



Lam Geotechnics Limited

Sampling, Field Measurement and Testing Works (Stage 2)

Contract No. HK/2011/07
Wanchai Development Phase II
and Central Wanchai Bypass

CONTRACT NO: HK/2011/07

**WANCHAI DEVELOPMENT PHASE II AND
CENTRAL WANCHAI BYPASS
SAMPLING, FIELD MEASUREMENT AND TESTING
WORK (STAGE 2)**

**PROPOSAL FOR RELOCATION OF AIR QUALITY
MONITORING STATION AT CHILDREN PLAYGROUNDS
OPPOSITE TO PEDESTRIAN PLAZA (CMA5a) REV.2**

CLIENTS:

**Civil Engineering and Development
Department**

and

Highways Department

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CHECKED BY:

Raymond Dai
Environmental Team Leader

DATE:

19 November 2014

CONTRACT NO: HK/2011/07

WANCHAI DEVELOPMENT PHASE II AND CENTRAL WANCHAI BYPASS SAMPLING, FIELD MEASUREMENT AND TESTING WORK (STAGE 2)

Response to Comments on PROPOSAL FOR RELOCATION OF AIR QUALITY MONITORING STATION AT CHILDREN PLAYGROUNDS OPPOSITE TO PEDESTRIAN PLAZA (CMA5a)

Date: 19 November 2014

Comments	Responses
The justification for the proposed monitoring station of the proposal should meet all the requirements in section 1.4 of the General Technical Requirements of Environmental Monitoring.	The Justification for the proposed monitoring location and position of the monitoring equipment have been updated and addressed in section 2 and 4 respectively.
The IEC, should state clearly if he satisfied that the above requirements, in particular 1.4.2 and 1.4.3 of the GTR are fully met.	Please refer to the attached IEC verification letter.

Ref.: AACWBIECEM00_0_5964L.14

20 November 2014

Lam Geotechnics Limited
11/F Centre Point
181-185 Gloucester Road
Wan Chai, Hong Kong

By Post and Fax (2882 3331)

Attention: Mr. Raymond DAI

Dear Sir,

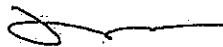
Re: Contract No. HK/2011/07
Wan Chai Development Phase II and Central-Wan Chai Bypass –
Sampling, Field Measurement and Testing Works (Stage 2)
Proposal for Relocation of Air Quality Monitoring Station at Children
Playgrounds Opposite to Pedestrian Plaza (CMA5a) Rev. 2

Reference is made to your submission of the captioned Proposal for Relocation of Air Quality Monitoring Station at Children Playgrounds opposite to Pedestrian Plaza (CMA5a) Rev. 2 received by e-mail on 19 November 2014.

Please be informed that we have no objection to the captioned proposal and hereby write to verify the captioned proposal meets the requirements as per Section 1.4.2 and 1.4.3 of the General Technical Requirements of Environmental Monitoring.

Thank you for your kind attention.

Yours sincerely,



David Yeung
Independent Environmental Checker

c.c.	HyD	Mr. Eddy Wu	by fax: 2714 5289
	CEDD	Mr. Jason Cheung	by fax: 2577 5040
	AECOM	Mr. Frankie Fan (PRE)	by fax: 2587 1877
	AECOM	Mr. Conrad Ng	by fax: 2691 2649

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PROPOSAL FOR RELOCATION OF AIR QUALITY MONITORING STATION AT CHILDREN PLAYGROUNDS OPPOSITE TO PEDESTRIAN PLAZA (CMA5a)

1. Introduction

With respect to the current construction stage under Contract HK/2012/08 at Wan Chai West, the location of the existing air quality monitoring station namely CMA5a – Children Playgrounds Opposite to Pedestrian Plaza is anticipated to become active construction area. The existing monitoring station is not feasible to maintain and considered as inappropriate to represent the potential dust impact to nearby Air Sensitive Receivers (ASRs). As such, it presents a need to relocate the existing air quality monitoring station (CMA5a) to an alternative location for monitoring the potential dust impact on nearby ASRs.

2. Justification for proposed location

After reviewing among locations in the vicinity of the existing monitoring location (CMA5a), it was considered that the Harbour Road Pedestrian Plaza (hereafter as the Pedestrian Plaza) to be an appropriate location for the relocation of existing air quality station CMA5a with the following justification. The location of the existing and proposed monitoring station is shown in **Appendix A**.

According to the EM&A Manual under Central-Wan Chai Bypass and Island Eastern Corridor Link, section 2.5.2, when alternative monitoring locations are proposed, the location shall be located at the site boundary or such locations close to the major dust emission source, close to the sensitive receptors and taken into account of the prevailing meteorological condition.

According to the approved EIA report table 3.4, the Pedestrian Plaza was considered as one of the air sensitive receivers (A33) and it is located at the vicinity of Project boundary with major dust emission source. In view of the proximity (60m) of the locations and similarity in the surrounding environments, the proposed location is considered to have similar meteorological location as the original monitoring location. In addition, the baseline air quality monitoring was conducted at the baseline air quality monitoring station CMA5 at the Pedestrian Plaza.

As such, the proposed relocated location is considered to be appropriate for representing the worst case scenario for any dust impact generated from the construction works and a representative location for the nearby sensitive receivers.

2. Equipments

Component equipments of High Volume Sampler (HVS) are listed below. Details of equipments are as follows. Specifications of proposed equipments are shown in **Appendix D**.

High volume samplers (HVSs) in compliance with the following specifications shall be used for carrying out the 1-hour TSP monitoring:

- 0.6 - 1.7 m³ per minute adjustable flow 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 cm²;
- Flow 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 flow 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;
- Easily changeable filter; and
- Capable of operating continuously for a 24-hour period.

3. Proposed Monitoring Station

The proposed relocated air quality monitoring station (CMA5b) is at the Pedestrian Plaza. The location plan for the proposed location of monitoring station is enclosed in **Appendix A**.

4. Set-up of Monitoring Station

- a) HVS should be installed into anodized aluminium shelter w/gabled roof. The shelter shall be mounted on floor at the premise. The installation of the monitoring station shall refer to the requirements in Section 1.4.3 of the "General Technical Requirements of Environmental Monitoring". In view of the proposed location is situated within public podium area, under safety concern and landscape and visual consideration to public use, the most appropriate location for the monitoring equipment is selected. The equipment shall be installed and positioned such that the inlet and the operation of the monitoring equipment would neither be obstructed nor interrupted and would poses minimal interference to public. The Schematic drawing of the monitoring equipments and proposed locations of monitoring stations enclosed in **Appendix C**.
- b) Anodized aluminium shelter is a weather-proof, suitable for semi-permanent, unsupervised outdoor installation. It is effective to protect all parts of High Volume Sampler from wind, rain, chemical resistant and birds during the Air Quality Monitoring.

5. Methodology, Monitoring Parameters, Procedures, Frequency and Duration

The methodology and monitoring parameters, frequency and duration shall strictly follow the procedures as defined previously for air quality monitoring station CMA5a.

6. Baseline Monitoring

- a) According to the approved EM&A manual, the baseline air quality monitoring shall be conducted at a period when there should not be any construction or dust generating activities in the vicinity of the monitoring station. It shall also be conducted at the period when the highest dust impact is expected. However, due to the construction



activities currently undertaken by Contract No. HK/2012/08, whose construction activities have been taking place in the vicinity of the proposed monitoring location, the construction activities in the vicinity of proposed location will be continuous during every normal daytime and during restricted hours that are allowed in their valid CNP. As such, it is considered not feasible to conduct baseline air quality monitoring at the proposed monitoring location at this stage in accordance with the requirements of the EM&A Manual.

- b) In view of the proposed monitoring station is located at the same location as the baseline monitoring station CMA5 and to avoid any disturbance to the progress of air quality monitoring undertaken and to effectively monitor the potential air quality impact in relate to Project works, with reference to Section 2.6.3 of the EM&A Manual, it is considered that the baseline air quality monitoring data of baseline air quality monitoring station, the Wanchai – Pedestrian Plaza (CMA5), could be adopted for reference in determining the action and limit level at the proposed location due to the same nature of surrounding environment as tabulated in Table 7.1.

Table 7.1 Comparison on locations for Wanchai – Pedestrian Plaza (CMA5) and Pedestrian Plaza (CMA5b)

Stations	<u>Baseline monitoring station</u> Wanchai – Pedestrian Plaza (CMA5)	<u>Proposed monitoring station</u> Pedestrian Plaza (CMA5b)
Major source of dust impact	Nearby slip road	HK/2012/08 construction works Nearby slip road

- c) According to the approved air quality baseline monitoring report in April 2010, the baseline monitoring station CMA5 was located at the same location as the proposed location for monitoring station CMA5b. The location of the proposed monitoring station at the Pedestrian Plaza and the baseline monitoring station CMA5 is shown in **Appendix B**.
- d) As such, it is proposed that baseline AQM results of monitoring station CMA5 could be adopted by the proposed monitoring station at Pedestrian Plaza as the two stations are identical and with the same surrounding environment to account for the ambient air quality at the monitoring location. In addition, the prevailing meteorological at the two locations are considered to be identical. Hence, the action and limit level for monitoring station CMA5a shall be adopted by the proposed relocated station CMA5b and the monitoring result obtained at monitoring station CMA5b shall be reported as construction impact monitoring. The summary of action and limit level proposed to be adapted by CMA5b is shown in **Appendix E**.

7. Monitoring commencement:

- a) All activities are subjected to client's (CEDD's) instructions.
- b) After received EPD approval for relocation:
- All equipments for installation shall be prepared within one week when this proposal approved by ER and IEC.
 - A 2-day T&C shall be conducted after HVS installation.

Appendix A

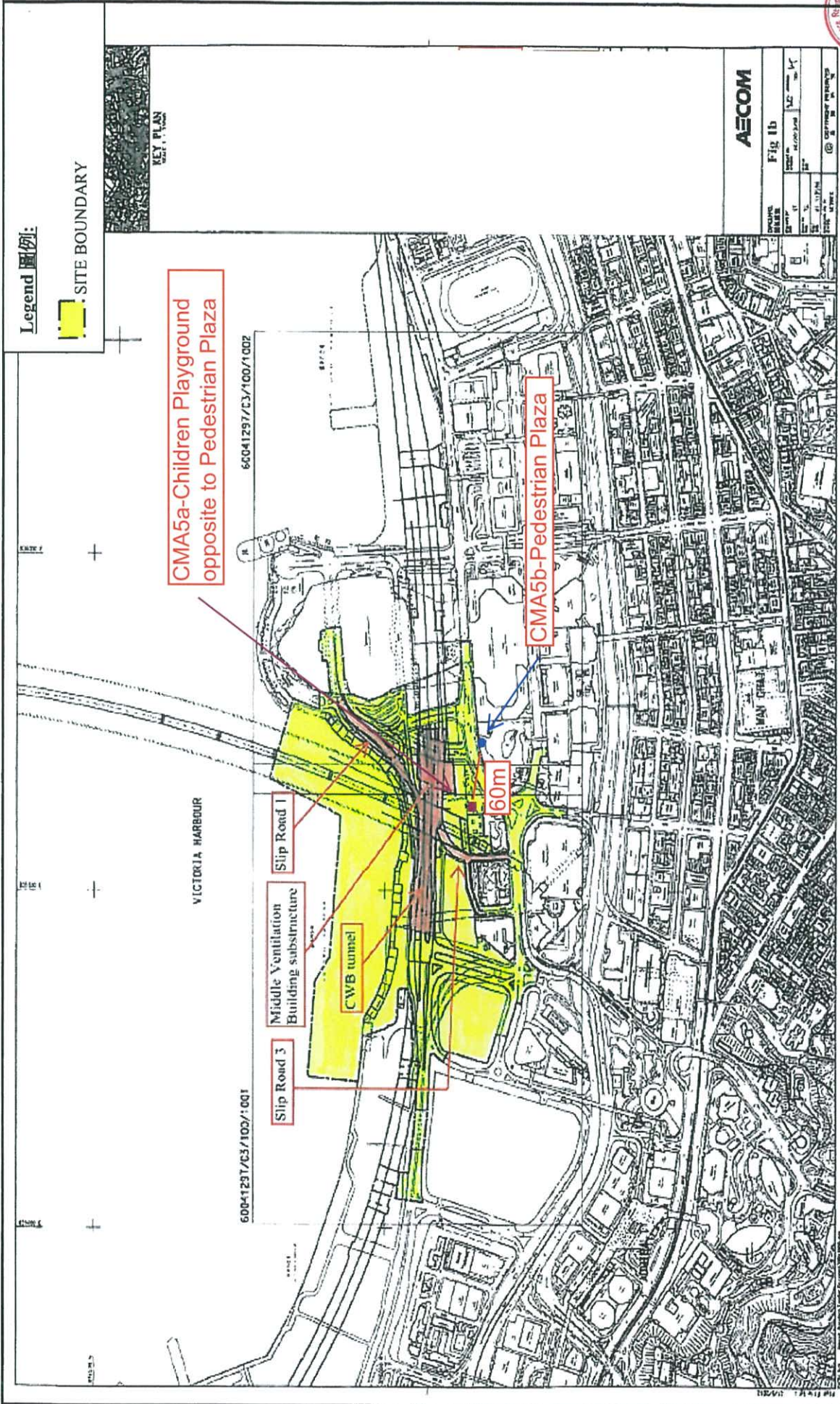


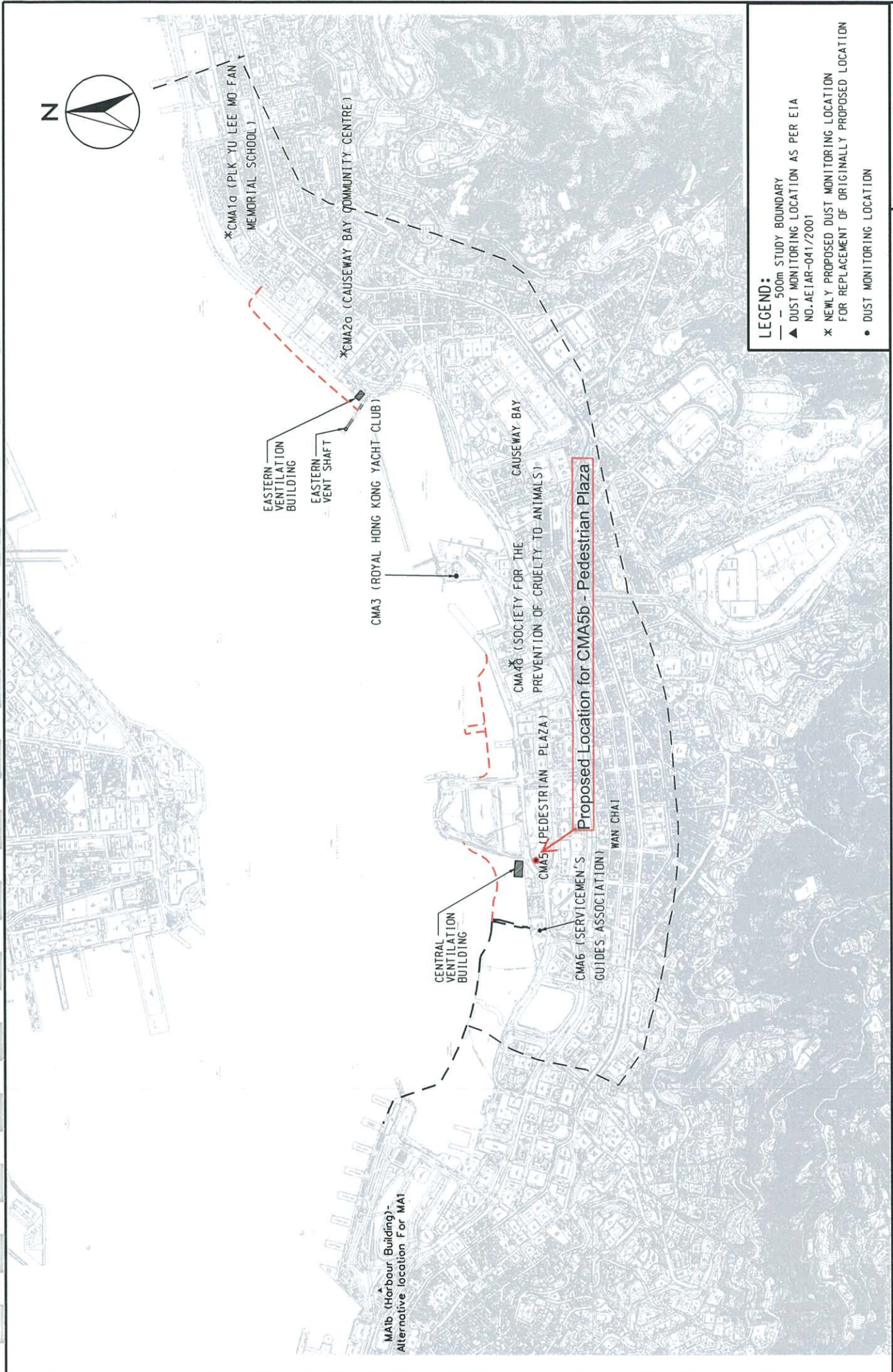
Figure 1b : General Layout of the Project
圖 1b : 工程項目佈局圖

(This figure was prepared based on Figure 1b of Application for Further Environmental Permit (Application No.: FEP-144/2013))
 (本圖是根據申請新的環境許可證 (申請編號 FEP-144/2013) 圖 b 編製)

Project Title: Wan Chai Development Phase II - Central-Wan Chai Bypass at Wan Chai West
(Contract No. HY/2012/08) - Tunnel Works
工程項目名稱: 灣仔發展第二期 - 中環灣仔繞道 - 灣仔西段 (合約編號 HK/2012/08) - 隧道工程
Environmental Permit No. : FEP-09-364/2009/B
環境許可證編號 : FEP-09-364/2009/B



Appendix B



LEGEND:

- 500m STUDY BOUNDARY
- ▲ DUST MONITORING LOCATION AS PER EIA NO. AEIAR-041/2001
- * NEWLY PROPOSED DUST MONITORING LOCATION FOR REPLACEMENT OF ORIGINALLY PROPOSED LOCATION
- DUST MONITORING LOCATION

WAN CHAI DEVELOPMENT PHASE II - PLANNING AND ENGINEERING REVIEW
 LOCATIONS OF AIR QUALITY MONITORING STATIONS

FIGURE 2.1

Appendix C



Proposed Set up of Air Quality Monitoring Station

Appendix D



MFC-TSP

Manufacturer of Air Pollution Monitoring Equipment

TE-5170

HIGH VOLUME TOTAL SUSPENDED PARTICULATE (TSP) IN AMBIENT AIR

Mass Flow Controlled TSP High Volume Air Sampling System includes:

- anodized aluminum shelter
- 8" x 10" stainless steel filter holder with probe hole
- blower motor assembly
- continuous flow/pressure recorder
- elapsed time indicator
- mass flow controller with 20–60 scfm air flow probe
- 7-day mechanical timer
- 110v/60hz or 220v/50hz

Meets EPA Code of Federal Regulation, Appendix B to Part 50

Specifications

- Flow rate: 39–60 cfm (1.1–1.7m³)
Filter media: Glass fiber filter 8" x 10" (TE-G653)
Flow control: Mass flow controlled with 20–60 scfm air flow probe (TE-300–310)
Motor blower: 2-stage vacuum 0.6 hp: 110v/60hz (TE-116311)
220v/50hz (TE-116312)
Flow indicator: Flow/pressure recorder (TE-5009)
Timer: 7-day mechanical timer (TE-5007)
Elapsed time indicator device: Elapsed time indicator (TE-5012)
Motor specifications: 110v/60hz—Part TE-116311 double ball bearing, thru-flow discharge
220v/50hz—Part TE-116312 ball/sleeve bearing, thru-flow discharge
Start up amps: 12 Amps
Running amps: 6 Amps

Shipping information (two cartons)

- Size/weight: 45.5" x 22.5" x 20"/75 lbs
19" x 14" x 14"/9 lbs

TE-5170D

MASS FLOW CONTROLLED TSP AIR SAMPLER

Mass Flow Controlled TSP High Volume Air Sampling System includes:

- anodized aluminum shelter
- 8" x 10" stainless steel filter holder with probe hole
- blower motor assembly
- continuous flow/pressure recorder
- 110v/60hz or 220v/50hz

Meets EPA Code of Federal Regulation, Appendix B to Part 50

Same as TE-5170 except:

- Flow control/Timer: TE-300–312
Combination mass flow controller solid state digital timer and digital elapsed time indicator w/20-60 scfm air flow probe

Appendix E



Action and Limit Level

Action and Limit Level for Air Monitoring

Monitoring Location	1-hour TSP Level in $\mu\text{g}/\text{m}^3$		24-hour TSP Level in $\mu\text{g}/\text{m}^3$	
	Action Level	Limit Level	Action Level	Limit Level
CMA5b	332.0	500	181.0	260