

Architectural Services Department

**Programme No.: 794CL
The Demolition of Existing
Superstructures at Caroline Hill Road
Site, Causeway Bay**

Preliminary Environmental Review
(Version 6.0)

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Approved By



(Project Director: Dr. HF Chan)

REMARKS:

The information supplied and contained within this report is, to the best of our knowledge, correct at the time of printing.

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1. INTRODUCTION

1.1 Project Background

- 1.1.1 The Government targets to make available the area locating at the junction of Leighton Road and Caroline Hill Road in Causeway Bay (hereafter called the "Project Site") for future development.
- 1.1.2 To make available the Project Site, all existing above-ground buildings including the Civil Aid Service (CAS) Building, ex-Electrical and Mechanical Services Department (EMSD) Headquarters, PCCW Recreation Club and Hong Kong Post Office (HKP) Recreation Club will be demolished.
- 1.1.3 Demolition work will be commence in the 2nd quarter of 2017 and will be completed in the 3rd quarter of 2018. The site plan is shown in Figure 1-1. Existing superstructure to be demolished includes:
- a 11-storey office building, a 5-storey Training Center, a 7-storey staff quarter, three 1-storey workshops and a vehicle shelter in the ex-EMSD Headquarters;
 - a 6-storey CAS Building;
 - a 1-storey Post Office Recreation Club; &
 - a 3-storey PCCW Recreation Club
- 1.1.4 All substructure, including the 2-storey basement structures under the ex-EMSD Headquarters and CAS Building, 1-storey basement structure under the 11-storey office building at the ex-EMSD Headquarters and 1-storey basement at the HKP Recreation Club, will not be demolished. The 2-storey basement will remain untouched while the latter two 1-storey basements will be backfilled with the inert construction and demolition materials generated from demolition of the other superstructures.
- 1.1.5 Land contamination was previously identified within the site of "Former EMSD Headquarters" under the EMSD's study "Contamination Assessment for the Former EMSD Headquarters at Caroline Hill Road Site". The decontamination work is being carried out by the consultant of the EMSD and is scheduled to be completed by early 2017. After the decontamination works are completed, the Site will be taken over by Architectural Services Department (ArchSD) for demolition.
- 1.1.6 Cinotech Consultants Limited (the Consultant) has been appointed to conduct the Preliminary Environmental Review (PER) for the demolition stage of the Project.

1.2 Existing Environment of Project Site

- 1.2.1 The Project Site covers 26,300 m², and locates at the junction of Leighton Road and Caroline Hill Road in Causeway Bay. The Site is a developed land, and is currently occupied by the CAS Building, ex-EMSD Headquarters, PCCW Recreation Club and HKP Recreation Club.

- 1.2.2 In the vicinity of the Site, different types of building are found. High-rise commercial buildings such as Lippo Leighton Tower and Lee Garden Six are in the north-west of the Site; mixed uses buildings (shops on ground floor with residential units above) including Leishun Court and Caroline Hill Court, St. Paul's Hospital, Saint Paul's Convent, Saint Paul's Convent School and Christ The King Chapel are in the north-east of the Site; Recreation clubs such as South China Athletic Association, South China Stadium and Indian Recreation Club, and schools including Hotung Secondary School are in the south-east of the Site; Residential buildings (e.g. Caroline Garden) are in the south-west of the Site; and Po Leung Kuk is in the west of the Site.

1.3 Scope of Study

- 1.3.1 This report aims to describe the surrounding environment of Caroline Hill Road, together with an assessment of the major impact which the proposed demolition work would have on the environment.
- 1.3.2 The key environmental issues with potential environmental impacts arising from the Project are identified as construction noise impact, construction dust impact, waste management and water quality impact during the demolition work.
- 1.3.3 The assessment has covered the following major aspects:
- Air quality Impact
 - Noise Impact
 - Waste Management Implication
 - Water Quality Impact

2. AIR QUALITY IMPACT

2.1 Introduction

2.1.1 This chapter identifies and evaluates potential air quality impact due to the Project, and recommends appropriate mitigation measures for the potential impact.

2.2 Legislation

2.2.1 The Air Pollution Control Ordinance (CAP 311) provides for the control of air pollutants from a variety of stationary and mobile sources through the establishment of a set of Air Quality Objectives (AQOs). As of 1st January 2014, a new set of air quality objectives which stipulates maximum concentrations for a range of pollutants, namely nitrogen dioxide (NO₂), sulphur dioxide (SO₂), respirable suspended particulates (RSP), fine suspended particulates, carbon monoxide (CO), photochemical oxidants (O₃) and lead (Pb) has been in force. The new AQOs are listed in Table 2-1 below.

Table 2-1 New Hong Kong Air Quality Objectives

Pollutant	Averaging time	Concentration limit [i] ($\mu\text{g}/\text{m}^3$)	Number of exceedances allowed
Sulphur dioxide	10-minute	500	3
	24-hour	125	3
Respirable suspended particulates (PM ₁₀) [ii]	24-hour	100	9
	Annual	50	Not applicable
Fine suspended particulates (PM _{2.5}) [iii]	24-hour	75	9
	Annual	35	Not applicable
Nitrogen dioxide	1-hour	200	18
	Annual	40	Not applicable
Ozone	8-hour	160	9
Carbon monoxide	1-hour	30,000	0
	8-hour	10,000	0
Lead	Annual	0.5	Not applicable

Note:

- [i] All measurements of the concentration of gaseous air pollutants, i.e., sulphur dioxide, nitrogen dioxide, ozone and carbon monoxide, are to be adjusted to a reference temperature of 293 Kelvin and a reference pressure of 101.325 kilopascal.
- [ii] Respirable suspended particulates means suspended particles in air with a nominal aerodynamic diameter of 10 μm or less.
- [iii] Fine suspended particulates means suspended particles in air with a nominal aerodynamic diameter of 2.5 μm or less.

2.3 Study Area & Air Sensitive Receivers

2.3.1 The Study Area for this air quality impact assessment covers the area 500 m away from the Project boundary. Identified air quality sensitive receivers (ASRs) include residential buildings, schools, sports-ground and commercial buildings in the vicinity of the Project Site. Representative ASRs are listed in **Table 2-1** while their locations are presented in **Figure 2-1**.

Table 2-2 List of Representative Air Quality Sensitive Receivers

ASR code	Description	Land Use / Building type	Shortest Horizontal Distance (m)
ASR01	Leishun Court	Residential & Commercial	12
ASR02	Caroline Hill Court	Residential & Commercial	11
ASR03	Lei Ka Court	Residential & Commercial	11
ASR04	Disciplined Services Sports & Recreation Club	Sports stadium	40
ASR05	South China Athletic Association	Sports stadium	4
ASR06	Po Leung Kuk Vicwood Chong Kee Ting Kindergarten	School	72
ASR07	Caroline Garden	Residential	20
ASR08	Silverwood	Residential	16
ASR09	Po Leung Kuk Kwok Law Kwai Chun Children Services Building	Clinic	36
ASR10	Playground in Po Leung Kuk	Recreation	16
ASR11	Zoroastrian Building	Commercial	36
ASR12	Lippo Leighton Tower	Commercial	19
ASR13	Lee Garden Six	Commercial	12

2.4 Impact Identification & Evaluation

2.4.1 Demolition works will be carried out by non-blasting, top-down deconstruction method. Identified potential sources of air quality impact associated with the Project include dust generated during demolition work, emission from powered mechanical equipment (PME), and asbestos in structures to be demolished.

2.4.2 Dust, i.e. fine suspended particulates (FSP) and respirable suspended particulates (RSP), would be generated during demolition work (e.g. concrete crushing). Although the distance between the site boundary and ASRs are short, with proper implementation of mitigation measures in **Section 2.5**, the impact is anticipated to be minor and acceptable.

2.4.3 Operation of PME during demolition work would emit air pollutants such as sulphur dioxide (SO₂) via fuel burning. However, since the number of PME expected to be used on-site will be much less than vehicles travelled on surrounding roads (e.g. Caroline Hill Road & Leighton Road), the impact is anticipated to be insignificant.

2.4.4 As buildings on the Project Site were built before 1970, buildings might contain asbestos which is carcinogenic. Nevertheless, with proper implementation of mitigation measures in **Section 2.5**, the impact is anticipated to be insignificant.

2.5 Mitigation Measures

2.5.1 Dust control measures under the Air Pollution Control (Construction Dust) Regulation (Cap. 311R) and good site practice shall be implemented to mitigate dust impact arising from demolition work by preventing dust generation and by screening, suppressing and removing dust generated:

- Provide hoarding of not less than 2.4 m high from ground level along the entire length of the site boundary where adjoins a road, street, service lane or other area accessible to the public, except for a site entrance or exit;
- Enclose the whole wall of the building to a height of at least 1m higher than the highest level of the structure to be demolished with impervious dust screens or sheeting on façade abutting or fronting upon a street;
- Water or a dust suppression chemical shall be sprayed on the area to be demolished immediate prior to, during and immediately after demolition works;
- Maintain a reasonable height when dropping materials to limit dust generation;
- All stockpile of dusty materials shall be either entirely covered by impervious sheeting or stored in a three-side and top enclosed area;
- All dusty materials shall be sprayed with water or a dust suppression chemical immediately prior to any loading, unloading or transfer operation to maintain dusty materials wet;
- Similar to storage of dusty materials, debris shall be either entirely covered by impervious sheeting or stored in a three-side and top enclosed area;
- Using water spray to wet the remaining dusty materials on the floor after removing stockpile. The surface of roads or streets shall be free from dust;
- Dust suppression shall be applied to the working area immediately before, during and immediately after site clearance (e.g. removal of trees, vegetation and structures) to keep the surface wet;
- All demolished items (e.g. trees, vegetation, structures, debris and rubbish) that may dislodge dust particles shall be covered entirely by impervious sheeting or placed in a three-side and top enclosed area within a day of demolition;
- Cover materials on trucks before leaving the site to prevent dusty material from dropping during traffic movement or being blown away by wind;
- Provide vehicle washing facilities including a high pressure water jet at every discernible or designated vehicle exit point. The washing area and road towards site exit should be paved with concrete, bituminous materials or hardcores;
- Exposed earth shall be properly treated within 6 months from completion of construction activities, e.g. by compacting, turfing, hydroseeding, vegetation planting or paving.

2.5.2 To mitigate impact arising from the operation of PME, good site practice, including service all PME on-site regularly and switch off or throttle down un-used machine or machine in intermittent use, shall be implemented. In addition, use ultra-low-sulphur diesel (ULSD) for all diesel-powered plants and equipment can also mitigate impact arising from using PME.

2.5.3 To mitigate impact arising from asbestos containing materials (ACMs), an asbestos investigation should be carried out to ascertain whether ACM presents in the Site or not. If ACM was found, all ACM should be abated by registered asbestos contractor before the start of demolishment. The asbestos investigation report (AIR) will be prepared separately.

2.6 Conclusion

2.6.1 Representative air quality sensitive receivers in the Study Area have been identified. Potential air quality impact associated with the Project would be dust generated from demolition work, sulphur from diesel-powered plants and asbestos containing materials. However, with proper implementation of mitigation measures, the impact on air quality is anticipated to be minor and acceptable.

3. NOISE IMPACT

3.1 Introduction

- 3.1.1 This chapter identifies and evaluates potential noise impact due to the Project, and recommends appropriate mitigation measures for the potential impact.

3.2 Legislation

Construction Noise

- 3.2.1 Construction noise is governed by the Noise Control Ordinance (NCO) (Cap. 400) which prohibits the use of powered mechanical equipment (PME) during the restricted hours (7 p.m. to 7 a.m. on Monday to Saturday and any time on a general holiday, including Sunday) without a valid Construction Noise Permit (CNP) issued by the Authority. The criteria and methodology are specified in the "Technical Memorandum on Noise from Construction Works Other than Percussive Piling" - (TM1).
- 3.2.2 As the demolish work will only be conducted in day time, and TM1 does not provide criteria for daytime construction activities, the noise limits for this assessment follow the guideline set out in the (ProPECC) "Noise from Construction Activities - Non-statutory Controls" (PN 2/93) which are shown in Table 3-1 below.

Table 3-1 Noise Limits for Daytime Construction Activities

Receiver	0700 to 1900 hours on any day not being a Sunday or general holiday L_{eq} (30min.) dB (A)
Dwelling	75
School	70 65 (during examination)

Notes:

- (i) the above standards apply to uses which rely on opened windows for ventilation;
- (ii) the above standards shall be viewed as the maximum permissible noise levels assessed at 1m from the external facade.

- 3.2.3 For noise sensitive receivers not classified in the above table (e.g. clinic and place of public worship), the noise criteria are proposed to be 75dB(A).

3.3 Noise Sensitive Receivers

- 3.3.1 The Study Area for this noise impact assessment covers the area 300 m away from the Project boundary. Identified noise sensitive receivers (NSRs) include residential buildings, schools, place of public worship and clinic in the vicinity of the Project Site. Representative NSRs and listed in Table 3-2 while their locations are presented in Figure 3-1.

Table 3-2 List of Representative Noise Sensitive Receivers

NSR code	Description	Land Use / Building type
NSR01	Leishun Court	Residential & Commercial
NSR02	Caroline Hill Court	Residential & Commercial
NSR03	Lei Ka Court	Residential & Commercial
NSR04	Staff Quarters of St Paul's Convent	Residential
NSR05	Saint Paul's Convent	Place of Public Worship
NSR06	Caroline Garden	Residential
NSR07	Caroline Hill Road No. 103 – 105	Residential
NSR08	Silverwood	Residential
NSR09	Po Leung Kuk Kwok Law Kwai Chun Children Services Building	Clinic
NSR10	Po Leung Kuk Chu Lee Yuet Wah Kindergarten	School
NSR11	Bright Star Mansion	Residential & Commercial

3.4 Impact Identification & Evaluation

3.4.1 Buildings in the Site will be demolished by non-blasting, top down method. This Project involves three phases:

- Phase 1 - Mobilization of Equipment
- Phase 2 - Demolition of Superstructure
- Phase 3 - Backfilling and Compaction

3.4.2 The main noise source would be the operation of PME. Table 3-3 shows a preliminary list of plant equipment with the quantity and percentage on-time, which have been confirmed by ArchSD's engineer to be reasonable, feasible and practicable.

Table 3-3 List of Plant Equipment

Location	Type of Machine	Nos.	Percentage on-time (%)
Phase 1 - Mobilization of equipment by mobile crane			
Zone B01-B07	Crane, mobile mounted (diesel)	1	100%
Phase 2 - Demolition of superstructure			
Part 2a – Typical demolition works			
Zone B01-B07	Excavator/Loader	1	80%
	Dump Truck	1	50%
	Generator	1	100%
	Concrete Crusher, excavator mounted	1	100%
	Breaker, hand held	2	100%
Part 2b – Demolition works near trees to be preserved			
Zone T01 & T02	Saw/groover, concrete (petrol)	1	50%

Location	Type of Machine	Nos.	Percentage on-time (%)
Phase 3 - Backfilling and Compaction			
Zone B01-B07	Concrete Crusher, excavator mounted	1	50%
	Breaker, hand held	1	50%
	Excavator/Loader	1	50%
	Roller, vibratory	1	100%
	Generator	1	100%

* The above plant list represents a single set of PME for each zone.

- 3.4.3 As shown in Figure 3-2, the construction site is divided into seven building zones (Zone B01-B07) based on the location and geometry of the buildings. In addition, demolition works near three trees to be preserved (Zones T01 & T02) require special method (cutting) and the potential noise generated was also considered in the assessment. Areas that are neither covered by the building zones and the tree areas will only undergo minimal demolition work (e.g. removal of light post and play equipment) and mainly used for temporary storage and sorting of C&D waste.
- 3.4.4 Quantitative noise assessment was conducted to assess the construction noise level at representative NSRs. Different parts of the Site may undergo different phases at the same time. The work programme will be dependent on the resources and arrangement of the future contractor. For individual building, each phase must be completed before the next phase can commence. For conservativeness, all zones were assumed to be working concurrently at the noisiest phase in the unmitigated case. Construction noise level in Phase 2 is the highest and expected to exceed the noise criteria at all NSRs. Detailed calculations are shown in Appendix 3.1 and 3.2 and the results are summarized in the table below:

Table 3-4 Unmitigated Noise Levels

NSR	Noise Criteria (dB(A))	Construction Noise (dB(A))				
		Phase 1 only	Phase 2a only	Phase 2b only	Phase 3 only	Worst Case (Phases 2a & 2b)
NSR01	75	79	85	69	81	85
NSR02	75	79	85	70	81	85
NSR03	75	79	85	70	81	85
NSR04	75	79	84	69	81	84
NSR05	75	79	85	67	81	85
NSR06	75	79	85	70	81	85
NSR07	75	81	86	71	83	87
NSR08	75	80	86	71	82	86
NSR09	75	77	82	69	78	82
NSR10	65/70 #	<u>76</u>	<u>82</u>	<u>69</u>	<u>78</u>	<u>82</u>
NSR11	75	73	79	68	75	79

Noise criteria for school is 70dB(A) in normal case and 65dB(A) for examination period.

* Exceeded values are bolded for normal case and underlined for examination period.

- 3.4.5 In order to reduce the noise impact, the PME are proposed to be replaced by the quieter alternatives. Movable noise barriers shall be erected for plants operated outdoor. In addition, PCCW Recreation Club located at the southwestern part of the Site (which is opposite to NSR10 Po Leung Kuk Chu Lee Yuet Wah Kindergarten) will be demolished with the ground finished before commencement of demolition work of the rest of the Site (hereafter called “Early Stage”). Therefore, phase 2 and phase 3 at Zone B06 will be at most carried out concurrently with phase 1 of the other work zones. **Appendix 3.3** illustrates this arrangement in the draft work programme, which has been confirmed by ArchSD’s engineer to be reasonable, feasible and practicable. After completion of work at Work Zone B06, all remaining zones (B01 – B05, B07, T01, T02) were assumed to be working concurrently at the noisiest phase (hereafter called “Later Stage”).
- 3.4.6 The mitigated noise levels are expected to comply with the noise criteria at all NSRs except NSR10 Po Leung Kuk Chu Lee Yuet Wah Kindergarten during examination period. Detailed calculations are shown in **Appendix 3.1** and **3.2** and the results are summarized in the table below:

Table 3-5 Mitigated Noise Levels

NSR	Noise Criteria (dB(A))	Worst Case Construction Noise Level (dB(A))	
		Early Stage	Later Stage
NSR01	75	71	74
NSR02	75	70	74
NSR03	75	71	74
NSR04	75	70	73
NSR05	75	70	74
NSR06	75	71	74
NSR07	75	72	75
NSR08	75	72	74
NSR09	75	69	70
NSR10	65/70	<u>69</u>	<u>69</u>
NSR11	75	65	67

Noise criteria for school is 70dB(A) in normal case and 65dB(A) for examination period.

* Exceeded values are bolded for normal case and underlined for examination period.

3.5 Recommended Mitigation Measures

- 3.5.1 As mentioned in **Section 3.4.5**, demolition and ground finishing work at PCCW Recreation Club shall be conducted before commencement of demolition work of the rest of the Site. Also, quiet plant equipment of the same or lower sound power levels adopted in the construction noise estimation shall be employed. These requirements shall be specified in the specifications for contractor.
- 3.5.2 To avoid affecting NSR10 Po Leung Kuk Chu Lee Yuet Wah Kindergarten, the contractor shall liaise and agree with the school to avoid noisy construction activities during examination period.

3.5.3 Noise control measures and good site practice shall be implemented to mitigate noise impact arising from demolition work as far as practicable. Examples include:

- Schedule noisy operations during non-restricted hours, and avoid examination period as possible.
- Make good use of other structures for noise screening (e.g. when demolishing building storey by storey, interior structures should be crushed before removing the façade facing NSRs);
- Crush concrete into further smaller pieces inside building structure where possible. Alternatively, screen the breaking process with noise barriers if carried out outdoor. Large stockpile of broken concrete can also screen noise from on-site activity;
- Use concrete crusher for concrete crushing;
- Silenced plants or quality powered mechanical equipment (QPME) should be used;
- Use PME equipped with properly designed silencers, mufflers, acoustically dampened panels and/ or acoustic sheds or shields, etc.;
- Where possible, use electric-powered equipment instead of diesel-powered or pneumatic-powered equipment;
- Erect noise barrier/enclosure around noisy plants when operated outdoor. The dimensions and locations of the noise barriers/enclosures should be determined by the Contractor with the principle that they would block the line of sight to the PME from the nearby NSRs. The side of the barrier facing the PME shall be laid with noise absorbent for noise attenuation. PMEs to be screened by noise barrier are slow moving or usually stationary when they are operating and hence the position of the mobile barriers will not need to be frequently adjusted;
- Adopt good site practice, such as regularly service plant equipment;
- Machines that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum; &
- Follow “Recommended Pollution Control Clauses for Construction Contracts” issued by the EPD

3.6 Conclusion

3.6.1 Representative NSRs within the Study Area includes residential buildings, a place of public worship, a school and a clinic. Major noise concern during demolition works comes from operation of powered mechanical equipment. By adopting QPME and implementing proposed mitigation measures, the construction noise level at NSRs is expected to comply with the criteria except NSR10 Po Leung Kuk Chu Lee Yuet Wah Kindergarten. The contractor shall liaise and agree with the school to avoid noisy construction activities during examination period.

4. WATER QUALITY IMPACT

4.1 Introduction

- 4.1.1 This chapter identifies and evaluates potential water quality impact due to the Project, and recommends appropriate mitigation measures for the potential impact.

4.2 Legislations, Standards & Guidelines

- 4.2.1 The *Water Pollution Control Ordinance (Cap. 358)* (WPCO), in existence since 1980, is the major legislation relating to the protection and control of water quality in Hong Kong. According to the ordinance and its subsidiary legislation, Hong Kong waters are divided into ten Water Control Zones (WCZ).
- 4.2.2 Besides setting the Water Quality Objectives (WQOs), the WPCO controls effluent discharging into the WCZs through a licensing system. A *Technical Memorandum (TM) on Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters* was issued under the WPCO which gives guidance on the permissible effluent discharges based on the type of receiving waters (foul sewers, inland waters, marine waters, inshore waters and coastal waters) and the flow rate. The limits control the physical, chemical and microbial quality of effluents. Sewage from the proposed construction activities should comply with the TM standards for effluent discharged.
- 4.2.3 A practice note (PN) for professional persons was issued by the Environmental Protection Department (EPD) to provide environmental guidelines for handling and disposal of construction site discharges. The *ProPECC PN 1/94 "Construction Site Drainage"* provides good practice guidelines for dealing with various types of discharge from a construction site. Practices outlined in the PN should be followed as far as possible during construction to minimize the water quality impact due to construction site drainage.

4.3 Water Quality Sensitive Receivers

- 4.3.1 Although no water quality sensitive receiver (e.g. natural waterbody including natural stream, lake and marine water) is identified in the vicinity of the Project Site, water drainage system (e.g. U-channel) near the Project Site could carry pollutants (e.g. suspended solids & chemicals) to receiving waters.

4.4 Impact Identification & Evaluation

- 4.4.1 Demolition does not require water. Water used for dust suppression and wheel washing will be limited, and such water will be collected and re-used to minimize the amount of wastewater and thus the amount of effluent to be discharged after treatment. The major source of water comes from rain water that results in construction site runoff. Accidental leakage of chemicals is another concern.
- 4.4.2 Construction site surface runoff may carry pollutants into nearby water drainage system, which may lead to increased suspended solids and other pollutants' (e.g.

metals and organics) concentrations in receiving waters, and may cause blockage of storm water drains. Nevertheless, as no large scale of earthwork (e.g. excavation) will be involved in the Project and existing paved area will be kept intact, the surface runoff will be similar to typical stormwater and is not expected to be silty. The impact is anticipated to be insignificant if mitigations proposed in Section 4.5 are implemented properly.

- 4.4.3 Chemicals, such as fuel and lubricating oil for powered mechanical equipment (PME), may be stored and used onsite for the demolition work. Accidental leakage/spillage of these chemicals may be carried down by construction site runoff and deteriorate water quality in receiving waters. Nevertheless, since there should be no immerse need for chemical or oil in this project, the quantity stored or used onsite should be limited. With proper implementation of mitigations proposed in Section 4.5, the impact is anticipated to be insignificant.

4.5 Mitigation Measures

- 4.5.1 As described in Section 4.4, the surface runoff is expected to be clean. Nevertheless, construction site runoff should be prevented or minimized in accordance with the guidelines stipulated in the *Practice Note for Professional Persons, Construction Site Drainage (ProPECC PN 1/94)* published by the EPD, which includes but not limited to the followings:

- Channels, earth bunds or sand bag barriers should be provided on site to direct storm-water to sand/silt removal facilities. Where necessary, perimeter channels should be provided at the Site boundary to intercept storm-runoff from outside the site. These shall be implemented in advance of demolition work.
- Sand/silt removal facilities such as sand traps, silt traps and sediment basins shall be provided to remove sand/silt particles from runoff. These facilities shall be properly and regularly maintained. Treated effluent should be reused for dust suppression/wheel washing to achieve zero wastewater discharge.
- If there is excess effluent, it shall be treated by sedimentation up to the standard stipulated in the water discharge license issued by EPD. Only that effluent can be discharged into the designated discharge point to safeguard the water quality in the receiving water. If discharge to stormwater system is not permitted under the WPCO, the treated water is proposed to be removed from the Site by tankers. The effluent will then be delivered to public sewage treatment plant.
- Open stockpiles of materials on site shall be covered with tarpaulin or similar fabric during rainstorms.

- 4.5.2 Oil interceptors shall be provided in the drainage system. They shall be emptied regularly to prevent the release of oil and grease into water drainage system after accidental spillages. Interceptors shall have a bypass to prevent flushing during periods of heavy rain.

- 4.5.3 All chemicals shall be stored in suitable containers which are sealable, robust and in

good condition.

- 4.5.4 Chemical storage areas shall have impermeable floor and bund-wall. The bund shall at least have a capacity of 110% of the volume of the largest container or 20% by volume of the chemical stored in the area, whichever is largest. All liquid collected within the bund shall be treated as chemical waste (see **Section 5.4** for details). Where possible, storage areas should be sheltered to prevent rainfall entering.

4.6 Conclusion

- 4.6.1 Although there is no natural water body such as stream and pond in the vicinity of the Project Site, water drainage system (e.g. U-channel) near the Project Site could carry pollutants to receiving waters. Potential water quality impact associated with the Project would be construction site runoff and accidental leakage of chemicals. However, with proper implementation of mitigation measures, the impact on water quality is anticipated to be insignificant.

5. WASTE MANAGEMENT IMPLICATIONS

5.1 Introduction

- 5.1.1 This chapter identifies and evaluates potential impact due to waste management of the Project, and recommends appropriate mitigation measures for the potential impact. Mitigation measures, including waste handling, storage and disposal, are recommended with reference to the applicable waste legislation and guidelines.

5.2 Legislations, Standards & Guidelines

- 5.2.1 The principal legislation controlling waste materials in Hong Kong is the *Waste Disposal Ordinance (Cap. 354)* and its subsidiary regulations.
- 5.2.2 *Waste Disposal (Chemical Waste) (General) Regulation (Cap. 354C)* outlines the requirement for chemical waste handling and disposal.
- 5.2.3 Under the *Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N)*, construction waste delivered to a landfill for disposal must not contain more than 50% by weight of inert materials. Construction waste delivered to a sorting facility for disposal must contain more than 50% by weight of inert materials, and construction waste delivered to a public fill reception facility for disposal must consist entirely of inert materials.
- 5.2.4 The *ETWB TC(W) No. 33/2002 Management of Construction and Demolition Material Including Rock* requires the project office to establish a system to minimize C&D material generation and to reuse inert material generated including rock, as far as possible.
- 5.2.5 The *Development Bureau Technical Circular (Works) (TC(W)) No. 6/2010, Trip Ticket System for Disposal of Construction & Demolition Materials* promulgates the policy to implement a trip-ticket system in public works contracts for the proper disposal of C&D materials at public filling facilities or landfills.
- 5.2.6 The *ETWB TC(W) No. 19/2005, Environmental Management on Construction Sites* sets out the policy and procedures requiring contractors to prepare and implement an Environmental Management Plan (EMP) in all public works contracts and adopt unified standards on environmental nuisance abatement measures.
- 5.2.7 The *Guidelines on Yard Waste Reduction and Treatment* by the Greening, Landscape and Tree Management Section (GLTMS) provides general reference on implementing measures on yard waste reduction and treatment in various stages from planting design to maintenance and suggest ways of how yard waste can be reduced, reused and recycled (3Rs).

5.3 Impact Identification & Evaluation

- 5.3.1 The demolition work to be carried out for the Project would generate a variety of wastes that can be divided into categories, including construction and demolition (C&D) materials, general refuse and chemical waste. In which, C&D materials will be the main source of solid waste generated from the Project.

Construction and Demolition (C&D) Materials

- 5.3.2 C&D materials will be generated from demolition of the CAS Building and ex-EMSD Headquarters, PCCW Recreation Club and Post Office Recreation Club. The estimated volume of C&D materials generated from the demolition work is about 7,038 m³, which comprises 6,400 m³ of inert C&D materials (e.g. broken concrete), 638 m³ of non-inert C&D materials (e.g. metal, timber and dismantled bamboo scaffolding) and approximately 32 nos. felled trees (to be confirmed upon completion of the updated Tree Preservation and Removal Proposal).
- 5.3.3 If C&D materials are not handled properly, pollutants might be washed into drainage system, resulting in pollution. Having piles of C&D material around is also unpleasant and may bring odour nuisance. However, with mitigation measures mentioned in Section 5.4, the impact is anticipated to be insignificant.

General Refuse

- 5.3.4 During daily operation, workers would generate general refuse including food waste and packaging, metal cans, plastic bottles and office waste. As the quantity of general refuse depends on the scale of workforce employed by the Contractor, it cannot be estimated at this stage. Nevertheless, it is anticipated that the quantity of general refuse would be small.
- 5.3.5 If general refuses are not handled properly, rubbish may be blown away by wind or washed into drainage system, resulting in pollution, and even flood event under heavy rain. Having rubbish around is also unpleasant, may attract pest and may bring odour nuisance. However, with mitigation measures mentioned in Section 5.4, the impact is anticipated to be insignificant.

Chemical Waste

- 5.3.6 The use and maintenance of powered mechanical equipment (PME) and vehicles may generate chemical wastes such as, cleaning fluids, solvents, lubrication oil and fuel. However, it is difficult to quantify the amount of chemical waste that would arise from the construction activities. It is because the quantity of chemical waste would be depended on the Contractor's practices (e.g. on-site maintenance requirements and the amount of plant utilized). Nevertheless, it is anticipated that the quantity of chemical waste would be limited.
- 5.3.7 Improper handling of the chemical wastes may pose health impact on workers (e.g. accidental ingestion), fire hazard and contamination of soil and water. However, with mitigation measures mentioned in Section 5.4, the impact is anticipated to be insignificant.

Asbestos Containing Materials

- 5.3.8 As buildings on the Project Site were built before 1970, buildings might contain asbestos which is carcinogenic. To mitigate impact arising from asbestos containing materials (ACMs), an asbestos investigation was carried out to ascertain the location of ACM presents in the Site. All ACM should be abated by registered asbestos contractor before the start of demolition. All ACMs shall be abated and disposed of in accordance with the separate asbestos abatement report (AAP).

Land Contamination

- 5.3.9 Land contamination was previously identified within the site of "Former EMSD Headquarters" under the EMSD's study "Contamination Assessment for the Former EMSD Headquarters at Caroline Hill Road Site". The decontamination work is being carried out by the consultant of the EMSD and is scheduled to be completed by early 2017. After the decontamination works are completed, the Site will be taken over by Architectural Services Department (ArchSD) for demolition. As no handling of contaminated soil is involved, no land contamination impact is expected.

5.4 Mitigation MeasuresConstruction and Demolition (C&D) Material

- 5.4.1 All C&D materials should be sorted on-site. Sorted inert C&D materials (e.g. broken concrete) should be utilized for backfilling the basement structure in the Project Site. Excessive portion should be sent to a public fill reception facility for beneficial reuse, and the closest public fill reception facility is located at Chai Wan Public Fill Barging Point. The contractor shall enquire with the Public Fill Committee on the availability of public fill and acceptability of the inert material.
- 5.4.2 Sorted non-inert C&D materials (e.g. metal) should be recycled or reused as far as possible. Timber and dismantled bamboo scaffolding should be reused in other projects if the quality remains satisfactory. Felled trees are recommended to be recycled as wood chips for horticultural practices or reused in other projects as far as feasible. In order to recycle felled trees, proper pests and diseases control, disposal of any diseased yard waste, and treatment on the infected debris / soil medium shall be carried out. Non-inert C&D materials which are not recyclable or reusable should be disposed of at landfill, and the closest one is South East New Territories Landfill. The contractor shall enquire with the Environmental Protection Department on the availability of landfill and acceptability of the waste.
- 5.4.3 The estimated waste removal frequency is 70m³/day. A dump truck with an average capacity of 7.5m³, about 10 vehicle trips will be required every day. The number of induced traffic due to waste removal is small. The dump trucks should not be overloaded and the cover should be closed to secure the waste within the dump body to prevent debris from being blown away during transportation.

General Refuse

- 5.4.4 Sufficient rubbish bins or collection area should be provided to maintain the hygiene and tidiness of the works site. (Recycle bins should also be provided for recycling of paper, metal and plastic to encourage recycling. The collected waste shall be removed

at regular interval.

Chemical Waste

- 5.4.5 The Contractor shall register with EPD as a chemical waste producer. Chemical waste shall be stored, handled, transported and disposed in accordance with the *Code of Practice on the Packaging, Labelling and Storage of Chemical Waste* published by the EPD. In addition, all chemical wastes shall be delivered to Chemical Waste Treatment Centre in Tsing Yi by licensed collectors for treatment and disposal in strict compliance with the *Waste Disposal (Chemical Waste) (General) Regulation (Cap. 354C)*.

General Good Site Practices

- 5.4.6 Apart from the measures mentioned in Sections 5.4.1 – 5.4.5, good site practices including but not limited to the followings should be implemented:
- Prepare and implement a site specific Waste Management Plan (WMP) as part of Environmental Management Plan (EMP) in accordance with the *ETWB TC(W) No. 19/2005 – Environmental Management on Construction Sites*, which details waste management method in the form of avoidance, reuse, recovery, recycling, storage, collection, treatment and disposal. It should be approved by the engineer's representative and regularly reviewed;
 - Where applicable, apply for relevant waste disposal permits in accordance with the *Waste Disposal Ordinance (Cap. 354)*, *Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N)*, *Land (Miscellaneous Provisions) Ordinance (Cap. 28)*;
 - A trip ticket system should be implemented as per *Development Bureau Technical Circular (Works) (TC(W)) No. 6/2010, Trip Ticket System for Disposal of Construction & Demolition Materials* to monitor the flow of waste from the site to public fill reception facilities/landfill/chemical waste treatment facilities/recycler;
 - Hire licensed waste disposal contractors for waste collection and removal. Waste should be disposed at appropriate licensed facilities; &
 - Organize training and reminders to site staff on waste minimization through avoidance and reduction, reusing and recycling.

Asbestos

- 5.4.7 All asbestos wastes shall be disposed of according to the "Code of Practice on the Handling, Transportation and Disposal of Asbestos Waste" published by the EPD. The requirements are detailed in a separate Asbestos Abatement Plan.
- 5.4.8 A Registered Asbestos Contractor shall be engaged to carry out asbestos abatement. He shall give notice to the Chemical Waste Collection Licensing Section of the EPD in a prescribed form as required under section 17 of the Waste Disposal Ordinance for dumping of asbestos waste at a Government appointed disposal site, and comply with the trip ticket system for disposal, before the commencement of asbestos abatement works. The Registered Asbestos Contractor should have registered with the EPD as

chemical waste producer and/or been licensed by the EPD as chemical waste collector in order to dispose the asbestos wastes.

- 5.4.9 All asbestos waste once generated from abatement activities should be immediately placed into suitably labelled containers, packed and sealed (debris with sharp edges should be first placed in a nylon bag to prevent the plastic bags from being damaged). All bagged waste should first be thoroughly cleaned by wet-wiping and HEPA vacuumed once packed in each work area inside work zone. The bagged waste should then be transferred to the ground and egress the work zone through the decontamination unit where the bagged waste should be cleaned again to a condition of no visible debris. All asbestos waste in sealed bags is to be temporarily stored in a buffer area or secure store within the building and securely locked at a location or placed in sealed container/skip supplied by the Registered Asbestos Contractor. Only licensed chemical waste collector is allowed to deliver the asbestos waste to landfill site for disposal.

5.5 Conclusion

- 5.5.1 Major solid waste generated by the Project would be C&D materials from demolition work. In addition, other wastes include chemical waste from maintenance of plant equipment and general refuse from workforce. These wastes shall be handled, transported and disposed of using approved methods and the recommended good site practices shall be strictly followed. With these measures no adverse environmental impact is expected during the demolition works.

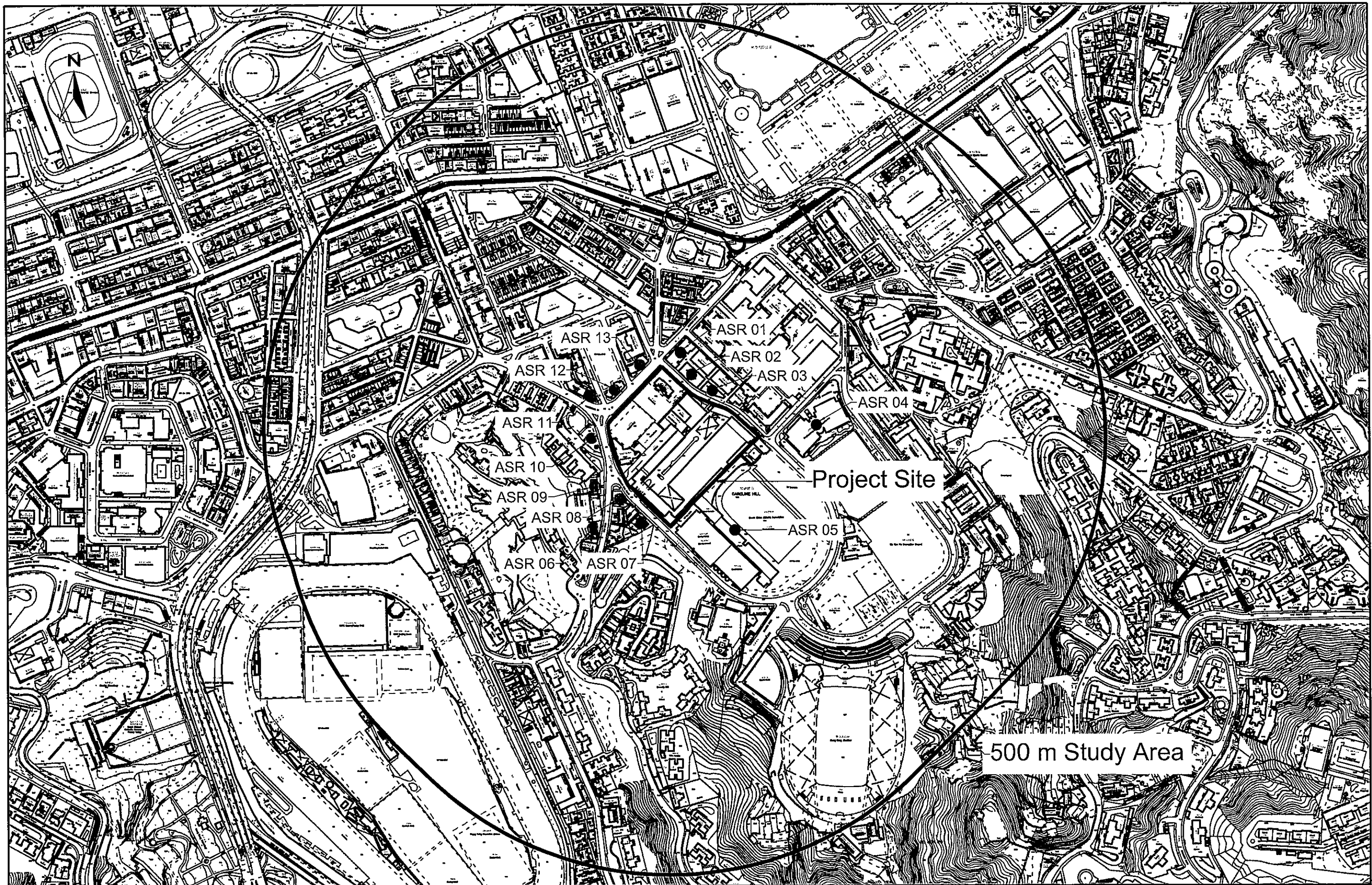
6. CONCLUSION

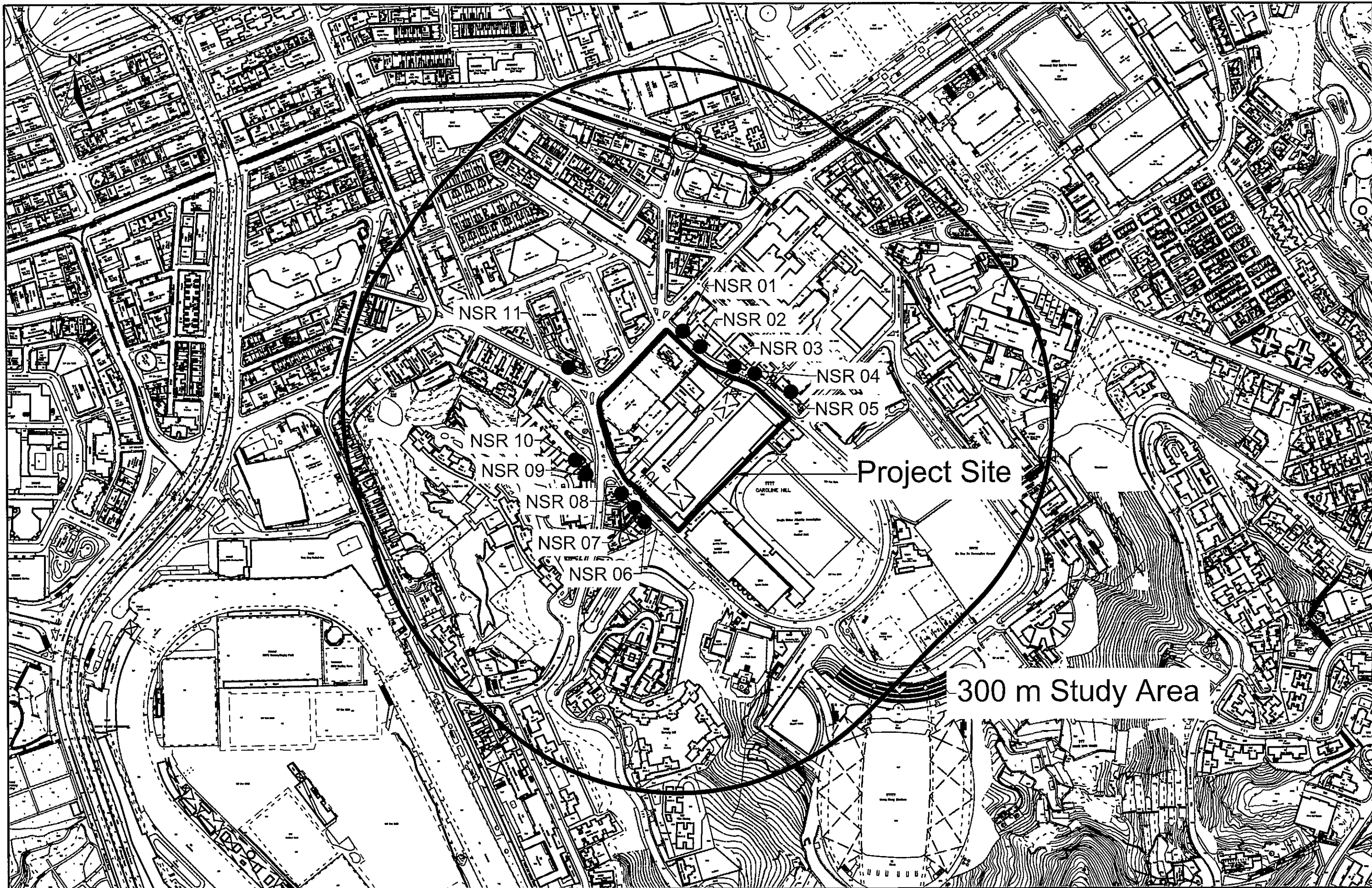
- 6.1.1 A Preliminary Environmental Review has been carried out to evaluate the potential environmental impact likely to arise from the demolition of existing superstructures at Caroline Hill Road Site, Causeway Bay. The key environmental issues of this project are construction noise, dust, water impacts and waste management during the demolition works.
- 6.1.2 Representative air quality sensitive receivers in the Study Area have been identified. Potential air quality impact associated with the Project would be dust generated from demolition work, sulphur from diesel-powered plants and asbestos containing materials. However, with the implementation of dust suppression measures stipulated under the Air Pollution Control (Construction Dust) Regulation and the adoption of good site practice, the impact on air quality is anticipated to be minor and acceptable.
- 6.1.3 Representative NSRs within the Study Area include residential buildings, a place of public worship, a school and a clinic. Major noise concern during demolition works comes from operation of powered plant equipment. By adopting quieter PMEs and implementing proposed mitigation measures, the construction noise level at NSRs is expected to comply with the criteria except NSR10 Po Leung Kuk Chu Lee Yuet Wah Kindergarten. The contractor shall liaise and agree with the school to avoid noisy construction activities during examination period.
- 6.1.4 Major solid waste generated by the Project would be C&D materials from demolition work. In addition, other wastes include chemical waste from maintenance of plant equipment and general refuse from workforce. These wastes shall be handled, transported and disposed of using approved methods and the recommended good site practices shall be strictly followed. With these measures no adverse environmental impact is expected during the demolition works.
- 6.1.5 Although there is no natural water body such as stream and pond in the vicinity of the Project Site, water drainage system (e.g. U-channel) near the Project Site could carry pollutants to receiving waters. Potential water quality impact associated with the Project would be construction site runoff and accidental leakage of chemicals. However, with proper implementation of mitigation measures, the impact on water quality is anticipated to be insignificant.

FIGURES



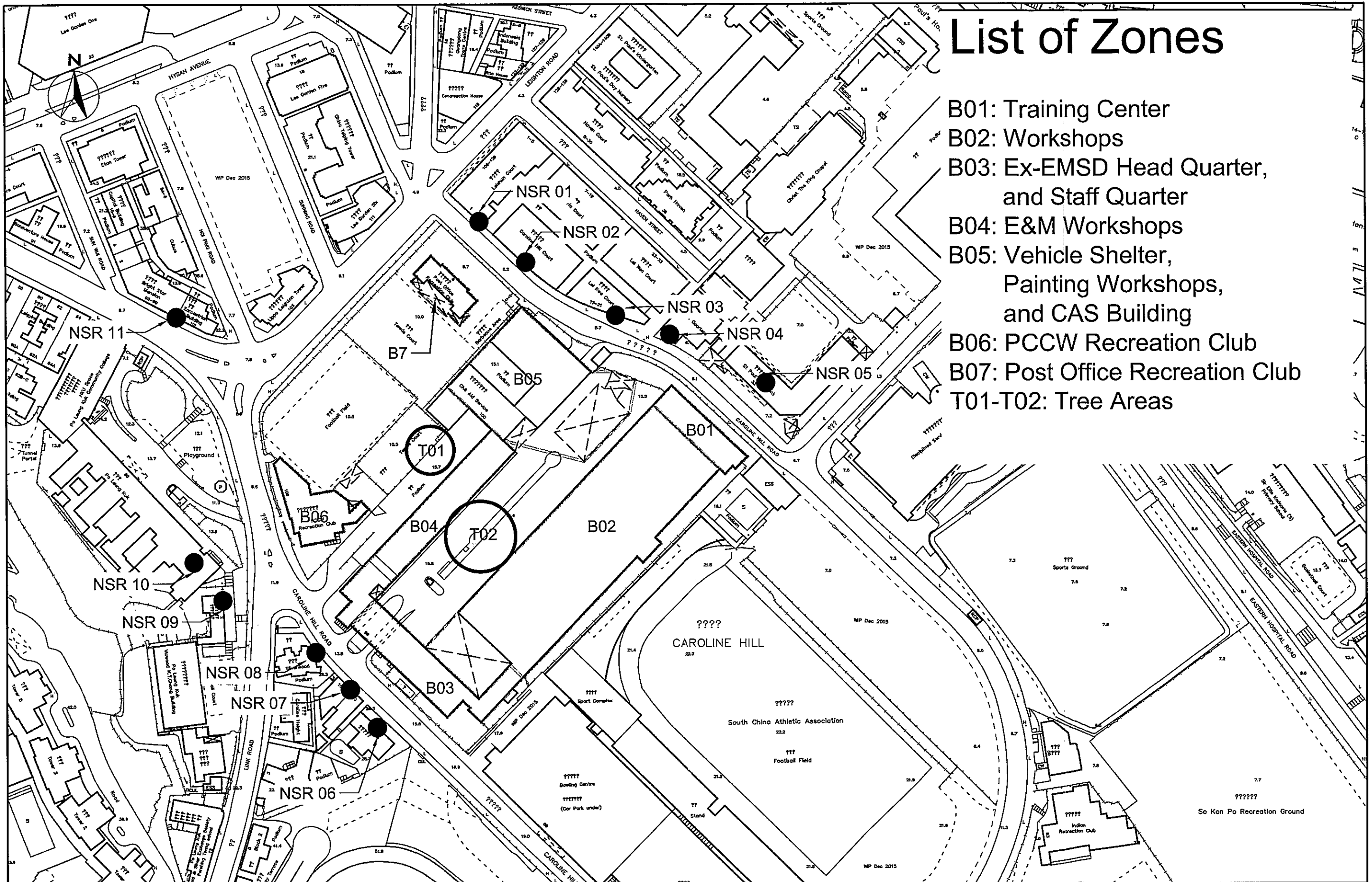
Figure 1-1 Site Plan





List of Zones

- B01: Training Center
- B02: Workshops
- B03: Ex-EMSD Head Quarter, and Staff Quarter
- B04: E&M Workshops
- B05: Vehicle Shelter, Painting Workshops, and CAS Building
- B06: PCCW Recreation Club
- B07: Post Office Recreation Club
- T01-T02: Tree Areas



APPENDIX 3.1
PLANT INVENTORY

Appendix 3.1 - Plant Inventory

Unmitigated Scenario

Location	Type of machine	Quantity	CNP Code	Noise Level, dB(A)	% on time	Barrier Type	Barrier Reduction, dB(A)	Overall Noise level, dB(A)
Phase 1 - Mobilization of equipment by mobile crane								
Zone B01-B07	Crane, mobile mounted (diesel)	1	CNP048	112	100%	-	0	112
Phase 2 - Demolition of superstructure								
Part 2a - Typical demolition works								
Zone B01-B07	Excavator/Loader	1	CNP 081	112	80%	-	0	118
	Dump Truck	1	CNP 067	117	50%	-	0	
	Generator	1	CNP 101	108	100%	-	0	
	Concrete Crusher, excavator mounted	1	Others ^[1]	103	100%	-	0	
	Breaker, hand held	2	CNP 024	108	100%	-	0	
Part 2b - Demolition works near trees to be preserved								
Zone T01-T02	Saw/groover, concrete (petrol)	1	CNP 203	115	50%	-	0	112
Phase 3 - Backfilling and Compaction								
Zone B01-B07	Concrete Crusher, excavator mounted	1	Others ^[1]	103	50%	-	0	114
	Breaker, hand held	1	CNP 024	108	50%	-	0	
	Excavator/Loader	1	CNP 081	112	50%	-	0	
	Roller, vibratory	1	CNP 186	108	100%	-	0	
	Generator	1	CNP 101	108	100%	-	0	

[1] Others - EPD website: http://www.epd.gov.hk/epd/english/application_for_licences/guidance/files/OtherSWLe.pdf

The above plant list represents a single set of PME for each zone.

Mitigated Scenario

Location	Type of machine	Quantity	CNP Code	Noise Level, dB(A)	% on time	Barrier Type	Barrier Reduction, dB(A)	Overall Noise level, dB(A)
Phase 1 - Mobilization of equipment by mobile crane								
Zone B01-B07	Crane, mobile mounted (e.g. LIEBHERR LTM 1500-8.1) ^[2]	1	QPME (e.g. EPD-03745)	108	100%	Movable Noise Barrier	-5	103
Phase 2 - Demolition of superstructure								
Part 2a - Typical demolition works								
Zone B01-B07	Excavator/Loader (e.g. DOOSAN DX225LC) ^[2]	1	QPME (e.g. EPD-03795)	103	80%	Movable Noise Barrier	-5	106
	Dump truck , 5.5 tonne < gross vehicle weight ≤ 38 tonne	1	Others ^[1]	105	50%	Movable Noise Barrier	-5	
	Generator, silenced, 75 dB(A) at 7m	1	CNP 102	100	100%	Movable Noise Barrier	-5	
	Concrete Crusher, excavator mounted	1	Others ^[1]	103	100%	-	0	
	Breaker, hand held (e.g. HILTI TE 800-AVR) ^[2]	2	QPME (e.g. EPD-03776)	101	100%	Movable Noise Barrier	-5	
Part 2b - Demolition works near trees to be preserved								
Zone T01-T02	Saw/groover, concrete (petrol)	1	CNP 203	115	50%	Movable Noise Barrier	-5	107
Phase 3 - Backfilling and Compaction								
Zone B01-B07	Concrete Crusher, excavator mounted	1	Others ^[1]	103	50%	Movable Noise Barrier	-5	105
	Breaker, hand held (e.g. HILTI TE 800-AVR) ^[2]	1	QPME (e.g. EPD-03776)	101	50%	Movable Noise Barrier	-5	
	Excavator/Loader (e.g. DOOSAN DX225LC) ^[2]	1	QPME (e.g. EPD-03795)	103	50%	Movable Noise Barrier	-5	
	Roller, vibratory	1	CNP 186	108	100%	Movable Noise Barrier	-5	
	Generator, silenced, 75 dB(A) at 7m	1	CNP 102	100	100%	Movable Noise Barrier	-5	

[1] Others - EPD website: http://www.epd.gov.hk/epd/english/application_for_licences/guidance/files/OtherSWLe.pdf

[2] The contractor should use plant with similar or lower noise level.

The above plant list represents a single set of PME for each zone.

**APPENDIX 3.2
UNMITIGATED AND MITIGATED
NOISE LEVELS AT NSRS**

Appendix 3.2 - Unmitigated and Mitigated Noise Levels at NSRs

Table 1 - Notional Distance, m

Location	NSR1	NSR2	NSR3	NSR4	NSR5	NSR6	NSR7	NSR8	NSR9	NSR10	NSR11
Zone B01	120	93	51	42	30	187	185	189	216	223	226
Zone B02	138	115	87	75	76	77	77	97	138	151	190
Zone B03	187	177	167	166	172	29	26	36	77	92	164
Zone B04	115	99	96	101	142	75	50	39	75	80	137
Zone B05	61	50	35	48	77	151	141	138	153	155	146
Zone B06	139	139	149	165	196	91	71	55	50	52	88
Zone B07	29	33	69	93	138	187	173	162	161	156	111
Zone T01	96	86	94	110	143	117	104	95	111	109	118
Zone T02	129	112	105	112	133	86	79	85	107	117	154

* The location of the construction zones could be found in Figure 3-2.

Table 2 - Distance Attenuation and Façade Correction, dB(A)

Location	NSR1	NSR2	NSR3	NSR4	NSR5	NSR6	NSR7	NSR8	NSR9	NSR10	NSR11
Zone B01	-47	-44	-39	-37	-35	-50	-50	-51	-52	-52	-52
Zone B02	-48	-46	-44	-42	-43	-43	-43	-45	-48	-49	-51
Zone B03	-50	-50	-49	-49	-50	-34	-33	-36	-43	-44	-49
Zone B04	-46	-45	-45	-45	-48	-42	-39	-37	-42	-43	-48
Zone B05	-41	-39	-36	-39	-43	-49	-48	-48	-49	-49	-48
Zone B06	-48	-48	-48	-49	-51	-44	-42	-40	-39	-39	-44
Zone B07	-34	-35	-42	-44	-48	-50	-50	-49	-49	-49	-46
Zone T01	-45	-44	-44	-46	-48	-46	-45	-45	-46	-46	-46
Zone T02	-47	-46	-45	-46	-47	-44	-43	-44	-46	-46	-49

Table 3 - Unmitigated Noise Level at Receivers, dB(A)

Location	NSR1	NSR2	NSR3	NSR4	NSR5	NSR6	NSR7	NSR8	NSR9	NSR10	NSR11
Criteria (dB(A))	75	75	75	75	75	75	75	75	75	70/65	75
Phase 1 - Mobilization of equipment by mobile crane											
Zone B01	65	68	73	75	77	62	62	61	60	60	60
Zone B02	64	66	68	70	69	69	69	67	64	63	61
Zone B03	62	62	63	63	62	78	79	76	69	<u>68</u>	63
Zone B04	66	67	67	67	64	70	73	75	70	<u>69</u>	64
Zone B05	71	73	76	73	69	63	64	64	63	63	64
Zone B06	64	64	64	63	61	68	70	72	73	<u>73</u>	68
Zone B07	78	77	70	68	64	62	62	63	63	63	66
Phase 2 - Demolition of superstructure											
Part 2a - Typical demolition works											
Zone B01	71	73	79	80	83	67	67	67	66	<u>66</u>	66
Zone B02	70	71	74	75	75	75	75	73	70	<u>69</u>	67
Zone B03	67	68	68	68	68	83	84	82	75	<u>73</u>	68
Zone B04	71	73	73	73	70	75	79	81	75	<u>75</u>	70
Zone B05	77	79	82	79	75	69	70	70	69	<u>69</u>	69
Zone B06	70	70	69	68	67	74	76	78	79	<u>78</u>	74
Zone B07	83	82	76	73	70	67	68	69	69	<u>69</u>	72
Part 2b - Demolition works near trees to be preserved											
Zone T01	67	68	68	66	64	66	67	67	66	<u>66</u>	66
Zone T02	65	66	67	66	65	68	69	68	66	<u>66</u>	63

Location	NSR1	NSR2	NSR3	NSR4	NSR5	NSR6	NSR7	NSR8	NSR9	NSR10	NSR11
Criteria (dB(A))	75	75	75	75	75	75	75	75	75	70/65	75
Phase 3 - Backfilling and compaction											
Zone B01	67	70	75	76	79	64	64	63	62	62	62
Zone B02	66	68	70	71	71	71	71	69	66	65	63
Zone B03	64	64	64	65	64	80	81	78	71	<u>70</u>	65
Zone B04	68	69	69	69	66	71	75	77	71	<u>71</u>	66
Zone B05	73	75	78	75	71	65	66	66	65	65	66
Zone B06	66	66	65	65	63	70	72	74	75	<u>75</u>	70
Zone B07	80	79	72	70	66	64	64	65	65	65	68
Cumulative noise level for works conducted at all Work Zones at the same time											
Phase 1 only	79	79	79	79	79	79	81	80	77	<u>76</u>	73
Phase 2a only	85	85	85	84	85	85	86	86	82	<u>82</u>	79
Phase 2b only	69	70	70	69	67	70	71	71	69	<u>69</u>	68
Phase 3 only	81	81	81	81	81	81	83	82	78	<u>78</u>	75
Phase 2a and Phase 2b (Worst Case)	85	85	85	84	85	85	87	86	82	<u>82</u>	79

** The Cumulative noise level is calculated by the sum of all zones unless otherwise specified.

Exceeded values are bolded.

Exceeded values are underlined for examination period (NSR 10).

Table 4 - Mitigated Noise Level at Receivers, dB(A)

Location	NSR1	NSR2	NSR3	NSR4	NSR5	NSR6	NSR7	NSR8	NSR9	NSR10	NSR11
Criteria (dB(A))	75	75	75	75	75	75	75	75	75	70/65	75
Phase 1 - Mobilization of equipment by mobile crane											
Zone B01	56	59	64	66	68	53	53	52	51	51	51
Zone B02	55	57	59	61	60	60	60	58	55	54	52
Zone B03	53	53	54	54	53	69	70	67	60	59	54
Zone B04	57	58	58	58	55	61	64	66	61	60	55
Zone B05	62	64	67	64	60	54	55	55	54	54	55
Zone B06	55	55	55	54	52	59	61	63	64	64	59
Zone B07	69	68	61	59	55	53	53	54	54	54	57
Phase 2 - Demolition of superstructure											
Part 2a - Typical demolition works											
Zone B01	60	62	67	69	72	56	56	56	54	54	54
Zone B02	58	60	62	64	64	63	63	61	58	58	56
Zone B03	56	56	57	57	56	72	73	70	63	62	57
Zone B04	60	61	62	61	58	64	67	69	64	63	58
Zone B05	65	67	70	68	63	58	58	58	57	57	58
Zone B06	58	58	58	57	55	62	64	66	67	<u>67</u>	62
Zone B07	72	71	64	62	58	56	56	57	57	57	60
Part 2b - Demolition works near trees to be preserved											
Zone T01	62	63	63	61	59	61	62	62	61	61	61
Zone T02	60	61	62	61	60	63	64	63	61	61	58
Phase 3 - Backfilling and compaction											
Zone B01	58	61	66	68	70	55	55	54	53	53	53
Zone B02	57	59	61	62	62	62	62	60	57	56	54
Zone B03	55	55	56	56	55	71	72	69	62	61	56
Zone B04	59	60	60	60	57	62	66	68	62	62	57
Zone B05	64	66	69	66	62	56	57	57	56	56	57
Zone B06	57	57	57	56	54	61	63	65	66	<u>66</u>	61
Zone B07	71	70	63	61	57	55	55	56	56	56	59

Location	NSR1	NSR2	NSR3	NSR4	NSR5	NSR6	NSR7	NSR8	NSR9	NSR10	NSR11
Criteria (dB(A))	75	75	75	75	75	75	75	75	75	70/65	75
Cumulative noise level for works conducted at all Work Zones at the same time											
Early Stage of Project (During demolition, backfilling and compaction at PCCW Recreation Club)											
Phase 1 (B01-B07)	70	70	70	70	70	70	72	71	68	<u>67</u>	64
Phase 2a (B06) + Phase 1 (B01-B05, B07) (Worst Case)	71	70	71	70	70	71	72	72	69	<u>69</u>	65
Phase 3 (B06) + Phase 1 (B01-B05, B07)	70	70	70	70	70	71	72	71	69	<u>68</u>	65
After demolition, backfilling and compaction at PCCW Recreation Club											
Phase 1 (B01-B05, B07)	70	70	70	70	70	70	71	70	65	64	62
Phase 2a (B01-B05, B07)	73	73	73	73	73	73	75	73	68	<u>67</u>	65
Phase 2b (T01-T02)	64	65	65	64	62	65	66	66	64	64	63
Phase 3 (B01-B05, B07)	72	72	72	72	72	72	73	72	67	<u>66</u>	64
Phase 2a (B01-B05, B07) + Phase 2b (T01-T02) (Worst Case)	74	74	74	73	74	74	75	74	70	<u>69</u>	67

** The Cumulative noise level is calculated by the sum of all zones.

Exceeded values are bolded.

Exceeded values are underlined for examination period (NSR 10).

APPENDIX 3.3
PRELIMINARY WORK PROGRAMME

Appendix 3.3 - Tentative Works Programme

Project : Project: Demolition of Existing Superstructures at Caroline Hill Road Site, Causeway Bay, Hong Kong

Tentative Works Programme

Building	Month														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
PCCW Recreation Club (Zone B06)	Phase 1, 2 & 3			Demolition Works Completed											
Other Portions of the Site	Asbestos Abatement ^[1] & Phase 1			Phase 1, 2 & 3											

Phase 1: Mobilization

Phase 2: Demolition

Phase 3: Backfilling & Compaction

Note:

[1] No PME involved in Asbestos Abatement

