

Project Profile

for

Public Housing Development at Lin Cheung Road Site

Temporary Sewage Pumping Station and Associated Sewer

Pipes





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1. Basic Information

1.1 Project Title

1.1.1 The title of the project is "Public Housing Development at Lin Cheung Road Site - Temporary Sewage Pumping Station and Associated Sewer Pipes".

1.2 Project Description

- 1.2.1 The proposed public housing development at Lin Cheung Road Site (LCR site) comprises seven residential blocks of about 3,700 flats with a site area of about 3.59 ha in Cheung Sha Wan. The housing site falls within an area zoned "Residential (Group A)12" ("R(A)12") on the approved South West Kowloon Outline Zoning Plan (OZP) No. S/K20/30 where "Flat" is a Column 1 use that is always permitted.
- 1.2.2 Similar to other proposed public housing developments which are not designated projects under the Environmental Impact Assessment Ordinance (EIAO), an Environmental Assessment Study (EAS) has been conducted by the Hong Kong Housing Authority (HKHA) to address the environmental issues of the public housing development at LCR site. Standard pollution control measures would be implemented to control the short-term environmental impacts during construction of the public housing development. The piling works of the public housing development has already commenced in early October 2014 with target completion of the building works for population intake in between Year 2018 and 2019.
- 1.2.3 The planning of permanent sewerage infrastructure works for the entire LCR site of about 9.65 ha covering both private and public housing developments are being undertaken by the Civil Engineering and Development Department (CEDD), with target commissioning date scheduled for 2021. To ensure timely population intake in 2018 for the public housing development, it is considered more cost effective to provide a temporary sewage pumping station (TSPS) with associated sewer pipes to serve the public housing development from March 2018 as a stop-gap measure until the permanent sewerage system becomes fully operational tentatively in 2021.
- 1.2.4 The Drainage Services Department (DSD) is responsible for the design, operation and maintenance of the TSPS and associated sewer pipes. However, in view of the small scale of the proposed TSPS and associated sewer pipes (Section 1.5) and to meet the public housing development programme, the construction works of the TSPS and associated sewer pipes will be constructed and supervised by the HKHA under the public housing building contract. This arrangement could also save cost and time in administering a separate construction contract for the proposed TSPS



and associated sewer pipes.

1.3 Purpose and Nature of Project

- 1.3.1 The proposed TSPS are needed to collect the sewage from the proposed public housing development at LCR site and convey it via the associated sewer pipes (approximately 90m including twin rising main and gravity sewer) to the existing sewage manhole at Hing Wah Street West. It will be fully enclosed within a reinforced concrete structure.
- 1.3.2 The proposed TSPS are temporary in nature and expected to provide a few years of service to the public housing development upon population intake in between Year 2018 and 2019. It will operate from March 2018 until the permanent sewerage infrastructure works for the entire LCR site are provided by CEDD tentatively in 2021.

1.4 Name of the Project Proponent

1.4.1 The Hong Kong Housing Authority (HKHA) is the project proponent of this Project.

1.5 Site Location and Scale of Project and History of Site

- 1.5.1 The Project site is located at the north-western portion of a reclaimed land which is bounded by Lin Cheung Road, Hing Wah Street West and the Cheung Sha Wan Wholesale Food Market in Cheung Sha Wan. A proposed public housing development (with provisions of seven residential blocks) is located about 15 m away from the Project site. The area further to the south of the Project site is currently occupied by the MTRC and used as a temporary barge loading point to facilitate the construction of the Express Rail Link (XRL) project. The site area for construction of the proposed TSPS is currently used as an open storage of water containers and cement bags and/or car parking area. General location of the Project site and the public housing development is shown in **Figure 1**.
- 1.5.2 The proposed TSPS will occupy about 200 m^2 in area and the size of the proposed TSPS is about 19.75 m x 10 m with a building height of 4.55 m except a staircase roof of 7.25 m (refer to **Appendix A**).
- 1.5.3 The average dry weather flow (ADWF) of the proposed TSPS is 3,000 m³ per day. General arrangement layout plans of the TSPS and the details of the building height, building footprint and access of the proposed TSPS are provided in **Appendix A**.

1.6 Number and Type of Designated Project Covered by the Project Profile

1.6.1 The installed capacity (ADWF) of the proposed TSPS is greater than 2,000 m³ per day and located within 150m from the boundary of the proposed public housing



development at LCR site. Thus, the Project is classified as a designated project under F.3 (b) (i) of Part I, Schedule 2 of the Environmental Impact Assessment Ordinance (EIAO).

1.6.2 This Project Profile is prepared 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.

1.7 Name and Number of Contact Person

1.7.1 The name and contact details of the Project Proponent are provided below:

Hong Kong Housing Authority 33 Fat Kwong Street Ho Man Tin Kowloon, Hong Kong

Contact Person: Lee Man Kwong, David (Civil Engineer/32)

Telephone: 2129 3821 Fax: 2628 9060

Email: davidmk.lee@housingauthority.gov.hk



2. Outline of Planning and Implementation programme

2.1 Project Implementation

2.1.1 The Drainage Services Department (DSD) is responsible for the design, operation and maintenance of the Project whereas construction of the Project will be managed by the HKHA and carried out by contractor(s) to be appointed by HKHA under the building contract of the public housing development.

2.2 Project Timetable

2.2.1 The planning and design of the Project has been in process since February 2014. Construction of the Project is scheduled to commence in October 2015 for completion before 2018 to tie in with the completion of the building works of the proposed public housing development.

2.3 Interactions with Other Projects

- 2.3.1 The Project will be constructed under the same building contract of the proposed public housing development at LCR site supervised by the HKHA. The proposed public housing development would involve superstructure works (e.g. formworks, erection of precast structures, building services, etc.) and piling works (the noisy works). In order to minimize cumulative construction noise impact, the construction of the Project would be commenced after piling works of the adjoining public rental housing residential blocks are completed. With the implementation of the pollution control measures, it is not anticipated that there will be significant noise impact due to the superstructure works for the proposed public housing development which will result in adverse cumulative construction noise impact.
- 2.3.2 Apart from this, construction works areas for ventilation building and temporary barge loading point of the XRL project are identified 190m to the north and 3m to the south of the Project site respectively with overlapping implementation programme, resulting in potential cumulative construction noise impact.



3. Major Elements of the Surrounding Environment

3.1 Existing and Planned Sensitive Receivers and Sensitive Parts of the Natural Environment

Air Quality and Noise

3.1.1 The proposed TSPS is located on a reclaimed land at northwest Kowloon which is currently zoned "Residential (Group A)12"("R(A)12") on the approved South West Kowloon OZP No. S/K20/30. The land uses in the vicinity of the Project include "Residential (Group A)" ("R(A)"), "Comprehensive Development Area" ("CDA"), "Government, Institution or Community" ("G/IC"), "Industrial" ("I"), 'Other Specified Uses" ("OU") and "Open Space" ("O"). There is no committed completion year to the planned sensitive receivers but only a tentative programme, except a proposed public housing development which will be located adjacent to the Project. Nonetheless, relevant air sensitive receivers (ASRs) and noise sensitive receivers (NSRs) within 500 m and 300 m from the Project site are identified. The locations of representative existing and planned ASRs and NSRs are shown in **Figure 2** and **Figure 3** respectively and listed in **Table 3.1**.

Table 3.1 Air Quality and Noise Sensitive Receivers in the vicinity of the Project

	Sensitive Receiver	Land Use	Approximate Horizontal Distance from		
I.D.			The Nearest Project Site Boundary (m)	The Nearest TSPS's Structure Wall (m)	
Air Sensitiv	re Receivers				
ASR 1 (Planned)	Government, Institution or Community Site (1)	G/IC ⁽⁷⁾	1	32	
ASR 2 (Planned)	Comprehensive Development Area (2)	CDA ⁽⁷⁾	7	20	
ASR 3 (Planned)	Proposed Public Housing Development (3)	Residential	10	15	
ASR 4	New World First Ferry	Office	81	134	
ASR 5 (Planned)	Comprehensive Development Area (4)	CDA (7)	178	179	
ASR 6	Sheng Kung Hui St. Andrew's Primary School	Educational	193	198	
ASR 7	Hoi Chi House, Hoi Lai Estate, Sham Shui Po	Residential	267	287	
ASR 8 (Planned)	Government, Institution or Community Site (5)	G/IC ⁽⁷⁾	288	293	
ASR 9	Hop Hing Marine Industrial (HK) Ltd.	Office	304	363	
ASR 10	Cheung Sha Wan Wholesale	Office	326	334	





	Sensitive Receiver	Land Use	Approximate Horizontal Distance from		
I.D.			The Nearest Project Site Boundary (m)	The Nearest TSPS's Structure Wall (m)	
	Food Market				
ASR 11	Tack Ching Girls' Secondary School	Educational	365	366	
ASR 12 (Planned)	Residential Area (6)	Residential	382	385	
ASR 13	Block 3, Aqua Marine, Sham Shui Po	Residential	385	390	
Noise Sens	Noise Sensitive Receivers				
NSR 1 (Planned)	Government, Institution or Community Site (1)	G/IC (7)	1	32	
NSR 2 (Planned)	Comprehensive Development Area (2)	CDA (7)	7	20	
NSR 3 (Planned)	Proposed Public Housing Development (3)	Residential	10	15	
NSR 4 (Planned)	Comprehensive Development Area (4)	CDA (7)	178	179	
NSR 5	Sheng Kung Hui St. Andrew's Primary School	Educational	193	198	
NSR 6	Hoi Chi House, Hoi Lai Estate, Sham Shui Po	Residential	267	287	
NSR 7 (Planned)	Government, Institution or Community Site (5)	G/IC (7)	288	293	

Notes:

Water Quality

3.1.2 The Project is a land-based project within an urban area. There are no natural rivers/ streams with ecological interests within 500 m from the Project site and the seafront is about 107 m to the southwest of the Project site. The closest water quality sensitive receivers (WSRs) refer to the MTRC Cooling Water Intake and Water Services Department Cheung Sha Wan Flushing Water Intake, which are more than 900 m away from the Project site boundary.

Visual

3.1.3 The visual sensitive receivers (VSRs) in the vicinity of the Project mainly consist of road travellers along Hing Wah Street West, Lin Cheung Road and West Kowloon Highway, and the planned G/IC and comprehensive development located on the

^{1.} The completion year of the G/IC Site (i.e. ASR 1 and NSR1) is around 2019/2020 that is subject to the development programme of the site's owner.

^{2.} The completion year of the CDA Site (i.e. ASR 2 and NSR2) is around 2019/2020 that is subject to the development programme of the site's owner.

^{3.} The population intake year of the proposed public housing development (i.e. ASR3 and NSR3) is from 2018 to 2019.

^{4.} The population intake year of the proposed public housing development (i.e. ASR5 and NSR4) is 2019 to 2021.

^{5.} The completion year of the G/IC Site (i.e. ASR 8 and NSR 7) is around 2018 that is subject to the development programme of the site's owner.

^{6.} The population intake year of proposed public housing development (i.e. ASR12) is 2020.

^{7.} G/IC - Government, Institution or Community; CDA- Comprehensive Development Area



southwest of the Project site and the lower floors of the proposed public housing development located at the LCR site. To the north of the Project, no VSR has been identified to have direct line of sight of the Project due to the elevated West Kowloon Highway and the vertical barriers for the Nam Cheong West Rail Line.

Cultural Heritage

3.1.4 There are no declared monuments, historical buildings or sites of Archaeological Interest identified within 500m from the Project site.

Ecology

- 3.1.5 Within 500m from the Project site, there is no recognized site of ecological sensitive area or fisheries resources in the waters nearby.
- 3.2 Major Elements of Surrounding Environment and Land Uses Which Might Affect the Project
- 3.2.1 The proposed TSPS and associated sewer pipes are not environmentally sensitive receivers. As such, the surrounding land uses will not impact upon the Project in environmental terms.



4. Possible Impact on the Environment

4.1 Outline of Process Involved

4.1.1 The general layout of the proposed TSPS is shown in **Appendix A** and the alignment of associated sewer pipes is shown in **Figure 4**. Sewage from the proposed public housing development at LCR site will be conveyed to the proposed TSPS via gravity sewers. The incoming sewage will be first diverted into an inlet chamber and then go through the screening chamber and the distribution chamber, and finally enter the wet well. The sewage will be screened by mechanical raked bar screens and screenings will be properly packed in plastic bags within the proposed TSPS and transported to landfill site for disposal before being pumped by submersible pumps out of the proposed TSPS to the existing public sewers at Hing Wah Street West. The sewage will then be conveyed via the public sewerage system to West Kowloon Sewage Pumping Station No. 2 to Stonecutters Island Sewage Treatment Works for treatment and disposal.

4.2 Possible Environmental Impacts during Construction Stage of the Temporary Sewage Pumping Station and Associated Sewer Pipes

Air Quality

- 4.2.1 In view of the small scale of the Project and the small site area for the proposed TSPS (approximately 200 m²), large scale site formation and excavation works are not anticipated. Possible air quality impacts arising from the construction of the Project would be fugitive dust emissions from superstructure works including site clearance, foundations, wind erosion of open sites and stockpiling areas. Dust suppression measures as stipulated in the Air Pollution Control (Construction Dust) Regulation will be fully implemented and adverse air quality impacts due to the construction of the Project are not anticipated.
- 4.2.2 The construction works of the Project would be carried out by the contractor(s) to be appointed under the building contract for the proposed public housing development at LCR site. The contractor is required to schedule carefully their dusty construction activities for the Project such as excavation works to avoid overlapping the major dusty construction activities for the proposed public housing development. Adverse cumulative construction dust impacts due to the construction phase of the Project is not anticipated.



Noise

- 4.2.3 Noise Sensitive Receivers (NSRs) in the vicinity of the construction site may be affected by the construction activities for the Project involving the use of Powered Mechanical Equipment (PME). Subject to the development programme of the site's owner, NSR 1 to NSR 4 & NSR7 are tentatively planned to be completed after 2018. Given that construction of the proposed TSPS will be completed before 2018, potential construction noise impacts to these planned NSRs are not applicable and thus only the existing NSRs (i.e. Sheng Kung Hui St. Andrew's Primary School (NSR 5) and Hoi Chi House, Hoi Lai Estate, Sham Shui Po (NSR 6)) are considered. In view of the small scale of the Project and the large horizontal distance separation from the Project site to the existing Sheng Kung Hui St. Andrew's Primary School (NSR 5) and Hoi Chi House, Hoi Lai Estate, Sham Shui Po (NSR 6) (about 193 m to 267 m), adverse construction noise impact is not anticipated when using recommended quiet PMEs during construction phase. An analysis on construction noise impacts is provided in Appendix C.
- 4.2.4 There are works areas for construction of ventilation building and temporary barge loading point for the XRL project identified in vicinity of the Project. According to MTRC's latest information, completion of the XRL is expected to be in 2017, thus is expected to overlap with the construction of the Project. The potential cumulative construction noise impacts due to the XRL project and the Project have been discussed in **Appendix C** and summarized below.
- 4.2.5 According to Appendix C, the highest estimated construction noise level (from excavation works) for the Project is 5 dB(A) below the criteria under the mitigated scenario (e.g. with quieter PMEs) and last for 3 months only. The construction of the Project would only commence after the noisy piling works for the adjoining public rental housing residential blocks have been completed. In order to further minimize cumulative construction noise impacts, the contractor is required to carefully schedule the noisy activities (especially when using excavators) for the Project to avoid concurrent noisy superstructure works of the proposed public housing development. In view of the insignificant construction noise impact from the Project (Appendix C) and proper scheduling of concurrent construction activities under the same contractor, cumulative adverse construction noise impacts are not anticipated.

Water Quality

4.2.6 Water quality impacts could potentially arise from uncontrolled surface runoff



generated by the use of dust suppression sprays and the erosion of open stockpiles and exposed earthworks during rainstorm events. Sewage generated from workforce will also need to be properly controlled. Due to the limited scale of the Project, as well as the requirements for future contractor to fully comply with the Water Pollution Control Ordinance and to implement the best practice site drainage measures as described in the Professional Persons Environmental Consultative Committee Practice (ProPECC) Note PN 1/94 "Construction Site Drainage", adverse water quality impacts during construction phase are not anticipated.

Waste Management

- 4.2.7 Construction and demolition (C&D) materials and waste such as excavated spoil (soil and rock), broken concrete, metal scraps and packaging materials will be generated from the construction phase of the Project. The estimated volume of excavated C&D materials is about 1,020 m³ that includes about 110 m³ would be reused on site. The inert portion will be transported to public fill facilities whereas the non-inert C&D waste will be disposed of to landfill. Based on currently available information, no marine deposit will be generated from the works.
- 4.2.8 Small amount of chemical wastes will also be generated from the maintenance of equipment. Under the Waste Disposal (Chemical Waste) (General) Regulation, the contractor will be required to register with the EPD as a chemical waste producer and to follow the guidelines stated in the "Code of Practice on the Packaging Labelling and Storage of Chemical Wastes". Good quality containers compatible with the chemical wastes should be used, and incompatible chemicals should be stored separately. Appropriate labels must be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the chemical waste, such as flammable, oxidizing, irritant, toxic, harmful, corrosive, etc. The contractor will use a licensed collector to transport and dispose of the chemical wastes at the approved Chemical Waste Treatment Centre or other licensed recycling facilities, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.
- 4.2.9 In view of the scale and limited construction activities for the Project, it is expected that insignificant amount of general refuse will be generated from the construction workforce. Any general refuse generated will be collected regularly and disposed of at the South East New Territories (SENT) Landfill via the West Kowloon Transfer Station.
- 4.2.10 With implementation of good construction site management practice, environmental



impact due to waste generated during construction phase of the Project would be minimal.

Land Contamination

4.2.11 The Project site is situated on reclaimed land in the inland portion of LCR site which was formed since 1995. Based on the historical aerial photographs obtained from Lands Department, the Project site area for the proposed TSPS had been vacant and as part of an open storage of water containers and cement bags and/or car parking area up to now. The Project site area for the proposed sewage discharge system is now on the local access road. According to the site visit findings obtained in March and September 2014, there were no specific contaminative activities carried out on the Project site and there were no potential contaminants such as fuel, chemical and/or dangerous good identified. Therefore, it is not anticipated that there are potential sources for land contamination and substantial land contamination issues due to the Project are not expected. The historical aerial photographs are shown in Appendix E.

Landscape and Visual

4.2.12 The Project site is situated on reclaimed land which is currently used as open storage of water containers and cement bags and/ or car parking area and vehicles access road. No trees were identified within the Project site. The approximate location of the Project site and existing views from the surroundings are illustrated in **Appendix D**. During construction, site hoardings with 2.3 m in height will be provided and surround the Project site, the view of VSRs to the construction works will be limited. Therefore, adverse landscape and visual impacts are not anticipated during construction phase of the Project.

Cultural Heritage

4.2.13 There are no declared monuments, historical buildings or Sites of Archaeological Interest identified within 500m from the Project site. No cultural heritage impacts are anticipated.

Ecology

4.2.14 The Project site is located on reclaimed land in the urbanized area at Cheung Sha Wan. The Project site is not surrounded by areas of ecological value (e.g. woodland and natural stream). Adverse ecological impacts are not expected to occur.





4.3 Possible Environmental Impacts during Operational Stage of the Temporary Sewage Pumping Station and Associated Sewer Pipes

No adverse environmental impact for the proposed associated sewer pipes during the operational stage is anticipated. The possible environmental impacts during operational stage of the TSPS are listed as follow:

Air Quality

- 4.3.1 Potential air quality impact arising during the operational phase of the Project would mainly be the odour from the proposed TSPS. The wet wells, inlet chamber and screen chambers would be the main sources of odour emissions. Potential odour impact would be expected at the nearby ASRs without mitigation measures. However, all odour sources will be housed inside the proposed TSPS reinforced concrete structure and a deodourising system will be installed to remove the odour. Also, all fan exhaust openings are located away from the ASRs (e.g. the proposed public housing development) toward Hing Wah Street West and the generated screenings would be packed and handled carefully inside the proposed TSPS structure to avoid odour nuisance.
- 4.3.2 A desk-top study on the review of existing Cheung Sha Wan Sewage Pumping Station (CSWSPS) has been conducted. According to the information provided by DSD, the designed capacity of CSWSPS is 456,863 m³/day and the average daily flow for the Year 2012 was 349,386 m³/day. Similar to the proposed TSPS, all the odour sources are housed inside the reinforced concrete structure. There are four number of activated carbon type deodourisation units in total and the odour removal efficiency of each deodourisation unit is 95%. In addition, a half-yearly maintenance for the deodourisation units and daily maintenance and cleaning works are conducted such that the deodourisation units are under good condition all the time. According to DSD's odour nuisance complaint records in respect of the CSWSPS, there were no odour nuisance complaints received from the public between year 2008 and 2012.
- 4.3.3 A reference odour perception has been conducted at the existing CSWSPS to further verify DSD's information. As a worst scenario consideration, the survey has been carried out at 2pm to 3pm on 11 September 2014, where a peak sewage flow is expected. The weather condition of the odour perception date is given in <u>Table 4.1</u>.



Table 4.1 Weather Condition of Odour Perception Date

Parameters	Index
Temperature	33 °C
Wind Direction	Southeast
Wind Speed	Breezeless

- 4.3.4 According to the odour perception, 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 vent. No odour could be detected at locations over 10 m away from the exhaust vent. The odour perception route of the CSWSPS is shown in **Figure 5**.
- 4.3.5 Therefore, the existing odour mitigation measures (e.g. activated carbon deodourizers with regular maintenances) for CSWSPS are considered effective. Given the designed and current flows of CSWSPS are 456,863 m³/day and 349,386 m³/day respectively, the scale of proposed TSPS is much smaller (design flow of 3,000 m³/day only). The horizontal distance from the exhaust outlet of the proposed TSPS to the nearest ASR is 20m and much far away from the 10m-odour detectable distance as per CSWSPS. Thus, adverse odour impact for the proposed TSPS is anticipated to be negligible, provided that similar odour control measures of CSWSPS would be implemented in the Project.

Noise

4.3.6 The main potential noise impacts from the operational phase of the Project will be the fixed plant noise from pumps, mechanical screens, and exhaust fans of the proposed TSPS. These fixed plant equipment will all be housed inside the reinforced concrete structure with acoustic louvers at exhaust openings of fans as appropriate. Therefore, no adverse fixed plant noise impacts due to the operation of the proposed TSPS are expected. An analysis on operational noise impact is provided in **Appendix C**.

Water Quality

4.3.7 Under normal operating conditions, the Project will not cause any adverse impacts on the water quality of the surrounding environment. Under emergency situations, such as pump failure or extended power loss of the proposed TSPS, sewage will be discharged to the existing box culvert located next to the proposed TSPS. With the implementation of appropriate preventative measures as stated in Section 5.3, this emergency discharge scenario will be extremely unlikely.

Waste Management

4.3.8 The waste generated during the operational phase of the Project includes small



amount of screenings from the proposed TSPS. The screenings would be packed and handled carefully inside the proposed TSPS structure to avoid odour nuisance. The screenings will be disposed of to landfill regularly. No adverse impact due to waste disposal activities is expected to occur during the operational phase of the Project.

Landscape and Visual

4.3.9 The Project will be built on reclaimed land and no existing tree will be affected. The proposed TSPS is a low-rise building (i.e. one storey with dimensions of 19.75 m x10 m x 4.55 m (length x width x height)) and is small in scale. Green design has been incorporated to soften the building structure and enhance the visual quality of the proposed TSPS. The potential design of the proposed TSPS building structure is shown in **Appendix B**. Roof-top greening and vertical greening on the structure wall will be provided and optimized as far as practicable to achieve the best greening and screening effect. It is expected that the visual impact will be alleviated to an acceptable level.

Cultural Heritage

4.3.10 There are no declared monuments, historical buildings or sites of Archaeological Interest identified in the vicinity of the Project. Therefore, no cultural heritage impacts are anticipated during the operational phase of the Project.

Ecology

4.3.11 The Project will be constructed in the urbanized area. The Project site is not surrounded by areas of ecological value (e.g. woodland and natural stream). Therefore, adverse ecological impact is not anticipated during the operational phase of the Project.



Environmental Protection Measures to be Incorporated in the Construction and Operation and any Further Environmental Implication

5.1 General

5.1.1 Environmental pollution control clauses and all environmental pollution mitigation measures as recommended in this Project Profile will be incorporated in the building contract to ensure that proper mitigation measures are implemented by the contractor. In addition, an Environmental Officer (EO) shall be employed by the contractor to audit the implementation of all environmental mitigation measures recommended.

5.2 Mitigation Measures during Construction Phase

Air Quality

- 5.2.1 Dust control and suppression measures stipulated in the Air Pollution Control (Construction Dust) Regulation of the Air Pollution Control Ordinance (APCO) will be strictly adhered to control the dust emissions.
- 5.2.2 The implementation of mitigation measures such as water spraying of exposed surfaces at least four times a day, wheel washing and covering stockpiles with tarpaulin sheet, and provision of covers for all trucks will help reduce the level of construction related dust and reduce any air quality impacts.
- 5.2.3 With proper implementation of the mitigation measures, dust emissions from the construction of the Project will be controlled to within acceptable levels.

Noise

- 5.2.4 The contractor will be required to use quiet PME during construction.
- 5.2.5 The calculations and the Sound Power Levels (SWL) of the PME are provided in **Appendix C**. The construction noise from the Project will be within the EIAO-TM daytime noise standard of 75 dB(A) for domestic premises or 70 dB(A) for school (and 65 dB(A) during examination periods)).
- 5.2.6 In addition to quiet PME, the contractor will be required to adopt the following good site practices during the construction phase.
 - Use well maintained site equipment and PME;
 - Employ the use of silencers and mufflers where applicable;
 - Situate mobile equipment (i.e. generators) as far away from NSRs as



reasonably possible;

- Site machinery used intermittently should be turned off or throttled to a minimum when not in use;
- Site machinery that emits noise in a particular direction should be positioned to emit noise away from NSRs; and
- Position material stockpiles, site offices and site hoardings as noise barriers where reasonably possible.

Water Quality

5.2.7 The construction of the Project includes excavation and general building works. The contractor will follow the guidelines stipulated in EPD's ProPECC Note PN1/94 – "Construction Site Drainage" to minimise the potential water quality impacts. Good housekeeping and stormwater best management practices, as detailed below, should be implemented to ensure that all construction runoff are well controlled in order to minimise the water quality impacts that arise due to construction of the Project.

Construction Site Runoff and Drainage

- 5.2.8 Exposed soil areas should be minimised to reduce the potential for increased siltation, contamination of runoff and erosion. Construction runoff related impacts associated with the construction activities can be readily controlled through the use of appropriate mitigation measures which include:
 - use of sediment traps; and
 - adequate maintenance of drainage systems to prevent flooding and overflow.
- 5.2.9 Sedimentation tanks of sufficient capacity, constructed from pre-formed individual cells are recommended as a general mitigation measure which can be used for settling surface runoff prior to disposal.
- 5.2.10 Open stockpiles of construction materials (for examples, aggregates, sand and fill material) should be covered with tarpaulin or similar fabric. Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system.
- 5.2.11 All vehicles and plants should be cleaned before leaving the construction site to ensure no earth, mud, debris and the like are deposited outside the construction works areas.
- 5.2.12 Silt removal facilities, channels and manholes (if any) should be maintained and the



- deposited silt and grit should be removed regularly, at the onset of and after each rainstorm to ensure that these facilities are functioning properly at all times.
- 5.2.13 Good site practices should be adopted to remove rubbish and litter from construction site so as to prevent it from spreading from the construction works areas. It is recommended to clean the construction site on a regular basis.
- 5.2.14 Earths final surfaces should be well compacted and the subsequent permanent work or surface protection should be carried out immediately after the final surfaces are formed to prevent erosion caused by rainstorms. Appropriate drainage like intercepting channels should be provided where necessary.
- 5.2.15 All temporary and permanent drainage pipes, bypass channels and culverts provided to facilitate runoff discharge should be adequately designed for the controlled release of storm flows. All sediment control measures should be regularly inspected and maintained to ensure proper and efficient operation at all times and particularly following rain storms. The temporarily diverted drainage should be reinstated to its original condition when the construction work has finished or the temporary diversion is no longer required.

Accidental Spillage

- 5.2.16 There is potential for leakage and spillage from the maintenance of vehicles and equipment. These activities will be carried out off-site and should only be undertaken within areas appropriately equipped to control these discharges.
- 5.2.17 With the implementation of these measures, water quality will be kept within acceptable levels.

Waste Management

- 5.2.18 The contractor will be required to sort all C&D materials and waste into different categories for suitable disposal. Disposal of C&D materials will 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". The inert portion will be transported to public filling facility whereas the non-inert C&D waste will be disposed of at landfill. The EO shall audit the proper handling and disposal of the C&D materials generated.
- 5.2.19 All chemical wastes from equipment maintenance will be handled, stored and disposed of properly and in accordance with the requirements for Waste Disposal (Chemical Waste) Regulation such as good quality containers compatible with the



chemical wastes should be used, and incompatible chemicals should be stored separately; appropriate labels must be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the chemical waste, such as flammable, oxidizing, irritant, toxic, harmful, corrosive, etc.; and a licensed collector will be employed to transport and dispose of the chemical wastes at the approved Chemical Waste Treatment Centre or other licensed recycling facilities. General refuse will be stored and disposed of separately from general construction waste and chemical waste. The storage bins for general refuse will be provided with lids, which should be kept closed to avoid odour nuisance and wind blown litter.

5.2.20 With a suitable waste management plan and proper implementation of the recommended waste management measures, no adverse waste impact during the construction phase is expected.

Landscape and Visual

5.2.21 During construction phase of the Project, site hoardings (with 2.3 m in height) compatible with the surrounding environment will be provided to screen the construction site from the surroundings. The proposed Project site is small in scale and suits for construction of a TSPS building, as such no temporary planter would be proposed within the proposed Project site. Nevertheless, roof-top greening and vertical greening on the structure wall will be provided as far as practicable after completion of the proposed TSPS's building construction to soften the building structure and enhance the visual quality of the proposed TSPS as far as possible to achieve the best greening and screening effects. The conceptual design plan of the proposed TSPS building structure is attached in **Appendix B**. Therefore, adverse landscape and visual impacts are not expected during the construction phase of the Project.

Cultural Heritage

5.2.22 As no cultural heritage impact is expected during the construction phase of the Project, no mitigation measures are necessary.

Ecology

5.2.23 As no ecological impact is expected during the construction phase of the Project, no mitigation measures are necessary.



5.3 Mitigation Measures during Operational Phase

Air Quality

- 5.3.1 To minimize air quality impact in the proposed TSPS, the potential odour emission areas such as wet wells, inlet chamber and screen chambers of the proposed TSPS will be located underground with cover, enclosed by a reinforced concrete structure. In addition, the vented air from the wet wells and screen chamber would be treated by activated carbon type deodourization unit before contacting into atmosphere, which successful example could refer to the existing CSWSPS.
- 5.3.2 Also, the exhaust of the deodorizer would be located in a direction away from the sensitive receivers (i.e. away from the proposed public housing development at LCR site) toward Hing Wah Street West.
- 5.3.3 Activated carbon type deodourizer is commonly used to treat odourous gases and with typically 90% or above odour removal efficiency for most DSD's sewage treatment facilities and sewage pumping stations (e.g. CSWSPS as mentioned in Sections 4.3.2 to 4.3.4), no adverse odour impacts are anticipated. For the proposed TSPS, one activated carbon type deodourizer was designed to continuously treat the odour with at least 99.5 % odour removal efficiency. The removal efficiency of the deodourizer would be monitored by the operator through the Supervisory Control and Data Acquisition (SCADA) system.
- 5.3.4 Similar to the CSWSPS, in order to avoid potential adverse odour impacts due to the proposed TSPS, it is recommended that the operator of the proposed TSPS shall conduct regular maintenance of the deodourizer unit. The frequency of preventive maintenance for the deodourisation units should be at least on a half-yearly basis and a daily patrol should be conducted. Subject to actual operation, the activated carbon should be replaced at least at a 4-year interval to ensure the deodourizer in a good condition.

Noise

- 5.3.5 All the pump sets will be located at wet well. Mechanically raked bar screens will be located in a 200 mm reinforced concrete structure with a soundproof door.
- 5.3.6 The deodorizer unit will be fully enclosed inside the concrete building of the proposed TSPS. Outlets of the ventilation exhaust fans will be fitted with acoustic louver to mitigate the noise level to meet the relevant noise criterion i.e. 5 dB(A) below the Acceptable Noise Level (ANL-5) under the EIAO-TM. Adverse noise impact is not anticipated.



Water Quality

- 5.3.7 To minimise the chance of abnormal situation and emergency sewage bypass, the proposed TSPS contains precautionary measures. Two wet wells will be enlarged to provide a 2-hour retention limit of average dry weather flow influent, allowing for the temporary holding of excess sewage and/or water during ultimate flow conditions. The proposed TSPS has 4 pumps, with normally only 3 pumps being in operation and 1 pump as standby. Regular maintenance works will be carried out to repair or replace any failure parts as necessary, so as to maintain proper operation of the proposed TSPS.
- 5.3.8 In addition, the twin rising main also provides a large pumping capacity. Dual-feed power supplies also mitigate the risk of sewage bypass due to lack of power. A Supervisory Control and Data Acquisition (SCADA) system will also be installed in order to allow for remote monitoring of the proposed TSPS because it is due to be unmanned. The SCADA system allows for immediate action to be taken in the event of an emergency.
- 5.3.9 The dual-feed power supply will be provided. The dual-feed power supply further enhances the supply security and reliability. In consideration of this intense backup, the chance of an emergency bypass situation is considered to be extremely remote.
- 5.3.10 Given that the Project is land-based within an urban area, there is no ecologically importance in the vicinity and the closest WSR is only industrial users (seawater intakes) which is about 900m away. With the implementation of precautionary measures in terms of provisions of standby pump, telemetry monitoring system, larger pumping capacity, dual-feed power supply and provision of 2-hour retention limit of average dry weather flow influent, adverse water quality impact is not anticipated.

Waste Management

5.3.11 Screenings collected in the screening hall of the proposed TSPS will be properly packed in plastic bags within the proposed TSPS. The screenings will then be transported to landfill site for disposal. No adverse environmental impact is anticipated.

Landscape and Visual

5.3.12 As stated in Section 5.2.21, greening designs including a large panel of green roof and vertical greening on the structure wall toward Hing Wah Street West will be incorporated and optimized to soften the building structure and enhance the visual



- quality of the proposed TSPS. The green roof will be formed by the 300 mm and 600 mm soil depth planters with shrub, creepers and groundcovers. Vertical green will be provided on the structure wall which is toward Hing Wah Street West. The conceptual design plan for the proposed TSPS is presented in **Appendix B**.
- 5.3.13 Architectural aspects of the proposed TSPS such as colour scheme will be carefully designed taking into account the features of the surrounding land and design of the proposed public housing development to make the new structure form part of the compound hence minimizing any potential visual impact.
- 5.3.14 In view of the small scale of the proposed TSPS and with proper mitigation measures, no adverse landscape and visual impacts are anticipated during the operational phase of the Project.

Ecology

5.3.15 As no ecological impact is expected during the operational phase of the Project, no mitigation measures will be taken.

Cultural Heritage

5.3.16 As no cultural heritage impact is expected during the operational phase of the Project, no mitigation measures will be taken.



6. Summary of Potential Environmental Impacts and Mitigation Measures

- 6.1 Construction and Operational Stage Impacts and Mitigation Measures
- 6.1.1 The potential environmental impacts and proposed mitigation measures to be incorporated into the construction and design of the Project are summarized in Table 6.1 and Table 6.2, respectively.

Table 6.1 Summary of Potential Environmental Impacts and Mitigation Measures during Construction Stage

measures during Construction Stage					
Potential Environmental Impact	Mitigation Measures	Implementation Agent	Relevant Section in Project Profile		
Construction Dust	 Dust control and suppression measures stipulated in the Air Pollution Control (Construction Dust) Regulation Water spraying on exposed surface at least four times a day Wheel washing Covering stockpiles with tarpaulin sheet Provision of covers for all trucks 	Contractor	5.2.1 - 5.2.2		
Noise	Use quiet PMEGood site practices	Contractor	5.2.4 & 5.2.6		
Construction site runoff	 Provide a sedimentation tank follow the guidelines stipulated in EPD's ProPECC Note PN1/94 – "Construction Site Drainage" 	Contractor	5.2.7 - 5.2.16		
Waste arising	Sort all C&D materials and waste into different categories for suitable disposal Chemical wastes from equipment maintenance will be handled, stored and disposed of properly and in accordance with the requirements for Waste Disposal (Chemical Waste) Regulation General refuse will be stored and disposed of separately from general construction waste and chemical waste Storage bins for general refuse will be provided with lids	Contractor	5.2.18 – 5.2.20		
Landscape and visual impacts	Provide site hoardings (with 2.3 m in height) compatible with the surrounding environment Provide green roof & vertical greening on the structure wall	Contractor	5.2.21		



Table 6.2 Summary of Potential Environmental Impacts and Mitigation Measures during Operational Stage

Measures during Operational Stage Potential P					
Environmental Impact	Mitigation Measures	Implementation Agent	Relevant Section in Project Profile		
Odour	Wet well and inlet chamber and screen chambers of the proposed TSPS would be located underground with cover and enclosed by a reinforced concrete structure TSPS to include activated carbon type of deodorizer which has a 99.5% odour removal efficiency Exhaust of the deodorizer would be located in a direction away from the sensitive receivers (i.e. away from the Proposed public housing development at LCR site) toward Hing Wah Street West Conduct regular maintenance of deodourizer unit in order to avoid potential adverse odour impacts due to the proposed TSPS Conduct preventive maintenance for deodourisation units at least in half-yearly basis and a daily patrol Replace activated carbon in at least 4 years intervals to ensure the deodourizer in a good condition	HKHA / DSD	5.3.1– 5.3.4		
Noise	 Pump sets will be located in wet well. Mechanically raked screens will be located in a 200 mm reinforced concrete structure with a soundproof door The deodourizer unit will be fully enclosed inside the concrete building of the proposed TSPS Exits of the ventilation exhaust fans will be fitted with proper type of acoustic louver to mitigate the noise level in compliance with relevant noise criteria (i.e. ANL-5) under the EIAO-TM. 	HKHA / DSD	5.3.5 - 5.3.6		
Emergency bypass	 One standby pump Twin rising mains Two wet wells would be enlarged to provide 2 hour retention limit of average of dry weather flow influent Dual power supplies and dual start controls Install Supervisory Control and Data Acquisition (SCADA) system Regular maintenance of equipment 	HKHA / DSD	5.3.7 - 5.3.9		
Waste arising	Screenings collected in the screening hall of the proposed TSPS will be properly packed in plastic bags within the proposed TSPS	HKHA / DSD	5.3.11		



Potential Environmental Impact	Mitigation Measures	Implementation Agent	Relevant Section in Project Profile
Landscape and visual impacts	 Provide green roof and vertical greening on the structure wall to soften the building structure and enhance the visual quality of the proposed TSPS Colour scheme will be carefully designed taking into account the features of the surrounding land and design of the public housing development to make the new structure form part of the compound hence minimizing any potential visual impact 	HKHA / DSD	5.3.12 - 5.3.13



Previous Projects with Permission Granted for Applications 7. for Permission to Apply Directly for Environmental Permit

7.1 **Project Profile of Similar Nature Referenced**

7.1.1 There are a number similar nature of projects with permission granted for applications for permission to apply directly for Environmental Permit under the EIAO. Some examples are listed in **Table 7.1**.

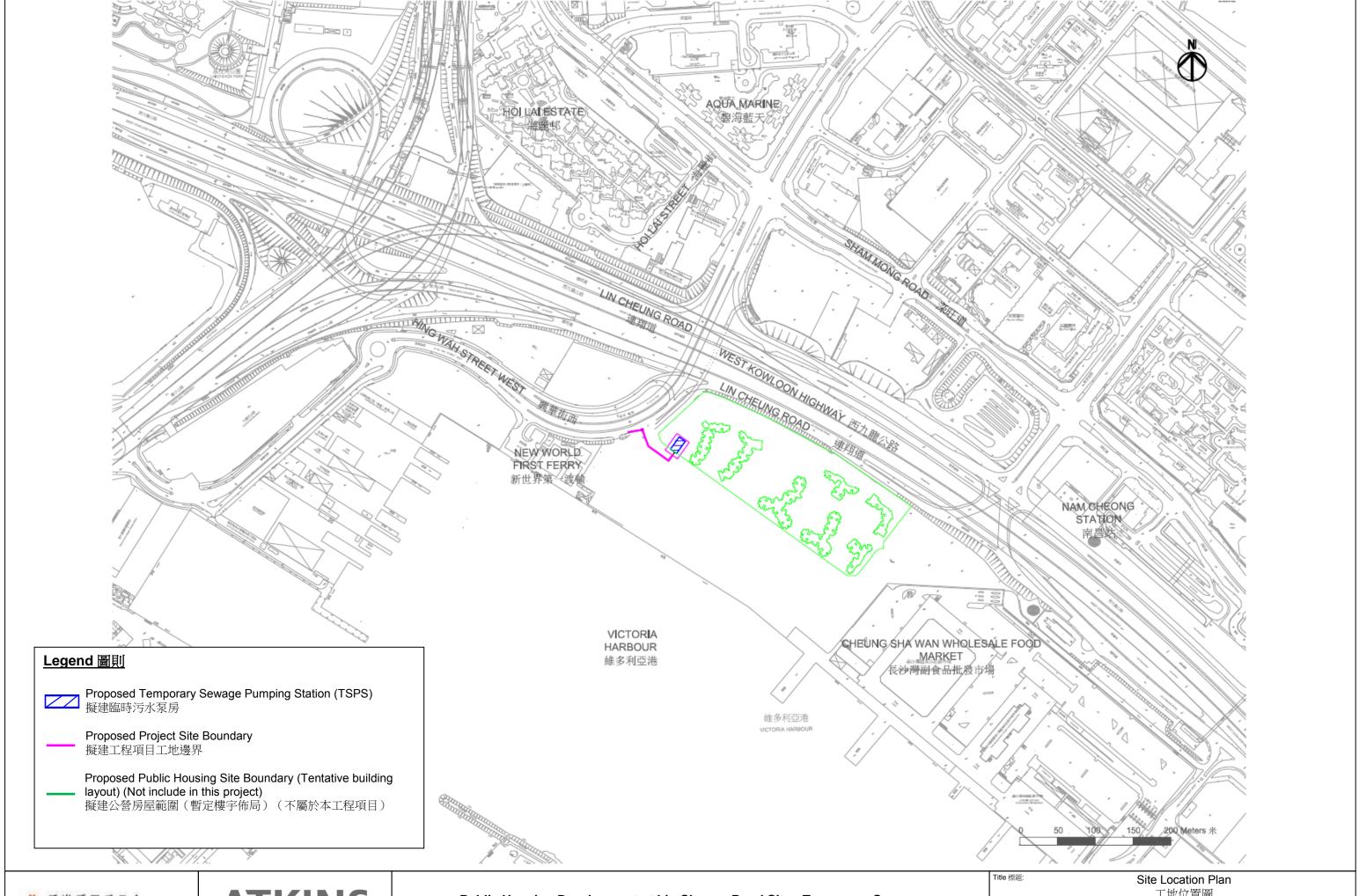
Table 7.1 Previous Projects with Permission Granted from Applications for Permission to Apply Directly for Environmental Permit

Termission to Apply Directly for Environmental Termit					
Application No.	Project Profile Title	Pumping Capacity (ADWF)	Nearest Sensitive Receiver		
DIR-226/2013	Temporary Sewage Pumping Station Ancillary to Tung Chung Area 56 Public Housing Development	2,311.6 m³/day	22m		
DIR-218/2011	Port Shelter Sewerage Stage 2 and Stage 3 – Design and Construction	216 m³/day	5m		
DIR-180/2009	Control of Water Pollution at Jordan Valley Box Culvert - Sewage Pumping Station (JVBCSPS)	Pump rate of 0.5 m ³ /s	81m		
DIR-175/2008	Western Interceptor Sewer Sewage Pumping Station	54,630 m³/day	61m		
DIR-173/2008	Yuen Long KauHui No. 2 Sewage Pumping Station	5,900 m ³ /day	30m		
DIR-171/2008	Upgrading of Chinese University Sewage Pumping Station	9,500 m ³ /day	130m		
DIR-168/2008	Sewage Interception Scheme in Kowloon City Sewage Pumping Stations	SPS No.1: 60,480 m³/day SPS No.2: 64,800 m³/day	SPS No.1 - 21m SPS No.2- 10m		
DIR-161/2007	Tai Po Tai Wo Road Sewage Pumping Station	12,100 m ³ /day	29m		
DIR-140/2006	Sewage Treatment and Disposal Facilities – Tsing Lung Tau Pumping Station	4,000 m ³ /day	25m		
DIR-115/2005	Upgrading of Ting Kok Road Pumping Station No. 5	11,500 m ³ /day	60m		
DIR-057/2001	Sai Kung Area 4 Sewage Pumping Station	7,500 m ³ /day	34m		
DIR-040/2000	Au Tau Sewage Pumping Station (relocation)	12,200 m³/day	80m		
DIR 026/1999	Au Tau Pumping Station	12,200 m ³ /day	40m		
DIR 024/1999	Yuen Long Southern SPS	36,300 m ³ /day	70m		
DIR 020/1999	SPS at Tung Tau IA Yuen Long	5,260 m ³ /day	35m		



Figures







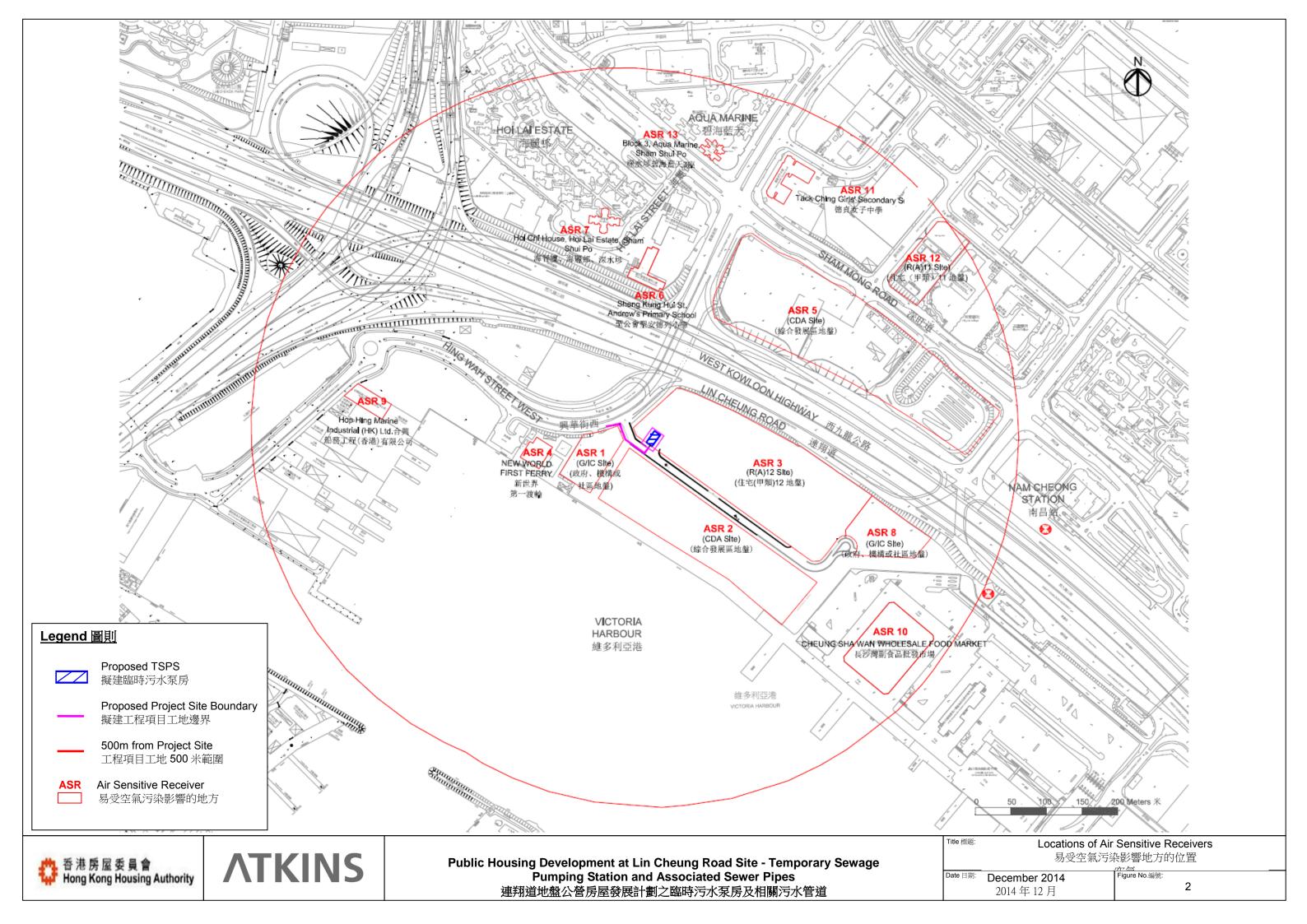
ATKINS

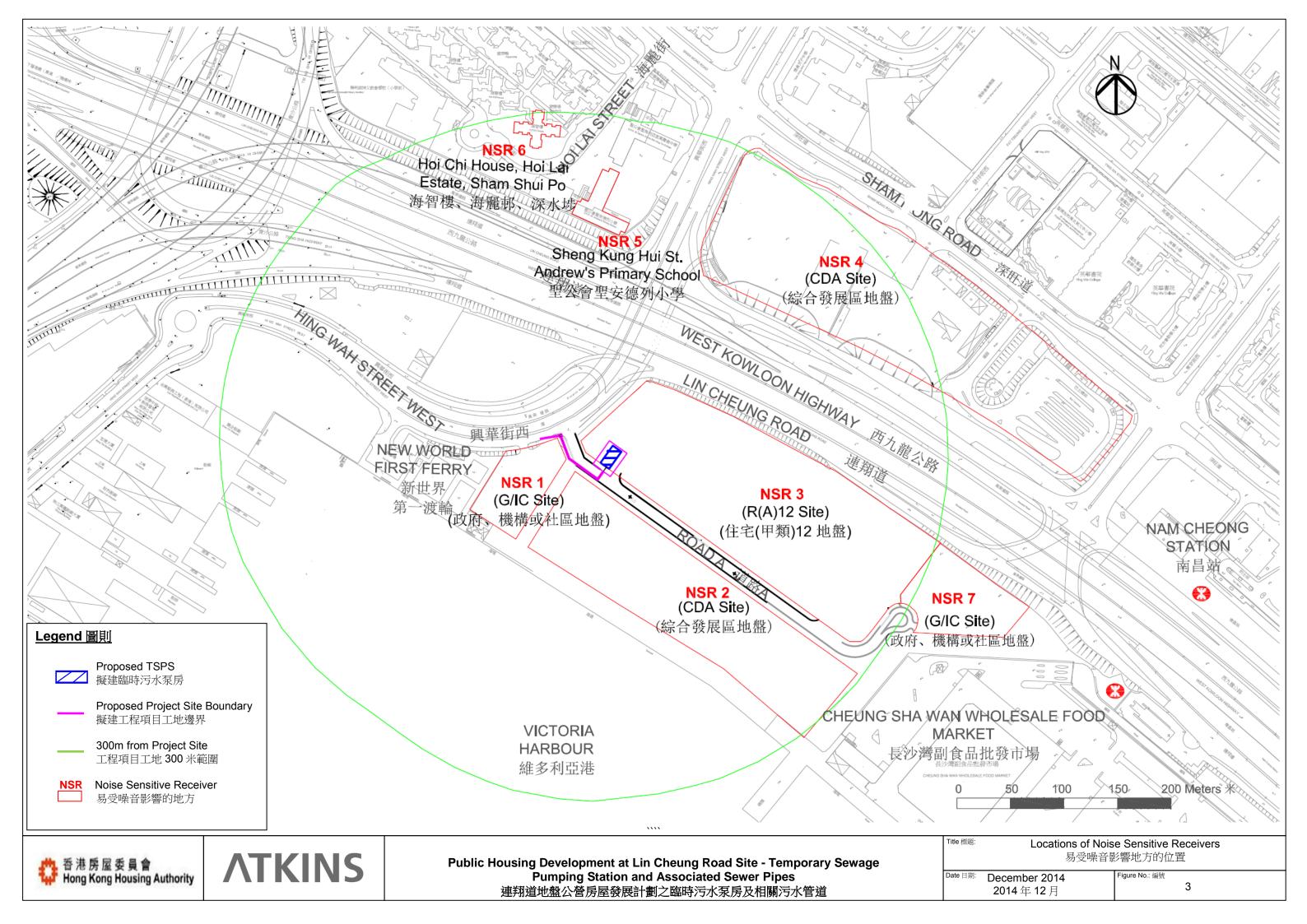
Public Housing Development at Lin Cheung Road Site - Temporary Sewage Pumping Station and Associated Sewer Pipes 連翔道地盤公營房屋發展計劃之臨時污水泵房及相關污水管道

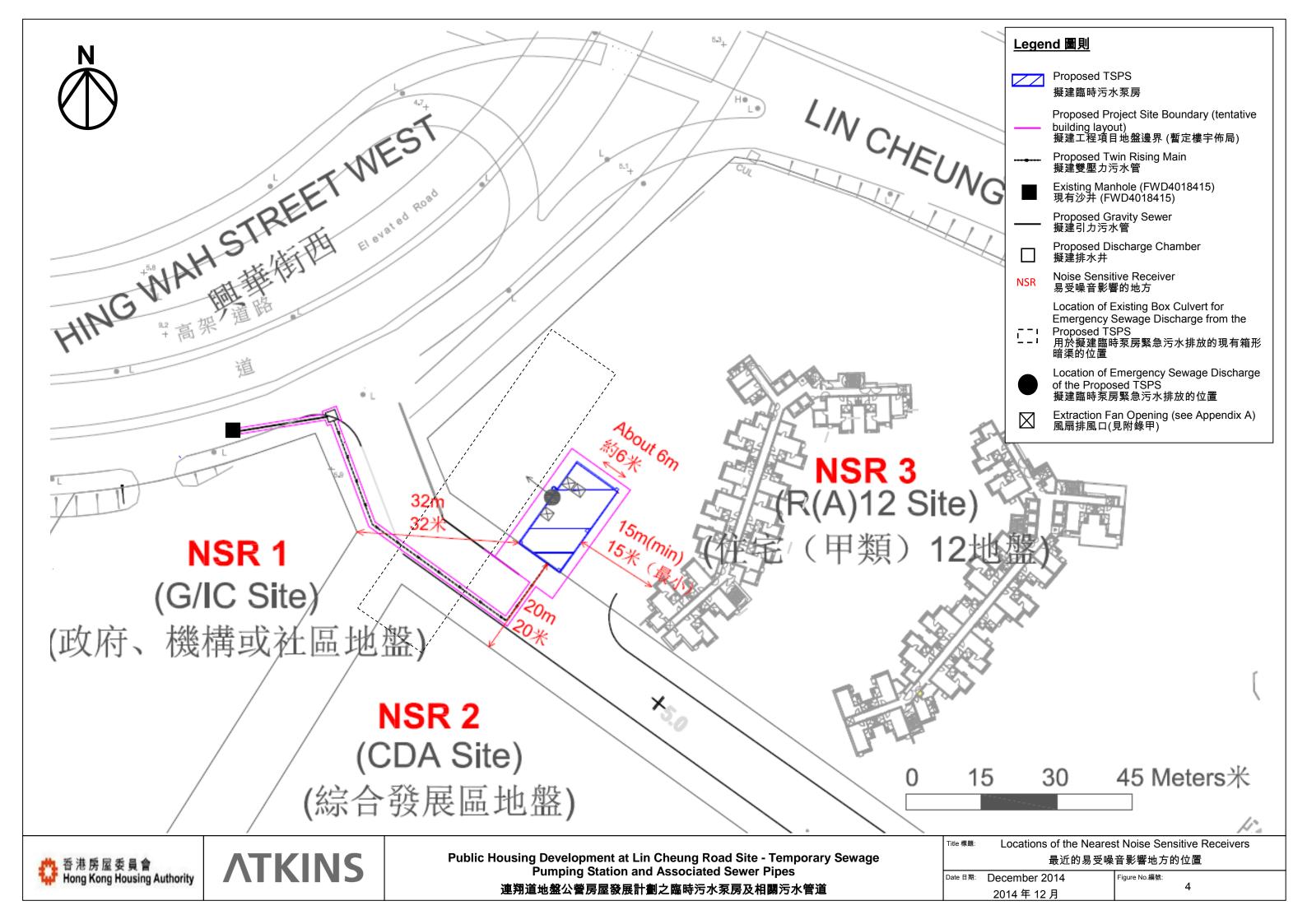
Site Location Plan 工地位置圖

Date 日期: December 2014 2014 年 12 月

Figure No.編號:







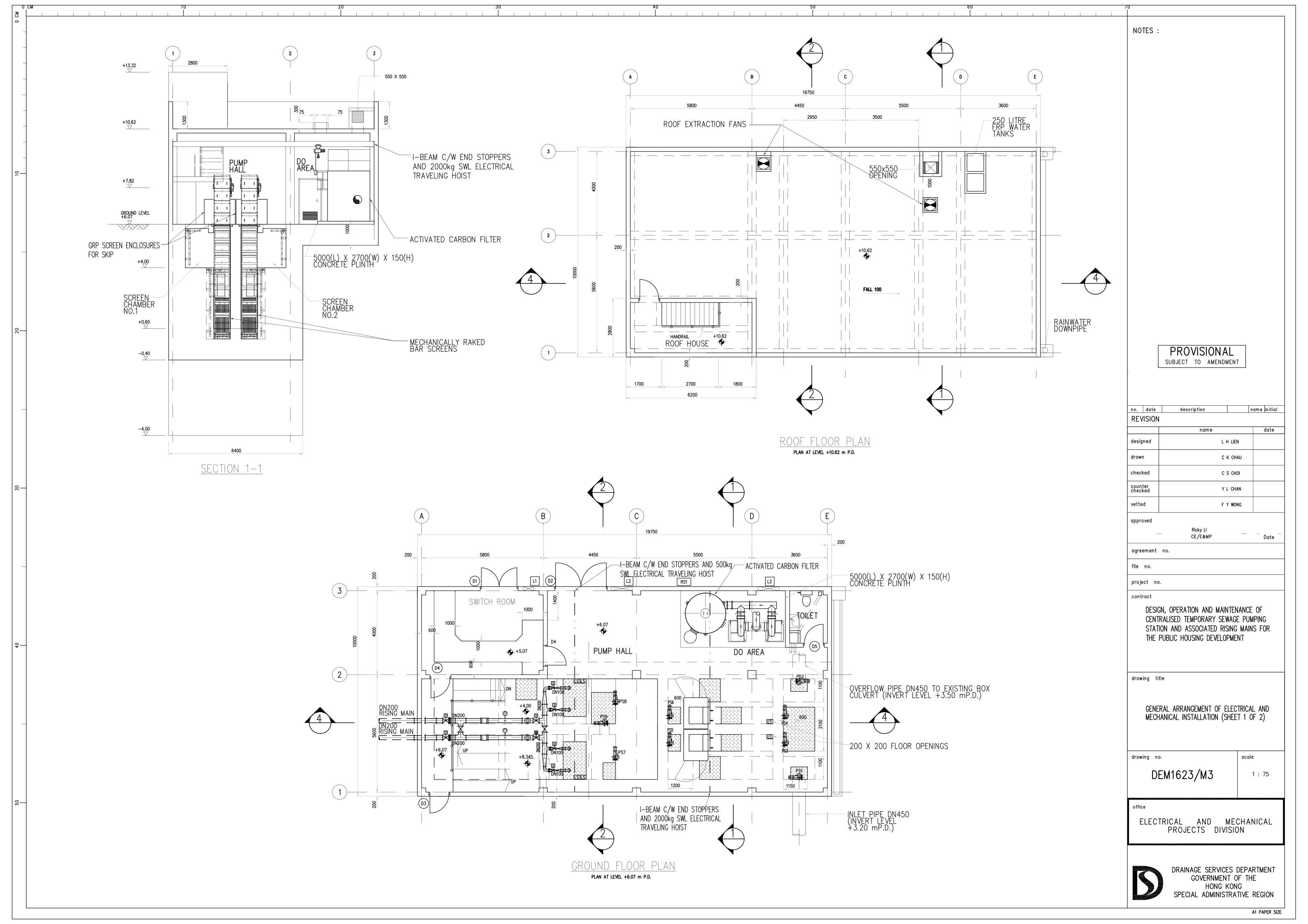


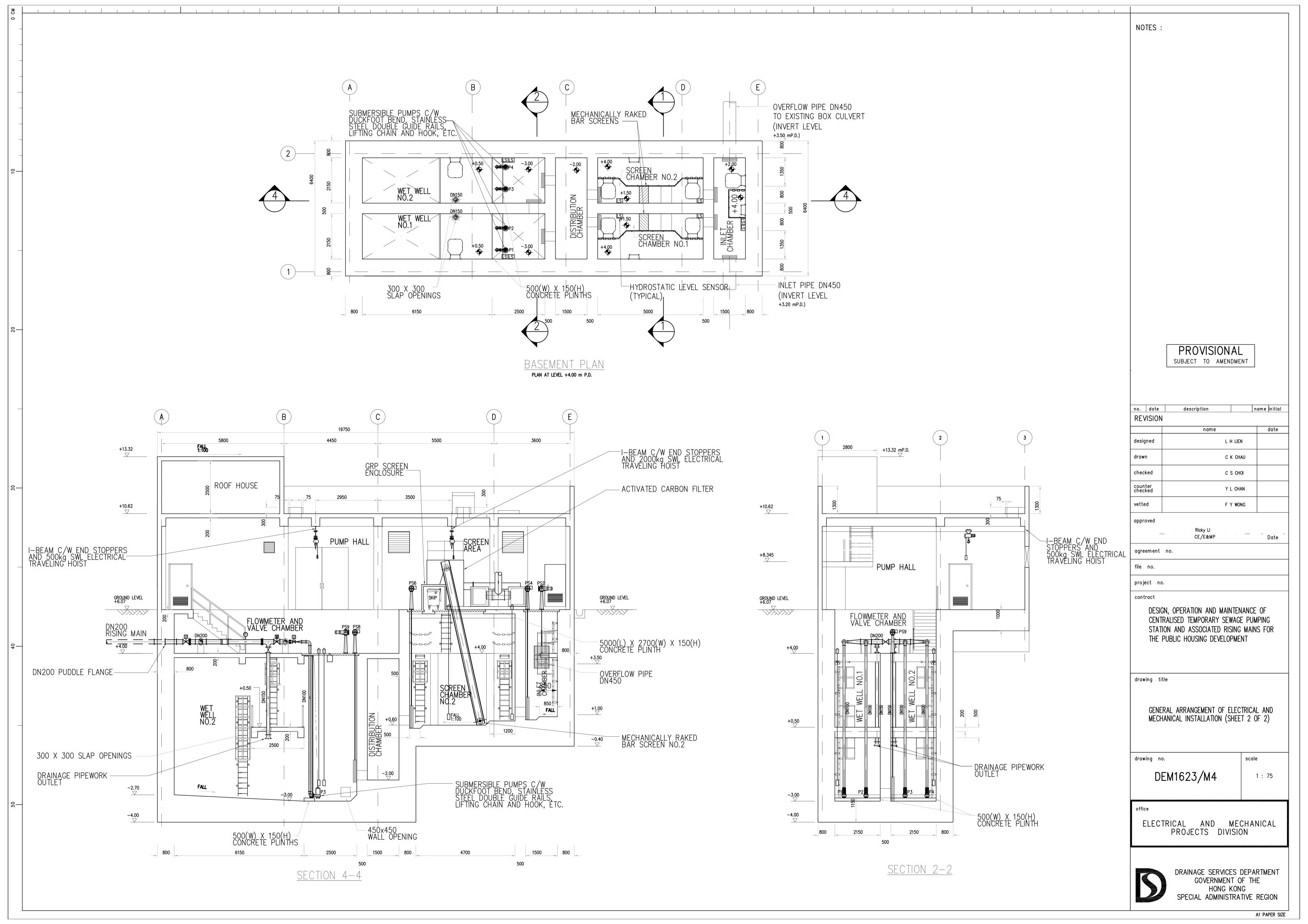


Appendix A

Temporary Sewage Pumping Station General Arrangement Layout Plans







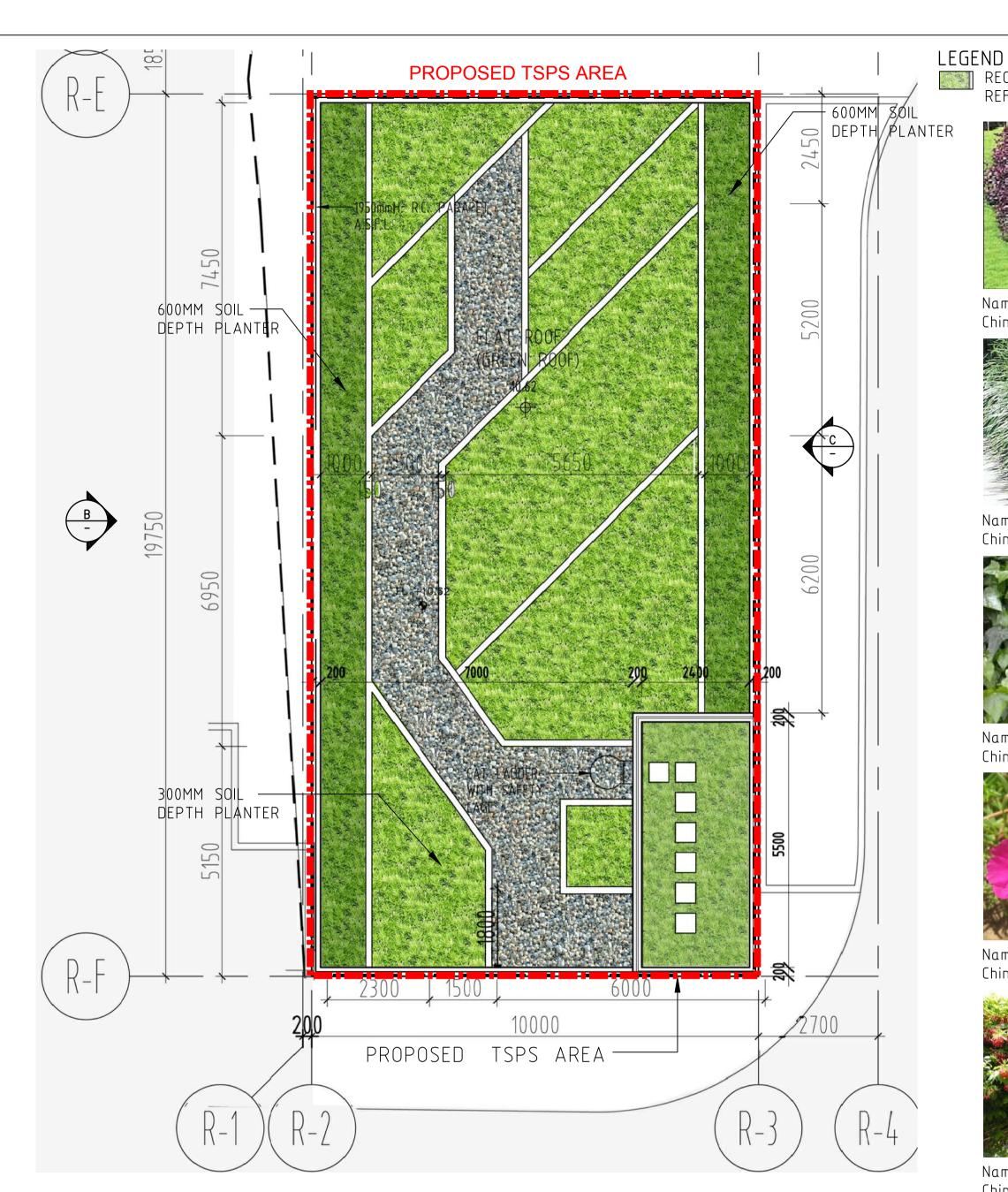


Appendix B

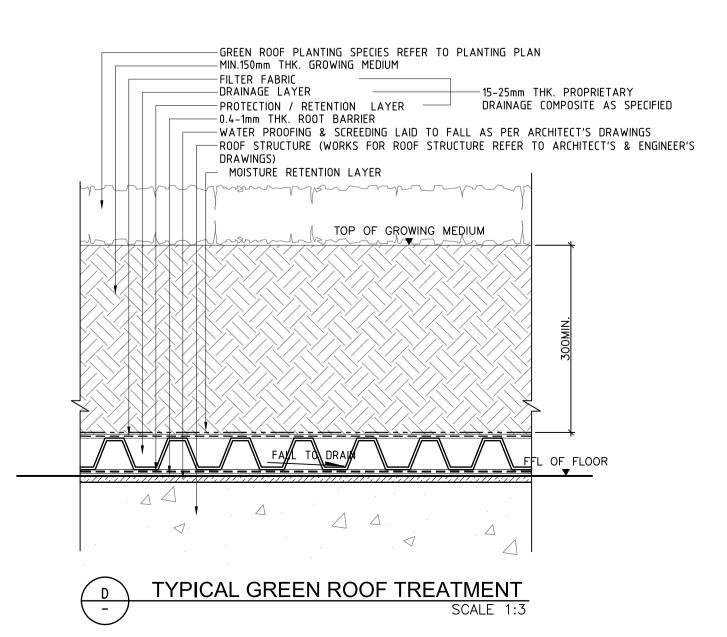
Temporary Sewage Pumping Station

Conceptual Drawings





ROOF FLOOR PLAN
SCALE 1:75







Name:*Aerve songuinolenta* Chinese Name: 血莧草



Name:*Ophiopogon japonicas* Chinese Name: 沿階草



Name:*Hedera helix* Chinese Name: 常春藤



Name:*Portulaca grandiflora* Chinese Name: 松葉牡丹



Name:*Quisqualis indica* Chinese Name: 使君子



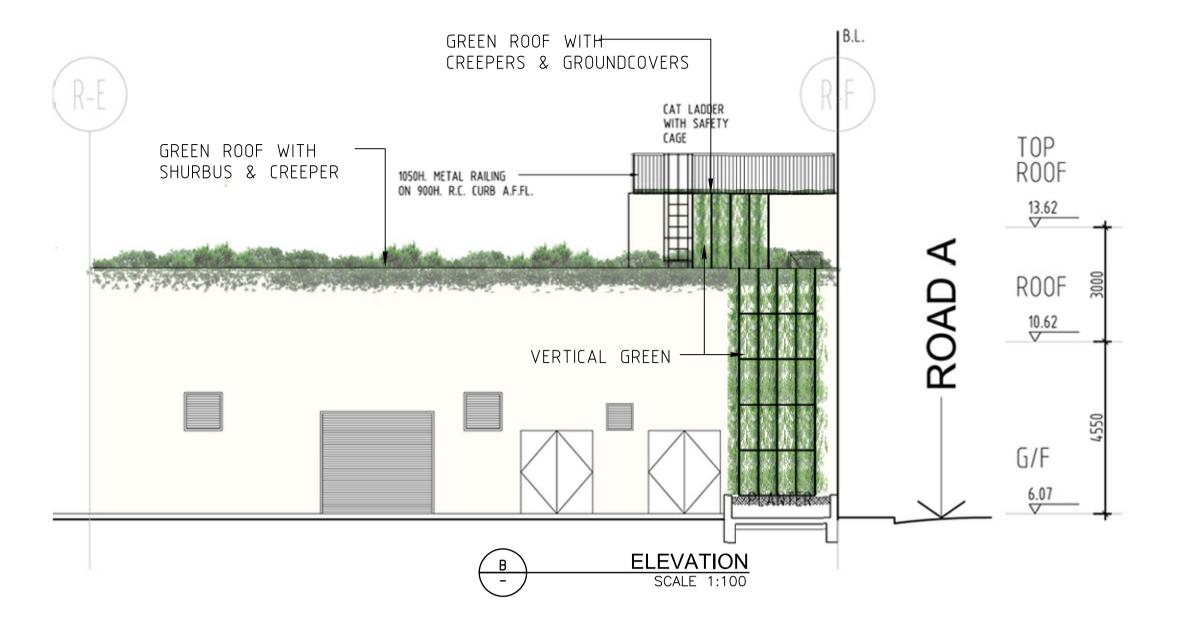
Name:*Sansevieria trifasciata Hahnii* Chinese Name: 短葉虎尾蘭

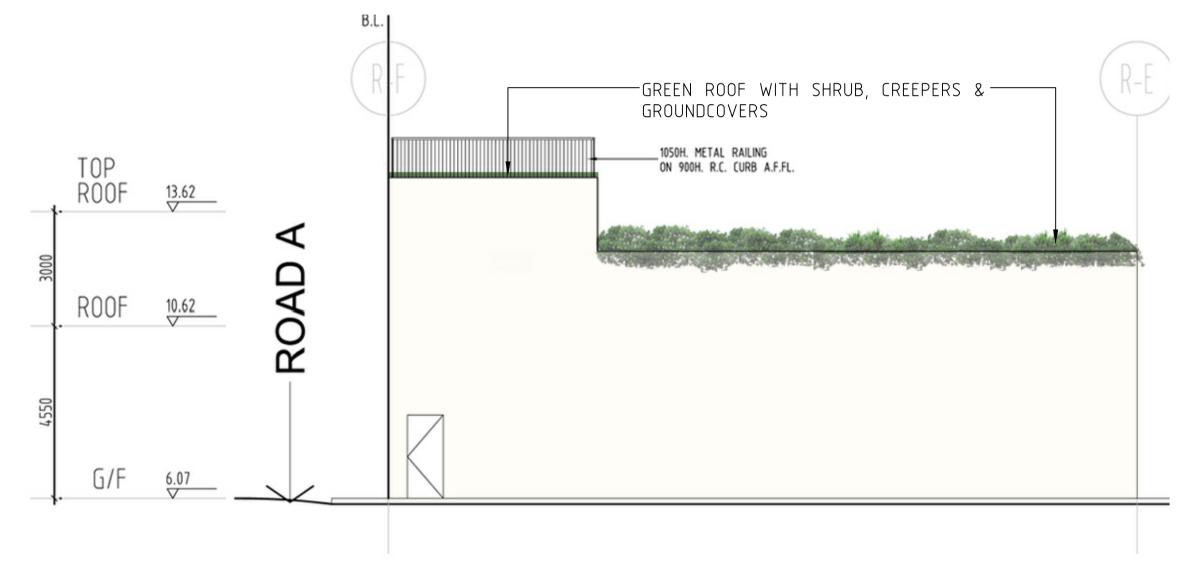


Name:*Sedum lineare* Chinese Name: 佛甲草



Name:*Vernomia elliptica* Chinese Name: 光耀藤





C ELEVATION SCALE 1:100

PLANTING SCHEDULE

EANTING SCHEDOLE						
ABB.	SCIENTIFIC NAME	CHINESE NAME	SIZE (HEIGHT x WIDTH) mm	SPACING (mm)	REMARK	
SHRUBS AND GROUNDCOVER						
AER.SON.	Aerve songuinolenta	血莧草	250(H)×150(W)	200	CONTAINER GROWN	
HED.HEL.	Hedera helix	常春藤	800mm LENGTH	400	CONTAINER GROWN MIN. 3-5 SHOOTS	
QUI.IND.	Quisqualis indica	使君子	800mm LENGTH	400	CONTAINER GROWN MIN. 3-5 SHOOTS	
SED.LIN.	Sedum lineare	佛甲草	150(H)×150(W)	150	CONTAINER GROWN	
OPH.JAP.	Ophiopogon japonicas	沿階草	400(H)×300(W)	300	CONTAINER GROWN	
POR.GRA.	Portulaca grandiflora	松葉牡丹	150(H)×150(W)	150	CONTAINER GROWN	
SAN.TRI.	Sansevieria trifasciata 'Hahnii'	短葉虎尾蘭	200(H)x200(W)	200	CONTAINER GROWN	
VER.ELL.	Vernomia elliptica	光耀藤	800mm LENGTH	400	CONTAINER GROWN MIN. 3-5 SHOOTS	

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REVISIONS			AL A IGNATI	
NO	DESCRIPTION AND DATE	DWN	CKD	AUTH
Α	2014-09-02	EI	AY,TC	ΙΗ
В	2014-09-15	ΕI	AY,TC	ΙΗ
O	2014-09-26	ΕI	AY,TC	ΙΗ
О	2014-10-30	ΕI	AY,TC	ΙΗ

	NAME AND DESIGNATION	INITIAL	DATE
UTHORISED			
	IRIS HOI		MAY 2014
CHECKED	VINCENT CHOW		MAY 2014
	SAMAN CHAU		MAY 2014
DRAWN	PERRY MA		MAY 2014

DPO IE

FOUNDATION FOR PUBLIC HOUSING DEVELOPMENTS AT CHEUNG SHA WAN WHOLESALE FOOD MARKET SITE 3 AND SITE 5 PHASES 1 & 2

DRAWING TITLE

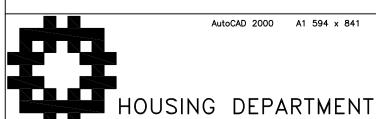
GREEN ROOF SCHEMATIC PROPOSAL FOR TEMP. SEWAGE PUMPING STATION

SCALE AS SHOWN

DRAWING NO.

PT27/TSPS/SD/GA01/D

SOURCE





Appendix C

Analysis on Construction and Operational Noise Impacts





APPENDIX C

ANALYSIS ON CONSTRUCTION AND OPERATIONAL NOISE IMPACTS

1. Introduction

1.1.1 This appendix provides an analysis of the potential construction noise impacts from the Project and operational noise impacts from the proposed Temporary Sewage Pumping Station (TSPS) to nearby noise sensitive receivers.

2. Environmental Legislation, Plans, Standards and Criteria

2.1 Environmental Legislation, Plans, Standards and Criteria

- 2.1.1 The noise impacts were assessed in accordance with the methodology and criteria laid out in the Technical Memoranda made under the Environmental Impact Assessment Ordinance (EIAO).
- 2.1.2 The Noise Control Ordinance (NCO) provides the statutory framework for noise control. The NCO invokes the following four Technical Memoranda, which define the technical means for noise assessment:
 - Technical Memorandum on Noise from Places other than Domestic Premises,
 Public Places or Construction Sites (IND-TM);
 - Technical Memorandum on Noise from Construction Work in Designated Areas (DA-TM);
 - Technical Memorandum on Noise from Construction Work other than Percussive Pilling (GW-TM); and
 - Technical Memorandum on Noise from Percussive Piling (PP-TM)
- 2.1.3 The NCO and the accompanying Technical Memoranda provide a mechanism for assessing noise levels and the statutory power to control noise.
- 2.1.4 With regard to the analysis on construction and operational noise impacts, the NCO designates acceptable noise levels for Noise Sensitive Receivers (NSRs) on the basis of an Area Sensitivity Rating (ASR), based on the characteristics of the area in which the NSRs are located. The categories are rural, village, low-density residential, or urban. Within these areas, the presence of "Influencing Factors" (such as the presence of major roads) can further effect the ASR and therefore the acceptable noise level (see Table 1).

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Table 1 Area Sensitivity Ratings

Type of Area Containing NSR	Degree to which NSR is affected by Influencing Factor				
Type of Area Containing NON	Not Affected	Indirectly Affected	Directly Affected		
Rural Area	Α	В	В		
Urban Area	В	С	С		
Low density residential area consisting of low-rise or isolated high-rise developments	А	В	С		
Area other than those above	В	В	С		

2.2 Construction Phase

2.2.1 Under the GW-TM, the construction activity noise from the site is not restricted during the 0700 – 1900 hours on weekdays, except Public Holidays. However, the EIAO-TM identifies a general daytime construction noise limit of Leq_(30 minutes) 75 dB(A) for domestic premises and Leq_(30 minutes) 70 dB(A) for educational institutes during normal teaching hours (Leq_(30 minutes) 65 dB(A) during examination hours). This standard has been used as an assessment criterion in the construction noise assessment.

2.3 Operation Phase

2.3.1 The operational noise emitted from the proposed TSPS is controlled under the IND-TM. According to the IND-TM, the Acceptable Noise Levels (ANLs) for different Area Sensitivity Ratings (ASRs) are given in **Table 2**. The ANL is based upon the type of area within which the NSR is and the effect of Influencing Factors such as major roads and industrial activity.

Table 2 Acceptable Noise Levels (ANLs)

Time Period ASR	Α	В	С
Day (0700 to 1900 hours)	60	GE	70
Evening (1900 to 2300 hours)	60	00	70
Night (2300 to 0700 hours)	50	55	60

2.3.2 When assessed in accordance with the IND-TM, the level of the intruding noise at the façade of the nearest sensitive receiver should be at least 5 dB(A) below the appropriate ANL shown in Table 3 of the IND-TM or, in the case of the background being more than 5dB(A) lower than the ANL, the predicted noise level should not exceed the background noise level.





- 2.3.3 For assessing operational noise impacts of the proposed TSPS, the Area Sensitivity Rating (ASR) at the identified NSRs is defined in accordance with the IND-TMs. The proposed TSPS is located in Cheung Sha Wan that is located in an "Urban Area" that is directly affected by West Kowloon Highway. According to the Annual Traffic Census (2013), the corresponding section of the West Kowloon Highway has an annual average daily traffic flow (AADT) of 73,380 which exceeds 30,000 and it is considered as Influencing Factor (IF). Therefore, an ASR of "C" is assigned for the NSRs directly influenced by the IF according to the IND-TM.
- 2.3.4 The proposed TSPS is located in well developed urban area which is influenced by road traffic noise from the West Kowloon Highway, Lin Cheung Road and the Hing Wah Street West etc. Therefore, the prevailing background noise level would unlikely be lower than the ANL-5dB(A) criterion. The noise criteria adopted for the operation of the proposed TSPS are presented in **Table 3** below:

Table 3 Operational Noise Assessment Criteria

Time Period	ASR	ANL, dB(A)	Criteria, dB(A)*
Day (0700 to 1900 hours)		70	65
Evening (1900 to 2300 hours)	С	70	00
Night (2300 to 0700 hours)		60	55

Note:

- * The adopted criteria for the operational noise from the proposed TSPS is 5 dB(A) less than the relevant ANL.
- 2.3.5 In any event, the ASR assumed in this assessment is for indicative assessment only. It should be noted that fixed noise sources are controlled under Section 13 of the NCO. Nothing in this assessment shall bind the Noise Control Authority in assessing noise from these sources upon the receipt of complaints. The Authority shall assess the noise impacts based on the contemporary conditions.

3. Noise Sensitive Receivers

3.1.1 Potential Noise Sensitive Receivers (NSRs) have been identified in accordance with the criteria set out in the EIAO-TM. Representative NSRs located within the 300 m from project site have been selected for the assessment are set out in **Table 4**. Locations of these selected NSRs are shown in **Figure 3** and **Figure 4**.

Appendix C-Page 3



 Table 4
 Representative Noise Sensitive Receivers

			Approximate Ho		
NSR ID	Description	Number of Floors	The Nearest Project Site Boundary (m)	The Nearest TSPS's Structure Wall (m)	Land Use Nature
NSR 1 (Planned)	Government/ Institution/ Community Site (1)	N/A	1	32	G/IC (7)
NSR 2 (Planned)	Comprehensive Development Area (2)	N/A	7	20	CDA (8)
NSR 3 (Planned)	Proposed Public Housing Development (3)	N/A	10	15	Residential
NSR 4 (Planned)	Comprehensive Development Area (4)	N/A	178	179	CDA (8)
NSR 5	Sheng Kung Hui St. Andrew's Primary School	7	193 (201) ⁽⁶⁾	198	Educational
NSR 6	Hoi Chi House, Hoi Lai Estate, Sham Shui Po	32	267	287	Residential
NSR 7 (Planned)	Government/ Institution/ Community Site (5)	N/A	288	293	G/IC (7)

Notes:

- 1. The completion year of NSR 1 is 2019/2020 that is subject to the development programme of the site's owner.
- 2. The completion year of the NSR 2 is 2019/2020 that is subject to the development programme of the site's owner.
- 3. The completion year of NSR 3 is from 2018 to 2019.
- 4. The population intake year of NSR 4 is 2019 to 2021.
- 5. The completion year of NSR 7 is 2018 that is subject to the development programme of the site's owner.
- 6. Horizontal distance separation measured to the notional source location.
- 7. G/IC -. Government, Institution or Community
- 8. CDA Comprehensive Development Area



4. Analysis on Construction Noise impacts

4.1 Identification of Noise Source

- 4.1.1 In view of the small scale of the Project and the large horizontal distance separation from the Project site to existing NSRs (about 193 m to 267 m), adverse construction noise impact is anticipated to be limited. Nevertheless, the possible noise impacts arising from the construction phase of the Project would be the use of Power Mechanical Equipment (PME) (refer to **Table 5a**).
- 4.1.2 The inventory of project specific PME for each construction activity was developed by the Project Proponent in collaboration with Drainage Services Department (DSD) and is considered to be appropriate and practical for completing works within the proposed works programme. The estimated duration of each construction activity are presented in **Table 5b**.

Table 5a Powered Mechanical Equipment Inventory

Construction Ac	tivity	Power Mechanical Equipment	
		Breaker, Excavator Mounted (Hydraulic)	
Excavation Wo	rke	Dump Truck	
Excavation vvo	INS	Air Compressor	
		Generator, Standard	
Backfill works		Generator, Standard	
Dackilli Works		Vibratory Compactor	
		Lorry with Crane/Grab	
	Work Type 1	Saw, Circular, Wood	
		Chipper, Hand-held (Pneumatic)	
		Generator, Standard	
Reinforced Concrete Works		Bar Bender and Cutter	
Neimorced Concrete Works		Poker Vibrator	
		Concrete Lorry Mixer	
	Work Type 2	Air Compressor	
		Concrete Pump	
		Generator, Standard	
		Lorry with Crane/Grab	
E&M Installatio	ns	Air Compressor	
		Generator, Standard	

ATKINS Project Profile Appendix C-Page 5



Table 5b Construction Schedule (i.e. construction programme refers to Appendix C3)

Construction Activity	Estimate Duration (month)
Excavation Works & backfill works	3
Reinforced Concrete Works	12
E&M Installations	8

4.2 Methodology

- 4.2.1 The analysis on construction noise impacts generally followed the procedures given in the GW-TM. The distance attenuation from the PME operation was estimated by the following acoustic formula:
 - Distance Attenuation in $dB(A) = 20 \log D + 8$ [where D is the distance in meters]
- 4.2.2 Sound Power Levels of the equipment were adopted from Table 3 of the GW-TM, BS5228: Part 1: 2009 and the EPD's Quality Powered Mechanical Equipment. Groups of equipment likely to be employed for each construction task are shown in Appendix C1. The equipment lists are considered realistic and practicable. All works would be carried out in the non-restricted hours (0700-1900 hours).
- 4.2.3 Noise impact was estimated based on the following assumptions:
 - All PMEs required for construction would be located inside the proposed TSPS boundary. Distance separation was measured from the NSRs to the notional source position as described in GW-TM.
 - A +3 dB(A) façade correction was added to the predicted noise levels to account for the façade effect at each NSR; and
 - Noise impacts at the nearest sensitive façades of the existing NSRs to the notional source positions were estimated.

4.3 Evaluation of Environmental Impacts

4.3.1 Subject to the development programme of the site's owner, NSRs NSR 1 to NSR 4 and NSR7 are tentatively planned to be completed after 2018 (planned). Given that construction of the proposed TSPS will be completed before 2018, potential construction noise impacts to these planned NSRs are not applicable and thus only the existing NSRs (i.e. NSR 5 and NSR 6) are considered. The predicted construction noise levels at the existing NSRs are summarized in **Table 6** and the





calculation is shown in **Appendix C1**. Noise exceedances were predicted at the representative educational NSR 5 (Sheng Kung Hui St. Andrew's Primary School) during the construction activities as excavation and backfill and reinforced concrete. Noise mitigation measures would be required.

Table 6 Predicted Noise Levels at Existing NSR (Unmitigated)

Construction	η Δctivity	Predicted Noise Levels, dB(A)		
oonou double / touvily		NSR 5	NSR 6	
Excavation Works		<u>72</u>	70	
Backfill Works		59	56	
Reinforced Concrete	Work Type 1	64	61	
Works	Work Type 2	<u>67</u>	65	
E&M Installation		60	65	
Criteria (daytime) (1), dB(A)		70/ 65 (during examination)	75	

Notes: Underlined bold numbers refers to not meeting the noise criteria

4.4 Mitigation of Potential Adverse Environmental Impacts

- 4.4.1 The predicted noise levels show that unmitigated construction activities would exceed the noise criterion at the NSR 5. Noise mitigation measures are therefore required to alleviate the noise impacts. Construction noise impacts can be minimized by using guiet plants.
- 4.4.2 In addition to the use of silenced PME, the good site practices should be adopted to further reduce any impact on the NSRs and these practices should be included in the contract. These good site practices include:
 - Only well-maintained plants should be operated on site and should be serviced regularly during the construction phase;
 - Silencers or mufflers on construction equipment should be utilized, if found necessary, to further reduce noise, and should be properly maintained during the construction phase;
 - Mobile plants should be located as far away from the NSRs as reasonable possible;
 - Machines and plants (i.e. trucks) which are used intermittently should be turned off or throttled down to a minimum during periods of non-use;
 - Equipment that produces noise strongly in one direction should be orientated to direct noise away from the NSRs; and





- Material stockpiles and other structures should be effectively utilized, wherever practicable, in screening noise form on-site construction activity.
- 4.4.3 The mitigated construction noise levels are presented in **Table 7**. Calculations of the construction noise levels at the representative NSRs under the mitigated scenario are presented in **Appendix C1**.
- 4.4.4 With the adoption of quiet PMEs, the estimated noise levels at the representative NSRs will be well complied with the required noise criteria.

Table 7 Predicted Noise Levels at Existing NSRs (Mitigated)

		Predicted Noise Levels, dB(A)		
Constructi	on Activity	NSR 5	NSR 6	
Excavation	on Works	62	70	
Backfill works		59	56	
Reinforced Concrete	Work Type 1	64	61	
Works	Work Type 2	60	64	
E&M Installation		60	56	
Criteria (day	Criteria (daytime) , dB(A)		75	

4.5 Cumulative Environmental Impacts

- 4.5.1 The potential concurrent project in the vicinity of the Project will be the ventilation building and barging point (Works Area P and Works Area Y, respectively) of Express Rail Link (XRL) project. According to MTRC's latest information, completion of the XRL is expected to be in 2017.
- 4.5.2 According to XRL's recent monthly Environmental Monitoring and Auditing reports, no major construction activities except barging point operation have been conducted in Works Area Y and tunnel boring machine (TBM) has been operated in Works Area P. Additionally, the ventilation building structure and concrete works were substantially completed in Works Area P according to site observation in September 2014. Therefore, it is expected that construction activities including TBM operation (i.e. TBM driving), reinforced concrete works for ventilation building conducted in Works Area P and conveyor belt to load C&D material to barges would be the possible noise sources to be concurrently with construction of the Project.
- 4.5.3 With reference to the approved Environmental Impact Assessment (EIA) of XRL project (EIAO Register No. EIA-169/2009), the predicted construction noise (with mitigation) at NSR (Sheung Kung Hui St. Andrew's Primary School) that may also be affected by the proposed TSPS construction is within the relevant noise standards for





School (i.e. 70 dB(A) for normal hours and 65 dB(A) for examination periods). The predicted construction noise levels of XRL's TBM driving and construction of ventilation building are 57 dB(A) and 52 dB(A), respectively. The predicted total construction noise level due to XRL's TBM driving and construction of ventilation building is 58 dB(A). With careful scheduling of noisy activities of the Project, cumulative construction noise level with XRL is expected to be 65 dB(A) that complies with the relevant noise standards for school.

4.6 Conclusion

4.6.1 With the adoption of quiet PMEs, the predicted mitigated construction noise levels at the representative NSRs comply with the relevant noise criteria. Thus, no adverse construction noise impact due to the construction of the Project would be expected.



5. Analysis on Operational Noise Information

5.1 Identification of Noise Source

5.1.1 For the Project, it is expected that fixed plant noise impacts would arise from the operation of the proposed TSPS. The major noise sources from the proposed TSPS would be the operation of sewage pumps, deodorizer fans, mechanically raked bar screens and ventilation fans, based on the current design information from DSD.

5.2 Methodology

- 5.2.1 The analysis on operational noise impacts generally followed the procedures given in the IND-TM. The distance attenuation was estimated using the standard formula as mentioned above in **Section 4.2.1**.
- 5.2.2 The estimated SWL of equipment was referenced from the specifications of similar items of equipment provided by the contractor/plant supplier and other similar projects. The deodorizer unit, pump sets and screening facilities will be located within the structure of the proposed TSPS within a 200 mm thick reinforced concrete structure with a soundproof door. This is expected to have a noise attenuation of 20 dB(A).
- 5.2.3 Noise impact was estimated on the basis of the following assumptions
 - A +3 dB(A) façade correction was added to the predicted noise levels to account for the façade effect at each NSR;
 - A +6 dB(A) tonality correction was added to the predicted noise level at each NSR; and
 - Noise impacts at the nearest NSR façades were estimated.

5.3 Evaluation of Environmental Impacts

5.3.1 The predicted operational noise levels at identified NSRs are summarized in **Table 8** and the calculation is shown in **Appendix C2**.

 Table 8
 Predicted Noise Levels at Representative NSRs (Unmitigated)

	Predicted	Noise Criteria	Exceed	dances
NSR ID	Noise Levels, dB(A)	Daytime and Evening / Nighttime	Daytime & Evening	Nighttime
NSR1 (Planned)	55	65 / 55	No	No
NSR2 (Planned)	59	65 / 55	No	Yes





	Predicted	Noise Criteria	Exceed	dances
NSR ID	Noise Levels, dB(A)	Daytime and Evening / Nighttime	Daytime & Evening	Nighttime
NSR3 (Planned)	62	65 / 55	No	Yes
NSR4 (Planned)	40	65 / 55	No	No
NSR5	39	65 / 55	No	No
NSR6	36	65 / 55	No	No

Remarks: NSR7 is considered far away (293m from TSPS) and likely to be screened by NSR3. Thus NSR7 is not considered.

5.3.2 Nighttime noise exceendances were predicted at NSR 2 and NSR 3. Noise mitigation measures would be required during the operation phase.

5.4 Mitigation of Potential Adverse Environmental Impacts

- 5.4.1 In order to reduce the operational noise levels arising from the proposed TSPS, acoustic louvers are recommended to be installed at ventilation fan exhaust outlets. It is assumed that a 10 dB(A) noise reduction can be achieved.
- 5.4.2 The predicted mitigated operational noise levels at identified NSRs are summarized in **Table 9**. With the noise mitigation measures implemented, the predicted mitigated operational noise levels would be comply with the daytime and nighttime noise criteria. The calculation is presented in **Appendix C2**.

Table 9 Predicted Noise Levels at Representative NSRs (Mitigated)

	Predicted Noise	Noise Criteria	Exce	edance
NSR ID	Levels, dB(A)	Daytime and Evening / Nighttime	Daytime & Evening	Nighttime
NSR1 (Planned)	47	65 / 55	No	No
NSR2 (Planned)	51	65 / 55	No	No
NSR3 (Planned)	54	65 / 55	No	No
NSR4 (Planned)	32	65 / 55	No	No
NSR5	31	65 / 55	No	No
NSR6	28	65 / 55	No	No

Remarks: NSR7 is considered far away (293m from TSPS) and likely to be screened by NSR3. Thus NSR7 is not considered.

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5.5 Cumulative Environmental Impacts

5.5.1 Within the 300m from Project site, there are two potential fixed plant noise sources may have the potential to result in cumulative operational noise impacts including New World First Ferry Workshop (NWFFW) and New World First Bus Depot (NWFBD) at Hing Wah Street West.

NWFFW

5.5.2 NWFFW is located approximate 106 m from the southwestern proposed TSPS boundary. According to the site observations in March and September 2014, potential daytime operational noise are mainly from the mechanical equipments when hammering, metal grinding, welding metal, fan at work and ship engine and no activities would be conducted during nighttime. In view of the location and arrangement of NSRs, it is expected that the representative planned NSR 3 may have direct line of sight to both the NWFFW and the proposed TSPS. With consideration of the large distance separation (i.e. about 130 m) between NSR 3 and the NWFFW, adverse noise impact from the NWFFW on NSR 3 is not anticipated. Furthermore, the operational noise impact from the proposed TSPS on planned NSR 3 is only 54 dB(A) which much lower than the daytime ANL-5 dB(A) noise criterion (65 dB(A)). Therefore, adverse cumulative operational noise impacts due to NWFFW and the proposed TSPS is not anticipated.

NWFBD

5.5.3 NWFBD is located approximate 265 m from the northwestern proposed TSPS boundary. In the NWFBD, potential noisy activities as refueling and washing of buses have been identified during daytime and nighttime. It is not expected that NWFBD would cause significant noise impact on the representative NSRs which have direct line of sight to the NWFBD due to the large distance separation (about 200 m to 290 m). Apart from this, the operational noise impact from the proposed TSPS are ranged as 28 dB(A) to 54 dB(A) and below the noise criteria for daytime (65 dB(A)). Therefore, adverse cumulative operational noise impacts due to the NWFBD and the proposed TSPS is not anticipated.

5.6 Conclusion

5.6.1 The noise impacts associated with the operation of the proposed TSPS were evaluated. The assessment results indicated that with the adoption of acoustic louvers, the operational noise levels at the representative noise sensitive receivers





due to the operation of the proposed TSPS would comply with the relevant noise criteria.

Appendix C1 附錄丙1 Construction Noise Assessment(Unmitigated)

施工噪音評估(未實施紓解措施)

NSR 6, Sheng Kung Hui St. Andrew's Primary School

	.,					
ISR 6	5. 聖	八會型	宇海	ないで	粤	

Construction Activity 建造活動	PME 機動設備	TM Ref./ Other Ref. 技術備忘錄/ 其他辨認代 碼	SWL,dB(A) 聲功率級,分 貝(A)	Quantity 數量	Total SWL, dB(A) 總聲功率級, 分貝(A)	Distance Separation, m* 距離,米	Distance Attenuation ,dB(A) 距離衰減, 分貝(A)	Correction for Barrier, dB(A) 屏障修正, 分貝(A)	Façade Correction, dB(A) 反射修正, 分貝(A)	Corrected Noise Level CNL, dB(A) 經修正的噪音聲級, 分貝(A)	Overall CNL, dB(A) 經修正的總噪音 聲級,分貝(A)	
	Breaker, excavator mounted (hydraulic) 破碎機,裝在挖土機上(油壓)	CNP 028	122	1	122	201	-54	0	3	71		
Excavation 挖掘	Dump truck 卸土車	CNP 067	117	1	117	201	-54	0	3	66	72	
	Air Compressor 空氣壓縮機	CNP 003	104	1	104	201	-54	0	3	53		
	Generator, Standard 發電機,標準型	CNP 101	108	1	108	201	-54	0	3	57		
Backfill	Generator, Standard 發電機,標準型	CNP 101	108	1	108	201	-54	0	3	57	59	
回填	Vibratory Compactor 壓實機,震動式	CNP 050	105	1	105	201	-54	0	3	54	00	
	Work Type 1 類別 1			•						_	_	
	Lorry with crane/grab (5.5tonne <gross vehicle<br="">weight≤38 tonne) 有吊臂/抓鬥貨車</gross>	CNP 145	105	1	105	201	-54	0	3	54		
	Saw, circular, wood 圓型木鋸	CNP 201	108	1	108	201	-54	0	3	57	64	
	Chipper, hand-held (pneumatic) 手提型(氣動)剁鏨機	CNP 043	112	1	112	201	-54	0	3	61	04	70 & 65 (during examination)
	Generator, Standard 發電機,標準型	CNP 101	108	1	108	201	-54	0	3	57		70 & 65 (考試期間)
Reinforced Concrete	Bar Bender and Cutter 鋼筋彎曲機及切割機	CNP 021	90	1	90	201	-54	0	3	39		
鋼筋混凝土	Work Type 2 類別 2											
	Poker Vibrator 混凝土震動機	CNP 170	113	2	116	201	-54	0	3	65		
	Concrete Lorry Mixer 混凝土攪拌車	CNP 044	109	1	109	201	-54	0	3	58		
	Air Compressor 空氣壓縮機	CNP 003	104	1	104	201	-54	0	3	53	67	
	Concrete Pump 混凝土泵	CNP 047	109	1	109	201	-54	0	3	58		
	Generator, Standard 發電機,標準型	CNP 101	108	1	108	201	-54	0	3	57		
E&M Installation	Lorry with crane/grab (5.5tonne <gross vehicle<br="">weight≤38 tonne) 有吊臂/抓鬥貨車</gross>	CNP 145	105	1	105	201	-54	0	3	54	- 60	
機電安裝	Air Compressor 空氣壓縮機	CNP 003	104	1	104	201	-54	0	3	53	00	
	Generator, Standard 發電機,標準型	CNP 101	108	1	108	201	-54	0	3	57		

NSR 7, Hoi Chi House, Hoi Lai Estate, Sham Shui

Construction Activity 建造活動	PME 機動設備	TM Ref./ Other Ref. 技術備忘錄/ 其他辨認代 碼	SWL,dB(A) 聲功率級,分 貝(A)	Quantity 數量	Total SWL, dB(A) 總聲功率級, 分貝(A)	Distance Separation, m* 距離,米	Distance Attenuation ,dB(A) 距離衰減, 分貝(A)	Correction for Barrier, dB(A) 屏障修正, 分貝(A)	Façade Correction, dB(A) 反射修正, 分貝(A)	Corrected Noise Level CNL, dB(A) 經修正的噪音聲級, 分貝(A)	Overall CNL, dB(A) 經修正的總噪音 聲級,分貝(A)	
	Breaker, excavator mounted (hydraulic) 破碎機,裝在挖土機上(油壓)	CNP 028	122	1	122	267	-57	0	3	68		
Excavation 挖掘	Dump truck 卸土車	CNP 067	117	1	117	267	-57	0	3	63	70	
193ш	Air Compressor 空氣壓縮機	CNP 003	104	1	104	267	-57	0	3	50		
	Generator, Standard 發電機,標準型	CNP 101	108	1	108	267	-57	0	3	54		
Backfill	Generator, Standard 發電機,標準型	CNP 101	108	1	108	267	-57	0	3	54	56	
回填	Vibratory Compactor 壓實機,震動式	CNP 050	105	1	105	267	-57	0	3	51	50	
	Work Type 1 類別 1											
	Lorry with crane/grab (5.5tonne <gross vehicle<br="">weight≤38 tonne) 有吊臂/抓鬥貨車 (5.5噸<車輛總重<38噸)</gross>	CNP 145	105	1	105	267	-57	0	3	51		
	Saw, circular, wood 圓型木鋸	CNP 201	108	1	108	267	-57	0	3	54	61	
	Chipper, hand-held (pneumatic) 手提型(氣動)剁鏨機	CNP 043	112	1	112	267	-57	0	3	58		75
Reinforced	Generator, Standard 發電機,標準型	CNP 101	108	1	108	267	-57	0	3	54		70
Concrete 鋼筋混凝土	Bar Bender and Cutter 鋼筋彎曲機及切割機	CNP 021	90	1	90	267	-57	0	3	36		
到叫月 <i>月</i> 77年15天比二上。	Work Type 2 類別 2											
	Poker Vibrator 混凝土震動機	CNP 170	113	2	116	267	-57	0	3	62		
	Concrete Lorry Mixer 混凝土攪拌車	CNP 044	109	1	109	267	-57	0	3	55		
	Air Compressor 空氣壓縮機	CNP 003	104	1	104	267	-57	0	3	50	65	
	Concrete Pump 混凝土泵	CNP 047	109	1	109	267	-57	0	3	55		
	Generator, Standard 發電機,標準型	CNP 101	108	1	108	267	-57	0	3	54		
E&M Installation	Lorry with crane/grab (5.5tonne <gross vehicle<br="">weight≤38 tonne) 有吊臂/抓鬥貨車</gross>	CNP 145	105	1	105	267	-57	0	3	51	57	
機電安裝	Air Compressor 空氣壓縮機	CNP 003	104	1	104	267	-57	0	3	50		
	Generator, Standard 發電機,標準型	CNP 101	108	1	108	267	-57	0	3	54		

Notes:

PME = Powered Mechanical Equipment

PME = 機動設備

SWL = Sound Power Level

SWL = 聲功率級

TM = Technical Memorandum on Noise from Construction Work other than Percussive Piling

技術備忘錄 = 管制建築工程噪音(撞擊式打樁除外)技術備忘錄

*: Distance separation measured to the notional source location.

*: 相隔距離量度至象徵性聲源位置。

**: Horizontal distance from the nearest Project boundary.

**: 距離最近之項目工地邊界的水準距離。

***: All construction activities will be conducted during daytime i.e. non-restricted hours between 0700 to 1900 hours on any day except Sunday and general holiday.
***: 所有建造工作將於日間進行。例如 非星期日及公眾假期的0700時至1900時的非限制時間。

Construction Noise Assessment (Mitigated)

建築噪音評估(已實施紓解措施)

NSR 6, Sheng Kung Hui St. Andrew's Primary School

NSR 6, 聖公會聖安德列小學

Construction Activity 建造活動	PME 機動設備	TM Ref./ Other Ref. 技術備忘錄/ 其他辨認代 碼	SWL,dB(A) 聲功率級,分 貝(A)	Quantity 數量	Total SWL, dB(A) 總聲功率級, 分貝(A)	Distance Separation, m* 距離,米	Distance Attenuation ,dB(A) 距離衰減, 分貝(A)	Correction for Barrier, dB(A) 屏障修正, 分貝(A)	Façade Correction, dB(A) 反射修正 [,] 分貝(A)	Corrected Noise Level CNL, dB(A) 經修正的噪音聲級, 分貝(A)	Overall CNL, dB(A) 經修正的總噪音 聲級,分貝(A)	
	Breaker, excavator mounted (hydraulic) 破碎機,裝在挖土機上(油壓)	BS D8/13	110	1	110	201	-54	0	3	59		
Excavation 挖掘	Dump truck 卸土車	BS D9/24	104	1	104	201	-54	0	3	53	62	
7.27.2	Air Compressor 空氣壓縮機	CNP 003	104	1	104	201	-54	0	3	53		
	Generator, Standard 發電機,標準型	CNP 101	95	1	95	201	-54	0	3	44		
Backfill	Generator, Standard 發電機,標準型	CNP 101	108	1	108	201	-54	0	3	57	59	
回填	Vibratory Compactor 壓實機,震動式	CNP 050	105	1	105	201	-54	0	3	54	59	
	Work Type 1 類別 1											
	Lorry with crane/grab (5.5tonne <gross vehicle<br="">weight≤38 tonne) 有吊臂/抓鬥貨車 (5.5噸<車輛總重<38噸)</gross>	CNP 145	105	1	105	201	-54	0	3	54		
	Saw, circular, wood 圓型木鋸	CNP 201	108	1	108	201	-54	0	3	57	64	
	Chipper, hand-held (pneumatic) 剁鏨機,手提型(氣動)	CNP 043	112	1	112	201	-54	0	3	61		70 & 65 (during
Dainfanaad	Generator, Standard 發電機,標準型	CNP 101	108	1	108	201	-54	0	3	57		examination) 70 & 65 (考试期间)
Reinforced Concrete	Bar Bender and Cutter 鋼筋彎曲機及切割機	CNP 021	90	1	90	201	-54	0	3	39		
鋼筋混凝土	Work Type 2 類別 2										_	
	Poker Vibrator 混凝土震動機	BS D6/40	98	2	101	201	-54	0	3	50		
	Concrete Lorry Mixer 混凝土攪拌車	BS D6/33	96	1	96	201	-54	0	3	45		
	Air Compressor 空氣壓縮機	CNP 003	104	1	104	201	-54	0	3	53	60	
	Concrete Pump 混凝土泵	CNP 047	109	1	109	201	-54	0	3	58		
	Generator, Standard 發電機,標準型	CNP 103	95	1	95	201	-54	0	3	44		
E&M Installation	Lorry with crane/grab (5.5tonne <gross vehicle<br="">weight≤38 tonne) 有吊臂/抓鬥貨車 (5.5噸<車輛總重<38噸)</gross>	CNP 145	105	1	105	201	-54	0	3	54	60	
機電安裝	Air Compressor 空氣壓縮機	CNP 003	104	1	104	201	-54	0	3	53		
	Generator, Standard 發電機,標準型	CNP 101	108	1	108	201	-54	0	3	57		

NSR 7, Hoi Chi House, Hoi Lai Estate, Sham Shui

Construction Activity 建造活動	PME 機動設備	TM Ref./ Other Ref. 技術備忘錄/ 其他辨認代 碼	SWL,dB(A) 聲功率級,分 貝(A)	Quantity 數量	Total SWL, dB(A) 總聲功率級, 分貝(A)	Distance Separation, m* 距離,米	Distance Attenuation ,dB(A) 距離衰減, 分貝(A)	Correction for Barrier, dB(A) 屏障修正, 分貝(A)	Façade Correction, dB(A) 反射修正, 分貝(A)	Corrected Noise Level CNL, dB(A) 經修正的噪音聲級, 分貝(A)	Overall CNL, dB(A) 經修正的總噪音 聲級,分貝(A)	
	Breaker, excavator mounted (hydraulic) 破碎機,裝在挖土機上(油壓)	CNP 028	122	1	122	267	-57	0	3	68		
Excavation	Dump truck 卸土車	CNP 067	117	1	117	267	-57	0	3	63	70	
挖掘	Air Compressor 空氣壓縮機	CNP 003	104	1	104	267	-57	0	3	50		
	Generator, Standard 發電機,標準型	CNP 101	108	1	108	267	-57	0	3	54		
Backfill	Generator, Standard 發電機,標準型	CNP 101	108	1	108	267	-57	0	3	54	50	
回填	Vibratory Compactor 壓實機,震動式	CNP 050	105	1	105	267	-57	0	3	51	56	
	Work Type 1 類別 1											
	Lorry with crane/grab (5.5tonne <gross td="" vehicle<=""><td>CNP 145</td><td>105</td><td>1</td><td>105</td><td>267</td><td>-57</td><td>0</td><td>3</td><td>51</td><td></td><td></td></gross>	CNP 145	105	1	105	267	-57	0	3	51		
	Saw, circular, wood 圓型木鋸	CNP 201	108	1	108	267	-57	0	3	54		
	Chipper, hand-held (pneumatic) 剁鏨機,手提型(氣動)	CNP 043	112	1	112	267	-57	0	3	58	61	
	Generator, Standard 發電機,標準型	CNP 101	108	1	108	267	-57	0	3	54		75
Reinforced Concrete	Bar Bender and Cutter 鋼筋彎曲機及切割機	CNP 021	90	1	90	267	-57	0	3	36		
鋼筋混凝土	Work Type 2 類別 2											
У Ч В/Л / ГБ (ЛУС	Poker Vibrator 混凝土震動機	CNP 170	113	2	116	267	-57	0	3	62		
	Concrete Lorry Mixer 混凝土攪拌車	CNP 044	109	1	109	267	-57	0	3	55		
	Air Compressor 空氣壓縮機	CNP 003	104	1	104	267	-57	0	3	50	65	
	Concrete Pump 混凝土泵	CNP 047	109	1	109	267	-57	0	3	55		
	Generator, Standard 發電機,標準型	CNP 101	108	1	108	267	-57	0	3	54		
E&M Installation	Lorry with crane/grab (5.5tonne <gross vehicle<br="">weight≤38 tonne) 有吊臂/抓鬥貨車</gross>	CNP 145	105	1	105	267	-57	0	3	51	- 57	
機電安裝	Air Compressor 空氣壓縮機	CNP 003	104	1	104	267	-57	0	3	50] "'	
	Generator, Standard 發電機,標準型	CNP 101	108	1	108	267	-57	0	3	54		

Notes:

PME = Powered Mechanical Equipment

PME = 機動設備

SWL = Sound Power Level SWL = 聲功率級

TM = Technical Memorandum on Noise from Construction Work other than Percussive Piling

技術備忘錄 = 管制建築工程噪音(撞擊式打樁除外)技術備忘錄 *: Distance separation measured to the notional source location.

*: 相隔距離量度至象徵性聲源位置。

**: Horizontal distance from the nearest Project boundary.

**: 距離最近之項目工地邊界的水準距離。

***: All construction activities will be conducted during daytime i.e. non-restricted hours between 0700 to 1900 hours on any day except Sunday and general holiday.
***: 所有建造工作將於日間進行。例如 非星期日及公眾假期的0700時至1900時的非限制時間。

附錄丙2 Operational Noise Assessment (Unmitigated) 運作噪音影響評估 (未實施紓解措施)

Site

NSR 1,	Govern	ment/	Institution/	Community	Si
		Pate Pate	D > 1		

				Total Sound Power	Screening/Barrier/Enclosure			Tonality Correction,	Impulsiveness	Intermittency	Façade	Sound Pressure Level	Predicted Operational	Exceed No 超出噪	ise Criteria 音標準	(ANL-5) Criteria	(ANL-5) Criteria
Equipment 設備	Sound Power Level 聲功率級	No. of Items Duty 主機數量	Standby	(duty items)	Reduction, dB(A) (Ref. 3) 區/屋陰/周計物音減,公日(A)	Distance (m) # 距離(米)#	Distance	dB(A) (Ref. 2)	Correction dB(A)	Correction dB(A)	Correction dB(A)	at NSB dB(A)	Noise Level, dB(A) 預計運作時的噪音聲 級,分貝(A)	Daytime 日間	Nightime 夜間		Daytime 夜間標準(可 接受噪音聲級- 5 分貝(A))
Submersible Pumps (Ref. 1) 潛水污水泵(注1)	85	3	1	90	20	32	38	6	0	0	3	41					
Deodorizer Fan (Ref. 1) 除臭扇(注1)	83	1	1	83	20	32	38	6	0	0	3	34					
Mechanically raked bar screen (Ref. 1) 機械耙杆過濾器(注1)	89	1	1	89	20	32	38	6	0	0	3	40	55	NO	NO	65	55
Ventilation Fan(Ref. 1) 通風扇(注1)	79	3	0	84	0	32	38	6	0	0	3	55					

NSR 2, Comprehensive Development

NSR 2, 綜合發展區 (ANL-5) **Exceed Noise Criteria Total Sound Power** Criteria (ANL-5) Criteria 超出噪音標準 Screening/Barrier/ Enclosure Tonality Correction, Impulsiveness Façade Sound Pressure Level | Predicted Operational Intermittency Sound No. of Items | No. of Items | Level, dB(A) Distance Daytime Daytime Reduction, dB(A) (Ref. 3) Noise Level, dB(A) Distance (m) # dB(A) (Ref. 2) | Correction, dB(A) | Correction, dB(A) | Correction, dB(A) | at NSR, dB(A) Equipment 備用數量 總聲功率級,分貝(阿/屏障/圍封物衰減,分貝(A) 日間標準(夜間標準(可 **Power Level** Duty 設備 距離 (米)# Daytime Nightime 聲功率級 主機數量 可接受噪音 接受噪音聲級-(注2) 聲壓級,分貝(A) 級,分貝(A) 日間 夜間 5 分貝(A)) A) (主機) 聲級-5 分貝(A)) Submersible Pumps (Ref. 1) 20 20 34 0 0 45 85 1 90 6 3 潛水污水泵(注1) Deodorizer Fan (Ref. 1) 83 83 20 20 34 0 0 38 除臭扇 (注1) Mechanically raked bar screen 59 55 NO YES (Ref. 1) 89 20 20 34 0 0 44 3 機械耙杆過濾器(注1)

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NSR 3, Public Housing Development NSR 3. 公營房屋發展計劃

Ventilation Fan (Ref. 1)

通風扇 (注1)

				Total Sound Power	Screening/Barrier/ Enclosure			Tonality Correction,	, Impulsiveness	Intermittency	Façade	Sound Pressure Level	Predicted Operational	-	pise Criteria 快音標準	(ANL-5) Criteria	(ANL-5) Criteria
Equipment 設備	Sound Power Level 聲功率級	No. of Items Duty 主機數量	Standby	(duty itams)	Reduction, dB(A) (Ref. 3) 隔/屏障/圍封物衰減,分貝(A) (注3)	Distance (m) # 距離(米)#	Distance	dB(A) (Ref. 2)	Correction dB(A)	Correction dB(A)	Correction dB(A)	at NSB dB(A)	Noise Level, dB(A) 預計運作時的噪音聲 級,分貝(A)		Nightime 夜間		Daytime 夜間標準(可 接受噪音聲級 5 分貝(A))
Submersible Pumps (Ref. 1) 潛水污水泵(注1)	85	3	1	90	20	15	32	6	0	0	3	47					
Deodorizer Fan (Ref. 1) 除臭扇(注1)	83	1	1	83	20	15	32	6	0	0	3	40					
Mechanically raked bar screen (Ref. 1) 機械耙杆過濾器(注1)	89	1	1	89	20	15	32	6	0	0	3	46	62	NO	YES	65	55
Ventilation Fan(Ref. 1) 通風扇(注1)	79	3	0	84	0	15	32	6	0	0	3	61					

NSR 4, Comprehensive Development Area NSR 4. 綜合發展區

				Total Sound Power	Screening/Barrier/ Enclosure			Tonality Correction,	Impulsiveness	Intermittency	Façade	Sound Pressure Level	Predicted Operational	数 山 Na	ise Criteria 音標準	(ANL-5) Criteria	(ANL-5) Criteria
Equipment 設備	Sound Power Level 聲功率級	No. of Items Duty 主機數量	Standby	(duty items)	Reduction, dB(A) (Ref. 3) 隔/屏障/圍封物衰減,分貝(A) (注3)	Distance (m) # 距離(米)#	Distance	dB(A) (Ref. 2) 辛期修正,分目(A)	Compation dD(A)	Compation dD(A)	Compation dD(A)	at NCD dD/A)	Noise Level, dB(A) 預計運作時的噪音聲 級,分貝(A)		Nightime 夜間		Daytime 夜間標準(可 接受噪音聲級- 5分貝(A))
Submersible Pumps (Ref. 1) 潛水污水泵(注1)	85	3	1	90	20	179	53	6	0	0	3	26					
Deodorizer Fan (Ref. 1) 除臭扇(注1)	83	1	1	83	20	179	53	6	0	0	3	19					
Mechanically raked bar screen (Ref. 1) 機械耙杆過濾器(注1)	89	1	1	89	20	179	53	6	0	0	3	25	40	NO	NO	65	55
Ventilation Fan (Ref. 1) 通風扇 (注1)	79	3	0	84	0	179	53	6	0	0	3	40					

NSR 5, Sheng Kung Hui St. Andrew's Primary School

				Total Sound Power	Screening/Barrier/ Enclosure			Tonality Correction	, Impulsiveness	Intermittency	Façade	Sound Pressure Level	Predicted Operational	超中間	pise Criteria 音標準	(ANL-5) Criteria	(ANL-5) Criteria
Equipment 設備	Sound Power Level 聲功率級	_	No. of Items Standby 備用數量	(duty itams)	Reduction, dB(A) (Ref. 3) 厚/屋跨/周封伽喜滨,公旦(A)	Distance (m) # 距離(米)#	Distance Attenuation, dB(A) 距離衰減,分貝(A)	dD(A) (Def 2)	Competion dD(A)	Commontion dB(A)	Compation dD(A)	at NCD dD/A)	Noise Level, dB(A) 預計運作時的噪音聲 級,分貝(A)		Nightime 夜間		Daytime 夜間標準(可 接受噪音聲級 5分貝(A))
Submersible Pumps (Ref. 1) 潛水污水泵(注1)	85	3	1	90	20	198	54	6	0	0	3	25					
Deodorizer Fan (Ref. 1) 除臭扇(注1)	83	1	1	83	20	198	54	6	0	0	3	18					
Mechanically raked bar screen (Ref. 1) 機械耙杆過濾器(注1)	89	1	1	89	20	198	54	6	0	0	3	24	39	NO	NO	65	55
Ventilation Fan (Ref. 1) 通岡島(注1)	79	3	0	84	0	198	54	6	0	0	3	39	1				

NSR 6, Hoi Chi House, Hoi Lai Estate, Sham Shui Po

NSR 6, 深水埗,海麗邨, 海管]樓															(2211 =)	
				Total Sound Power	Screening/Barrier/Enclosure			Tonality Correction,	Impulsiveness	Intermittency	Façade	Sound Pressure Level	Predicted Operational	拉山陽	ise Criteria 音標準		(ANL-5) Criteria
Equipment 設備	Sound Power Level 聲功率級	No. of Items Duty 主機數量	Standby	(duty items)	Reduction, dB(A) (Ref. 3) 隔/屏障/圍封物衰減,分貝(A) (注3)	Distance (m) # 距離(米)#	Distance	dB(A) (Bof 2)	Correction dB(A)	Correction dB(A)	Correction dB(A)	at NSP dR(A)	Noise Level, dB(A) 預計運作時的噪音聲 級,分貝(A)		Nightime 夜間		Daytime 夜間標準(可 接受噪音聲級- 5分貝(A))
Submersible Pumps (Ref. 1) 潛水污水泵(注1)	85	3	1	90	20	287	57	6	0	0	3	22					
Deodorizer Fan (Ref. 1) 除臭扇(注1)	83	1	1	83	20	287	57	6	0	0	3	15					
Mechanically raked bar screen (Ref. 1) 機械耙杆過濾器(注1)	89	1	1	89	20	287	57	6	0	0	3	21	36	NO	NO	65	55
Ventilation Fan (Ref. 1) 通風扇(注1)	79	3	0	84	0	287	57	6	0	0	3	36					

Remarks 注:

- (Ref. 1) The estimated sound power level of submersible pumps, mechanically raked bar screen and ventialtion fans were made reference from the Project Profile for Yuen Long Kau Hui No. 2 Sewage Pumping Station (EIAO Register No. DIR-173/2008). The Yuen Long Kau Hui No. 2 Sewage Pumping Station waverage dry weather (ADWF) flow is 5,900 m³/day which is approximate twice the ADWF of the Cheung Sha Wan Wholesale Food Market (Phase 2) Centralised Temporary Sewage Pumping Station of 2,692.3m³/day. For the purpose of this assessment, the Yuen Long Kau Hui No.2 SPS will be
- adopted as a worst case reference. (Ref. 2) A worst case assumption of +6 dB(A) tonality correction has been applied.
- (Ref. 3) For all plants enclosed inside a concrete structure of the CTSPS building, a -20 dB(A) noise reduction has been assumed.

84

0

20

34

- # As a worst case scenario, horizontal separation distance measured from NSRs to the nearest CTSPS boundary was used for the assessment.
- (注1) 潛水泵、機械耙杆过滤器及通風扇的估計聲功率級參考元 朗 舊 墟 第 二 污 水 泵 房(環境影響評估條例登記編號DIR-173/2008)之工程項目簡介。元 朗 舊 墟 第 二 污 水 泵 房平均旱季流量為每日5,9000立方米,是長沙灣蔬菜批發市場 (2期) 臨時泵房(每日2,692.3立方米)的兩倍。此評估採納了元朗舊墟第二污水泵房的資料作為最保守的參考。
- (注2)採用最保守的方法,音調修正係數為6分貝(A)。
- (注3) 所有設備是設置在臨時污水泵房的鋼筋混凝土建築物以內。這情況假設可減音20分貝(A)。 # 作為最保守情況,評估採用的水平距離由易受噪音影響的地方量度至擬建臨時泵房最近的邊界。

附錄丙2

Operational Noise Assessment (Unmitigated) 運作噪音影響評估 (已實施紓解措施)

NSR 1, Government/ Institution/ Community Site

NSR 1, 政府、機構或社區																	
				Total Sound Power	Screening/Barrier/Enclosure			Tonality Correction,	Impulsiveness	Intermittency	Façade	Sound Pressure Level	Predicted Operational	担山幅	ise Criteria 音標準		(ANL-5) Criteria
Equipment 設備	Sound Power Level 聲功率級	No. of Items Duty 主機數量	Standby	(duty itams)	Reduction, dB(A) (Ref. 3) 隔/屏障/圍封物衰減,分貝(A) (注3)	Distance (m) # 距離(米)#	Distance Attenuation dB(A)	dB(A) (Ref. 2) 辛調修正,公日(A)	Correction, dB(A) 脈衝修正,分貝(A)		Correction, dB(A)		Noise Level, dB(A) 預計運作時的噪音聲 級,分貝(A)	Daytime 日間	Nightime 夜間		Daytime 夜間標準(可 接受噪音聲級- 5分貝(A))
Submersible Pumps (Ref. 1) 潛水污水泵(注1)	85	3	1	90	20	32	38	6	0	0	3	41					
Deodorizer Fan (Ref. 1) 除臭扇(注1)	83	1	1	83	20	32	38	6	0	0	3	34					
Mechanically raked bar screen (Ref. 1) 機械耙杆過濾器(注1)	89	1	1	89	20	32	38	6	0	0	3	40	47	NO	NO	65	55
Ventilation Fan (Ref. 1) 通風扇(注1)	79	3	0	84	10	32	38	6	0	0	3	45					

NSR 2, Comprehensive Development

				Total Sound Power	Screening/Barrier/Enclosure			Tonality Correction	, Impulsiveness	Intermittency	Façade	Sound Pressure Level	Predicted Operational	担	ise Criteria 音標準		(ANL-5) Criteria
Equipment 設備	Sound Power Level 聲功率級	_	No. of Items Standby 備用數量	(duty itoms)	Reduction, dB(A) (Ref. 3) 區/屏障/周封物音減,分貝(A)	Distance (m) # 距離(米)#	Distance	dD(A) (Def 2)	Compostion dD(A)	Convection dD(A)	Compation dD(A)	at NCD dD/A)	Noise Level, dB(A) 預計運作時的噪音聲 級,分貝(A)		Nightime 夜間		Daytime 夜間標準(可 接受噪音聲級- 5分貝(A))
Submersible Pumps (Ref. 1) 潛水污水泵(注1)	85	3	1	90	20	20	34	6	0	0	3	45					
Deodorizer Fan (Ref. 1) 除臭扇(注1)	83	1	1	83	20	20	34	6	0	0	3	38					
Mechanically raked bar screen (Ref. 1) 機械耙杆過濾器(注1)	89	1	1	89	20	20	34	6	0	0	3	44	51	NO	NO	65	55
Ventilation Fan(Ref. 1) 通風扇(注1)	79	3	0	84	10	20	34	6	0	0	3	49					

NSR 3, Public Housing Development

NSR 3, 公營房屋發展計劃		į.		Total Sound Power	Screening/Barrier/Enclosure			Tonality Correction	, Impulsiveness	Intermittency	Façade	Sound Pressure Level	Predicted Operational	把 把 把 把	ise Criteria 音標準		(ANL-5) Criteria
Equipment 設備	Sound Power Level 聲功率級		No. of Items Standby 備用數量	(duty itams)	Reduction, dB(A) (Ref. 3) 隔/屏障/圍封物衰減,分貝(A) (注3)	Distance (m) # 距離(米)#	Distance Attenuation, dB(A) 距離衰減,分貝(A)	dB(A) (Ref. 2) 辛調修正,分目(A	Competion dD(A)	Competion dD(A)	Compation dD(A)	at NSR, dB(A)	Naiss Lavel (D/A)	Daytime 日間	Nightime 夜間		Daytime 夜間標準(可 接受噪音聲級 5分貝(A))
Submersible Pumps (Ref. 1) 潛水污水泵(注1)	85	3	1	90	20	15	32	6	0	0	3	47					
Deodorizer Fan (Ref. 1) 除臭扇(注1)	83	1	1	83	20	15	32	6	0	0	3	40					
Mechanically raked bar screen (Ref. 1) 機械耙杆過濾器(注1)	89	1	1	89	20	15	32	6	0	0	3	46	54	NO	NO	65	55
Ventilation Fan(Ref. 1) 通風扇(注1)	79	3	0	84	10	15	32	6	0	0	3	51					

NSR 4, Comprehensive Development Area

NSR 4, 綜合發展區				Total Sound Power	Screening/Barrier/Enclosure			Tonality Correction,	Impulsiveness	Intermittency	Façade	Sound Pressure Level	Predicted Operational	Exceed No 超出噪	ise Criteria 音標準		(ANL-5) Criteria
Equipment 設備	Sound Power Level 聲功率級	No. of Items Duty 主機數量	Standby	(duty items)	Reduction, dB(A) (Ref. 3) 隔/屏障/圍封物衰減,分貝(A) (注3)	Distance (m) # 距離(米)#	Distance	dB(A) (Bef 2)	Correction dB(A)	Correction dB(A)	Correction dB(A)	at NSB dB(A)	Noise Level, dB(A) 預計運作時的噪音聲 級,分貝(A)	Daytime 日間	Nightime 夜間		Daytime 夜間標準(可 接受噪音聲級- 5分貝(A))
Submersible Pumps (Ref. 1) 潛水污水泵(注1)	85	3	1	90	20	179	53	6	0	0	3	26					
Deodorizer Fan (Ref. 1) 除臭扇(注1)	83	1	1	83	20	179	53	6	0	0	3	19					
Mechanically raked bar screen (Ref. 1) 機械耙杆過濾器(注1)	89	1	1	89	20	179	53	6	0	0	3	25	32	NO	NO	65	55
Ventilation Fan (Ref. 1) 通風扇(注1)	79	3	0	84	10	179	53	6	0	0	3	30					

NSR 5, Sheng Kung Hui St. Andrew's Primary School

				Total Sound Power	Screening/Barrier/Enclosure			Tonality Correction	, Impulsiveness	Intermittency	Façade	Sound Pressure Level	Predicted Operational	松山崎	pise Criteria 快音標準		(ANL-5) Criter
Equipment 設備	Sound Power Level 聲功率級	No. of Items Duty 主機數量	Standby	(duty items)	Reduction, dB(A) (Ref. 3) 隔/屏障/圍封物衰減,分貝(A) (注3)	Distance (m) # 距離(米)#	Distance Attenuation, dB(A) 距離衰減,分貝(A)	dB(A) (Ref. 2) 辛調修正,公目(A)	Correction, dB(A)	Correction, dB(A)	Correction, dB(A)	at NSR, dB(A)	Noise Level, dB(A)	Daytime 日間	Nightime 夜間		Daytime 夜間標準(可接受噪音聲級 5分貝(A))
Submersible Pumps (Ref. 1) 潛水污水泵(注1)	85	3	1	90	20	198	54	6	0	0	3	25					
Deodorizer Fan (Ref. 1) 除臭扇(注1)	83	1	1	83	20	198	54	6	0	0	3	18]				
Mechanically raked bar screen (Ref. 1) 幾械耙杆過濾器(注1)	89	1	1	89	20	198	54	6	0	0	3	24	31	NO	NO	65	55
Ventilation Fan (Ref. 1) 通風扇(注1)	79	3	0	84	10	198	54	6	0	0	3	29]				

NSR 6, Hoi Chi House, Hoi Lai Estate, Sham Shui Po

				Total Sound Power	Screening/Barrier/Enclosure			Tonality Correction,	Impulsiveness	Intermittency	Façade	Sound Pressure Level	Predicted Operational	Exceed No 超出噪	ise Criteria 音標準		(ANL-5) Criteri
Equipment 設備	Sound Power Level 聲功率級	No. of Items Duty 主機數量	Standby	(duty items)	Reduction, dB(A) (Ref. 3) 區/屏障/周計物音減,公日(A)	Distance (m) # 距離(米)#	Distance	dB(A) (Bof 2)	Correction dB(A)	Correction dB(A)	Correction dB(A)	at NSP dR(A)	Noise Level, dB(A) 預計運作時的噪音聲 級,分貝(A)	Daytime 日間	Nightime 夜間		Daytime 夜間標準(可 接受噪音聲級 5分貝(A))
Submersible Pumps (Ref. 1) 潛水污水泵(注1)	85	3	1	90	20	287	57	6	0	0	3	22					
除臭扇(注1)	83	1	1	83	20	287	57	6	0	0	3	15	1				
Mechanically raked bar screen (Ref. 1) 機械耙杆過濾器(注1)	89	1	1	89	20	287	57	6	0	0	3	21	28	NO	NO	65	55
Ventilation Fan (Ref. 1) 通風長(注1)	79	3	0	84	10	287	57	6	0	0	3	26	1				

Remarks:

注:

- (Ref. 1) The estimated sound power level of submersible pumps, mechanically raked bar screen and ventialtion fans were made reference from the Project Profile for Yuen Long Kau Hui No. 2 Sewage Pumping Station (EIAO Register No. DIR-173/2008). The Yuen Long Kau Hui No. 2 Sewage Pumping Station waverage dry weather (ADWF) flow is 5,900 m³/day which is approximate twice the ADWF of the Cheung Sha Wan Wholesale Food Market (Phase 2) Centralised Temporary Sewage Pumping Station of 2,692.3m³/day. For the purpose of this assessment, the Yuen Long Kau Hui No.2 SPS will be
- adopted as a worst case reference. (Ref. 2) All plants are enclosed inside a concrete structure of the CTSPS building. A -20 dB(A) noise reduction has been assumed. Acoustic louvers have been proposed for the ventilation fans at exhaust outlets as noise mitigation measures. It is assumed that a 10 dB(A) noise reduction can be achieved for ventilation fan with provision of acoustic louvers.
- (Ref. 3) A worst case assumption of +6 dB(A) tonality correction is applied.
 - # As a worst case scenario, horizontal separation distance measured from NSRs to the nearest CTSPS boundary was used for the assessment.
- (注1)潛水泵、機械耙杆过滤器及通風扇的估計聲功率級參考元 朗舊 墟 第二 污水 泵房(環境影響評估條例登記編號DIR-173/2008)之工程項目簡介。元 朗舊 墟 第二 污水 泵房平均旱季流量為每日5,9000立方米,是長沙灣蔬菜批發市場 (2期) 臨時泵房(每日2,692.3立方米)的兩倍。此評估採納了元 朗舊 墟第二污水泵房的資料作為最保守的參考。
- (注2)採用最保守的方法,音調修正係數為6分貝(A)。
- (注3) 所有設備是設置在臨時污水泵房的鋼筋混凝土建築物以內。這情況假設可減音20分貝(A)。 # 作為最保守情況,評估採用的水平距離由易受噪音影響的地方量度至擬建臨時泵房最近的邊界。

Appendix C3 - Construction Programme 附錄丙3 - 施工 計畫

Item No.	Construction Activity	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12	Month 13	Month 14	Month 15	Month 16	Month 17	Month 18	Month 19	Month 20	Month 21	Month 22	Month 23 Item
項目編號	建造工作	第1個月	第2個月	第3個月	第4個月	第5個月	第6個月	第7個月	第8個月	第9個月	第10個月	第11個月	第12個月	第13個月	第14個月	第15個月		第17個月	第18個月	第19個月	第20個月		第 22 個月	
1	Civil Works																							1
1	土木工程																							' /
2	Temporary Shoring Installation		! months																					2
2	臨時支撐安裝		2個月																					2
3	Excavation & backfill works		3 months																					3
3	挖掘及回填		3個月																					
4	Construction of base slab & substructure					4 mo																		4
	底板及底層結構建造					4個	月																	
5	Construction of superstructure												3 months											5
	上層結構建造												3個月											
6	Construction of roof slab														1 month									6
	頂板建造														1個月	4								
7	Water test to wet well															1 month								7
	濕井水測試															1個月								
8	Watertightness test for roof															2 weeks 2周	3							8
	屋頂水密性測試															2周								
12	Finishing																							12
	飾面工程																1 month							
13	Apply Internal Finishes																1 month 1個月							13
	實施 內部飾面工程																门凹月	1 month						
14	Apply External Finishes 實施 外部飾面工程																	1 month 1個月						14
	E&M Works																	刊四月						
	機電工程																							15
	Electrical & Mechnical Installations																		5 months					
	機電安裝																		5個月					16
	Testing & Commissioning for E&M Works at SPS																		● □/J				3 months	
17	泵房機電工程測試及運作																						3個月	16
																							101/4	
9	Drainage Works 排水工程																							9
40	Laying 2x200 dia. Rising Mains connected between SPS and DC								2 mo	nths														40
10	鋪兩條直徑為200毫米的壓力污水管道以連接污水泵房和排水池								2個															10
44	Laying 450 dia Gravity Sewer connected between DC and Discharge point										onths													
-11	鋪一條直徑450毫米的重力污水管道以連接排水池和排放點										固月													11



Appendix D
Site Surroundings Photos



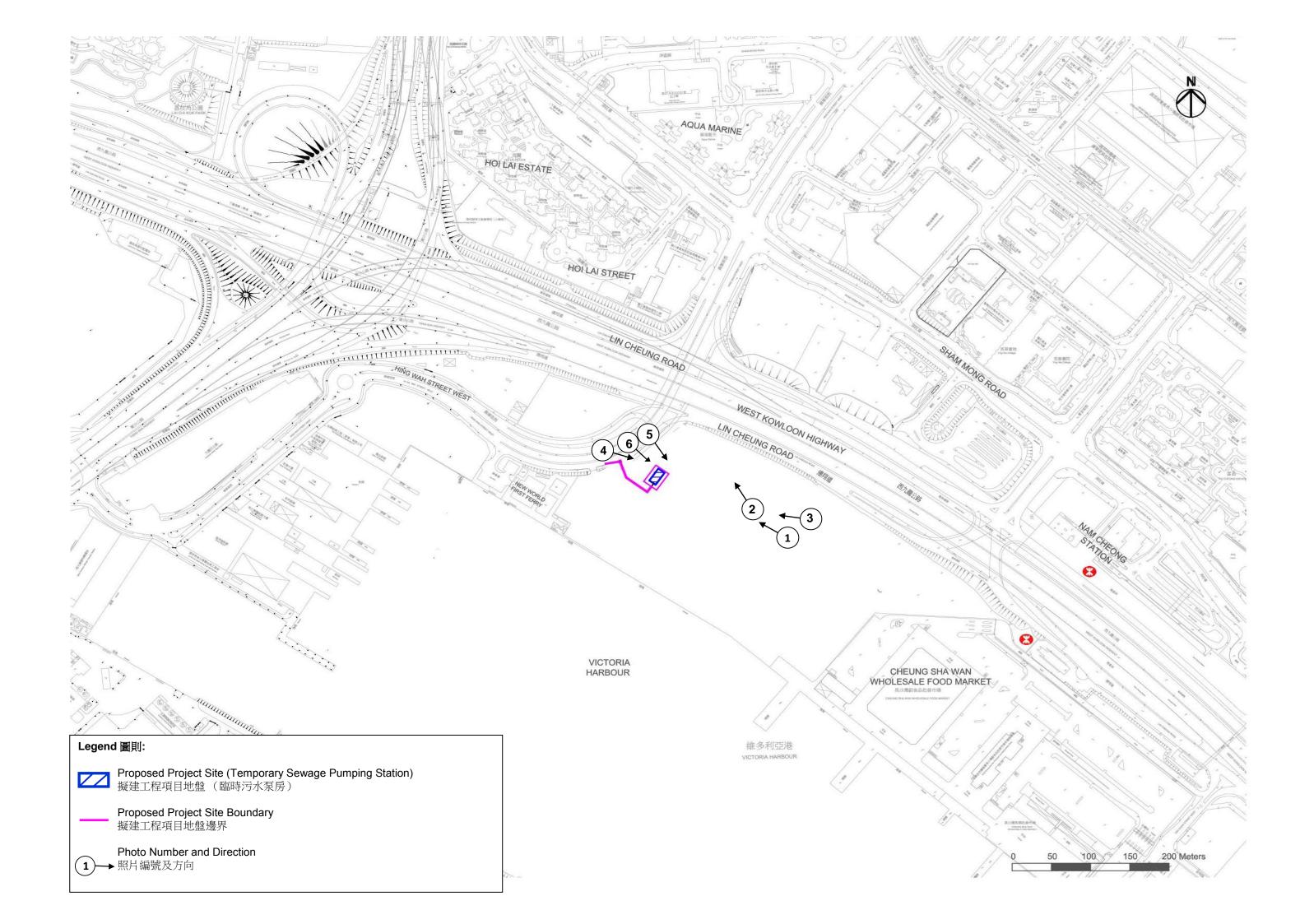




Photo 1 照片 1



Photo 2 照片 2



Photo 3 照片 3



Photo 4 照片 4







Appendix E

Historical Aerial Photographs





