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ENVIRONMENTAL MONITORING AND AUDIT (EM&A) MANUAL

FOR

CONSTRUCTION OF ANNEX BLOCK AT HONG KONG OBSERVATORY HEADQUARTERS, TSIM SHA TSUI

Prepared by

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COMMERCIAL-IN-CONFIDENCE

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1.1 PROJECT BACKGROUND

1.1.1 The Project is for construction of a new Annex Block, and refurbishment of the existing Red House at Hong Kong Observatory (HKO) Headquarters in Tsim Sha Tsui to (i) meet the existing shortfall in office space and functional areas for operation needs of the HKO; (ii) provide space for developing HKO's essential operation and services; and (iii) provide space for organizing public education and outreach activities relating the HKO's work.

1.1.2 The Project is planned to construct on a piece of land located at the southern side of HKO Headquarters which is a Declared Monument under the *Antiquities and Monuments Ordinance (Cap.53)* at 134A Nathan Road, Tsim Sha Tsui. The site location of the Project is shown in ***Figure 1.1***.

1.1.3 The Project is classified as a Designated Project (DP) under Item Q.1, Part I of Schedule 2 of the Environmental Impact Assessment Ordinance (EIAO).

1.1.4 Allied Environmental Consultants Limited was commissioned by Architectural Services Department (ArchSD) to conduct the EIA study. The EIA Study Brief (No: ESB-347/2021) for the Project includes the requirement to prepare an Environmental Monitoring and Audit (EM&A) programme. This EM&A manual is prepared in accordance with Annex 21 of the Technical Memorandum on EIA Process and the Project Study Brief for the Project and follows the approach recommended in the EM&A Guidelines for Development Projects in Hong Kong

1.2 PROJECT SCOPE AND LOCATION

1.2.1 Location Plan of the Project is shown in ***Figure 1.1***. The scope of the Project would comprise:

(a) Construction of a new Annex Block at HKO Headquarters,

(b) Refurbishment works to convert the existing Red House into a History Room for showing the history of HKO;

(c) Road widening works for Emergency Vehicular Access (EVA) at the existing access road; and

(d) Minor public utility works and minor maintenance works to roads, slopes and utilities connecting to the existing HKO Headquarters .

1.3 TENTATIVE CONSTRUCTION PROGRAMME

1.3.1 The construction of the Project is tentatively to commence in period from 2025 to 2029 depending on the design process. The preliminary construction programme of the Project is shown in ***Appendix 1.1***.

1.4 PURPOSE OF EM&A MANUAL

1.4.1 The purpose of this Environmental Monitoring and Audit (EM&A) Manual (hereafter referred to as "this Manual") is to

- Guide the setup of an EM&A programme to ensure the compliance with the EIA study recommendations;
- Specify the requirements for monitoring equipment;
- Propose environmental monitoring points, monitoring frequency etc.;
- Propose Action and Limit Levels; and
- Propose Event and Action Plans.

1.4.2 This Manual outlines the monitoring and auditing programme for the construction and operation of the Project and provides systematic procedures for monitoring, auditing and minimizing environmental impacts.

1.4.3 Hong Kong environmental regulations and the Hong Kong Planning Standards and Guidelines (HKPSG) have served as environmental standards and guidelines in the preparation of this Manual. In addition, this Manual has been prepared in accordance with the requirements stipulated in Annex 21 of the Technical Memorandum on the EIA Process (EIAO-TM).

1.4.4 The Manual contains the following information:

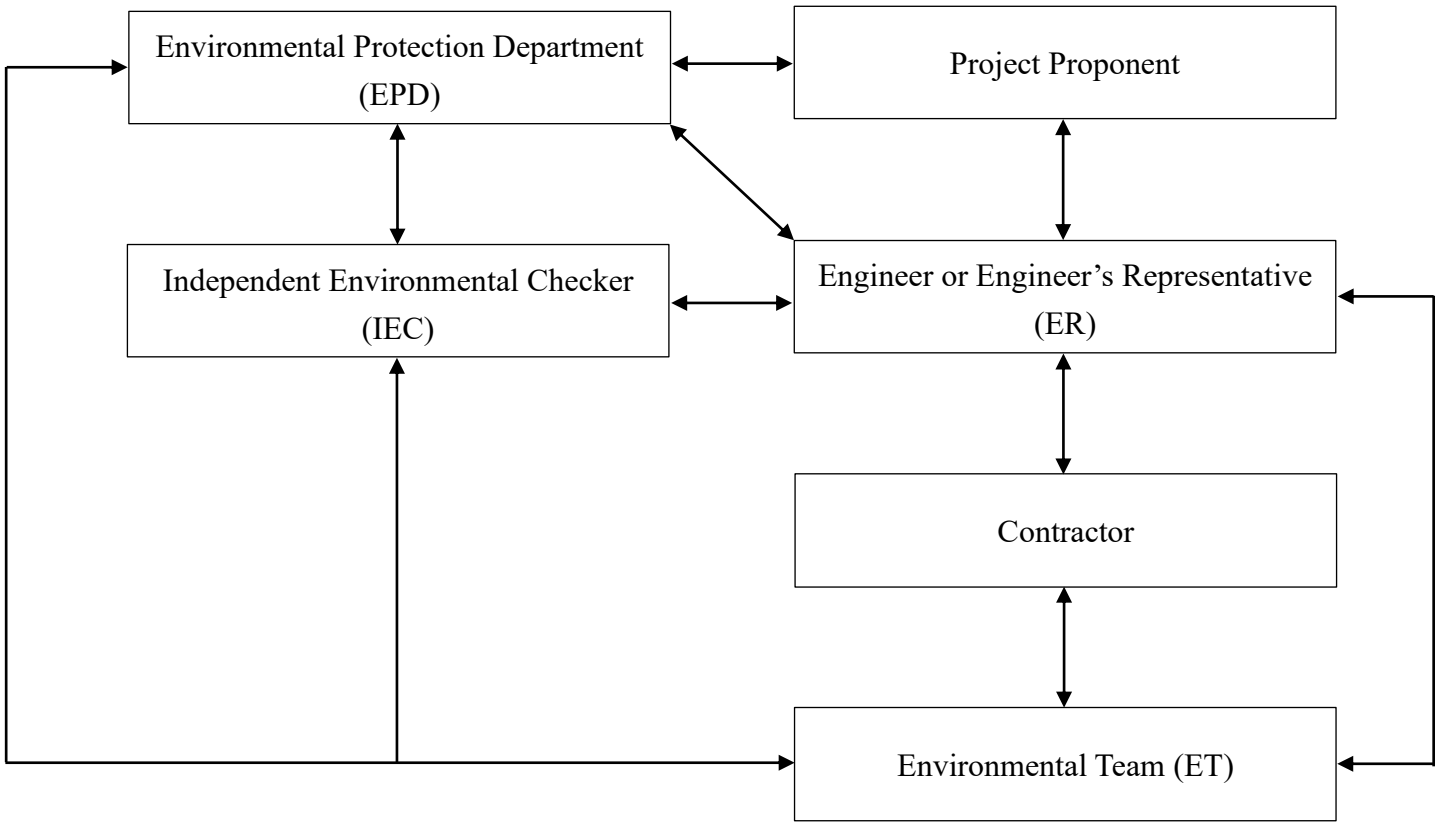
- Responsibilities of the Contractor, the Engineer or Engineer's Representative (ER), Environmental Team (ET), and the Independent Environmental Checker (IEC) under the context of EM&A;
- Project organisation for the EM&A works;
- The basis for, and description of the broad approach underlying the EM&A programme;
- Details of the methodologies to be adopted, including all laboratories and analytical procedures, and details on quality assurance and quality control programme;
- The rationale on which the environmental monitoring data will be evaluated and interpreted;
- Definitions of Action and Limit levels;
- Establishment of Event and Action Plans;
- Requirements for reviewing pollution sources and working procedures required in the event of non-compliance with the environmental criteria and complaints; and
- Requirements for presentation of environmental monitoring and audit data and appropriate reporting procedures.

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

1.5 PROJECT ORGANIZATION

Background

1.5.1 The roles and responsibilities of various parties involved in the EM&A process and the organisation structure of the parties responsible for implementing the EM&A programme are outlined below.



Engineer or Engineer's Representative (ER)

1.5.2 The ER is responsible for overseeing the construction works and ensuring the works to be undertaken by the Contractor in accordance with the specifications and contractual requirements. The duties and responsibilities of the ER with respect to the EM&A include:

- Supervise the Contractor's activities and ensure that the requirements in this Manual are fully complied with;
- Inform the Contractor when action is required to reduce impacts in accordance with the Event and Action Plans;

- Participate in joint site inspections and audits undertaken by the ET; and
- Adhere to the procedures for carrying out complaint investigations.

The Contractor

1.5.3 The Contractor should report to the ER. The duties and responsibilities of the Contractor are:

- Comply with the relevant contract conditions and specifications on environmental protection;
- Implement the EIA recommendations and requirements;
- Provide assistance to ET in carrying out relevant monitoring and audit;
- Participate in the site inspections by the ET as required, and undertake any corrective actions;
- Provide information / advice to ET regarding works activities which may contribute, or be continuing to the generation of adverse environmental conditions;
- Submit proposals on mitigation measures in case of exceedances of Action and Limit levels in accordance with the Event and Action Plans;
- Implement measures to reduce impact where Action and Limit levels are exceeded; and
- Adhere to the procedures for carrying out complaint investigations.

Environmental Team (ET)

1.5.4 An ET with an ET Leader shall be employed to conduct the EM&A programme before the commencement of construction of the Project. The ET Leader or the ET shall be an independent party from the IEC and the Contractor and have relevant professional qualifications, or have sufficient relevant EM&A experience subject to approval of the Environmental Protection Department (EPD).

1.5.5 The ET should be led and managed by an ET leader, who should possess at least 7 years of experience in EM&A or environmental management. The ET should monitor the mitigation measures implemented by the Contractor on a regular basis to ensure the compliance with the intended aims of the mitigation measures.

1.5.6 The duties and responsibilities of the ET are:

- Set up all the required environmental monitoring stations;
- Monitor various environmental parameters as required in this Manual;
- Analyze the environmental monitoring and audit data, review the success of EM&A programme, confirm the adequacy of mitigation measures implemented and the validity of the Environmental Impact Assessment (EIA) predictions, and to identify any adverse environmental impacts arising;

- Carry out site inspection to investigate and audit the Contractors' site practice, equipment and work methodologies with respect to pollution control and environmental mitigation measures, and take proactive actions to pre-empt problems;
- Audit and prepare audit reports on the environmental monitoring data and site environmental conditions;
- Report on the environmental monitoring and audit results to the IEC, Contractor, and the ER or its delegated representative;
- Recommend suitable mitigation measures to the Contractor in the case of exceedance of Action and Limit levels in accordance with the Event and Action Plans;
- Undertake regular on-site audits / inspections and report to the Contractor and the ER of any potential non-compliance;
- Follow up and close out non-compliance actions;
- Advise the Contractor on environmental improvement, awareness, enhancement matters, etc., on site; and
- Adhere to the procedures for carrying out environmental complaint investigation.

Independent Environmental Checker (IEC)

1.5.7 The IEC should be employed by the Project Proponent / Engineer prior to the commencement of the Project. The IEC shall be an independent party from the Contractor and the ET and should possess at least 7 years of experience in EM&A and/or environmental management. The main duties and responsibilities of the IEC are:

- Review the EM&A works performed by the ET (at not less than monthly intervals) ;
- Audit the monitoring activities and results (at not less than monthly intervals);
- Validate and confirm the accuracy of monitoring results, monitoring equipment, monitoring locations, monitoring procedures and locations of sensitive receivers;
- Review the EM&A reports submitted by the ET;
- Review the proposal on mitigation measures submitted by the Contractor in accordance with the Event and Action Plans;
- Check the mitigation measures submitted by the Contractor in accordance with the Event and Action Plans;
- Check the mitigation measures that have been recommended in the EIA and this Manual, and ensure they are properly implemented in a timely manner, when necessary; and
- Report the findings of site inspections and other environmental performance reviews to ER and EPD.

1.5.8 Sufficient and suitably qualified professional and technical staff shall be employed by the respective parties to ensure full compliance with their duties and responsibilities as required under the EM&A programme for the duration of the Project.

1.6 STRUCTURE OF EM&A MANUAL

1.6.1 Following this introductory section, the structure of this Manual is set out as below:

- *Section 2* sets out the EM&A requirements for air quality impact;
- *Section 3* sets out the EM&A requirements for noise impact;
- *Section 4* sets out the EM&A requirements for water quality and sewerage impact;
- *Section 5* sets out the EM&A requirements for waste management implications;
- *Section 6* sets out the EM&A requirements for impact on cultural heritage;
- *Section 7* sets out the EM&A requirements for landscape and visual impact;
- *Section 8* describes the scope and frequency of the environmental site audits and sets out the system of handling complaints; and
- *Section 9* details the EM&A reporting requirements.

2 AIR QUALITY

2.1 INTRODUCTION

2.1.1 The EIA study of the Project concluded that with the implementation of sufficient dust suppression measures stipulated in the *Air Pollution Control (Construction Dust) Regulation*, good site practices and proposed mitigation measures, no adverse dust impact would be anticipated from the construction and operation of the Project. As such, dust monitoring is not required during the construction and operation phase.

2.1.2 Nevertheless, regular site audit is recommended to ensure that appropriate dust control measures are properly implemented and good construction site practices are adopted throughout the construction period.

2.2 MITIGATION MEASURES

2.2.1 The recommended mitigation measures for construction dust impacts are presented as the EMIS in ***Appendix 1.2*** of this Manual. The Contractor should be responsible for the design and implementation of these mitigation measures.

2.3 AUDIT REQUIREMENTS

2.3.1 No construction phase dust monitoring or operation phase air quality impact monitoring is considered necessary.

2.3.2 Weekly site inspection and audit should be conducted by ET during the construction phase of the Project to ensure the recommended good site practices and mitigation measures are properly implemented by the Contractor during construction phase.

3 NOISE

3.1 INTRODUCTION

3.1.1 Potential noise impacts arising from the construction and operation of the Project were assessed in the EIA Report. Noise monitoring is proposed to be conducted during construction phase.

3.1.2 Construction noise mitigation measures would be required to reduce noise levels to the stipulated standard. A noise monitoring and audit programme should be undertaken to confirm such mitigation measures would be implemented properly. Construction Noise Management Plan (CNMP) shall be prepared and submitted to the Director of EP no later than 2 months before the issuance of the tender of the Project and before commencement of the project implementation. The CNMP shall be prepared and checked by Certified Noise Modelling Professional as recognized by Hong Kong Institute of Qualified Environmental Professionals Limited (HKIQEP) or equivalent.

3.1.3 For fixed plant noise impact, a noise commissioning test should be conducted to ensure fixed plant noise impact would comply with the relevant noise standards. No noise monitoring during operation phase is required.

3.1.4 The EM&A requirements, methodology, equipment, monitoring locations and protocols for the noise impacts during the construction phase of the Project are presented in this Section.

3.2 CONSTRUCTION PHASE MONITORING

Noise Parameters

3.2.1 The construction noise level should be measured in terms of the 30-minute A-weighted equivalent continuous sound pressure level (L_{eq}). $L_{eq\ (30\ min)}$ should be used as the monitoring parameter for the time period between 0700 and 1900 hours on normal weekdays.

3.2.2 Supplementary information for data auditing and statistical results, such as L_{10} and L_{90}, should be obtained and recorded for reference. A sample data record sheet is provided in ***Appendix 3.1*** for reference. The ET Leader may modify the data record sheet for this EM&A programme but the format of which should be agreed by the IEC.

Monitoring Equipment

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

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

3.2.5 The ET is responsible for the provision of the monitoring equipment and should ensure that sufficient noise measuring equipment and associated instrumentation are available for conducting the baseline monitoring, regular impact monitoring and ad-hoc monitoring. All the equipment and associated instrumentation should be labelled clearly. The equipment installation location shall be proposed by the ET Leader and agreed with the IEC and EPD.

Monitoring Locations

3.2.6 Based on the EIA study, construction noise monitoring should be conducted at the potentially worst affected locations as listed in ***Table*** 3.1 and shown in ***Figure 3.1***.

Table 3.1 Designated Noise Monitoring Stations

Identification No.	NSR ID in EIA Report	Monitoring Stations
NM1	NAP101	HKO Quarters No.2 (Within HKOHQ)
NM2	NAP201	HKO Quarters No.1 (Within HKOHQ)
NM3	NAP501	Lok Fun Mansion
NM4	NAP601	Carlton Building

3.2.7 The status and location of noise sensitive receivers (NSRs) may change after issuing this Manual. If such cases exist, the ET should propose alternative monitoring locations and seek approval from the IEC and agreement from the EPD on the proposal. The alternative locations should be selected based on the following criteria:

- Locations that are close to the major site activities which are likely to have noise impacts;
- Close to the NSRs; and
- For monitoring locations located in the vicinity of the sensitive receivers, care shall be taken to cause minimal disturbance to the occupants during monitoring.

3.2.8 The monitoring stations should normally be at a point 1 m from the exterior of the facade of the NSR and be at a position 1.2 m above the ground. If there is a problem with access to the normal monitoring position, an alternative position should be chosen, and a correction to the measurement results should be made. For reference, a correction of +3 dB(A) should be made to the free field measurements. The ET shall agree with the IEC on the monitoring position and the corrections adopted. Once the positions for the monitoring stations are chosen, the baseline and impact monitoring should be carried out at the same positions. If changes to the monitoring stations are required upon commencing the baseline monitoring or thereafter, the ET should propose alternative locations based on the above-mentioned criteria and seek approval from the IEC and agreement from EPD on the proposal.

Baseline Monitoring

3.2.9 The ET should carry out the baseline noise monitoring in all of the identified monitoring stations prior to the commencement of the construction works. The baseline noise levels should be measured for a continuous period of at least 14 consecutive days at a minimum logging interval of 30 minutes during daytime between 0700 and 1900, and 5 minutes between 1900 and 0700. The L_{eq}, L_{10} and L_{90} should be recorded at the specified intervals. A schedule on the baseline monitoring should be submitted to the IEC for approval before the baseline monitoring starts.

3.2.10 There should not be any construction activities in the vicinity of the monitoring stations during the baseline monitoring. The source and location of any non-project related construction activities in the vicinity of the monitoring stations during the baseline monitoring should be noted and recorded.

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

Impact Monitoring

3.2.12 Noise monitoring should be carried out at all the designated monitoring stations when there are project-related construction activities being undertaken within a radius of 300m from the monitoring stations. Monitoring of $L_{eq(30min)}$ should be carried out at each station between 0700 and 1900 hours on normal weekdays at a frequency of once a week when construction activities are underway.

3.2.13 If construction works are extended to include works during the hours of 1900 to 0700, additional weekly impact monitoring shall be carried out during evening and night-time works. Applicable permits under *NCO* shall be obtained by the Contractor.

3.2.14 In case of non-compliance with the construction noise criteria, more frequent monitoring as specified in the Event and Action Plan in ***Table 3.2*** should be carried out. The additional monitoring should be continued until the recorded noise levels show that the non-compliance is rectified or proved to be irrelevant to the roject-related construction activities.

Event and Action Plan

3.2.15 The Action and Limit levels for the construction noise are provided in ***Table 3.2***. Should non-compliance of the noise criteria occur, actions in accordance with the Event and Action Plan in ***Table 3.3*** should be taken.

Table 3.2 Action and Limit Level for Construction Noise Monitoring

Time Period	Action Level	Limit Level
0700 – 1900 hours on any day not being a general holiday	When one documented complaint is received	75 dB(A) for residential premises

Note:
If works are to be carried out during restricted hours and/or percussive piling is to be carried out, the monitoring requirements and conditions stipulated in the construction noise permit (CNP) issued by the Noise Control Authority have to be followed.

Table 3.3 Event and Action Plan for Construction Noise Monitoring

	Action			
	ET	**IEC**	**ER**	**Contractor**
Action Level	1. Notify IEC and Contractor. 2. Carry out investigation. 3. Report the results of investigation to the ER, IEC and Contractor. 4. Discuss with the IEC and Contractor and formulate remedial measures. 5. Increase monitoring frequency to check mitigation effectiveness.	1. Review the investigation results submitted by the ET. 2. Review the proposed remedial measures by the Contractor and advise the ER accordingly. 3. Supervise the implementation of remedial measures	1. Confirm receipt of notification of failure in writing. 2. Notify the Contractor. 3. Require the Contractor to propose remedial measures. 4. Ensure remedial measures are properly implemented.	1. Submit noise mitigation proposals to the IEC and ER. 2. Implement noise mitigation proposals.
Limit Level	1. Notify the ER, IEC, Contractor and EPD. 2. Identify sources. 3. Repeat measurements 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 the IEC, ER and Contractor the causes and action taken for the exceedances.	1. Discuss amongst the ER, ET and Contractor on the potential remedial action. 2. Review the Contractor's remedial action whenever necessary to ensure their effectiveness and advise the ER accordingly.	1. Confirm receipt of notification of failure in writing. 2. Notify the Contractor. 3. Require the Contractor to propose remedial measures. 4. Ensure remedial measures are properly implemented. 5. If exceedance continues, consider what portion of work is responsible and instruct the Contractor to stop that portion of works until the exceedance is abated.	1. Take immediate action to avoid further exceedance. 2. Submit proposals for remedial action to the IEC and ER within 3 working days of notification. 3. Implement the agreed proposals. 4. Submit further proposals if problems still not under control. 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.

Notes

(1) Each step of action should be undertaken within 1 working day unless otherwise specified.

3.3 MITIGATION MEASURES

Construction Phase

3.3.1 According to the EIA Report, noise mitigation measures and good site practices are recommended. The Contractor should be responsible for the design and implementation of the measures and practices under the supervision of the ER and monitored by the ET. The CNMP shall also be prepared by Certified Noise Modelling Professional as recognized by the Hong Kong Institute of Qualified Environmental Professionals (HKIQEP) or equivalent. It should be submitted to the Director of EP no later than 2 months before the issuance of the tender of the Project and before commencement of the project implementation. The implementation schedule for the recommended mitigation measures is presented in ***Appendix 1.2***.

3.3.2 In the event of non-compliance(s) or complaint(s), the Contractor should review the effectiveness of these mitigation measures. Alternative or additional measures should be proposed, designed and implemented as appropriate. The Contractor should liaise with the ET on alternative or additional remedial measures, if appropriate, and the proposal of the measures should be submitted to the ER for approval. The Contractor should implement the agreed remedial measures properly.

Operation Phase

Fixed Plant Noise – MVAC equipment and other fixed noise sources

3.3.3 The maximum allowable Sound Power Levels (SWLs) of the identified fixed noise sources of the Project are predicted in the EIA study. To ensure that the noise impact associated with the fixed plant operations would comply with the fixed plant noise criteria, the specified SWLs should be implemented and refined by the Contractor as appropriate.

3.3.4 Commissioning test for fixed noise sources prior to operation is required to ensure compliance of the operational airborne noise levels with the stipulated noise standard. Commissioning test requirements should be agreed with EPD at least 1 month prior to the commissioning test.

3.3.5 The mitigation measures as recommended in the EIA Report for the fixed plant noise arising from the operation of the Project are presented in ***Appendix 1.2***.

3.4 AUDIT REQUIREMENTS

3.4.1 Weekly site inspection and audit should be conducted during the construction phase of the Project to ensure the recommended mitigation measures and good site practices listed in ***Appendix 1.2*** are properly implemented and the noise control requirements stated in EPD's "*Recommended Pollution Control Clauses for Construction Contracts*" are met to further minimise the potential noise nuisance during construction phase.

4 WATER QUALITY AND SEWERAGE

4.1 INTRODUCTION

4.1.1 With the implementation of mitigation measures as recommended in the EIA report, no adverse water quality impact would be anticipated to the water sensitive receivers (WSRs) during the construction and operation phases of the Project. Nevertheless, regular inspections of construction activities, works sites and works areas should be conducted to ensure that the recommended mitigation measures are properly implemented. With the full implementation of the recommended mitigation measures during operation phase, no EM&A requirement for water quality is considered required during the operation phase.

4.2 MITIGATION MEASURES

Construction Phase

4.2.1 The recommended mitigation measures for water quality impacts are presented in ***Appendix 1.2*** of this Manual. The Contractor should be responsible for the design and implementation of these mitigation measures.

Operation Phase

4.2.2 All sewage arising from the Project should be collected and diverted to the public sewerage system via proper connections to minimise water quality impact from the operation of the Project and ensure compliance with TM-DSS on Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters under *Water Pollution Control Ordinance (WPCO).*

4.3 AUDIT REQUIREMENTS

4.3.1 Regular site environmental audit during the construction phase of the Project should be conducted at least once per week to ensure that the recommended mitigation measures are to be properly undertaken during construction phase of the Project. It can also provide an effective control of any malpractices and therefore achieve continual improvement of environmental performance on site.

5 WASTE MANAGEMENT IMPLICATIONS

5.1 INTRODUCTION

5.1.1 Waste management would be the Contractor's responsibility to ensure that all wastes produced during the construction works for the Project are handled, stored, collected, transported, and disposed of in accordance with good waste management practices, EPD's regulations and requirements.

5.1.2 Waste materials generated during construction activities, such as construction and demolition (C&D) materials, chemical waste and general refuse, are recommended to be audited at regular intervals to ensure that proper storage, transportation and disposal practices are being implemented. This monitoring of waste management practices would avoid spillage/leakage in the vicinity. The Contractor would be responsible for the implementation of any mitigation measures to minimise waste or redress problems arising from the waste materials. Waste Management Plan (WMP) should be prepared as part of the EMP and submitted to the Engineer for approval before the commencement of work in accordance with *ETWB TC(W) No. 19/2005*. The auditing requirements of the EMP should be followed with regard to the management of C&D materials, chemical waste and general refuse.

5.2 MITIGATION MEASURES

Construction Phase

5.2.1 With proper handling, storage, collection, transportation and disposal of waste arising from the construction and operation of the Project, it is anticipated that potential adverse environmental impacts would be avoided or minimised. During site inspections, the ER and ET should pay special attention to the issues relating to the waste management and check whether the Contractor has implemented the recommended good site practices and other mitigation measures. The recommended mitigation measures for waste management are presented in the EMIS in ***Appendix 1.2*** of this Manual.

Operation Phase

5.2.2 The mitigation measures as recommended in the EIA Report for the waste generated from the operation of the Project are presented in ***Appendix 1.2***.

5.3 AUDIT REQUIREMENTS

5.3.1 Monthly site inspection and audit should be conducted during the construction phase of the Project to ensure the recommended mitigation measures are properly implemented. The audits should examine all aspects of waste management including the waste generation, storage, recycling, transportation and disposal. Apart from site inspections, documents including licenses, permits, disposal and recycling records should be reviewed and audited for the compliance with the legislation and contract requirements.

6 CULTURAL HERITAGE IMPACT

6.1 INTRODUCTION

6.1.1 Cultural heritage resources within study area have been identified and reviewed through literature review and field surveys. Visual impact to the major heritage resources is not anticipated during construction and operation phases. Direct impact to key historic buildings will be in a controlled manner, which will be at localised locations for the UU diversion works, and restricted to refurbishment works to Red House, with mitigation measures. Indirect vibration/settlement/tilting impact on historic buildings during construction phase will be monitored with monitoring measures.

6.1.2 No SAI is found within the Cultural Heritage Assessment Area (CHAA), therefore no adverse archaeological impact due to the proposed works is anticipated. The excavation of the Project are mainly located in developed area undergone construction works with high level of ground disturbance, and area unfavourable to cultural deposit accumulation which has no archaeological potential, therefore no adverse archaeological impact due to the proposed works of the Project is anticipated. However, the proposed work area of Underground utilities (UU) diversion work near to the entrance of the 1883 building, which requires excavation of 1.8m from the ground level, is located near to the underground chamber and the stairs connecting the tunnel portal to underground chamber. It is recommended that design proposal, method of works and choice of machinery should be targeted to avoid direct physical impacts to the underground chamber, stair and tunnel portal. Any vibration/ settlement / titling induced from the proposed works should be strictly monitored to ensure no physical damages made to the underground chamber with tunnel portal during the course of works. As a precautionary measure, the Project Proponent is required to inform AMO immediately when any antiquities or supposed antiquities under the *Antiquities and Monuments Ordinance (Cap. 53)* are discovered during the course of works.

6.1.3 Monitoring measures are required during the construction stage upon commencement of any works till the works completed to ensure the structural integrity of the historic buildings within the HKO Headquarters, including 1883 Building and its annex building, Quarters No. 2 and No. 3, Garage of Quarters No. 2, Underground chamber with tunnel portal, Quarters No. 1, Garage of Quarters No. 1, Garage adjacent to Quarters No. 1, Red House, Substation A, White House No. 2 and White House No. 1. The 3A levels of control criteria (Alert, Alarm and Action) would be adopted for monitoring during the foundation and excavation and lateral support works for the construction of new Annex Block. Checkpoints and markers relating to ground settlement, services settlement, building tilting, vibration and water table would be installed for the monitoring. The concerned limits are proposed in ***Table 6.1***:

Table 6.1 Alert, Alarm and Action Level of Cultural Heritage Monitoring

Monitoring	Alert Level	Alarm Level	Action Level
Ground settlement (mm)	6	8	10
Tilting	1/2000	1/1500	1/1000
Vibration (mm/s)	2	2.5	3

6.1.4 Different sets of monitoring points should be provided in the vicinity of the Project Site and the historic buildings of HKO Headquarters respectively, with locations and frequency to be agreed by AMO. Construction works shall be suspended immediately when a vibration monitoring reading is found to exceed the limit given in the vibration control or monitoring scheme. The investigation report and remedial proposal shall be submitted to Project Team, ArchSD and AMO to examine the construction method and review ground response history of the monitoring record. The construction works shall be resumed after the acceptance of the investigation report and remedial proposal by Project Team, ArchSD and AMO.

6.1.5 Regular inspections of construction activities, works sites and works areas should be conducted to ensure that the recommended mitigation measures are properly implemented.

6.2 RECOMMENDATIONS

6.2.1 According to the EIA Report, cultural heritage mitigation measures are recommended. The Contractor should be responsible for the design and implementation of the measures and practices under the supervision of the ER and monitored by the ET. The mitigation measures should be checked in routine site inspections and regular audits. The implementation schedule for the recommended mitigation measures is presented in ***Appendix 1.2***.

7 LANDSCAPE AND VISUAL

7.1 INTRODUCTION

7.1.1 The EIA Report has recommended landscape and visual mitigation measures for the construction and operation phases of the Project. This section defines the audit requirements to confirm the recommended landscape and visual impact mitigation measures are effectively implemented.

7.2 MITIGATION MEASURES

7.2.1 The proposed mitigation measure of landscape and visual impacts are presented in the EMIS in ***Appendix 1.2*** of this Manual. The landscape and visual mitigation measures proposed should be incorporated in the detailed landscape and engineering design. The construction phase mitigation measure should be adopted from the commencement of construction and should be in place throughout the entire construction period. Mitigation measures for the operation phase should be adopted during the detailed design and be built as part of the construction works so that they are in place on commissioning of the Project.

7.2.2 Any potential conflict among the proposed mitigation measures, the Project works, and operational requirements should be identified and resolved at early stage. Any change to the mitigation measures should be incorporated in the detailed design.

7.3 BASELINE REVIEW FOR LANDSCAPE & VISUAL IMPACT

7.3.1 Baseline review to check, record and report the status of the Landscape Resources (LR) and Landscape Character Areas (LCA) within the construction works sites and works areas and the Visually Sensitive Receivers(VSRs) within the visual envelope shall be conducted prior to commencement of any construction works making reference to the LR, LCA and VSRs maps included in the EIA Report.

7.3.2 Any significant change to the status of LR, LCA and VSRs since the EIA shall be identified. The recommended mitigation measures shall be reviewed if such change warrants a change in the design of the mitigation measures.

7.3.3 A baseline monitoring report including photographic record of the site at the time of the Contractor's possession of the Project Site shall be prepared by the Contractor and approved by the ER. The approved baseline monitoring report including photographic record shall be submitted to the Project Proponent, ET, IEC and EPD for record.

7.4 AUDIT REQUIREMENTS

7.4.1 Site audits should be undertaken during the construction phase and the 12-month establishment period (operation phase) of the Project to check that the proposed landscape and visual mitigation measures are properly implemented and maintained as per their intended objectives.

The extent of works areas should be regularly checked by the ET, ER and the Contractor to ensure no damage to existing vegetation or trees outside the works limits.

7.4.2 The conditions and growth performance of the implemented compensatory planting should be regularly checked and monitored by a qualified plant specialist of the ET to ensure the effectiveness of the mitigation measures. A specialist landscape subcontractor should be employed for the implementation of tree and landscape works and subsequent maintenance operations during the establishment period.

7.4.3 Monthly Site inspections should be undertaken by the ET during the construction period and once every two months for the 12-month establishment period during operation phase.

7.5 EVENT AND ACTION PLAN

7.5.1 Should non-compliance of the landscape and visual impacts occur, actions should be carried out in accordance with the event and action plan as shown in ***Table 7.1.***

Table 7.1 Event and Action Plan for Landscape and Visual Impact during Construction Phase

Action Level	ET	IEC	ER	Contractor
Non-conformity on one occasion	1. Inform the IEC and ER. 2. Discuss remedial actions with the IEC, ER and Contractor. 3. Monitor remedial action until rectification has been completed.	1. Check inspection report. 2. Check the Contractor's working method. 3. Discuss with the ET, ER and Contractor on possible remedial measures. 4. Advise the ER on the effectiveness of the proposed remedial measures. 5. Check implementation of remedial measures.	1. Confirm receipt of notification of non-conformity in writing. 2. Review and agree on the remedial measures proposed by the Contractor. 3. Ensure remedial measures are properly implemented.	1. Identify source and investigate the non-conformity. 2. Amend working methods. 3. Rectify damage and undertake remedial measures or any necessary replacement.
Repeated Non-conformity	1. Identify source. 2. Inform the IEC, ER and Contractor. 3. Discuss remedial actions with the IEC, ER and Contractor. 4. Monitor remedial action until rectification has been completed. 5. If non-conformity stops, cease additional monitoring (site audit).	1. Check inspection report. 2. Check the Contractor's working method 3. Discuss with the ET, ER and Contractor on possible remedial measures. 4. Advise the ER on effectiveness of proposed remedial measures.	1. Notify the Contractor. 2. In consultation with the ET and ICE, agree with the Contractor on the remedial measures to be implemented. 3. Supervise implementation of remedial measures	1. Identify source and investigate the non-conformity. 2. Implement remedial measures 3. Amend working methods agreed with the ER as appropriate. 4. Rectify damage and undertake remedial measures or any necessary replacement. Stop relevant portion of works as determined by the ER until the non-conformity is abated.

8 SITE ENVIRONMENTAL AUDIT AND COMPLIANCES

8.1 SITE INSPECTION

8.1.1 Site inspection provides a direct means to trigger and enforce specified environmental protection and pollution control measures. These shall be undertaken regularly and routinely to inspect construction activities in order to ensure that appropriate environmental protection and pollution control mitigation measures are properly implemented. The site inspection is one of the most effective tools to enforce the environmental protection requirements at the works area.

8.1.2 The ET shall be responsible for formulating the environmental site inspection programme as well as the deficiency and action reporting system, and for carrying out the site inspections. The proposal for rectification, if any, should be prepared and submitted to the ET Leader and IEC by the Contractor.

8.1.3 Regular site inspections shall be carried out at least once per week during the construction phase. The areas of inspection shall not be limited to the environmental situation, pollution control and mitigation measures within the site. It should also review the environmental conditions of locations outside the works area which are likely to be affected, directly or indirectly, by the construction site activities of the Project. The ET shall make reference to the following information in conducting the inspection:

- The EIA and EM&A recommendations on the environmental protection and pollution control mitigation measures;
- On-going results of the EM&A programme;
- The works progress and programme;
- Individual works methodology proposals (which shall include the proposal on associated pollution control measures);
- Contract specifications on environmental protection;
- The relevant environmental protection and pollution control legislation; and
- Previous site inspection results undertaken by the ET and others.

8.1.4 The Contractor shall keep the ER and ET Leader updated with all the relevant environmental related information on the construction contract necessary for him to carry out the site inspections. Site inspection results and associated recommendations for improvements to the environmental protection and pollution control efforts should be recorded and followed up by the Contractor in an agreed time-frame. The Contractor shall follow the procedures and time-frame as stipulated in the environmental site inspection, and the deficiency and action reporting system formulated by the ET, to report on any remedial measures subsequent to the site inspections.

8.1.5 The ER, ET and the Contractor should also carry out ad-hoc site inspections if significant environmental problems are identified. Inspections may also be required subsequent to receipt of a valid environmental complaint, or as part of the investigation work, as specified in the Event and Action Plans for the EM&A programme.

8.2 COMPLIANCE WITH LEGAL AND CONTRACTUAL REQUIREMENTS

8.2.1 There are contractual requirements and legislation in Hong Kong on environmental protection and pollution control with which the construction activities must comply.

8.2.2 To ensure the works are in compliance with the contractual requirements, all method statements of major works should be submitted by the Contractor to the ER for approval and to the ET for vetting so as to ensure whether sufficient environmental protection and pollution control measures have been incorporated.

8.2.3 The ER and ET should also review the progress and programme of the construction works in order to check that the relevant environmental legislation has not been violated and that any foreseeable potential for violating laws can be prevented.

8.2.4 The Contractor should regularly provide the update of the relevant documents to the ER and ET, so that the checking can be carried out in good time. Such documents should at least include the updated Works Progress Reports, work programme, application letters for environmental licenses / permits, and copies of all valid licenses / permits. The Contractor's site diary and environmental records should also be available for inspection by the relevant parties.

8.2.5 After reviewing the document, the ET shall advise the IEC and the Contractor of any non-compliance with legislative requirements on environmental protection and pollution control so that they can timely take follow-up actions as appropriate. If the follow-up actions still result in potential violation of environmental protection and pollution control requirements, the ER and ET should provide further advice to the Contractor to take remedial action to resolve the problem.

8.2.6 Upon receipt of the advice, the Contractor shall undertake immediate actions to correct the situation. The ER and ET shall follow up to ensure that appropriate action has been taken in order to satisfy legal requirements.

8.3 ENVIRONMENTAL COMPLAINTS

8.3.1 Complaints shall be referred to the ET Leader for action. The ET Leader shall undertake the following procedures upon receipt of any complaint:

- log complaint and date of receipt onto the complaint database and inform the IEC immediately;
- investigate the complaint to determine its validity, and assess whether the source of the problem is due to construction works of the Project;
- identify remedial measures in consultation with the IEC if a complaint is valid and due to the construction works of the Project;

- advise the Contractor if mitigation measures are required;
- review the Contractor's response to identified mitigation measures, and the updated situation;
- If the complaint is referred by the EPD, submit interim report to EPD on the status of the complaint investigation and follow-up actions within the time frame assigned by the EPD;
- undertake monitoring and audit to verify the situation if necessary, and oversee that circumstances leading to the complaint do not recur;
- report investigation results and subsequent actions to complainant (if the source of complaint is identified through EPD, the results should be reported within the timeframe assigned by EPD); and
- record the complaint, investigation, the subsequent actions and results in the Monthly EM&A Reports.

8.3.2 During the complaint investigation, the Contractor and ER should coordinate with the ET to provide all the necessary information and assistance for the completion of the investigation. If mitigation measures are identified to be required, the Contractor should promptly implement such measures and the ER should ensure that the measures have been carried out properly. A flow chart of the complaint response procedures is shown in ***Appendix 8.1***.

9 REPORTING

9.1 INTRODUCTION

9.1.1 Reports that the ET should prepare and submit include the Baseline Monitoring Report, Monthly EM&A Reports and Final EM&A Review Report. In accordance with Annex 21 of the EIAO-TM, a copy of the Monthly and Final Review EM&A Reports should be made available to the Director of Environmental Protection (DEP). All monitoring data (baseline and impact) should be submitted in an electronic medium.

9.1.2 Reports can be provided in an electronic medium upon agreeing the format with the ER and EPD. This would enable a transition from a paper / historic and reactive approach to an electronic / real time proactive approach. All the monitoring data (baseline and impact) shall also be submitted in electronic format.

9.2 BASELINE MONITORING REPORT

9.2.1 The ET should prepare and submit a Baseline Monitoring Report within 10 working days of the completion of the baseline monitoring and then certified by the ET Leader. Copies of the Baseline Monitoring Report should be submitted to the Contractor, IEC, ER and EPD. The ET Leader should liaise with the relevant parties on the exact number of copies required. The report format and baseline monitoring data format shall be agreed with the EPD prior to submission.

9.2.2 The Baseline Monitoring Report should include at least the following information:

- An Executive Summary of up to half a page;
- A brief description of the project background;
- Drawing showing locations of the baseline monitoring stations;
- Monitoring results (in both hard and electronic copies) together with the following information:
  - Monitoring methodology;
  - Name of laboratory and types of equipment used and calibration details;
  - Monitoring parameters;
  - Monitoring locations;
  - Monitoring date, time, frequency and duration; and
  - Quality Assurance (QA)/ Quality Control (QC) results and detection limits.
- Details of the influencing factors, including:
  - Major activities, if any, being carried out on-site during the period;

- Weather conditions during the period; and
- Other factors which might affect the monitoring results.

- Determination of the Action and Limit Levels for each monitoring parameter and statistical analysis of the baseline data which should conclude if there is any significant difference between the control and impact stations for the parameters monitored, where appropriate;
- Revisions for inclusion in the EM&A Manual; and
- Comments, recommendations and conclusions.

9.3 MONTHLY EM&A REPORT

9.3.1 The results and findings of the EM&A programme required in this Manual should be recorded in the Monthly EM&A Reports prepared by the ET Leader and endorsed by IEC. The EM&A reports should be prepared and submitted within 10 working days from the end of each reporting month, with the first Monthly EM&A Report due in the month after the construction works commence. Copies of each Monthly EM&A Report should be submitted to the Contractor, ER, IEC and EPD. Before submission of the first Monthly EM&A Report, the ET Leader should liaise with the relevant parties on the exact number of copies and format of the reports in both hard and electronic copies.

9.3.2 The ET should review the number and location of the monitoring stations and parameters every six months, or on an as-needed basis, in order to cater for any changes in the surrounding environment and the nature of works in progress.

First Monthly EM&A Report

9.3.3 The first Monthly EM&A Report should include at least but not limited to the following information:

- Executive summary (1-2 pages):
  - Breaches of the Action and Limit levels;
  - Complaint log;
  - Notification of any summons and status of prosecutions;
  - Reporting changes; and
  - Future key issues.
- Basic project information:
  - Project organisation including key personnel contact names and telephone numbers;

- Construction programme with fine tuning of construction activities showing the inter-relationship with environmental protection/mitigation measures for the month;
- Management structure; and
- Works undertaken during the reporting month.

- Environmental status:
  - Advice on the status of the statutory environmental compliance, e.g. EP conditions under the EIAO, submission status under the EP and implementation status of mitigation measures etc.;
  - Works undertaken during the reporting month with illustrations (e.g. location of works etc.); and
  - Drawings showing the Project Area, environmental sensitive receivers and locations of the monitoring and control stations.
- A brief summary of EM&A requirements including:
  - All monitoring parameters;
  - Environmental quality performance limits (Action and Limit levels);
  - Event and Action Plans;
  - Environmental mitigation measures, as recommended in the EIA Report; and
  - Environmental requirements in contract documents.
- Implementation status:
  - Advice on the implementation status of environmental protection and pollution control/ mitigation measures, as recommended in the EIA Report, summarised in the updated implementation schedule.
- Monitoring results (in both hard and diskette copies) together with the following information:
  - Monitoring methodology;
  - Name of laboratory and types of equipment used and calibration details;
  - Monitoring parameters;
  - Monitoring locations;
  - Weather conditions during the period;
  - Monitoring date, time, frequency and duration;

- Graphical plots of the monitoring parameters in the reporting month annotated against the following information:

  (i) Major activities being carried out on site during the reporting period;

  (ii) Weather conditions that may affect the monitoring results;

  (iii) Any other factors which might affect the monitoring results; and

- QA/QC results and detection limits.

- Reporting non-compliance, complaints, notifications of summons and status of prosecutions:

  - Records of all non-compliance (exceedances) of the environmental quality performance limits (Action and Limit levels);

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

  - Records of all notifications of summons and successful prosecutions for breaches of current environmental protection/ pollution control legislation, including locations and nature of the breaches, investigation, follow-up actions taken, results and summary;

  - The review of the reasons for the implications of non-compliance, complaint, 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 the earlier non-compliance.

- Others:

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

  - Advice on the solid and liquid waste management status;

  - A forecast of the works programme, impact predictions and monitoring schedule for the next three months;

  - Record of any project changes from the original proposed as described in the EIA (e.g. construction methods, mitigation proposals, design changes etc); and

  - Comments (e.g. the effectiveness and efficiency of mitigation measures), recommendations (e.g. any improvement in the EM&A programme) and conclusions.

Subsequent Monthly EM&A Reports

9.3.4 The subsequent Monthly EM&A Reports during the construction phase should include the following information:

- Executive summary (1-2 pages):
  - Breaches of the Action and Limit levels;
  - Complaint log;
  - Notifications of any summons and status of prosecutions;
  - Reporting changes; and
  - Future key issues.
- Basic project information:
  - Project organisation including personnel contact names and telephone numbers;
  - Construction programme;
  - Management structure;
  - Works undertaken during reporting month; and
  - Any updates as needed to the scope of works and construction methodologies.
- Environmental status:
  - Advice on the status of statutory environmental compliance, status of compliance with EP conditions under the EIAO, submission status under the EP and implementation status of mitigation measures;
  - Works undertaken during the reporting month with illustrations (such as location of works, etc.); and
  - Drawings showing the Project Area, environmental sensitive receivers and locations of the monitoring and control stations.
- Implementation status:
  - Advice on the implementation status of environmental protection and pollution control / mitigation measures, as recommended in the EIA Report.
- Monitoring results (in both hard and diskette copies) together with the following information:
  - Monitoring methodology;

- Name of laboratory and types of equipment used and calibration details;
- Monitoring parameters;
- Monitoring locations;
- Weather conditions during the period;
- Monitoring date, time, frequency and duration;
- Graphic plots of the monitoring parameter in the month annotated against the following information;
  (i) Major activities being carried out on site during the reporting period;
  (ii) Weather conditions that may affect the monitoring results;
  (iii) Any other factors which might affect the monitoring results; and
- QA/QC results and detection limits.

- The report on non-compliances, complaints, notifications of summons and status of prosecutions:
  - Records of all non-compliance (exceedances) of the environmental quality performance limits (action and Limit levels);
  - Records of all complaints received (written or verbal), including the locations and nature of complaints investigation, liaison and consultation undertaken, actions and follow-up procedures taken, results and summary;
  - Records of all notifications of summons and successful prosecutions for breaches of current environmental protection/ pollution control legislation, including locations and nature of the breaches, investigation, follow-up actions taken, results and summary;
  - The review of the reasons for and implications of non-compliances, complaints, summons and prosecutions including review of pollution sources and working procedures; and
  - Descriptions of the actions taken in the event of non-compliance and deficiency reporting and any follow-up procedures related to the earlier non-compliances.
- Others:
  - An account of the future key issues as reviews from the works programme and method statements of works;
  - Advice on the solid and liquid waste management status;

- A forecast of the works programme, impact predictions and monitoring schedule for the next three months;
- Comparisons of the EM&A data in the reporting month with the EIA predictions and annotate with explanation for any discrepancies; and
- Comments (e.g. the effectiveness and efficiency of the mitigation measures), recommendations (e.g. any improvement in the EM&A programme) and conclusions.

- Appendices:
  - Action and Limit levels;
  - Graphical plots of trends of the monitored parameters at key stations over the past four reporting periods for the representative monitoring stations annotated against the following information:
    (i) Major activities being carried out on site during the reporting period;
    (ii) Weather conditions during the reporting period;
    (iii) Any other factors that might affect the monitoring results;
    (iv) Monitoring schedule for the present and next reporting period;
    (v) Cumulative statistics on complaints, notifications of summons and successful prosecutions; and
    (vi) Outstanding issues and deficiencies.

Final EM&A Review Report

9.3.5 The EM&A programme for construction phase should be terminated upon the completion of the construction activities that have the potential to cause significant environmental impacts, while the EM&A Programme for operation phase could be terminated upon the completion of operation phase monitoring (i.e. 12-month establishment period).

9.3.6 The proposed termination should only be implemented after the proposal has been endorsed by the IEC, the ER and the Project Proponent followed by the approval from the Director of Environmental Protection.

9.3.7 The ET Leader should prepare and submit the Final EM&A Review Report after the completion of the construction activities that have the potential to cause significant environmental impacts. The Final EM&A Review Report should contain at least the following information:

- Executive summary (1-2 pages);
- Drawings showing the Project Area, environmental sensitive receivers and locations of the monitoring and control stations;

- The basic project information including a synopsis of the project organisation, contacts of key management, and a synopsis of works undertaken during the course of the Project or past 12 months;
- A brief summary of EM&A requirements including:
  - Environmental mitigation measures implemented as recommended in the EIA Report;
  - Environmental impact hypotheses tested;
  - Environmental quality performance limits (Action and Limit levels);
  - All monitoring parameters; and
  - Event and Action Plans.
- A summary of the implementation status of environmental protection and pollution control/ mitigation measures for construction phase, as recommended in the EIA Report, summarised in the updated environmental mitigation implementation schedule;
- Graphical plots and statistical analysis of the trends of the monitored parameters over the course of the Project, including the post-project monitoring for all monitoring stations annotated against:
  - Major activities being carried out on site during the reporting period;
  - Weather conditions during the reporting period; and
  - Any other factors which might affect the monitoring results.
- A summary of non-compliance (exceedances) of the environmental quality performance limits (Action and Limit levels);
- A review of the reasons for and implications of non-compliance including the review of pollution sources and working procedures as appropriate;
- A description of the action taken in the event of non-compliance;
- A summary record of all complaints received (written or verbal), liaison and consultation undertaken, action and follow-up procedures taken and results;
- A summary record of the notifications of summons and successful prosecutions for breaches of the current environmental protection/pollution control legislation, locations and nature of the breaches, follow-up investigation taken and results;
- A review of the validity of EIA predictions for construction phase and identification of shortcomings in the recommendations of the EIA study;
- Comments (e.g. a review of the effectiveness and efficiency of the mitigation measures and of the performance of the environmental management system, i.e., of the overall EM&A programme); and

- Recommendations and conclusions (e.g. a review of the success of the overall EM&A programme to cost-effectively identify deterioration and to initiate prompt effective mitigation action when necessary).

9.4 DATA KEEPING

9.4.1 No site-based documents (e.g. the monitoring field records, laboratory analysis records, site inspection form, etc.) are required to be included in the EM&A reporting documents. However, any such documents should be properly maintained by the ET and be ready for inspection upon request. All relevant information should be clearly and systematically recorded in the document. Monitoring data should also be recorded in magnetic media form, and the electronic copy must be available upon request. All documents and data should be kept for at least one year following the completion of the construction contract.

9.5 INTERIM NOTIFICATION OF ENVIRONMENTAL EXCEEDANCE

9.5.1 With reference to the Event and Action Plans, when the environmental quality performance limits are exceeded, the ET should immediately notify the Contractor, ER, IEC and EPD, as appropriate. The notification should be followed up with advice to the IEC and EPD on the results of the investigation, proposed action and success of the action taken, with any necessary follow-up proposals. A sample template for the interim notification is presented in ***Appendix 9.1*** of this Manual.

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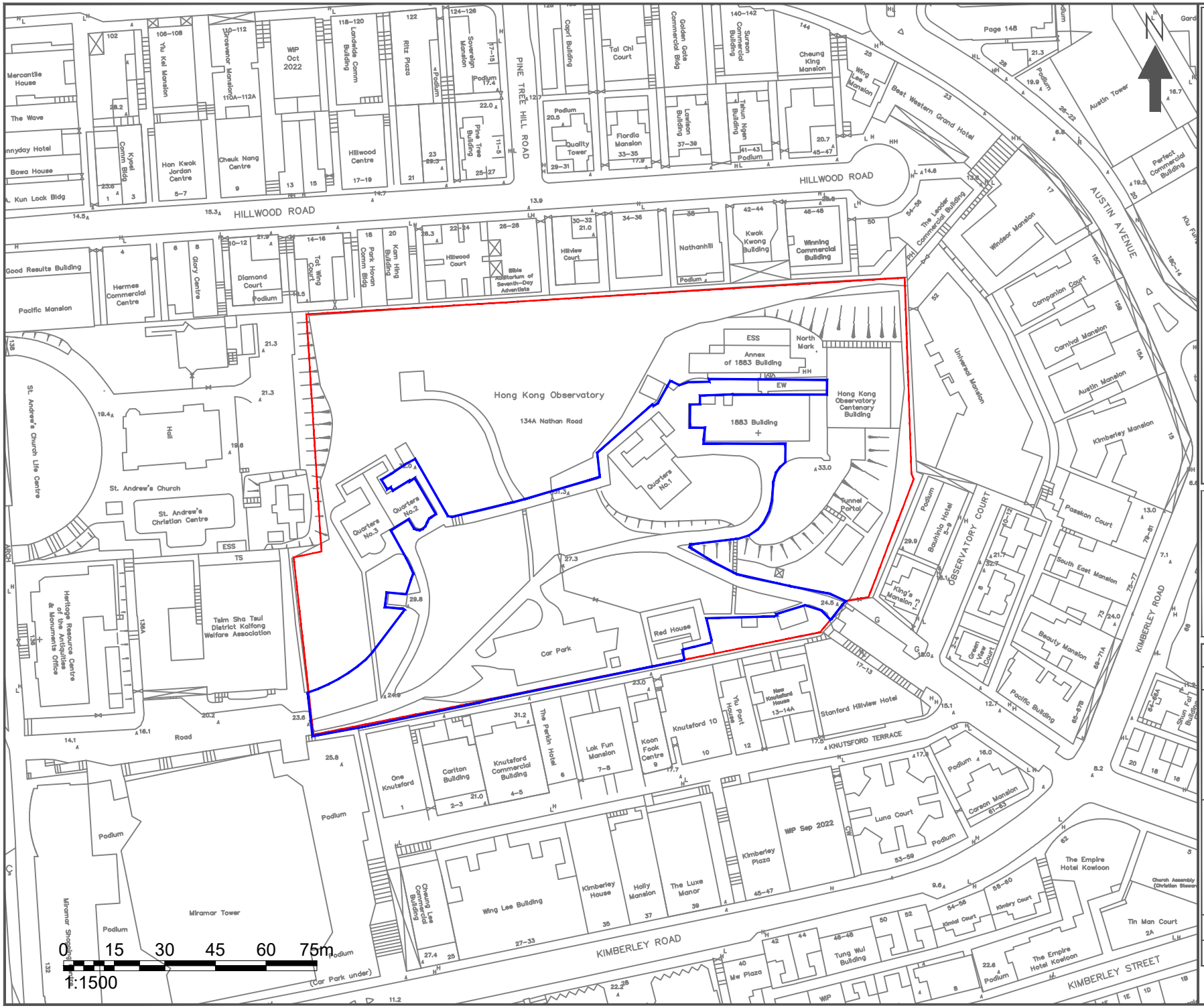
Figures



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NOTES :

PROJECT SITE
工程項目工地

BOUNDARY OF HONG KONG OBSERVATORY HEADQUARTERS (SAME AS THE BOUNDARY OF DECLARED MONUMENT)
尖沙咀天文台總部邊界範圍
(與法定古蹟範圍一樣)

Consultant

AEC

Allied Environmental Consultants Limited

Project No. :	1709
File Name :	–

Project :

CONSTRUCTION OF ANNEX BLOCK AT HONG KONG OBSERVATORY HEADQUARTERS, TSIM SHA TSUI
尖沙咀天文台總部副樓興建計劃

Drawing Title :

SITE LOCATION PLAN
工程項目工地位置圖

Drawing No : FIGURE 1.1 圖1.1	Revision : 5
Scale : AS SHOWN 如圖示	Date : OCT 2023

A4 297 x 210

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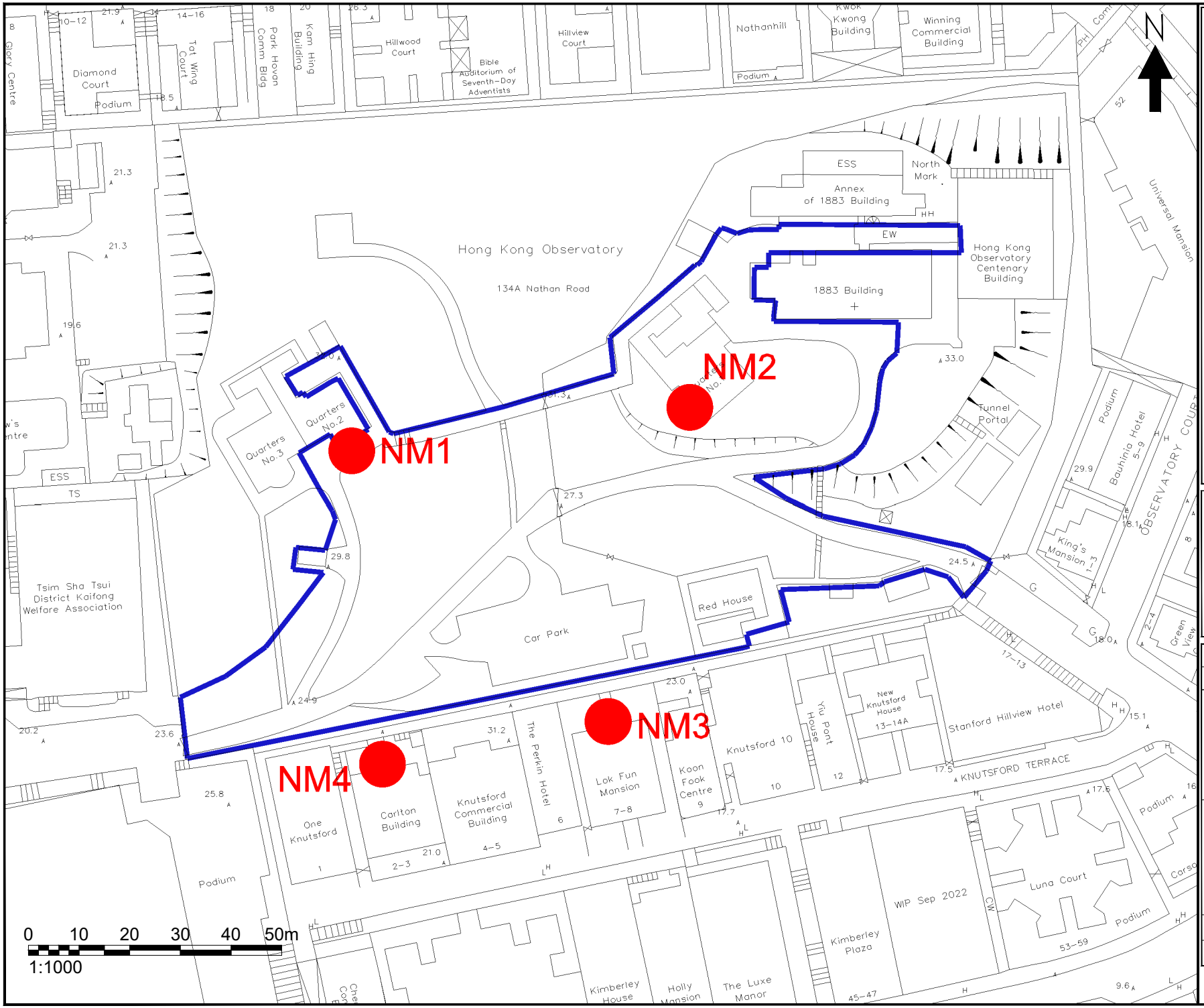

NOTES :

PROJECT SITE
工程項目工地

NOISE MONITORING STATIONS
噪音監測站

Consultant

Allied Environmental Consultants Limited

Project No. :	1709
File Name :	–

Project :
CONSTRUCTION OF ANNEX BLOCK AT HONG KONG OBSERVATORY HEADQUARTERS, TSIM SHA TSUI
尖沙咀天文台總部副樓興建計劃

Drawing Title :
LOCATIONS OF DESIGNED NOISE MONITORING STATIONS
噪音指定監測站位置

Drawing No : FIGURE 3.1 圖3.1	Revision : 5
Scale : AS SHOWN 如圖示	Date : OCT 2023

A4 297 x 210

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Appendix 1.1

Tentative Programme of the Project

Appendix 1.1 Tentative Programme of the Project

Project	Work Stage / Month / Year	2025												2026												2027												2028												2029											
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
New Annex Block and Refurbishment of the Red House	Site Preparation and Road Works																																																										
	Excavation and Foundation																																																										
	Construction of Annex Block and Refurbishment of Red House																																																									

Appendix 1.2

Environmental Mitigation Implementation Schedule (EMIS)

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & 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							
4.7.2	2.2.1	Dust suppression measures stipulated in the Air Pollution Control (Construction Dust) Regulation and good site practices: • Use of regular watering, to reduce dust emissions from exposed site surfaces and unpaved roads, particularly during dry weather; • Use of frequent watering for particularly dusty construction areas close to ASRs; • Use of frequent watering or water sprinklers for major haul roads, material stockpiling areas and other dusty activities within the construction site; • Side enclosure and covering of any aggregate or dusty material storage piles to reduce emissions. Where this is not practicable owing to frequent usage, watering should be applied to aggregate fines; • Provide hoardings of not less than 2.4 m high from ground level along the Site boundary except for site entrance or exit; • Open temporary stockpiles should be avoided or covered. Prevent placing dusty material storage plies near ASRs;	To minimize the dust impact generated from various construction activities at the work sites	Contractor and sub-contractors	All work sites	Construction phase	Air Pollution Control Ordinance

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & 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?
		• Tarpaulin covering of all dusty vehicle loads transported to, from and between site locations; • Establishment and use of vehicle wheel and body washing facilities at the exit points of the Site; • Provide wind shield and dust extraction units or similar dust mitigation measures at the loading area of barging point, and use of water sprinklers at the loading area where dust generation is likely during the loading process of loose material, particularly in dry seasons/ periods. • Imposition of speed controls for vehicles on unpaved site roads. 8 km/hr is the recommended limit; • Where possible, routing of vehicles and positioning of construction plants should be at the maximum possible distance from ASRs; • Avoid position of material stockpiling areas, major haul roads and dusty works within the construction site close to concerned ASRs; and • Avoid unnecessary exposed earth.					
4.7.3	2.2.1	Guidelines of dust suppression stipulated in EPD's Recommended Pollution Control Clauses for Construction Contracts: • The Contractor shall observe and comply with the APCO and its subsidiary regulations, particularly the Air Pollution Control (Construction Dust) Regulation;	To minimize the dust impact generated from various construction activities at the work sites	Contractor and sub-contractors	All work sites	Construction phase	Air Pollution Control Ordinance

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & 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 undertake at all times to prevent dust nuisance as a result of the construction activities; • The Contractor shall ensure that there will be adequate water supply / storage for dust suppression; • The Contractor shall devise and arrange methods of working and carrying out the works in such a manner so as to minimise dust impacts on the surrounding environment, and shall provide experienced personnel with suitable training to ensure that these methods are implemented; and • Before the commencement of any work, the Contractor may be required to submit the methods of working, plant, equipment and air pollution control system to be used on the Site for the Engineer inspection and approval.					
4.7.4	2.2.1	To minimise the exhaust emission from NRMM during the construction phase, below measures in relation to DEVB TC(W) No. 1/2015 – Emissions Control of Non-road Mobile Machinery in Capital Works Contracts of Public Works shall be applied as far as practicable: • Connection construction plant and equipment to main electricity supply and avoid use of diesel generators and diesel-powered equipment; • Exempted NRMMs shall be avoided;	To minimize exhaust emission from NRMMs during construction phase	Contractor and sub-contractors	All work sites	Construction phase	DEVB TC(W) No.1/2015

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & 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?
		• Deploy electrified NRMMs as far as practicable.					
4.7.5	2.2.1	In order to help reduce carbon emission and pollution, timely application of temporary electricity and water supply as well as wider use of electric vehicles in public works contracts would be adopted in accordance with DEVB TC(W) No. 13/2020 – Timely Application of Temporary Electricity and Water Supply for Public Works Contracts and Wider Use of Electric Vehicles in Public Works Contracts in the Project.	To reduce carbon emission and pollution	Contractor and sub-contractors,	All work sites	Construction phase	DEVB TC(W) No.13/2020
Noise							
5.8.3	3.3.1 – 3.3.2	Selection and Optimisation of Construction Processes • Carefully arrange the timing and sequencing of the various construction activities according to the actual site work situation; • Limit the number of concurrent activities; • Avoid simultaneous operation of noisy PME; and • Limit the percentage on-time of PME	To minimize construction noise impact arising from the Project	Contractor and sub-contractors	All work sites	Construction phase	EIAO, Noise Control Ordinance
5.8.4-5.8.9	3.3.1-3.3.2	Use of Quieter Alternative Construction Equipment/Methods The Contractor shall consider quieter construction methods or technologies to reduce the noise at its source if they are technically feasible and applicable for the proposed construction works. • For site preparation works, hydro-demolition will be adopted as far as practicable for the removal of existing carpark slab.	To minimize potential impacts to the nearby NSRs	Contractor and sub-contractors	All work sites	Construction phase	EIAO, Noise Control Ordinance

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		• For foundation works, socketed steel H-piling will be adopted; • For the main building construction, localised precast concrete construction will be adopted to minimize in-situ work; and • Reinforced concrete MiC by fully making use of Building Information Modelling (BIM).					
5.8.10 – 5.8.12	3.3.1 – 3.3.2	Use of QPME • Specify maximum SWL for specific plant equipment; and • Obtain particular models of plant that are quieter than the QPMEs listed	To minimize construction noise impact arising from the Project	Contractor and sub-contractors	All work sites	Construction phase	EIAO, Noise Control Ordinance
5.8.13 – 5.8.14	3.3.1 – 3.3.2	Use of Movable Noise Barriers • The use of movable noise barrier for certain PME could further minimize the construction noise impact. In general, 5dB(A) reduction for mobile PME and 10dB(A) for stationary PME can be achieved provided that the direct line-of site of the PME is blocked. • The Contractor shall be responsible for the design of the movable noise barrier with due consideration given to the size of the PME and the requirement of intercepting the line of sight between the NSRs and the PME, as well as ensuring that the barriers should have no openings and gaps.	To minimize construction noise impact arising from the Project	Contractor and sub-contractors	All work sites	Construction phase	EIAO, Noise Control Ordinance

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5.8.15	3.3.1 – 3.3.2	Implementation of Good Site Practices: • Use of well-maintained and regularly-serviced plant during the works; • Turn off or throttle down the plant in intermittent use to a minimum; • Orient the plant known to emit noise strongly in one direction to face away from the NSRs; • Use silencers, mufflers and enclosures for plant where possible and maintain properly throughout the works; • Site fixed plant as far away from NSRs as possible; and • Use stockpiles of excavated materials and other structures such as site buildings effectively to screen noise from the works.	To minimize construction noise impact arising from the Project	Contractor and sub-contractors	All work sites	Construction phase	EIAO, Noise Control Ordinance
5.8.16 – 5.8.17	3.3.1-3.3.2	Preparation of Construction Noise Management Plan (CNMP). • CNMP shall be prepared and submitted to the Director of EP no later than 2 months before the issuance of the tender of the Project and before commencement of the Project implementation; • If there is any change to the construction noise mitigation measures and/or plant inventory recommended in the submitted CNMP, an updated CNMP should be submitted to the Director, no later than one month before the implementation of any of such change; and • The CNMP shall be prepared and checked by Certified Noise Modelling Professional as	To minimize construction noise impact arising from the Project	Contractor and sub-contractors	All work sites	Construction phase	EIAO, Noise Control Ordinance, EIAO GN No. 9/2023

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		recognized by Hong Kong Institute of Qualified Environmental Professionals Limited (HKIQEP) or equivalent.					
5.8.17 – 5.8.18	3.3.4	The following noise reduction measures should be considered as far as practicable: • Apply noise mitigation measures including silencers, acoustic louvers and acoustic enclosure where necessary; • As part of the design process, commissioning test should be conducted to ensure the compliance of relevant fixed plant noise criteria; and • Develop and implement a regularly scheduled plant maintenance programme to ensure that equipment is properly operated and serviced in order to maintain controlled level of noise. The programme should be implemented by properly trained personnel.	To minimize the fixed plant noise impact	Contractor and sub-contractors, HKO	Annex Block and Red House at HKO Headquarters	Design phase, Operation phase	EIAO, Noise Control Ordinance
Water Quality and Sewerage							
6.7.1	4.2.1	In accordance with Professional Persons Environmental Consultative Committee Practice Notes (ProPECC PN) 2/23, potential water quality impact shall be minimised by the implementation of construction phase mitigation measures and general good site practice including the following: • At the establishment of works site, perimeter cut-off drains to direct off-site water around the Site should be constructed with internal drainage works and erosion and sedimentation control facilities implemented. Channels (both temporary and permanent drainage pipes and culverts), earth bunds or sand bag barriers should be provided to divert the stormwater to	To minimize water quality impacts	Contractor and sub-contractors	All work sites	Construction phase	Water Pollution Control Ordinance

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		silt removal facilities. The design of the temporary on-site drainage system will be undertaken by the Contractor prior to the commencement of construction, followed by proper maintenance and management practices throughout the construction phase; • Dikes or embankments for flood protection should be implemented around the boundaries of earthwork areas. Temporary ditches should be provided to facilitate the run-off discharge into an appropriate watercourse, through a silt/sediment trap. Silt/sediment traps should also be incorporated in the permanent drainage channels to enhance deposition rates; • The design of efficient silt removal facilities should be based on the guidelines in Appendix A1 of ProPECC PN 2/23, which states that the retention time for silt/sand traps should be less than 5 minutes under maximum flow conditions. The sizes may vary depending upon the flow rate, but for a flow rate of $0.1m^3/s$, a sedimentation basin of $30m^3$ would be required and for a flow rate of $0.5m^3/s$ the basin would be $150m^3$. The detailed design of the sand/silt raps should be undertaken by the Contractor prior to the commencement of construction. • The construction works should be programmed to minimise surface excavation works during rainy seasons (April to September), as far as possible. All exposed earth areas should be completed and vegetated as soon as possible after completion of the earthwork, or alternatively, within 14 days of the cessation of earthworks where practicable.					

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		If excavation of soil cannot be avoided during the rainy season, or at any time of year when rainstorms are likely, exposed slope surfaces should be covered by tarpaulin or other means; temporary access roads should be protected by crushed stone or gravel, as excavation proceeds. Intercepting channels should be provided (e.g. along the crest/edge of excavation) to prevent storm runoff from washing across exposed soil surface. Arrangements should always be in place to ensure that adequate surface protection measures can be safely carried out well before the arrival of a rainstorm. • The overall slope of works sites should be kept to a minimum to reduce the erosive potential of surface water flows, and all trafficked areas and access roads should be protected by coarse stone ballast. An additional advantage accruing from the use of crushed stone is the positive traction gained during the prolonged periods of inclement weather and the reduction of surface sheet flows; • All drainage facilities and erosion and sediment control structures should be regularly inspected and maintained to ensure their proper and efficient operation at all times particularly following rainstorms. Deposited silts and grits should be removed regularly and disposed of by spreading evenly over stable, vegetated areas; • Measures should be taken to minimise the ingress of site drainage into excavations. If the excavation of trenches in wet season is inevitable, they should be dug and backfilled					

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		in short sections wherever practicable. The water pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities; • All open stockpiles of construction materials (for example, aggregates, sand and fill materials) should be covered with tarpaulin or similar fabric during rainstorms. Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system; • Manholes (including newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris being washed into the drainage system and storm run-off being directed into foul sewers; • Precautions to be taken at any time of the year when rainstorms are likely, actions to be taken when a rainstorm is imminent or forecasted and during or after rainstorms, are summarised in Appendix A2 of ProPECC PN 2/23. Particular attention should be paid to the control of silty surface run-off during storm events; • All vehicles and plants should be cleaned before leaving the Project Site to ensure no earth, mud, debris and the like is deposited by them on roads. An adequately designed and sited wheel washing bay should be provided at the exit of Project Site where practicable. Wash-water should have sand and silt settled out and removed at least on a weekly basis to ensure the continued efficiency of the process.					

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		The section of access road leading to, and exiting from, the wheel-washing bay to public roads should be paved with sufficient backfall toward the wheel-washing bay to prevent vehicle tracking of soil and silty water to public roads and drains; • Oil interceptors should be provided in the drainage system downstream of any oil/fuel pollution sources. Oil interceptors should be emptied and cleaned regularly to prevent the release of oil and grease into the storm water drainage system after accidental spillage. A bypass should be provided for oil interceptors to prevent flushing during heavy rain. Any drainage channels connecting storm drains via designed sand/silt removal facilities should be disconnected/removed after completion of construction stage to prevent any direct discharge to the stormwater system; • The construction solid waste, debris and rubbish on-site should be collected, handled and disposed of properly to avoid causing any water quality impacts. The requirements for solid waste management are detailed in *Section 8* of EIA report; and • All fuel tanks and storage areas should be provided with locks and sited on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank to prevent spilled fuel oils from reaching the nearby WSRs; • Groundwater pumped out of wells, etc. for the lowering of ground water level in basement or foundation construction, and groundwater					

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		seepage pumped out of tunnels or caverns under construction should be discharged into storm drains after the removal of silt in silt removal facilities; • Water used in ground boring and drilling for site investigation or rock/soil anchoring should as far as practicable be recirculated after sedimentation. When there is a need for final disposal, the wastewater should be discharged into storm drains via silt removal facilities; • Bentonite slurries used in diaphragm wall and bore-pile construction should be reconditioned and reused wherever practicable. If the disposal of a certain residual quantity cannot be avoided, the used slurry may be disposed of at the marine spoil grounds subject to obtaining a marine dumping licence from EPD on a case-by-case basis; • If the used bentonite slurry is intended to be disposed of through the public drainage system, it should be treated to the respective effluent standards applicable to foul sewers, storm drains or the receiving waters as set out in the WPCO Technical Memorandum on Effluent Standards; • Before commencing any demolition works, all sewer and drainage connections should be sealed to prevent building debris, soil, sand etc. from entering public sewers/drains;					

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		• Wastewater generated from building construction activities including concreting, plastering, internal decoration, cleaning of works and similar activities should not be discharged into the stormwater drainage system. If the wastewater is to be discharged into foul sewers, it should undergo the removal of settleable solids in a silt removal facility, and pH adjustment as necessary; and • Acidic wastewater generated from acid cleaning, etching, pickling and similar activities should be neutralized to within the pH range of 6 to l0 before discharging into foul sewers. If there is no public foul sewer in the vicinity, the neutralized wastewater should be tankered off site for disposal into foul sewers or treated to a standard acceptable to storm drains and the receiving waters.					
6.7.3	4.2.1	There is a need to apply to the EPD for a discharge licence for discharge of effluent from the construction site under the WPCO. The discharge quality must meet the requirements as specified in the discharge licence. All the run-off and wastewater generated from the works areas should be treated so that it satisfies all the standards listed in the Technical Memorandum. Minimum distances of 100 m should be maintained between the discharge points of construction site effluent and the existing seawater intakes. In addition, no new effluent discharges in nearby typhoon shelters should be	To minimize water quality impacts	Contractor and sub-contractors	All work sites	Construction phase	Water Pollution Control Ordinance

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		allowed. The beneficial uses of the treated effluent for other on-site activities such as dust suppression, wheel washing and general cleaning etc., would minimise water consumption and reduce the effluent discharge volume.					
6.7.4	4.2.1	Portable chemical toilets and sewage holding tanks are recommended for the handling of the construction sewage generated by the workforce. A licenced contractor should be employed to provide appropriate and adequate portable toilets and be responsible for appropriate disposal and maintenance.	To minimize water quality impacts	Contractor and sub-contractors	All work sites	Construction phase	Water Pollution Control Ordinance Waste Disposal (Chemical Waste) (General) Regulation
6.7.5	4.2.1	The Contractor must register as a chemical waste producer if chemical wastes would be produced from the construction activities. The Waste Disposal Ordinance (Cap. 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation should be observed and complied with for control of chemical wastes.	To minimize water quality impacts	Contractor and sub-contractors	All work sites	Construction phase	Water Pollution Control Ordinance Waste Disposal (Chemical Waste) (General) Regulation
6.7.6	4.2.1	Any maintenance facilities should be located on hard standings within a bunded area, and sumps and oil interceptors should be provided. Maintenance of vehicles and equipment involving activities with potential for leakage and spillage should be undertaken within the areas appropriately equipped to control these discharges.	To minimize water quality impacts	Contractor and sub-contractors	All work sites	Construction phase	Water Pollution Control Ordinance
6.7.7	4.2.2	All sewage arising from the Project should be collected and diverted to the public sewerage system via proper connections to minimise water quality impact from the operation of the Project and ensure compliance with WPCO-TM on Standards for Effluents Discharged into Drainage and Sewerage	To minimize sewage impacts	Contractor and sub-contractors,	Annex Block and Red House at HKO Headquarters	Design phase, operation phase	Water Pollution Control Ordinance

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		Systems, Inland and Coastal Waters under the WPCO.					
6.7.8	4.2.2	To minimise the impact from increased surface runoff, the Project should be designed with adequate drainage system to cater for the runoff from 50 year-return-period rainstorm; and provided with appropriate screening facilities and oil interceptors, as required. The design of stormwater drains shall follow the relevant guidelines and practices as given in the ProPECC PN 1/23. Manholes, gullies and oil interceptors should be cleaned and inspected regularly. Additional inspection and cleansing should be carried out before forecast heavy rainfall.	To minimize impact from increased surface runoff	Contractor and sub-contractors, HKO	Annex Block and Red House at HKO Headquarters	Design phase, operation phase	Water Pollution Control Ordinance
Waste Management							
7.6.1-7.6.5	5.2.1	Recommendations for general mitigation measures: • Provide training for site staff for the concept of site cleanliness, chemical handling procedures and appropriate waste management procedures, including waste reduction, reuse and recycle; • Develop and provide toolbox talk for on-site sorting of C&D materials to enhance workers' awareness in handling, sorting, reuse and recycling of C&D materials; • Requirements for staff training shall be included in the contractor's Environmental Management Plan (EMP). The EMP shall be submitted to the Engineer for approval before construction works; • Good planning and site management practices shall be employed to eliminate over ordering	To ensure proper management of waste disposal	Contractor and Sub-contractors	All works sites and related transportation route of waste	Construction phase	Waste Disposal Ordinance, Land (Miscellaneous Provisions) Ordinance, DEVB TC(W) No. 6/2010, ETWB TC(W) No. 19/2005, EIAO, WBTC No.2/93 , WBTC No.2/93B

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		or mixing of construction materials and reduce wastage. Proper storage and site practices will minimize the damage or contamination of construction materials; and • Where waste generation is unavoidable, the potential for recycling or reuse shall be considered. If waste cannot be recycled, disposal routes described in the EMP shall be followed. The amount of waste generated, recycled, and disposed shall be recorded. Trip-ticket system shall also be implemented in accordance with Development Bureau TC(W) No. 6/2010 to monitor the disposal of C&D material and control fly-tipping.					
7.6.6	5.2.1	Recommendations for good site practices: • Nominate approved personnel, such as a site manager to be responsible for implementation of good site practices, arrangements for waste collection and effective disposal to an appropriate facility; • Prepare EMP to include monthly and yearly Waste Flow Tables that indicate the amounts of waste generated, recycled and disposed of (including final disposal site), and which shall be regularly updated; • The reuse/ recycling of all materials on site shall be investigated prior to treatment/ disposal off-site • Proper site practices shall be adopted from the	To ensure proper management of waste disposal	Contractor and Sub-contractors	All works sites and related transportation route of waste	Construction phase	Waste Disposal Ordinance, Land (Miscellaneous Provisions) Ordinance, DEVB TC(W) No. 6/2010, ETWB TC(W) No. 19/2005, EIAO, WBTC No.2/93 , WBTC No.2/93B

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		commencement of works to avoid the generation of waste, reduce cross contamination of waste and to promote waste minimization; • Minimise windblown litter and dust during transportation of waste such as by either covering trucks or by transporting wastes in enclosed containers; and • Adoption of appropriate measures to minimise windblown litter and dust during transportation of waste such as either covering trucks or by transporting wastes in enclosed containers; and • Adoption of a recording system for the amount of wastes generated, recycled and disposed (including the disposal sites).					
7.6.7	5.2.1	Recommendations for waste reduction measures: • Encourage collection of aluminum cans, paper and plastic and glass bottles by providing separate labelled bins to enable these wastes to be segregated from other general refuse generated by the workforce; • Segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal; • Make provisions in contract documents to allow and promote the use of recycled aggregates where appropriate; • Minimize over-ordering and wastage through	To ensure proper management of waste disposal and minimize waste quantity	Contractor and Sub-contractors	All works sites and related transportation route of waste	Construction phase	Waste Disposal Ordinance, Land (Miscellaneous Provisions) Ordinance, DEVB TC(W) No. 6/2010, ETWB TC(W) No. 19/2005, EIAO, WBTC No.2/93 , WBTC No.2/93B

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		careful planning during purchasing of construction materials; • Use of steel formwork instead of timber formwork to reduce the generation of timber waste; • Proper site practices to minimise the potential for damage or contamination of inert C&D materials; and • Plan the delivery and stock of construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste.					
7.6.8	5.2.1	<u>C&D Materials:</u> • Sort and segregate on-site materials into inert and non-inert C&D materials, to be recycled or reused. • Make arrangements for the collection of the recyclable materials. Collected Timber and woody materials will be delivered to Yard Waste Recycling Centre in Y-Park as far as possible . Any remaining non-inert C&D materials shall be collected and disposed of at landfills whilst any inert C&D materials shall be re-used on site as far as possible. • Surplus inert materials can be delivered to Public Fill Reception Facilities after obtaining the appropriate licence; • A trip ticket system with CCTV monitoring at the vehicular entrance and exit shall be	To ensure proper management of C&D materials and minimize quantity of C&D waste	Contractor and Sub-contractors	All work sites and related transportation route of waste	Construction phase	Waste Disposal Ordinance, Land (Miscellaneous Provisions) Ordinance, DEVB TC(W) No. 6/2010, ETWB TC(W) No. 19/2005, EIAO, WBTC No.2/93 , WBTC No.2/93B

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		established at the outset of the construction to monitor the disposal of C&D materials and solid wastes from the Site to public filling facilities and landfills; • All dump trucks should be equipped with GPS or equivalent system for the monitoring of their travel routings and parking locations to prohibit illegal dumping and landfilling of C&D materials. • Cover properly with tarpaulin or similar impervious sheeting to prevent dust nuisance and site runoff; • Prior to disposal off-site, non-inert C&D materials will have to be temporarily put in a suitably covered storage area where it will have to be regularly cleaned and maintained to avoid attracting vermin and pests; and • Dump trucks with mechanical cover shall be used to minimize windblown litter and dust during transportation of waste.					
7.6.8	5.2.1	<u>Chemical Waste:</u> • The Contractor shall be registered as Chemical Waste Producer if chemical wastes such as spent lubricants and paints are generated on site; • Suitable containers shall be used for specific types of chemical wastes. The containers shall be properly labelled and closely secured to prevent spillage/leakage in the vicinity. Stored	To minimize impacts arising from collection and transportation of chemical waste for off-site disposal	Contractor and sub-contractors	All work sites	Construction phase	Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes, Waste Disposal (Chemical Waste) (General) Regulation

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & 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?
		volume shall not be kept more than 450 litres. • Storage area shall be enclosed by three sides by a wall, partition of fence that is at least 2m height or height of tallest container with adequate ventilation and space; • Used lubricants should be collected and stored in individual containers which are fully labelled in English and Chinese and stored in a designated secure place. The licensed chemical waste collector should regularly take chemical waste to a licensed chemical waste treatment facility (such as the CWTC in Tsing Yi); • No lubricants, oils, solvents or paint products should be allowed to discharge into water courses, either by direct discharge, or as contaminants carried in surface water runoff from the construction site; and • Drip tray should be provided to chemical waste containers. The drip tray should be cleaned up regularly. Clean up should be done before foreseeable inclement weather such as typhoon or heavy rain.					

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7.6.8	5.2.1	General Refuse: • A sufficient number of covered bins shall be provided on site for the containment of general refuse to prevent visual impacts and nuisance to the sensitive surroundings. These bins shall be cleared daily and the collected waste disposed of to WENT Landfill. The contractor is required to maintain a clean and hygienic site throughout the Project works; • Waste collection facilities (e.g. litter bins) and separate collection bins for glass bottles, aluminium cans, plastic containers and paper wastes shall be provided. Recyclable materials shall be separated and delivered to the local recyclers; and • General refuse including food waste generated on-site shall be stored in enclosed bins or skips and collected separately from other construction and chemical wastes and disposed of at WENT Landfill. The removal of waste from the Site shall be arranged on a daily basis by the contractor to minimize any potential odour impacts, minimize the presence of pests, vermin and other scavengers and prevent unsightly accumulation of waste; and. • Disposal of general refuse is recommended before foreseeable inclement weather such as typhoon or heavy rain.	To minimize impacts arising from collection and transportation of general refuse for off-site disposal	Contractor and sub-contractor(s)	All work sites	Construction phase	Waste Disposal Ordinance, Development Bureau TC(W) No. 8/2010

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7.6.9-7.6.10	5.2.2	• Waste collection facilities (e.g. litter bins) and recycling bins for aluminium cans, plastic drinks bottles and paper wastes shall be provided. Other non-recyclable general refuse would be collected by licensed collectors daily and disposed of at WENT Landfill. • General refuse shall be removed on a daily basis to minimize potential odour, pest and litter impact.	To avoid and minimize impacts arising from waste management	HKO	Annex Block and Red House at HKO Headquarters	Operation phase	Waste Disposal Ordinance

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Cultural Heritage							
8.8.10	6.2.1	Recommended mitigation measures for the archaeological perspective: • As a precautionary measure, the Project Proponent is required to inform AMO immediately when any antiquities or supposed antiquities under the Antiquities and Monuments Ordinance (Cap. 53) are discovered during the course of works.	To minimize impacts to the cultural heritage resources	Contractor and Sub-contractors	Within Project site	Design phase, construction phase	Antiquities and Monuments Ordinance
8.8.10	6.2.1	Recommended mitigation measures for the proposed construction of New Annex Block with various greening strategies: • Photographic and cartographic survey of the heritage site including the affected CDEs shall be carried out before the commencement of works; • Condition survey should be carried out before, during (at a regular interval during works period) and upon completion of the Project; • Interpretation strategy should be properly formulated and the historic development and changes of the heritage site should be presented to enhance and reinforce the understanding of its cultural significance; • The Project proponent should be reminded to inform AMO immediately in case of discovery of antiquities or supposed antiquities in the course of works, so that appropriate mitigation	To minimize impacts to the cultural heritage resources	Contractor and Sub-contractors	Within Project site	Design phase, construction phase	Antiquities and Monuments Ordinance

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		measures, if needed, can be timely formulated and implemented in agreement with AMO. • Details of the construction of underground plant room should be submitted to AMO at the implementation stage for further review. Any construction works of the temporary works during construction stage to be outside Project Site boundary should be reversible and shall have minimum disturbance to existing historic landscape.					
8.8.11	6.2.1	Recommended mitigation measures for the proposed geotechnical works for the construction of new Annex Block: • Photographic and cartographic survey of the heritage site including the affected CDEs shall be carried out before the commencement of works. • Condition survey should be carried out to record conditions of the affected CDEs before, during (at a regular interval during works period) and upon completion of the Project so as to ensure that the CDEs of historic buildings and / or surrounding within the HKO Headquarters would be properly monitored. All the survey reports should be submitted for AMO's record. • Interpretation strategy should be properly formulated and the historic development and changes of the heritage site should be	To minimize impacts to the cultural heritage resources	Contractor and Sub-contractors	Within Project site	Construction phase	Antiquities and Monuments Ordinance

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & 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?
		presented to enhance and reinforce the understanding of its cultural significance. • The Project proponent should be reminded to inform AMO immediately in case of discovery of antiquities or supposed antiquities in the course of works, so that appropriate mitigation measures, if needed, can be timely formulated and implemented in agreement with AMO. • The proposed works for the construction of new Annex Block (including site formation works, foundation works, slope upgrading and improvement works, superstructure and external works etc.) shall have minimum disturbance to existing historic landscape. • The proposed works for the construction of new Annex Block shall take into account of the existing historic buildings in the close vicinity which shall not incur ground settlement, and impose vibration and tilting to the historic buildings, and should not undermine or cause damage to the foundation of the historic structures. • During the construction stage, works boundary should be set away from the historic buildings within the HKO Headquarters as far as practical and physical barrier should be provided to fence off heritage sites from the works area. • Foundation information of the historic structures shall be verified on site where necessary, sufficient lateral support should be provided and de-watering (if required) should be carried out with great cautions to control					

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & 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?
		ground movement and change of ground water regime at the heritage site.					
8.8.12	6.2.1	Recommended mitigation measures for the provision of a widened access road to the new Annex Block for the EVA: • Photographic and cartographic survey of the heritage site including the affected CDEs shall be carried out before the commencement of works; • Condition survey should be carried out to record conditions of the affected CDEs before, during (at a regular interval during works period) and upon completion of the Project; • Interpretation strategy should be properly formulated and the historic development and changes of the heritage site should be presented to enhance and reinforce the understanding of its cultural significance. • The Project proponent should be reminded to inform AMO immediately in case of discovery of antiquities or supposed antiquities in the course of works, so that appropriate mitigation measures, if needed, can be timely formulated and implemented in agreement with AMO. • The widened access road will be constructed in a way such that the major access from the Nathan Road site entrance to the main area is still maintained. • The site entrance from Nathan Road will need to be widened in order to achieve the widened EVA. The affected gate posts shall be salvaged	To minimize impacts to the cultural heritage resources	Contractor and Sub-contractors	Annex Block and the widened access road	Design phase, construction phase	Antiquities and Monuments Ordinance

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & 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?
		and re-installed in a new location as far as technically feasible. • The proposal and works on the entrance, the gate and the posts should be conducted upon AMO's approval as appropriate.					
8.8.13	6.2.1	Recommended mitigation measures for Proposed UU diversion works: • Condition survey should be carried out to record conditions of the affected CDEs before, during (at a regular interval during works period) and upon completion of the Project so as to ensure that the CDEs of historic buildings and / or surrounding within the HKO Headquarters would be properly monitored. All the survey reports should be submitted for AMO's record. • The proposed works area of UU diversion will both make use of existing trenches and form new trenches along the existing paths. • In case of forming new trenches: - The forming of new trenches will require excavation of 1.8m from the ground level. The proposed works for the UU diversion shall take into account of the existing historic buildings in the close vicinity which shall not incur ground settlement, and impose vibration and tilting to the historic buildings, and should not undermine or cause damage to the foundation of the historic structures. - The exact boundary for the excavation works shall be refined and determined in	To minimize impacts to the cultural heritage resources	Contractor and Sub-contractors	Within Project site	Design phase, construction phase	Antiquities and Monuments Ordinance

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & 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?
		detailed design stage in order to avoid disturbance to the foundation of existing buildings. Trial pits shall be carried out subject to AMO's approval. - The excavation works will be limited to the use of small excavator and handheld tools for shallow excavations to minimise the indirect vibration/settlement / tilting impact. - New underground utilities will be grouped together when entering the affected buildings at localised locations. - Any new openings for passage of the underground utilities should be at less prominent locations, and should be agreed prior to the works. The forming of the new openings shall be subject to the advice from Registered Structural Engineer. • In case of making use of the existing trenches: - Existing openings should be utilised as far as technically feasible so that minimum number of openings will be made on the walls. - In the event that it is necessary to enlarge existing openings, the extent of the enlargement shall be determined by Registered Structural Engineer. Disturbance to the existing structure shall be kept to a minimum as far as possible.					

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & 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 proposed works for the UU diversion works shall have minimum disturbance to existing historic buildings and landscape. • Monitoring measures are required during the construction stage upon commencement of any works till the works completed to ensure the structural integrity of the historic buildings. • Three levels of control criteria, Alert, Alarm and Action levels (AAA system) would be adopted for monitoring during excavations for the UU diversion works. Checkpoints and markers relating to ground settlement, services settlement, building tilting, vibration and water table would be installed for the monitoring. • Different sets of monitoring points should be provided in the vicinity of the Project Site and the historic buildings of HKO Headquarters respectively, with locations and frequency to be agreed by AMO. Monitoring criteria would be subjected to review by AMO. • Construction works shall be suspended immediately when a vibration monitoring reading is found to exceed the limits given in the vibration control / monitoring scheme. An investigation report and remedial proposal shall be submitted to Project team, ArchSD and AMO to examine the construction method and review ground response history of the monitoring record. The construction works shall only be resumed after the acceptance of					

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & 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 investigation report and remedial proposal by Project team, ArchSD and AMO. • Periodic visual inspections of the historic buildings shall be conducted by contractor during the course of construction works, and the monitoring data should be submitted for Project team and AMO's noting, comment and record. • The Project proponent should be reminded to inform AMO immediately in case of discovery of antiquities or supposed antiquities in the course of works, so that appropriate mitigation measures, if needed, can be timely formulated and implemented in agreement with AMO.					
8.8.14	6.2.1	Recommended mitigation measures for refurbishment of the Red House for the purpose of providing a history room: • Photographic and cartographic survey of Red House including the affected CDEs shall be carried out before the commencement of works. • Interpretation strategy should be properly formulated and the historic development and changes of the Red House should be presented to enhance and reinforced the understanding of its cultural significance. • The new use as a history room will make use of the existing internal layout and will not impose any impact to the original spatial arrangement.	To minimize impacts to the cultural heritage resources	Contractor and Sub-contractors	Red House at HKO Headquarters	Construction phase	Antiquities and Monuments Ordinance

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & 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?
8.8.15	6.2.1	Recommended mitigation measures for removal of existing later-added window-type A/C units: • The later-added window-type A/C units are undesirable interventions to the Red House and shall be removed. Reinstating those affected windows could reveal the original façade and window design. • Detailed documentation including photographic survey and cartographic survey should be carried out to the affected building elements prior to the removal. • New timber windows to be installed should make reference to the existing timber windows of period style in terms of materials, dimensions, texture, colour, and ironmongeries.	To minimize impacts to the cultural heritage resources	Contractor and Sub-contractors	Red House at HKO Headquarters	Design phase, cconstruction phase	Antiquities and Monuments Ordinance
8.8.16	6.2.1	Recommended mitigation measures for removal of existing internal fittings identified to be later additions (e.g. false ceilings): • The later-added internal fittings are undesirable interventions to the Red House and shall be removed. Reinstating those affected CDEs could reveal the original historic fabrics and interior. • Detailed documentation including photographic survey and cartographic survey should be carried out to the affected building elements prior to the removal.	To minimize impacts to the cultural heritage resources	Contractor and Sub-contractors	Red House at HKO Headquarters	Design phase, construction phase	Antiquities and Monuments Ordinance
8.8.17	6.2.1	Recommended mitigation measures for installation of building services systems such as electrical system, fire services system, air conditioning system, etc.:	To minimize impacts to the cultural heritage resources	Contractor and Sub-contractors	Red House at HKO Headquarters	Design phase, construction phase	Antiquities and Monuments Ordinance

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & 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?
		• Existing building services installation should be followed as far as technically feasible. All the locations of new openings should be submitted to AMO for approval. • New building services will be grouped together when entering the Red House so that minimum number of openings will be made on the walls. • Instead of forming new holes, existing openings on walls should be utilised as far as technically feasible. • New openings for passage of pipes should be at less prominent location, and should be agreed prior to the works. • Cable trunking should be used instead of individual electrical conduits. • Minimise disturbance to the historic walls as far as possible. The openings shall be formed by removal of masonry units subject to the advice from Registered Structural Engineer. • No new conceal type conduit and pipe is allowed at existing historic fabrics. The exposed routing should be carefully designed at less prominent locations and tidily aligned to keep minimum disturbance and visual impact to historic fabrics.					
8.8.18	6.2.1	Recommended mitigation measures for the proposed geotechnical works including retaining structure, slope improvement works and excavation, lateral support works for pile cap construction, substructure	To minimize impacts to the cultural heritage resources	Contractor and Sub-contractors	Within Project site	Design phase, construction phase	Antiquities and Monuments Ordinance

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & 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?
		and superstructure works for the construction of new Annex Block: • The proposed works for the construction of new Annex Block (including foundation, ELS, geotechnical works, substructure and superstructure works etc.) shall have minimum disturbance to existing historic buildings and landscape. • The proposed works for the construction of new Annex Block shall take into account of the existing historic buildings in the close vicinity which shall not incur ground settlement, and impose vibration and tilting to the historic buildings, and should not undermine or cause damage to the foundation of the historic structures. • Foundation information of the historic structures shall be verified on site where necessary, and sufficient lateral support should be provided and de-watering (if required) should be carried out with great cautions to control ground movement and change of ground water regime at the heritage site. • The excavation and foundation works for the construction of the new Annex Block shall be carried out by a non-percussive method to minimise the disturbance to existing historic building. Percussive method shall be avoided as far as practicable. • Monitoring measures are required during the construction stage upon commencement of any works till the works completed to ensure					

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & 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 structural integrity of the historic buildings. • Three levels of control criteria, AAA system would be adopted for monitoring during foundation and ELS works. Checkpoints and markers relating to ground settlement, services settlement, building tilting, vibration and water table would be installed for the monitoring. • Different sets of monitoring points should be provided in the vicinity of the Project Site and the historic buildings of HKO Headquarters respectively, with locations and frequency to be agreed by AMO. Monitoring criteria would be subjected to review by AMO upon updates of grading status of heritage sites. • Construction works shall be suspended immediately when a vibration monitoring reading is found to exceed the limits given in the vibration control / monitoring scheme. An investigation report and remedial proposal shall be submitted to Project team, ArchSD and AMO to examine the construction method and review ground response history of the monitoring record. The construction works shall only be resumed after the acceptance of the investigation report and remedial proposal by Project team, ArchSD and AMO. • Periodic visual inspections of the historic buildings shall be conducted by contractor during the course of construction works, and the monitoring data should be submitted for					

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & 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?
		Project team and AMO's noting, comment and record. • The Project proponent should be reminded to inform AMO immediately in case of discovery of antiquities or supposed antiquities in the course of works, so that appropriate mitigation measures, if needed, can be timely formulated and implemented in agreement with AMO.					
8.8.19	6.2.1	Recommended mitigation measures for the proposed construction of new Annex Block with various greening strategies: • The new Annex Block will be located away from the main area of HKO Headquarters and the building height is capped at +45 mPD for the least visual impact in the perception of the overall setting. • The location of the new Annex Block is carefully chosen, which is mainly in the supporting area and partly in the area with supplementary facilities, and these areas are with lower significance and experienced interventions throughout the history of the Site. • The appearance of the new Annex Block should be compatible with but distinguishable from the heritage site. • Various greening strategies adopted in the design such as vertical green walls and roof trellis with climber plants could soften the	To minimize impacts to the cultural heritage resources	Contractor and Sub-contractors	Within Project site	Design phase, construction phase	Antiquities and Monuments Ordinance

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & 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?
		appearance of the new Annex Block, while stepped terraces with planting serves as green buffer towards adjacent buildings. • The new Annex Block will be located away from Red House, where a new outdoor space is introduced in-between to minimize visual impact. • The new Annex Block should be understated in design which should not overwhelm the appearance of Red House.					
Landscape and Visual							
Construction Phase							
Section9.9-Table 9.19	7.2.1	<u>Minimisation of Temporary Works</u> The construction area and contractor's temporary works areas shall be minimised to avoid impacts on adjacent landscape.	To avoid impacts on adjacent landscape	Main Contractor	All work sites	Planning phase, construction phase	Approved TPRP; Detailed Design Drawings and Specifications
Section9.9-Table 9.19	7.2.1	<u>Optimisation of Construction Period</u> Reduction of construction period to practical minimum.	To minimize the duration of impacts on VSRs.	Main Contractor	All work sites	Planning phase, Construction phase	Approved project programme.
Section9.9-Table 9.19	7.2.1	<u>Construction Traffic Control</u> Construction traffic including construction plant shall be kept to a practical minimum.	To minimize visual impacts on surrounding VSRs	Main Contractor	All work sites	Planning phase, construction phase	Comply with Particular Specification and approved method statements for use of traffic and plant.
Section9.9-Table 9.19	7.2.1	<u>Screen Hoarding</u> Erection of decorative mesh screens or construction hoardings around works areas in visually unobtrusive colours.	To maximize screening of works from surrounding VSRs	Main Contractor	All work sites	Construction phase	Compliance with Particular Specification and approved hoarding design.

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & 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?
Section9.9-Table 9.19	7.2.1	Reduction of Visual Intrusion of Temporary Built Forms Avoidance of excessive height and bulk of site buildings and structures.	To avoid visual obstruction and intrusion on surrounding VSRs.	Main Contractor	Annex Block and Red House at HKO Headquarters	Planning phase, construction phase	Compliance with Particular Specification and approved contractor's submissions for temporary built forms.
Section9.9-Table 9.19	7.2.1	Light Control Control of night-time lighting by hooding all lights and through minimisation of night working periods.	To minimize visual impacts on surrounding VSRs	Main Contractor	All work sites	Planning phase, construction phase	Compliance with Particular Specification and approved contractor's submissions for night lighting and working.
Section9.9-Table 9.19	7.2.1	Tree Protection & Preservation All existing trees to be retained shall be carefully protected before, during and after construction. A Detailed Tree Protection Specification shall be provided in the Contract Specification, under which the Contractor shall be required to submit for approval a detailed method statement for the protection of trees prior to undertaking any works adjacent to all retained trees or trees to be transplanted, including trees in contractor's works areas. Early preparation of trees to be transplanted shall be undertaken to increase their likely survival rate following transplanting.	To protect the existing trees	Main Contractor	All work sites	Planning phase, construction phase	Compliance with approved TPRP, DEVB TC(W) No. 4/2020; Tree Protection Particular Specification and approved Contractor's tree protection method statement.
Section9.9-Table 9.19	7.2.1	Tree Transplantation Trees unavoidably affected by the construction works shall be transplanted where practical. Detailed transplanting proposals shall be submitted to relevant government departments for approval.	To transplant the trees unavoidably affected	Main Contractor	Within Project Site and/or off-site	Planning phase, construction phase	Compliance with approved TPRP, Transplanting Particular Specification and approved transplanting method statement.
Operation Phase							

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & 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?
Section 9.10-Table 9.20	7.2.1	Sensitive Design of Building Massing Sensitive design of buildings in terms of scale, height and bulk (visual weight).	To minimize visual impact to surrounding VSRs	Architect and Main Contractor	Annex Block	Design phase, construction phase, operation phase	Detailed Design Drawings and Specifications
Section 9.10-Table 9.20	7.2.1	Treatment of Built Structures Use of appropriate building materials and colours to complement surroundings.	To integrate building and minimise visual impact to surrounding VSRs	Architect and Main Contractor	Annex Block	Design phase, construction phase, operation phase	Detailed Design Drawings and Specifications
Section 9.10-Table 9.20	7.2.1	Careful Design and Positioning of Building Footprint Design of building footprint to minimise impact on existing slopes and vegetation.	To minimize impact on existing slopes and vegetation	Architect and Main Contractor	Annex Block	Design phase, construction phase, operation phase	Detailed Design Drawings and Specifications
Section 9.10-Table 9.20	7.2.1	Compensatory Planting Compensatory tree planting shall be provided at 1:1 ratio as far as possible based on felled tree numbers and to the satisfaction of relevant Government departments. Required numbers and locations of compensatory trees shall be determined and agreed separately with Government during the Tree Felling Application process under Development Bureau Technical Circular (Works) No. 4/2020 – Tree Preservation	To mitigate the loss of existing trees	Landscape Sub-contractor	Within Project Site and/or off-site	Design phase, construction phase, operation phase	As per approved TPRP, Detailed Design Drawings and Particular Specification
Section 9.10-Table 9.20	7.2.1	Vertical Greening/ Green Roofs Provision of planting on podium, terraces and roofs and vertical greening of facades to increase greening and provide visual mitigation.	To increase greening and provide visual mitigation	Landscape Sub-contractor	Podium, terraces and roofs of the Annex Block	Design phase, construction phase, operation phase	Detailed Design Drawings and Particular Specifications
Section 9.10-Table 9.20	7.2.1	Provision of Amenity Landscape Area Provision of 30% amenity planting/ greenery area .The exact layout of the greenery area will be subject to detail design of the Project.	To provide adequate green amenity landscape area to minimize landscape and visual impacts	Main Contractor and Landscape Sub-contractor	Within Project Site and/or off-site	Design phase, construction phase, operation phase	DEVB TC(W) No.3/2012; Detailed Design Drawings and Specifications
Section 9.10-Table 9.20	7.2.1	Night Lighting Control Road lighting units to be directional and minimise unnecessary light spill and glare.	To minimize impacts on surrounding VSRs	Main Contractor	Roads within Project Site	Design phase, construction phase, operation phase	Detailed Design Drawings and Specifications

Appendix 3.1

Sample Data Record Sheet for Noise Monitoring

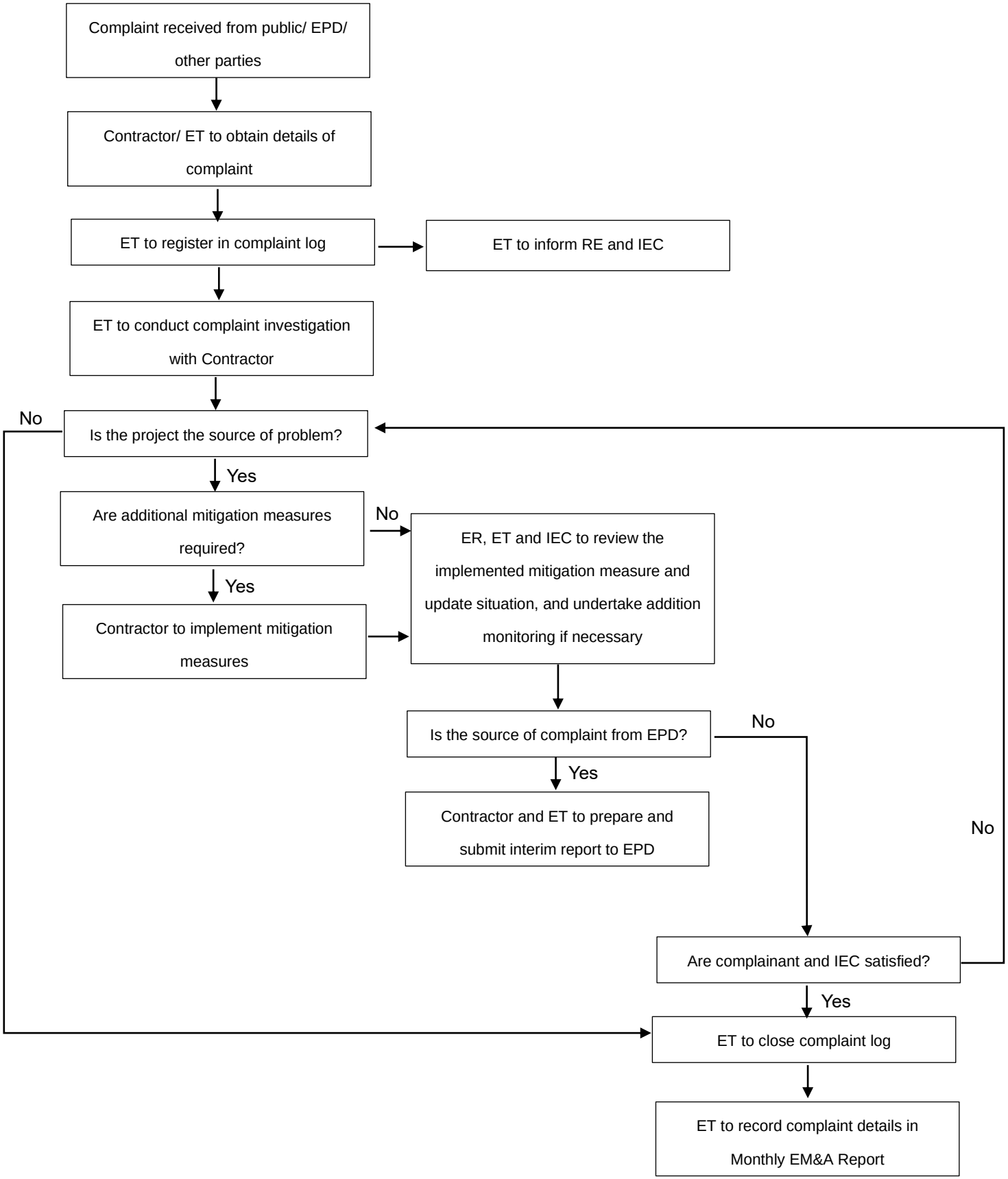
Noise Monitoring Field Record Sheet

Monitoring Location		
Description of Location		
Date of Monitoring		
Measurement Start Time (hh:mm)		
Measurement Time Length (min.)		
Noise Meter Model/Identification		
Calibrator Model/Identification		
Measurement Results	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
Recorded By :			
Checked By :			

Appendix 8.1

Flow Chart of Complaint Response Procedures


Complaint received from public/ EPD/ other parties
Contractor/ ET to obtain details of complaint
ET to register in complaint log
ET to inform RE and IEC
ET to conduct complaint investigation with Contractor
No
Is the project the source of problem?
Yes
Are additional mitigation measures required?
No
ER, ET and IEC to review the implemented mitigation measure and update situation, and undertake addition monitoring if necessary
Yes
Contractor to implement mitigation measures
Is the source of complaint from EPD?
No
Yes
Contractor and ET to prepare and submit interim report to EPD
No
Are complainant and IEC satisfied?
Yes
ET to close complaint log
ET to record complaint details in Monthly EM&A Report

Appendix 9.1

Interim Report on Non-compliance of Action/ Limit Level

Interim Report on Non-compliance of Action Level/ Limit Level

Project	
Date	
Time	
Monitoring Location	
Parameter	
Action/ Limit Levels	
Measured Level	
Possible Reason(s) for Non-compliance of Action/ Limit Level	
Action(s) Taken/ to be Taken	
Remarks	

	Name & Designation	Signature	Date
Recorded by:			
Checked by:			