
9. Log a record on the complaint, investigation, the subsequent actions and the results in the monthly EM&A reports.

10.3.2 The ET Leader shall immediately notify the ER, IEC, Contractor and EPD of any complaints received and keep him well informed of the actions being taken to settle these complaints.

10.3.3 During the complaint investigation work, the Contractor and ER shall co-operate with the ET Leader in providing all the necessary information and assistance for completion of the investigation. If mitigation measures are identified to be required in the investigation in consultation with the IEC, the Contractor shall promptly carry out the measures. The ER shall ensure that the Contractor has implemented the mitigation measures.

10.4 Documentation

10.4.1 All documentation is required to be filed in a traceable and systematically manner and ready for inspection upon request. All EM&A results and findings shall be documented in the EM&A report prepared by the ET and endorsed by IEC prior to circulation to the Contractor, ER and EPD.

Figure 10.1 Flow Chart of Preliminary Site Inspection, Deficiency and Action Reporting System

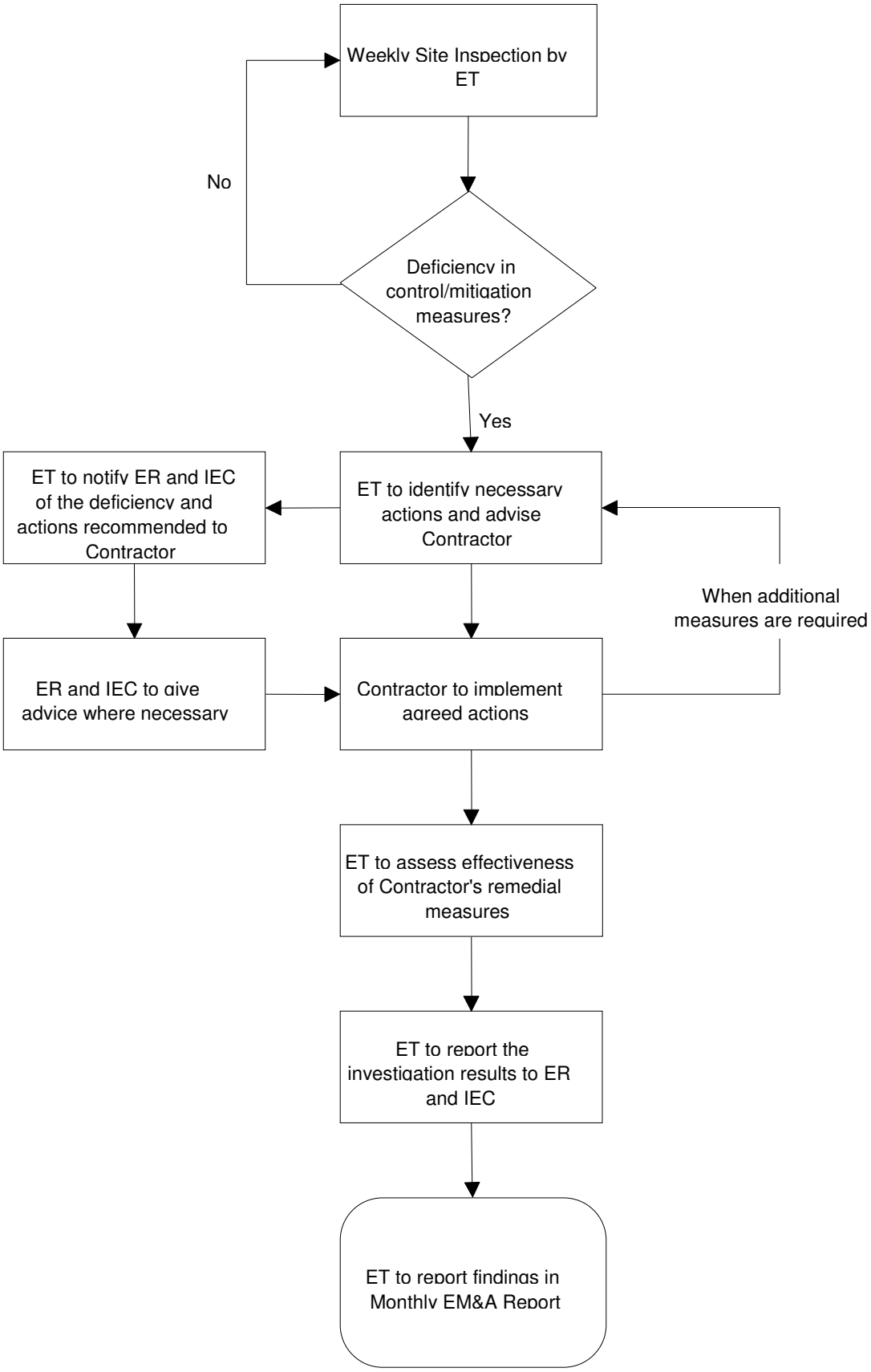
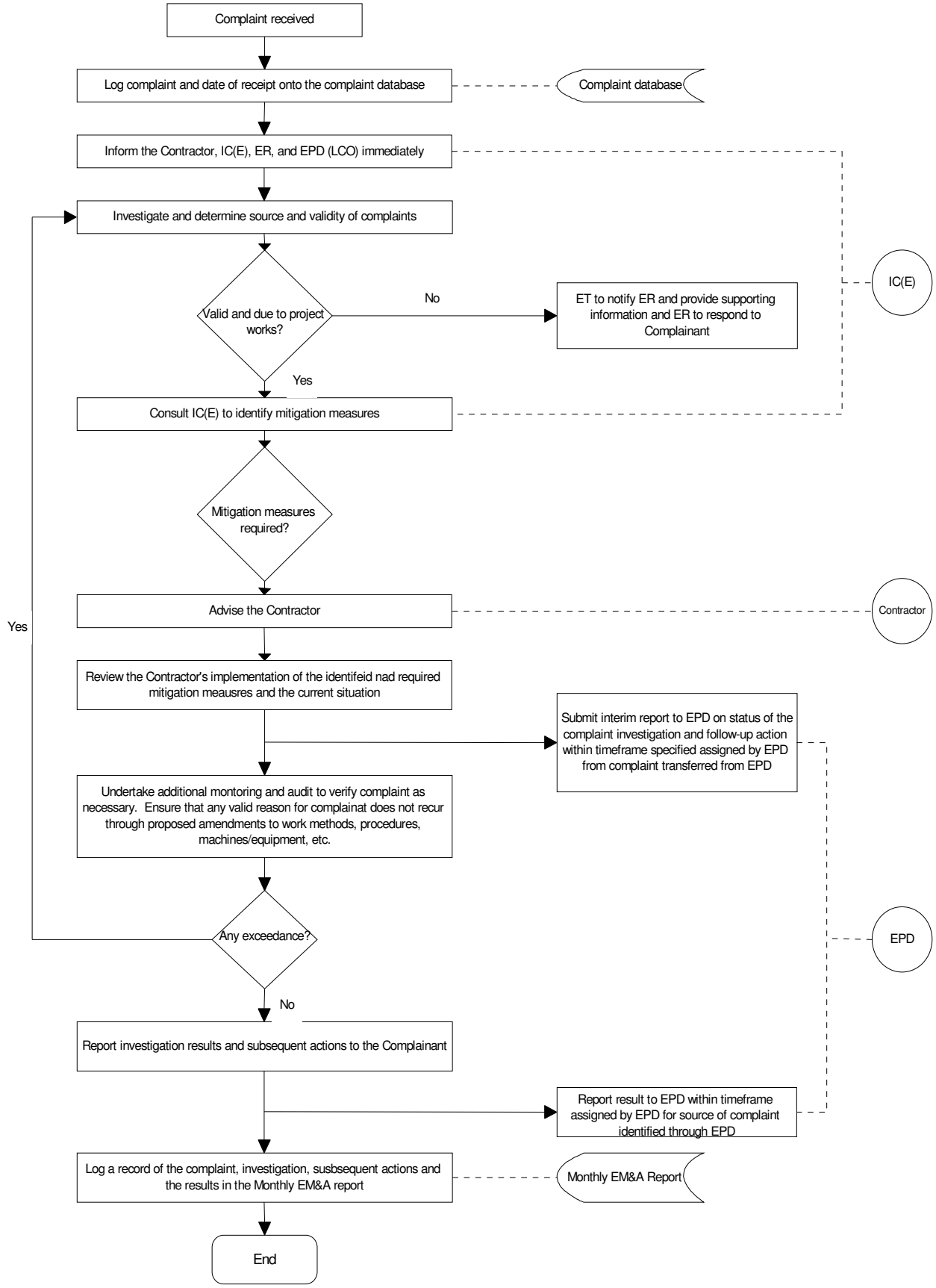


Figure 10.2 Flow Chart of Complaint Investigation Procedures



11. REPORTING

11.1 General

11.1.1 The following reporting requirements are based upon a paper-documented approach. However, the same information shall be provided in an electronic medium upon agreeing the format with the ER and EPD. All the monitoring data (baseline and impact) shall also be submitted in an agreed electronic format in accordance with the requirements under Annex 21 of the EIAO TM. This would enable a transition from a paper/historic and reactive approach to an electronic/real time proactive approach.

11.2 Baseline Monitoring Report

11.2.1 As mentioned in Section 4.5, baseline monitoring for construction noise is necessary. The ET Leader shall prepare and submit a Baseline Environmental (Noise) Monitoring Report within 10 working days (Mondays to Fridays except public holidays) of completion of the baseline monitoring.

11.2.2 Copies of the Baseline Environmental (Noise) Monitoring Report shall be submitted to each of the 4 parties: ER, Contractor, IEC and EPD. The ET Leader shall liaise with the relevant parties on the exact number of copies needed. The format and content of the report, and the representation of the baseline monitoring data shall be in a format agreeable to EPD and include, but not necessarily limited to:

1. Up to a half-page executive summary;
2. Brief project background information;
3. Drawings showing locations of the baseline monitoring stations;
4. An updated programme on construction of the project with milestones of environmental protection/mitigation activities annotated;
5. Monitoring results (in both hard and soft copies) together with the following information:
    - Monitoring methodology;
    - Types of equipment used and calibration details;
    - Parameters monitored;
    - Monitoring locations;
    - Monitoring date, time, frequency and duration; and
    - QA/QC results and detection limits.
6. Details of influencing factors, including:
    - Major activities, if any, being carried out on the site during the period;
    - Weather conditions during the period; and
    - Other factors which might affect the results.

7. Determination of the Action/ Limit levels for each monitoring parameter and statistical analysis of the baseline data, the analysis shall conclude if there is any significant difference between control and impact actions for the parameters monitored;
8. Revisions for inclusion in the EM&A Manual; and
9. Comments and conclusions.

11.3 Monthly EM&A Report

11.3.1 The results and findings of all EM&A work required in this Manual shall be presented in a monthly EM&A report prepared and certified by the ET Leader and verified by the IEC before submitting to EPD.

11.3.2 Generally, each EM&A monthly report shall be submitted within 2 weeks of the end of each reporting month. The first report is due in the month after the establishment phase commences. Generally, in additional to the copies to EPD, 3 more copies of each monthly EM&A report shall be submitted to the ER, the IEC and the Contractor. Before submission of the first EM&A report, the ET Leader shall liaise with the parties on the exact number of copies and format of the monthly reports for both hard and soft copy.

11.3.3 The ET Leader shall review the number and location of monitoring stations and parameters to be monitored every 6 months or on a needed basis in order to cater for the changes in surrounding environment and nature of works in progress.

11.4 First Monthly EM&A Report

11.4.1 The first monthly EM&A report shall include at least the following, where applicable:

1. Executive Summary (1-2 pages);
    - Breaches of Action/ Limit levels;
    - Complaint Log;
    - Notifications of any summons and successful prosecutions;
    - Reporting Changes; and
    - Future key issues.
2. Basic Project Information
    - Project organisation including key personnel contact names and telephone numbers;
    - Programme with fine tuning of activities showing the inter-relationship with environmental protection/mitigation measures for the month;
    - Management structure; and
    - Work undertaken during the month.
3. Environmental Status
    - Works undertaken during the month with illustrations (such as location of works, etc.); and

- Drawings showing the project area, any environmental sensitive receivers and the locations of the monitoring and control stations, if relevant.

4. Summary of EM&A requirements including:
    - All monitoring parameters;
    - Environmental quality performance limits (Action/ Limit levels);
    - Event/Action Plans;
    - Environmental mitigation measures, as recommended in the project EIA study final report;
    - Environmental requirements in contract documents;
5. Implementation Status
    - Advice on the implementation status of environmental protection and pollution control/ mitigation measures as recommended in the project EIA report, summarised in the updated implementation schedule.
6. Monitoring Results (in both hard and soft copies) together with the following information
    - Monitoring methodology;
    - Types of equipment used and calibration details;
    - Parameters monitored;
    - Monitoring locations;
    - Monitoring date, time, frequency, and duration;
    - Weather conditions during the period;
    - Graphical plots of the monitored parameters in the month annotated against;
        - Major activities being carried out on site during the period;
        - Weather conditions that may affect the results; and
        - Any other factors which might affect the monitoring results;
    - QA/QC results and detection limits;
    - Waste generation and disposal records;
    - All monitoring results should be tabulated with exceedances highlighted for ease of reference; and
    - Compare/contrast and assess the EM&A data with the EIA predictions and provide discussion for any discrepancies.
7. Report on Non-compliance, Complaints, Notifications of Summons and Successful Prosecutions
    - Compliance status with the EP under the EIAO and any EP submissions;
    - Record of all non-compliance (exceedances) of the environmental quality performance limits (Action/ 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 legislation, including locations and nature of the breaches, investigation, follow-up actions taken, result and summary;
- Review of the reasons for and the implications of non-compliance, complaints, summons and prosecutions including review of pollution sources and working procedures; and
- Description of the actions taken in the event of non-compliance and deficiency reporting and any follow-up procedures related to earlier non-compliance.

8. Comments, Recommendations and Conclusions
    - An account of the future key issues reviewed from the works programme and work method statements;
    - Advice on the solid and liquid waste management status; and
    - Submission of implementation status proforma, proactive environmental protection proforma, regulatory compliance proforma, site inspection proforma, data recovery schedule and complaint log summarising the EM&A of the period.

11.5 Subsequent Monthly EM&A Report

11.5.1 The subsequent monthly EM&A reports shall including the following:

1. Executive Summary (1-2 pages)
    - Breaches of Action/ Limit levels;
    - Complaint log;
    - Notifications of any summons and successful prosecutions;
    - Reporting changes;
    - Future key issues.
2. Environmental Status
    - Programme with fine tuning of activities showing the inter-relationship with environmental protection/mitigation measures for the month;
    - Work undertaken during the month with illustrations included (such as location of works, daily, dredging/filling rates, etc); and
    - Drawings showing the project area, any environmental sensitive receivers and the locations of the monitoring and control stations.
3. Monitoring Results to provide monitoring results (in both hard and electronic copies) together with the following information.
    - Monitoring methodology;
    - Types of equipment used and calibration details;
    - Parameters monitored;
    - Monitoring locations;
    - Monitoring date, time, frequency, and duration;

- Weather conditions during the period;
- Graphical plots of the monitored parameters in the month annotated against;
    - Major activities being carried out on site during the period;
    - Weather conditions that may affect the results; and
    - Any other factors which might affect the monitoring results;
- QA/QC results and detection limits;
- Waste generation and disposal records;
- All monitoring results should be tabulated with exceedances highlighted for ease of reference; and
- Compare/contrast and assess the EM&A data with the EIA predictions and provide discussion for any discrepancies.

4. Implementation Status
    - Advice on the implementation status of environmental protection and pollution control/mitigation measures as recommended in the project EIA study report, summarised in the updated implementation schedule.
5. Report on Non-compliance, Complaints, Notifications of Summons and Successful Prosecutions
    - Record of all non-compliance (exceedances) of the environmental quality performance limits (Action/ 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 legislation, including locations and nature of the breaches, investigation, follow-up actions taken, result and summary;
    - Review of the reasons for and the implications of non-compliance, complaints, summons and prosecutions including review of pollution sources and working procedures; and
    - 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.
6. Comments, Recommendations and Conclusions
    - An account of the future key issues reviewed from the works programme and work method statements;
    - Advice on the solid and liquid waste management status; and
    - Submission of implementation status proforma, proactive environmental protection proforma, regulatory compliance proforma, site inspection proforma, data recovery schedule and complaint log summarising the EM&A of the period.
7. Appendix
    - Action/ Limit Levels;

- Graphical plots of trends of monitored parameters at key stations over the past four reporting periods for representative monitoring stations annotated against the following:
    - Major activities being carried out on Site during the periods;
    - Weather conditions during the period; and
    - 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; and
- Outstanding issues and deficiencies.

11.6 Final EM&A Summary Report

11.6.1 Timing for completion of the EM&A Programme shall be confirmed by ER in liaison with the IEC. Impact monitoring shall continue until the completion of all construction works as approved by the ER.

11.6.2 The final EM&A summary report shall include the following:

1. An executive summary;
2. 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 phase, including baseline phase activities, of the works;
3. A brief summary of EM&A requirements including:
    - Monitoring parameters;
    - Environmental quality performance limits (Action/ Limit levels); and
    - Environmental mitigation measures, as recommended in the project EIA study final report.
4. Advice on the implementation status of environmental protection and pollution control/ mitigation measures, as recommended in the project EIA study report, summarised in the updated implementation status proformas, including waste generation and disposal records;
5. Drawings showing the project area, any environmental sensitive receivers and the locations of the monitoring and control stations;
6. Compliance status with the EP under the EIAO and any EP submissions;
7. Graphical plots of the trends of monitored parameters over the period of construction (of the project) for representative monitoring stations annotated against;
    - The major activities being carried out on site during the period;
    - Weather conditions during the period;
    - Any other factors which might affect the monitoring results; and
    - The return of ambient environmental conditions in comparison with baseline data.
8. Compare/contrast and assess the EM&A data with the EIA predictions and provide

discussion for any discrepancies;

9. Provide clear-cut decisions on the environmental acceptability of the project with reference to the specific impact hypothesis;
10. Advice on the solid and liquid waste management status;
11. Comments, Recommendations and Conclusions
    - A summary of non-compliance (exceedances) of the environmental quality performance limits (Action/ Limit levels);
    - A brief review of the reasons for and the implications of non-compliance including review of pollution sources and working procedures;
    - A summary description of the actions taken in the event of non-compliance and any follow-up procedures related to earlier non-compliance;
    - A summary record of all complaints received (written or verbal) for each media, liaison and consultation undertaken, actions and follow-up procedures taken;
    - Review the monitoring methodology adopted and with the benefit of hindsight, comment on its effectiveness (including cost effectiveness);
    - A summary record of all notification of summons and successful prosecutions for breaches of the current environmental protection/pollution control legislation, locations and nature of the breaches, investigation, follow-up actions taken and results;
    - Review the practicality and effectiveness of the EIA process and EM&A programme (e.g. effectiveness and efficiency of the mitigation measures);
    - Recommend any improvement in the EM&A programme.

11.7 Typical Forms to be Adopted

11.7.1 To facilitate the management of the EM&A programme for the construction of the project, the record forms presented in **Appendix D** (including those presented in the preceding sections) shall be adopted where applicable during the construction phase of the project. These forms are listed as follows:

1. Implementation Status Performa;
2. Data Recovery Schedule;
3. Site Inspection Corrective Action Proforma;
4. Proactive Environmental Protection Proforma;
5. Regulatory Compliance Proforma;
6. Complaint Log;

11.8 Data Keeping

11.8.1 The site document such as the monitoring field records, site inspection forms, etc. are not required to be included in the monthly EM&A reports, for submission. However, the document shall be well kept by the ET and be ready for inspection upon request. All relevant information shall be clearly and systematically recorded in the document. The monitoring data shall also be recorded in electronic form, and the software copy can be

available upon request. All the documents and data shall be kept for at least one year after completion in construction of the project.

11.9 Electronic Reporting of EM&A Information

11.9.1 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 relevant condition of the EP.

11.9.2 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.

11.9.3 The ET shall pass all environmental monitoring data and results described in relevant conditions of the EP to the ER 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.

11.9.4 All these environmental monitoring data and results described in relevant conditions of the EP shall be made available to the public via a dedicated web site to be set up by the ER.

11.9.5 The internet website described above will enable user-friendly public access to the monitoring data and project data including the EIA and the EP of the project. The internet website shall have features capable of: -

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

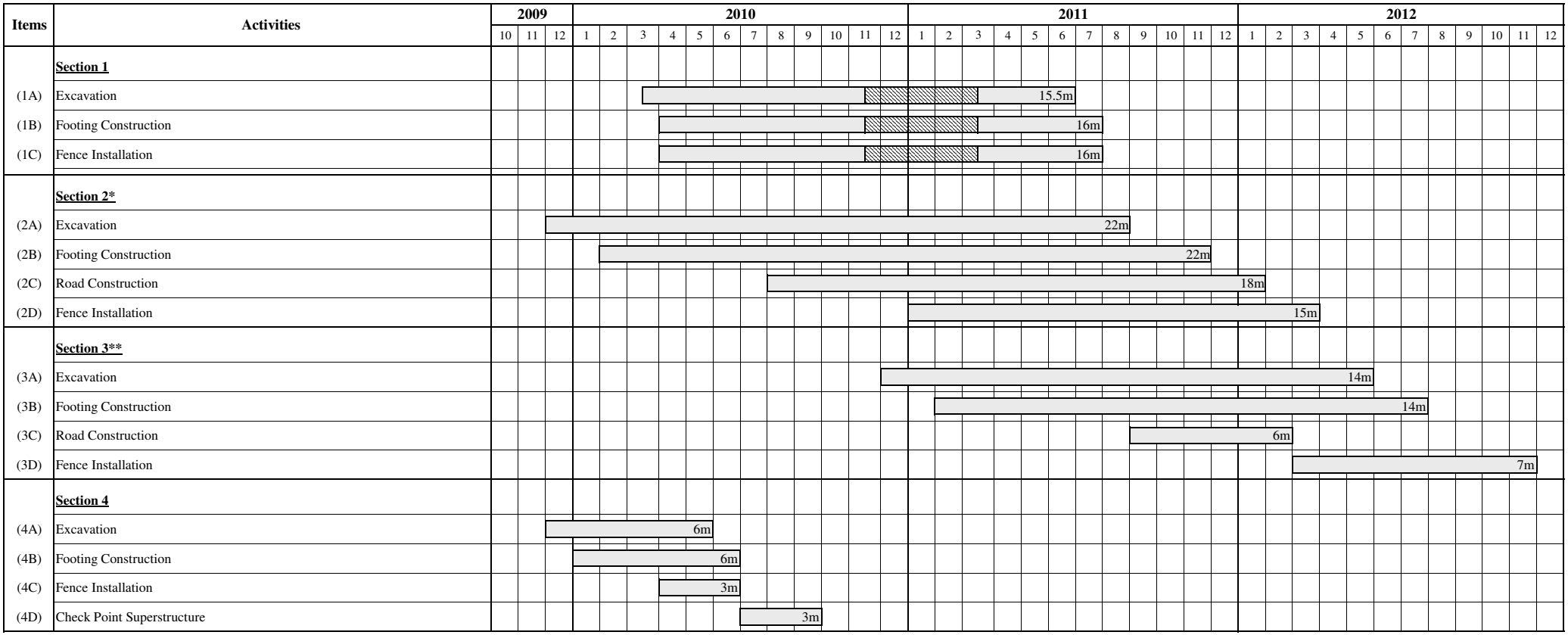
11.10 Interim Notifications of Environmental Quality Limit Exceedances

11.10.1 With reference to Event/Action Plans in previous sections, when the environmental quality limits are exceeded, the ET shall immediately notify the IEC, ER and EPD, as appropriate. The notification shall be followed up with advice to EPD on the results of the investigation, proposed actions and success of the actions taken, with any necessary follow-up proposals. A sample template for the interim notifications is shown in **Appendix E**.

Appendix A
Tentative Construction Programme

Appendix A Tentative Construction Programme

Construction of a Secondary Boundary Fence and New Sections of Primary Boundary Fence and Boundary Patrol Road (Sections 1-4)



Remarks:

Construction works are restricted. Please refer to Sections 6.6.46 and 6.10.4 for details.

* The completion date would be subject to the schedule of the advance river training works for Liantang/Heung Yuen Wai Boundary Control Point as described in Section 1.8.4.

** The construction programme of Section 3 excludes the works at the interface section with Liantang/Heung Yuen Wai Boundary Control Point (BCP) as described in Sections 1.8.2 and 1.8.3, the completion date of which would be subject to the schedule of the advance river training works for the BCP and the BCP construction works.

Appendix B
Environmental Mitigation Implementation Schedule

Appendix B Project Implementation Schedule

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?
Air Quality							
During Construction							
2.5.2	3.2.2	The following good site practice should be implemented: • any excavated dusty materials or stockpile of dusty materials should be covered entirely by impervious sheeting or sprayed with water so as to maintain the entire surface wet, and recovered or backfilled or reinstated within 24 hours of the excavation or unloading; • the working area of excavation should be sprayed with water immediately before, during and immediately after the operations so as to maintain the entire surface wet; • dusty materials carried by vehicle leaving a construction site should be covered entirely by clean impervious sheeting; • the area where vehicle washing takes place and the section of the road between the washing facilities and the exit point should paved with concrete, bituminous materials or hardcores; • the portion of road leading only to a construction site that is within 30m of designated vehicle entrance or exit should be kept clear of dusty materials; • all dusty materials should be sprayed with water prior to any loading, unloading or transfer; • vehicle speed should be limited to 10kph except on completed access roads; • every vehicle should be washed to remove any dusty materials from its body and wheels before leaving the construction sites.	To minimize construction dust impact	Contractor	Construction Work Sites	During Construction	EIAO-TM, Air Pollution Control (Construction Dust) Regulation
Noise							
During Construction							
3.8.14	4.8.1	The following good site practical should be implemented: • The Contractor shall adopt the Code of Practice on Good Management Practice to Prevent Violation of the Noise Control Ordinance (Chapter 400) (for Construction Industry) published by EPD;	To mitigate construction noise impact	Contractor	Construction Work Sites	During Construction	EIAO-TM, NCO

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?
		• The Contractor shall observe and comply with the statutory and non-statutory requirements and guidelines; • Before commencing any work, the Contractor shall submit to the Engineer Representative for approval the method of working, equipment and noise mitigation measures intended to be used at the site; • The Contractor shall devise and execute working methods to minimise the noise impact on the surrounding sensitive uses, and provide experienced personnel with suitable training to ensure that those methods are implemented; • Noisy equipment and noisy activities should be located as far away from the NSRs as is practical; • Unused equipment should be turned off. PME should be kept to a minimum and the parallel use of noisy equipment / machinery should be avoided; • Regular maintenance of all plant and equipment; • Material stockpiles and other structures should be effectively utilised as noise barriers, where practicable.					
3.8.1 -3.8.3	4.8.2 - 4.8.3	Other than good site practice, the Contractor is required to adopt Levels 1 and 2 site-specific direct mitigation measures as specified below during the construction phase. With construction / demolition work undertaken at a distance of 60m or less to the NSRs, below mitigation measures should be included: **Level 1 – Use of Quiet Plant and Movable Noise Barrier** • The Contractor shall obtain particular models of plant that are quieter than standards given in GW-TM. • Purpose-built movable noise barriers should be used to mitigate construction noise directly at sources that are not usually mobile provide that the direct line of sight to the source is blocked.	To mitigate construction noise impact	Contractor	Construction work sites, **Figure 4.9** shows the typical section of movable noise barrier	During construction	EIAO-TM, NCO

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?
3.8.9	4.8.4	In addition to the use of quiet plant and movable noise barrier, alternative demolition method of existing boundary fence at Section 2-3 shall be used where demolition works would be undertaken at a distance of 12m or less to the NSRs. These particular mitigation measures should be included: **Level 2 – Alternative Demolition Method of Existing Boundary Fence** • The use of welder is recommended to replace the use of hand-held driller; • The use of hand-held breaker with movable noise barrier is recommended to replace the use of mini-robot mounted breaker; and the duration for the use of hand-held breaker is minimal as only the surface level of the footing to be broken; and • The removal of the footing of the existing boundary fence should be carried by concrete crusher mini-robot mounted after the surface level broken by hand-held breaker.	To mitigate construction noise impact for demolition of existing boundary fence	Contractor	Construction work sites (Section 2 - 3)	Before the commencement of demolition works	EIAO-TM, NCO
Water Quality							
During Construction							
4.7.1	5.3.1	Good site practices in addition to the implementation of mitigation measures would minimize the impact to the surrounding environment. *General Prevention and Precaution Measures* • The site should be confined to avoid silt runoff to the site. • No discharge of silty water into the storm drain and drainage channel within and the vicinity of the site. • Any soil contaminated with chemicals/oils shall be removed from site and the void created shall be filled with suitable materials. • Stockpiles to be covered by tarpaulin to avoid spreading of materials during rainstorms; • Suitable containers shall be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport; • Chemical waste containers shall be labelled with appropriate warning signs in English and Chinese to avoid accidents. there shall also be clear instructions showing what action to take in the event of an accidental;	To avoid site runoff and chemical leakage	Contractor	Construction work sites	During construction	Practice Note for Professional Persons with regard to site drainage (ProPECC PN 1/94) and TM standard under the WPCO

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?
		• Storage areas shall be selected at safe locations on site and adequate space shall be allocated to the storage area; • Any construction plant which causes pollution to the water system due to leakage of oil or fuel shall be removed off-site immediately; • Spillage or leakage of chemical waste to be controlled by using suitable absorbent materials; • Chemicals will always be stored on drip trays or in bunded areas where the volume is 110% of the stored volume; • Regular clearance of domestic waste generated in the temporary sanitary facilities to avoid waste water spillage. • Temporary sanitary facilities to be provided for on-site workers during construction.					
4.7.2 – 4.7.3	5.3.2-5.3.3	**Concreting Work** A temporary drainage channel and associated facilities should be provided to collect the runoff generated and prevent concrete-contaminated water from entering watercourses. Adjustment of pH can be achieved by adding a suitable neutralising reagent to wastewater prior to discharge. The concreting works should be temporarily isolated with proper methods, such as by placing of sandbags or silt curtains with lead edge at bottom and properly supported props.	To collect runoff generated and prevent concrete-contaminated water from entering watercourses To prevent adverse impacts on the water quality of Lin Ma Hang Stream SSSI	Contractor	Construction work sites Work sites of Section 3 in the proximity of Lin Ma Hang Stream SSSI	During construction	Practice Note for Professional Persons with regard to site drainage (ProPECC PN 1/94) and TM standard under the WPCO CEDD General Specification- Protection of natural streams/rivers- Clause 25.09
4.7.4	5.3.4	**Soil Excavation and Stockpiling** Excavated soil which needs to be temporarily stockpiled should be stored in a specially designated area and provided with a tarpaulin cover to avoid runoff into the drainage channels.	To avoid site runoff	Contractor	Construction work Sites	During construction	Practice Note for Professional Persons with regard to site drainage (ProPECC PN 1/94) and TM standard under the WPCO

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?
4.7.5 - 4.7.6	5.3.5- 5.3.6	**Site Depot** All compounds in works areas should be located on areas of hard standing with provision of drainage channels and settlement ponds where necessary to allow interception and controlled release of settled/treated water. Hard standing compounds should drain via an oil interceptor. The oil interceptor should be regularly inspected and cleaned to avoid wash-out of oil during storm conditions. A bypass should be provided to avoid overload of the interceptor's capacity. Any contractor generating waste oil or other chemicals as a result of his activities should register as a chemical waste producer. Disposal of the waste oil should be done by a licensed collector. Good housekeeping practices should be implemented to minimise careless spillage and to keep the storage and the work space in a tidy and clean condition. Appropriate training including safety codes and relevant manuals should be given to the personnel who regularly handle the chemicals on site.	To avoid wash-out of oil during storm conditions	Contractor	Construction work Sites	During construction	Practice Note for Professional Persons with regard to site drainage (ProPECC PN 1/94) and TM standard under the WPCO
4.7.7	5.3.7	**Construction of Checkpoint** Sewage system should be constructed to divert domestic sewage, which will be generated from the sanitary facilities provided in the new checkpoint at Shek Chung Au, to public sewer connected to government sewage treatment facilities.	To avoid disposal of domestic sewage into watercourses.	Contractor	Construction work Site at Checkpoint	During construction	N/A
Waste Management							
During Construction							
5.6.7	6.3.6	**Site Clearance** The topsoil and vegetation removed and excavated material may have to be temporarily stockpiled on-site. Control measures should be taken at the stockpiling area to prevent the generation of dust and pollution of stormwater channels, fish ponds or river channels. However, to eliminate the risk of blocking drains in the wet season, it is recommended that stockpiling of excavated materials during the wet season should be avoided as far as practicable.	Prevent the generation of dust and pollution of storm water channels	Contractor	Construction work sites	During construction	Waste Disposal Ordinance (Cap.354); ETWBTC No. 15/2003, Waste Management on Construction Site

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?
5.6.10 – 5.6.12	6.3.8	**Construction and Demolition Materials** Careful design, planning and good site management can minimize over-ordering and generation of waste materials such as concrete mortars and cement grouts. The design of formwork should maximize the use of standard wooden panels so to achieve high reuse levels. Alternatives such as steel formwork or plastic facing should be considered to increase the potential for reuse. The Contractor should recycle as much of the C&D materials as possible on-site. Proper segregation of waste on-site will increase the feasibility of certain components of the waste stream by the recycling contractors. Different areas of the worksite shall be designated for such segregation and storage wherever site conditions permit. Trip-ticket system should be employed to monitor the disposal of C&D material and solid at public filling facilities and landfills, and to control fly-tipping. Government has established a differentiated charging scheme for the disposal of waste to landfill, construction waste sorting facilities and public fill facilities. This will provide additional incentives to reduce the volume of waste generated and to ensure proper segregation of wastes.	Minimize over-ordering and generation of waste materials	Contractor	Construction work sites	During construction	Waste Disposal Ordinance (Cap.354); ETWBTC No. 15/2003, Waste Management on Construction Site
5.6.13-5.6.14	6.3.9 – 6.3.13	**Chemical Waste** For those processes which generate chemical waste, it may be possible to find alternatives which generate reduced quantities or even no chemical waste, or less dangerous types of chemical waste. Chemical waste that is produced, as defined by Schedule 1 of the Waste Disposal (Chemical Waste) (General) Regulation, should be handed in accordance with the Code of Practice on the Packaging, Handling and Storage of Chemical Waste as follows: Containers used for the storage of chemical wastes should: • be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition, and securely closed: • have a capacity of less than 450 litres unless the specification have been approved by the EPD; and • display a label in English and Chinese in accordance with instructions prescribed in Schedule 2 of the Regulations,	To avoid chemical leakage	Contractor	Construction work sites	During construction planning	Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes, Waste Disposal (Chemical Waste) (General) Regulation

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?
		The storage area for chemical wastes should: • be clearly labelled and used solely for the storage of chemical waste; • be enclosed on at least 3 sides; • have an impermeable floor and bunding, of capacity to accommodate 110% of the volume of the largest container or 20% by volume of the chemical waste stored in that area whichever is the greatest; • have adequate ventilation; • be covered to prevent rainfall entering (water collected within the bund must be tested and disposed as chemical waste if necessary); and • be arranged so that incompatible materials are adequately separated. Disposal of chemical waste should: • be via a licensed waste collector; and • be to a facility licensed to receive chemical waste, such as the Chemical Waste Treatment Facility which also offers a chemical waste collection service and can supply the necessary storage containers, or • to be re-user of the waste, under approval from the EPD.					
5.6.16	6.3.15	**General Refuse** Should be stored in enclosed bins or compaction units separate from C&D and chemical wastes. The Contractor should employ a reputable waste collector to remove general refuse from the site, separate from C&D and chemical wastes, on a regular basis to minimise odour, pest and litter impacts. Burning of refuse on construction sites is prohibited by law.	Minimise odour, pest and litter impacts	Contractor	Construction work sites	During construction	Public Health and Municipal Services Ordinance (Cap. 132)
5.6.18	6.3.16	**Construction Waste Management Plan** A construction waste management plan (CWMP) should be prepared and developed by the contractor to ensure proper collection, treatment and disposal of waste on site. This CWMP will also take into account the requirement to handle chemical wastes on site which will need to be managed by a licensed waste collection contractor.	Waste management during construction	Contractor	Construction work sites	During construction	ETWB TCW No. 19/2005, Waste Management on Construction Sites

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?
Ecology							
Table 6.38	7.2	**Ecological Impacts on Floral Species of Conservation Concern** Erection of protective fencing to protect the plant during construction period	Protect the plant during construction period	Contractor	Construction work sites	During construction	EIAO
Table 6.40	7.2	**Potential Ecological Impacts on Offsite Habitats** Good site practices for controlling the dust and water quality (avoid stockpiles adjacent to wetlands, covering the stockpiles with impervious sheeting, control of vehicle speed, no discharge of silty water to the rivers, streams and drainage channels); Clear definition of works limit to avoid impact on adjacent habitats	To avoid site runoff and dust impact	Contractor	Construction work sites	During construction	EIAO / Air Pollution Control (Construction Dust) Regulation / WPCO
Table 6.39-Table 6.45	7.2	**Disturbance to Wetland-Dependent Birds, Raptors, Terrestrial Birds and Egretry** Good working practices include switching off unused equipment, keep minimum number of powered mechanical equipment in operation at the same period, the use of stockpiles and other structures to form noise barriers where practicable, avoidance of feeding the wildlife to cause disturbance, site confinement and proper cover of stockpiles with impervious sheeting to minimize construction noise, uncontrolled surface runoff and discharge of silts; Avoidance of construction works using Power Mechanical Equipments within the Wetland Conservation Area during bird migratory season (15th November – 15th March); and Restriction of excavation works within a 150m buffer zone from the egretry to ardeid non-breeding season (from August to February).	To minimize disturbance to wildlife	Contractor	Construction work sites	During construction	EIAO / Air Pollution Control (Construction Dust) Regulation / WPCO
Cultural Heritage							
8.7.1 – 8.7.4	8.1.1 - 8.1.4	An archaeological survey should be undertaken at the study areas of Pak Fu Shan and Lin Ma Hang of Section 3 after land resumption and before commencement of construction works	Assess the archaeological impact on the two identified sites of archaeological potential.	Contractor (through professional archaeologist)	The study areas of Pak Fu Shan and Lin Ma Hang of Section 3	After land resumption and before commencement of construction works	Antiquities and Monuments Ordinance / EIAO

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?
8.7.6	8.2.1	Built Heritage Resources Mitigation in the form of buffer zones and safe public access have been proposed for one shrine (BF-HB1) and two graves (BF-G1 and G2) BF-HB1 A buffer zone of a minimum distance of 1 metres should be established between the shrine and any construction works in close proximity. The buffer zone should be marked out by temporary fencing. Safe public access should be provided to the shrine during any construction works in close proximity. BF-G1 and BF-G2 A buffer zone of a minimum distance of 1 metres should be established between the graves and any construction works in close proximity. The buffer zone should be marked out by temporary fencing. Safe public access should be provided to the graves during any construction works in close proximity.	Avoid impacts to built heritage resources	Contractor	The works that are located in the vicinity of built heritage resources (BF-HB1 and BF-G1 and G2)	During Construction	EIAO
Landscape and Visual							
		Preservation of Existing Vegetation					
Table 7-13 CP1	Table 9-1	• To retain trees that have high amenity or ecology value and contribute most to the landscape and visual amenity of the site and its immediate environs.	Preservation of Existing Vegetation	Project Landscape Architect / Contractor	Site	Throughout construction phase	TM-EIA Annex 18, ETWB TCW No. 2/2004 & ETWB TCW No. 3/2006
Table 7-13 CP1	Table 9-1	• Creation of precautionary area around trees to be retained equal to half of the trees canopy diameter. Precautionary area to be fenced.	To ensure the success of the tree preservation proposals.	Project Landscape Architect / Contractor	Site	Before construction phase commences	TM-EIA

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?
Table 7-13 CP1	Table 9-1	• 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 precautionary area.	To ensure the success of the tree preservation proposals.	Project Landscape Architect / Contractor	Site	Throughout construction phase	TM-EIA Annex 18, ETWB TCW No. 2/2004 & ETWB TCW No. 3/2006
Table 7-13 CP1	Table 9-1	• Phased segmental root pruning for trees to be retained and transplanted over a suitable period (determined by species and size) prior to lifting or site formation works which affect the existing rootball of trees identified for retention. The extent of the pruning will be based on the size and the species of the tree in each case.	To ensure the success of the tree preservation proposals.	Project Landscape Architect / Contractor	Site	Throughout construction phase	TM-EIA Annex 18, ETWB TCW No. 2/2004 & ETWB TCW No. 3/2006
Table 7-13 CP1	Table 9-1	• 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.	To ensure the success of the tree preservation proposals.	Project Landscape Architect / Contractor	Site	Throughout construction phase	TM-EIA Annex 18, ETWB TCW No. 2/2004 & ETWB TCW No. 3/2006
Table 7-13 CP1	Table 9-1	• The watering of existing vegetation particularly during periods of excavation when the water table beneath the existing vegetation is lowered.	To ensure the success of the tree preservation proposals.	Project Landscape Architect / Contractor	Site	Throughout construction phase	TM-EIA Annex 18, ETWB TCW No. 2/2004 & ETWB TCW No. 3/2006
Table 7-13 CP1	Table 9-1	• 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	To ensure the success of the tree preservation proposals.	Project Landscape Architect / Contractor	Site	Throughout construction phase	Annex 18, ETWB TCW No. 2/2004 & ETWB TCW No. 3/2006

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?
Table 7-13 CP1	Table 9-1	• 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	To ensure the success of the tree preservation proposals.	Project Landscape Architect / Contractor	Site	Throughout construction phase	TM-EIA Annex 18, ETWB TCW No. 2/2004 & ETWB TCW No. 3/2006
Table 7-13 CP1	Table 9-1	• Detailed landscape and tree preservation proposals will be submitted to the relevant government departments for approval under the lease conditions and in accordance with ETWB TCW No. 2/2004 and WBTC No. 3/2006.	To ensure the tree preservation and planting proposals are integrated with the existing landscape context and that the landscape resources are preserved where appropriate.	Project Landscape Architect / Contractor	Site	Throughout construction phase	TM-EIA Annex 18, ETWB TCW No. 2/2004 & ETWB TCW No. 3/2006
Table 7-13 CP1	Table 9-1	• The tree preservation works should be implemented by approved Landscape Contractors and inspected and approved on site by a qualified Landscape Architect. A tree protection specification would be included within the contract documents.	To ensure the tree preservation and planting proposals are integrated with the existing landscape context and that the landscape resources are preserved where appropriate.	Contractor	Site	Throughout construction phase	TM-EIA Annex 18, ETWB TCW No. 2/2004 & ETWB TCW No. 3/2006
		Preservation of Existing Topsoil					

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?
Table 7-13 CP2	Table 9-1	• Topsoil disturbed during the construction phase should be tested using a standard soil testing methodology and where it is found to be worthy of retention stored for re-use.	To provide a viable growing medium suited to the existing conditions and reduce the need for the importation of top soil.	Contractor	Site	Throughout construction phase	TM-EIA Annex 18
Table 7-13 CP2	Table 9-1	• The soil will be stockpiled to a maximum height of 2m and will be either temporarily vegetated with hydroseeded grass during construction or covered with a waterproof covering to prevent erosion.	To provide a viable growing medium suited to the existing conditions and reduce the need for the importation of top soil.	Contractor	Site	Throughout construction phase	TM-EIA Annex 18
Table 7-13 CP2	Table 9-1	• The stockpile should be turned over on a regular basis to avoid acidification and the degradation of the organic material, and reused after completion. Alternatively, if this is not practicable, it should be considered for use elsewhere, including other projects.	To provide a viable growing medium suited to the existing conditions and reduce the need for the importation of top soil.	Contractor	Site	Throughout construction phase	TM-EIA Annex 18
		Permanent and Temporary Works Areas					
Table 7-13 CP3	Table 9-1	• Where appropriate to the final design the landscape of these works areas should be restored following the completion of the construction phase.	To minimise the disturbance to existing landscape resources and change of visual amenity.	Contractor	Site	Through out construction phase	TM-EIA Annex 18

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?
Table 7-13 CP3	Table 9-1	• Construction site controls should be enforced including the storage of materials, the location and appearance of site accommodation and the careful design of site lighting to prevent light spillage.	To minimise the disturbance to existing landscape resources and change of visual amenity.	Contractor	Site	Through out construction phase	TM-EIA Annex 18
		Mitigation Planting					
Table 7-13 CP4	Table 9-1	• Replanting of disturbed vegetation should be undertaken at the earliest possible stage of the construction phase	To minimise the disturbance to existing landscape resources and change of visual amenity.	Contractor	Site	Through out construction phase	TM-EIA Annex 18
Table 7-13 CP4	Table 9-1	• Use of native plant species predominantly in the planting design for the buffer areas.	To minimise the disturbance to existing landscape resources and change of visual amenity.	Contractor	Site	Through out construction phase	TM-EIA Annex 18
Table 7-13 CP4	Table 9-1	• The tree planting works should be implemented by approved Landscape Contractors and inspected and approved on site by a qualified Landscape Architect. A tree planting specification would be included within the contract documents.	To minimise the disturbance to existing landscape resources and change of visual amenity.	Contractor	Site	Through out construction phase	TM-EIA Annex 18
		Transplantation of Existing Trees					
Table 7-13 CP5	Table 9-1	• The tree transplanting 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.	To minimise the disturbance to existing landscape resources and minimize the impacts on the visual amenity of the area.	Contractor	Site	Prior to the commencement of the proposed works	TM-EIA Annex 18, ETWB TCW No. 2/2004 & ETWB TCW No. 3/2006

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?
		Design of the Fence and associated Structures					
Table 7-14 OP1	Table 9-2	• Design of Boundary Fence, Boundary Patrol Road and Police Check Point – These structural elements will be designed in accordance with security requirement from Police Force and incorporate design features as part of design mitigation measures including:	Responsive design to integrate the proposals into their landscape and visual context.	ArchSD	Site	Throughout design phase	TM-EIA Annex 18 and BD
		1. Integrated design approach – the boundary fence should integrated, as far as technically feasible, with existing built structures such as existing road, footpath and track and embankment of fishponds, river and drainage channel as part of design mitigation measures to reduce the potential cumulative impact of the proposed works. The location and orientation of the police check points should be away from landscape and visually sensitive areas such wetland, fishpond and agricultural field.					
		2. Building massing - the proposed use of simple responsive design for the built structures with a low building height profile to reduce the potential visual mass of the structure within a rural context.					
		3. Treatment of built structures - the architectural design should seek to reduce the apparent visual mass of the facilities further through the use of natural materials such as wooden frame, vertical greening or other sustainable materials such as recycled plastic.					
		4. Responsive building and fence finishes - In terms of the proposed finishes natural tones should be considered for the colour palette with non-reflective finishes are recommended to reduce glare effect. The use of colour blocking on the proposed fence could be used to break up the visual mass of the structure.					

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?
		5. Responsive lighting design – Aesthetic design of architectural and track lighting with following glare design measures: ▪ Directional and full cut off lighting is recommended particularly for areas adjacent to existing village to minimise light spillage. ▪ Minimise geographical spread of lighting, only applied for safety and security reasons; ▪ Limited lighting intensity to meet the minimum safety and operation requirement; and ▪ High-pressure sodium road lighting is recommended for more stringent light control reducing spillage and thus visual impacts.					
		Compensatory Planting Proposals					
Table 7-14 OP2	Table 9-2	• Utilise native to Hong Kong will be utilized within the buffer planting areas.	Planting will serve to visually integrate the proposals within the existing landscape framework.	Contractor	Site	Throughout design phase	TM-EIA Annex 18, HKPSG and BD
Table 7-14 OP 2 / 3	Table 9-2	• 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.	Provide a linkage with the existing wooded areas creating a more coherent landscape framework whilst also improving the ecological connectivity between existing and proposed woodland habitats.	Contractor	Site	Throughout design phase	TM-EIA Annex 18, HKPSG and BD

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?
Table 7-14 OP 2	Table 9-2	Tree and Shrub Planting – Given the rural nature of the proposed alignment it is recommended that the where possible tree and shrub species which are native to Hong Kong be used. In addition where possible the planting of new trees and shrubs will aim to link together existing woodland areas and small tree groups to improve the connectivity between habitats and create more coherent landscape framework. The planting of small groups of trees along the alignment of the proposed fence will serve to de-emphasise the horizontality of the fence structure and provide for better sense of visual integration with the landscape context. Where practicable vertical greening measures should also be considered on engineering structures.	The planting proposal seeks to compensate for the predicted tree loss.	Contractor	Site	Throughout design phase	TM-EIA Annex 18, HKPSG and BD

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?
Table 7-14 OP 3	Table 9-2	Compensatory Planting Proposals – Given the works extent is largely limited along existing roadside embankment to minimise impact to existing village settlements and valuable landscape resources such as wetland, fishpond, stream course and existing trees, and considered the importance of tree retention within the works area, new tree planting will concentrate in selected new amenity areas along the alignment, infilling between retained and transplanted trees. The preliminary planting proposals for the proposed works include the planting of some 357 new trees utilising a combination of mature to light standard sized stock (i.e. approximately 15% of mature trees, 75% of standard trees, and 10% light standard trees). These trees will be planted in woodland clumps and small tree groups at strategic locations to de-emphasise the horizontality of the fence alignment. Based on preliminary findings the proposed planting will result in a compensatory planting ratio of 1:1 (new planting: trees recommended for felling). This compares favourably with the report's assertion that some 357 trees would be felled due to the proposed works. With the proposed preservation of existing trees, transplantation of trees in conflict with the proposals and the planting of new trees the project area will contain approximately 2000 trees. Trees forming part of the new planting will provide screening to neighbourhood villagers and will utilise species native to Hong Kong. These proposals will be subject to review at detailed design stage of the project.	The planting proposal seeks to compensate for the predicted tree loss.	Contractor	Site	Throughout design phase	TM-EIA Annex 18, HKPSG and BD

Appendix C
Sample Environmental Monitoring Data Recording Sheet

Noise Monitoring Field Record Sheet

Monitoring Location							
Details of Location							
Date of Monitoring							
Measurement Start Time (hh:mm)							
Measurement Time Length (min.)							
Weather Conditions	Fine / Sunny / Cloudy / Rainy						
Wind Speed (m/s)							
Noise Meter Model/Identification							
Calibrator Model/Identification							
Calibration Before Measurement (dB(A))							
Calibration After Measurement (dB(A))							
Measurement Result	5min	5min	5min	5min	5min	5min	30min
L_{90} (dB(A))							
L_{10} (dB(A))							
L_{eq} (dB(A))							
Major Construction Noise Source(s) During Monitoring							
Other Noise Source(s) During Monitoring							
Remarks							

Name & Designation	Signature	Date
Record by:		
_____	_____	_____
Checked by:		
_____	_____	_____

Appendix D
Typical Proforma for EM&A

IMPLEMENTATION STATUS PROFORMA

Ref:_____

Ref**	Environmental Protection Measures*	Implementation Status

* *All recommendations and requirements resulted during the Course of EIA/EA Process, including ACE and /or accepted public comment to the proposed project*

** *EIA Ref/EM&A Log Ref/Design Document Ref*

Signed by Environmental Team Leader: _____ Date: _____

Audited by Independent Checker (Environment): _____ Date: _____

DATA RECOVERY SCHEDULE

Ref:_____

Date	Air Quality Monitoring					Noise Monitoring					Water Quality Monitoring				
	Monitoring Station*					Monitoring Location*					Monitoring Location*				
	A1	A2	A3	A4	A5	N1	N2	N3	N4	N5	W1	W2	W3	W4	W5
1															
2															
3															
4															
5															
6															
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26															
27															
28															
29															
30															
31															
% of R															

* *Remark type of parameters*
% of R *The percentage of Data Recovery is the actual monitoring over the scheduled monitoring*

Signed by Environmental Team Leader: _____ Date: _____

Copy to Independent Checker (Environment)

SITE INSPECTION PROFORMA Ref:_____

Date	Location	Req't Ref.*	Observation/Deficiency	Mitigation Action** (Responsible Agency)	Date*** of Confirmation

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

This Proforma is an Environmental Protection Instruction for: _____ on _____

Signed by Environmental Team Leader: _____ Date: _____

Copy to Independent Checker (Environment)

PROACTIVE ENVIRONMENTAL PROTECTION PROFORMA Ref:_____

Ref*	Proposed Construction Method**	Location/ Working Period	Anticipated Impacts	Recommended Mitigation Measures

* *EIA Ref/EM&A Log Ref/Design Document Ref*
** *Details of equipment, vehicles, plants, processes, technologies for the option of construction method*

Reviewed by Environmental Team Leader: _____ Date: _____

Approved by Independent Checker (Environment): _____ Date: _____

REGULATORY COMPLIANCE PROFORMA Ref:_____

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

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

Recorded by Environmental Team Leader: _____ Date: _____

Signed by Independent Checker (Environment): _____ Date: _____

COMPLAINT LOG

Ref:_____

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

Filed by Environmental Team Leader: _____ Date: _____

Appendix E

Sample Interim Notification of Environmental Quality Limit Exceedances

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: