



**Reprovisioning of FEHD Sai Yee Street
Environmental Hygiene Offices-cum-vehicle Depot
at Yen Ming Road, West Kowloon Reclamation Area**

Environmental Impact Assessment Report

Executive Summary

June 2013

**Food and Environmental Hygiene Department
The Government of the
Hong Kong Special Administrative Region**



**Architectural Services Department
The Government of the
Hong Kong Special Administrative Region**



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1. INTRODUCTION

- 1.1.1 The existing Sai Yee Street Vehicle Depot in Mong Kok of Food and Environmental Hygiene Department (FEHD) has to be demolished as the land is scheduled to be returned to Lands Department by March 2017. Continuation of the vehicle repairing and maintenance services of the existing Sai Yee Street Vehicle Depot as well as the washing service of the new depot is crucial to ensure the vehicles are clean, hygienic and under normal and safe operation in the FEHD fleet of West Kowloon region including Sham Shui Po, Mongkok, Yau Ma Tei and Tsim Sha Tsui districts. FEHD therefore requires a land piece for housing the existing facilities in Sai Yee Street Vehicle Depot.
- 1.1.2 This Project is to construct and operate a new offices-cum-vehicle depot building (the Depot) at Yen Ming Road, West Kowloon to accommodate the existing facilities in Sai Yee Street Vehicle Depot and to carry out vehicle washing and repairing services for the FEHD fleet in the district and their parking when they are not in operation.

2. PROJECT DESCRIPTION

2.1 PROJECT LOCATION

- 2.1.1 The Project is located on an urbanised area at Yen Ming Road (the Site), which is a land piece zoned as “Government, Institution or Community” use in the Outlined Zoning Plan No. S/K20/28, whilst commercial, residential and institutional uses are located in the proximity. The Site constitutes an area of previously developed reclaimed land which was recently occupied by Civil Engineering and Development Department (CEDD) as site offices and associated storage (just returned). The location of the Site with an area of about 8,278m² is shown in **Figure 2-1**.
- 2.1.2 The Depot will be a five-storey building comprising various facilities for vehicle washing and repair operation, parking of vehicles as well as offices. The lowest three floors will provide vehicle maintenance and vehicle washing facilities for carrying out general vehicle repair and washing activities as well as providing parking spaces for the FEHD vehicle fleet of West Kowloon region. Offices and stores will be mainly located on the higher floors, with green roof design providing substantial landscape features.

2.2 SCOPE OF EIA STUDY

- 2.2.1 In accordance with Item A.6, Part I, Schedule 2 of Environmental Impact Assessment (EIA) Ordinance, this Project is a designated project under the category of “A transport depot located less than 200m from the nearest boundary of an existing or planned residential area / educational institution”. An EIA is required and an Environmental Permit (EP) is to be obtained prior to construction commencement. An application for the EIA Study Brief under Section 5(1) of the EIA Ordinance (EIAO) was submitted by the FEHD on 17 April 2012 with a Project Profile (No. PP-463/2012). The EIA Study Brief (No. ESB-245/2012) was issued by the Environmental Protection Department (EPD) on 25 May 2012 to proceed with an EIA study for the Project.
- 2.2.2 This EIA Report was prepared in accordance with the abovementioned EIA Study Brief (No. ESB-245/2012). The purpose of this EIA study is to provide information on the nature and extent of the potential environmental impacts arising from construction and operation of the Project and associated works that will take place concurrently.

2.3 SELECTION OF PROJECT SCHEME

Design of the Depot

- 2.3.1 The following designs were considered and reviewed in order to optimise the operational and environmental benefits of the facility:-
- **Building Design:** To minimise the potential environmental impacts, in particular on noise and air quality perspectives, different forms of building have been considered and eventually non-open form was preferred for vehicle repairing and washing activities, which are now to be located at ground floor and refined and covered by floors above.
 - **Building Layout:** Layout design was investigated in details in order to strike the balance between operational needs, as well as to cater environmental

considerations. Activities with potential environmental implication / nuisance were located in a confined manner as possible including covered vehicle repairing bays and workshop surrounded by storerooms for noise screening as well as solid partition wall to entirely isolate potential nuisance from the manual vehicle washing bays. Substantial greenery features for enhancing visual quality were also considered.

- **Mechanical Ventilation System:** Mechanical ventilation system is specially arranged for different functional areas. Car parking areas provided with vast amount of openings would have rare usage of associated substantial mechanical ventilation system to minimise potential noise impact from fixed plant system. Whilst sufficient forced air changes would be provided for activities with potential nuisance such as repairing activities at the workshop and vehicle washing.
- **Local Exhaust:** Ventilated exhaust will be treated prior to discharging to the atmosphere. Various gas treatments were evaluated and the most appropriate technology with proven removal efficiency (e.g. activated carbon filter, bio-oxygen generator) will be applied. Location and orientation of the local exhaust were carefully examined to ensure sufficient dispersion and to avoid direct impact to the nearby receivers.

Construction Methodology

2.3.2 Construction of the Depot would involve various typical work stages and conventional building services works. As such, consideration of alternative construction method is focused on the design of the foundation works. According to the ground condition of the Site, two foundation types, namely driven steel-H piling (percussive) and bored piling (non-percussive) as described below were considered:-

- **Steel-H driven piling** is a percussive piling method. It has the supporting capacity more suitable for low rise buildings and higher flexibility in the pile arrangement, enabling higher load/capacity. Minimal waste is generated and fewer plants (e.g. sedimentation tank, grouting machines) are required. The construction time required is relatively short and hence the potential environmental impacts during the construction phase, e.g. construction dust, noise, site effluent, C&D waste, etc would be reduced. It is relatively the most cost effective pile system.
- **Bored piling** is a non-percussive piling method with high pile capacity suitable for medium to high rise buildings. Quality of pile can be controlled effectively. Nevertheless, the construction time is long (especially in rock) in comparison to other pile types. Also, it needs to reach deep bedrock and with long pile length for end-bearing piles in rock. It is relatively more expensive compared to driven-H piling.

2.3.3 Although relatively less noise and vibration would be generated by bored piling during construction, the excavation would be comparatively substantial and not cost effective when compared to driven steel H-pile. Therefore, driven steel H-pile would be selected for the proposed Depot.

2.4 PREFERRED OPTION

2.4.1 Based on the above considerations of alternatives, a preferred option has been

selected in the design phase of this Project is summarised below, based on which this EIA study was carried out:

- Optimum design for building design, facilities layout, ventilation and local exhaust design; and
- Optimum construction method using steel-H driven piling.

2.4.2 This preferred option is determined upon the comparison of the feasibility in line with the environmental benefits and dis-benefits of the various options and alternatives. It was also selected on the principle of minimising the environmental impacts and optimising overall environmental benefits and acceptability over the other options.

2.5 PROJECT IMPLEMENTATION PROGRAMME

2.5.1 The construction works are planned to be commenced in late 2014 and to be completed in late 2016/ early 2017, upon which mobilisation and installation of the equipment will be carried out. The new building will then be handed over to FEHD for operation.

2.6 ENVIRONMENTAL BENEFITS

2.6.1 The Project is to re-provision the existing Sai Yee Street Vehicle Depot by another site, in order to return the land at Sai Yee Street to Lands Department. A plan is noted proposing to redevelop the site including commercial development above a public transport interchange (PTI), as well as provision of public open space and preservation of the existing mature trees at the site.

2.6.2 As such, the heavy traffic flows and traffic jam suffered currently at Sai Yee Street would be re-organised and resolved, which would relieve air quality in local extent from traffic emissions.

2.6.3 Furthermore, as mentioned above, public open space is to be developed, where landscaping areas would be enhanced and thus favouring the landscape and visual quality in the area.

2.6.4 Moreover, the existing depot was built and has been operating for a long period of time. Limited comprehensive environmental measures could be incorporated into the design of the existing depot due to technical and spatial constraints. This might impose certain concerns from the neighbour (e.g. noise and odorous emission during vehicle repairing works). With the Project to re-provision the existing depot, the environmental nuisance to the surrounding at Sai Yee Street site will be totally eliminated. Meanwhile, with the adequately designed environmental protection measures to be incorporated to the facilities as needed, particularly at the odorous areas like washing bays and workshops to be arranged at enclosed building envelop with sufficient negative ventilation and odour removal equipment prior discharging the vent gas where the vent location and orientation also examined, such nuisance will not be relocated / transferred to the proposed new site.

2.6.5 Last but not the least, extensive greening measures (pedestrian and roof levels, as well as facades) would be incorporated into the new Depot, which could be beneficial to landscaping and visual quality of the area, comparing with the CEDD's site offices and

associated storage areas (just returned), and thus enhance the living quality of the environment.

2.7 PUBLIC CONCERNS

- 2.7.1 During the course of planning and development of the Project, local public has been communicated and liaised. In particular, meetings / forums were held to consult the local residents, encouraging them to express views and concerns.
- 2.7.2 Amongst different issues raised from the local residents, environmental concerns were also expressed, such as potential smelling issues from the activities, road vehicular noise and air emissions, as well as the selection of traffic routing of the future vehicle fleets.
- 2.7.3 Once the said concerns were received and well noted, the Project Team has examined various optimisations and design enhancements for the Project to resolve the local's comments, including the provision of odour removal equipment and ventilation system, as well as traffic re-routing of vehicle fleet away from the concerned road lanes and receivers, in order to minimise nuisance to the locals.
- 2.7.4 The associated environmental nuisances have been adequately assessed in the following chapters of the report to address public concerns.

3. KEY FINDINGS OF ENVIRONMENTAL IMPACT ASSESSMENT

3.1 AIR QUALITY IMPACT

Construction Phase

- 3.1.1 There would be no major earthworks carried out for the site formation works for the Site. Only minor excavation works would be anticipated for the construction of the concrete footing for the support of the sandwich roof and, also, the underground drainage and plumbing works. Since the amount of construction and demolition (C&D) materials generated would be minimal, impacts from the transportation of dusty materials would be unlikely.
- 3.1.2 With the implementation of sufficient dust suppression measures as stipulated under the Air Pollution Control (Construction Dust) Regulation, adverse construction dust impact would not be anticipated.

Operation Phase

- 3.1.3 Potential sources of air pollutant emissions would be from vehicular movement and idling vehicles with their started engines within the Depot. Vehicular emissions from the surrounding open roads would also be a dominant source of air pollutants to the Project. Air modelling was used to evaluate concentration of major pollutants from vehicular exhaust, which are Nitrogen Dioxide (NO₂) and Respirable Suspended Particles (RSP), from the open roads within 500m study area.
- 3.1.4 The worst-case scenario determined based on the highest Nitrogen Oxides (NO_x) emission scenario using the EMFAC-HK is Year 2017. The highest 1-hour, 24-hour and annual concentrations of NO₂ are 137.98, 92.65 and 77.68 µg/m³ respectively. For RSP, the highest 24-hour and annual concentrations are 57.27 and 53.29 µg/m³ respectively. The simulation indicated that the concentration of NO₂ and RSP are in compliance with Air Quality Objectives.
- 3.1.5 Odour analysis conducted for the operation of the Project revealed that potential odour emission and minimal spread in the Depot would be localised only in the washing bay. Mechanical ventilation adopting with proper installation and maintenance of deodourisation system, as well as the dilution along considerable buffer distance between the Depot and the adjacent ASRs will be provided.
- 3.1.6 Therefore, no adverse air quality impacts would be anticipated due to limited vehicular emissions from the repairing and parking activities. Also, with implementation of described engineering design, potential odour nuisance associated with the operation of the Depot is anticipated to be negligible.

3.2 NOISE IMPACT

Construction Phase

- 3.2.1 The potential sources of noise impact during the construction phase of the Project which would mainly be the use of Powered Mechanical Equipment (PME) for various construction activities have been assessed according to *Technical Memoranda on Noise from Construction Work Other Than Percussive Piling* under *Noise Control*

Ordinance. The predicted cumulative construction noise levels at representative NSRs under unmitigated scenario ranged from 58 to 72 dB(A), resulting in exceedance of the daytime construction noise criteria during normal working hours at 3 nos. of NSRs. By employing quiet PMEs, temporary noise barriers, noise jackets, mufflers, and limiting the number of plants operated concurrently, the mitigated noise levels at representative NSRs were predicted to be 55 to 65 dB(A). Therefore, adverse construction noise impact is not anticipated.

- 3.2.2 In addition, it is recommended that more detailed construction work programme should be considered before actual construction work is undertaken by the contractor, and applicable noise mitigation measures should be implemented according to the actual site condition and constraints, in order to minimise the potential cumulative construction noise impact with concurrent projects. In particular, the contractor shall keep close liaison with the nearby educational institutions, and special arrangement on PME operations should be determined during school examination periods.

Operation Phase

- 3.2.3 Fixed plant noise and off-site traffic noise were identified as potential operational noise from the Depot.
- 3.2.4 Identified fixed plant noise sources including (a) workshop vehicle repair activities and (b) Mechanical Ventilation and Air Conditioning System (MVAC) installation have been assessed according to *Technical Memorandum for the Assessment of Noise from Places other than Domestic Premises, Public Places or Construction Sites under Noise Control Ordinance*. With a maximum allowable Sound Power Level (SWL) of 90 dB(A) for each of the plant room equipment and measured SWL for workshop vehicle repair activities, the results revealed that the predicted maximum noise levels at the identified NSRs would be 46.6 to 58.2 dB(A) at day-time and 43.7 to 54.9 dB(A) at night-time, which would comply with noise criteria. With the implementation of the recommended mitigation measures for both workshop vehicle repair activities and MVAC installation, adverse impact to the NSRs due to fixed plant noise would not be anticipated during operation phase.
- 3.2.5 The off-site traffic noise contribution generated by the Depot for the short-term period and long run are represented by Year 2017 and 2032 respectively which would be the occupation year and 15 years after operation. Based on the insignificant off-site traffic generation and routings for the Project development, the assessment results demonstrated that the operation of the FEHD Depot would introduce insignificant traffic noise impact less than 1.0 dB(A) at all representative NSRs for short-term period and in the long run.
- 3.2.6 Moreover, environmental benefits by the development of the Depot as a noise tolerate building fronting some of the NSRs could also contribute traffic noise reduction by up to 1.7dB(A).

3.3 WATER QUALITY AND SEWAGE IMPACT

Construction Phase

- 3.3.1 Potential water pollution sources have been identified as construction site run-off, sewage from workforce, and potential risk of chemical spillage. Mitigation measures

including the implementation of the construction site practices in accordance with the EPD's ProPECC PN 1/94 Construction Site Drainage, provision and management of portable toilets on-site, and preventive measures to avoid accidental chemical spillages are recommended to mitigate any adverse water quality impacts, based on which adverse residual impacts would not be anticipated.

Operation Phase

- 3.3.2 There would be sewage discharged and treatment implications during the operation of this Project. Sewage from the Depot is anticipated to be generated mainly from the toilet and shower facilities in the workshop and office, while potentially polluted run-off is anticipated to be generated from the cleaning activities at the vehicle washing bays and maintenance areas. Automatic vehicle washing machine equipped with simple filtration and disinfection before reuse by the machine will be provided. With the implementation of the recommended mitigation measures based on the findings of this EIA study, adverse water quality impact would not be anticipated.

3.4 WASTE MANAGEMENT IMPLICATIONS AND LAND CONTAMINATION

Construction Phase

- 3.4.1 The major waste stream identified during construction phase will be C&D materials, followed by C&D wastes, chemical wastes and general refuse. Measures at design stage to reduce waste generation were recommended. Adoption of driven H-pile was proposed to avoid generation of excavation wastes and marine sediment. Estimated amount of C&D materials to be reused on-site or off-site as public fill would be approximately 40,800m³. Opportunities for minimising waste generation via on-site sorting and reusing at least one-third of excavated soil for backfilling upon the completion of excavation works for substructure were identified.
- 3.4.2 Provided that the recommended waste management measures are implemented, unacceptable environmental impacts would not be expected to arise from the handling, storage, transportation and disposal of wastes and chemicals during the construction phase of the Project.
- 3.4.3 Land contamination during construction phase would not be anticipated.

Operation Phase

- 3.4.4 The waste streams generated during the operation phase of the Project would be chemical wastes arising from repairing and maintenance activities of vehicles and general refuse. Measures to ensure proper treatment and disposal of these wastes have been provided and no significant waste implications would be anticipated.
- 3.4.5 In view of the paved site and recommended preventive measures, it is anticipated that land contamination during operation would be avoided.

3.5 LANDSCAPE AND VISUAL IMPACT

Construction Phase

- 3.5.1 Out of the total 16 trees surveyed within the Site, the Project will result in felling of 15

trees which are of the invasive exotic species, *Leucaena leucocephala* (銀合歡), having direct conflict with the proposed car parking spaces and access road for the vehicle depot. Given the limited footprint of the Depot, no significant impacts on the identified LR and LCAs will be anticipated except for impacts on Vacant Land Vegetation (LR 5-3) and Open Space/Vacant Land (LCA 4) due to felling of 15 common trees of the Site.

- 3.5.2 Due to the close proximity of Traveller of Yen Chow Street West (VSR T02), Traveller of Yen Ming Road (VSR T03) as well as Users/ Visitors of Wholesale Food and Fish Market (VSR P02), to the Site where these Visual Sensitive Receivers may have glimpse to full view of the Site, the construction activities may impose some visual impact on the viewers. Nevertheless, in view of their transient nature of use, the magnitude of change of VSR T02, VSR T03 and VSR P02 due to the construction activities is considered as small. As a result, with low sensitivity and small magnitude of change, slight visual impacts are anticipated.
- 3.5.3 With the implementation of mitigation measures such as control of construction activities and temporary landscape treatment during construction phase, the Project will inevitably result in some landscape impact but no adverse visual impact during the construction phase.

Operation Phase

- 3.5.4 To compensate for the trees lost during construction phase, 27 compensatory trees will be planted on-grade and on 3/F. Landscape design which includes an area of about 630m² of tree and shrub planting on ground floor pedestrian zone, as well as an area of about 1,400m² of tree and shrub planting on roof garden would be provided in place before the completion of construction work of the Project.
- 3.5.5 Following the completion of construction activities, the magnitude of change would be further reduced as the proposed landscape mitigation measures would help screen and soften the operational phase impact of the building on the surrounding landscape. At Year 10, the trees and shrub planting will be matured and further screening views for the surrounding VSRs. On the contrary, ground floor planting, vertical greening and roof gardens will be provided for the proposed Depot during operation phase. Both landscape and visual impact would become negligible in Year 10 when the mitigation measures are already established.
- 3.5.6 Comparing with the original setting of the Site before the proposed project where undesirable and weedy species are located at the Site, the overall landscape character and visual quality of the Site would be improved, with the provision of landscape design including ground floor planting at pedestrian zone, vertical greening and roof gardens for the Depot. According to Annex 10 of EIAO-TM, the landscape and visual character of the Site have been complemented and therefore landscape and visual impact arising from the Depot is considered as beneficial.

4. ENVIRONMENTAL MONITORING AND AUDIT

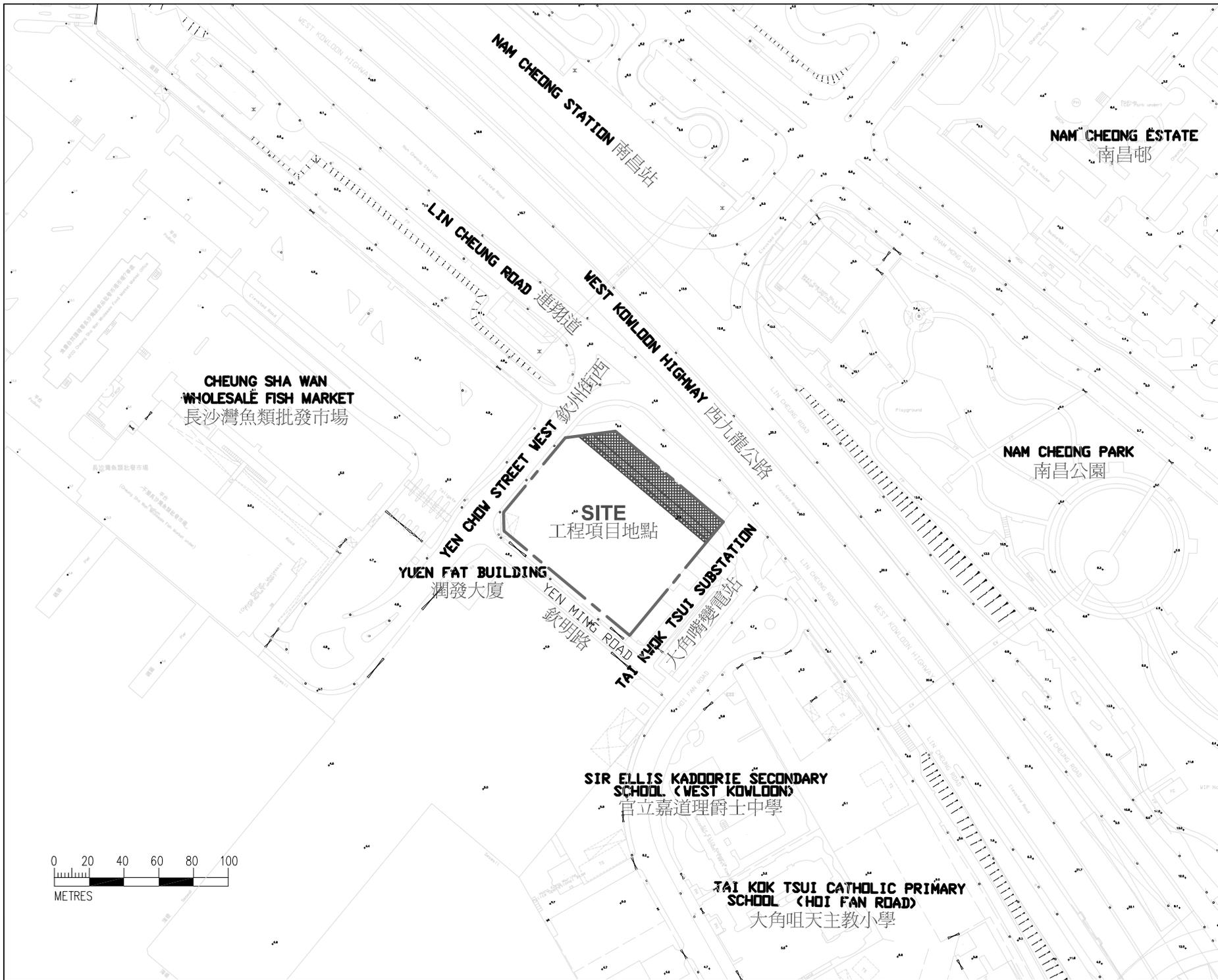
- 4.1.1 Based on the assessment on various environmental parameters, programme and methodologies, Environmental Monitoring and Audit (EM&A) are recommended for evaluating the environmental performance and compliance or implementing the Project. The EM&A programme provides systematic procedures for monitoring, auditing and minimising the environmental impacts associated with the construction and operation of the Project.
- 4.1.2 Regular audit for all aspects through site inspection and supervision during construction phase is recommended. Environmental monitoring for airborne noise in $L_{eq-30min}$ during construction phase and odour removal efficiency for the odour removal unit during the first year of operation are also proposed.

5. CONCLUSIONS

- 5.1.1 EIA for the Project has been conducted to assess the likely environmental impacts arising from the construction and operation of the Project in accordance with the EIA Study Brief. With the implementation of recommended environmental measures as well as the EM&A programme, where necessary and practicable, during construction and operation phases, it is envisaged that the adverse residual impacts would not be anticipated.

Figure 2-1

Site Layout Plan



NOTE: 注釋:
 COORDINATES ARE RELATED TO
 HONG KONG METRIC GRID (1980)
 坐標與香港1980年格網坐標有關

LEGEND: 圖例:
 工地範圍
 UTILITY RESERVE
 公用設施預留用地

Rev.	Date	Description	Drawn	Checked
修訂	日期	描述	繪圖	校核

Department (Project Proponent) 部門(項目發起人)
 Food and Environmental Hygiene Department
 食物環境衛生署

Department (Works) 部門(工務)
 ARCHITECTURAL SERVICES DEPARTMENT
 建築署

Lead Architect (Consultancy Agreement No. SAK 034):
 建築師(顧問合約編號SAK 034)
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Project Title 項目名稱
 REPROVISIONING OF FEHD SAI YEE STREET ENVIRONMENTAL HYGIENE OFFICES-CUM-VEHICLE DEPOT AT YEN MING ROAD, WEST KOWLOON RECLAMATION AREA
 在西九龍填海區欽明路重置食物環境衛生署洗衣街環境衛生辦事處車房

Drawing Title 圖名
SITE LAYOUT PLAN
 位置圖

Drawing No. 圖號		Figure 2-1 圖 2-1	
Designed 繪圖	THWY	Checked 校核	STWY
Drawn 繪圖	STWY	Scale 比例	AS SHOWN
Approved 校核	HTM	Date 日期	JUN 2015
		Status 狀態	FINAL

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