



The Government of the Hong Kong Special Administrative Region
Civil Engineering and Development Department

**PWP Item No. B783CL
Infrastructural Works for Proposed Developments
at Queen's Hill, Fanling**

**Queen's Hill Sewage Pumping Station
Project Profile**

October 2015

AECOM Asia Co. Ltd.

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1 BASIC INFORMATION

1.1 Project Title

- 1.1.1.1. Queen's Hill Sewage Pumping Station (QHSPS) (hereinafter referred to as "the Project").

1.2 Purpose and Nature of the Project

- 1.2.1.1. The Project is part of the proposed Infrastructural Works for Proposed Developments at Queen's Hill (QH), Fanling¹. The purpose of the Project is to construct and operate a sewage pumping station at Lung Ma Road to cope with sewerage needs of the planned developments at Queen's Hill development site (QHD).

1.3 Name of Project Proponent

- 1.3.1.1. Civil Engineering and Development Department (CEDD) is the project proponent of the Project.

1.4 Location and Scale of Project and History of Site

- 1.4.1.1. The Project site is near Ma Liu Shui San Tsuen at Queen's Hill, which is currently occupied by few scattered village houses. It is located within "Government, Institution or Community" (G/IC) zone on the Lung Yeuk Tau & Kwan Tei South Outline Zoning Plan (OZP) No. S/NE-LYT/16. The site area is approximately 1,500 m². Location of the Project is shown in **Figure 1.1**.

- 1.4.1.2. The proposed QHSPS has an average dry weather flow (ADWF) of about 11,000 m³ per day. General layout plan and details of the design are provided in Appendix A.

1.5 Number and Type of Designated Project to be Covered by This Project Profile

- 1.5.1.1. Since the proposed QHSPS will have an installed capacity of more than 2000 m³ per day and the clearance between the existing/planned residential area and planned education institution will be less than 150m, it is classified as Designated Project under F.3(b) of Part I, Schedule 2 of Environmental Impact Assessment Ordinance (EIAO).

- 1.5.1.2. This Project Profile is to seek permission to apply directly for an Environmental Permit for the construction and operation of the Project under Section 5(11) of the EIAO.

1.6 Name and Telephone Number of Contact Person(s)

Ms. FONG Hau Yin, Fiona
Engineer, Housing Projects Division, CEDD
3/F, Civil Engineering and Development Building,
101 Princess Margaret Road, Ho Man Tin, Kowloon.
Tel: 2762 5673
Fax: 2714 0103

¹ The PWP Item No. B783CL "Infrastructural Works for Proposed Developments at Queen's Hill, Fanling" was recently retitled as "Infrastructure Works for Development at Queen's Hill, Fanling". Nevertheless, the former title is adopted throughout this Project Profile for consistency with other relevant documents.

2 OUTLINE OF PLANNING AND IMPLEMENTATION PROGRAMME

2.1 Project Planning and Implementation

2.1.1.1. The Consultants, engaged by the Housing Projects Division of CEDD, will carry out the design and construction supervision of the Project. The Sewage Treatment Division 1 and Hong Kong & Islands Division (Buildings / Civil Maintenance Team) of Drainage Services Department (DSD) will operate and maintain the completed works.

2.2 Project Time-table

2.2.1.1. The planning and design of the proposed works have been in progress since February 2015. Construction of the Project is scheduled to commence in year 2016 for completion / commissioning in year 2019 to tie in with the population intake of the proposed public housing development at QH in 2020/2021 tentatively.

2.3 Interactions with Other Projects

2.3.1.1. Other projects with construction period overlapping with and within 500m from this Project during construction and/or operational phases are shown in **Table 2.1** and illustrated in **Figure 2.1**. The potential cumulative environmental impacts are addressed in **Sections 4.2.1.2** and **4.2.2.3**.

Table 2.1 - Summary of Concurrent Projects

Project Title	Works	Tentative Construction Period
1. Infrastructural Works for Proposed Developments at QH, Fanling	Lung Ma Road Widening and associated sewerage (including gravity sewer and sewage rising mains (SRM) outside QHSPS's boundary), drainage and utilities installation	End 2016 – March 2019
	Sewerages installation along Sha Tau Kok Road (STKR)	End 2016 – End 2019
2. Public Housing Development at QH	Site formation, piling, building, road and utilities installation works	Mid 2016 – Mid 2021
3. Planned Electric Sub-station (ESS) near Ma Liu Shui San Tsuen	Piling, building and E&M installation works	October 2017 – March 2019

3 MAJOR ELEMENTS OF THE SURROUNDING ENVIRONMENT

3.1.1.1. The Project site has been developed and currently occupied by some scattered village houses and open storages and its surrounding areas have been disturbed by village development. A fire station and an Electric Sub-station (ESS) are planned to be located to the north and to the south of the site, respectively. Fire Services Department (FSD) has not advised any proposal for inclusion of staff quarter in the planned fire station.

3.1.1.2. The identified nearest existing and planned air and noise sensitive receivers in the vicinity are listed in **Table 3.1** and indicated in **Figure 3.1**.

Table 3.1 - Representative Air and Noise Sensitive Receivers

Sensitive Receiver	Description	Land Use	Number of Floors	Approximate Horizontal Distance from the Nearest Site Boundary (m)
Representative Air Sensitive Receivers				
A1	Ming Yiu Yuen	Residential	2	21
A2	The Church of Jesus Christ of Latter-day Saints	G/IC	2	37
A3	No. 43, Hai Wing Road	Residential	2	55
A4	Chi Sau Lo	Residential	2	38
PA1	Proposed Primary School at Lung Ma Road	G/IC	7	43
Representative Noise Sensitive Receivers (NSRs)				
N1	Ming Yiu Yuen	Residential	2	21
N2	The Church of Jesus Christ of Latter-day Saints	G/IC	2	37
N3	No. 43, Hai Wing Road	Residential	2	55
N4	Chi Sau Lo	Residential	2	38
PN1	Proposed Primary School at Lung Ma Road	G/IC	7	43

3.1.1.3. The proposed QHSPS is located in a rural area with low to middle density of residential developments. The Area Sensitivity Rating (ASR) of the type of area within which the representative NSRs are located and the corresponding basic noise levels (BNLs) were determined according to the Technical Memorandum on Noise from Places other than Domestic Premises, Public Places or Construction Sites (IND-TM).

3.1.1.4. Noise measurement at the representative NSRs was also conducted in April 2015 to obtain the prevailing background noise levels. The measured prevailing background noise levels, ASR and fixed noise criteria are presented in **Figure 3.1**.

3.1.1.5. The water quality sensitive receivers near the Project site comprise the channelized Ma Wat River and Ng Tung River at approximately 780 m and 300 m away from the Project site respectively (**Figure 3.2**).

3.1.1.6. There are no declared monuments, historic buildings or structures identified within 500 m from the Project site. The Queen's Hill Site of Archaeological Interest (SoAI) is located at more than 50m away from the site.

3.1.1.7. The site is comprised of developed area/wasteland habitat dominated by common tree and herb species. No recognized site of ecological sensitive area was identified.

4 POTENTIAL IMPACTS ON THE ENVIRONMENT

4.1 Outline of Process Involved

- 4.1.1.1. Sewage collected from the planned developments at QH will be conveyed to the QHSPS via gravity sewers. Sewage inside the QHSPS will be screened to avoid damaging the pumps due to large objects. The screened sewage will then enter into a wet well before being pumped out to Shek Wu Hui Sewage Treatment Works (SWHSTW) via twin SRM.
- 4.1.1.2. The proposed SPS comprises an underground covered inlet chamber, mechanical screens (one duty and one standby), wet wells, underground flow meters & valve chamber with pumps (two duty and one standby pump), a control panel & a switchboard, ventilation systems, a deodorization (DO) unit, and a chemical dosing unit. The QHSPS will be fully enclosed by a single-storey concrete structure.
- 4.1.1.3. The proposed QHSPS would impose environmental impacts during its construction and operational phase as described below.

4.2 Potential Environmental Impacts during Construction Phase

4.2.1 Air Quality

- 4.2.1.1. Fugitive dust emissions would be generated from construction activities including site formation, foundations, wind erosion of open site and stockpiling areas. However, in view of the small scale of the Project and the limited site area (approximately 1,500 m²), potential air quality impact would be short-term and limited and could be well controlled through implementing dust suppression measures as described in **Section 5.1.1**. With the implementation of the dust suppression measures, adverse air quality impacts due to the construction of the Project is not anticipated.
- 4.2.1.2. Major dusty construction activities (i.e. excavation works and site formation) for QHSPS may overlap with the construction activities of other projects as described in **Table 2.1**. With the implementation of the dust suppression measures as described in **Section 5.1.1**, adverse cumulative construction dust impact is not anticipated.

4.2.2 Noise

- 4.2.2.1. Construction of the proposed QHSPS would mainly involve site clearance and formation, soil excavation, foundation works, superstructure, and concreting works. Potential noise impacts arising from these construction activities would be the use of powered mechanical equipment (PME) such as excavator, lorry, mobile crane, concrete lorry mixer, poker, etc. It is anticipated that the noise nuisance arisen from the construction of the proposed QHSPS would be minor in view of the small-scale construction activities and works area. With the implementation of the standard noise control measures in **Section 5.1.2**, adverse construction noise impact is not anticipated.
- 4.2.2.2. No construction work during restricted hours is expected. A Construction Noise Permit is required under the Noise Control Ordinance (NCO) in case the construction works are to be carried out during night-time (1900 – 0700), Sundays and public holidays.
- 4.2.2.3. Construction activities of the concurrent projects as listed in **Table 2.1** would be localized and noisy activities would be well coordinated on site; therefore, adverse cumulative construction noise impact from these concurrent projects is not anticipated.

4.2.3 Water Quality

- 4.2.3.1. Potential impacts would arise from uncontrolled surface runoff and erosion of exposed soil, earthworks, and stockpiles during storm events. Muddy water may also be generated from the construction activities such as dust suppression sprays, dewatering during excavation, and washing of construction equipment. Nevertheless, in view of the limited scale of the Project and with proper implementation of mitigation measures as presented in **Section 5.1.3**, adverse water quality impact during construction phase is not anticipated.

4.2.4 Waste Management

- 4.2.4.1. The types of waste generated during construction phase of the Project include Construction and Demolition (C&D) Materials, Chemical waste, and General refuse.
- 4.2.4.2. C&D materials and waste include excavated spoil (soil and rock), unusable concrete and grout, wood, metal scraps, equipment parts, and packaging materials. The volume of different types of C&D materials that may be generated from the construction of the Project is summarized in **Table 4.1**. With the implementation of the mitigation measures as presented in **Section 5.1.4**, adverse environmental impacts arising from the storage, handling, and transportation of C&D materials and waste would not be anticipated.

Table 4.1 - Predicted Volume of Different Types of C&D Materials

Type of C&D Materials	Volume (m ³)
All C&D materials	4,900
All inert C&D materials	4,700
Inert C&D materials to be reused on site as backfilling materials	1,000
Inert C&D materials to be disposed of at public filling reception facilities (PFRF)	3,700
Non-inert C&D materials to be reused, recycled or disposed of at landfill	200

- 4.2.4.3. General refuse comprising of food scraps, waste paper, empty containers, etc. would be generated from workers; however, the quantities would be insignificant due to the limited number of workers (less than 15 per day) for such small scale of works and limited space of each works front. With the implementation of the mitigation measures in **Section 5.1.4**, adverse environmental impacts arising from the storage, handling, and transportation of general refuse would not be anticipated.
- 4.2.4.4. Small amount of chemical waste would be generated from the maintenance of construction plants /equipment, and it should be collected by licensed collectors and disposed of at the Chemical Waste Treatment Centre (CWTC) at Tsing Yi. All possible opportunities should be taken to reuse and recycle the materials. Provided the chemical wastes are handled and disposed of in accordance with the mitigation and control requirements in **Section 5.1.4**, adverse environmental impacts would not be anticipated.

4.2.5 Ecology

- 4.2.5.1. The site is comprised of developed area/wasteland habitat dominated by common tree and herb species. No areas of ecological value (e.g. woodland and natural stream) were identified within or in the vicinity of the site. As such, no adverse ecological impact is anticipated.

4.2.6 Cultural Heritage

- 4.2.6.1. There are no historic monuments or buildings or structures located within or close to the Project. The Project site is more than 50 m away from the Queen's Hill Site of Archaeological Interest (SoAI). No direct impact to the archaeology would be anticipated. Potential impact on cultural heritage resources is not anticipated during the construction of the Project.

4.2.7 Land Contamination

- 4.2.7.1. A review of the historical aerial photographs from Lands Department as shown in **Appendix B** was undertaken to identify the potential contaminative activities within the Project Site. A site walkover was also conducted on 1 April 2015 to identify any potential lands contamination site.
- 4.2.7.2. The whole Project Site was occupied by farmlands in 1964. The existing substation, at the western end of the Project Site, was firstly noted in the 1976 topographic survey map and in the aerial photograph in 1977. In 1992, a suspected car park / workshop was noted in the eastern portion of the Project Site. The remaining areas appeared to be used only as Lung Ma Road, village houses or vegetated land. No significant change was observed from 1992 to 2014.
- 4.2.7.3. Land uses include substation (**Photo No. 2 in Figure 4.1**) and the suspected car park / workshop (**Photo No. 4 in Figure 4.1**) may cause potential land contamination if there is contamination due to past and/or present activities within these facilities. The extent of contamination, if any, is not expected to be extensive in view of the small areas of encroachment.
- 4.2.7.4. As these two potential sites were not accessible at the time of reporting, further site appraisal will be carried out when site access is available and before any construction works commenced, to confirm the presence and, if any, extent of soil and groundwater contamination; and detailed land contamination assessment will be conducted if land contamination is ascertained.
- 4.2.7.5. The operator (CLP Power Hong Kong) confirmed that no existing underground oil/petroleum storage tank was installed within the substation site; however, it involves handling of transformer oil, whereas car workshop may involve the handling and storage of oils, fuels, lubricants and solvents. The potential chemicals of concern (COCs) for these two operations may include metals, volatile organic chemicals (VOCs), semi-volatile organic chemicals (SVOCs), petroleum carbon ranges (PCRs), and polychlorinated biphenyls (PCBs) which can be handled satisfactorily with proven technologies in Hong Kong such as biopiling and cement solidification/stabilisation (cement s/s).
- 4.2.7.6. Considering the small extent of potential lands contamination and with the proven treatment method to be implemented before commencement of construction works, no insurmountable lands contamination impact to both the construction workers and the future operators of the proposed QHSPS would be anticipated.

4.2.8 Landscape and Visual

- 4.2.8.1. The location of the proposed Sewage Pumping Station (SPS) is near Ma Liu Shui San Tsuen at QH, which is currently occupied by a few scattered village houses. Based on a broad-brush tree survey, ~11 nos. of existing trees are within the project boundary and would be affected. None of them are Registered Old and Valuable Tree (OVT) or potential OVT. They are generally with medium to low amenity value, poor to fair health, and in poor to fair form. Species found include *Acacia confusa*, *Bombax ceiba*, *Bridelia tomentosa*, *Lagerstroemia speciosa* and *Macaranga tanarius*. All existing trees within the project boundary will be unavoidably removed during construction phase.
- 4.2.8.2. The proposed SPS is within a Rural Inland Plain Landscape Character Area (LCA), which is characterized by flat lowland landscapes with scattered groups of tree, abandoned fields, village housing, workshop and storage yards. The scale of construction works for the proposed SPS is small and localized. It is considered that the magnitude of impact on the LCA would be insignificant during construction.
- 4.2.8.3. There would be some potential visual impact on the adjacent Visual Sensitive Receivers (VSRs) in the adjacent Village Houses in Ma Liu Shui San Tsuen due to the building works. As the scale of construction of the proposed SPS is small and localized, it is anticipated that the magnitude of impact would be small.

4.3 Potential Environmental Impacts during Operational Phase

4.3.1 Air Quality

- 4.3.1.1. The inlet, screen chambers, and wet wells of the QHSPS would be the potential sources of odour nuisance to the nearby air sensitive receivers during the operational phase of the Project. However, with the implementation of the commonly adopted mitigation measures as detailed in **Section 5.2.1**, adverse odour impact is not anticipated. Moreover, all exhaust fan openings will be located toward the planned ESS and away from the nearby air sensitive receivers.
- 4.3.1.2. According to the Project Profile for Public Housing Development at Lin Cheung Road Site – Temporary Sewage Pumping Station and Associated Sewer Pipes (DIR-239/2014), a review of the effectiveness of odour removal facilities was conducted based on the existing Cheung Sha Wan Sewage Pumping Station (CSWSPS) that with designed capacity of 456,863 m³/day and average daily flow of 349,386 m³/day (in Year 2012). Similar to the proposed QHSPS, all odour sources of the existing CSWSPS are housed inside the reinforced concrete structure and installed with DO units with odour removal efficiency up to 95%. A reference odour perception was conducted at the existing CSWSPS in September 2014 and the results indicated that no odour was detected around the CSWSPS's site boundary, except slight odour was detected at the location which was 10 m away from the exhaust fan. This was supported by DSD's record of no odour nuisance complaint received from the public between 2008 and July 2015. Hence, the existing odour mitigation measures (i.e. activated carbon deodorizers with regular maintenance) for CSWSPS are considered effective.
- 4.3.1.3. As the scale of the proposed QHSPS is much smaller (design flow of ~11,000 m³/day) compared to the CSWSPS and the horizontal distance from the exhaust outlet of the proposed QHSPS to the nearest air sensitive receiver is more than 30m, with the implementation of similar odour mitigation measures of the CSWSPS, no adverse odour impact would be anticipated for the QHSPS.

4.3.1.4. Screening wastes will be stored in covered containers, packed and handled carefully inside the screen houses; and remained in the covered containers before disposal at landfill site to avoid off-site odour nuisance along the disposal route. Therefore, adverse on-site or off-site odour impacts due to the removal/handling of the screening wastes would not be anticipated.

4.3.2 Noise

4.3.2.1. The major operation noise sources of the proposed QHSPS would be the electrical and mechanical equipment including sewage pumps, mechanically raked bar screens and air extraction fans, etc. Designs and mitigation measures detailed in **Section 5.2.2.1**, which are proven method and practices currently adopted in other existing SPS such as Sha Tau Kok Road San Uk Tsuen SPS, Fanling Yip Cheong Street SPS, etc., would be implemented. According to DSD's record, no noise complaint about these SPS operations was received so far and it was further ascertained by the villager's representative of the villages near these SPS during District Council consultation. Therefore, adverse fixed plant noise impact due to the operation of the proposed QHSPS would not be anticipated.

4.3.3 Water Quality

4.3.3.1. No adverse impact from the SPS is anticipated during normal operation. Under emergency situations such as prolonged power failure or pump failure or rupture or leakage of rising mains within the SPS, the emergency sewage overflow will be discharged to the existing sewer connected to Sha Tau Kok Road (STKR) trunk system, and a standby sewage bypass to nearby drainage system will only be operated in case the capacity of STKR trunk sewerage system are fully utilized during extreme weather and prolonged power supply suspension. With this design and the implementation of the preventive measures as listed in **Section 5**, the chance of sewage overflow to nearby receiving waters would be extremely low and the duration would be short.

4.3.4 Waste Management

4.3.4.1. The main waste types will include screening wastes and chemical wastes generated from the operation of the proposed QHSPS. Sewage would pass through the mechanical screens for prevention of shutting down of pumping system due to pump damage by large objects. It is anticipated that quantity of screening wastes to be generated would be limited with reference to that recorded in other existing SPS in similar scale. Small quantities of chemical waste (mainly lubricant oil and paints) would be expected to be generated from the maintenance of the QHSPS. With the mitigation and control requirements in **Section 5.1.4**, adverse environmental impacts would not be anticipated.

4.3.5 Ecology

4.3.5.1. No adverse impact on ecology is anticipated during normal operation of the QHSPS. Potential indirect ecological impact due to emergency sewage overflow from the SPS will be minimized with precautionary measures as mentioned in **Section 4.3.3** above. Adverse indirect impact on ecology is therefore not anticipated.

4.3.6 Cultural Heritage

4.3.6.1. No adverse impact on cultural heritage is anticipated during the operational phase.

4.3.7 Land Contamination

- 4.3.7.1. Any soil and/or groundwater contamination being identified will be properly treated prior to the development. As such, no adverse land contamination impact is anticipated during the operation of the QHSPS.

4.3.8 Landscape and Visual

- 4.3.8.1. The potential landscape impact due to permanent loss of ~11 nos. of existing trees in the construction phase would remain the same in the operational phase.
- 4.3.8.2. There will be permanent localized change of the landscape character due to the operation of the proposed SPS. The scale and the building massing of the proposed SPS are compatible with the adjacent rural landscape setting. It is considered that the magnitude of impact on the LCA would be insignificant during operation.
- 4.3.8.3. The maximum height of the proposed SPS is ~11m which is of similar building height level with the existing adjacent village houses in Ma Liu Shui San Tsuen and the planned developments including the fire station to the north with ~16m high office building and 30m high practice tower, the ESS to the south with building height of 15m, and the public toilet to the west with a building height of 5m. Upon full development of the area, it is anticipated that the proposed SPS would not cause significant visual impact on adjacent VSRs during the operational phase. A plan showing the locations of nearby developments and the key VSRs is shown in **Appendix C**.

5 ENVIRONMENTAL MITIGATION MEASURES TO BE INCORPORATED IN THE CONSTRUCTION AND OPERATION AND ANY FURTHER ENVIRONMENTAL IMPLICATION

5.1 Construction Phase

5.1.1 Air Quality

- 5.1.1.1. Dust control and suppression measures stipulated in the *Air Pollution Control (Construction Dust) Regulation* will be implemented to control the dust emissions from the site including regular water spraying of exposed surfaces, wheel washing and covering dusty material stockpiles with tarpaulin sheet, screen hoarding and provision of covers for all trucks would minimize dust emissions.

5.1.2 Noise

- 5.1.2.1. Standard noise control measures such as the use of quiet PME, movable / temporary noise barriers, screen hoarding, etc., should be implemented by the contractor during construction. In addition, the following good site practices should be implemented:

- Only well-maintained plant should be operated on-site and plant should be serviced regularly;
- Silencers or mufflers on construction equipment, if applicable, should be utilized and should be properly maintained;
- Mobile plant such as generator, if any, should be sited as far away from NSRs as possible.

- PME that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum;
- Plant known to emit noise strongly in one direction should, wherever possible, be directed away from the nearby NSRs; and
- Material stockpiles and other structures should be effectively utilized, wherever practicable, for screening noise from on-site construction activities.

5.1.2.2. The schedule and location of noisy construction activities of the Project and other concurrent projects should be well coordinated on site in order to minimize cumulative construction noise impact.

5.1.3 Water Quality

5.1.3.1. The site practices outlined in *ProPECC PN 1/94 "Construction Site Drainage"* should be implemented in order to minimize surface runoff and the chance of erosion. The following measures should be implemented to ensure all construction runoff are well controlled, so as to minimize water quality impacts:

Construction Site Runoff and Drainage

- Sand/silt removal facilities such as sand/silt traps and sediment basins should be provided to remove sand/silt particles from runoff to meet the Technical Memorandum standard under the *Water Pollution Control Ordinance*.
- All drainage facilities and erosion and sediment control structures should be regularly inspected and maintained to ensure proper and efficient operation at all times and particularly during rainstorms. Deposited silt and grit should be regularly removed, at the onset of and after each rainstorm to ensure that these facilities are functioning properly at all times.
- All vehicles and plant should be cleaned before leaving the construction site to ensure no earth, mud, debris and the like is deposited outside the construction works areas.
- Open stockpiles of construction materials or construction wastes on-site should be covered with tarpaulin or similar fabric during rainstorms.
- Good site practices should be implemented to remove rubbish and litter from construction site. It is recommended to clean the construction site on a regular daily basis.

Sewage from Construction Workers

- Temporary sanitary facilities, such as portable chemical toilets, should be employed on-site where necessary to handle sewage from the workers. A licensed contractor would be responsible for the appropriate disposal of sewage and maintenance of these facilities.

5.1.4 Waste Management

5.1.4.1. Good waste management plan and practices will be implemented to ensure proper handling and disposal of waste, and to minimize the quantity of waste and C&D materials generated. All C&D materials generated will be sorted by the contractor into different categories for disposal at public filling, landfills or recycling as appropriate. Disposal of C&D materials should be managed in accordance with the

Development Bureau *Technical Circular (Works) DEVB TC(W) No. 6/2010 "Trip Ticket System for Disposal of Construction & Demolition Materials"*.

- 5.1.4.2. All chemical wastes from equipment maintenance will be handled, stored, and disposed of properly in accordance with the *Waste Disposal (Chemical Waste) Regulation*.
- 5.1.4.3. General refuse will be stored in enclosed bins or compaction units, separated from C&D materials and chemical wastes. A reputable waste collector should be employed by the contractor to collect and dispose of general refuse, which will be separated from C&D materials and chemical wastes, on a daily or every second day basis to minimize odour, pest and litter impacts.
- 5.1.4.4. **Table 5.1** provides a summary of the various types of waste likely to be generated during the construction and operational phases of the Project, together with the recommended handling and disposal methods.

Table 5.1 - Summary of Waste Handling Procedures and Disposal Routes

Waste Type	Handling	Disposal
Construction Phase		
C&D Materials	Where possible should be reused on-site. If off-site disposal required, separate into: <ul style="list-style-type: none"> • C&D waste • Public fill: concrete and rock 	<ul style="list-style-type: none"> • Strategic Landfill • Public filling area
Chemical Wastes	To be collected and disposed of by licensed companies. Stored in compatible containers in designed area on site	Chemical Waste Treatment Centre
General Refuse	Provided on-site refuse collection facilities	<ul style="list-style-type: none"> • Refuse station for compaction & containerization and then to Strategic Landfill • Private hygiene company
Operational Phase		
Screening Wastes, Silt and Debris from Operation and Maintenance	Off-site disposal required	Strategic landfill
Chemical Wastes	Off-site disposal required by licensed companies	Chemical Waste Treatment Centre

5.1.5 Ecology

- 5.1.5.1. Since no ecological impact would be anticipated during the construction phase of the Project, mitigation measures are considered not necessary.

5.1.6 Cultural Heritage

- 5.1.6.1. As cultural heritage impact would not be anticipated during the construction phase, no mitigation measure is required.

5.1.7 Land Contamination

- 5.1.7.1. Site appraisal should be carried out within the substation and the suspected car park / workshop when site access is available before any construction works commence to confirm the presence and, if any, extent of contamination. If contamination is identified, a detailed land contamination assessment including Contamination Assessment Plan (CAP), Remediation Action Plan (RAP) and Remediation Report (RR) should be prepared according to EPD's *Guidance Note for Contaminated Land Assessment and Remediation* (Guidance Note), *Guidance Manual for Use of Risk-Based Remediation Goals for Contaminated Land Management* (Guidance Manual), and *Practice Guide for Investigation and Remediation of Contaminated Land* (Practice Guide); and should be submitted to EPD for approval.
- 5.1.7.2. No works, other than decontamination work, would be carried out before the approval of RR by EPD.

5.1.8 Landscape and Visual

- 5.1.8.1. Based on the potential landscape and visual impact identified in **Section 4.2.8**, the following mitigation measures proposed shall be implemented as early as possible during the construction phase to minimize the potential adverse impact: -
- CM1 - Trees to be unavoidably affected shall be considered for transplanting where possible making reference to the latest Guidelines on Tree Transplanting issued by GLTM Section of DevB
 - CM2 - Compensatory planting shall be provided in accordance with DEVB TC(W) No. 10/2013 - Tree Preservation
 - CM3 - Control of night-time lighting glare
 - CM4 - Erection of decorative screen hoarding compatible with the surrounding setting around the proposed SPS
 - CM5 - Management of facilities on work sites which give control on the height and disposition/arrangement of all facilities on the works site to minimize visual impact to adjacent VSRs

5.2 Operational Phase

5.2.1 Air Quality

- 5.2.1.1. All facilities and areas with potential odour emission such as wet wells, inlet chamber and screen chambers will be covered by reinforced concrete structure and the exhausted air will be conveyed to a DO unit with odour removal efficiency of 95% for treatment before discharge to the environment. Performance / compliance tests of the DO unit should be included as one of the requirements in the construction contract before the proposed SPS in operation. During operational phase, continuous monitoring of removal efficiency could be achieved by the installation of H₂S meter at the inlet and exhaust vents of the DO unit. In addition, the exhaust outlet of the DO unit will be located away from the nearby air sensitive receivers as far as practicable, i.e. facing west or southwest of the QHSPS.

- 5.2.1.2. The screening wastes will be removed regularly (i.e. at least twice a week) from the QHSPS, and will be properly packed and handled within the QHSPS structure and transported to designated landfill for disposal immediately after collection from QHSPS.
- 5.2.1.3. Chemical dosing would be adopted as mitigation measures for prevention of septicity as well as odour problem due to the long retention time within the pumping system particularly during the initial sewage flow build up period.

5.2.2 Noise

- 5.2.2.1. All the fixed plant equipment of the proposed QHSPS would be housed inside a reinforced concrete structure with soundproof door. Silencers or other acoustic treatment equipment would be installed at the outlet of the air extraction fans and all the openings would be located at the southwest façade of the proposed QHSPS facing away from the nearest NSRs. The fixed plant noise criteria at the nearby NSRs as shown in **Figure 3.1** should be specified as design criteria of the proposed QHSPS in the contract. The contractor should design and select equipment that could comply with the contract requirements. Compliance noise measurement would be conducted in pre-operational phase at the boundary of the proposed SPS to ensure the operation noise would not exceed the noise criteria at the nearby NSRs. A Compliance Test Report demonstrating the compliance should be submitted to EPD before the operation of the Project.

5.2.3 Water Quality

- 5.2.3.1. The following precautionary measures will be incorporated in the design of the QHSPS to avoid emergency overflow of sewage to the maximum practicable extent.
- A standby pump and screen will be provided to cater for breakdown and maintenance of the duty pump;
 - Backup power supply in the form of dual / ring circuit power supply by CLP or generator will be provided to secure electrical power supply. According to information from CLP, their supply reliability reaches 99.99%. The backup as mentioned above further enhanced the security and reliability;
 - An alarm with telemetry system connecting to SWHSTW will be installed to signal emergency high water level in the wet well;
 - Spare volume of wet well and inlet chamber with holding capacity for ~1 hour average dry weather flow will be provided for proposed QHSPS to cater for breakdown and maintenance of duty pump;
 - Regular maintenance and checking of plant equipment to prevent equipment failure;
 - Twin rising mains system will be provided to facilitate the maintenance works and to avoid emergency overflow of sewage;
 - A telemetry system to the nearest manned station/plant will be provided so that swift action can be taken in case of malfunction of the unmanned facilities; and
 - If all the above measures are exhausted, sewage will be tanked away to minimize the chance of emergency overflow.

- 5.2.3.2. All overflow sewage should be screened by bar screen (with clear spacing of ~25 mm) before discharged which can prevent the discharge of floating solids into receiving water bodies as far as practicable while ensuring flooding at the facilities will not occur even if the screen is blocked.
- 5.2.3.3. Furthermore, any incident of emergency overflow from the SPS will follow EPD's "A Guide on Reporting Sewage Bypass Incidents in Sewage Pumping Stations and Sewers" and DSD's "Contingency Plan for Incidents Possibly Encountered in Sewage Treatment Facilities having a Potential of Generating an Environmental Nuisance". With the emergency sewage overflow arrangement as mentioned in **Section 4.3.3.1** and implementation of the precautionary measures, the possibility of emergency sewage overflow would be extremely low and the potential water quality impacts in the unlikely event that an overflow does occur would be minimized.

5.2.4 Waste Management

- 5.2.4.1. The screening wastes collected by the screens of the proposed QHSPS will be stored in enclosed containers and transported to landfill for disposal regularly (i.e. at least twice a week). The wastes packaging will be conducted inside the pumping station building. All chemical wastes from equipment maintenance will be handled, stored, and disposed of properly and in accordance with *Waste Disposal (Chemical Waste) Regulation*.

5.2.5 Ecology

- 5.2.5.1. No adverse impact on ecology is anticipated during normal operation of the QHSPS. The precautionary measures proposed in **Section 5.2.3.1** which avoid the emergency overflow of sewage to the maximum practicable extent would minimise the potential indirect ecological impacts.

5.2.6 Cultural Heritage

- 5.2.6.1. As cultural heritage impact would not be anticipated during operation of the Project, no mitigation measure is required.

5.2.7 Land Contamination

- 5.2.7.1. As no land contamination impact would be anticipated during operation of the Project, no mitigation measure is required.

5.2.8 Landscape and Visual

- 5.2.8.1. Based on the potential landscape and visual impact identified in **Section 4.3.8**, landscape and visual mitigation measures proposed to alleviate potential adverse impact during operational phase shall include the following: -

- OM1 - Aesthetically pleasing design as regard to the form, material and finishes shall be incorporated to the proposed SPS so as to blend in the structures to the adjacent landscape and visual context.
- OM2 - Green roof shall be proposed to the pumping station to minimize any potential adverse visual impact on adjacent VSRs.
- OM3 - Vertical greening is proposed to key facade to soften the above ground structure.
- OM4 – Palm tree planting to soften the development edge

5.2.8.2. Landscape master plan showing the recommended landscape and visual mitigation measures are illustrated in **Figure 5.1**. The minimum ratio of no. of felled trees to no. of on-site compensation trees shall be in 1:1 in terms of number of heavy standard trees in accordance with DEVB TC (W) No. 10/2013.

5.2.8.3. The mitigation measures for operational phase listed above shall be adopted during the detailed design and be built so that they are in place at the date of commissioning of the proposed SPS.

5.3 Environmental Monitoring and Audit

5.3.1.1. With the implementation of recommended mitigation measures, no adverse environmental impacts would be anticipated and hence no environmental monitoring is considered necessary. Environmental Site Audit is to be conducted during the construction phase to ensure the recommended mitigation measures be implemented properly.

5.3.1.2. As stated in **Section 5.2** above, EM&A during operational phase is not necessary as potential environmental impacts could be mitigated by proven method and practices currently adopted in other similar projects.

5.4 Severity, Distribution and Duration of Environmental Effects

5.4.1.1. In view of the nature and small scale of the Project, the associated environmental impacts would be small scale, localised and temporary. With the implementation of the recommended mitigation measures, no adverse residual impacts would be anticipated from this Project.

5.5 History of Similar Projects

5.5.1.1. A review has been made to other projects of similar nature whereby permission was granted to apply directly for Environmental Permit as summarized in **Table 5.2**.

Table 5.2 - Summary of Previous Projects with Permission Granted to Apply Directly for Environmental Permit

Application No.	Project Profile Title	ADWF (m ³ /day)	Distance to the Nearest Sensitive Receiver (m)
DIR-239/2014	Public Housing Development at Lin Cheung Road Site – Temporary Sewage Pumping Station and Associated Sewer Pipes	3,000	1
DIR-226/2013	Temporary Sewage Pumping Station Ancillary to Tung Chung Area 56 Public Housing Development	2,312	22
DIR-173/2008	Yuen Long Kau Hui No. 2 Sewage Pumping Station	5,900	30
DIR-161/2007	Tai Po Tai Wo Road Sewage Pumping Station	12,100	29
DIR-115/2005	Upgrading of Ting Kok Road Pumping Station No. 5	11,520	60
DIR-057/2001	Sai Kung Area 4 Sewage Pumping Station	7,500	34
DIR-040/2000	Au Tau Sewage Pumping Station (relocation)	12,200	80

Application No.	Project Profile Title	ADWF (m ³ /day)	Distance to the Nearest Sensitive Receiver (m)
DIR 026/1999	Au Tau Sewage Pumping Station	12,200	40
DIR 024/1999	Yuen Long South Sewage Pumping Station	36,900	70

5.6 Public Consultation to Date, Public Interest and Political Sensitivity

5.6.1.1. District Council and Rural Committee have been consulted in April 2015 and both of them expressed support to the Project.

5.6.1.2. The proposed QHSPS as part of the proposed sewerage works was gazetted under Roads (Works, Use and Compensation) Ordinance (Chapter 370) as applied by section 26 of the Water Pollution Control (Sewerage) Regulation (Chapter 358, Sub. Leg.) in July 2015 and the objection period was ended in September 2015.

6 SUMMARY OF POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

6.1.1.1. The potential environmental impacts and proposed mitigation measures to be incorporated during construction and operational phases of the Project are summarized in **Table 6.1**, which would be included in the construction contract document. The project proponent would supervise and monitor the implementation of these measures by the Contractor.

Table 6.1 - Summary of Potential Environmental Impacts and Mitigation Measures

Potential Environmental Impacts	Mitigation Measures	Implementation Agent	Relevant Section in Project Profile
Construction Phase			
Construction Dust	<ul style="list-style-type: none"> • Dust control and suppression measures stipulated in the <i>Air Pollution Control (Construction Dust) Regulation</i>; • Regular water spraying of exposed surfaces ; • Wheel washing; • Covering dusty material stockpiles with tarpaulin sheet; • Erection of screen hoarding; and • Provision of covers for all trucks. 	Contractor	5.1.1.1
Construction Noise	<ul style="list-style-type: none"> • Standard noise control measures such as the use of quiet PME, movable / temporary noise barriers, screen hoarding, etc.; and • Good site practices: <ul style="list-style-type: none"> - Only well-maintained plant should be operated on-site and plant should be serviced regularly. - Silencers or mufflers on construction equipment should be utilized and should be properly maintained. - Mobile plant such as generator, if any, should be sited as far away from NSRs as possible. 	Contractor	5.1.2.1 - 5.1.2.2

Potential Environmental Impacts	Mitigation Measures	Implementation Agent	Relevant Section in Project Profile
	<ul style="list-style-type: none"> - PME that may be in intermittent use should be shut down between works periods or should be throttled down to a minimum. - Plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs. - Material stockpiles and other structures should be effectively utilised, wherever practicable, in screening noise from on-site construction activities. • The schedule and location of noisy construction activities of the Project and other concurrent projects should be well coordinated on site in order to minimize cumulative construction noise impact. 		
Water Quality	<ul style="list-style-type: none"> • Adopt site practices outlined in ProPECC PN 1/94 "Construction Site Drainage" • Provide sand/silt removal facilities to remove sand/silt particles from runoff • Inspect and maintain all drainage facilities and erosion and sediment control structures • Clean all vehicles and plant before leaving the construction site • Cover open stockpiles of construction materials or construction wastes on-site with tarpaulin or similar fabric during rainstorms • Adopt good site practices to remove rubbish and litter from construction site • Deploy temporary sanitary facilities 	Contractor	5.1.3.1
Waste Management	<ul style="list-style-type: none"> • Implement good waste management plan and practices on minimizing, handling and disposal of waste • Handle, store and dispose of chemical waste in accordance with the requirements for <i>Waste Disposal (Chemical Waste) Regulation</i> • Store general refuse in enclosed bins or compaction units separate from C&D materials and chemical wastes • Employ a reputable waste collector to collect and dispose of general refuse from the site on a daily or every second day basis 	Contractor	5.1.4.1 - 5.1.4.3
Land Contamination	<ul style="list-style-type: none"> • Conduct site appraisal within the substation and the suspected car park / workshop when site access is available before any construction works commence to confirm the presence and, if any, extent of contamination. • If contamination is identified, conduct detailed land contamination assessment before any construction works commence. 	Project Proponent & Contractor	5.1.7.1 - 5.1.7.2
Landscape and	<ul style="list-style-type: none"> • CM1 - Trees to be unavoidably affected shall be considered for transplanting where 	Contractor	5.1.8.1

Potential Environmental Impacts	Mitigation Measures	Implementation Agent	Relevant Section in Project Profile
Visual	<p>possible making reference to the latest Guidelines on Tree Transplanting issued by GLTM Section of DevB</p> <ul style="list-style-type: none"> • CM2 - Compensatory planting shall be provided in accordance with DEVB TC(W) No. 10/2013 - Tree Preservation (i.e. minimum ratio of nos. of felled trees to no. of on-site compensation trees shall be in 1:1 in terms of numbers of heavy standard trees.) • CM3 - Control of night-time lighting glare • CM4 - Erection of decorative screen hoarding compatible with the surrounding setting around the proposed SPS • CM5 - Management of facilities on work sites which give control on the height and disposition/arrangement of all facilities on the works site to minimize visual impact to adjacent VSRs 		
Operational Phase			
Odour	<ul style="list-style-type: none"> • Cover all facilities and areas with potential odour emission such as wet wells, inlet chamber and screen chambers by reinforced concrete structure. • Convey exhausted air to a DO unit with odour removal efficiency of 95%. • Locate the exhaust outlet of the DO unit in a direction away from the nearby Air Sensitive Receivers as far as practicable, i.e. facing west or southwest of the QHSPS. • Pack and handle screening waste within the QHSPS structure. • Adopt chemical dosing to prevent odour problem due to septicity of sewage. 	Project proponent & Operator	5.2.1.1 - 5.2.1.2
Fixed Plant Noise	<ul style="list-style-type: none"> • Enclose all the fixed plant equipment inside a reinforced concrete structure with soundproof door. • Install silencers or other acoustic treatment equipment at the outlet of the air extraction fans. • Locate all openings at the southwest façade of the proposed QHSPS. • Specify the fixed plant noise criteria at the nearby NSRs as shown in Figure 3.1 as design criteria of the proposed QHSPS in the contract. The contractor should design and select equipment that could comply with the contract requirements. • Compliance noise measurement would be conducted in pre-operational phase at the boundary of the proposed SPS to ensure the 	Project proponent & Operator	5.2.2.1

Potential Environmental Impacts	Mitigation Measures	Implementation Agent	Relevant Section in Project Profile
	operation noise would not exceed the noise criteria at the nearby NSRs. A Compliance Test Report demonstrating the compliance should be submitted to EPD before the operation of the Project		
Water quality – Emergency Overflow	<ul style="list-style-type: none"> • Provide a standby pump and screen • Provide backup power supply • Install an alarm with telemetry system connecting to SWHSTW to signal emergency high water level in the wet wells • Provide spare volume of wet well with holding capacity for ~1 hour average dry weather flow • Regular maintenance and checking of plant equipment • Provide twin rising mains system • Provide a telemetry system to the nearest manned station/plant • Tank away of sewage • Screen all overflow sewage before discharged 	Project proponent & Operator	5.2.3.1
Waste Management	<ul style="list-style-type: none"> • Conduct waste packaging inside the pumping station building. • Store screening waste in enclosed containers and transport screening waste to landfill for disposal regularly • Handle, store and dispose of all chemical waste in accordance with the requirements for <i>Waste Disposal (Chemical Waste) Regulation</i>. 	Operator	5.2.4.1
Landscape and Visual	<ul style="list-style-type: none"> • OM1 - Aesthetically pleasing design as regard to the form, material and finishes shall be incorporated to the proposed SPS so as to blend in the structures to the adjacent landscape and visual context. • OM2 - Green roof shall be proposed to the pumping station to minimize any potential adverse visual impact on adjacent VSRs. • OM3 - Vertical greening is proposed to key facade to soften the above ground structure. • OM4 - Palm tree to soften the development edge 	Project proponent & Operator	5.2.8.1

7 USE OF PREVIOUSLY APPROVED ENVIRONMENTAL IMPACT ASSESSMENT REPORTS

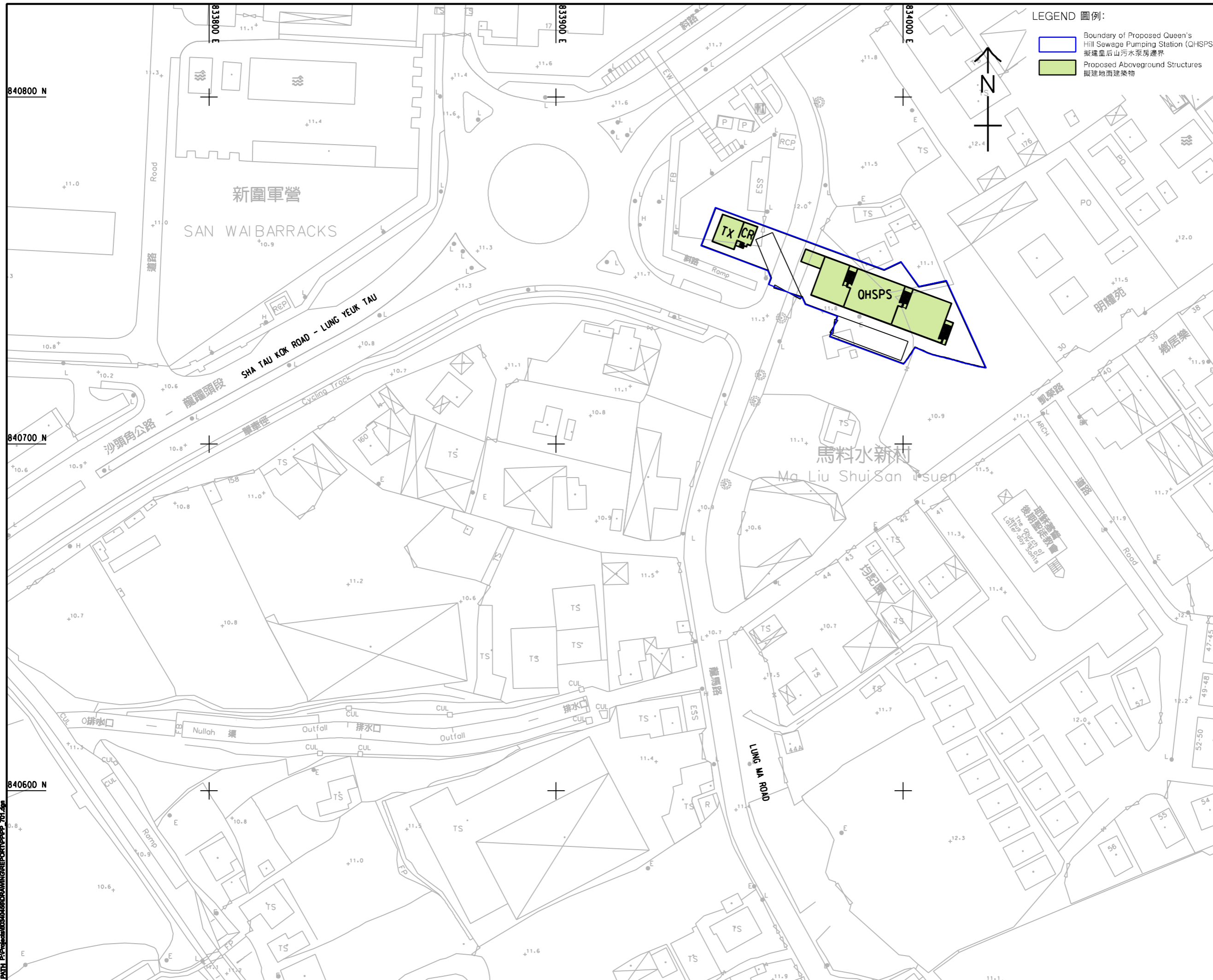
- 7.1.1.1. No previous Environmental Impact Assessment (EIA) Report has been approved or submitted for the Project.

8 CONCLUSION

- 8.1.1.1. The predicted environmental impacts from the Project are unlikely to be adverse and the mitigation measures described in this Project Profile meet the requirements of the Technical Memorandum on Environmental Impact Assessment Process (EIAO-TM).
- 8.1.1.2. This Project Profile is prepared to seek permission from the Director of Environmental Protection under Section 5(11) of the EIAO to apply directly for an Environmental Permit.

FIGURES

ISO A1 841mm x 641mm
 Approved: _____
 Checked: _____
 Designer: _____
 Project Management Initials: _____
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LEGEND 圖例:

- Boundary of Proposed Queen's Hill Sewage Pumping Station (QHSPS)
擬建皇后山污水泵房邊界
- Proposed Aboveground Structures
擬建地面建築物



PROJECT
 Infrastructural Works for Proposed Developments at Queen's Hill, Fanling - Investigation, Design and Construction
 粉嶺皇后山發展之基礎設施工程 - 勘查研究、設計及建造

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ISSUE/REVISION

NO.	DATE	DESCRIPTION	CHK.

STATUS

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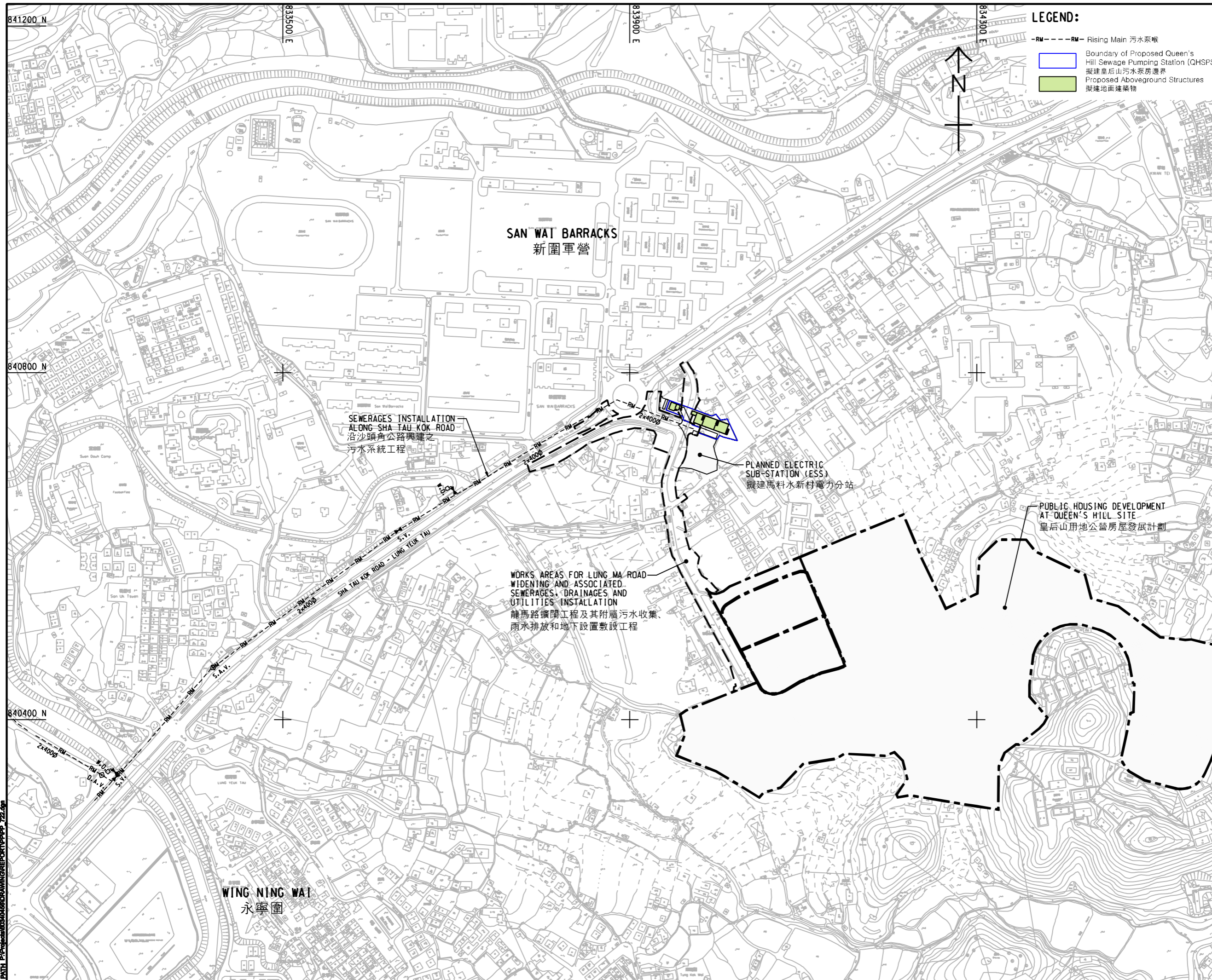
KEY PLAN

PROJECT NO. **CONTRACT NO.**
 60340456 CE 63/2014 (CE)

SHEET TITLE
 Site Location Plan
 工地位置圖

SHEET NUMBER
 60340456/PP/FIGURE 1.1
 圖 1.1

Project Management Initials: Designer: Checker: Approved: 841200 N 833500 E 833500 E 834300 E 840800 N 840400 N
 File No: HJANGWYI_20150915
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LEGEND:

- RM - - - -RM- Rising Main 污水系統
- Boundary of Proposed Queen's Hill Sewage Pumping Station (QHSPS) 擬建皇后山污水泵房邊界
- Proposed Aboveground Structures 擬建地面建築物

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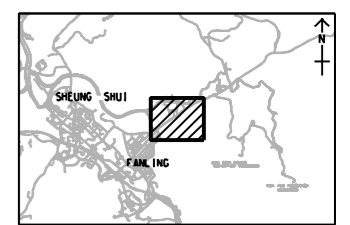
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NO.	DATE	DESCRIPTION	CHK.

STATUS

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KEY PLAN A1 1:100000

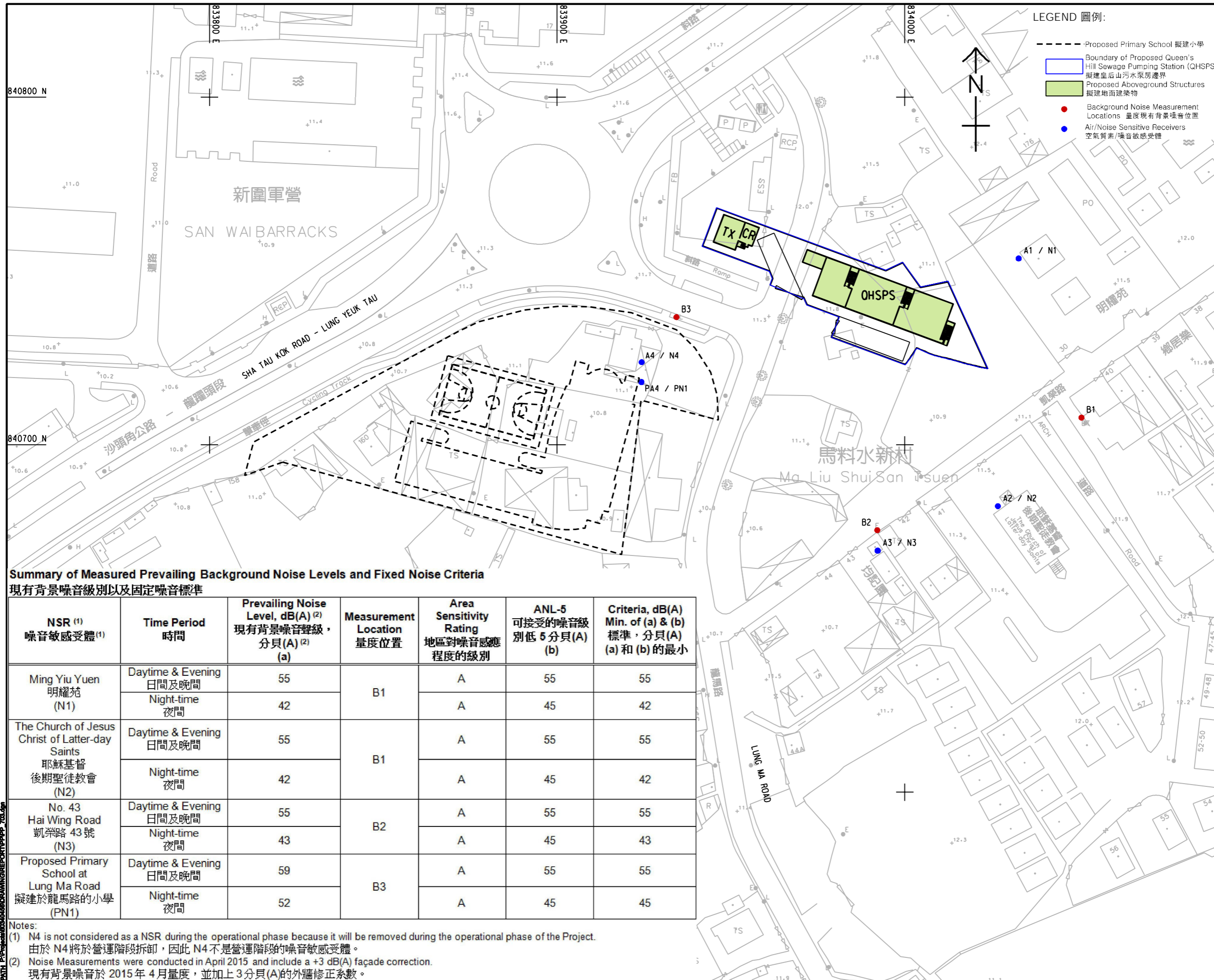


PROJECT NO. 60340456 **CONTRACT NO.** CE 63/2014 (CE)

SHEET TITLE Locations of Concurrent Projects 其他並行工程位置

SHEET NUMBER 60340456/PP/FIGURE 2.1 圖2.1

B0/A1 804mm x 614mm
 Approved:
 Checked:
 Designer:
 Project Management Initials:



Summary of Measured Prevailing Background Noise Levels and Fixed Noise Criteria

現有背景噪音級別以及固定噪音標準

NSR ⁽¹⁾ 噪音敏感受體 ⁽¹⁾	Time Period 時間	Prevailing Noise Level, dB(A) ⁽²⁾ 現有背景噪音聲級, 分貝(A) ⁽²⁾ (a)	Measurement Location 量度位置	Area Sensitivity Rating 地區對噪音感應程度的級別	ANL-5 可接受的噪音級別低 5 分貝(A) (b)	Criteria, dB(A) Min. of (a) & (b) 標準, 分貝(A) (a) 和 (b) 的最小
Ming Yiu Yuen 明耀苑 (N1)	Daytime & Evening 日間及晚間	55	B1	A	55	55
	Night-time 夜間	42		A	45	42
The Church of Jesus Christ of Latter-day Saints 耶穌基督後期聖徒教會 (N2)	Daytime & Evening 日間及晚間	55	B1	A	55	55
	Night-time 夜間	42		A	45	42
No. 43 Hai Wing Road 凱樂路 43 號 (N3)	Daytime & Evening 日間及晚間	55	B2	A	55	55
	Night-time 夜間	43		A	45	43
Proposed Primary School at Lung Ma Road 擬建於龍馬路的小學 (PN1)	Daytime & Evening 日間及晚間	59	B3	A	55	55
	Night-time 夜間	52		A	45	45

Notes:

- N4 is not considered as a NSR during the operational phase because it will be removed during the operational phase of the Project.
由於 N4 將於營運階段拆卸, 因此 N4 不是營運階段的噪音敏感受體。
- Noise Measurements were conducted in April 2015 and include a +3 dB(A) façade correction.
現有背景噪音於 2015 年 4 月量度, 並加上 3 分貝(A) 的外牆修正係數。

LEGEND 圖例:

- Proposed Primary School 擬建小學
- Boundary of Proposed Queen's Hill Sewage Pumping Station (QHSPS)
擬建皇后山污水泵房邊界
- Proposed Aboveground Structures
擬建地面建築物
- Background Noise Measurement Locations 量度現有背景噪音位置
- Air/Noise Sensitive Receivers 空氣質素/噪音敏感受體



PROJECT

Infrastructural Works for Proposed Developments at Queen's Hill, Fanling - Investigation, Design and Construction
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SCALE DIMENSION UNIT

A1 : 800 METRES

KEY PLAN

PROJECT NO.

60340456

CONTRACT NO.

CE 63/2014 (CE)

SHEET TITLE

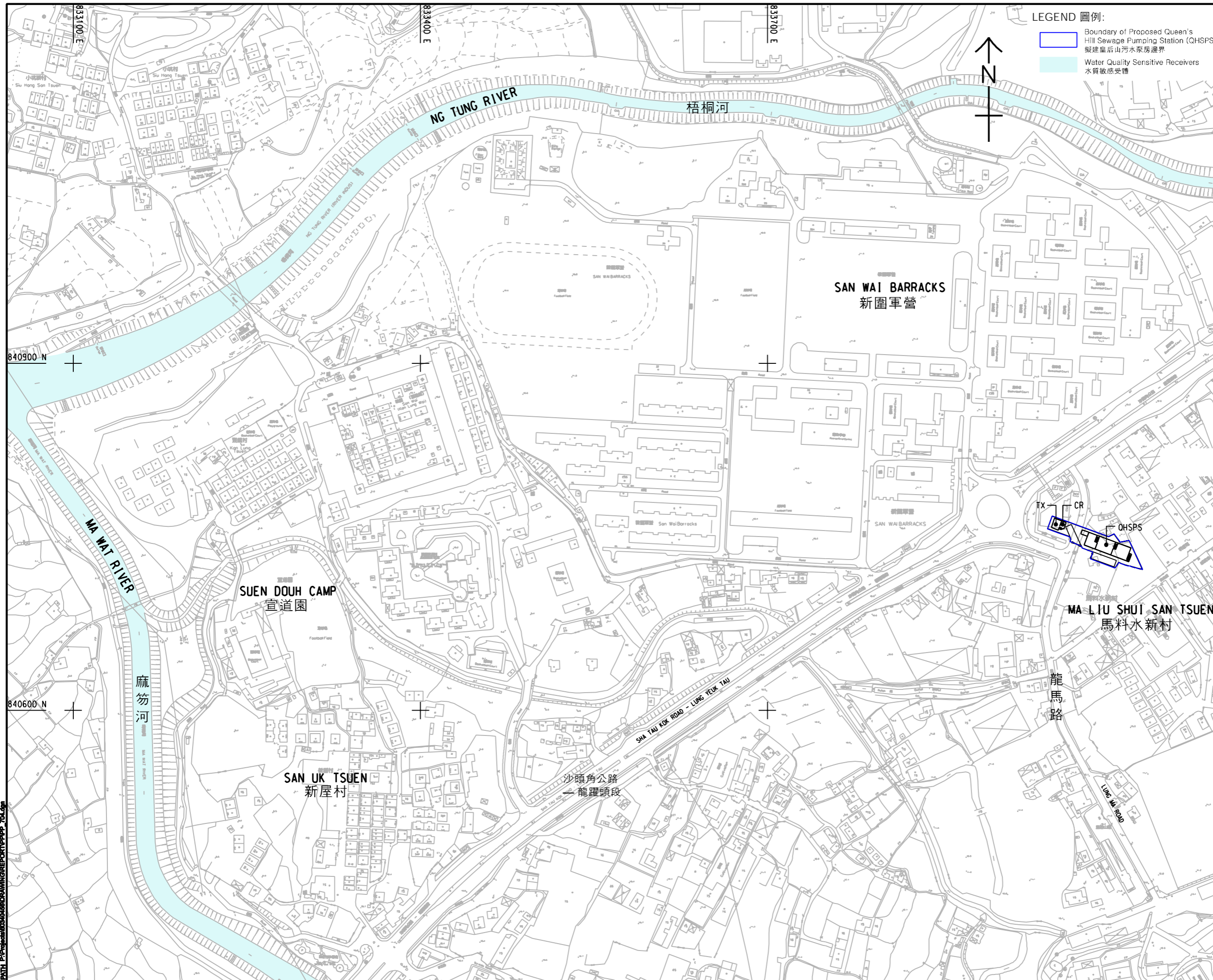
Locations of Representative Air and Noise Sensitive Receivers and Background Noise Measurements
具代表性空氣質素及噪音敏感受體以及量度現有背景噪音位置

SHEET NUMBER

60340456/PP/FIGURE 3.1

圖3.1

ISO A1 594mm x 841mm
 Approved:
 Checked:
 Designer:
 Project Management Initials:
 20150510
 PP111
 20150510
 PP111



LEGEND 圖例:

- Boundary of Proposed Queen's Hill Sewage Pumping Station (QHSPS)
擬建皇后山污水泵房邊界
- Water Quality Sensitive Receivers
水質敏感受體



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SCALE
A1 1:1500

DIMENSION UNIT
METRES

KEY PLAN

PROJECT NO.
60340458

CONTRACT NO.
CE 63/2014 (CE)

SHEET TITLE
Locations of Water Quality Sensitive Receivers
水質敏感受體位置

SHEET NUMBER
60340458/PP/FIGURE 3.2
圖3.2

ISO A1 864mm x 611mm
Approved:
Checked:
Designed:
Project Management Initials:
201506
PP11
PP12
PP13
PP14
PP15
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PP100



PHOTO 1: EXISTING VILLAGE HOUSE
(DATE TAKEN: 1 APRIL 2015)

相片一：現有村屋
(攝於2015年4月1日)



PHOTO 2: EXISTING ELECTRIC SUBSTATION
(DATE TAKEN: 1 APRIL 2015)

相片二：現有電力分站
(攝於2015年4月1日)



PHOTO 3: EXISTING VILLAGE HOUSE
(DATE TAKEN: 1 APRIL 2015)

相片三：現有村屋 (攝於2015年4月1日)



PHOTO 4: OUTSIDE SUSPECTED CARPARK /
WORKSHOP (DATE TAKEN: 1 APRIL 2015)

相片四：疑似停車場/工場外圍 (攝於2015年4月1日)

LEGEND 圖例:

- Boundary of Proposed Queen's Hill Sewage Pumping Station (QHSPS)
擬建皇后山污水泵房邊界
- Boundary of Concerned Site
受關注地區邊界
- ▲ Locations and Directions of Photographs Taken / Photo IDs
拍攝位置及方向 / 相片編號

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STATUS

SCALE **DIMENSION UNIT**

A1: 1:500 METRES

KEY PLAN

PROJECT NO.

60340456

CONTRACT NO.

CE 63/2014 (CE)

SHEET TITLE

Findings of Site Walkover
實地調查結果

SHEET NUMBER

60340456/PP/FIGURE 4.1

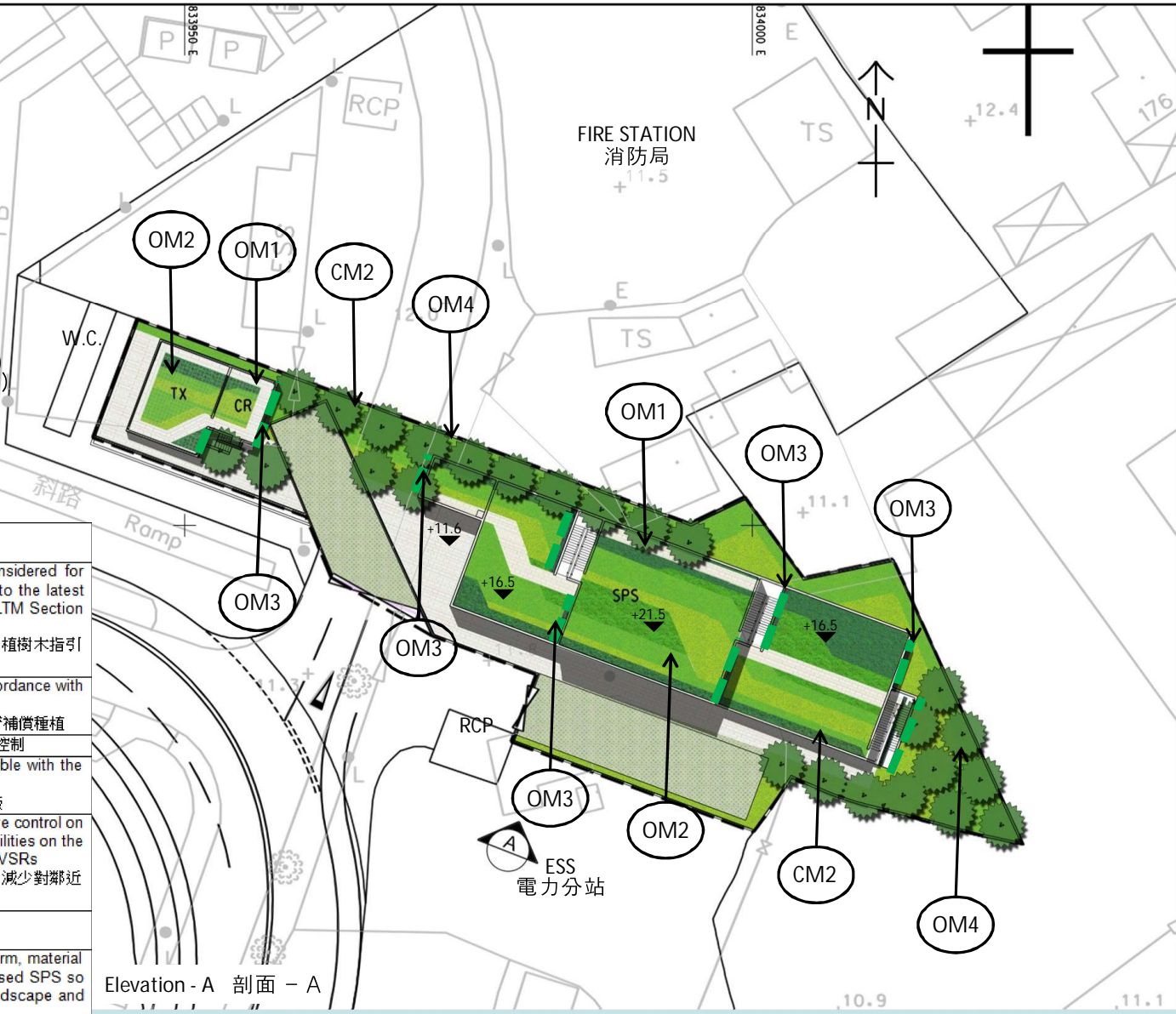
圖4.1

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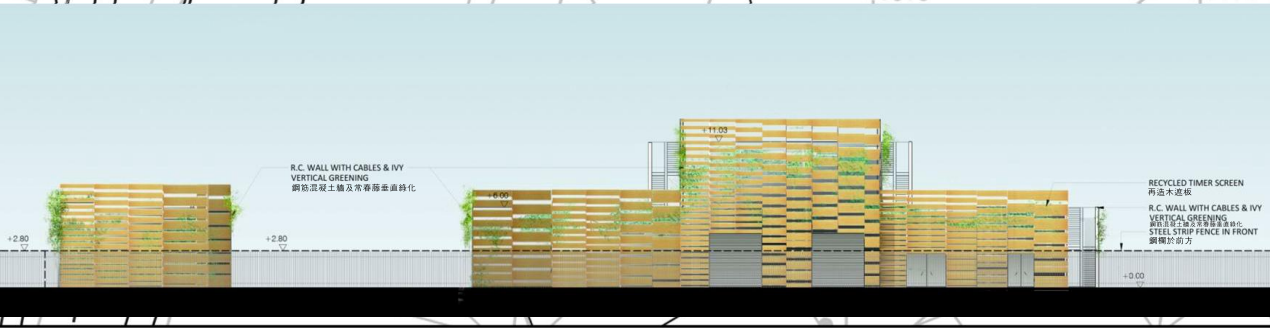
Project Management Initials: Designer: Checklist: Approved: IBO A1 584mm x 841mm
 2015/5/27
 P:\Projects\60340456\DRAWINGS\SKETCHES\K4021.dgn
 Pld File by: YANGBT

LEGEND 圖例:

- Site Boundary 工地邊界
- Proposed Vertical Greening 擬設垂直綠化
- Proposed Green Roof 擬設綠化屋頂
- Foot Path 行人徑
- Car Parking Area (Grasscrete) 停車場 (鋪砌草面物料)
- Shrub/ Ground Cover 灌木 / 鋪地植物
- Palm Tree Planting 棕櫚樹種植



Elevation - A 剖面 - A



Mitigation Measures during Construction Phase 施工期間的緩解措施

CM1	Trees to be unavoidably affected shall be considered for transplanting where possible making reference to the latest Guidelines on Tree Transplanting issued by GLTM Section of DevB 應參照發展局綠化、園境及樹木管理組最新的移植樹木指引考慮盡量移植不可避免地受影響的樹
CM2	Compensatory planting shall be provided in accordance with DEVB TC(W) No. 10/2013 - Tree Preservation 依照發展局 TC(W) No. 10/2013 樹木保護法進行補償種植
CM3	Control of night-time lighting glare 夜間強光照明控制
CM4	Erection of decorative screen hoarding compatible with the surrounding setting around the proposed SPS 於工程項目邊界豎立一些配合周邊景觀的工地圍板
CM5	Management of facilities on work sites which give control on the height and disposition/arrangement of all facilities on the works site to minimize visual impact to adjacent VSRs 管理工地內所有設施的高度及部署 / 排列以盡量減少對鄰近視覺敏感的地方造成的不良視覺影響

Mitigation Measures during Operational Phase 營運階段的緩解措施

OM1	Aesthetically pleasing design as regard to the form, material and finishes shall be incorporated to the proposed SPS so as to blend in the structures to the adjacent landscape and visual context. 擬建皇后山污水泵房的形式、建築物料和飾面應配合美學設計，以使新建建築物能融入周邊環境和減少對周邊景觀及視覺的不良影響
OM2	Green roof shall be proposed to the pumping station to minimize any potential adverse visual impact on adjacent VSRs. 污水泵房應納入綠化屋頂的設計，以減少對周邊視覺敏感的地方的不良視覺影響。
OM3	Vertical greening is proposed to key façade to soften the above ground structure. 建議於主要建築物外牆以垂直綠化柔化地面建築物。
OM4	Palm tree planting to soften the development edge 種植棕櫚樹以柔化發展範圍的邊緣

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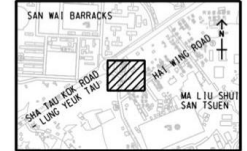
NO.	DATE	DESCRIPTION	CHK.

STATUS

SCALE **DIMENSION UNIT**

A1: 200 METRES

KEY PLAN A1: 1:10000



PROJECT NO. **CONTRACT NO.**
 60340456 CE 63/2014 (CE)

SHEET TITLE
 Landscape and Visual Mitigation Measures Plan
 景觀及視覺緩解措施

SHEET NUMBER
 60340456/PP/FIGURE 5.1
 圖 5.1

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APPENDIX A

General Layout Plan and Design of
Queen's Hill Sewage Pumping Station

ISO A1 864mm x 641mm

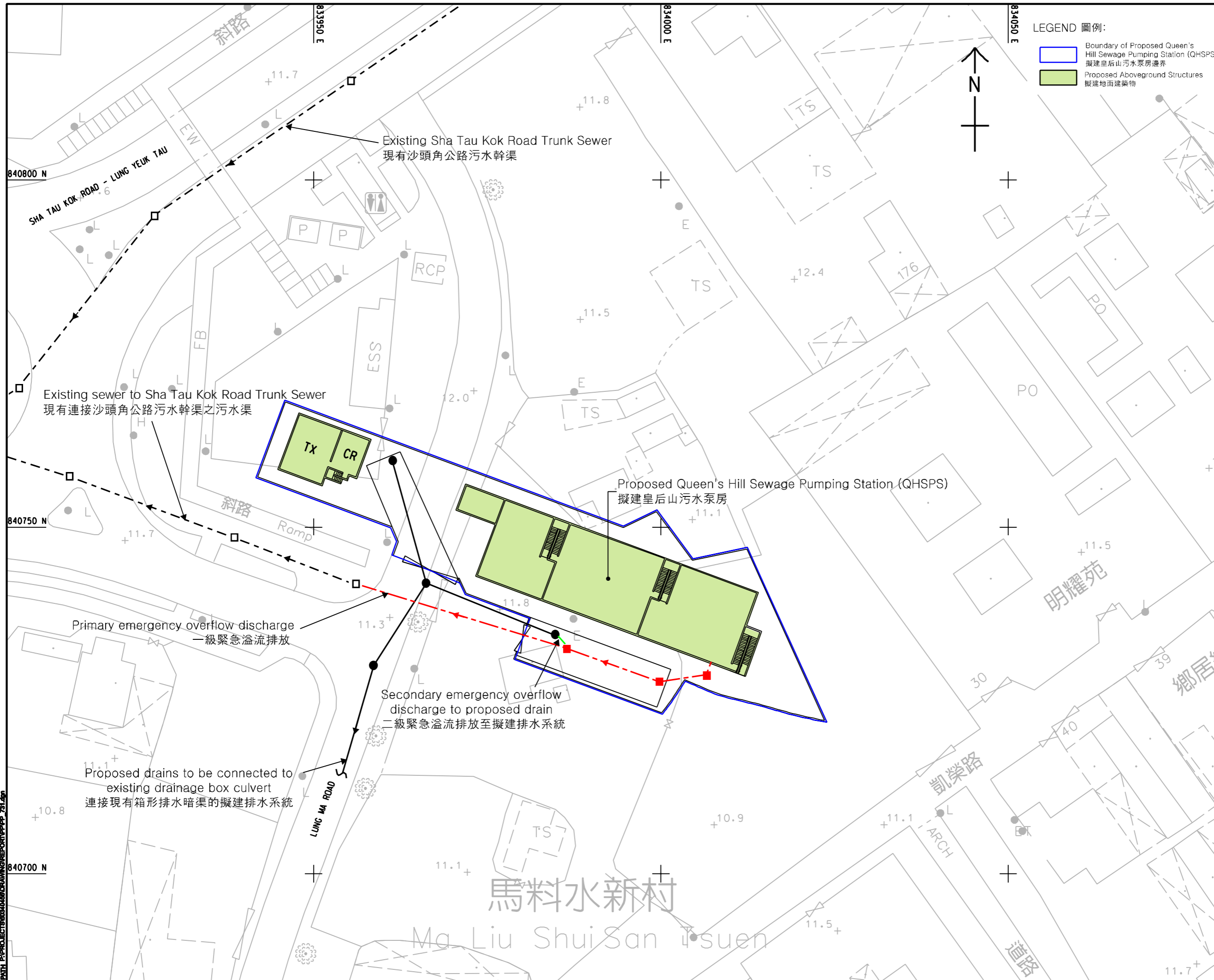
Approved:

Checked:

Designed:

Project Management Initials:

Pkg File: Z:\112_201608_PP\PROJECT\BIDDING\DRAWING\REPORT\PP-731.dgn



LEGEND 圖例:

- Boundary of Proposed Queen's Hill Sewage Pumping Station (QHSPS) 擬建皇后山污水泵房邊界
- Proposed Aboveground Structures 擬建地面建築物



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STATUS

SCALE **DIMENSION UNIT**

A1 1:250 METRES

KEY PLAN

PROJECT NO.

60340456

CONTRACT NO.

CE 63/2014 (CE)

SHEET TITLE

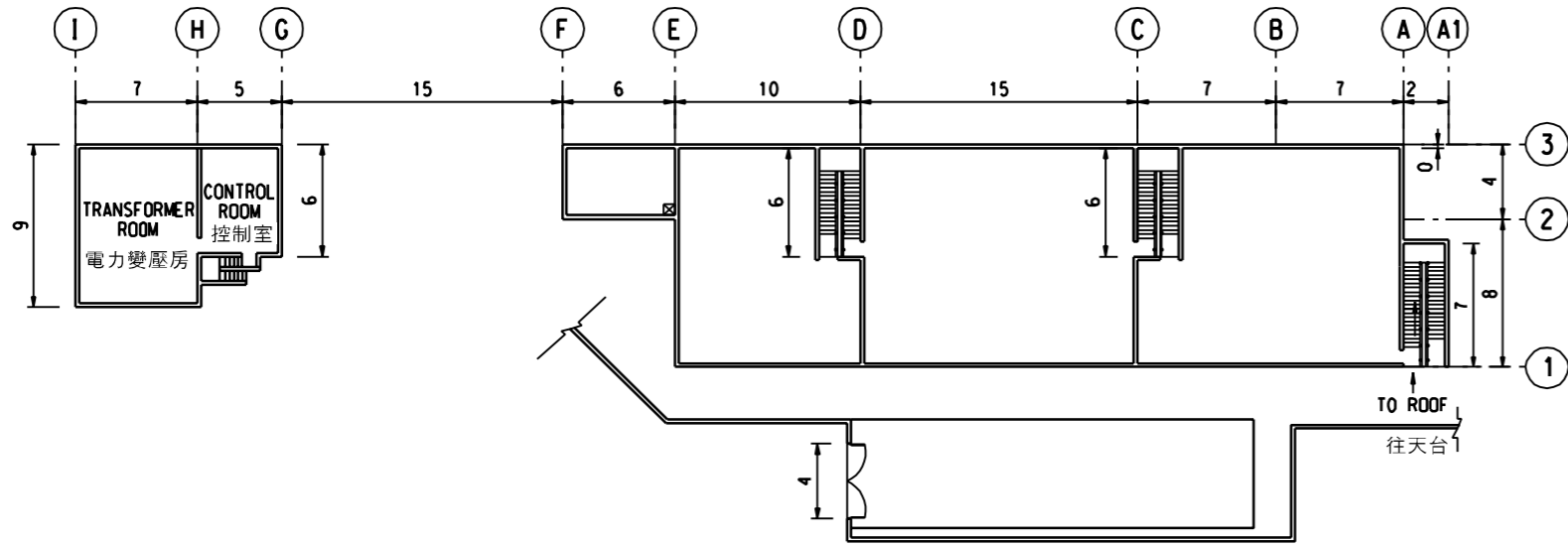
Queen's Hill Sewage Pumping Station
General Layout Plan
皇后山污水泵房總平面圖

SHEET NUMBER

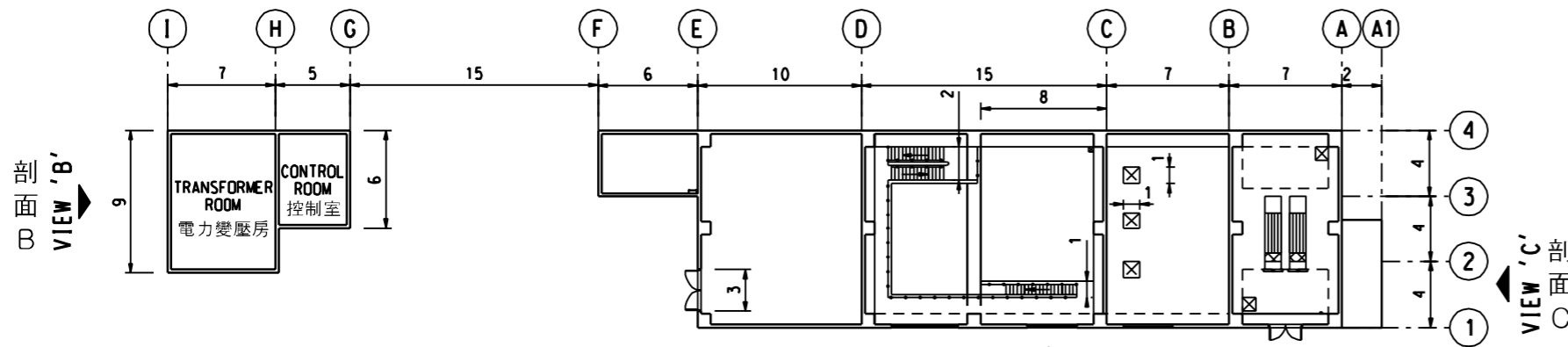
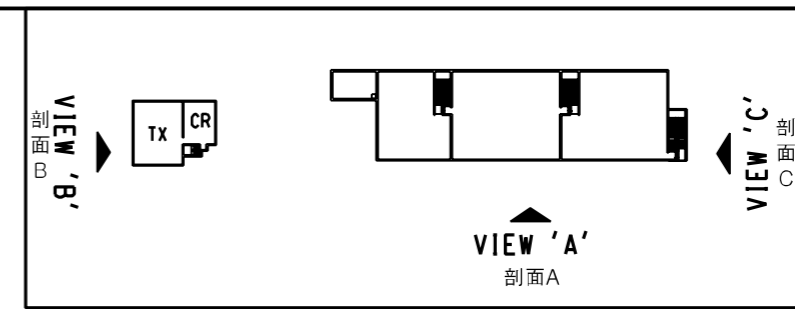
60340456/PP/APPENDIX A1

附錄A1

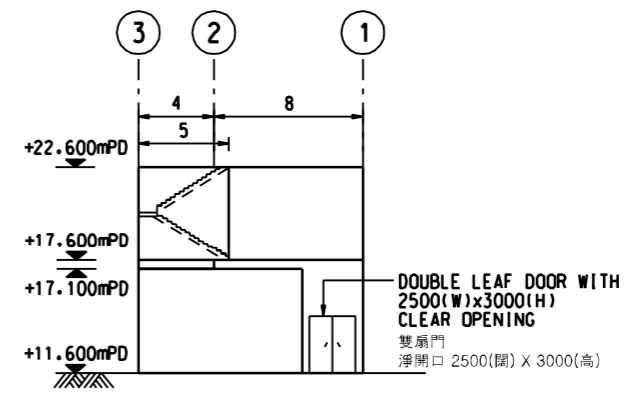
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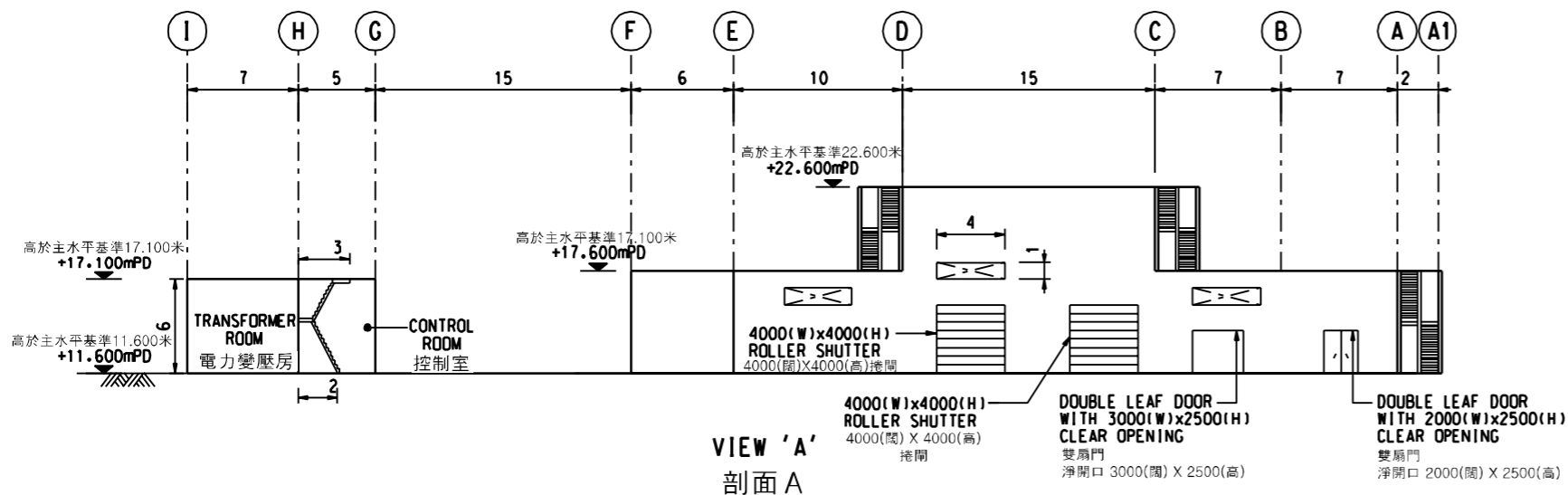
ROOF PLAN
天台平面圖



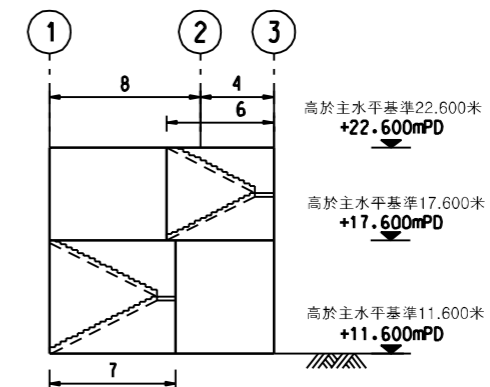
SECTIONAL PLAN AT +11.600mPD
剖面圖於高於主水平基準11.600米



VIEW 'B' 剖面B



VIEW 'A' 剖面A



VIEW 'C' 剖面C

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STATUS

SCALE
A1 1:200

DIMENSION UNIT
METRES

KEY PLAN

PROJECT NO.
60340458

CONTRACT NO.
CE 63/2014 (CE)

SHEET TITLE
Queen's Hill Sewage Pumping Station
General Design
皇后山污水泵房設計圖

SHEET NUMBER
60340458/PP/APPENDIX A2
附錄A2

APPENDIX B
Aerial Photographs



**INFRASTRUCTURAL WORKS FOR PROPOSED DEVELOPMENTS AT QUEEN'S HILL, FANLING
- INVESTIGATION, DESIGN AND CONSTRUCTION**

粉嶺皇后山發展之基礎設施工程 — 勘查研究、設計及建造

**PHOTO - AP1 (#4866) -
AERIAL PHOTO (1964)
HEIGHT (FEET): 1,800**

相片 — AP1 (#4866)
航空照片 (1964)
航高 (尺) : 1,800

AECOM
APPENDIX B
附錄B



**INFRASTRUCTURAL WORKS FOR PROPOSED DEVELOPMENTS AT QUEEN'S HILL, FANLING
- INVESTIGATION, DESIGN AND CONSTRUCTION**

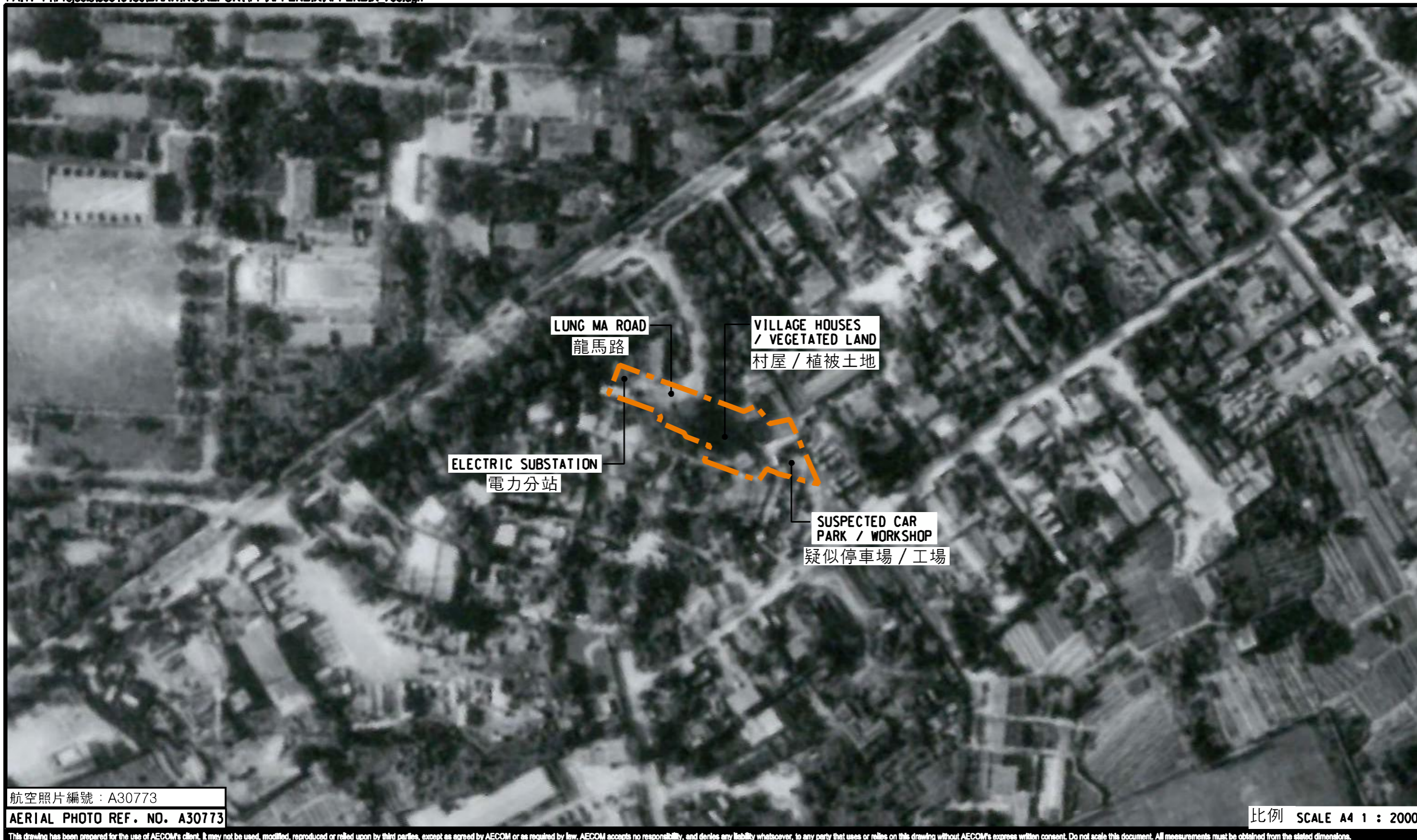
粉嶺皇后山發展之基礎設施工程 — 勘查研究、設計及建造

**PHOTO - AP2 (#20188) -
AERIAL PHOTO (1977)
HEIGHT (FEET): 4,000**

相片 — AP2 (#20188)
航空照片 (1977)
航高 (尺) : 4,000

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**APPENDIX B
附錄B**



INFRASTRUCTURAL WORKS FOR PROPOSED DEVELOPMENTS AT QUEEN'S HILL, FANLING
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PHOTO - AP3 (#A30773) -
AERIAL PHOTO (1992)
HEIGHT (FEET): 4,000

相片 — AP3 (#A30773)
航空照片 (1992)
航高 (尺) : 4,000

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APPENDIX B
附錄B



INFRASTRUCTURAL WORKS FOR PROPOSED DEVELOPMENTS AT QUEEN'S HILL, FANLING
- INVESTIGATION, DESIGN AND CONSTRUCTION

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PHOTO - AP4 (#CS52033) -
AERIAL PHOTO (2014)
HEIGHT (FEET): 6,000

相片 — AP4 (# CS52033)
航空照片 (2014)
航高 (尺) : 6,000

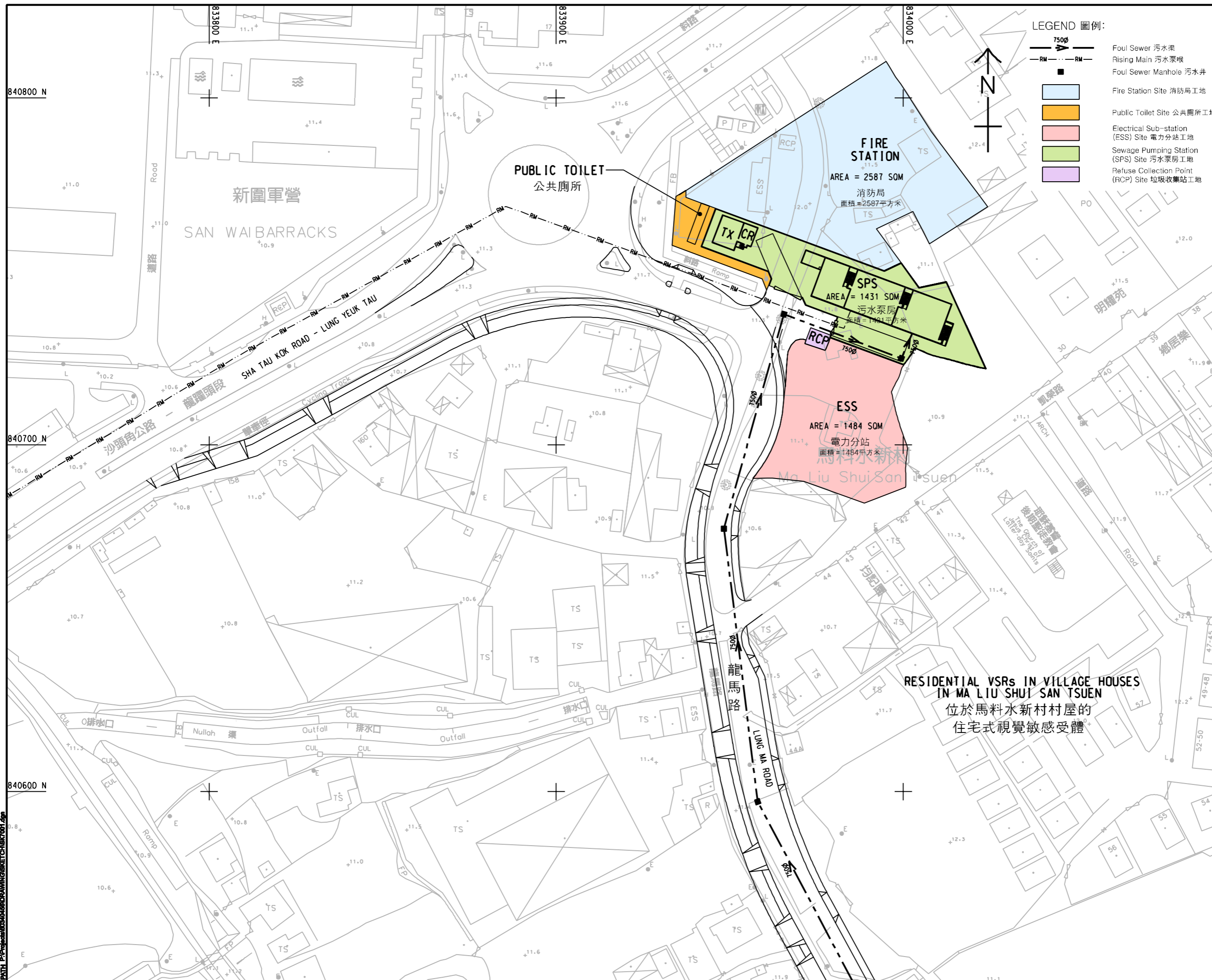
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APPENDIX B
附錄B

APPENDIX C

Location of Nearby Developments and the Key VSRs

Project Management Initials: Designer: Checklist: Approved: 840800 N
 840700 N
 840600 N
 File Path: \\X:\A\2\20140626\20140626\20140626\DRAWING\NET\CHSR7001.dgn
 20140626



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STATUS

SCALE 1:800
DIMENSION UNIT METRES

KEY PLAN

PROJECT NO. 60340456
CONTRACT NO. CE 63/2014 (CE)

SHEET TITLE
 Locations of Nearby Developments and the Key VSRs
 周邊的發展和視覺敏感受體的位置

SHEET NUMBER
 60340456/SK7001

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