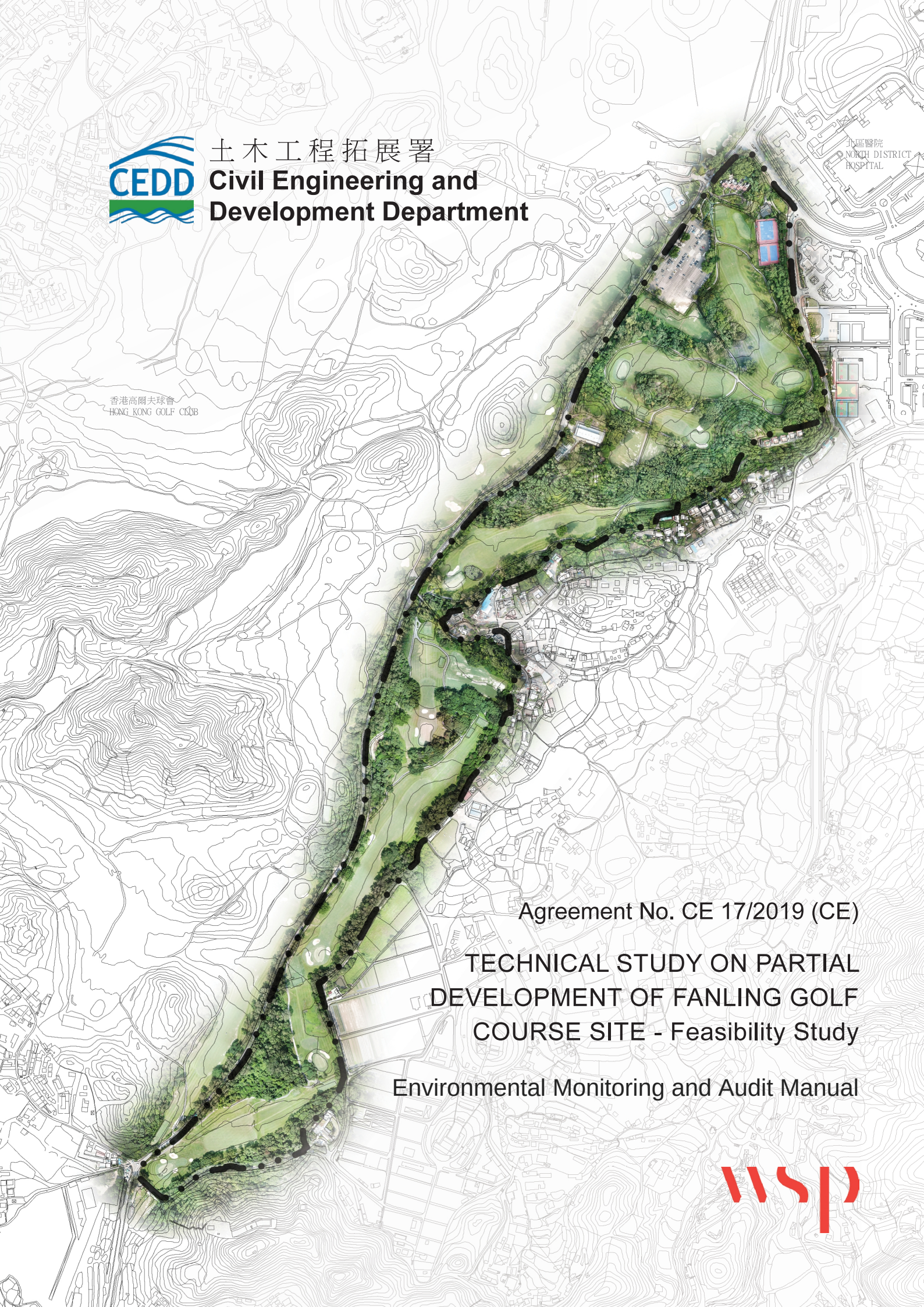
土木工程拓展署
Civil Engineering and Development Department



Agreement No. CE 17/2019 (CE)

TECHNICAL STUDY ON PARTIAL DEVELOPMENT OF FANLING GOLF COURSE SITE - Feasibility Study

Environmental Monitoring and Audit Manual

ENVIRONMENTAL MONITORING AND AUDIT MANUAL

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1. INTRODUCTION

1.1 Background

1.1.1 After public consultation on various land supply options in 2018, the Task Force on Land Supply (Task Force) (TFLS) recommended on 31 December 2018, among others, the Government to accord priority to studying and resuming the 32 ha of land of FGC to the east of Fan Kam Road for housing development. On 20 February 2019, the Government announced that the eight land supply options (including the partial development of the FGC site) recommended by the Task Force were fully endorsed.

1.1.2 The Government also announced that the Government will develop the 32 ha of land east of Fan Kam Road of FGC for the purpose of housing development (with emphasis on public housing), and will accordingly commence a detailed, technical study in the second half of 2019 to ascertain the highest flat yield attainable in short to medium terms; assess the scope of infrastructural works required to support such development; identify environmental, ecological and other constraints, and formulate mitigation measures to contain any identified impacts to within acceptable limits; and come up with an implementation plan with timing and costs.

1.1.3 WSP (Asia) Ltd. has been appointed by CEDD to undertake this Technical Study of Agreement No. CE17/2019 (CE) and title of "Technical Study on Partial Development of Fanling Golf Course Site – Feasibility Study" (the Project). This Assignment was commenced on 30 September 2019.

1.1.4 The location of Project is shown in **Figure 1.1**. Descriptions of the Project elements have been further elaborated and presented in **Section 2.1**.

1.2 Purpose of the Manual

1.2.1 The purpose of this Environmental Monitoring and Audit (EM&A) Manual are to:

- Guide the set up of an EM&A programme to ensure compliance with the EIA 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.

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

1.2.3 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 EM&A Manual has been prepared in accordance with the requirements stipulated in **Annex 21** of the Technical Memorandum on the EIA Process (EIAO-TM).

1.2.4 This 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 organization 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;
- Definition 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.

1.2.5 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 environmental monitoring and audit requirements.

2. PROJECT DESCRIPTION

2.1 General Description of the Project

2.1.1 The FGC site is located to the southwest of Sheung Shui town centre, and the closet point of the FGC site is within 800m from MTR Sheung Shui Railway Station. The golf course is composed of three distinct 18-hole courses (the Old, New and Eden Courses, built in 1911, 1931 and 1970 respectively) set within about 170 ha of land.

2.1.2 The FGC site is currently not covered by any statutory Outline Zoning Plan. To the north, west, south and southeast of the FGC site are mainly rural areas under "Village Type Development", "Green Belt", "Agriculture", "Recreation", "Government, Institution or Community" and "Residential (Group C)" zones. To the northeast and further north across Fanling Highway, it is the Fanling/Sheung Shui New Town, of which land use zones with higher development intensity are found, such as the "Residential (Group A)" zone with a plot ratio of 5 to 7.

2.1.3 A part of the FGC site to the east of Fan Kam Road of about 32 ha (which is identified as the potential development area, or PDA) is identified for comprehensive planning and development. PDA is located to the southwest of Sheung Shui town centre, with a length of about 1.89km and width varying from a minimum of about 54m to a maximum of 358m. It is bounded by Ping Kong Road to its northeast; Po Kin Road to its north; Fan Kam Road to its northwest and west; rural settlements of Ping Kong to its east; Tai Lung Experimental Farm and a green hillock to its southeastern and southern ends.

2.1.4 In order to more specifically address the irregular-shaped site, PDA is delineated as Sub-Area 1 to Sub-Area 4. The boundary of each Sub-Area is shown in **Figure 2.1** and the Sub-Areas are described as follows:-

- Sub-Area 1 is located at the northernmost part of PDA, it extended up to the edge of woodland adjacent to the Fanling Raw Water Pumping Station. This piece of land is generally regular and is adjacent to high density housing development such as Cheung Lung Wai Estate;
- Sub-Area 2 is bounded by the above-mentioned woodland, which is also indicated as an ecological corridor for bypassing of species, and extended up to the existing access road of On Po in the south side. A number of species of conservation importance was recorded and there is a man-made pond in this Sub-Area to provide water source for wildlife.
- Sub-Area 3 is bounded by the existing access road of On Po in the north and the narrow edge adjacent to Tai Lung Experimental Farm at the south. This piece of land is irregular in shape and there are a number of tree clusters at the sides and in the middle of the Sub-Area; and
- Sub-Area 4 is located at the southernmost part of PDA. It is bounded by the boundary of Sub-Area 3 to the Site boundary of PDA. There are a marsh and a swampy woodland with a rare Chinese Swamp Cypress (Glyptostrobus pensilis) colony in the Sub-Area.

2.1.5 The Project explores the development potential of the PDA (a part of the FGC). The PDA and the proposed work limit of supporting infrastructure, government, institution or community facilities and open space covers about 32 ha. The proposed

site formation and the associated infrastructure work to support the public housing developments comprise the followings:

(1) Site formation works;
(2) Building works (i.e. foundation works and superstructure);
(3) Slope works and other geotechnical works;
(4) Roadworks;
(5) Waterworks;
(6) Sewerage works;
(7) Drainage works;
(8) Landscaping works;
(9) Public Transport Interchange (PTI); and
(10) Other infrastructure works including laying of utilities, etc.

2.1.6 Minor road modification works is proposed to be carried out at Ping Kong Road, northeast of the PDA.

2.1.7 Associated supporting infrastructure and utilities outside the Project boundary, which are considered as part of the Project, including (i) laying of sewer to Shek Wu Hui Sewage Treatment Works; (ii) junction improvements; (iii) laying of drainage pipes and construction of flood wall; and (iv) laying of fresh watermains and flushing watermains.

2.2 Designated Project

2.2.1 The proposed Development Area has a study area of about 32 ha. It falls within Item 1 under Schedule 3 of the Environmental Impact Assessment Ordinance (EIAO), i.e. "Engineering feasibility study of urban development projects with a study area covering more than 20 ha or involving a total population of more than 100,000" and is therefore a Designated Project (DP) requiring an EIA report.

2.2.2 Based on the current information, the Project does not include any individual work items that fall under Schedule 2 of the EIAO.

2.3 Implementation Programme

2.3.1 The implementation programme is summarized as below:

Table 2.5 Summary of Tentative Implementation Programme

Stage	Works Components	Time Line
Stage 1	Public Housing Development in Sub-Area 1 • Site clearance and site formation works • Construction of internal Road • Pipe works and utilities works • Construction and building works of public	2024 - 2029

Stage	Works Components	Time Line
	housing site • Construction of public transport interchange (PTI) and bus terminus	
Stage 2	School Site Development in Sub-Area 1 • Site clearance and site formation works • Construction of internal Road • Pipe works and utilities works • Construction of special school	2024 - 2028
Stage 3	Associated Road Works outside PDA • Junction improvement works at Po Kin Road / Ping Kong Road • Minor road improvement works at Ping Kong Road	2024 - 2029
Stage 4	Associated Infrastructure Works outside PDA • Pipe works and utilities works	2024 - 2029
Stage 5	• Recreational cum Conservation Area in Sub-Areas 2 to 4	To be further reviewed

2.4 Construction Projects

2.4.1 The EIA has assessed the potential cumulative impacts of the Project and associated that may arise through interaction or in combination with other existing and planned development in the vicinity of the Project and associated works. A list of the tentative concurrent projects identified at this stage is summarized below:

Concurrent Project	Project Proponent	Tentative Construction Commencement	Target Operation/ Target Completion of Development
Potential Housing Developments in North District - Ching Hiu Road	CEDD	2022	2030
Potential Housing Developments in North District - Tai Tau Leng	CEDD	2025	2032
North District Hospital Extension	ArchSD/ HA	2021	2030
Drainage Improvements at North District	DSD	2021	2027
Fanling Highway Widening	CEDD	2024	2031

Concurrent Project	Project Proponent	Tentative Construction	Target Operation/ Target Completion
Po Shek Wu Flyover	CEDD	2024	2029
Road Improvement Works at Fan Kam Road	HyD	N/A (a)	N/A (a)
Fanling Area 36 Phase 4 (Ching Ho Extension)	CEDD	2020	2024
Private Housing Development at Lot 4076 in D.D. 91	Private Developer	N/A [(a)]	2028
Reclaimed Water Supply to Sheung Shui and Fanling – Investigation, Design and Construction	WSD	2020	2025
Sheung Shui Lot 2RP in DD 92, Sheung Shui	Private Developer	N/A [(a)]	2023
So Kwun Po Interchange [(b)]	CEDD	2025	2030
Retrofitting of Noise Barriers on Po Shek Wu Road	EPD	2024	2028
Drainage Improvement Works in North District	DSD	N/A	N/A

Note:

(a) The commencement/ completion of construction is not available.
(b) As advised by CEDD, construction details (e.g. plant inventory) are not yet available. EIA Study will be commenced shortly in 2021.

3. PROJECT ORGANIZATION

3.1 Project Organization

3.1.1 The proposed project organization and lines of communication with respect to environmental protection works are shown in **Appendix 3.1.**

3.1.2 The leader of the ET shall be an independent party from the Contractor and has relevant professional qualifications, or have sufficient relevant EM&A experience subject to approval of the ER.

3.1.3 The responsibilities of respective parties are:

The Contractor

- Implement the EIA recommendations and requirements;
- Employ an ET to undertake monitoring, laboratory analysis and reporting of environmental monitoring and audit;
- Provide assistance to ET in carrying out monitoring and auditing;
- 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 agreed procedures for carrying out compliant investigation.

Environmental Team

- Set up all the required environmental monitoring stations;
- Monitor various environmental parameters as required in the EM&A Manual;
- Analyse 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 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, the ER and EPD 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; and

- Adhere to the procedures for carrying out environmental complaint investigation.

Engineer or Engineer's Representative

- Supervise the Contractor's activities and ensure that the requirements in the EM&A Manual are fully complied with;
- Inform the Contractor when action is required to reduce impacts in accordance with the Event and Action Plans;
- Assist the Project Proponent in employing an IEC to audit the results of the EM&A works carried out by the ET;
- Comply with the agreed Event Contingency Plan in the event of any exceedance; and
- Adhere to the procedures for carrying out complaint investigations.

Independent Environmental Checker

- 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 con irm the accuracy of monitoring results, monitoring equipment, monitoring locations, monitoring procedures and location of sensitive receivers;
- Report the audit results to the ER and EPD in parallel;
- Review the EM&A reports (monthly and quarterly summary 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 Report 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.

3.1.4 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.

3.1.5 The ET Leader shall have at least 7 years of experience in conducting EM&A for infrastructure projects. His / Her qualification shall be vetted by the ER and the IEC. And the IEC should possess at least 7 years of experience in EM&A.

4. ENVIRONMENTAL SUBMISSION

4.1 Introduction

4.1.1 The Contractor shall prepare the Environmental Management Plan (EMP) (including

a Waste Management Plan, WMP), Construction Method Statement prior to the commencement of construction works and obtain approval from ER and IEC and other relevant authorities to encompass the recommended environmental protection/mitigation measures with respect to their latest construction methodology and programme.

4.2 Environmental Management Plan

4.2.1 A systematic EMP shall be set up by the Contractor to ensure effective implementation of the mitigation measures, monitoring and remedial requirements presented in EIA, EM&A Manual and Environmental Mitigation Implementation Schedule (EMIS) (See **Appendix 4.1**). The ER and the IEC will audit the implementation status against the EMP and advise the necessary remedial actions required. These remedial actions shall be enforced by the ER through contractual means.

4.2.2 The EMP will require the Contractor (together with its sub-contractors) to define in details how to implement the recommended mitigation measures in order to achieve the environmental performance defined in the Hong Kong environmental legislation and the EIA documentation.

4.2.3 The review of on-site environmental performance shall be undertaken by ER and IEC through a systematic checklist and audit once the construction works commences. The environmental performance review programme comprises a regular assessment on the effectiveness of the EMP. Reference should be made to ETWBTC 19/2005 "Environmental Management on Construction Sites" or its latest versions, and any other relevant Technical Circulars.

4.3 Waste Management Plan

4.3.1 As part of EMP, the Contractor shall include WMP for the construction of the Project and prior to the commencement of construction works submit to the ER and IEC for approval. Where waste generation is unavoidable, the opportunities for recycling or reusing should be maximised. If wastes cannot be recycled, recommendations for appropriate disposal routes should be provided in the WMP. A method statement for stockpiling and transportation of the excavated materials and other construction wastes should also be included in the WMP and be approved before the commencement of construction works. All mitigation measures arising from the approved WMP shall be fully implemented.

4.3.2 For the purpose of enhancing the management of Construction and Demolition (C&D) materials including rock, and minimizing its generation at source, construction works would be undertaken in accordance with the Section 4.1.3 of Chapter 4 in the Project Administration Handbook for Civil Engineering Works (PAH).

4.4 Construction Method Statement

4.4.1 In case the Contractor would like to adopt alternative construction methods or implementation schedules, it is required to submit details of methodology and equipment to the ER for approval before the work commences. Any changes in construction method shall be reflected in a revised EMP or the Contractor will be

required to demonstrate the manner in which the existing EMP should accommodate the proposed changes. The Contractor may need to apply for a Variation of Environmental Permit (VEP) from EPD before commencement of any construction activities.

5. AIR QUALITY IMPACT

5.1 Introduction

5.1.1 The EIA has considered the potential air quality impacts during both the construction and operation phases of the project. Fugitive dust and vehicle emission would be the key impacts during the construction phase, while potential odour impact from the proposed sewage treatment works, Sewage Pumping Station, refuse collection points as well as the drainage channels and nullahs shall be effectively controlled during the operation phase.

5.2 Air Quality Parameters

5.2.1 Monitoring and audit of the Total Suspended Particulate (TSP) levels shall be carried out by the ET to ensure that construction works are not generating dust that exceeds the acceptable level. Timely action should be taken to rectify the situation if an exceedance is detected.

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

5.2.3 All relevant data including temperature, pressure, weather conditions, elapsed-time meter reading for the start and stop of the sampler, identification and weight of the filter paper, and any other local atmospheric factors affecting or affected by site conditions, special phenomena and work progress of the site etc., shall be recorded down in detail by the ET. A sample data sheet is shown in **Appendix 5.1.**

5.3 Monitoring Equipment

5.3.1 A high volume sampler (HVS) in compliance with the following specifications should be used for carrying out the 1-hour TSP monitoring:

- 0.6 - 1.7 m^3 per minute (20 - 60 standard cubic feet per minute) adjustable low range;
- Equipped with a timing / control device with ± 5 minutes accuracy for 24 hours operation;
- Installed with elapsed-time meter with ± 2 minutes accuracy for 24 hours operation;
- Capable of providing a minimum exposed area of 406 cm^2;
- Low control accuracy: ± 2.5% deviation over 24-hour sampling period;
- Equipped with a shelter to protect the filter and sampler;

- Incorporated with an electronic mass flow rate controller or other equivalent devices;
- Equipped with a low recorder for continuous monitoring;
- Provided with a peaked roof inlet;
- Incorporated with a manometer;
- Able to hold and seal the filter paper to the sampler housing at horizontal position;
- Easy to change the filter; and
- Capable of operating continuously for 24-hour period.

5.3.2 The ET is responsible for the provision, installation, operation, maintenance, and dismantling of the monitoring equipment. They shall ensure that sufficient number of HVSs with an appropriate calibration kit are available for carrying out the baseline monitoring, regular impact monitoring and ad hoc monitoring. The HVSs shall be equipped with an electronic mass flow controller and be calibrated against a traceable standard at regular intervals. All the equipment, calibration kit, filter papers, etc., shall be clearly labelled by the ET.

5.3.3 The flow-rate of the sampler before and after the sampling exercise with the filter in position shall be verified to be constant and be recorded in the data sheet as mentioned in **Appendix 5.1**.

5.3.4 If the ET proposes to use a direct reading dust meter to measure 1-hour TSP levels, they shall submit sufficient information to the IEC to prove that the instrument is capable of achieving a comparable result to the HVS. The instrument should also be calibrated regularly, and the 1-hour sampling shall be determined periodically by the HVS to check the validity and accuracy of the results measured by direct reading method.

5.3.5 Wind data monitoring equipment shall also be provided and set up at suitable locations for logging wind speed and wind direction near the dust monitoring locations. The equipment installation location shall be proposed by the ET and agreed with the Engineer and the IEC. For installation and operation of wind data monitoring equipment, the following points shall be observed:

- The wind sensors should be installed at 10m above ground so that they are clear of obstructions or turbulence caused by buildings;
- The wind data should be captured by a data logger, the data shall be downloaded for analysis at least once a month;
- The wind data monitoring equipment should be re-calibrated at least once every six months; and
- Wind direction should be divided into 16 sectors of 22.5 degrees each

5.3.6 In exceptional situations, the ET may propose alternative methods to obtain representative wind data upon approval from the Engineer and agreement from the IEC.

5.4 Laboratory Measurement / Analysis

5.4.1 A clean laboratory with constant temperature and humidity control, and equipped with necessary measuring and conditioning instruments to handle the dust samples

collected shall be available for sample analysis, equipment calibration and maintenance. The laboratory should be Hong Kong laboratory accreditation scheme (HOKLAS) accredited.

5.4.2 If a site laboratory is set up or a non-HOKLAS accredited laboratory is hired for carrying out the laboratory analysis, the laboratory equipment shall be approved by the Engineer, in consultation with the IEC. Measurement performed by the laboratory shall be demonstrated to the satisfaction of the ER and IEC. The IEC shall regularly audit the measurement performed by the laboratory to ensure the accuracy of measurement results. The ET shall provide the Engineer and the IEC with one copy of the Title 40 of Code of Federal Regulations, Chapter 1 (Part 50), Appendix B for reference.

5.4.3 Filter paper of size 8" x 10" shall be labelled before sampling. It shall be a clean filter paper with no pin holes and shall be conditioned in a humidity-controlled chamber for over 24-hours and be pre-weighed before use for the sampling.

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

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

5.5 Monitoring Locations

5.5.1 The selected monitoring locations are the worst potentially affected air sensitive receivers located in the vicinity of construction sites. The proposed air quality monitoring locations during construction phase are listed in **Table 5.1** below and shown in **Figure 5.1**.

Table 5.1 Construction Dust Monitoring Locations

ID	ASR ID	Location	Impact Monitoring Period [1]
Existing Air Sensitive Receivers			
AMC1	AH21	Ching Cheung House, Cheung Lung Wai Estate	Stage 1, Stage 2 and Stage 4
AMC2	AS21	HHCKLA Buddhist Wisdom Primary School	Stage 1, Stage 2 and Stage 4
AMC3	AV32	Ming Tak Court	Stage 1, Stage 2, Stage 3 and Stage 4
AMC4	AG12	The Hong Kong Golf Club	Stage 1, Stage 2 and Stage 4

Note:
[1] The impact monitoring period is determined based on the distance between the stages of development and the monitoring locations. Impact monitoring is recommended when the stages in the vicinity of the monitoring locations are under construction. The stages of the Project will subject to adjustment based on the actual construction programme of the relevant contracts in the Construction Stage.

5.5.2 The status and locations of the air quality sensitive receivers may change after issuing this manual. In such case, the ET shall propose updated monitoring locations and seek approval from ER and the IEC, and agreement from the EPD on the proposal.

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

i. At the site boundary or such locations close to the major dust emission source;
ii. Close to the air sensitive receivers as defined in the EIAO-TM;
iii. Proper position/ sitting and orientation of the monitoring equipment; and
iv. Take into account the prevailing meteorological conditions.

5.5.4 The ET shall agree with the ER in consultation with the IEC on the position of the HVS for the installation of the monitoring equipment. When positioning the samplers, the following points shall be noted:

i. A horizontal platform with appropriate support to secure the samplers against gusty wind shall be provided;
ii. The distance between the sampler and an obstacle, such as buildings, shall be at least twice the height that the obstacle protrudes above the sampler;
iii. A minimum of 2 metres of separation from walls, parapets and penthouses is required for rooftop samplers;
iv. A minimum of 2 metres of separation from any supporting structure, measured horizontally is required;
v. No furnace or incinerator flue is nearby;
vi. Air low around the sampler is unrestricted;
vii. The sampler is more than 20 metres from the dripline;
viii. Any wire fence and gate, to protect the sampler, shall not cause any obstruction during monitoring;
ix. Permission must be obtained to set up the samplers and to obtain access to the monitoring stations;
x. A secured supply of electricity is needed to operate the samplers; and
xi. No two samplers should be placed less than 2 metres apart.

5.5.5 Before construction in each month, the corresponding dust monitoring schedule shall be prepared by the ET based upon the construction schedule provided by the Contractor. The ET shall forward the IEC the impact monitoring programme such that he/she can conduct on-site audits to ensure accuracy of the impact monitoring results.

5.6 Baseline Monitoring

5.6.1 The ET shall carry out the baseline monitoring at all of the designated monitoring locations (Table 5.1) for at least 14 consecutive days prior to the commissioning of major construction works to obtain 1-hour TSP samples. The selected baseline monitoring stations should reflect baseline conditions at the impact monitoring

stations. One-hour sampling should also be done at least 3 times per day while the highest dust impact is expected.

5.6.2 During the baseline monitoring, there should not be any major construction or dust generation activities in the vicinity of the monitoring stations. Before commencing baseline monitoring, the ET shall inform the IEC of the baseline monitoring programme such that, if required, the IEC can conduct on-site audit to ensure accuracy of the baseline monitoring results.

5.6.3 In case the baseline monitoring cannot be carried out at the designated monitoring locations during the baseline monitoring period, the ET shall carry out the monitoring at alternative locations which can effectively represent the baseline conditions at the impact monitoring locations. The alternative baseline monitoring location shall be agreed with the Engineer and the IEC, and approved by the EPD.

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

5.6.5 Ambient conditions may vary seasonally and shall be reviewed once every three months. If the ET considered that the ambient conditions have changed and a repeat of the baseline monitoring is required to be carried out for obtaining the updated baseline levels, the monitoring should be at times when the Contractor's activities are not generating dust, at least in the proximity of the monitoring stations. Should change in ambient conditions be determined, the baseline levels and, in turn, the air quality criteria, should be revised. The revised baseline levels and air quality criteria should be agreed with the IEC and the EPD.

5.7 Impact Monitoring

5.7.1 The ET shall carry out impact monitoring during construction phase of the project. For 1-hour TSP monitoring, the sampling frequency of at least three times in every six-days should be undertaken when the highest dust impact occurs. In case of non-compliance with the air quality criteria, more frequent monitoring, as specified in the action plan in the following section, should be conducted within the specified timeframe after the result is obtained. This additional monitoring should be continued until the excessive dust emission or the deterioration in the air quality is rectified. The impact monitoring programme is summarized in **Table 5.2**.

Table 5.2 Summary of Construction Dust Monitoring Programme

Monitoring Period	Duration	Sampling Parameter	Frequency
Baseline Monitoring	Consecutive days of at least 2 weeks before commencement of major construction works	1-hour TSP	3 times per day
Impact Monitoring	Throughout the construction phase	1-hour TSP	3 times every 6 days

5.8 Event and Action Plan

5.8.1 The baseline monitoring results form the basis for determining the air quality criteria for the impact monitoring. The ET shall compare the impact monitoring results with air quality criteria set up for 1-hour TSP. **Table 5.3** shows the air quality criteria, namely action and limit levels to be used.

Table 5.3 Action and Limit Levels for Air Quality (Dust)

Parameter	Action Level	Limit Level
1-hour TSP level in μ g/m^3	For baseline level <= 384 μg/m3, action level = (baseline level x 1.3 + limit level)/2 For baseline level > 384 μg/m3, action level = limit level.	500 μg/m^3

5.8.2 Should non-compliance of the air quality criteria occur, action in accordance with the action plan in **Table 5.4** shall be carried out.

5.9 Mitigation Measures

5.9.1 Mitigation measures for construction phase air quality impacts and appropriate design for minimising potential operational odour impact have been recommended in the EIA Report. All the recommended mitigation measures and designs are detailed in the implementation schedule in **Appendix 4.1.**

Table 5.4 Event and Action Plan for Air Quality

Event	Action			
	ET	**IEC**	**ER**	**Contractor**
Action level exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform IEC and ER; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method.	1. Notify Contractor.	1. Rectify any unacceptable practice; 2. Amend working methods if appropriate.
Action level exceedance for two or more consecutive samples	1. Identify source; 2. Inform IEC and ER; 3. Advise the ER on the effectiveness of the proposed remedial measures; 4. Repeat measurements to confirm findings; 5. Increase monitoring frequency to daily; 6. Discuss with IEC and Contractor on remedial actions required; 7. If exceedance continues, arrange meeting with IEC and ER; 8. If exceedance stops, cease additional monitoring.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ET on the effectiveness of the proposed remedial measures; 5. Supervise Implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented.	1. Submit proposals for remedial actions to ER within 3 working days of notification; 2. Implement the agreed proposals; 3. Amend proposal if appropriate.
Limit level exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform ER, Contractor and EPD; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily; 5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ER on the effectiveness of the proposed remedial measures; 5. Supervise implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented.	1. Take immediate action to avoid further exceedance 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Amend proposal if appropriate.

Event	Action			
	ET	**IEC**	**ER**	**Contractor**
Limit level exceedance for two or more consecutive samples	1. Notify IEC, ER, Contractor and EPD; 2. Identify source; 3. Repeat measurement to confirm findings; 4. Increase monitoring frequency to daily; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Arrange meeting with IEC and ER to discuss the remedial actions to be taken; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring.	1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. In consultation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Ensure remedial measures properly implemented; 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.

6. NOISE IMPACT

6.1 Introduction

6.1.1 In the EIA Report, construction noise monitoring and regular site audit have been recommended to be carried out during construction phase to ensure the construction noise level will comply with the relevant noise criteria.

6.1.2 Road traffic noise levels should also be monitored at representative noise sensitive receivers (NSRs), which are in the vicinity of the recommended direct mitigation measures, upon the population intake of the proposed development. The purpose of the monitoring is to compare the measured noise levels with the predicted noise levels, appropriate conversion corrections shall be applied to allow for the traffic conditions at the time of measurement.

6.1.3 Monitoring of fixed noise sources of the mechanical ventilation system of public transport interchanges (PTIs) during the testing and commissioning stage was recommended to verify the compliance with the EIAO-TM criteria.

6.2 Noise Monitoring Parameters for Construction Noise

6.2.1 Construction noise level shall be monitored by the ET and shall be measured in terms of the A-weighted equivalent continuous sound pressure level (L_{eq}). $L_{eq(30\text{-}min)}$ shall be used as the monitoring parameter for the time period between 0700 and 1900 hours on normal weekdays. For all other time periods, $L_{eq\ (5\text{-}min)}$ shall be employed for comparison with the Noise Control Ordinance (NCO) criteria. A sample data sheet is shown in **Appendix 6.1.**

6.2.2 As supplementary information for data auditing, statistical results such as L10 and L90 shall also be obtained for reference.

6.3 Monitoring Equipment for Construction Noise

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

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

6.3.3 The ET is responsible for the provision, installation, operation, maintenance,

dismantling of the monitoring equipment. He shall ensure that sufficient noise measuring equipment and associated instrumentation are available for carrying out the baseline monitoring, regular impact monitoring and *ad hoc* monitoring. All the equipment and associated instrumentation shall be clearly labelled.

6.4 Monitoring Locations for Construction Noise

6.4.1 NSRs that are anticipated to have the highest construction noise level when without mitigation measures were selected as monitoring stations. The locations of construction noise monitoring stations are summarised in **Table 6.1** and shown in **Figure 6.1.**

Table 6.1 Proposed Construction Noise Monitoring Location

ID	NSR ID	Description	Impact Monitoring Period[1]
Existing Noise Sensitive Receivers			
NMC1	E01_CN05	Ching Cheung House, Cheung Lung Wai Estate	Stage 1, Stage 2 and Stage 4
NMC2	E04_CN01	HKCKLA Buddhist Wisdom Primary School	Stage 1, Stage 2 and Stage 4
NMC3	E09_CN05	Village Houses near Palmera Villa	Stage 1 and Stage 3
NMC4	E02_CN03	Little Sisters of the Poor Saint Joseph's Home for the Aged	Stage 5
NMC5	E28_CN06	Choi Po Court	Stage 5

Note:
[1] The impact monitoring period is determined based on the distance between the stages of development and the monitoring locations. Impact monitoring is recommended when the stages in the vicinity of the monitoring locations are under construction. The stages of the Project will subject to adjustment based on the actual construction programme of the relevant contracts in the Construction Stage.

6.4.2 If the status or location of a NSR changes after issuing this manual, the ET shall propose the updated monitoring location and seek approval from the ER and agreement from the IEC and the EPD of the proposal to amend the monitoring location.

6.4.3 When alternative monitoring locations are proposed, the monitoring locations shall be chosen taking account of the following criteria:

a) All locations close to the major site activities that are likely to have noise impacts;
b) Close to the NSRs as defined in the EIAO-TM; and
c) Assurance of minimal disturbance to the occupants during monitoring.

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

chosen, the baseline monitoring and the impact monitoring shall be carried out at the same positions.

6.5 Baseline Monitoring for Construction Noise

6.5.1 In accordance with Section 4.2 of Appendix D2 of Guidelines for Development Projects in Hong Kong published by EPD, Baseline noise monitoring before commencement of construction works is not normally required.

6.6 Impact Monitoring for Construction Noise

6.6.1 Construction noise monitoring should be carried out at the designated monitoring stations (**Table 6.1**) directly affected by the construction works once every week after the commencement of construction. During construction works, one set of Leq(30-min) measurement at each station between 0700 and 1900 hours on normal weekdays shall be taken. If construction works are extended to include works during the period between 1900 and 0700 hours, additional weekly impact monitoring shall be carried out during evening and night-time works. Applicable permits under NCO shall be obtained by the Contractor.

6.6.2 In case of non-compliance with the construction noise criteria, more frequent monitoring, as specified in the Event and Action Plan in **Table 6.3**, shall be carried out. This additional monitoring shall be continued until the recorded noise levels are rectified or proved to be unrelated to the construction activities.

6.7 Action and Limit Levels for Construction Noise

6.7.1 The Action and Limit levels for construction noise are defined in **Table 6.2**. Should non-compliance of the criteria occur, the ET, the IEC, the ER and the Contractor shall undertake their specified actions in accordance with the Event and Action Plan shown in **Table 6.3.**

Table 6.2 Action and Limit Levels for Construction Noise

Time Period	Action Level	Limit Level
0700 - 1900 hours on normal weekdays	When one documented complaint is received	75 dB(A) *

Notes:
If works are to be carried out during restricted hours, the conditions stipulated in the construction noise permit issued by the Noise Control Authority have to be followed.
* Reduce to 70 dB(A) for schools and 65 dB(A) during school examination periods.

6.8 Event and Action Plan for Construction Noise

6.8.1 Should non-compliance of the noise criteria occur, actions in accordance with the event and action plan in **Table 6.3** shall be carried out.

Table 6.3 Event/Action Plan for Construction Noise

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

Notes:
ET – Environmental Team; IEC – Independent Environmental Checker; ER – Engineer's Representative

6.9 Noise Monitoring Parameters for Operational Road Traffic Noise

6.9.1 The ET should carry out monitoring of road traffic noise after the works under the Project are completed and upon the population intake of the proposed development. The road traffic noise during operation of the Project should be measured in terms of the A-weighted equivalent of $L_{10}(_{1\text{-hour}})$. During the road traffic noise measurement, traffic count should be undertaken concurrently. Supplementary information for data auditing and statistical results such as L_{eq} and L_{90} should also be obtained for reference..

6.10 Monitoring Equipment for Operational Noise and Fixed Plant Noise

6.10.1 The requirement of monitoring equipment for both operational road traffic noise and fixed plant noise could be referred to Section 6.3.

6.11 Monitoring Locations for Operational Road Traffic Noise

6.11.1 Those most affected NSRs identified in the EIA report are selected as the noise monitoring locations in this EM&A Manual. The traffic noise monitoring locations during operation phase are listed in **Table 6.4** and shown in **Figure 6.2**. In addition, noise monitoring shall be carried out for one year following the population intake of the proposed development. The locations for operational noise monitoring shall be defined during detailed design on the basis of the status of the most up-to-date information on proposed developments surrounding the Project.

Table 6.4 Proposed Road Traffic Noise Monitoring Locations

ID	NSR ID	Location	Proposed Direct Mitigation Measures [1]
NMO1	E01_TN04	Ching Cheung House, Cheung Lung Wai Estate	LNRS
NMO2	E03_TN01	TWGHs Ma Kam Chan Memorial Primary School	LNRS
NMO3	B04_TN01	Block 4, Public Housing Development	LNRS
NMO4	B01_TN03	Block 1, Public Housing Development	LNRS

Note:
[1] "LNRS" denotes Low Noise Road Surfacing. The locations of the proposed direct mitigation measures is indicated in **Figure 6.3**.

6.11.2 The status and locations of NSRs may change after issuing this Manual. In this event, the ET leader shall propose updated monitoring locations and seek approval from the IEC and agreement from the EPD of the proposal.

6.11.3 When alternative monitoring locations are proposed, the monitoring locations should be chosen based on the following criteria in that they should be:

- At locations facing proposed road sections with direct mitigation measures;
- Close to the NSRs; and
- For monitoring locations located in the vicinity of the sensitive receivers, care

should be taken to cause minimal disturbance to the occupants during monitoring.

6.11.4 The monitoring station shall normally be at a point 1 m from the exterior of the sensitive receiver building facade and be at a position 1.2 m above the ground. If there is problem with access to the normal monitoring position, an alternative position may be chosen, and a correction to the measurements shall be made. For reference, a correction of +3 dB(A) shall be made to the free field measurements. The ET shall agree with the IEC on the monitoring position and the corrections adopted before commencement of monitoring.

6.12 Impact Monitoring for Operational Road Traffic Noise

6.12.1 The ET should prepare and deposit to the EPD, at least 6 months before the operation of the proposed roads under the Project, a monitoring plan for the purpose of overseeing the environmental performance of the development project by comparing the noise impact predictions with the actual impacts. The monitoring plan should contain monitoring locations, monitoring schedules, methodology of noise monitoring including noise measurement procedures, traffic counts and speed checks, and methodology of comparison with the predicted levels. The ET should implement the monitoring plan in accordance with the deposited monitoring plan unless with prior justifications. Monitoring details and results including the comparison between the measured noise levels and the predicted levels should be recorded in a report to be deposited with the EPD within one month of the completion of the monitoring. The report should be certified by the ET leader before it is deposited with the EPD.

6.12.2 Road traffic noise monitoring shall be carried out at all the designated road traffic noise monitoring stations upon the population intake of the proposed development. The following is an initial guide on the road traffic noise monitoring requirements during the operation phase. A sample data sheet is shown in **Appendix 6.2.**

- One set of measurements at the morning traffic peak hour on normal days;
- One set of measurements at the evening traffic peak hour on normal days;
- A concurrent census of traffic low and percentage of heavy vehicles shall be conducted for the Project Road and the existing road network in the vicinity of each measurement point;
- Average vehicle speed estimated for Project Road and the existing road network in the vicinity of each measuring point; and
- The two sets of monitoring data shall be obtained within the first year following the population intake of the proposed development.

6.12.3 Measured noise levels shall be compared with the predicted noise levels by applying appropriate conversion corrections to allow for the traffic conditions at the time of measurement.

6.13 Event and Action Plan for Operational Road Traffic Noise

6.13.1 The measured/monitored road traffic noise levels shall be compared with the predicted results and the predicted traffic low conditions (calculated noise levels based on concurrent traffic census obtained). In cases discrepancies are observed,

explanation shall be given to justify the discrepancies.

6.14 Commissioning Test for Operational Fixed Plant Noise

6.14.1 The maximum allowable sound power levels of the identified fixed noise sources have been predicted in the EIA report. The contractor should implement and refine the specified sound power levels as appropriate to ensure compliances with the noise standards stipulated in the EIAO-TM and NCO for the fixed plant operations.

6.14.2 The contractor should also carry out a noise commissioning test for all fixed noise sources before operation of the Project, in order to ensure compliance of the noise levels with the EIAO-TM's stipulated noise standard. The ET should prepare and deposit a commissioning test plan for the fixed plant noise to the EPD, at least six months before the operation of the planned fixed plants. The plan should contain locations, measurement schedules, methodology of noise measurement including noise measurement procedures and data analysis of measured noise level. The commissioning test should be certified by the ET leader and verified by the IEC before submission to the EPD.

6.15 Mitigation Measures

6.15.1 To alleviate the construction noise impact on the affected NSRs, practical mitigation measures including good site management practices, use of movable noise barrier and full enclosure, use of "quiet" plant and working method, construction noise impacts at all of the neighbouring residential noise sensitive uses , minimum separation distance between schools and critical works area during school examination period are recommended for the Project during construction phase.

6.15.2 For the operational traffic noise impact, a combination of noise mitigation measures has been recommended as direct and additional mitigation measures, including i) application of low noise road surfacing material along Po Kin Road and Ping Kong Road, ii) provision of acoustic window (baffle type) at planned residential blocks, iii) provision of Class Assessment Approach at the proposed school, iv) restriction on locating the more noise sensitive welfare uses at façade facing Ping Kong Road, for mitigating noise impacts from operational road traffic noise to nearby existing/planned NSRs.

6.15.3 For the fixed noise sources, mitigation measures such as provision of buffer distance, relocation of the sources, or environmentally friendly layout design should be incorporated in the layout plan for mitigating noise impacts from existing/planned fixed noise sources to nearby existing/planned NSRs.

6.15.4 The recommended maximum allowable Sound Power Level of the ventilation fans potentially to be installed at the PTIs should be reviewed with the final design of the PTIs during the detailed design stage. It is recommended that a canopy should be provided at the ingress and egress of the PTIs and solid panels to be erected as necessary next to the vehicle bays to screen the line-of-sight of the PTI from the nearby NSRs.

6.15.5 A Construction Noise Management Plan (CNMP) with reference to Section 8 and

Annex 21 of the EIAO-TM as well as this EM&A Manual and the EIA Report should be prepared by the future contractor. In the CNMP, the inventory of noise sources should be verified, and the effectiveness and practicality of all identified measures for mitigating the construction noise impact should be assessed. Mitigation measures proposed in the EIA Report, such as the adoption of quiet construction methods and QPME, should be considered during the design and tendering stage of the Project. The CNMP should confirm the implementation of the mitigation measures, and submitted to EPD for approval six months prior to the commencement of construction. By referring to the measures proposed in the CNMP, the implementation schedule of mitigation measures should also be updated and reflected in the construction program accordingly.

6.15.6 All the recommended mitigation measures and designs are detailed in the implementation schedule in **Appendix 4.1**.

7. WATER QUALITY IMPACT

7.1 Introduction

7.1.1 Potential water pollution sources from construction and operation of the Project have been identified including construction runoff, sewage, possible contamination due to oil and grease, use of fertilizers, pesticides and waste construction materials. Sewage generated during construction and operation will be disposed offsite and ultimately to Shek Wu Hui Sewage Treatment Works. Other sources of polluted water will be intercepted for reuse, or disposal as chemical waste, or discharge into stormwater system. It can be concluded that there is no significant water quality impact to the sensitive receivers provide that the mitigation measures are properly implemented during construction and operation phases.

7.1.2 As mitigation is required, site audit should be carried out to ensure the effectiveness of the mitigation measures.

7.2 Construction Phase

7.2.1 The Project is a land-based works. Construction site runoff would be collected, treated and discharged to specified location. Subject to the requirements in the effluent discharge licence to be issued under the Water Pollution Control Ordinance, regular water quality monitoring will be carried out at representative water discharge locations to ensure that relevant water quality standard can be met.

7.2.2 Weekly site audit should be carried out to check the implementation status of the recommended water quality impact mitigation measures throughout construction period.

7.3 Operation Phase

7.3.1 The sewerage and storm water system should be designed and constructed to separate the sewage from the uncontaminated surface runoff. As the Project area would be serviced by public sewers, no unacceptable water quality impact is anticipated. No operational phase monitoring or audit is proposed.

7.4 Mitigation Measures

7.4.1 The EIA proposed a number of construction phase mitigation measures. Some examples are provided below.

- To provide drainage channels in construction site
- To provide sand/silt removal facilities such as sand traps, silt traps and sediment basins
- To provide sufficient number of chemical toilets if necessary and employ licensed contractor for regular clean-up and maintenance
- To cover the slope and loose materials with tarpaulin before rainstorm and inspect the area afterwards
- To cover the manhole to prevent silty runoff from entering the foul sewer

7.4.2 Examples of operational phase mitigation measures are provided below:

- To maintain the separate sewerage and stormwater systems properly
- To clean and maintain all manholes, sand traps and oil interceptors regularly
- To clean the rubbish and litter regularly

7.4.3 All the recommended mitigation measures and designs are detailed in the implementation schedule in **Appendix 4.1**.

8. SEWAGE & SEWERAGE TREATMENT IMPLICATIONS

8.1 Introduction

8.1.1 An assessment of potential impacts due to the sewage arising from the proposed Project has been assessed in Section 6 of the EIA Report.

8.2 Mitigation Measures

Construction Phase

8.2.1 The sewage generated during the construction stage from the on-site workers will be collected in chemical toilets and disposed of off-site. Therefore, no sewerage impacts are expected from the site during the construction phase. As such, environmental monitoring and audit of the sewerage system is considered not required.

Operation Phase

8.2.2 The following general mitigation measures are to be considered in order to meet 'no net increase in pollution loading' in Deep Bay:

- Provision of blue-green drainage infrastructure which facilitates the infiltration of rainfall and the process of natural filtering to reduce the quantity and improve the quality of runoff;
- Adopt on-site greywater recycling to reduce discharge of sewer;
- Sewage collected from the on-site/surrounding STW will be treated to a standard suitable for recycle for non-potable use including flushing and irrigation;
- Upgrading the sewerage system for discharge into SWH STW or providing other sewage treatment/disposal facilities to ensure that there is sufficient capacity to cater for increased sewage effluent flows from the developments; and
- Provision of suitable measures to minimize the risk of emergency discharges of untreated sewage effluent and to ensure timely repair.

9. WASTE MANAGEMENT IMPLICATIONS

9.1 Introduction

9.1.1 The quantity and timing for the generation of waste during the construction phase have been estimated. Measures including the opportunity for on-site sorting, reusing excavated materials etc., are devised in the construction methodology to minimise the surplus materials to be disposed off-site. Proper disposal of chemical waste and asbestos-containing materials (ACMs) should be disposed via a licensed waste collector.

9.2 Site Audit Requirements

9.2.1 Regular audits and site inspections should be carried out during construction phase by the ET to ensure that the recommended good site practices and other recommended mitigation measures are properly implemented by the Contractor. The audits should concern all aspects of on-site waste management practices including waste generation, storage, recycling, transport and disposal. Apart from site inspection, documents including licences, permits, disposal and recycling records should be reviewed and audited for compliance with the legislation and contract requirements.

9.2.2 The requirements of the environmental audit programme are set out in ***Section 15*** of this Manual. The audit programme will verify the implementation status and evaluate the effectiveness of the mitigation measures.

9.3 Mitigation Measures

9.3.1 Mitigation measures for waste management recommended in the EIA Report should form the basis of the Waste Management Plan (WMP) to be developed by the Contractor in the construction stage (as discussed in Section 4.3). **Appendix 4.1** provides the implementation schedule of the recommended mitigation measures during construction and operation phases.

9.3.2 Wastes generated during the construction activities should be audited regularly by the ET to determine if waste is being managed in accordance with approved procedures and the site WMP. The audit should look at all aspects of on-site waste management practices including waste generation, storage, recycling, transport and disposal. Apart from site inspection, documents including licences, permits, disposal and recycling records should be reviewed and audited for compliance with the legislations and contract requirements. In addition, the routine site inspections should check the implementation of the recommended good site practices, waste reduction measures, and other waste management mitigation measures.

9.3.3 The ET shall ensure all licenses and permits for waste disposal are obtained by the contractor in accordance with the following Ordinances:

- Waste Disposal Ordinance (Cap. 354);
- Waste Disposal (Chemical Waste) (General) Regulation (Cap. 354C);
- Waste Disposal (Clinical Waste) (General) Regulation (Cap. 354O);
- Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap.

354N);

- Land (Miscellaneous Provisions) Ordinance (Cap. 28);
- Public Health and Municipal Services Ordinance (Cap. 132); and
- Public Cleansing and Prevention of Nuisances Regulation (Cap. 132BK).

9.3.4 With the appropriate handling, storage and removal of waste arisings during the construction and operation of the Project, the potential to cause adverse environmental impacts would be minimized. During the site inspections, the ET shall pay special attention to the issues relating to waste management and check whether the Contractor has implemented the recommended good site practices, waste reduction measures and other mitigation measures.

10. LAND CONTAMINATION IMPACT

10.1 Introduction

10.1.1 The EIA report has reviewed the potential contaminated land uses associated with the Project, within the land contamination assessment area and the potential impacts on the future land uses.

10.2 Mitigation Measures

10.2.1 The land contamination assessment examined the potential contaminative land use within the assessment area and their potential impacts to future land use. As the identified potentially contaminated sites would still be in operation, site re-appraisal and a submission of supplementary Contamination Assessment Plan (CAP) covering the entire assessment area including associated off-site works area is therefore required upon the land has been reverted to Government.

10.2.2 Following the approved supplementary CAP, site investigations shall be conducted and results obtained shall be documented in a Contamination Assessment Report / Remediation Action Plan (CAR/RAP) for EPD's approval. If contaminated soil and/or groundwater are identified at the Project Site, remediation shall be carried out according to EPD's approved RAP and the RR should be submitted to EPD for agreement after completion of the remediation works. No development works shall be commenced prior to EPD's endorsement of the RR.

10.2.3 Remediation works, if necessary, shall be carried out at the contaminated sites identified in the future contamination assessment as detailed in Chapter 8 of the EIA Report prior to commencement of construction. Mitigation measures outlined in the future RAP approved by EPD shall be implemented to throughout the remediation works (**Appendix 13.1**). The EM&A requirements shall be carried out in the form of regular site inspection to ensure the recommended mitigation measures are properly implemented and findings of the audit shall be reported in the EM&A reports.

10.2.4 As the Project Site is located on an area with potentially high ambient arsenic levels, a health risk assessment (HRA) will be carried out to identify exposure paths of inhalation (dust) and ingestion of arsenic instead. This will be in a form of literature research to determine the best approach and methodology for the HRA, including any codes of practices, guidelines and applicable with reference to the approved North East New Territories New Development Area (EIA Report No. AEIAR-175/2013).

10.2.5 With the establishment and implementation of the CAP and the supplementary CAP, to define the nature, extent and degree of contamination; together with results from site investigation to provide sufficient information for the development of the CAR and/or RAP, no adverse residual impacts are anticipated from the construction and operation of Project activities as the land contamination assessment and remediation would be completed before the commencement of any construction works.

11. ECOLOGY

11.1 Introduction

11.1.1 The EIA has recommended mitigation measures to avoid, minimize and compensate the identified potential ecological impacts arising from the proposed Project. With the implementation of appropriate mitigation measures, no unacceptable adverse residual impacts would be anticipated. Nonetheless, EM&A is considered necessary during construction of the Project.

11.2 Mitigation Measures

11.2.1 *Avoidance of recognized sites of conservation importance* – All the recognized sites of conservation importance, including SSSI, Country Park, Conservation Areas, Long Valley Nature Park have been avoided and will not be encroached by any developments under the present Project.

11.2.2 *Avoidance of important habitats* –Important habitats including Fung Shui Wood and the egretries outside the Project Site would not be impacted. Within the Project Site, majority of the habitat types with medium or above ecological values (e.g. swampy woodland and marsh) have also been avoided.

Considerations for Impact Minimization

11.2.3 *Minimization of habitat loss and impacts to species of conservation importance* – Selection of Sub-Area 1 as the development area, which is located at the northernmost of the Project Site and is more disturbed with fewer species of conservation importance recorded, could avoid as far as possible and minimize potential impacts to existing ecological resources, than having development in other Sub-Areas.

11.2.4 Although the major development will be limited to Sub-Area 1 of the Project Site, the layout plan of the development, i.e. location and extent of the proposed development, has been fine-tuned to further minimize the area of woodland loss, i.e. the mixed woodland in the southeast of Sub-Area 1 (next to Ming Tak Court). Besides, further minimizing direct impacts to the woodland habitats inside Sub-Area 1 as far as practicable during the detailed design stage is also recommended.

11.2.5 *Restricted working hours* – Working hours will be restricted during construction phase to minimize potential disturbance to utilization of the preserved habitats by nocturnal animals. Construction hours will be restricted to daytime and no night works with strong flush lights will be conducted. While the normal works hours are 0700 – 1900, works hours of powered mechanical equipment near the preserved habitats within the Project Site will be restricted to at least one hour before subset, following the proposed restriction hours derived from the earliest subset time in each month in the years of construction. The proposed restriction of works hours would slightly extend the construction programme, but would provide sufficient time for

powered mechanical equipment to halt before sunset when nocturnal animals in particular mammals might be in search for food.

11.2.6 *Minimization of water quality impact* – As the aquatic/wetland habitats are away from Sub-Area 1, the measures stated in the chapter of water quality impact assessment are adequate to protect the aquatic/wetland habitats and the associated wildlife. For example, the site practices outlined in ProPECC PN 1/94 "Construction Site Drainage" should be followed as far as practicable to minimize surface runoff and the chance of erosion during construction. Effluent discharged from the construction site should comply with the standards stipulated in the TM-DSS. While the runoff will be intercepted by properly designed and managed silt traps at appropriate spacing so allow drain into drainage system during operational phase.

11.2.7 *Use of noise barriers/acoustic screens* – In order to further minimise the overall impacts on the nearby sensitive habitats and associated wildlife, particularly to the woodland habitats in the Project Site, temporary noise barriers with absorptive materials of about 4m high will be erected along the sensitive sides of the works area, throughout the construction phase. The purpose is to screen the construction noise and human disturbance from the sensitive habitats and associated wildlife during construction phase.

11.2.8 Adequate noise barriers should also be provided for percussive piling works, to further minimise the construction noise disturbance from these construction activities. Movable noise barriers should be provided and acoustic mat should be provided to the piling plants around the rig. The contractor should provide enclosure for construction equipment, especially static plants (e.g. generator), as appropriate to minimise the noise disturbance as far as practicable.

11.2.9 *Use of quality powered mechanical equipment* – The Quality Powered Mechanical Equipment (QPME) system was developed by EPD to benchmark construction equipment items that are new, notably quieter, more environmentally friendly and efficient by QPME Labels. The contractor should source QPMEs for construction as far as practicable to further minimise the overall construction noise and other disturbance to the nearby sensitive habitats and associated wildlife to the maximum practical extent.

11.2.10 *Careful planning of lighting* - Although the potential impact of light glare from artificial lightings on habitats near Sub-Area 1 is considered minor, to take a precautionary approach, it is recommended that light glare in the operational phase can be further reduced through careful planning of lighting, e.g. control on light level generated from public roads and footpaths within Sub-Area 1, directing the lighting inwards to the proposed development but not to the nearby habitats in Sub-Area 2, provision of screen planting to avoid light glare from external lighting to the habitats in Sub-Area 2 where nocturnal fauna were recorded.

Mitigation

11.2.11 *Compensation woodland planting* - Within Sub-Area 1 of the Project Site, although some of the mixed woodland can be minimized under the present proposed layout (i.e.

2.85ha out of 3.72ha in Sub-Area 1), to take a conservative approach, all the mixed woodland and woodland in Sub-Area 1 (i.e. about 4.11ha, with 3.72 ha mixed woodland and 0.39 ha woodland) are assumed to be lost during construction phase at this stage for compensation planning. The actual loss however should be smaller when the layout is confirmed during the detailed design stage with the consideration of minimizing direct impacts to woodland habitats.

11.2.12 The turfgrass within the Project Site is suitable for woodland compensation. The advantage of selecting the existing turfgrass is that there are existing woodlands immediately beside the turfgrass, planting new woodland areas adjoining existing woodlands would form an ecological linkage and increase the overall habitat size and hence would help to enhance the biodiversity and ecological values in the long run.

11.2.13 Large scale of planting works might affect the hydrology for the sensitive wetland habitats i.e. marsh and swampy woodland in Sub-Area 4, it is recommended the location for woodland compensation should avoid Sub-Area 4 to preserve the hydrology that supports the wetland habitats. Hence, turfgrass of Sub-Area 2 and northern part of Sub-Area 3 are recommended for woodland compensation, which have flat topography and with enough sunlight. The proposed location of woodland compensation (~5.1 ha, larger than the woodland loss of 4.1ha) is shown in **Figure 11.1**. Besides, according to LVIA, tree felling will be required and the compensatory trees are proposed to be planted in Sub-Area 3 within PDA, which is overlapped with the proposed location of woodland compensation shown in **Figure 11.1**. The exact sites for woodland compensation and compensatory planting are subject to future site planning during detailed design stage.

11.2.14 The feasibility of commencing woodland compensation planting as soon as practicable should be considered. The tree species to be planted should mostly be native species recorded in the assessment area for woodland compensation, and the tree species can also make reference to the existing tree species at Lin Tong Mei Fung Shui Wood. Early and timely arrangement with forest nursery for propagation of the seedlings should be made to ensure the availability of both the species and the quantity required. A woodland compensation plan and tree compensation plan with the consideration of the impacts to wetland hydrology in Sub-Area 4 will be submitted.

11.2.15 Preservation and/or transplantation of plant species of conservation importance - Preservation and/or transplantation of plant species of conservation importance, including Aquilaria sinensis, Ardisia villosa, Geedorum densiflorum and Ilex graciliflora will be conducted before site formation works. Priority should be given to on-site preservation, especially for large sized individuals, and followed by transplantation, which is more feasible for small-sized individuals/seedlings. The proposed transplanted site will be at the same location as the woodland compensation area in Sub-Area 3 that is recommended in LVIA. An updated vegetation survey will be conducted and a detailed transplantation plan with the consideration of the impacts to wetland hydrology in Sub-Area 4 will be submitted in the detailed design stage.

11.2.16 *Management Plan* - Although artificial habitats such as turfgrass and plantation were identified within Sub-Area 2 to Sub-Area 4, the ecological values are ranked

medium or medium to high due to the presence of some natural habitats that supported a variety of wildlife including some species of conservation importance. Sub-Areas 2 to 4 are intended to be zoned as "Other Specified Uses" annotated "Recreation cum Conservation" under Outline Zoning Plan. Hence, Sub-Area 2 to Sub-Area 4 should be conserved and a management plan will be formulated with the aims to manage the human activities conducted in Sub-Area 2 to Sub-Area 4 and conserve the ecologically sensitive habitats and species of conservation importance from disturbance. The management plan should consider of but not limited to the operational hours, the impacts to moths and other nocturnal wildlife (e.g. closure of Sub-Area 2 to 4 at night and no flush light can be deployed etc.), management of the wetlands for water dependent fauna such as odonates, hydrology of wetland, as well as planting larval food plants for the butterfly species of conservation importance recorded within the assessment area (e.g. Troides Helena, Pachliopta aristolochiae, Catochrysops Strabo, Megisba Malaya (mentioned in EIA Study Brief but not recorded in present study). With the future management plan, the potential impacts from indirect disturbance (e.g. noise, traffic and human disturbance) to the important habitats in Sub-Area 2 to Sub-Area 4 and the habitats in the vicinity as well as the species of conservation importance can be further reduced. A monitoring programme should be included in the management plan to evaluate the effectiveness of the management strategies.

11.2.17 *Defining and Maintaining Construction Site Boundary* - Site hoarding should be erected along the interface with woodland habitats in particular the boundary between Sub-Area 1 and Sub-Area 2 as well as the preserved woodlands within Sub-Area 1, to properly delineate the works area and screen and minimize the potential disturbance due to construction activities to the nearby habitats and associated fauna during construction phase.

11.2.18 *Provision of Temporary Drainage System to Protect Sensitive Habitats* - During the construction phase, a temporary drainage system would be implemented to ensure that the surface runoff would not be released to nearby sensitive habitats (e.g. woodlands, wetland habitats). DSD Technical Circular No. 2/2004 and ETWB No. 5/2005 which set out for the protection of natural rivers and streams from adverse impacts arising from construction works should be followed during construction works near streams. In accordance with Practice Note for Professional Persons on Construction Site Drainage, Environmental Protection Department, 1994 (ProPECC PN 1/94), best management practices should be implemented on site as far as practicable to control site runoff and drainage at all work sites during construction. The best practices are detailed in the chapter of water quality impact assessment.

11.2.19 Other Site Practices - Standard site practices listed as follows would be implemented to minimize potential impacts, including dust, noise and site runoff, on the surrounding environment.

- Regular checking should be undertaken to ensure that the work site boundary is not exceeded and that no damage occurs to surrounding areas;
- Implementation of mitigation measures specified in ProPECC PN 1/94 to control site runoff and drainage during construction;

- Implementation of noise control measures to reduce impacts of construction noise to wildlife habitats adjacent works area;
- Implementation of dust control measures at all construction sites to minimize dust nuisance to adjacent wildlife habitats during construction activities;
- Construction debris and spoil should be covered up and/or properly disposed of as soon as possible to avoid being washed into nearby waterbodies by rain;
- Good site practice and site precautionary measures will also be implemented to avoid the potential impact due to site runoff. Construction effluent, site runoff and sewage should be properly collected and/or treated. Wastewater from a construction site should be managed with the following approach in descending order;
- Proper locations for discharge outlets of wastewater treatment facilities well away from the natural streams/rivers should be identified;
- Effluent monitoring should be incorporated to make sure that the discharged effluent from construction site meets the effluent discharge guidelines; and
- Supervisory staff should be assigned to station on site to closely supervise and monitor the works.

11.3 Construction Phase Monitoring and Audit

Audit Requirement

11.3.1 Site audits shall be undertaken at least monthly during the construction phase of the Project to check the proper implementation and maintenance of recommended mitigation measures.

11.3.2 A project organisation consisting of the Engineer Representative (ER), Independent Environmental Checker (IEC), Environmental Team (ET), Project Proponent (CEDD) and Contractor should be established to take on the responsibilities for environmental protection for the Project.

Monitoring for Compensatory Planting Woodland

11.3.3 Monitoring on the compensatory planting woodland should be performed on regular basis after the first planting, to monitor the survival of trees and establishment of the woodland including wildlife use. Survival and establishment of planted woodland at the planting locations will be monitored quarterly for 3 years. The monitoring surveys shall be carried out by qualified botanist(s). Survey in each woodland planting location will commence three months after completion of planting. Selected individuals of each planted species will be tagged and percentage survival computed. Supplementary planting will be recommended when necessary. Wildlife use of the planted vegetation will be monitored.

Monitoring of Transplanted Plant Species of Conservation Importance

11.3.4 Surveys will be conducted to monitor and evaluate the effectiveness of the preservation and transplantation programme. Survival and conditions of transplanted plant individuals as well as individuals to be preserved in-situ will be monitored. For transplanted individuals, the monitoring will be two years, and the frequency will be monthly for the first year, and then quarterly for the second year. For the in-situ

preserved plant individuals, the monitoring will be conducted monthly throughout the construction period. The monitoring surveys shall be carried out by qualified botanist(s). The condition of the tree protection zone, if any, should be regularly checked.

Monitoring of Ecological Conditions under the Proposed Management Plan

11.3.5 A monitoring programme should be included in the management plan to evaluate the effectiveness of the management strategies. An ecological baseline information including habitat conditions and the conditions of the species of conservation importance shall be updated prior to the operation of Sub-Area 2-4. During the operation of Sub-Area 2-4, regular monitoring of the ecological conditions as well as the conditions of the species of conservation importance shall also be monitored.

11.4 Operational Phase Monitoring and Audit

11.4.1 As the potential impacts to ecology during operational phase are all considered minor or insignificant, operational phase monitoring and audit are not required. Monitoring of the effectiveness of the management measures for Sub-Area 2 to Sub-Area 4 will be formulated.

12. FISHERIES

12.1 Introduction

12.1.1 Based on the EIA, fish ponds are present within 500m area from the boundary of the PDA located southeast of Agriculture, Fisheries and Conservation Department (AFCD)'s Tai Lung Experimental Station. However, no significant impacts arising from construction and operational phases of the Project on pond fisheries are anticipated, no specific monitoring programme for fisheries resources is required. Good site practices for the control and operation of construction projects as detailed in **Section 7** of this Manual shall be fully implemented to minimize impacts on water resources for pond fish culture in the Project Area or its vicinity.

13. LANDSCAPE AND VISUAL IMPACTS

13.1 Introduction

13.1.1 The EIA has recommended EM&A for landscape and visual mitigation measures to be carried out during the design, construction and operational stages of the project. The design, implementation and maintenance of landscape mitigation measures must be checked to ensure all the mitigation measures are fully implemented and that potential conflicts between the proposed landscape measures and any other project works and operational requirements are resolved at the earliest possible stage and without compromise to the intention of the mitigation measures. In addition, implementation of the mitigation measures recommended by the EIA report will be monitored through the site audit programme.

13.2 Audit Requirement

13.2.1 A Registered Landscape Architect (RLA) should monitor all of the landscape and visual mitigation measures undertaken during the construction phase and throughout establishment period of the operation phase to check if the proposed landscape and visual mitigation measures are properly implemented and maintained as per the design intended.

13.2.2 Site inspection and audit should be undertaken by the RLA at least once every two weeks throughout the construction phase and at least one a month during establishment period. Ad-hoc inspections and audits should also be carried out in case of tree felling, transplantation, adverse weather where significant damage to existing trees is anticipated, and when significant environmental problems are identified.

13.2.3 For all soft landscape works, involving landscape and visual mitigation measures such as tree transplantation and compensatory planting and woodland restoration, there should be at least a 12 months establishment period and maintenance which will commence once soft landscaping in an area has been planted.

13.3 Construction and Post-construction Phase

13.3.1 A specialist Landscape Sub-contractor should be employed for the implementation of landscape construction works and subsequent maintenance operations during a 12-month establishment period. A Registered Landscape Architect should be employed to supervise the specialist Landscape Sub-contractor for the implementation of landscape works, both hard and soft landscape included.

13.3.2 Mitigation measures undertaken by both the Main Contractor(s) and the specialist Landscape Sub-contractor during the construction phase and the first year of post-construction stage will be audited by the Registered Landscape Architect, to ensure all the mitigation measures are compliance with the design intent. Site inspections should be undertaken at least once every two weeks throughout the landscaping plants establishment period when planting works are being undertaken.

13.3.3 A tree survey should be prepared for DLO submission and for the purpose of existing trees protection purpose. Removal of existing trees should be minimized. The Contractor should consider employing a certified arborist when sizable and valuable

existing tree(s) protection of transplant is required.

13.3.4 A broad scope of audit / inspections for construction and post-construction phase auditing are detailed below.

- ***Advance Tree Planting*** - monitoring of implementation and maintenance of planting, and against potential incursion, physical damage, fire, pollution, surface erosion, etc;
- ***Protection of trees to be retained***- identification and demarcation of trees / vegetation to be retained, erection of physical protection (e.g. fencing), monitoring against potential incursion, physical damage, fire, pollution, surface erosion, etc.;
- ***Clearance of existing vegetation*** - identification and demarcation of trees / vegetation to be cleared, checking of extent of works to reduce damage, monitoring of adjacent areas against potential incursion, physical damage, fire, pollution, surface erosion, etc.;
- ***Transplanting of trees*** - identification and demarcation of trees / vegetation to be transplanted, monitoring of extent of pruning / lifting works to reduce damage, timing of operations, implementation of the stages of preparatory and translocation works, and maintenance of transplanted vegetation, etc.;
- ***Plant supply*** - monitoring of operations relating to the supply of specialist plant material (including the collecting, germination and growth of plants from seed) to ensure that plants will be available in time to be used within the construction works;
- ***Soiling, planting*** - monitoring of implementation and maintenance of soiling and planting works and against potential incursion, physical damage, fire, pollution, surface erosion, etc.;
- ***Sensitive Design of Building Block*** - implementation and maintenance of mitigation measures, to ensure conformity with the agreed designs;
- ***Establishment Works (12 Months)***- monitoring of implementation of maintenance operations during the establishment period.

13.4 Event and Action Plan

13.4.1 In the event of non-compliance, the responsibilities of the relevant parties are detailed in the Event /Action plan provided on **Table 13.1**.

13.5 Mitigation Measures

13.5.1 The Landscape and Visual Assessment of the EIA report recommended a series of mitigation measures to accommodate the landscape and visual impacts of the proposed development. These measures are summarized in **Table 13.2** below.

Table 13.1 Event and Action Plan for Landscape and Visual Monitoring

Event	Action			
	ET	IEC	ER	Contractor
Design Check	1. Check final design conforms to the requirements of EP and prepare report.	1. Check report. 2. Recommend remedial design if necessary.	1. Undertake remedial design if necessary.	-
Non-conformity on one occasion	1. Inform the IEC, ER and the Contractor 2. Discuss remedial actions with IEC, ER and Contractor 3. Monitor remedial actions until rectification has been completed	1. Check inspection report. 2. Check Contractor's working method 3. Discuss with ET, ER and Contractor on possible remedial measures. 4. Advise ER on effective of proposed remedial measures. 5. Check implementation	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 agreed with ER as appropriate 3. Rectify damage and undertake any necessary replacement
Repeated Non-conformity	1. Identify sources 2. Inform the Contractor, IEC and ER 3. Discuss inspection frequency 4. Discuss remedial actions with IEC, ER and Contractor 5. Monitor remedial actions until rectification has been completed 6. If non-conformity stops, cease additional monitoring	1. Check inspection report 2. Check Contractor's working method 3. Discuss with ET, ER and Contractor on possible remedial measures 4. Advise ER on effectiveness of proposed remedial measures	1. Notify the Contractor 1. In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented 2. Supervise implementation of remedial measures	1. Identify source and investigate the non-conformity 2. Amend working methods agreed with ER as appropriate 3. Rectify damage and undertake any necessary replacement. Stop relevant portion of works as determined by ER until the non-conformity is abated.

Table 13.2 Landscape and Visual Mitigation Measures

<table>
<tr><th>ID No.</th><th>Landscape and Visual Mitigation Measure</th><th>Funding Agency</th><th>Implement-ation Agency</th><th>Management Agency</th><th>Maintenance Agency</th></tr>
<tr><td colspan="6">Construction Phase</td></tr>
<tr><td>CM1</td><td>Preservation of Existing Vegetation – Any existing vegetations, trees and tree of particular interest (TPI) not affected by the Project and within 5m offset from the PDA Boundary shall be carefully preserved and protected in accordance with DEVB TCW No. 4/2020 and the latest Guidelines on Tree Preservation During Development by GLTMS of DEVB. If needed, they shall be transplanted to a suitable location within the PDA as far as feasible.
<table>
<tr><th>Proposed Treat-ment</th><th>Location</th><th>Tree Types</th><th>No. of Tree (s)</th><th>Sub-total</th></tr>
<tr><td rowspan="5">Retain</td><td rowspan="4">Sub-Area 1</td><td>TPIs (mature trees with DBH>=1000mm)</td><td>11</td><td rowspan="4">267</td></tr>
<tr><td>TPIs (rare/protected species with DBH>=95mm)</td><td>5</td></tr>
<tr><td>TPIs (rare/protected species with DBH<95mm)</td><td>9</td></tr>
<tr><td>Trees other than TPIs</td><td>242</td></tr>
<tr><td rowspan="4">Sub-Area 2 - 4</td><td>TPIs (mature trees with DBH>=1000mm)</td><td>41</td><td rowspan="4">3090</td></tr>
<tr><td>TPIs (rare/protected species with DBH>=95mm)</td><td>80</td></tr>
<tr><td>TPIs (rare/protected species with DBH<95mm)</td><td>274</td></tr>
<tr><td>Other trees (in tree groups)</td><td>2695</td></tr>
<tr><td rowspan="2">Adjacent area</td><td>TPIs (mature trees with DBH>=1000mm)</td><td>1</td><td rowspan="2">24</td></tr>
<tr><td>Trees other than TPIs</td><td>23</td></tr>
<tr><td colspan="3"><u>Sub-total</u></td><td><u>3381</u></td></tr>
<tr><td>Transplant</td><td>Sub-Area 1</td><td>TPIs (mature trees with DBH>=1000mm)</td><td>2</td><td>34</td></tr>
</table></td><td>CEDD</td><td>Contractor (CEDD)</td><td>Contractor (CEDD)</td><td>Contractor (CEDD)</td></tr>
</table>

ID No.	Landscape and Visual Mitigation Measure	Funding Agency	Implement-ation Agency	Management Agency	Maintenance Agency
Construction Phase					
	<table><tr><td></td><td></td><td>TPIs (rare/protected species with DBH>=95mm)</td><td>10</td><td></td></tr><tr><td></td><td></td><td>TPIs (rare/protected species with DBH<95mm)</td><td>22</td><td></td></tr><tr><td></td><td colspan="2"><u>Sub-total</u></td><td><u>34</u></td><td></td></tr><tr><td>Remove</td><td>Sub-Area 1</td><td>TPIs (mature trees with DBH>=1000mm)</td><td>11</td><td rowspan="4">954</td></tr><tr><td></td><td></td><td>TPIs (rare/protected species with DBH>95mm)</td><td>0</td></tr><tr><td></td><td></td><td>Trees other than TPIs (excluding Leucaena leucocephala)</td><td>880</td></tr><tr><td></td><td></td><td>Leucaena leucocephala</td><td>63</td></tr><tr><td></td><td>Adjacent area</td><td>Trees other than TPIs</td><td>35</td><td rowspan="2">42</td></tr><tr><td></td><td></td><td>Leucaena leucocephala</td><td>7</td></tr><tr><td></td><td colspan="2"><u>Sub-total</u></td><td><u>996</u></td><td></td></tr><tr><td colspan="3"><u>Total</u></td><td><u>4411</u></td><td></td></tr></table> In addition to the above, there are 56 nos. of plants (non-tree species) with conservation value found within the PDA. In Sub-Area 1, 3 nos. are proposed to be retained, 9 nos. are proposed to be transplanted. The remaining amount of plants with conservation value found in Sub-Area 2-4 is proposed to be retained. In Sub-area 2, a 1-storey building and the associated vehicle road may possibly be provided nearby the existing pumping station for the future use of Sub-areas 2 to 4, 2 nos. of TPIs (T33 and T61) would be affected by the proposed layout. However, this layout is indicative for demonstrating possible form of recreational facilities for preliminary assessment at this stage only. The exact layout of the proposed 1-storey building and the associated vehicle road shall be subjected to further review in detail design stage, conflict to the existing trees in Sub-areas 2-4 shall be avoided.				
CM2	<u>Control of Night-time Lighting Glare -</u> All night time lighting shall be avoided as far as possible. All lights should be directed light and no light glare shall illuminate directly	CEDD	Contractor (CEDD)	Contractor (CEDD)	Contractor (CEDD)

ID No.	Landscape and Visual Mitigation Measure	Funding Agency	Implement-ation Agency	Management Agency	Maintenance Agency
Construction Phase					
	outside the site boundary.				
CM3	Good Site Practice – Construction areas' control, such as reducing the extent of working areas, temporary working areas, storage area and shortening construction period, shall be enforced to minimise potential landscape and visual impact arising from construction activities. The proposed site should reduce topographical / landform changes to reduce disturbance with the natural terrain. Earthworks and engineered slopes should be designed to be visually interesting and compatible with the surrounding landscape, mimic contouring and terrain. Temporary landscape treatment such as hydroseeding temporary stockpiles is recommended. Protection measures for the nearby water bodies, will be conducted in accordance with *ETWB TCW 5/2005*. Avoidance of polluted liquid or solid wastes falling into river waters will be implemented with reference to *ProPECC PN1/94.*	CEDD	Contractor (CEDD)	Contractor (CEDD)	Contractor (CEDD)
CM4	Erection of Decorative Screen Hoarding - Site hoardings shall be painted in a colour that is compatible with the surroundings and shall screen the views to the construction works. Hoarding should be taken down at the end of the construction period.	CEDD	Contractor (CEDD)	Contractor (CEDD)	Contractor (CEDD)
Operation Phase					
OM1	Landscape Treatment in Sub-Areas 2-4 – Location and species selection of trees and shrub planting should be considered in the landscape design as part of the new amenity and/or ecological planting in Sub-Area 2 to 4. Existing vegetation should be retained where possible and additional planting should prioritize in existing golf greens. Native species and existing species with proven ecological value to existing habitat, should be given priority consideration. Approximate 929 nos. of compensatory trees will be planted in Sub-Area 3[1] and tree species will refer to the existing tree species (e.g. *Cinnamomum camphora, Sterculia lanceolate, Acronychia pedunculata and Machilus chekiangensis*)) found at Lin Tong Mei Fung Shui Wood located to the west of the Project Site. Sub-areas 2 - 4 will be designated as "Other Specified Uses" annotated "Recreation cum Conservation", primary intention is to conserve the existing natural landscape and ecological features, to provide space recreational and ancillary facilities with minimal new structure/change to existing site conditions, serving the needs of the general public (subject to further design development). For trees to be planted on slope, tree planting will be conducted in accordance to *GEO Publication No. 1/2011.*	CEDD	Contractor (CEDD)	Proposed usage of Sub-Area 2-4 has not been confirmed yet, the proposed maintenance party is subject to further confirmation.	Proposed usage of Sub-Area 2-4 has not been confirmed yet, the proposed maintenance party is subject to further confirmation.

[1] The exact nos. and locations of compensatory tree planting shall be subjected to further review and to be provided under the compensatory tree planting plan in later design stage.

ID No.	Landscape and Visual Mitigation Measure	Funding Agency	Implement-ation Agency	Management Agency	Maintenance Agency
Construction Phase					
OM2	Landscape Treatment within the Public Housing Development – Planting should be provided on the podium and at-grade where practicable. Vertical greening and screening planting should be considered to soften the built structures. Blue-green infrastructure and sustainable landscape design, such as zero-irrigation, swales and rain gardens, should be taken into consideration. The choice of planting species selected should take careful consideration to the *GMP* of the North District, *Street Tree Selection Guide* by GLTMS, DEVB and the surrounding environment. The number of new trees within Public Housing Development will be confirmed by HD/ HA in due course.	HD	Contractor (HD)	HA	HA
OM3	Sensitive Design of Building Blocks – A staggered building height and form can enhance visual interest and quality. The building height should correspond with the nearby high-rise buildings and the natural landforms. Sensitive treatment and design to external finished of the built structure to ensure elements' colour, texture and tonal quality are compatible with the existing landscape and visual context. Lighting design should avoid potential glare impacts to sensitive receivers.	HD	Contractor (HD)	HA	HA
OM4	Compensatory Tree Planting – Trees felled due to the Development will be compensated as far as practicable in accordance with Development Bureau Technical Circular (Works) No. 4/2020. The proposed compensatory trees species will refer to the existing tree species (e.g *Cinnamomum camphora*, *Sterculia lanceolate, Acronychia pedunculata and Machilus chekiangensis*) found at Lin Tong Mei Fung Shui Wood and will be planted in Sub-Area 3[2]. Detailed investigation and survey of tree felling in the receptor site in Sub-Area 3 to accommodate the planting of compensatory tree and transplanting trees shall be carried out during the investigation, detailed design and construction stage.	CEDD	Contractor (CEDD)	Proposed usage of Sub-Area 2-4 has not been confirmed yet, the proposed maintenance party is subject to further confirmation.	Proposed usage of Sub-Area 2-4 has not been confirmed yet, the proposed maintenance party is subject to further confirmation.

[2] The exact nos. and locations of compensatory tree planting shall be subjected to further review and to be provided under the compensatory tree planting plan in later design stage.

14. CULTURAL HERITAGE IMPACT

14.1 Introduction

14.1.1 The cultural heritage impact assessment includes both built heritage and archaeology. Mitigation will be required for built heritage and it is anticipated that potential archaeology will be affected by the proposed development. The extent both laterally and significance of the potential archaeology needs to be established in an archaeological field survey prior to other investigations including ground investigation, investigation for land contamination and so on in order not to disturb the site. Mitigation such as rescue excavation or archaeological monitoring programmes may be required after the archaeological field survey results are known.

14.2 Mitigation Measures

Built Heritage

14.2.1 The proposed development in Sub-Area 1 and minor works in Sub-Areas 2 to 4 will directly and adversely affect the Fanling Golf Course, The Hong Kong Golf Club, a New Item (N340) to be graded by AAB. The impact of the proposed works is subject to the further assessment pending to the grading of the golf course conducted by AAB and mitigation measures, where necessary, will be proposed to minimise the impact on the Fanling Golf Course.

14.2.2 Four graded historic buildings, not-graded historic buildings and majority of clan graves are located at sufficient distance from the proposed development within Sub-Areas 2 to 4 to avoid direct impacts. The proposed development, subject to final design, consists of continuation of green environment with minor works and no visual or construction impacts on built heritage in particular on Grade 3 Half-way House of HKGC is expected. This is, however, subject to the final design.

14.2.3 A single clan grave (G-01) cannot be retained *in situ* and will require relocation. Full cartographic and photographic record of the grave (if relocated) to achieve preservation by record will be required prior to the construction phase. The report will have to be submitted to AMO for review and agreement. Clan Graves G-02 to G-07 will require protective measures depending on the final design of the development.

Archaeology

14.2.4 A detailed Archaeological Impact Assessment (AIA), including an archaeological field survey, of select areas within Sub-Area 1, in select areas of Sub-Areas 2 to 4 and proposed associated and/or drainage and minor road upgrade works will be required if development is confirmed at Investigation Phase (and prior to detailed design stage) and if works are determined to affect areas with no or limited existing impacts. The archaeological survey and archaeological impact assessment should be conducted prior to other investigations including ground investigation, investigation for land contamination and so on in order not to disturb the site and the archaeological field survey. Based on the result of the detailed archaeological impact assessment, mitigation measures, if necessary, should be recommended in prior agreement with

AMO. No construction works would be commenced prior to completion of the detailed archaeological impact assessment and the agreement of mitigation measures if needed.

15. SITE ENVIRONMENTAL AUDIT

15.1 Site Inspection

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

15.1.2 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..

15.1.3 Regular site inspections shall be carried out and led by the ER and attended by the Contractor and ET 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 situations outside the works area which is 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. During the inspection, the following information should be referred to:

a) EIA Report recommendations on environmental protection and pollution control mitigation measures;
b) works progress and programme;
c) individual works methodology proposals (which shall include the proposal on associated pollution control measures);
d) contract specifications on environmental protection;
e) relevant environmental protection and pollution control legislations; and
f) previous site inspection results.

15.1.4 The Contractor shall keep the ER and ET Leader updated with all 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.

15.1.5 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 Plan for the EM&A programme.

15.2 Environmental Compliance

15.2.1 There are statutory requirements on environmental protection and pollution control requirements with which construction activities must comply.

15.2.2 In order to ensure the works comply with corresponding requirements, all method statements of works should be submitted by the Contractor to the ER for approval and to the ET Leader to ensure sufficient environmental protection and pollution control measures have been included. The Environmental Mitigation Implementation schedule (EMIS) is summarised in **Appendix 4.1**. Any proposed changes to the mitigation measures shall be certified by the ET Leader and verified by the IEC as conforming to the relevant information and recommendations contained in the EIA Report.

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

15.2.4 The Contractor should provide the update of the relevant documents to the ET Leader so that checking can be carried out. The document shall at least include the updated Works Progress Reports, updated Works Programme, method statements, any application letters for different licences/permits under the environmental protection laws, and copies of all valid licences/permits. The site diary and environmental records shall also be available for inspection by the relevant parties.

15.2.5 After reviewing the document, the ET shall advise the IEC and 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 may 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.

15.2.6 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.

15.3 Choice of Construction Method

15.3.1 At times during the construction phase the Contractor may submit method statements for various aspects of construction. This state of affairs would only apply to those construction methods that the EIA has not imposed conditions while for construction methods that have been assessed in the EIA, the Contractor is bound to follow the requirements and recommendations in the EIA Study. The Contractor's options for alternative construction methods may introduce adverse environmental impacts into the Project. It is the responsibility of the Contractor and ET, in accordance with established standards, guidelines and EIA Study recommendations and requirements, to review and determine the adequacy of the environmental protection and pollution control measures in the Contractor's proposal in order to ensure no unacceptable impacts would result. To achieve this end, the ET shall provide a copy of the Proactive Environmental Protection Proforma as shown in **Appendix 15.1** to the IEC for approval. The IEC should audit the review of the construction method and endorse

the proposal on the basis of no adverse environmental impacts.

15.4 Environment Complaints

15.4.1 The following procedures should be undertaken upon receipt of any environmental complaint:

- The Contractor to log complaint and date of receipt onto the complaint database and inform the ER, ET and IEC immediately;
- The Contractor to investigate, with the ER and ET, the complaint to determine its validity, and assess whether the source of the problem is due to construction works of the Project with the support of additional monitoring frequency and stations, if necessary;
- The Contractor to identify remedial measures in consultation with the IEC, ET and ER if a complaint is valid and due to the construction works of the Project;
- The Contractor to implement the remedial measures as required by the ER and to agree with the ET and IEC any additional monitoring frequency and stations, where necessary, for checking the effectiveness of the remedial measures;
- The ER, ET and IEC to review the effectiveness of the Contractor's remedial measures and the updated situation;
- The ET to undertake additional monitoring and audit to verify the situation if necessary, and oversee that circumstances leading to the complaint do not recur;
- If the complaint is referred by the EPD, the Contractor to prepare interim report on the status of the complaint investigation and follow- up actions stipulated above, including the details of the remedial measures and additional monitoring identified or already taken, for submission to EPD within the time frame assigned by the EPD; and
- The ET to record the details of the complaint, results of the investigation, subsequent actions taken to address the complaint and updated situation including the effectiveness of the remedial measures, supported by regular and additional monitoring results in the monthly EM&A reports.

16. REPORTING

16.1 General

16.1.1 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 on diskettes or other approved media. The formats for air quality, noise and water quality monitoring data to be submitted shall be separately agreed.

16.1.2 The ET is responsible for establishing and maintaining a dedicated website throughout the entire construction period for publishing all the relevant environmental monitoring data (including but not limited to the baseline and impact monitoring). The ET shall propose the format and functionality of the website for agreement with the ER and IEC prior to publishing of data. Once the monitoring data are available (e.g. noise, dust, water quality etc) and vetted by the IEC, the ET is responsible to upload the relevant data to the dedicated website.

16.1.3 Types of reports that the ET shall prepare and submit include baseline monitoring report, monthly EM&A report 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 shall be made available to the Director of Environmental Protection.

16.2 Baseline Monitoring Report

16.2.1 The baseline monitoring report shall include at least the following:

i. Up to half a page executive summary;
ii. brief project background information;
iii. drawings showing locations of the baseline monitoring stations;
iv. monitoring results (in both hard and diskette copies) together with the following information:
    - monitoring methodology;
    - name of laboratory and types of equipment used and calibration details;
    - parameters monitored;
    - monitoring locations;
    - monitoring date, time, frequency and duration; and
    - quality assurance (QA)/quality control (QC) results and detection limits.
v. details of influencing factors, including;
    - major activities, if any, being carried out on the site during the period;
    - weather conditions during the period; and
    - other factors which might affect monitoring results.
vi. determination of the Action and Limit Levels for each monitoring parameter and statistical analysis of the baseline data;
vii. revisions for inclusion in the EM&A Manual; and
viii. comments, recommendations and conclusions.

16.3 Monthly Monitoring Reports

16.3.1 The results and findings of all EM&A work required in the Manual shall be recorded

in the monthly EM&A reports prepared by the ET and endorsed by the IEC. The EM&A report shall be prepared and submitted to EPD within 10 working days of the end of each reporting month, with the first report due the month after construction commences. Copies of each monthly EM&A report shall be submitted to the following parties: the IEC, the ER and EPD. Before submission of the first EM&A report, the ET shall liaise with the parties on the required number of copies and format of the monthly reports in both hard copy and electronic medium.

16.3.2 The ET should prepare and submit a Baseline Environmental Monitoring Report at least one month before commencement of construction of the Project. Copies of the Baseline Environmental Monitoring Report should be submitted to the IEC, ER and EPD. The ET should liaise with the relevant parties on the exact number of copies require.

16.3.3 The ET shall review the number and location of monitoring stations and parameters every six months, or on 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

16.3.4 The first monthly EM&A report shall include at least the following:

i. Executive summary (1-2 pages);
   - breaches of Action and Limit levels;
   - complaint log;
   - notifications of any summons and successful prosecutions;
   - reporting changes; and
   - future key issues.

ii. Basic project information:
   - project organization including key personnel contact names and telephone numbers;
   - programme;
   - management structure; and
   - works undertaken during the month.

iii. Environmental status
   - advice on the status of statutory environmental compliance such as the status of compliance with the environmental permit (EP) conditions under the EIA Ordinance, submission status under the EP and implementation status of mitigation measures;
   - works undertaken during the month with illustrations (such as location of works, daily excavation rate, etc.); and
   - drawings showing the project area, any environmental sensitive receivers and the locations of the monitoring and control stations (with co-ordinates of the monitoring locations).

iv. A brief summary of EM&A requirements including;
   - all monitoring parameters;
   - environmental quality performance limits (Action and Limit levels);
   - vent-Action Plans;
   - environmental mitigation measures, as recommended in the project EIA Study final report; and

- environmental requirements in contract documents.

v. Implementation status
- advice on the implementation status of environmental protection and pollution control / mitigation measures, as recommended in the project EIA Report.

vi. Monitoring result (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;
- monitoring date, time, frequency, and duration;
- weather conditions during the period;
- any other factors which might affect the monitoring results; and
- QA / QC results and detection limits.

vii. Reporting on non-compliance, complaints, and notifications of summons and successful prosecutions:
- record of all non-compliance (exceedances) of the environmental quality performance limits (Action and Limit levels);
- record of all complaints received (written or verbal) for each media, including locations and nature of complaints investigation, liaison and consultation undertaken, actions and follow-up procedures taken, results and summary;
- record of all notification 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;
- review of the reasons for and the implications of non-compliances, complaints, summons and prosecutions including review of pollution sources and working procedures; and
- description of the actions taken in the event of non-compliance and deficiency reporting and any follow-up procedures related to earlier non-compliance.

viii. 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;
- record of any project changes from the originally proposed as described in the EIA (e.g. construction methods, mitigation proposals, design changes, etc.); and
- comments (for examples, effectiveness and ef iciency of the mitigation measures), recommendations (for examples, any improvement in the EM&A programme) and conclusions.

Subsequent monthly EM&A Report

16.3.5 Subsequent monthly EM&A report shall include at least the following:

i. Executive summary (1-2 pages):
- breaches of Action and Limit levels;

- complaint log;
- notifications of any summons and successful prosecutions;
- reporting changes; and
- future key issues.

ii. Basic project information:
- project organization including key personnel contact names and telephone numbers;
- programme;
- management structure;
- works undertaken during the month; and
- any updates as needed to the scope of works and construction methodologies.

iii. Environmental status:
- advice on the status of statutory environmental compliance such as the status of compliance with the environmental permit (EP) conditions under the EIA Ordinance, submission status under the EP and implementation status of mitigation measures;
- works undertaken during the month with illustrations (such as location of works, daily excavation rate, etc.); and
- drawings showing the project area, any environmental sensitive receivers and the locations of the monitoring and control stations.

iv. Implementation status:
- advice on the implementation status of environmental protection and pollution control/mitigation measures, as recommended in the project EIA Report.

v. Monitoring result (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;
- monitoring date, time, frequency, and duration;
- weather conditions during the period;
- any other factors which might affect the monitoring results; and
- QA / QC results and detection limits.

vi. Reporting on non-compliance, complaints, and notifications of summons and successful prosecutions:
- record of all non-compliance (exceedances) of the environmental quality performance limits (Action and Limit levels);
- record of all complaints received (written or verbal) for each media, including locations and nature of complaints investigation, liaison and consultation undertaken, actions and follow-up procedures taken, results and summary;
- record of all notification 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;
- review of the reasons for and the implications of non-compliances, complaints, summons and prosecutions including review of pollution sources and working procedures; and

- description of the actions taken in the event of non-compliance and deficiency reporting and any follow-up procedures related to earlier non-compliance.

vii. 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;
- record of any project changes from the originally proposed as described in the EIA (e.g. construction methods, mitigation proposals, design changes, etc.); and
- comments (for examples, effectiveness and efficiency of the mitigation measures), recommendations (for examples, any improvement in the EM&A programme) and conclusions.

viii. Appendices:
- Action and Limit levels;
- graphical plots of trends of the monitoring parameters at key stations over the past four reporting periods for representative monitoring stations annotated against the following:
  a) major activities being carried out on site during the period;
  b) weather conditions during the period; and
  c) any other factors that might affect the monitoring results.
- monitoring schedule for the present and next reporting period;
- cumulative statistics on complaints, notifications of summons and successful prosecutions; and
- outstanding issues and deficiencies.

16.4 Final EM&A Review Reports

General

16.4.1 The EM&A programme for construction stage should be terminated upon the completion of the construction activities, while the EM&A programme for operation stage should be terminated upon the completion of operation monitoring.

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

Final EM&A Review Report for Construction Stage

16.4.3 The final EM&A review report for construction stage (to be submitted after completion of construction activities) should contain at least the following information:

i. Executive summary (1-2 pages):
ii. Drawings showing the project area, any environmental sensitive receivers and the locations of the monitoring and control stations;
iii. Basic project information including a synopsis of the project organization, contacts of key management, and a synopsis of work undertaken during the

course of the project or past twelve months;

iv. A brief summary of EM&A requirements including:
- environmental mitigation measures for construction stage, as recommended in the project EIA Report;
- environmental impact hypotheses tested;
- environmental quality performance limits (Action and Limit levels);
- all monitoring parameters;
- Event and Action Plans.

v. A summary of the implementation status of environmental protection and pollution control/mitigation measures for construction stage, as recommended in the project EIA Report and summarized in the updated implementation schedule;

vi. Graphical plots and the statistical analysis of the trends of monitoring parameters over the course of the project, including:
- The major activities being carried out on site during the period;
- weather conditions during the period; and
- any other factors which might affect the monitoring results.

vii. A summary of non-compliance (exceedances) of the environmental quality performance limits (Action and Limit levels);

viii. A review of the reasons for and the implications of non-compliance including review of pollution sources and working procedures as appropriate;

ix. A description of the actions taken in the event of non-compliance;

x. A summary record of all complaints received (written or verbal) for each media, liaison and consultation undertaken, actions and follow-up actions taken and results;

xi. A review of the validity of EIA predictions for construction stage and identification of shortcomings in EIA recommendations;

xii. Comments (for example, a review of the effectiveness and efficiency of the mitigation measures and of the performance of the environmental management system, that is, of the overall EM&A programme for construction stage); and

xiii. Recommendations and conclusions (for example, a review of success of the overall EM&A programme for construction stage to cost-effectively identify deterioration and to initiate prompt effective mitigatory action when necessary).

Final EM&A Review Report for Construction Stage

16.4.4 The final EM&A review report for operation stage (to be submitted after completion of operation monitoring) should contain at least the following information:

i. Executive summary (1-2 pages):

ii. Drawings showing the project area, any environmental sensitive receivers and the locations of the monitoring and control stations;

iii. Basic project information including a synopsis of the project organization, contacts of key management, and a synopsis of work undertaken during the course of the project or past twelve months;

iv. A brief summary of EM&A requirements including:
- environmental mitigation measures for construction stage, as recommended in the project EIA Report;
- environmental impact hypotheses tested;
- environmental quality performance limits (Action and Limit levels);
- all monitoring parameters;

- Event and Action Plans;

v. A summary of the implementation status of environmental protection and pollution control/mitigation measures for operation stage, as recommended in the project EIA Report and summarized in the updated implementation schedule;

vi. Graphical plots and the statistical analysis of the trends of monitoring parameters over the course of the project, including:
- the major activities being carried out on site during the period;
- weather conditions during the period; and
- any other factors which might affect the monitoring results;

vii. A summary of non-compliance (exceedances) of the environmental quality performance limits (Action and Limit levels);

viii. A review of the reasons for and the implications of non-compliance including review of pollution sources and working procedures as appropriate;

ix. A description of the actions taken in the event of non-compliance;

x. A summary record of all complaints received (written or verbal) for each media, liaison and consultation undertaken, actions and follow-up actions taken and results;

xi. A review of the validity of EIA predictions for operation stage and identification of shortcomings in EIA recommendations;

xii. Comments (for example, a review of the effectiveness and efficiency of the mitigation measures and of the performance of the environmental management system, that is, of the overall EM&A programme for operation stage); and

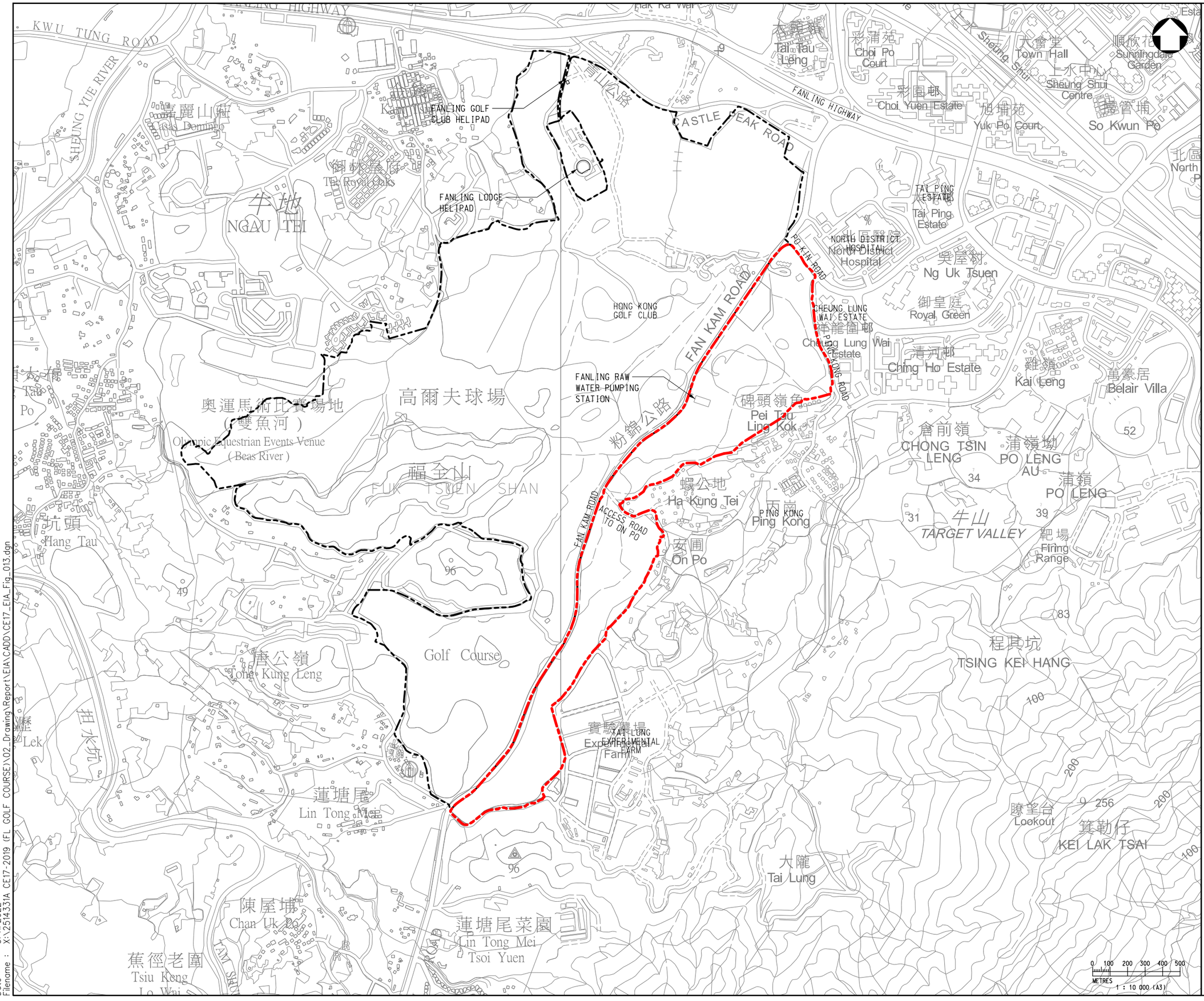
xiii. Recommendations and conclusions (for example, a review of success of the overall EM&A programme for operational stage to cost-effectively identify deterioration and to initiate prompt effective mitigatory action when necessary).

16.5 Data Keeping

16.5.1 No site-based documents (such as monitoring field records, laboratory analysis records, site inspection forms, etc.) are required to be included in the monthly EM&A reports. However, any such document shall be well kept by the ET and be ready for inspection upon request. All relevant information shall be clearly and systematically recorded in the document. Monitoring data shall also be recorded in magnetic media form, and the software copy must be available upon request. Data format shall be agreed with EPD. All documents and data shall be kept for at least one year following completion of the construction contract and one year following completion of the operation phase monitoring for construction phase EM&A and operational EM&A respectively.

16.6 Interim Notifications of Environmental Quality Limit Exceedances

16.6.1 With reference to the Event and Action Plans, when the environmental quality performance limits are exceeded and if they are proven to be valid, the ET should immediately notify the 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 actions and success of the actions taken, with any necessary follow-up proposals. A sample template for the interim notification is presented in **Appendix 16.1**.



NOTES :

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.
2. ALL LEVELS ARE IN METRES (M) AND RELATIVE TO HONG KONG PRINCIPAL DATUM (mPD).

LEGEND :

PROJECT BOUNDARY

FANLING GOLF COURSE (FGC)

Rev	Description	By	Date

Consultant

wsp

Project title

AGREEMENT NO. CE17/2019 (CE)
TECHNICAL STUDY ON PARTIAL DEVELOPMENT OF FANLING GOLF COURSE SITE
– FEASIBILITY STUDY

Drawing title

LOCATION OF THE PROJECT

Drawing no. Figure 1.1 Rev. –

Drawn	Date	Checked	Approved
CAD	12/2020	cck	EW

Scale: AS SHOWN (A3) Status: –

CEDD 土木工程拓展署
CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT
北拓展處
NORTH DEVELOPMENT OFFICE

Date : 5/11/2022
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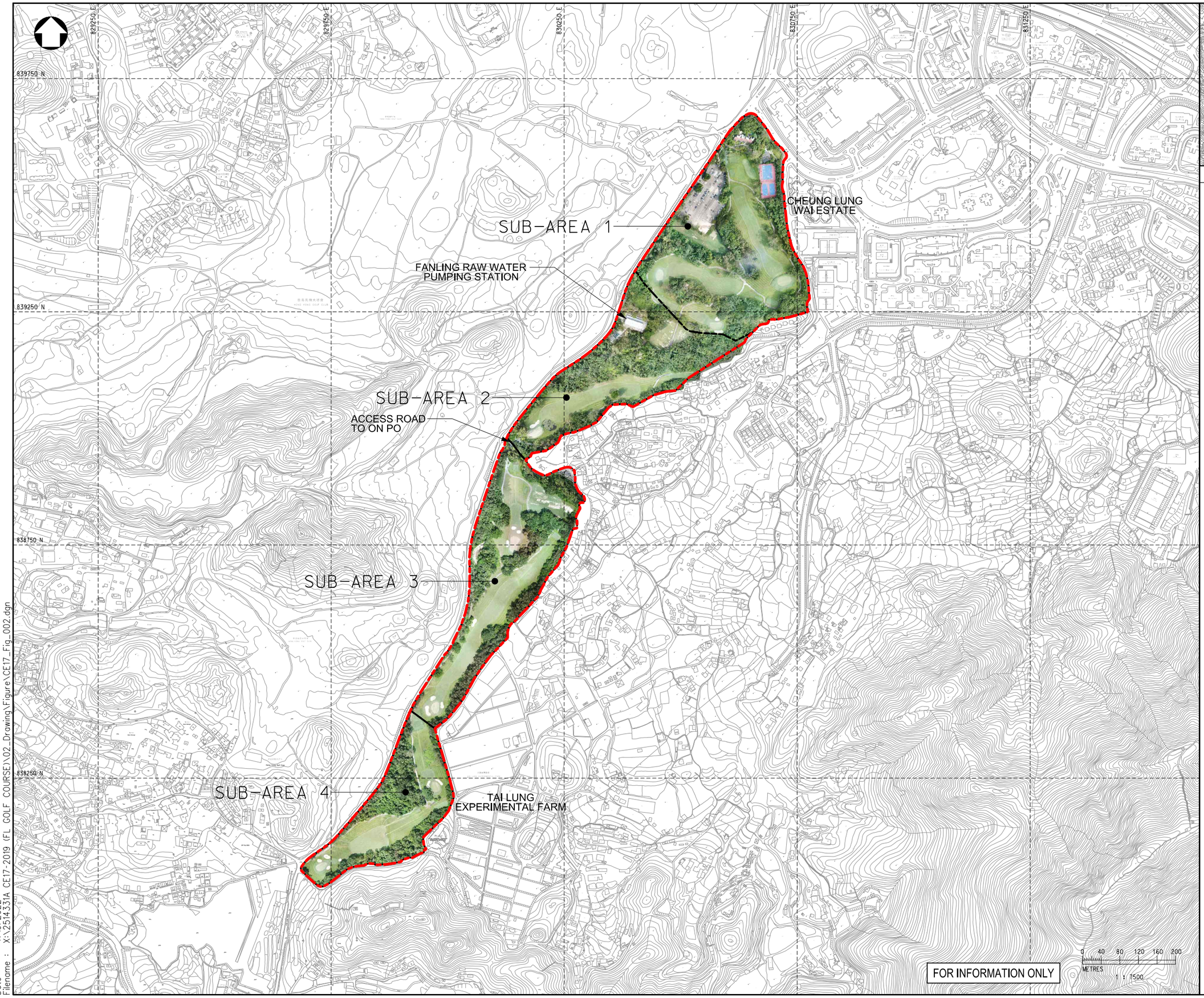

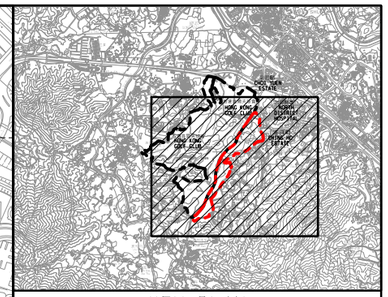

KEY PLAN

NOTES :

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.
2. ALL LEVELS ARE IN METRES (M) AND RELATIVE TO HONG KONG PRINCIPAL DATUM (mPD).

LEGEND :

HONG KONG (FANLING) GOLF CLUB

POTENTIAL DEVELOPMENT AREA (PDA)

Rev	Description	By	Date

Consultant

wsp

Project title

AGREEMENT NO. CE17/2019 (CE)
TECHNICAL STUDY ON PARTIAL DEVELOPMENT OF FANLING GOLF COURSE SITE
– FEASIBILITY STUDY

Drawing title

DELINEATION OF SUB-AREA 1 TO SUB-AREA 4

Drawing no.			Rev.
FIGURE 2.1			–
Drawn	Date	Checked	Approved
CAD	10/12/19	SF	EW
Scale		Status	
1:7500 (A3)		–	

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北拓展處
NORTH DEVELOPMENT OFFICE

Date : 4/19/2022
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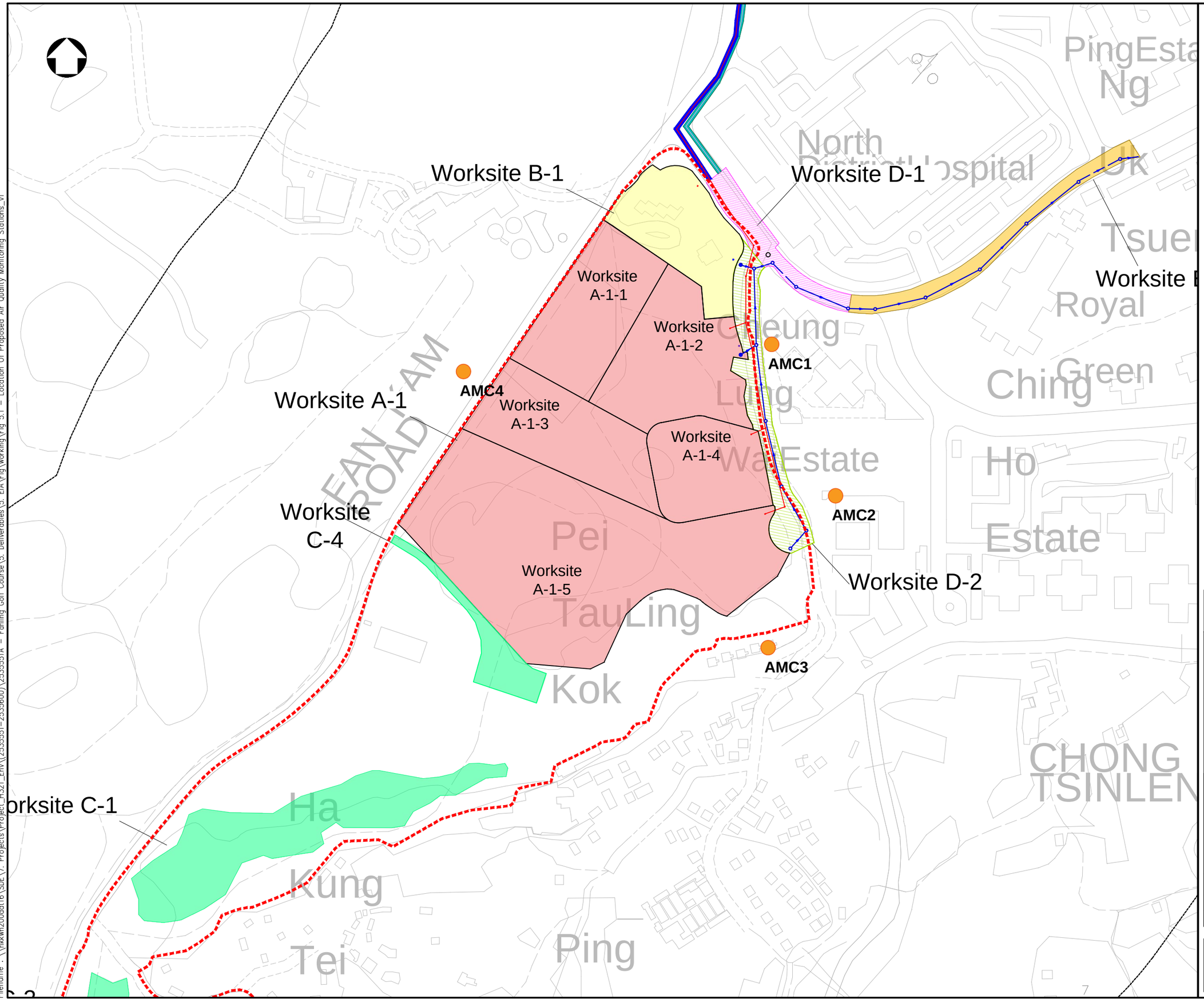

NOTES :

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2. ALL LEVELS ARE IN METRES (M) AND RELATIVE TO HONG KONG PRINCIPAL DATUM (mPD).

LEGEND :

PROJECT BOUNDARY

AMC1 PROPOSED AIR QUALITY MONITORING STATION

Rev	Description	By	Date

Consultant

wsp

Project title

AGREEMENT NO. CE17/2019 (CE)
TECHNICAL STUDY ON PARTIAL DEVELOPMENT OF FANLING GOLF COURSE SITE
– FEASIBILITY STUDY

Drawing title

LOCATION OF PROPOSED AIR QUALITY MONITORING STATIONS (CONSTRUCTION PHASE)

Drawing no.	Rev.
FIGURE 5.1	–

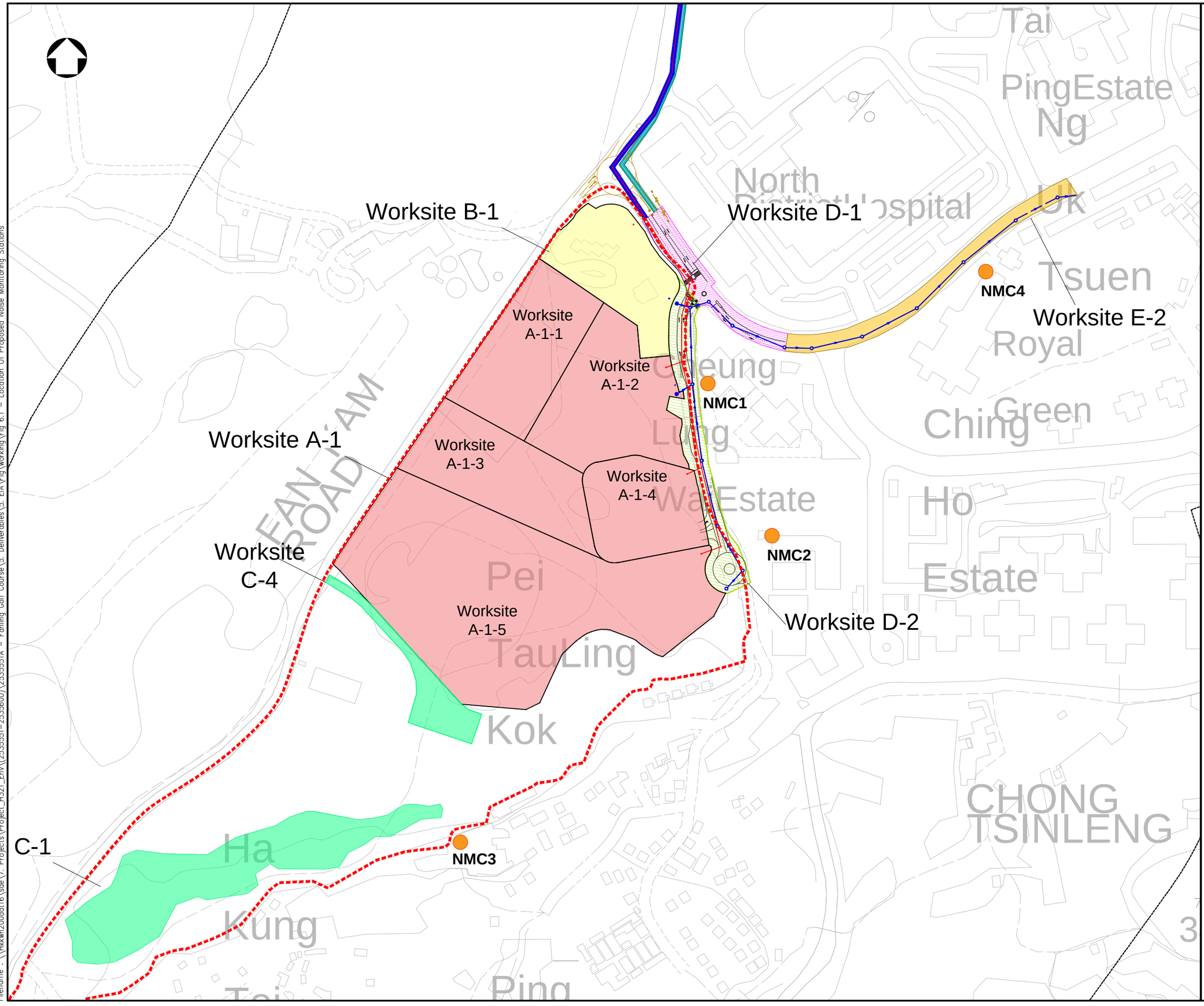
Drawn	Date	Checked	Approved
SC	04/2022	CY	CCK

Scale

Status –

土木工程拓展署
CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT
NORTH DEVELOPMENT OFFICE

Date : 11/2/2021
Filename : \\hkkwn200dat16\SDE\7. Projects\Project_H321_Env\(2535551-2535600)\2535551A - Fanling Golf Course\5. Deliverables\5. EIA\Fig\working\Fig 5.1 – Location Of Proposed Air Quality Monitoring Stations_v1



NOTES :

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2. ALL LEVELS ARE IN METRES (M) AND RELATIVE TO HONG KONG PRINCIPAL DATUM (mPD).

LEGEND :

PROJECT BOUNDARY

NMC1 PROPOSED CONSTRUCTION NOISE MONITORING STATION

Rev	Description	By	Date

Consultant

wsp

Project title

AGREEMENT NO. CE17/2019 (CE)
TECHNICAL STUDY ON PARTIAL DEVELOPMENT OF FANLING GOLF COURSE SITE
– FEASIBILITY STUDY

Drawing title

LOCATION OF PROPOSED CONSTRUCTION NOISE MONITORING STATIONS (CONSTRUCTION PHASE)

Drawing no.	Rev.
FIGURE 6.1a	–

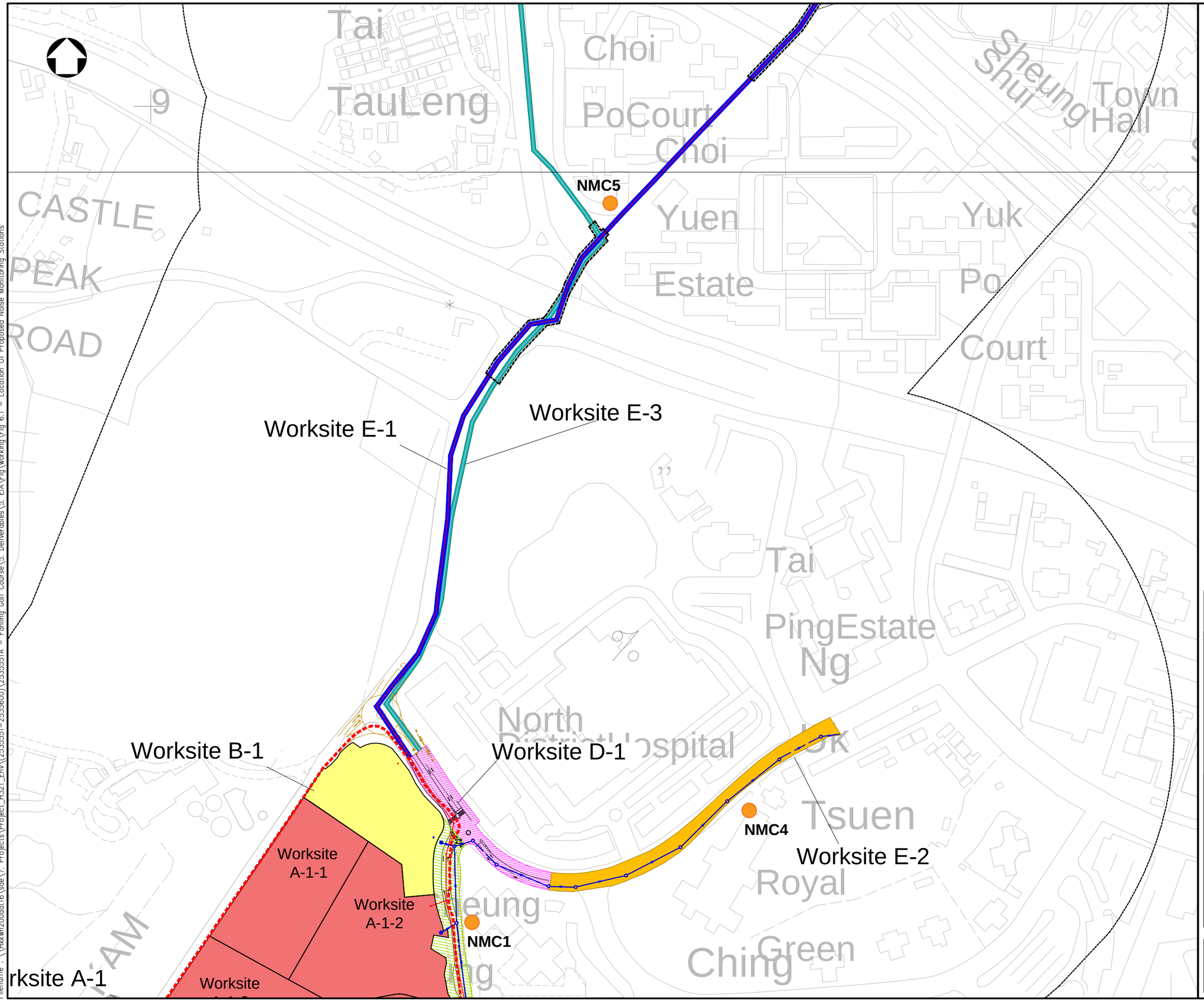
Drawn	Date	Checked	Approved
TL	05/2022	CCK	CCK

Scale

Status –

土木工程拓展署
CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT
NORTH DEVELOPMENT OFFICE

Date : 5/4/2022
Filename : \\Hkwn200dat16\sde\7. Projects\Project_H321_Env\(2535551-2535600)\2535551A – Fanling Golf Course\5. Deliverables\5. EIA\Fig\working\Fig 6.1 – Location Of Proposed Noise Monitoring Stations



NOTES :

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2. ALL LEVELS ARE IN METRES (M) AND RELATIVE TO HONG KONG PRINCIPAL DATUM (mPD).

LEGEND :

PROJECT BOUNDARY

NMC1 — PROPOSED CONSTRUCTION NOISE MONITORING STATION

Rev	Description	By	Date

Consultant: wsp

Project title:
AGREEMENT NO. CE17/2019 (CE)
TECHNICAL STUDY ON PARTIAL DEVELOPMENT OF FANLING GOLF COURSE SITE – FEASIBILITY STUDY

Drawing title:
LOCATION OF PROPOSED CONSTRUCTION NOISE MONITORING STATIONS (CONSTRUCTION PHASE)

Drawing no.	Rev.
FIGURE 6.1b	–

Drawn	Date	Checked	Approved
TL	05/2022	CCK	CCK

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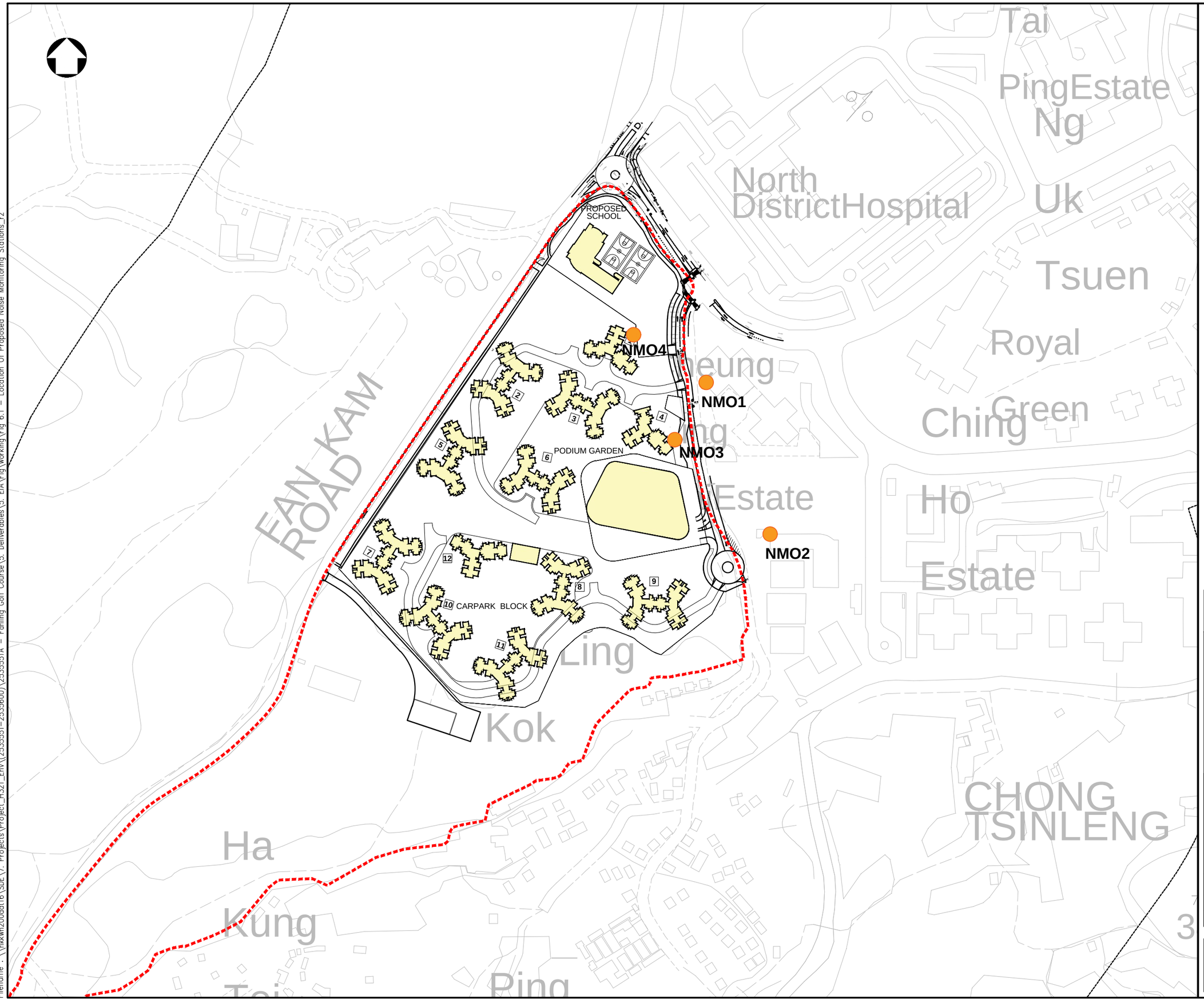
土木工程拓展署
CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT
NORTH DEVELOPMENT OFFICE

Date : 5/4/2022
Filename : \\Hkkwn200dat16\sde\7. Projects\Project_H321_Env\(2535551-2535600)\2535551A – Fanling Golf Course\5. Deliverables\5. EIA\Fig\working\Fig 6.1 – Location Of Proposed Noise Monitoring Stations



NOTES :

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.
2. ALL LEVELS ARE IN METRES (M) AND RELATIVE TO HONG KONG PRINCIPAL DATUM (mPD).

LEGEND :

PROJECT BOUNDARY

NMO1 PROPOSED ROAD TRAFFIC NOISE MONITORING STATION

Rev	Description	By	Date

Consultant

wsp

Project title

AGREEMENT NO. CE17/2019 (CE)
TECHNICAL STUDY ON PARTIAL DEVELOPMENT OF FANLING GOLF COURSE SITE
– FEASIBILITY STUDY

Drawing title

LOCATION OF PROPOSED ROAD TRAFFIC NOISE MONITORING STATIONS (OPERATION PHASE)

Drawing no.	Rev.
FIGURE 6.2	–

Drawn	Date	Checked	Approved
TL	05/2022	CCK	CCK

Scale –

Status –

土木工程拓展署
CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT
NORTH DEVELOPMENT OFFICE

Date : 5/4/2022
Filename : \\hkkwn200dat16\SDE\7. Projects\Project_H321_Env\(2535551-2535600)\2535551A - Fanling Golf Course\5. Deliverables\5. EIA\Fig\working\Fig 6.1 – Location Of Proposed Noise Monitoring Stations_r2

NORTH DISTRICT HOSPITAL

PROPOSED SCHOOL

PDNM_01

PDNM_02

PODIUM GARDEN

CARPARK BLOCK

1 2 3 4 5 6 7 8 9 10 11 12

NOTES :

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.
2. ALL LEVELS ARE IN METRES (M) AND RELATIVE TO HONG KONG PRINCIPAL DATUM (mPD).

LEGEND :

PROJECT BOUNDARY

LOW NOISE ROAD SURFACING

0 20 40 60 80 100
METRES

Rev	Description	By	Date

Consultant

wsp

Project title

AGREEMENT NO. CE17/2019 (CE)
TECHNICAL STUDY ON PARTIAL DEVELOPMENT OF FANLING GOLF COURSE SITE
– FEASIBILITY STUDY

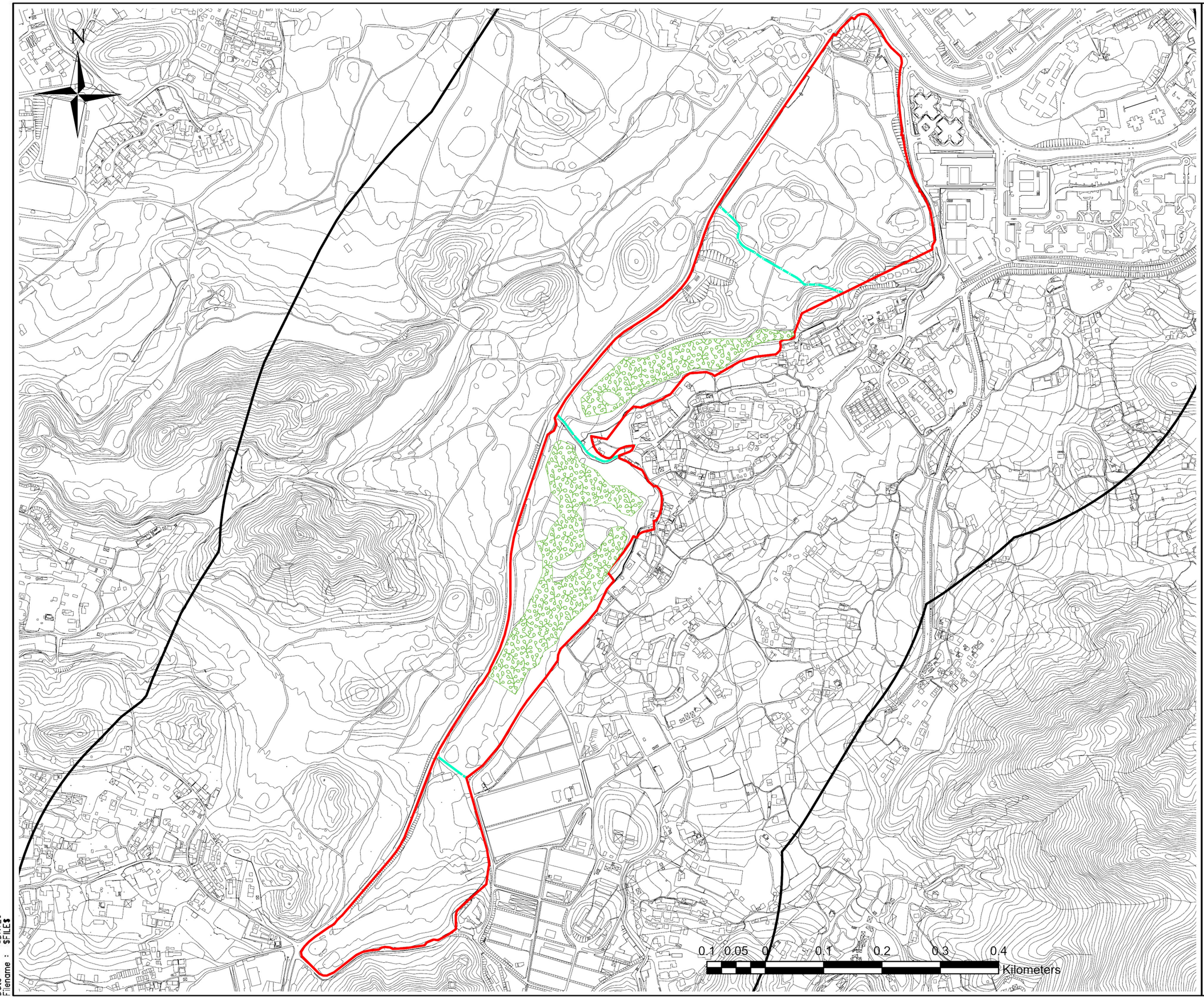
Drawing title

LOCATIONS OF DIRECT MITIGATION MEASURES

Drawing no.			Rev.
FIGURE 6.3			0
Drawn: AL	Date: 05/2022	Checked: CCK	Approved: DL
Scale: AS SHOWN		Status: –	

土木工程拓展署
CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT
NORTH DEVELOPMENT OFFICE

Date : 09/29/2021
Filename : \\hkkwn200da116\SDE\7. Projects\Project_H321_Env\(2535551-2535600)\2535551A – Fanling Golf Course\5. Deliverables\6. EM&A\Figures\xref\sk 055-w4_xref



Project Site
Assessment Area
Zone Boundary
Woodland Compensation

Rev	Description	By	Date

Consultant

wsp

Project title

AGREEMENT NO. CE17/2019 (CE)
TECHNICAL STUDY ON PARTIAL DEVELOPMENT OF FANLING GOLF COURSE SITE
– FEASIBILITY STUDY

Drawing title

Figure 11.1
Proposed Location of Woodland Compensation

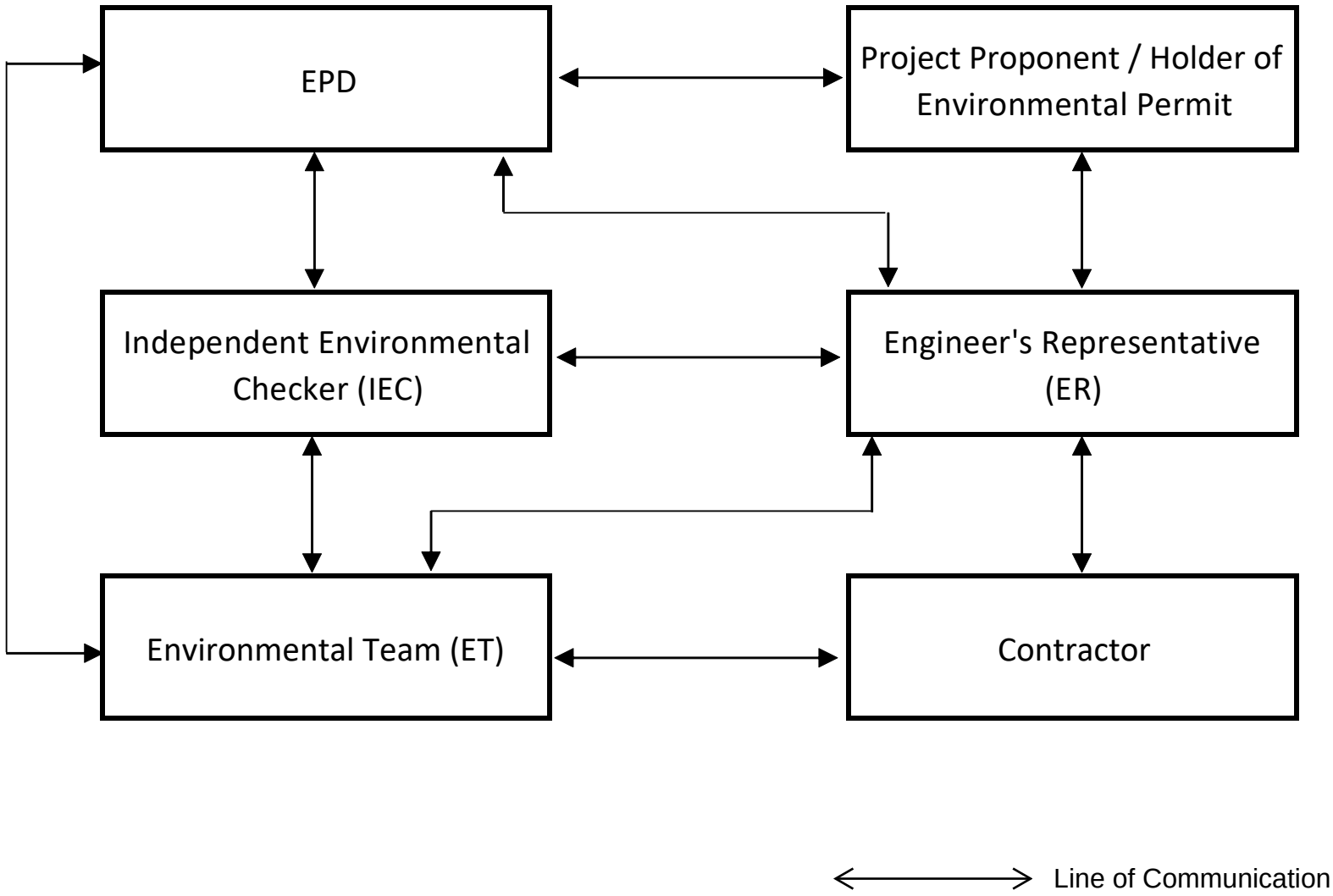
Drawing no.			Rev.
Drawn: CS LUI	Date	Checked	Approved: EW
Scale		Status	

CEDD 土木工程拓展署 CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT 北拓展處 NORTH DEVELOPMENT OFFICE

Date : $DATE$
Filename : $FILE$

Appendix 3.1
Project Organisation for Environmental Works

Project Organisation for Environmental Work



Appendix 4.1

Environmental Mitigation Implementation Schedule (EMIS)

Table A4.1 – Implementation Schedule of Air Quality Mitigation Measures

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Party Responsible for Implementation	Location / Timing	Implementation Stage	Relevant Legislation and Guidelines
Construction Dust							
	CD1	Watering once per hour on exposed worksites and haul road	Minimise dust impact at nearby sensitive receivers	Contractor	All construction site	Construction stage	➢ APCO ➢ Dust impact to meet HKAQO and EIAO-TM criteria
	CD2	Requirements as given in the Air Pollution Control (Construction Dust) Regulation should be followed.	Minimise dust impact at nearby sensitive receivers	Contractor	All construction site	Construction stage	➢ APCO ➢ Dust impact to meet HKAQO and EIAO-TM criteria
	CD3	Dust control measures as recommended as below, should be implemented. • The works area for site clearance shall be sprayed with water throughout the operation to maintain the entire surface wet (e.g. installation of sprinklers); • Restricting heights from which materials are to be dropped, as far as practicable to minimise the fugitive dust arising from unloading/ loading; • All vehicles shall be washed to remove any dusty materials from its body and wheels before leaving a construction site; • All spraying of materials and surfaces should avoid excessive water usage; • When a vehicle leaving a construction site is carrying a load of dusty materials, the load shall be covered entirely by clean impervious sheeting;	Minimise dust impact at nearby sensitive receivers	Contractor	All construction site	Construction stage	➢ APCO ➢ Dust impact to meet HKAQO and EIAO-TM criteria

		• Travelling speeds should be controlled to reduce traffic induced dust dispersion and re-suspension within the Site from the operating trucks; • Erection of hoarding of not less than 3 m high from ground level along the Site boundary; • Any stockpile of dusty materials shall be covered entirely by impervious sheeting; and/or placed in an area sheltered on the top and 4 sides; • All dusty materials shall be sprayed with water immediately prior to any loading, unloading or transfer operation so as to maintain the dusty materials wet; • Compaction, turfing, hydroseeding, vegetation planting or sealing with latex, vinyl, bitumen, shortcrete or other suitable surface stabiliser shall be provided within six months after the last construction activity on the construction site or part of the construction site where the exposed earth lies; and, • Avoid concurrent dusty construction works near ASRs through the control of timing and locations of different construction activities.					
	CD4	Regular monitoring of dust as per EM&A programme	Monitoring of dust impact	Contractor	Selected monitoring locations	Construction stage	➢ EIAO-TM

Table A4.2 – Implementation Schedule of Noise Mitigation Measures

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Party Responsible for Implementation	Location / Timing	Implementation Stage	Relevant Legislation and Guidelines
Construction Noise							
	CN1	<u>Adoption of Quieter Construction Method</u> • A quieter construction method, NonExplosive Chemical Expansion Agent (Soundless Chemical Demolition Agent), is proposed to be adopted to replace the use of breaker. • Adoption of Quieter Construction Method (Use of Silent Piling by Press-in Method). <u>Use of Quality PMEs</u> • Use of Quality Powered Mechanical Equipment (QPME) is recommended to reduce the noise impact. <u>Use of Noise Insulation Fabric</u> • Noise insulating fabric can be adopted for certain PME such as piling machine • Use of Movable Barrier with a cantilevered upper portion shall be placed as close to the PME as possible and a location intercepting the line of sight between the NSRs and PME. The barrier material shall have a surface density of not less than 10 kg/m^2 with 25 mm thick internal sound absorptive lining to achieve the maximum screening effect. • The future contractor will be required through contract specifications to provide and implement sufficient direct mitigation measures with reference to the recommendations in this EIA or the future	Control construction noise impacts	Contractor	All construction site	Construction stage	➢ EIAO-TM

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Party Responsible for Implementation	Location / Timing	Implementation Stage	Relevant Legislation and Guidelines
		detailed design to achieve acceptable noise levels on the nearby NSRs. <u>Use of Noise Enclosure</u> • Movable noise enclosure made up of plywood is proposed to surround certain static PME. The internal wall of the enclosure should be laid with sound absorbent such as mineral wool. • The future contractor will also be required to prepare a construction noise management plan with reference to Section 8 and Annex 21 of the EIAO-TM as well as this EIA Report and EM&A Manual. The construction management plan shall identify the inventory of noise sources and assess the effectiveness and practicality of all mitigation measures to minimize the construction noise impact and shall be submitted six months prior to commencement of construction. <u>Good Site Management Practices</u> • Only well-maintained plant should be operated on-site and plants should be serviced regularly during the construction period; • Mobile plant, if any, should be sited as far from NSRs as possible; • Plant known to emit noise strongly in one direction should, wherever possible, be properly orientated so that the noise is directed away from the nearby NSRs;					

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Party Responsible for Implementation	Location / Timing	Implementation Stage	Relevant Legislation and Guidelines
		• Use of site hoarding as a noise barrier to screen noise at low level NSRs; • Machines and plant that may be in intermittent use should be shut down between works periods or should be throttled down to a minimum; and • Any material stockpiles and other structures should be effectively utilized, wherever practicable, to screen the noise from on-site construction activities.					
	CN2	• To further alleviate the construction noise impact during the examination period, minimum separation distances between critical construction activities and the schools (Tung Wah Group of Hospitals Ma Kam Chan Memorial Primary School and HKCKLA Buddhist Wisdom Primary School) have been recommended, separation distance details can be referred to Table 4.5.6. The contractors shall liaise with the schools to confirm their examination period when planning their work sequence.	Control construction noise impacts	Contractor	Critical construction work area	Construction stage	➢ EIAO-TM
Operation Noise (Road Traffic Noise)							
	ON1	• At-source mitigation measure (i.e. low noise road surfacing material) has been proposed at appropriate locations along the Project road and other roads. The extents and locations of proposed direct mitigation measures are indicated in EIA report. • Po Kin Road (200m)	Control the road traffic noise impact	CEDD (Design stage & Construction Phase) & HyD (operation phase)	Refer to Figure 4.6.3b.	Prior to the operation of the Project.	➢ EIAO-TM

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Party Responsible for Implementation	Location / Timing	Implementation Stage	Relevant Legislation and Guidelines
		• Ping Kong Road (185m)					
	ON2	• Further environmental reviews will be conducted at the later detailed design stage to review the proposed noise mitigation measures taking into account the latest design standard for the application of the low noise road surfacing materials.	Reduce the noise from road traffic	CEDD (Design stage & Construction Phase) & HyD (operation phase)	Affected Sections of roads	Prior to the operation of the Project.	➢ EIAO-TM
	ON3	• Acoustics windows for the planned public housing development were proposed to alleviate the road traffic noise impact. The provision of acoustic windows for the planned public housing would be subject to further study by the Hong Kong Housing Authority (HKHA). • For the proposed welfare facility, it is recommended to restrict more noise sensitive welfare uses facing Ping Kong Road.	Reduce the noise from road traffic	Housing Department	Public Housing Site	Prior to the operation of the Project.	➢ EIAO-TM
	ON4	• Erection of a 3m high solid concrete boundary wall near the planned school site, the use of air conditioning and noise insulation windows were proposed under Class Assessment Approach.	Reduce the noise from road traffic	Architectural Services Department	School Site	Prior to the operation of the Project.	➢ EIAO-TM
Operation Noise (Fixed Noise)							

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Party Responsible for Implementation	Location / Timing	Implementation Stage	Relevant Legislation and Guidelines
	ON5	• The recommended maximum permissible Sound Power Level (SWL) of the ventilation fans potentially to be installed at the PTI should be reviewed with the final design of the PTI during the detailed design stage. The PTI will be enclosed and designed to avoid direct line-of-sight to the NSRs.	Reduce operation fixed noise	Relevant government departments/ Future Operator	Planned PTI	Design and Operation Stage	➢ EIAO-TM ➢ IND-TM
	ON6	The following good practices should be incorporated into the design of the proposed PTI during detailed design stage: • Proper selection of quiet plant aiming to reduce tonality at NSRs; • Openings of ventilation systems should be located away from NSRs as far as practicable and oriented away from the NSRs to avoid direct line-of-sight to the concerned NSRs; and • Installation of silencer/ acoustic louvre for the exhaust of ventilation system.	Reduce operation fixed noise	Relevant government departments/ Future Operator	All fixed plants where practicable	Design and Operation Stage	➢ Noise Control Ordinance and its TM; EIAO-TM

Table A4.3 – Implementation Schedule of Water Quality Mitigation Measures

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Party Responsible for Implementation	Location / Timing	Implementation Stage	Relevant Legislation and Guidelines
Construction Phase							
	CW1	In accordance with the Practice Note for Professional Persons on Construction Site Drainage, Environmental Protection Department, 1994 (ProPECC PN1/94), construction phase mitigation measures shall include the following: <u>Construction Site Run-off</u> Proper site management measures should be implemented to control site runoff and drainage, and thereby prevent high sediment loadings from reaching downstream sections of the river/stream. A storm water pollution control plan should be prepared. The Contractor should follow the practices, and be responsible for the design, construction, operation and maintenance of all the mitigation measures. The design of the mitigation measures should be submitted by the Contractor to the Engineer for approval. These mitigation measures shall include the following practices to minimize site surface runoff and the chance of erosion, and also to retain and reduce any suspended solids prior to discharge: • Before commencing any work, all sewer and drainage connections should be sealed to prevent debris, soil, sand etc. from entering public sewers/drains. • Provision of perimeter channels to intercept storm-runoff from outside the site. These	To minimise water quality impact from construction site runoff and general construction activities	Contractor	All construction site where applicable	Construction stage	➢ Water Pollution Control Ordinance ➢ ProPECC PN1/94 ➢ EIAO-TM ➢ TM-DSS

		should be constructed in advance of the construction works. • Temporary ditches such as channels, earth bunds or sand bag barriers should be included to facilitate runoff discharge into the stormwater drain, via a sand/silt basin/trap. • Works programme should be designed to minimize works areas at any one time, thus minimizing exposed soil areas and reducing the potential for increased siltation and runoff. • Sand/silt removal facilities such as sand traps, silt traps and sediment basins should be provided to remove the sand/silt particles from run-off where necessary. These facilities should be properly and regularly cleaned and maintained. These facilities should be carefully planned to ensure that they would be installed at appropriate locations to capture all surface water generated on site. • Careful programming of the works to avoid excavation works during the rainy season. • Temporary access roads (if any) should be protected by crushed gravel and exposed slope surfaces shall be protected when rainstorms are likely; and • Open stockpiles of construction materials on-site should be covered with tarpaulin or similar fabric during rainstorms to prevent erosion.					

	CW2	<u>Sewage and Wastewater Discharge</u> • Domestic sewage/wastewater generated by workforce on-site should be collected in a suitable storage facility such as portable chemical toilets. An adequate number of portable toilets will be provided during the construction phase. These toilets should be maintained in a state that will not deter the workers from using them. • The collected sewage/wastewater will be discharged into the foul sewer or transferred to the Government sewage treatment works by a licensed collector.	To minimise water quality impact from sewage effluent	Contractor	All construction site where applicable	Construction stage	➢ Water Pollution Control Ordinance ➢ TM-DSS
	CW3	<u>Storage and Handling of Oil, Other Petroleum Products and Chemicals</u> The following mitigation measures should be implemented for the storage and handling of oil, other petroleum products and chemicals: • All fuel tanks and chemical storage areas should be provided with locks and be sited on paved areas. • The storage areas should be surrounded by bunds with a capacity equal to 110% of the storage capacity of the largest tank to prevent spilled oil, fuel and chemicals from reaching the receiving waters. • Vehicle and plant servicing areas, vehicle wash bays and lubrication bays should, as far as possible, be located within roofed areas. The drainage in these covered areas should be connected to foul sewers via a petrol interceptor.	To minimise water quality impact due to chemical spillage	Contractor	All construction site where applicable	Construction stage	➢ Water Pollution Control Ordinance ➢ ProPECC PN1/94 ➢ Waste Disposal (Chemical Waste) (General) Regulations

		Handling of Spillage / Leakage In the event that accidental spillage or leakages of hazardous substances / chemical wastes occur, the response procedures as listed below should be followed. It should be noted that the procedures below are not exhaustive and the contractor should propose other response procedures in the emergency contingency plan based on the particular types and quantities of chemicals or hazardous substances used, handled and stored on-site. • Oil leakage or spillage should be contained and cleaned up immediately. Waste oil should be collected and stored for recycling or disposal • Instruct untrained personnel to keep at a safe distance well away from the spillage area. • If the spillage / leakage involve highly toxic, volatile or hazardous waste, initiate emergency evacuation and call the emergency service. • Only trained persons equipped with suitable protective clothing and equipment should be allowed to enter and clean up the waste spillage / leakage area. • Where the spillage/ leakage is contained in the enclosed storage area, the waste can be transferred back into suitable containers by suitable handheld equipment, such as hand operated pumps, scoops or shovels. If the spillage / leakage quantity is small, it can be covered and mixed with suitable absorbing materials such as tissue paper, dry soft sand or vermiculite. The resultant slurry should be					

		treated as chemical waste and transferred to suitable containers for disposal. • For spillage / leakage in other areas, immediate action is required to contain the spillage / leakage. Suitable liquid absorbing materials such as tissue paper, dry soft sand or vermiculite should be used to cover the spill. The resultant slurry should be treated as chemical waste and transferred to suitable containers for disposal. • Areas that have been contaminated by chemical waste spillage / leakage should be cleaned. While water is a soluble solvent for aqueous chemical wastes and water soluble organic waste, kerosene or turpentine should be used for organic chemical wastes that are not soluble in water. The waste from the cleanup operation should be treated and disposed of as chemical waste. • In incidents where the spillage / leakage may result in significant contamination of an area or risk of pollution, the EPD should be informed immediately.					
	CW4	<u>Groundwater from contaminated areas</u> • No directly discharge of groundwater from contaminated areas should be adopted. • Prior to any excavation works within the potentially contaminated areas, the baseline groundwater quality in the areas should be reviewed based on the past relevant site investigation data and any additional groundwater quality measurements to be performed with reference to Guidance Note for Contaminated Land Assessment and Remediation and the review results should	To minimise water quality impact from contaminated groundwater	Contractor	Excavation areas where contaminated ground-water is found	Construction stage	➢ Water Pollution Control Ordinance ➢ ProPECC PN1/94 ➢ TM-DSS

		be submitted to EPD for examination. If the review results indicated that the groundwater to be generated from the excavation works would be contaminated, this contaminated groundwater should be either properly treated or properly recharged into the ground in compliance with the requirements of the TMDSS. • If wastewater treatment is to be deployed for treating the contaminated groundwater, the wastewater treatment unit shall deploy suitable treatment processes to reduce the pollution level to an acceptable standard and remove any prohibited substances to an undetectable range. • All treated effluent from the wastewater treatment plant shall meet the requirements as stated in TM-DSS and should be either discharged into the foul sewers or tankered away for proper disposal. • If deployment of wastewater treatment is not feasible for handling the contaminated groundwater, groundwater recharging wells should be installed as appropriate for recharging the contaminated groundwater back into the ground. The recharging wells should be selected at places where the groundwater quality will not be affected by the recharge operation as indicated in section 2.3 of the TM-DSS. The baseline groundwater quality should be determined prior to the selection of the recharge wells, and submit a working plan to EPD for agreement. Pollution levels of groundwater to be recharged shall not be higher than pollutant levels of ambient groundwater at the recharge well. Groundwater monitoring wells should be installed near the recharge points to monitor the effectiveness of the recharge wells					

		and to ensure that no likelihood of increase of groundwater level and transfer of pollutants beyond the site boundary. Prior to recharge, free products should be removed as necessary by installing the petrol interceptor. The Contractor should apply for a discharge licence under the WPCO through the Regional Office of EPD for groundwater recharge operation or discharge of treated groundwater.					
Operation Phase							
	OW1	<u>Surface Runoff</u> Runoff will be controlled by best management practice. Runoff will be intercepted by properly designed and managed silt traps at appropriate spacing so allow drain into drainage system. A storm water pollution control plan shall be prepared. Subject to detailed design and requirement of relevant government departments, the capacities of road drainage system shall cater the runoff from 50 year-return-period rainstorm. Proper drainage systems with silt traps and oil interceptors should be installed.	To reduce impact on drainage system due to road/surface runoff	DSD	Proposed drainage system and future site operators	Operation stage	➢ N/A
	OW2	<u>Sewage and Wastewater Effluents from Buildings</u> For individual municipal facilities and commercial tenants, effluent discharge license under the WPCO will be required individually for wastewater discharge. The discharge standards specified under the TM-DSS should be observed. Depending on the effluent characteristics, pre-treatment may be required to comply with the standards for discharging wastewater into public sewerage.	To reduce impact from commercial tenants	Future Contractor / Operator	Planned Development Area	Operation stage	➢ Water Pollution Control Ordinance

Table A4.4 – Implementation Schedule of Sewage & Sewerage Treatment Implications Mitigation Measures

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Party Responsible for Implementation	Location / Timing	Implementation Stage	Relevant Legislation and Guidelines
Sewage & Sewerage Treatment Implications							
	SS1	Follow the mitigation measures proposed in the Environmental Monitoring and Audit Manual for the construction and operation phases of the project: • The sewage generated during the construction stage from the on-site workers will be collected in chemical toilets and disposed of off-site; • Provision of blue-green drainage infrastructure which facilitates the infiltration of rainfall and the process of natural filtering to reduce the quantity and improve the quality of runoff; • Adopt on-site greywater recycling to reduce discharge of sewer; • Sewage collected from the on-site/surrounding STW will be treated to a standard suitable for recycle for non-potable use including flushing and irrigation; • Upgrading the sewerage system for discharge into SWH STW or providing other sewage treatment/disposal facilities to ensure that there is sufficient capacity to cater for increased sewage effluent flows from the developments; and • Provision of suitable measures to minimize the risk of emergency discharges of	To meet 'no net increase in pollution loading' in Deep Bay	Contractor and Project proponent	Construction site	Construction and operational phases	➢ Contractual requirements and water quality mitigation measures

		untreated sewage effluent and to ensure timely repair.					

Table A4.5 – Implementation Schedule of Waste Management Mitigation Measures

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Party Responsible for Implementation	Location / Timing	Implementation Stage	Relevant Legislation and Guidelines
Waste Management (Construction Stage)							
7.6.2	**WM1**	**<u>Good Site Practices</u>** Application of good site practices are recommended throughout the construction stage, including: • Nomination of an approved person, such as a site manager, to be responsible for good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated from the Project; • Training of site personnel in proper waste management and chemical handling procedures; • Provision of sufficient waste disposal points and regular collection for disposal; • Appropriate measures to minimise windblown litter and dust / odour during transportation of waste by covering trucks or in enclosed containers; • Stockpiles of C&D materials should be sprayed with water immediately prior to any loading transfer operation to keep the dusty material wet during material handling at the stockpile areas; • Provision of wheel washing facilities for trucks before leaving the works area to minimise dust introduction to public road; • Well planned delivery programme fir offsite disposal so adverse environmental impact from	Minimise waste generation during construction	Contractor	All construction sites	Construction Stage	➢ Waste Disposal Ordinance ➢ Waste Disposal (Chemical Wastes) (General) Regulation ➢ Technical Circular (Works) No. 19/2005 Environmental Management on Construction Site

		transporting inert or non-inert C&D materials is not anticipated. • Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors; and • General refuse should be removed as soon as possible and avoid overnight accumulation and storage of general refuse.					
7.6.3	**WM2**	**<u>Waste Reduction Measures</u>** Proper planning for waste reduction measures should be carried out before site operation. Waste reduction is best achieved at the planning and design stage, and by ensuring the implementation of good site practices. The following are proposed to achieve waste reduction: • Prepare and submit a C&DMMP to PFC for approval in order to manage and monitor the C&D materials generation; • Segregate inert C&D materials from non-inert C&D materials for reuse; • Segregate any other recyclable materials (i.e., metal) from non-inert C&D materials for recycling; • 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; • Encourage collection of aluminium cans, PET bottles and paper by providing separate labelled bins to enable these wastes to be segregated from other general refuse generated by the workforce;	Reduce generation of waste	Contractor	All construction sites	Construction stage	➢ Waste Disposal Ordinance ➢ C&DMMP – Project Administration Handbook for Civil Engineering Works (2020 Edition) WBTC No. 12/2002, Specification Facilitating the Use of Recycled Aggregates ➢ ETWB TC(W) No. 19/2005, Environmental Management on Construction Sites ➢ DEVB TC(W) No. 6/2010, Trip Ticket System for Disposal of Construction and Demolition Materials; ➢ DEVB TC(W) No. 8/2010, Enhanced Specification for Site Cleanliness and Tidiness ➢ DEVB TC(W) No. 2/2011, Encouraging the Use of Recycled and other Green Materials in Public Works Projects; ➢ DEVB TC(W) No. 9/2011, Enhanced Control Measures for Management of Public Fill

		• Any unused chemicals or those with remaining functional capacity shall be recycled, and separation of chemical wastes for special handling and appropriate treatment; • Plan the use of construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste. • Provide training to workers about the concepts of site cleanliness and appropriate waste management procedures, including waste reduce, reuse and recycling (3Rs); • Prior to disposal of non-inert C&D material, it is recommended that wood, steel and other metals to be separated for reuse and/or recycling to minimise the quantity of waste going to landfills;					➢ CEDD TC No. 11/2019, Management of Construction and Demolition Materials
7.6.4	**WM3**	**<u>Proper framework, i.e., Waste Management Plan (WMP) to identify key waste types, set out waste reduction programmes and targets, and also outline arrangement for on-site segregation and proper waste disposal:</u>** • An Enviromental Management Plan (EMP) should be prepared by the Contractor with reference to the requirements in ETWB TCW No. 19/2005 and should be submitted to the Engineer for approval before construction; • The WMP, as part of the EMP, to be submitted to the Engineer / Architecture for approval prior to the commencement of construction works; • A recording system for amount of wastes generated, recycled and disposed of (including the disposal sites) should be updated on a monthly basis and submitted to the Engineer for approval and record keeping;	Minimise waste generation during construction	Contractor	All construction sites	Construction stage	➢ Waste Disposal Ordinance ➢ ETWB TCW No. 19/2005

		• A trip-ticket system should also be included as one of the contractual requirements to be implemented by the Contractor, with an aim to control the disposal of C&D material at landfills and Public Fill Reception Facilities (PFRFs); • A well-planned programme for transportation of C&D material should be implemented to lessen the off-site traffic impact; and • Ensure adverse noise impact from transporting of C&D material to off-site is not expected.					
7.6.6 to 7.6.7	**WM4**	**<u>Storage, Collection and Transportation of Waste</u>** • Proper storage and site practices to minimise the potential for damage or contamination of materials; • Clean the waste storage areas routinely. • Soil should be stored well in secured containment facilities; • Storage areas should be covered and provided with a water spraying system to prevent materials being blown away; • Remove the wastes as soon as possible; • Use of enclosed containers or covered trucks for waste transportation in order to minimise the impacts during transportation; • Relevant permits should be obtained by the waste collector prior to waste collection; and • Record the amount of waste generated, recycled and disposed.	Storage, Collection and Transportation of Waste	Contractor	All construction sites	Construction stage	➢ Waste Disposal Ordinance

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Party Responsible for Implementation	Location / Timing	Implementation Stage	➢ Relevant Legislation and Guidelines
7.6.18	**WM5**	**<u>General Refuse</u>** • General refuse should be stored in enclosed bins or compaction units separated from C&D materials • A waste collector should be employed by the Contractor to remove general refuse from the site separately on a daily basis. • Effective collection and storage methods (including enclosed and covered area) of site wastes should be provided to reduce the occurrence of wind-blown light material.	Minimise production of general refuse, and avoid odour, pest and litter nuisance	Contractor	All construction sites	Design and Construction Stage	➢ Waste Disposal Ordinance
7.6.8 to 7.6.10	**WM6**	**<u>Construction and Demolition Materials</u>** C&D materials should be sorted onsite into inert C&D (that is, public fill) and non-inert C&D. The surplus inert C&D material would require disposal at the Public Fill Reception Facilities (PFRFs) Non-inert C&D, such as bamboo, timber, vegetation, paper and plastic should be reused or recycled and, as a last resort, disposed of to landfill. In order to monitor the disposal of wastes to PFRFs and landfills, and to control fly-tipping, a trip-ticket system as promulgated under *DEVB TC(W) No. 6/2010* should be included as one of the contractual requirements and may be implemented by an Environmental Team undertaking the Environmental Monitoring and Audit work. An Independent Environmental Checker should be responsible for auditing the results of the system.	Minimise waste impacts from excavated and C&D materials	Contractor	All construction sites	Construction Stage	➢ Waste Disposal Ordinance ➢ Technical Circular (Works) No.6/2010 for Trip Ticket System for Disposal of Construction & Demolition Materials ➢ Technical Circular (Works) No. 19/2005 Environmental Management on Construction Site

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Party Responsible for Implementation	Location / Timing	Implementation Stage	➢ Relevant Legislation and Guidelines
7.6.8 to 7.6.10	**WM7**	It is recommended that a suitable area be designated on-site to facilitate the sorting process and a temporary stockpiling area will be required for the separated materials. Within the stockpile areas, the following measures should be taken to avoid and/or control potential environmental impacts or nuisance: • Coverage and water spraying system should be provided for the stockpiled C&D materials to prevent dust impact, during heavy rain and strong wind; • Locate stockpiles to mimimise potential air quality, water quality and visual impacts; • Provision of cover for the stockpile material, sand bag or earth bund as barrier to prevent material from washing away and entering the drains; and • Minimise land intake of stockpile areas as far as possible.	Minimise waste impacts from excavated and C&D materials	Contractor	All construction sites	Construction Stage	➢ Waste Disposal Ordinance ➢ Technical Circular (Works) No.6/2010 for Trip Ticket System for Disposal of Construction & Demolition Materials ➢ Technical Circular (Works) No. 19/2005 Environmental Management on Construction Site
7.6.8 to 7.6.10	**WM8**	When disposing C&D material at a PFRF, it shall be noted that the material should only consist of soil, rock, concrete, brick, cement plaster/mortar, inert building debris, aggregates and asphalt. The material should be free from household refuse, plastic, metals, industrial and chemical waste, animal and vegetable matter, and other material considered to be unsuitable by the Filling Supervisor.	Minimise waste impacts from excavated and C&D materials	Contractor	All construction sites	Construction Stage	➢ Waste Disposal Ordinance ➢ Technical Circular (Works) No.6/2010 for Trip Ticket System for Disposal of Construction & Demolition Materials ➢ Technical Circular (Works) No. 19/2005 Environmental Management on Construction Site

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Party Responsible for Implementation	Location / Timing	Implementation Stage	➢ Relevant Legislation and Guidelines
7.2.11 and 7.6.3	**WM9**	Project office in the planning and design of project should actively seek to minimise generation of C&D materials and to reuse inert materials generated, including rock, as far as possible. To achieve this, the project office is required to draw up a Construction & Demolition Materials Management Plan (C&DMMP) in the feasibility study or preliminary design stage for this Project. Requirements associated with the preparation, submission and implementation of C&DMMP introduced in Chapter 4 of the *Project Administration Handbook for Civil Engineering Works* should be implemented.	Minimise waste impacts from excavated and C&D materials	Contractor	All construction sites	Design & construction stage	➢ Technical Circular (Works) No.6/2010 for Trip Ticket System for Disposal of Construction & Demolition Materials ➢ Technical Circular (Works) No. 19/2005 Environmental Management on Construction Site ➢ Project Administration Handbook for Civil Engineering Works

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Party Responsible for Implementation	Location / Timing	Implementation Stage	➢ Relevant Legislation and Guidelines
7.6.11 to 7.6.12	**WM10**	**<u>Chemical Waste</u>** For those processes which would generate chemical waste, it may be possible to find alternatives to eliminate the use of chemicals, to reduce the generation quantities or to select a chemical type that is of less impact on environment, health and safety as far as possible. If the chemical wastes are produced at the construction site, the Contractor should register with EPD as a Chemical Waste Producer (CWP) and to follow the guidelines stated in the *Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes.* Good quality containers compatible with the chemical wastes should be used, and incompatible chemicals should be stored separately. Appropriate labels should be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the chemical waste, such as explosive, flammable, oxidizing, irritant, toxic, harmful, corrosive, etc. The Contractor shall use a licensed collector to transport and dispose the chemical waste, to the licensed Chemical Waste Treatment Centre, or other licensed facilities, in accordance with the *Waste Disposal (Chemical Waste) (General) Regulation.*	Control of chemical waste and to ensure proper storage, handling and disposal	Contractor	All construction sites	Construction stage	➢ Code of Practice on the Packaging Labelling and Storage of Chemical Wastes ➢ Waste Disposal (Chemical Waste) (General) Regulation

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Party Responsible for Implementation	Location / Timing	Implementation Stage	➢ Relevant Legislation and Guidelines
7.6.13 to 7.6.16	**WM11**	**<u>Asbestos-Containing Materials (ACMs)</u>** • Adoption of protection, such as full containment, mini containment, or segregation of work area; • Provision of decontamination facilities for cleaning of works, equipment and bagged waste before leaving the work area; • Adoption of engineering control techniques to prevent fibre release from work area, such as use of negative pressure equipment with high efficiency particulate air (HEPA) filters to control air flow between the work area and the outside environment; • Wetting the surface of ACMs before and during disturbance, minimising the breakage and dropping of asbestos containing materials, and packing of debris and waste immediately after it is produced; • Cleaning of work area by wet wiping and vacuuming with HEPA filtered vacuum cleaner; • Coating on any surfaces previously in contact with or containing asbestos with a sealant; • Proper bagging, safe storage and disposal of asbestos and asbestos contaminated waste; • Pre-treatment of all effluent from the work area before discharghing offsite; and • Implement air monitoring strategy to monitor the leakage and clearance of the work area during and after any asbestos work.	Precautionary measures to handle, package, transport and disposal of ACM wastes	Contractor	All construction sites	Before construction stage	➢ Code of Practice on the Packaging Labelling and Storage of Chemical Wastes ➢ Waste Disposal (Chemical Waste) (General) Regulation ➢ Code of Practice on Asbestos Control: Preparation Work Using Full Containment or Mini Containment Method; ➢ Code of Practice on Asbestos Control: Asbestos Work Using Glove Bag Method; ➢ Code of Practice on Asbestos Control: Safe Handling of Low Risk Asbestos Containing Material; ➢ Code of Practice on the Handling, Transportation and Disposal of Asbestos Waste; ➢ Code of Practice on Asbestos Control: Preparation of Asbestos Investigation Report, Asbestos Management Plan and Asbestos Abatement Plan; ➢ ProPECC PN2/97 Handling of Asbestos Containing Materials in Buildings ➢ Code of Practice on Safety and Health at Work with Asbestos

		A Code of Practice on *Safety and Health at Work with Asbestos* published by the Labour Department, which covers the protection of the health and safety of workers while handling asbestos or involved in the production of asbestos wastes, should also be observed. Specific requirements include: • Classification of ACMs wastes; • Registration requirement of the CWP; • License requirement of asbestos waste collector; and • Packaging, transportation and final disposal of the asbestos wastes.					
Waste Management (Operational Phase)							
7.7.2 to 7.7.3	**WM12**	**<u>General Refuse</u>** Recycling bins shall be placed in prominent locations to maximise the capture of recyclables from general refuse. General refuse from residential, commercial buildings and institutional uses should be collected with lidded bins and delivered to central collection point(s) and stored in enclosed containers to prevent windblown, vermin, water pollution and visual impact. General refuse collection should be arranged by the waste collector at least once a day.	Removal of general refuse generated from the proposed development	FEHD / Relevant Operators	Operating sites	Operation stage	➢ Waste Disoposal Ordinance
7.7.4 to 7.7.5	**WM13**	**<u>Chemical Waste</u>** All chemical wastes generated, i.e., paints, lubricants, used batteries, acids, alkalis and solvenet, should be collected and handled carefully. Local chemical waste storage area(s) should be established and located close to the source of waste generation for temporary storage. Drum-type containers with proper labelling should be used to	Ensure proper storage, handling and disposal of chemical waste	Chemical Waste Producer	Operating facility	Operation stage	➢ Code of Practice on the Packaging Labelling and Storage of Chemical Wastes ➢ Waste Disposal (Chemical Waste) (General) Regulation

		collect chemical wastes for storage at the designated areas. Chemical wastes producer(s) should register with EPD as a Chemical Waste Producer (CWP) and engage a licensed collector to transport and dispose the chemical waste, to the licensed Chemical Waste Treatment Centre, or other licensed facilities, in accordance with the *Waste Disposal (Chemical Waste) (General) Regulation*. Good quality containers compatible with the chemical wastes should be used, and incompatible chemicals should be stored separately. Appropriate labels should be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the chemical waste, such as explosive, flammable, oxidizing, irritant, toxic, harmful, corrosive, etc., according to the *Code of Practice on the Packaging Labelling and Storage of Chemical Wastes.*					
7.7.6	**WM14**	**<u>Clinical Waste</u>** In accordance with the Code of Practice for the Management of Clinical Waste - Small Clinical Waste Producers (June 2010), clinical waste shall be properly separated from other waste, packed, labelled, centrally collected and stored in designated clinical waste storage rooms. Clinical waste shall be collected by licensed clinical waste collectors for disposal at the licensed disposal facility. It is the responsibility of the management of welfare facilities to find the list of licensed waste collectors (as provided on EPD's website) and implement adequate clinical waste collection at regular intervals.	Ensure clinical waste are separated from other waste streams, stored, stored, labelled and stored in a designated clinical waste storage rooms. Ensure clinical wastes are collected by licensed waste collectors (provided on EPD's website) in a regular intervals.	Chemical Waste Producer	Operating facility	Operation stage	➢ Code of Practice for the Management of Clinical Waste - Small Clinical Waste Producers (June 2010)

Table A4.6 – Implementation Schedule of Land Contamination Mitigation Measures

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Party Responsible for Implementation	Location / Timing	Implementation Stage	Relevant Legislation and Guidelines
8.4.72	**LC1**	• Undertake environmental Site Investigation (SI) works outlined in EPD's endorsed Contamination Assessment Plan (CAP); • Where re-appraisal is required upon the land has been reverted to Government, a supplementary CAP on the whole assessment area including the proposed works area and any off-site works area shall be conducted. • The Project Proponent's appointed Consultant shall be required to conduct a site re-appraisal and prepare a supplementary CAP presenting the findings of the re-appraisal and strategy of the recommened SI, if required, and submit to EPD for review and agreement.	• Verify the land contamination potential before the commencement of construction. • To assess the latest site situation and identify any additional hot spots and potentially contaminating sites	Project Proponent	All areas within the Project Site identified in the CAP	Prior to the commencement of any development at the Project Site	• Annex 19 of the EIAO-TM, Guidelines for Assessment of Impact on Sites of Cultural Heritage and Other Impacts (Section 3: Potential Contaminated Land Issues) • Practice Guide of Investigation and Remediation of Contaminated Land • Guidance Manual for Use of RiskBased Remediation Goals (RBRGs) for Contaminated Land Management • Guidance Note for Contaminated Land Assessment & Remediation
8.4.74	**LC2**	After agreement of the supplementary CAP and upon completion of the SI works, the Project Proponent shall prepare and submit a Contamination Assessment Report (CAR) to obtain EPD's endorsement.	Present the findings of SI and evaluate the level and extent of contamination	Project Proponent	All surveyed areas listed in the CAP	Prior to the commencement of any development at the Project Site	
8.4.75	**LC3**	Preparation and submission of the Remedial Action Plan (RAP) to EPD for agreement if land contamination is identified from laboratory analyses.	Recommend appropriate mitigation measures contaminated soil and/or groundwater identified in the assessment	Project Proponent	All surveyed areas listed in the CAP	Prior to the commencement of any development at the Project Site	
8.5	**LC4**	Set remediation goals and targets if the levels of contamination exceed the relevant RBRGs, this includes the preparation and submission of the	Demonstrate that the remediation work is adequate and is carried out in	Project Proponent	All surveyed	Prior to the commencement of any	

		Remediation Report (RR) and submit to EPD for endorsement.	accordance with the endorsed CAR and RAP		areas listed in the CAP	development at the Project Site	

Table A4.7 – Implementation Schedule of Ecological Mitigation Measures

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Party Responsible for Implementation	Location / Timing	Implementation Stage	Relevant Legislation and Guidelines
Ecology							
	EC1	Avoidance of recognized sites of conservation importance and important habitats	To avoid recognized sites of conservation importance and important habitats	Project Proponent	N/A	Design stage	➢ N/A
	EC2	Minimization of habitat loss and impacts to species of conservation importance	To minimize the impacts to habitats and species of conservation importance	Project Proponent	N/A	Design stage	➢ Cap. 170
	EC3	Careful planning of lighting	To further reduce light glare due to artificial lighting	Project Proponent	N/A	Design stage	➢ N/A
	EC4	Design of noise barriers following relevant guidelines	To reduce risk of bird collisions	Project Proponent	Locations of noise barriers, if any	Design stage	➢ "Guidelines on Design of Noise Barriers", Second Issue, January 2003, issued by EPD and HyD ➢ Practice Notes no. BSTR/TN/003 Noise Barriers with Transparent Panels by the Highways Department
	EC5	Restricted working hours for powered mechanical equipment	To minimize disturbance to nocturnal animals	Contractor	Near preserved habitats in Sub-Area 1	Construction phase	➢ Contractural requirements
	EC6	Minimization of water quality impact	To protect watercourses and wetlands	Contractor	Sub-Area 1	Construction phase	➢ Contractural requirements

							➢ Following water quality mitigation measures
	EC7	Use of noise barriers/acoustic screens	To minimise the overall impacts on the nearby sensitive habitats and associated wildlife	Contractor	Sensitive sides of works areas in Sub-Area 1 and for percussive piling works	Construction phase	➢ Contractural requirements
	EC8	Use of quality powered mechanical equipment	To further minimise the overall construction noise	Contractor	Sub-Area 1	Construction phase	➢ Contractural requirements
	EC9	Direct security lighting in works area away from retained tree groups	A precautionary approach to further minimise the potential impacts to nocturnal animals	Contractor	Retained tree groups/ woodlands in Sub-Area 1	Construction phase	➢ Contractural requirements
	EC10	Compensation woodland planting	To compensate loss of mixed woodland and woodland	Contractor	Sub-Area 2 and Sub-Area 3 of the Project Site	Construction phase	➢ Contractural requirements
	EC11	Preservation and/or transplantation of plant species of conservation importance and the following monitoring of preserved/ transplanted plant individuals	Protection of plant species of conservation importance	Contractor	Sub-Area 1 of the Project Site	Construction phase	➢ Contractural requirements
	EC12	Formulation of Management Plan	To conserve the ecologically sensitive habitats and species of conservation importance from disturbance, and manage human activities in Sub-Area 2 to Sub-Area 4	Contractor	Sub-Areas 2 to 4 of the Project Site	Before commencement of operational phase	➢ Contractural requirements

	EC13	Defining and Maintaining Construction Site Boundary	Screen construction disturbance to the nearby habitats	Contractor	Along the boundary of construction site	Before commencement of site formation	➢ Contractural requirements
	EC14	Provision of Temporary Drainage System to Protect Sensitive Habitats	Ensure that the surface runoff would not be released to nearby sensitive habitats	Contractor	Along the boundary of construction site	Before commencement of site formation	➢ Contractual requirements and follow ProPECC PN 1/94 requirements
	EC15	Other Site Practices • Regular checking should be undertaken to ensure that the work site boundary is not exceeded and that no damage occurs to surrounding areas; • Implementation of mitigation measures specified in ProPECC PN 1/94 to control site runoff and drainage during construction; • Implementation of noise control measures to reduce impacts of construction noise to wildlife habitats adjacent works area; • Implementation of dust control measures at all construction sites to minimize dust nuisance to adjacent wildlife habitats during construction activities; • Construction debris and spoil should be covered up and/or properly disposed of as soon as possible to avoid being washed into nearby waterbodies by rain; • Good site practice and site precautionary measures will also be implemented to avoid the potential impact due to site runoff. Construction effluent, site runoff and sewage should be properly collected and/or treated. Wastewater from a construction site should	Minimize potential impacts, including dust, noise and site runoff, on the surrounding environment	Contractor	Construction site	Construction phase	➢ Contractual requirements and follow ProPECC PN 1/94 requirements

		be managed with the following approach in descending order; • Proper locations for discharge outlets of wastewater treatment facilities well away from the natural streams/rivers should be identified; • Effluent monitoring should be incorporated to make sure that the discharged effluent from construction site meets the effluent discharge guidelines; and • Supervisory staff should be assigned to station on site to closely supervise and monitor the works.					

Table A4.8 – Implementation Schedule of Fisheries Mitigation Measures

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Party Responsible for Implementation	Location / Timing	Implementation Stage	Relevant Legislation and Guidelines
Fisheries							
	F1	Follow the mitigation measures proposed in the water quality assessment for the construction and operation phases of the project	To protect the fisheries resources	Contractor	Construction site	Construction and operational phases	➢ Contractual requirements and water quality mitigation measures

Table A4.9 – Implementation Schedule of Landscape and Visual Mitigation Measures

<table>
<tr><th>EIA Ref.</th><th>EM&A Log Ref.</th><th>Recommended Mitigation Measures</th><th>Objectives of the Recommended Measures & Main Concerns to Address</th><th>Party Responsible for Implementation</th><th>Location / Timing</th><th>Implementation Stage</th><th>Relevant Legislation and Guidelines</th></tr>
<tr><td colspan="8">Construction Phase</td></tr>
<tr><td></td><td>LV1</td><td>Preservation of Existing Vegetation – Any existing vegetations, trees and tree of particular interest (TPI) not affected by the Project and within 5m offset from the PDA Boundary shall be carefully preserved and protected in accordance with DEVB TCW No. 4/2020 and the latest Guidelines on Tree Preservation During Development by GLTMS of DEVB. If needed, they shall be transplanted to a suitable location within the PDA as far as feasible.
<table>
<tr><th>Proposed Treatment</th><th>Location</th><th>Tree Types</th><th>No. of Tree (s)</th><th>Sub-total</th></tr>
<tr><td rowspan="5">Retain</td><td rowspan="4">Sub-area 1</td><td>TPIs (mature trees with DBH>=1000mm)</td><td>11</td><td rowspan="4">267</td></tr>
<tr><td>TPIs (rare/protected species with DBH>=95mm)</td><td>5</td></tr>
<tr><td>TPIs (rare/protected species with DBH<95mm)</td><td>9</td></tr>
<tr><td>Trees other than TPIs</td><td>242</td></tr>
<tr><td rowspan="3">Sub-areas 2 - 4</td><td>TPIs (mature trees with DBH>=1000mm)</td><td>41</td><td rowspan="3">3090</td></tr>
<tr><td>TPIs (rare/protected species with DBH>=95mm)</td><td>80</td></tr>
<tr><td>TPIs (rare/protected species with DBH<95mm)</td><td>274</td></tr>
</table></td><td>To protect and preserve Existing Trees</td><td>Contractor (CEDD)</td><td>On Site</td><td>Detailed Design and Construction Stages</td><td>➢ DEVB TCW No. 4/2020 and the latest Guidelines on Tree Preservation During Development by GLTMS of DEVB</td></tr>
</table>

					Other trees (in tree groups)	2695					
				Adjacent area	TPIs (mature trees with DBH>=1000mm)	1	**24**				
					Trees other than TPIs	23					
				Sub-total		**3381**					
			Transplant	**Sub-area 1**	TPIs (mature trees with DBH>=1000mm)	2	**34**				
					TPIs (rare/protected species with DBH>=95mm)	10					
					TPIs (rare/protected species with DBH<95mm)	22					
				Sub-total		**34**					
			Remove	**Sub-area 1**	TPIs (mature trees with DBH>=1000mm)	11	**954**				
					TPIs (rare/protected species with DBH>95mm)	0					
					Trees other than TPIs (excluding *Leucaena leucocephala*)	880					
					Leucaena leucocephala	63					
				Adjacent area	Trees other than TPIs	35	**42**				
					Leucaena leucocephala	7					
				Sub-total		**996**					
			Total			**4411**					

In addition to the above, there are 56 nos. of plants (non-tree species) with conservation value found within the PDA. In Sub-area 1, 3 nos. are proposed to be retained, 9 nos. are proposed to be transplanted. The

		remaining amount of plants with conservation value found in Sub-area 2-4 is proposed to be retained. In Sub-area 2, a 1-storey building and the associated vehicle road may possibly be provided nearby the existing pumping station for the future use of Sub-areas 2 to 4, 2 nos. of TPIs (T33 and T61) would be affected by the proposed layout. However, this layout is indicative for demonstrating possible form of recreational facilities for preliminary assessment at this stage only. The exact layout of the proposed 1-storey building and the associated vehicle road shall be subjected to further review in detail design stage, conflict to the existing trees in Sub-areas 2-4 shall be avoided.					
	LV2	Control of Night-time Lighting Glare - All night time lighting shall be avoided as far as possible. All lights should be directed light and no light glare shall illuminate directly outside the site boundary.	Minimise Impacts of Night-time Lighting Glare	Contractor (CEDD)	On Site	Construction Stage	➢ Charter on External Lighting, Environment Bureau; ➢ Guideline on Industry Best Practices for External Lighting Installations, Environment Bureau.
	LV3	Good Site Practice – Good Site Practice – Construction areas' control, such as reducing the extent of working areas, temporary working areas, storage area and shortening construction period, shall be enforced to minimise potential landscape and visual impact arising from construction activities. The proposed site should reduce topographical / landform changes to reduce disturbance with the natural terrain. Earthworks and engineered slopes should be designed to be visually interesting and compatible with the surrounding landscape, mimic contouring and terrain. Temporary landscape treatment such as hydroseeding temporary stockpiles is recommended. Protection measures for the nearby water bodies, will be conducted in accordance with *ETWB TCW 5/2005*. Avoidance of polluted liquid or solid wastes falling into river waters will be implemented with reference to *ProPECC PN1/94*.	Minimise Impacts on Existing Landscape	Contractor (CEDD)	All Construction Areas and Temporary Works Area	Construction Stage	➢ ETWB TCW 5/2005, ProPECC PN1/94

	LV4	Erection of Decorative Screen Hoarding - Site hoardings shall be painted in a colour that is compatible with the surroundings and shall screen the views to the construction works. Hoarding should be taken down at the end of the construction period.	Avoid Direct Impacts to the surrounding Landscape	Contractor (CEDD)	All Construction Areas and Temporary Works Area	Construction Stage	-
Operation Phase							
	LV5	Landscape Treatment in Sub-areas 2-4 – Location and species selection of trees and shrub planting should be considered in the landscape design as part of the new amenity and/or ecological planting in Sub-areas 2 to 4. Existing vegetation should be retained where possible and additional planting should prioritize in existing golf greens. Native species and existing species with proven ecological value to existing habitat, should be given priority consideration. Approximate 996 nos. of compensatory trees will be planted in Sub-area 2-3, mainly in Sub-area 3[1] and tree species will refer to the existing tree species (e.g. *Cinnamomum camphora, Sterculia lanceolate*, *Acronychia pedunculata* and *Machilus chekiangensis*)) found at Lin Tong Mei Fung Shui Wood located to the west of the Project Site. Sub-areas 2 - 4 will be designated as "Other Specified Uses" annotated "Recreation cum Conservation", primary intention is to conserve the existing natural landscape and ecological features, to provide space for recreational and ancillary facilities with minimal new structure/change to existing site conditions, serving the needs of the general public. No works would be carried out in Sub-area 4 (subject to further design development). For trees to be planted on slope, tree planting will be conducted in accordance to *GEO Publication No. 1/2011.*	To improve Landscape Amenity to assist in Mitigating Visual Impacts	Contractor (CEDD)	Sub-areas 2-4	Detailed Design and Construction Stage through to Maintenance in Operation Stage	➢ GEO Publication No. 1/2011.
	LV6	Landscape Treatment within the Public Housing Development – Planting should be provided on the podium and at-grade where practicable. Vertical greening and screening planting should be considered to soften the built structures. Blue-green infrastructure and sustainable landscape design, such as zero-irrigation, swales and rain gardens, should be taken into consideration.	To improve Landscape Amenity to assist in Mitigating Visual Impacts	Contractor (HD)	Sub-area 1	Detailed Design and Construction Stage through to Maintenance in Operation Stage	➢ Street Tree Selection Guide by GLTMS, DEVB

[1] The exact nos. and locations of compensatory tree planting shall be subjected to further review and to be provided under the compensatory tree planting plan in later design stage.

		The choice of planting species selected should take careful consideration to the *GMP* of the North District, *Street Tree Selection Guide* by GLTMS, DEVB and the surrounding environment. The number of new trees within Public Housing Development will be confirmed by HD/ HA in due course.					
	LV7	Sensitive Design of Building Blocks – A staggered building height and form can enhance visual interest and quality. The building height should correspond with the nearby high-rise buildings and the natural landforms. Sensitive treatment and design to external finished of the built structure to ensure elements' colour, texture and tonal quality are compatible with the existing landscape and visual context. Lighting design should avoid potential glare impacts to sensitive receivers.	Sensitive Design to improve Visual Amenity	Contractor (HD)	Sub-area 1	Detailed Design and Construction Stage	-
	LV8	Compensatory Tree Planting – Trees felled due to the Development will be compensated as far as practicable in accordance with Development Bureau *Technical Circular (Works) No. 4/2020*. The proposed compensatory trees species will refer to the existing tree species (e.g *Cinnamomum camphora*, *Sterculia lanceolate*, *Acronychia pedunculata* and *Machilus chekiangensis*) found at Lin Tong Mei Fung Shui Wood and will be planted in Sub-area 2-3, mainly in Sub-area 3[2]. Detailed investigation and survey of tree felling in the receptor site in Sub-area 3 to accommodate the planting of compensatory tree and transplanting trees shall be carried out during the investigation, detailed design and construction stage.	Compensate for the Felled Trees to the Satisfaction of Relevant Government Departments	Contractor (CEDD)	Sub-areas 2-3	Detailed Design and Construction Stage through to Maintenance in Operation Stage	➢ Development Bureau Technical Circular (Works) No. 4/2020
	LV9	Roadside Verge Greening Zone (RVGZ) (OM5) - A min. 1.5m width, will be provided along the Fan Kam Road to enhance the existing surroundings, create a pleasant microclimate and a pedestrian-friendly environment.	To improve Landscape Amenity	Contractor (CEDD)	Sub-Area 1	Detailed Design and Construction Stage through to Maintenance in Operation Stage	-

[2] The exact nos. and locations of compensatory tree planting shall be subjected to further review and to be provided under the compensatory tree planting plan in later design stage.

Table A4.10 – Implementation Schedule of Cultural Heritage Mitigation Measures

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to Address	Party Responsible for Implementation	Location / Timing	Implementation Stage	Relevant Legislation and Guidelines
	CH1	Preservation by record through carthographic and photographic survey of clan grave (G-01) prior to relocation of grave and prior to construction phase. Survey Report is to be submitted to AMO for review and agreement.	Preservation by record of Clan Grave (G-01)	Project proponent	Clan Grave G-01/Prior to construction phase	Detailed design stage	➢ A&M Ordinance (Cap. 53) ➢ Annexes 10 and 19 of the EIAO-TM ➢ Guidelines for CHIA ➢ HKPSG
	CH2	Protective measures for Clan Graves, G-02 and G-03, including prior to contruction phase condition survey by qualified building surveyor or engineer, vibration monitoring, setting up of buffer zone and ensure safe pubic access to graves.	Protection of grave structures and ensure appropriate use of setting and access to graves	Project proponent	Clan Grave G-02 and G-03/prior and during construction phase	Construction phase	➢ A&M Ordinance (Cap. 53) ➢ Annexes 10 and 19 of the EIAO-TM ➢ Guidelines for CHIA ➢ HKPSG
	CH3	Preservation in situ and safe public access for Clan Graves, G-04 to G-07. Measures to be determined in detailed built heritage impact assessment during design stage.	Protection of grave structures and ensure appropriate use of setting and access to graves	Project proponent	Clan Grave G-04 to G-07/prior to construction phase	Detailed design stage	➢ A&M Ordinance (Cap. 53) ➢ Annexes 10 and 19 of the EIAO-TM ➢ Guidelines for CHIA ➢ HKPSG
	CH4	Detailed archaeological impact assessment	To ensure archaeological information is recorded and preserved by record	Project proponent/Licenced archaeologist	Within PDA in Sub-Areas 1-4 and for proposed associated and/or drainage and minor road upgrade works	Investigation stage or as early as possible after the land has been reverted to Government.	➢ A&M Ordinance (Cap. 53) ➢ Annexes 10 and 19 of the EIAO-TM ➢ Guidelines for CHIA ➢ Guidelines for AIA ➢ HKPSG

					/Prior to construction phase		
	CH5	Grading assessment of Fanling Golf Course, The Hong Kong Golf Club, a New Item (N340)	To identify heritage significance from grading and assess impacts arising from proposed development, recommend mitigation if possible	Antoquities Advisory Board (AAB)	Old Course, of Fanling Golf Course, The Hong Kong Golf Club, a New Item (N340) /Prior to construction phase	ASAP	➢ A&M Ordinance (Cap. 53) ➢ Annexes 10 and 19 of the EIAO-TM ➢ Guidelines for CHIA ➢ HKPSG

Appendix 5.1

Sample Data Record Sheet for TSP Monitoring

Sample Data Record Sheet for TSP Monitoring

	Name & Designation	Signature	Date
Field Operator			
Laboratory Staff			
Checked by			

Monitoring Location		
Details of Location		
Sampler Identification		
Data & Time of Sampling		
Elapsed-time	Start (min)	
Meter Reading	Stop (min)	
Total Sampling Time (min)		
Weather Conditions		
Site Conditions		
Initial Flow Rate, Qs_i	P_i (mmHg)	
	T_i (°C)	
	H_i (in)	
	Qs_i (Std. m^3)	
Final Flow Rate, Qs_i	P_f (mmHg)	
	T_f (°C)	
	H_f (in)	
	Qs_f (Std. m^3)	
Average Flow Rate (Std. m^3)		
Total Volume (Std. m^3)		
Filter Identification No.		
Initial Wt. of Filter (g)		
Final Wt. of Filter (g)		
Measured TSP Level (g/m^3)		
Remarks		

Appendix 6.1

Sample Data Record Sheet for Construction Noise Monitoring

Sample Data Record Sheet for Construction Noise Monitoring

	Name & Designation	Signature	Date
Recorded by			
Checked by			

Monitoring Location		
Details of Location		
Data & Time of Sampling		
Major Noise Source(s)		
Other Noise Source(s)		
Measurement Period		
Sound Level Meter (Model, S/N)		
Calibrator (Model, S/N)		
Measurement Results	L_{90} (dB(A))	
	L_{10} (dB(A))	
	L_{eq} (dB(A))	
Remarks		

Appendix 6.2

Sample Data Record Sheet for Operational Stage Traffic Noise Monitoring

Sample Data Record Sheet for Operational Stage Traffic Noise Monitoring –

Field Record Sheet

	Name & Designation	**Signature**	**Date**
Recorded by			
Checked by			
Laboratory Staff			

Monitoring Location			
Details of Location			
Data & Time of Sampling			
Weather Condition			
Temperature (°C)			
Wind Speed (ms^{-1})			
Major Noise Source(s)			
Other Noise Source(s)			
Measurement Period			
Sound Level Meter (Model, S/N)			
Calibrator (Model, S/N)			
Calibration (@1k Hz)		Start:	Finish:
Measurement Results	L_{90} (dB(A))		
	L_{10} (dB(A))		
	L_{eq} (dB(A))		
Remarks			

Sample Data Record Sheet for Operational Stage Traffic Noise Monitoring –

Field Survey Record Sheet

	Name & Designation	**Signature**	**Date**
Recorded by			
Checked by			

Monitoring Location		
Details of Location		
Person-in-charge		
Data & Time of Monitoring		
Weather Condition		
Temperature (°C)		
Wind Speed (ms^{-1})		
Microphone Position		
Measurement Period		
Sound Level Meter (Model, S/N)		
Calibrator (Model, S/N)		
Calibration (@1k Hz)	Start:	Finish:

Raw Data

Time	Traffic Data*				Noise Level (30 min) dB(A)				Average Speed kph a/b/c/d#
	Near Side		Far Side						
	LV	HV	LV	HV	L_{10}	L_{90}	L_{eq}	L_{max}	

Note:
LV – Light vehicle (i.e. private car, motorcycle, taxis and van)
HV – Heavy vehicle (i.e. other than LV)
* – Traffic count for a duration of 15 minutes
# – a/b/c/d = near side LV/near side HV/far side LV/far side HV

Mitigation measures in place near measurement location	
Other Noise Source(s) during monitoring	
Remarks	

Appendix 15.1

Proactive Environmental Protection Proforma

Proactive Environmental Protection Proforma

Ref: _____

Ref [1]	Proposed Construction Method [2]	Location/ Working Period	Anticipated Impacts	Recommended Mitigation Measures

Notes:

(1) EIA Ref/EM&A Log Ref/Design Document Ref

(2) Details of equipment, vehicles, plants, processes, technologies for the option of construction method

Reviewed by Environmental Team Leader: _____

Date: _____

Approved by Independent Checker (Environment): _____

Date: _____

Appendix 16.1

Sample Template for Interim Notification

Incident Report on Action Level or Limit Level Non-compliance

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

Prepared by: _____

Designation: _____

Signature: _____

Date: _____