

Agreement No. CE 1/2012 (DS)

Construction of Dry Weather Flow Interceptor at Cherry Street Box Culvert and Other Works - Investigation, Design and Construction

Project Profile for Proposed Sewage Pumping Station and Dry Weather Flow Interceptor at Cherry Street Box Culvert

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1. BASIC INFORMATION

1.1 Project Title

1.1.1 The title of the project is “Proposed Sewage Pumping Station and Dry Weather Flow Interceptor at Cherry Street Box Culvert”.

1.2 Purpose and Nature of the Project

1.2.1 The existing Cherry Street Box Culvert (CSBC) is a reinforced concrete 8-cell stormwater box culvert; each cell is 4.8 m wide and 3.5 m high. The CSBC collects run-off from three upstream box culverts underneath Palm Street, Cheung Wong Road and a section of West Kowloon Corridor West and ultimately discharges into the New Yau Ma Tei Typhoon Shelter (NYMTTS).

1.2.2 At present, the water quality at NYMTTS and the odour associated with it remains unsatisfactory. It is believed that polluted flow, including those from the expedient connections, cross-connections between the foul water sewerage and the stormwater drainage system in the area found their way into the CSBC and in turn discharges into NYMTTS. Measures have to be taken to improve the present conditions at the CSBC.

1.2.3 In 2010, Environmental Protection Department (EPD) completed a West Kowloon and Tsuen Wan Sewerage Master Plans Study Review and recommended to construct a dry weather flow interceptor (DWFI) at the outfall of the CSBC. Upon commissioning of the DWFI system, the intercepted flow would be discharged to the existing sewerage system via proposed discharge sewerage.

1.2.4 The proposed DWFI system will comprise construction of a DWFI at the CSBC to intercept the dry weather flow (DWF) inside the box culvert and construction of a sewage pumping station to pump the intercepted DWF to the existing sewerage network via proposed twin rising mains.

1.3 Name of the Project Proponent

1.3.1 Drainage Services Department (DSD) is the project proponent of this Project.

1.4 Location and Scale of the Project

1.4.1 The Project including the Cherry Street Box Culvert Sewage Pumping Station (CSBCSPS), an underground DWFI, underground emergency stormwater bypass culvert and twin rising mains at CSBC (hereinafter referred to as the “Project”) are shown in **Figure 1.1**. The whole Project site area is about 2,255 m². The proposed site for the Project is located in an open area with a typical level of +4.8 mPD, above the outfall of the CSBC, surrounded by Hoi Fai Road at the northern and eastern sides, and by the seawall at the southwestern side. The area is largely zoned “Open Space” and partly zoned “Government, Institution or Community” on the approved South West Kowloon Outline Zoning Plan (OZP) No. S/K20/30. The proposed twin rising mains will be constructed across Hoi Fai Road, Cherry Street and Lin Cheung Road with a length of about 270m. The diameter of each rising main is 450mm.

1.4.2 The designed pump rate of CSBCSPS is 0.50m³/s (installed capacity 43,200m³/day). The layout and section plan of the CSBCSPS are shown in **Figure**

1.1 and Figure 1.1a. The normal processes of CSBCSPS are shown in **Appendix I**. All pump sets, screening facilities, inlet chamber and valve chamber will be fully installed below ground while an associated facility (including deodorizer, transformer, switchbox etc.) is located above ground and kept in a single above ground structure. The above ground structure with associated facilities is about 285m² and the maximum height of the structure is about 6.2m.

1.5 Rationale for Site Selection

1.5.1 The rationale for site selection is based on the current use of site, acceptance by the public, land status and zoning, environmental impacts, time implication, traffic and access. Various potential sites for the Project have been evaluated and Site A as indicated in **Figure 1.2** is considered as the most preferred location based on the following considerations:

- The current site is vacant;
- The site is on government land. The site is zoned “Open Space” and “Government, Institution or Community” on the approved South West Kowloon Outline Zoning Plan (OZP) No. S/K20/30. Planning permission from Town Planning Board (TPB) is required for “O” zone;
- The Project site has the least environmental impacts, time implication and ease of vehicular access when compared with other potential Sites B & C. **Table 1-1** below presents the site selection based on various aspects including area available, current use of site, acceptance by the public, land status and zoning, environmental impacts, time implication, traffic and ease of access.

Table 1-1 Comparison of Potential Sites on Various Aspects

	Site A	Site B	Site C
Approximate Area	1,700 m ² *	2500 m ² * preferred	2500 m ² * preferred
Current Use of Site	Vacant and no structure located within the site preferred	Open square for functional events with tree and planters	Cherry Street Park with garden, sitting out area and walking trail for leisure purpose
Acceptance by the Public	Objection not anticipated preferred	Strong objections by the public anticipated	Strong objections by the public anticipated
Land Status and Zoning	Gov. Land Zoning: “Open Space”, “Government, Institution or Community”	Gov. Land Zoning: “Road” preferred	Gov. Land Zoning: “Open Space”
Environmental Impact	Least impact (Vacant site with few low values trees) preferred	More impact (disturbance to the Olympian City Two and Central Park residents)	More impact (disturbance to The Hermitage residents and Cherry Street Park visitors)
Time Implication	Least implication (require permission from TPB under Section 16 application) preferred	Long public consultation process expected (require permission from TPB under Section 16 application but objections would likely be raised as public may not welcome a sewerage facility in this area)	Long public consultation process expected (require permission from TPB under Section 16 application but objections would likely be raised as it will reduce the public enjoyment area)

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	Site A	Site B	Site C
Traffic and Ease of Access	Minimal impact preferred	More impact during construction	Re-provision of Cherry Street Park EVA is necessary

*Remarks: The area excludes the Project site for the twin rising main.

1.6 History of the Project Site

1.6.1 The current Project site is located in a piece of unoccupied land. There is no existing structure or building at the site. The proposed site was originally an offshore area situated to the west of the entrance of old Yau Ma Tei Typhoon Shelter. The area was formed when the typhoon shelter was reclaimed in mid-1990's. The CSBC was constructed during the reclamation works. The area was formed to the current layout since 1997, and there were no significant changes afterwards.

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

1.7.1 The CSBCSPS is classified as a designated project under item F.3(b)(i), Part I of Schedule 2 of the Environmental Impact Assessment Ordinance (EIAO), as the proposed sewage pumping station has an installed capacity (average dry weather flow) of more than 2,000 m³ per day and its boundary is less than 150 m from an existing residential area. **Figure 1.1** illustrates the CSBCSPS location.

1.7.2 This Project Profile has been prepared to seek permission from the Director of Environmental Protection under Section 5(11) of the EIAO to apply directly for an Environmental Permit. The predicted impacts from the implementation of the proposed Project is not expected to be adverse and sufficient information is provided in this Project Profile on mitigation measures to meet the requirements under the Technical Memorandum on Environmental Impact Assessment Process (EIAO-TM).

1.8 Name and Telephone Number of Contact Person

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2. OUTLINE OF PLANNING AND IMPLEMENTATION PROGRAMME

2.1 Outline of Planning

2.1.1 The Project is delivered by DSD under Agreement No. CE 1/2012(DS) "Construction of Dry Weather Flow Interceptor at Cherry Street Box Culvert and Other Works – Investigation, Design and Construction". The Consultants Management Division of DSD appointed Black & Veatch Hong Kong Limited (B&V) to undertake the investigation, design and construction supervision of the Project. The construction will be carried out by a qualified contractor under the supervision of DSD and B&V. Relevant Divisions of DSD will operate and maintain the Project.

2.2 Project Implementation and Timetable

2.2.1 The Project is programmed to commence construction in January 2016 for completion in August 2020. The tentative implementation programme of the Project is as follows:

- Investigation Phase – End August 2012 to End March 2013
- Design Phase – End March 2013 to End September 2014
- Tender Stage – October 2015 to December 2015
- Construction and Commissioning:
 - ❖ January 2016 to August 2020
- Maintenance – September 2020 onwards

2.3 Interactions with Other Project

2.3.1 The following project is identified as concurrent project during construction phase as follows:

- The Highways Department's Proposed Road Improvement Works in West Kowloon Reclamation Development Phase I (EIA Report No.: AEIAR-179/2013) is located at the southeast of the work site of the Project. The construction works of this project has commenced in March 2015 for completion in early-2018.

3. MAJOR ELEMENTS OF THE SURROUNDING ENVIRONMENT

3.1 Existing Sensitive Receivers and Sensitive Parts of the Natural Environment

3.1.1 This section outlines the existing representative sensitive receivers that are likely to be affected by the Project during the construction and operational phases.

(a) Residential Buildings

3.1.2 There are seven residential buildings in the vicinity of the Project site, namely:

- Island Harbourview (IH) Tower 10 and (IH5) Tower 5
- Park Avenue Central Block 1 (PAC)
- Florient Rise (FR)
- One Silver Sea (OSS)
- Ocean Court (OCT)
- Harbour Green Tower 1 (HG)

(b) Commercial Buildings

3.1.3 There are five commercial buildings in the vicinity of the Project site, namely:

- Bank of China Centre (BCC)
- HSBC Centre (HSBC)
- Skyway House (SH)
- Olympian City Phase I (OC I)
- Olympian City Phase II (OC II)

Based on site survey, centralized air-conditioning system is equipped for all the commercial buildings.

(c) Office

3.1.4 There is one office building in the vicinity of the Project site, namely Harbour Patrol Section of Marine Department (HPS). Based on site survey, air-conditioners are provided for the building.

(d) Typhoon Shelter

3.1.5 There is New Yau Ma Tei Typhoon Shelter (NYMTTS) in the vicinity of the portal of the Western Harbour Crossing and identified as water sensitive receiver (WSR). The NYMTTS is located within the Victoria Harbour Water Control Zone (VHWCZ). The beneficial uses of NYMTTS do not cover activities for mariculture, swimming or secondary contact recreation. No statutory Water Quality Objective (WQO) on *E. coli* level has been set for the VHWCZ.

(e) Park

3.1.6 There are two parks in the vicinity of the Project site, namely Olympian City Promenade Park (OCPP) and Tai Kok Tsui Advance Promenade (TKTAP).

3.2 Major Elements of the Surrounding Environment

- 3.2.1 No planned sensitive receivers and sensitive parts of the natural environment have been identified.
- 3.2.2 The representative identified existing air and noise sensitive receivers in the vicinity of the Project site are summarized in **Table 3-1**, and their locations are indicated in **Figure 3.1**.

Table 3-1 Air and Noise Sensitive Receivers in the Vicinity of the Project Site

I.D.	Sensitive Receiver	Type	Shortest horizontal distance to the proposed CSBCSPS and DWFI (m)	Shortest horizontal distance to the twin rising mains (m)
HPS**	Harbour Patrol Section, MD	Office	131	139
BCC**	Bank of China Centre	Commercial	91	20
IH*	Island Harbourview Tower 10	Residential	135	80
IH5*	Island Harbourview Tower 5	Residential	275	148
HSBC**	HSBC Centre	Commercial	197	142
PAC*	Park Avenue Central Block 1	Residential	217	233
FR*	Florient Rise	Residential	245	205
OSS*	One Silver Sea	Residential	282	278
SH**	Skyway House	Commercial	311	122
OCT*	Ocean Court	Residential	328	167
HG*	Habour Green Tower 1	Residential	484	240
OCPP**	Olympian City Promenade Park	Recreation	436	213
TKTAP**	Tai Kok Tsui Advance Promenade	Recreation	10	30
OC I**	Olympian City Phase I	Commercial	154	2
OC II**	Olympian City Phase II	Commercial	154	167

Remarks: * Air and Noise Sensitive Receiver; ** Air Sensitive Receiver only

4. POSSIBLE IMPACTS ON THE ENVIRONMENT

4.1 Outline of Processes Involved

4.1.1 Referring to the Upgrading of West Kowloon and Tsuen Wan Sewerage Package prepared by EPD in April 2011, the dry weather flow in CSBC was polluted and affecting the water quality of the receiving water at West Kowloon, particularly the waters in the NYMTTS. The major objective of the Project is to intercept the polluted DWF in the CSBC, which will be conveyed by the CSBCSPS to the existing West Kowloon No. 1 Sewage Pumping Station (WK1SPS) through the proposed twin rising mains to the existing sewerage system along Lin Cheung Road. The intercepted DWF will be ultimately conveyed to Stonecutters Island Sewage Treatment Works for treatment and disposal. A tidal barrier will be constructed to prevent seawater intrusion from the downstream of the CSBC during the interception process. The interception scheme of the Project is illustrated in **Appendix I**. There are three main stages of the overall interception scheme as follows:

(i) *Stage 1: Dry Weather Flow (DWF) Mode*

This will be the default mode and the tidal barriers will be in closed condition. Water pumps in the CSBCSPS will pump the DWF from the CSBC to the rising mains and convey to WK1SPS.

(ii) *Stage 2 : Wet Weather Flow (WWF) Mode*

When rainfall reaches defined intensity, the tidal barrier will be opened automatically by control sensors to allow discharge of floodwater at the CSBC and no DWF will be intercepted under these conditions.

(iii) *Stage 3: Residual Water Discharge (RWD) Mode*

After rainfall, the tidal barrier will be closed automatically by control sensors. The residual floodwater trapped at the upstream of the tidal barrier will be pumped to the downstream of the CSBC via water pumps.

4.1.2 An underground emergency stormwater bypass culvert will be constructed to allow emergency discharge of the floodwater inside the CSBC in case of failure of the tidal barrier.

4.1.3 The DWF intercepted from the CSBC will be conveyed to the CSBCSPS via gravity sewers. The DWF will pass through a screening chamber for removal of screenings before entering the CSBCSPS. The screened flow will then enter into a wet well, where the DWF will be pumped out of the pumping station through the proposed twin rising mains, to the existing sewerage system on Lin Cheung Road by submersible pumps. The DWF in this sewerage system will be conveyed to the existing WK1SPS and ultimately be conveyed to the Stonecutters Island Sewage Treatment Works for treatment, which have sufficient capacity to cater for the intercepted DWF for treatment.

4.1.4 The CSBCSPS comprises of an underground component including an inlet chamber, a mechanical screen, wet well with submersible pumps, a flowmeter and valve chamber and an above ground associated facility for housing deodorizer, transformer, switchbox, etc. Air-tight covers (manhole covers with air-tight seals)

will be provided.

4.1.5 The potential environmental impacts during construction and operation phases are identified in the following sections.

4.2 Possible Environmental Impacts during Construction Phase

Air Quality

4.2.1 Dust may be generated during construction of the Project which may have potential impact to nearby air sensitive receivers (ASRs) (see **Figure 3.1**), in particular during excavation or handling and transportation of construction and demolition (C&D) materials.

4.2.2 The summary of excavation, handling and transportation of C&D materials is shown in **Table 4-1**. All the trucks with dusty loads will be properly covered. The Project site will be regularly sprayed with water per construction day and dust suppression measures stipulated in the Air Pollution Control (Construction Dust) Regulation will be applied. Concurrent excavation activities for construction of underground DWFI, underground emergency stormwater bypass culvert and CSBCSPS will be avoided. Also, the excavation activities will be carried out in sequence such that works area involving dusty construction activities will be minimized. No adverse dust impact is expected at nearby ASRs due to construction of the Project.

Table 4-1 Summary of Excavation, Handling and Transportation of C&D Materials

		CSBCSPS (a)	Underground DWFI, underground emergency stormwater bypass culvert (b)	Twin rising mains (c)	The Project (a+b+c)
Excavation period (months)		5	10	10	5 - 10
Total Excavation Area/Length	Area(m ²)	285	1,175	n/a	n/a
	Length(m)	n/a	n/a	270	n/a
Total amount of C&D materials (m ³)		1,435	2,211	869	4,515
Average volume of C&D materials to be handled per day (m ³)*		11.0	8.5	3.3	22.8
Number of trip required for handling C&D materials per day**		1.8	1.4	0.6	3.8

Remarks: * Assuming that there are 26 working days per month and the construction period is 10 hours per day.

** The average hauling volume of the truck is 6 m³ per trip.

4.2.3 The construction works of the Project would be carried out at similar time as the Road Improvement Works in West Kowloon Reclamation Development Phase I. The Contractor shall be required to schedule carefully their dusty construction activities (such as excavation and backfilling) to avoid overlap of major dusty construction activities. Cumulative dust impact can be controlled by good site practices and management, regular water spraying and implementation of dust suppression measures and are expected to be insignificant.

Water Quality

- 4.2.4 Potential water quality concerns during construction phase of the Project are site runoff and sewage generated from construction workforce. With the implementation of good site practices and recommended mitigation measures, adverse water quality impact during the construction phase due to the Project is not anticipated.
- 4.2.5 Cumulative water quality impact with Road Improvement Works in West Kowloon Reclamation Development Phase I is not expected. No adverse cumulative water quality impact is expected.

Noise

- 4.2.6 Noise Sensitive Receivers (NSRs) in the vicinity of the construction site may be affected by the construction noise impacts arising from construction activities involving the use of Powered Mechanical Equipment (PME). Existing representative noise sensitive receivers (NSRs) are identified in the vicinity of the site (see **Table 3-1** for details). No planned NSR is identified. With the implementation of good site practices, use of quiet plant and use of movable noise barrier (whenever appropriate), predicted noise levels at all identified NSRs are well below the daytime construction noise criteria during the construction phase of the Project. Cumulative noise impact to the NSRs with Road Improvement Works in West Kowloon Reclamation Development Phase I is predicted during construction phase. Noise impact analysis and typical construction programme are shown in **Appendix II**. With the proper implementation of mitigation measures and good site practices, adverse construction noise impacts from the Project are not anticipated.

Waste Management

- 4.2.7 C&D materials, general refuse and chemical waste will be generated during the construction phase. C&D materials are composed of inert and non-inert materials. Inert C&D materials including excavated spoil (soil and rock) and concrete which can be reused on-site or delivered to public filling reception facilities for reuse. Non-inert materials such as timber, paper and packing waste should be reused or recycled as much as possible. The non-inert C&D materials that cannot be reused or recycled will be disposed of at landfill. Workforce will also generate small amount of general refuse comprising packaging materials, food scraps and plastic containers. Small amount of chemical wastes from the maintenance of plant/PME are also expected. With the implementation of good construction site management practice, environmental impact due to waste generated from the Project would be minimal. Nonetheless, according to the ground investigation data, at least 20m fill material exists below the ground level while the maximum excavation depth for the CSBCSPS is 13m. As such, no sediment will be generated at CSBCSPS during construction and operation phases.
- 4.2.8 About 4,515 m³ C&D materials will be generated during the construction phase of the Project. The inert C&D materials will be either delivered to public filling reception facilities for reuse (3,260 m³) or reused on-site (852m³). The non-inert C&D materials will mainly consist of vegetation generated from site clearance and will be disposed of at landfill (403m³). Some general refuse which cannot be reused will also be disposed of at landfill (45m³). The breakdown of the C&D materials and general refuse generated from the Project during construction

phase is shown in **Table 4-2**.

Table 4-2 Summary of C&D Materials and General Refuse Generated during Construction Phase

	CSBCSPS (a)	Underground DWFI, underground emergency stormwater bypass culvert (b)	Twin rising mains (c)	The Project (a+b+c)
C&D Materials				
Total amount of C&D materials (m ³)	1,435	2,211	869	4,515
<i>Inert C&D Materials</i>				
To be delivered to public filling reception facilities (m ³)	1,305	1,315	640	3,260
To be reused on site (m ³)	0	692	160	852
<i>Non-inert C&D Materials</i>				
To be disposed of at landfill (m ³)	130	204	69	403
General Refuse				
To be disposed of at landfill (m ³)	15	20	10	45

4.2.9 With the implementation of good construction site management practice, environmental impact due to waste generated from the Project would be minimal. Small amount of chemical wastes from maintenance of equipment will also be generated. Provided that the chemical waste is handled and disposed of in accordance with the Code of Practice on the Packaging, Handling and Storage of Chemical Waste, adverse environmental impacts would not be anticipated. In view of the limited construction activities for the Project, it is expected that insignificant amount of general refuse will be generated from the construction workforce. Cumulative impact due to the waste generation with Road Improvement Works in West Kowloon Reclamation Development Phase I is not expected.

Landscape and Visual

4.2.10 The existing landscape character unit and representative visual sensitive receiver (VSR) in the vicinity of proposed CSBCSPS are shown in **Figure 3.2**.

4.2.11 The Project site is reclaimed land which is currently vacant above the outfall of the CSBC, mainly surrounded by Hoi Fai Road, at the northern and eastern sides, and by seawall at the southwestern side. The region to the northwest side of Hoi Fai Road mainly consists of commercial buildings and residential buildings. The region to the northeast side separated by West Kowloon Highway consists of Olympic MTR Station, commercial buildings and residential buildings. The region to the south of Hoi Fai Road includes the Project site and the NYMTTS.

4.2.12 During construction phase, temporary visual impact may arise from construction of the Project. Temporary stockpiling of excavated and building materials, construction site hoardings, construction PME, night-time lighting, and construction traffic may have moderate visual impact to the VSRs.

4.2.13 Mitigation measures will be implemented to minimize the visual impact during the construction phase. Erection of hoardings with outlook matching with surrounding landscape is one of the measures proposed to mitigate potential visual impacts. The impacts to the VSRs would be negligible after implementation of the mitigation measures.

4.2.14 Existing condition of the Project site and trees are shown in **Figure 4.1** and **Figure 4.2**. Tree information is shown in **Appendix IV**. 13 nos. of White Popinac (*Leucaena leucocephala*) and 1 no. of China-berry (*Melia azedarach*) will be affected by the Project. No important tree is identified. All the trees forms are poor with low amenity value. 12 nos. of them are expected to have low survival rate after transplanting. Thus, all 14 nos. of trees will be felled. The tree felling application under the Project had been approved by District Lands Office on 21 May 2015. 11 nos. of evergreen trees such as Madagascar Almond (*Terminalia mantaly* H. Perrier.) will be compensated and planted within the project boundary. Adverse landscape and visual impact due to the construction would not be anticipated.

Ecology

4.2.15 The Project site is located in a piece of vacant flat land. The Project site is not surrounded by areas of ecological value (e.g. woodland and natural stream). No adverse ecological impact is expected.

Cultural Heritage

4.2.16 Aerial photograph records showed that the Project site was formed by reclamation in 1993 and completed in 1997. The Project site was unoccupied since reclaimed. Therefore, no impacts on historical monuments or buildings and site of archaeological interest are expected during the construction phase.

Land Contamination

4.2.17 Contaminated land refers to the land which has been polluted by hazardous substances as a result of industrial operations carried out on the site over a number of years. These contaminants, if present, may pose hazardous risks or cause adverse effects to the land users and the nearby environment. In order to identify and evaluate the potential contamination impacts associated with the Project, the current and historical land uses for the Project site were reviewed. Sources of information include aerial photographs from Lands Department, records and photographs from site visit, and land uses information of the Project site and neighboring areas.

4.2.18 The aerial photo taken in 1949 showed that the Project site was an offshore area. There was no major change on land use until reclamation for Yau Ma Tei Typhoon Shelter which commenced in 1992 and completed in 1997. Construction of the CSBC started in 1993 and completed in 1997. Construction works for surrounding residential buildings started in 1998. The Project site was an open space after reclamation in 1997. As shown in the aerial photos in 2008 and site investigation which was carried out in 2012, the Project site was remained as a vacant land. According to the past history and site investigation, no land contamination was identified within the Project site (**Appendix III**). No impact on land contamination is expected during construction of the Project.

4.3 Possible Environmental Impacts during Operation Phase

Air Quality

- 4.3.1 Air quality impact arising during operation phase is the potential odour nuisance from the CSBCSPS. Odour nuisance may arise from the screen house and wet well of the CSBCSPS. No operation air quality impact is associated with the twin rising mains.
- 4.3.2 Measures will be implemented to minimize air quality impact. For example, potential odour emission areas such as inlet chamber, screen chamber, valve chamber and wet well of the CSBCSPS will be installed underground and enclosed inside a reinforced concrete structure. All odour sources will be treated by a deodorizing system inside the E&M equipment structure with forced ventilation to remove the odour. The location of the deodorizing system can be found in **Appendix I**. No adverse odour impact is expected.
- 4.3.3 No operation air quality impact is associated with the underground DWFI and underground emergency stormwater bypass culvert.
- 4.3.4 As stormwater would carry silt and sediments, desilting operation for the CSBC in the DWFI area would be carried out yearly. This will prevent the silt accumulated in the CSBC affecting CSBC's flood prevention performance. The overall desilting operation for CSBC will be carried out in 2 phases and in each phase, 4 cells of CSBC will be desilted to minimize the odour source. During each phase, desilting will occur one at a time for each cell and the silt will be removed off-site on the same day. The time required for desilting each cell will approximately be 1 week. During each phase, site hoarding will be erected to fence off the site with no public access allowed. The site hoarding will consist of water-filled barrier at the bottom and a non-transparent plastic sheet on top with a total height of about 3m. The desilting operation will only be carried out during daytime. With the limited exposure of odour sources during desilting at underground DWFI and underground emergency stormwater bypass culvert, potential odour impacts are considered temporary and reversible.
- 4.3.5 There is no other odour emission source within the 500 m of the area of the Project site. As this Project aims to improve the water quality in NYMTTS, the odour problem will be significantly improved and no adverse odour impact is expected.
- 4.3.6 In the DWFI area, all penstocks will be covered by air-tight covers. For maintenance openings, air-tight multi-part covers will be provided to minimize potential odour nuisance. No adverse odour impact on the surrounding ASRs is expected.

Water Quality

4.3.7 **Table 4-3** shows the operation processes of CSBCSPS and DWFI at CSBC.

Table 4-3 Operation Processes of the Project

CSBCSPS	DWFI at CSBC
Dry Weather Flow (DWF) Mode	
Water pumps will operate in the CSBCSPS which will pump the DWF from the CSBC to WK1SPS through the proposed twin rising mains.	Tidal barrier penstocks will be automatically closed to divert the DWF to CSBCSPS.
Wet Weather Flow Mode (WWF mode)	
No DWF will be intercepted and no pump will be operated under this condition.	Tidal barrier penstocks will be automatically opened to allow discharge of the floodwater from the CSBC to the NYMTTS to avoid flooding. As the flow will be diluted by a huge volume of floodwater, the water quality impact to the NYMTTS is considered negligible.
Residual Water Discharge (RWD Mode)	
The residual floodwater trapped at the upstream of the tidal barrier will be pumped to the downstream of the CSBC via water pumps.	Tidal barrier penstocks will be automatically closed to block tidal water from getting into CSBC.

4.3.8 Since the polluted DWF is currently being discharged to the NYMTTS, the implementation of the proposed interception scheme will significantly reduce 70% of the polluted flow to the NYMTTS, in comparison to the present conditions. Water quality will be significantly improved. No operation water quality impact is associated with the twin rising mains.

4.3.9 The DWF will be intercepted by DWF intercepting penstocks and diverted to the CSBCSPS. Screenings will be collected by mechanical bar screens and conveyed to trash skips on the upper level of the screen chamber. A crane lorry will be used for grabbing the trash skips for disposal. The screenings will be stored in enclosed bins and confined within the enclosed underground CSBCSPS. Thus, water quality impact due to screening operation at the CSBCSPS is not expected at the nearby sensitive receivers. No mitigation measure is required.

Noise

4.3.10 Mechanical screen, pump sets, overhead crane, extraction fans for deodorization unit and ventilation of the sewage pumping station and actuators for the penstocks of the DWFI are potential noise sources which may cause operation noise impact to the NSRs. As such, the pump sets and screening facilities will be located underground and housed inside a reinforced concrete structure while the actuators will be covered. Moreover, the overhead crane and extraction fans for deodorizing units and ventilation system would be enclosed in the CSBCSPS. Acoustic louvres would be installed to restrict the passage of sound generated inside the CSBCSPS to the surrounding environment. No adverse fixed plant noise impact is expected at the NSRs of the Project. No operation noise impact is associated with the twin rising mains. Noise impact analysis is contained in **Appendix II**.

Waste Management

4.3.11 Mechanically-raked bar screen will be installed at the inlet of the CSBCSPS to

prevent rubbish from entering the wet well. Screenings will be generated. The screenings shall be stored in enclosed bins inside the CSBCSPS to avoid odour nuisance and will be transported and disposed at landfills regularly. No adverse impact to the environment is expected during the operation phase of the Project.

- 4.3.12 The desilting operation will be carried out in the DWFI area. The silt will then be contained, transported and properly disposed at landfills by DSD. With these measures and practices properly implemented, the environmental impact during the operation phase would be negligible.

Landscape and Visual

- 4.3.13 The proposed CSBCSPS will be covered by air-tight multi-part covers with patterns that blends with the adjacent environment to mitigate the impact. The external appearance of the above ground CSBCSPS and DWFI facilities will be designed to match with surrounding environment and adjacent development. Rooftop and vertical greening features are also proposed to soften the building mass. Careful aesthetic design of the building structure is proposed to mitigate potential visual impact. The aesthetic design of the Project will also be in harmony with the adjacent Tai Kok Tsui Advance Promenade by adopting compatible colour theme and materials.

- 4.3.14 In order to maximize the open space provided to the public, the above ground structure of CSBCSPS will be minimized as far as practical. The DWFI compounds will also be set back 3 – 8m to facilitate the continuity of promenade along the NYMTTS. Amenity facilities will be provided at the future promenade to create a healthy activity space for public.

- 4.3.15 The landscape and visual impact during the operation phase would be negligible with these mitigation measures implemented. Perspective views of the Project and the proposed landscape and visual features are shown in **Figure 5.1, 5.1a, 5.1b** and **Appendix V**.

Ecology

- 4.3.16 The Project site is not surrounded by areas of ecological value. Adverse ecological impact is not expected during the operation phase of the Project.

Cultural Heritage

- 4.3.17 The Project site was unoccupied since reclaimed. No impacts on historical monuments or buildings and site of archaeological interest are expected during the operation phase of the Project.

5. ENVIRONMENTAL PROTECTION MEASURES TO BE INCORPORATED IN THE DESIGN AND FURTHER ENVIRONMENTAL IMPLICATIONS

5.1 During Construction Phase of the Project

Air Quality

5.1.1 The air quality impact due to dust generated from the construction works would be insignificant with the mitigation measures as stipulated in the Air Pollution Control (Construction Dust) Regulation implemented. The impacts will be minimized by adoption of proper working methods such as provision of wheel-washing facilities and regular water spraying. Stockpile of dusty materials will be covered by impervious sheets. Dusty load on trucks will be covered before they leave the construction site. Moreover, hoarding of not less than 2.4m high from ground level along the site boundary, in particular, adjoining Hoi Fai Road will be provided. Concurrent excavation activities for construction of underground DWFI, underground emergency stormwater bypass culvert and CSBCSPS will be avoided. Construction activities and methods will be devised and arranged in such a manner so as to minimize dust impacts on the surrounding environment such as minimize area involving dusty construction activities. Experienced personnel with suitable training will be provided to ensure that these methods are implemented. Relevant specifications will be incorporated into the works contract.

Water Quality

5.1.2 During construction phase of the Project, the practices outlined in “ProPECC PN1/94 Construction Site Drainage” as well as good site management practices to avoid site runoff and minimize the potential water pollution will be implemented. All site construction runoff will be controlled and screening removal facilities will be provided to prevent high levels of suspended solids from entering the drainage network. Silt removal facilities, channels and manholes will be properly maintained. The deposited silt and grit will be removed regularly, at the onset of and after each rainstorm events. Earthworks final surfaces will be well compacted and the subsequent permanent works or surface protection measures will be carried out immediately after the final surfaces are formed to prevent erosion caused by rainstorms. Appropriate drainage like intercepting channels will be provided (e.g. along the crest / edge of excavation) where necessary. The contractor will be required under the contract specification to ensure that the site is properly managed and deposition of any solid materials, litter or wastes will not occur in drainage channels or surface waters.

5.1.3 Any debris or rubbish generated on-site will be collected, handled and disposed of properly to avoid entering nearby stormwater drains or open drainage channels. All chemical tanks and storage areas will be located as far as possible from existing water ways and placed on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank. Open stormwater drains and culvert near the works area shall be covered to block the entrance of large debris and refuse.

Noise

5.1.4 The Contractor will be required to use quiet Powered Mechanical Equipment (PME) for the Project and temporary noise barrier during surface breaking construction. Noise impact analysis and the Sound Power Levels (SWL) of the

PME are provided in **Appendix II**.

- 5.1.5 Cumulative noise impact with the proposed Road Improvement Works in West Kowloon Reclamation Development Phase 1 has been evaluated. No adverse cumulative noise impacts are expected.
- 5.1.6 With the adoption of standard control measures such as adopting quiet mechanical equipment, temporary noise barriers and good site practices, etc., the predicted noise level would comply with the daytime noise criterion of 75dB(A) for domestic premises. The relevant regulations and the Noise Control Ordinance (NCO) will be complied to limit the construction noise within acceptable limits during the construction phase. The NCO also provides statutory control on general construction works during restricted hours (i.e. 1900 to 0700 hours (of the next day) from Monday to Saturday and at any time on Sundays or public holidays). The use of PME for construction works during restricted hours would require a Construction Noise Permit (CNP).
- 5.1.7 Although no adverse noise impact is anticipated during construction, standard measures including the good site practices listed below are still recommended to be carried out during the construction phase of the Project:
- Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction phase;
 - Silencers on construction equipment, if applicable, should be utilized and properly maintained during the construction;
 - PME that may be in intermittent use should be shut down or should be throttled down to a minimum;
 - Plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs; and
 - Material stockpiles and other structures should be effectively utilized, wherever practicable, in screening noise from on-site construction activities.

Waste Management

- 5.1.8 The contractor will be required to sort all C&D materials and general refuse into different categories for recycling or disposal at public filling area and landfill as appropriate. To minimize generation of waste and C&D materials, proper waste management measures and good site practices in waste handling, disposal and transportation will be implemented. With the implementation of good construction site management practice, environmental impact due to wastes generated from the Project during construction phase would be minimal. Disposal of C&D materials will be monitored through the trip-ticket system as stipulated in DEVB TC(W) No. 6/2010 "Trip Ticket System for Disposal of Construction & Demolition Materials". All chemical wastes due to maintenance of equipment will be handled, stored and disposed of properly in accordance with the requirements of the Waste Disposal (Chemical Waste) (General) Regulation. 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. The general refuse will be removed regularly and disposed of to licensed landfills. No adverse waste management implication related to handling and disposal of general refuse is expected.

Landscape and Visual

- 5.1.9 The contractor will be required to implement the following mitigation measures during construction:
- Erect site hoarding with decorative features that are compatible with the surrounding environment;
 - Maintain site cleanliness and tidiness;
 - Properly manage construction waste in the works area;
 - Reinststate the temporary works area for the construction of the twin rising mains to its original conditions upon completion of works.
- 5.1.10 With the implementation of mitigation measure, no adverse landscape and visual impacts are expected during construction phase.

5.2 During Operation Phase of the Project

Air Quality

- 5.2.1 To minimize air quality impact, the potential odour emission areas such as inlet chamber, screen chamber, valve chamber and wet well of the CSBCSPS will be located underground with air-tight covers. In addition, a deodorizer with forced ventilation will be installed to remove the odour. As adopted in other similar pumping station (e.g. Sewerage Works at Pik Shui Sun Tsuen; DIR-218/2011), the deodorizer will provide overall odour removal rate of at least 99.5%. In addition, air exhaust from the deodorizer will be located in a façade and directed away from the existing sensitive receivers, i.e. the residential buildings and commercial buildings at the north to the Project site. Hydrogen sulfide sensors shall be installed at the inlet and outlet of the deodorizers. DSD operation staff are responsible to monitor and maintain the deodorizers to achieve the required odour removal rate. The proposed deodorizer system (e.g. biotrickling filter) contains carrier media, recirculation water pumps, dehumidifier, air blower, nutrients and water mix-up tanks. A stand-by fan will be provided to increase the reliability of the deodorizer system. In case of shutdown of the deodorizer system, the CSBCSPS will also be shutdown to prevent odour emission due to the operation of the CSBCSPS. pH, nutrients, salt concentration and conductivity and temperature will be monitored frequently to ensure that the efficiency and biofilm growth are maintained to achieve the required odour removal rate at all times. With the installation of the deodorizer, no adverse odour impact to the nearby ASRs is expected.
- 5.2.2 The screenings will be removed from the CSBCSPS regularly. To avoid odour nuisance, the screenings will be enclosed with covers inside the underground structure. Collected air within the CSBCSPS will be treated by deodorizer located in the adjacent E&M building before discharge. Screening will be collected by the mechanical bar screen and conveyed to a trash skip on the upper level of screen chamber. A crane lorry will be used for grabbing the whole trash skip for disposal.
- 5.2.3 Air-tight covers will be installed in the proposed DWF area to minimize any air quality impact. During the desilting operation, the works area will be fenced-off with no public access and the desilting opening of each cell will be opened to remove the silt inside. Temporary cover will be provided to the desilting opening to minimize odour during desilting operation. The silt collected from CSBC will be removed off site to designated landfill daily. The silt will be removed off-site on

the same day. The silt will be properly handled and covered during delivery to designated landfill for disposal.

- 5.2.4 During each phase, site hoard will be erected to fence off the site with no public access allowed. The site hoarding will consist of water-filled barrier at the bottom and a non-transparent plastic sheet on top with a total height of about 3m.
- 5.2.5 Since the proposed interception scheme will intercept the polluted DWF at the CSBC, the water quality and hence the odour problem in the NYMTTS will be significantly improved after implementation of the Project.

Water Quality

- 5.2.6 During DWF mode of the proposed interception scheme, the tidal barrier will be closed to intercept the polluted DWF at the CSBC. As such, the water quality of the NYMTTS will be significantly improved after implementation of the Project.
- 5.2.7 During WWF mode, the tidal barrier will be opened automatically to allow the discharge of the floodwater from the CSBC to the NYMTTS to avoid flooding. As the flow will be diluted by a huge volume of floodwater, the water quality impact to the NYMTTS is considered negligible.
- 5.2.8 To minimize any impact due to power and equipment failure, mitigation measures such as underground emergency stormwater bypass culvert, stand-by pump, emergency power supply and telemetry system will be incorporated. A telemetry system will be provided to transmit signals showing irregularity or any operational problem of the intercepting facilities and CSBCSPS and immediate actions can be taken. The CSBCSPS and intercepting facilities are designed to be unmanned. The control system including all hardware such as control workstation and associated accessories for automatic and remote control will be housed in the Low Voltage Switch Room. The control system will be remotely connected to the DSD existing monitoring and control system via broadband leased line. The signals will be transmitted to the master station at Stonecutters Island Sewage Treatment Works (SCISTW) and other designated DSD pumping stations. Staff in SCISTW can take up swift action in case of malfunction of the CSBCSPS and intercepting facilities. DSD will carry out regular site inspection to avoid any malfunction of the telemetry system. With these measures incorporated into the design, it is anticipated that the water quality impact due to failure of the CSBCSPS and intercepting facilities will be extremely low. There is no sewage bypass for the CSBCSPS. In case of malfunction of the CSBCSPS, inlet penstock connecting the DWF to CSBCSPS will be closed. The DWF will be temporarily stored inside the CSBC which will provide at least 24 hours storage capacity. The DWF will be conveyed to CSBCSPS once its function resumes. Under normal operation of DWF mode, penstocks are automatically controlled according to water level sensors or manually opened based on the predicted storm events. Thus, the water quality impact to NYMTTS is considered negligible. Concrete plinth will be constructed on the based slab of CSBC underneath the penstocks as a small platform. This could minimize the risk of debris accumulating at the penstocks which may affect their function. DSD will carry out regular maintenance to avoid accumulation of debris objects. Furthermore, since the DWF is currently being discharged to the NYMTTS, the implementation of the proposed interception scheme will significantly improve the water quality by reducing 70% of the polluted flow to the NYMTTS in comparison to the present conditions.

Noise

- 5.2.9 To minimize potential noise impacts due to operation of the Project, overhead crane, penstock actuators, all the pumps and screening facilities will be enclosed in an underground reinforced concrete structure. Acoustic louvers will be provided to all extraction fans. According to the operational noise analysis attached in **Appendix II**, adverse noise impacts are not anticipated with this design incorporated.

Waste Management Implications

- 5.2.10 The screenings collected in CSBCSPS will be properly contained in the underground structure. The screenings will then be properly handled and transported to landfill site for disposal. No adverse waste management implication is anticipated.
- 5.2.11 During desilting operation, the silt collected from CSBC will be removed off site on the same day to designated landfill daily. The silt will be properly handled and covered during delivery to designated landfill for disposal.

Landscape and Visual

- 5.2.12 In order to minimize structures at above ground level, the CSBCSPS is an underground concrete structure housing the mechanical screenings, valves and submersible pumps which will be covered by air-tight multi-part covers. The above ground structure is the maintenance and operation structure which will occupy approximately an area of 285 m² and include a transformer room, switch control room, dangerous goods room and room for deodorization units.
- 5.2.13 The promenade will be designed to match the adjacent LCSD's promenade namely Tai Kok Tsui Advance Promenade (TKTAP). Similar paving materials and color scheme will be used to match the design of TKTAP.
- 5.2.14 New trees will be compensated for the tree loss. Groundcover will be used to cover 50% to 60% (around 160 m²) of the CSBCSPS to create a landscaping view. A green roof system will also be incorporated at the E&M equipment structure (around 165 m²). Other areas within the Project site will be developed as underground facilities and with a landscape deck (e.g. grasscrete) built on top to allow free access by the general public as well as for future maintenance vehicles. This site area will also be set back 3-8m from the existing seawall to facilitate the continuity of promenade along the NYMTTS. At-grade planting with vertical greening on wire mesh and feature wall will be provided to enhance the promenade.
- 5.2.15 The architecture and landscape features of the Project are designed to provide a coherent environment with the surroundings. Preliminary Architectural and Landscape Design Scheme are shown in **Appendix V**. With the implementation of following mitigation measure, landscape and visual impact is expected to be negligible.

(i) Architectural Design

Landscape design and Amenity

- The southern band of the development will be developed as sunken facilities with penstocks and box culvert situated underneath and with a landscape deck (e.g. grasscrete) built on top to allow free accessible by the general public as well as for future maintenance vehicles. Projection of spindles of the penstocks above ground will be covered with sand blasted glazing feature at street level to create illusion effect. At night, the glazing feature will be lit up with decorative lighting and present to public as lantern sculpture.
- Due to security concern, the DWFI facilities on the western band will be fenced off with integration of metal grille and solid wall. The interplay of both fence design will limit view toward unfavourable location and at the same time allow visual continuity to pleasing view.
- The development of DWFI facilities will be set back from the existing seawall to facilitate the continuity of promenade along the NYMTTS. Some integrated seats, at grade planting with vertical green on wire mesh and feature wall will be provided to enhance the promenade. It will become a healthy activity space rather than a passageway.

Materials, Finishes and Color

- The façade treatments of the DWFI facilities will use natural brick, artificial granite tiles, decorative stone spray paint, ceramic tiles, fins and louvre system as the major element.
- Fair-faced concrete will be used for the substrate and street furniture.
- Spray granite finish and artificial granite tiles finish will be used (natural colour similar to rock and stone finish).
- Green roof system will be incorporated.

Architectural Lighting

- Both LED and ordinary architectural lighting will be used for both landscape and street lighting. Particularly at night, the architecture features – the lantern box and skylight are highlighted with glow of light.
- The light can be switched on or off automatically by timer. A minimum lighting will be maintenance at night-time as general lighting provision for security reason.

(ii) Landscape Design

- New trees and groundcover will be planted.
- Benches and shelter will be provided.
- The landscape mitigation measures of the whole project during operation phase will be maintained and managed by DSD.

6. SUMMARY OF POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

6.1.1 The potential environmental impacts and proposed mitigation measures to be incorporated into the design and construction of the Project are summarized in **Table 6-1**.

Table 6-1 Summary of Potential Environmental Impacts and Mitigation Measures

Stage & Location	Potential Environmental Impact	Mitigation Measures	Implementation Agent	Relevant Section in the Project Profile
Construction Phase / Construction Site	Dust nuisance	(1) Adopt dust control and suppression measures as stipulated in the Air Pollution Control (Construction Dust) Regulation. (2) Water spraying on exposed area and during excavation. (3) Provide wheel-washing facilities. (4) Cover stockpile of dusty materials by impervious sheets. (5) Provide hoarding of not less than 2.4m high from ground level along the site boundary adjoining Hoi Fai Road. (6) Cover dusty load on trucks before they leave the construction site. (7) Avoid concurrent excavation activities for construction of underground DWFI, underground emergency stormwater bypass culvert and CSBCSPS. (8) Minimize area involving dusty construction activities by arrangement of construction activities and methods.	Contractor	5.1.1
	Water quality impact	(1) Control construction surface run-off according to ProPECC PN1/94, EPD's Practice Note for Professional Persons, Construction Site Drainage. (2) All chemical tanks and storage areas will be provided with locks and placed on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank.	Contractor	5.1.2 5.1.3
	Noise impact	(1) Adoption of standard control measures such as adopting quiet mechanical equipment, temporary noise barriers and good site practices etc. (2) Construction Noise Permit is required for construction work during restricted hours as defined under the Noise Control Ordinance	Contractor	5.1.4 5.1.7
	Waste Management	(1) Standard waste management measures and good site practices in waste handling, disposal and transportation will be implemented. (2) The Contractor will be required to sort all C&D materials and general refuse into different categories for reuse on site, recycling and disposal at designated public fill reception facilities or landfills. Disposal	Contractor	5.1.8

Project Profile for Proposed Sewage Pumping Station and Dry Weather Flow Interceptor at Cherry Street Box Culvert

Stage & Location	Potential Environmental Impact	Mitigation Measures	Implementation Agent	Relevant Section in the Project Profile
		<p>of C&D materials will be managed through the trip-ticket system as stipulated in DEVB TC(W) No. 6/2010.</p> <p>(3) All chemical wastes due to maintenance of equipment will be handled, stored and disposed of in accordance with the requirements of the Waste Disposal (Chemical Waste) (Chemical) Regulation.</p> <p>(4) 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. General refuse will be removed regularly and disposed of to landfills.</p>		
	Landscape and visual impact	<p>(1) Erect site hoarding with decorative features that are compatible with the surrounding environment;</p> <p>(2) Maintain site cleanliness and tidiness;</p> <p>(3) Properly manage construction waste in the works area;</p> <p>(4) Reinstate all temporary works areas to its original conditions upon completion of works.</p>	Contractor	5.1.9 – 5.1.10
Operation Phase/The Project	Odour nuisance	<p>The water quality and odour problem will be significantly improved after implementation of the Project. Measures to minimize any potential odour impact includes:</p> <p>(1) Potential odour sources will be enclosed.</p> <p>(2) Installation of deodorizer will provide an overall at least 99.5% odour removal rate.</p> <p>(3) The screenings will be properly handled within the CSBCSPS to avoid odour nuisance. All of them will then be transported to designated landfills for disposal.</p> <p>(4) Air-tight covers will be installed at the proposed DWF area and to minimize air quality impact.</p> <p>(5) Temporary cover will be provided to the desilting opening.</p> <p>(6) The silt collected from CSBC will be removed off site on the same day to designated landfill daily.</p>	DSD	5.2.1 – 5.2.5
	Water quality	<p>The water quality of the NYMTTS will be significantly improved after implementation of the Project and no impact during operation is anticipated. Measures to minimize any impact during failure of the sewage pumps :</p> <p>(1) Standby pump;</p> <p>(2) Dual feed power supply; and</p> <p>(3) Telemetry system</p>	DSD	5.2.6 – 5.2.8
	Noise impact	<p>(1) The overhead crane, pump sets and screening facilities will be installed inside underground reinforced concrete structure.</p> <p>(2) Acoustic louvers will be provided to all</p>	DSD	5.2.9

Project Profile for Proposed Sewage Pumping Station and Dry Weather Flow Interceptor at Cherry Street Box Culvert

Stage & Location	Potential Environmental Impact	Mitigation Measures	Implementation Agent	Relevant Section in the Project Profile
		extraction fans. (3) The penstock actuators will be covered.		
	Waste generation	(1) Screenings at CSBCSPS will be contained inside underground structure, properly handled and disposed to landfill site. (2) The silt collected from CSBC will be removed off site to designated landfill daily.	DSD	5.2.10 - 5.2.11
	Landscape and visual impact	Proper landscaping design of the Project to match with future environment. Compensatory planting, groundcover, at grade planting, amenity facilities and vertical green and feature wall will be provided to enhance greenery and match with existing character.	DSD	5.2.12 - 5.2.15 & Appendix V

7. PREVIOUS APPLICATIONS FOR PERMISSION TO APPLY DIRECTLY FOR ENVIRONMENTAL PERMIT

7.1.1 The successful cases of similar nature and scale of designated projects for application for permission to apply directly for Environmental Permit are summarized in **Table 7-1** as follows:

Table 7-1 Previous Projects with Permission Granted to Apply Directly for Environmental Permit

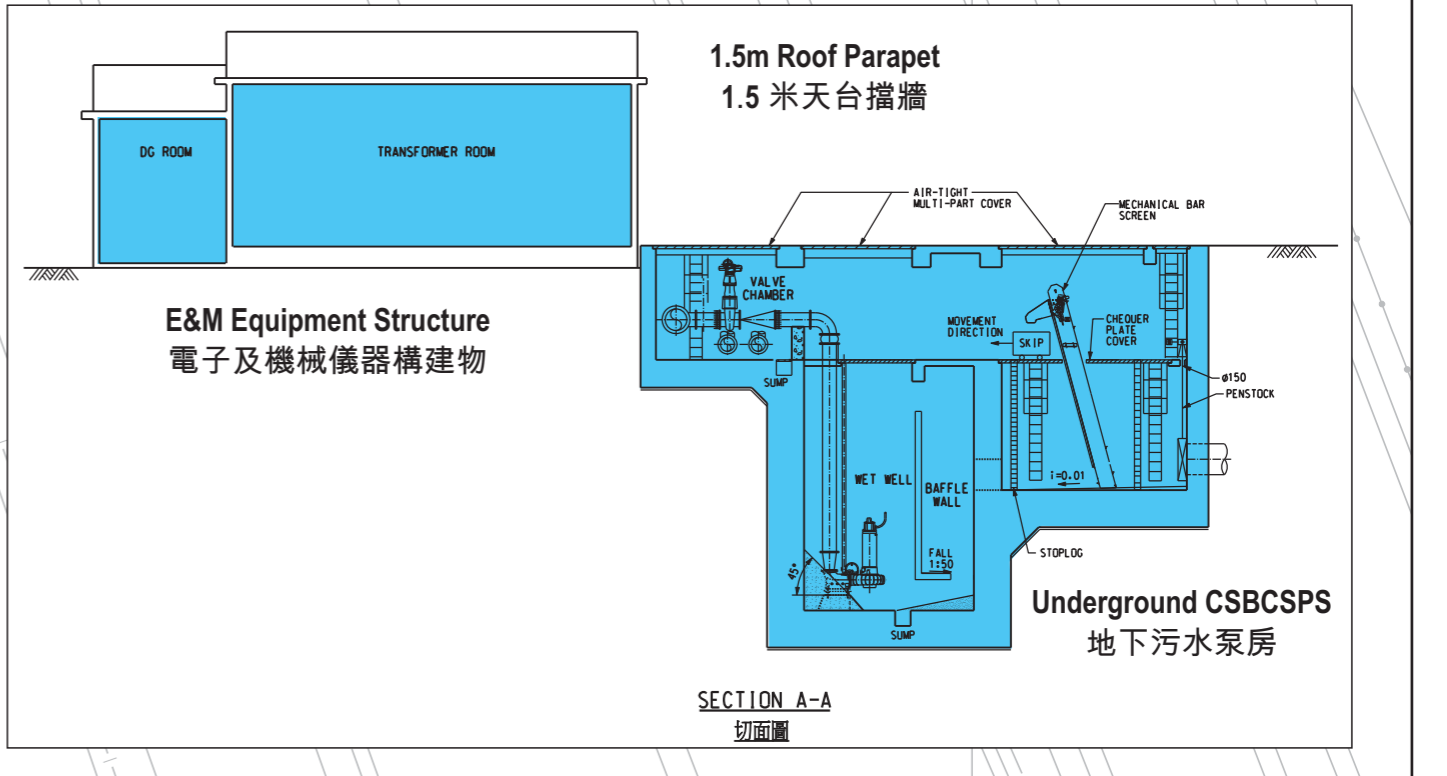
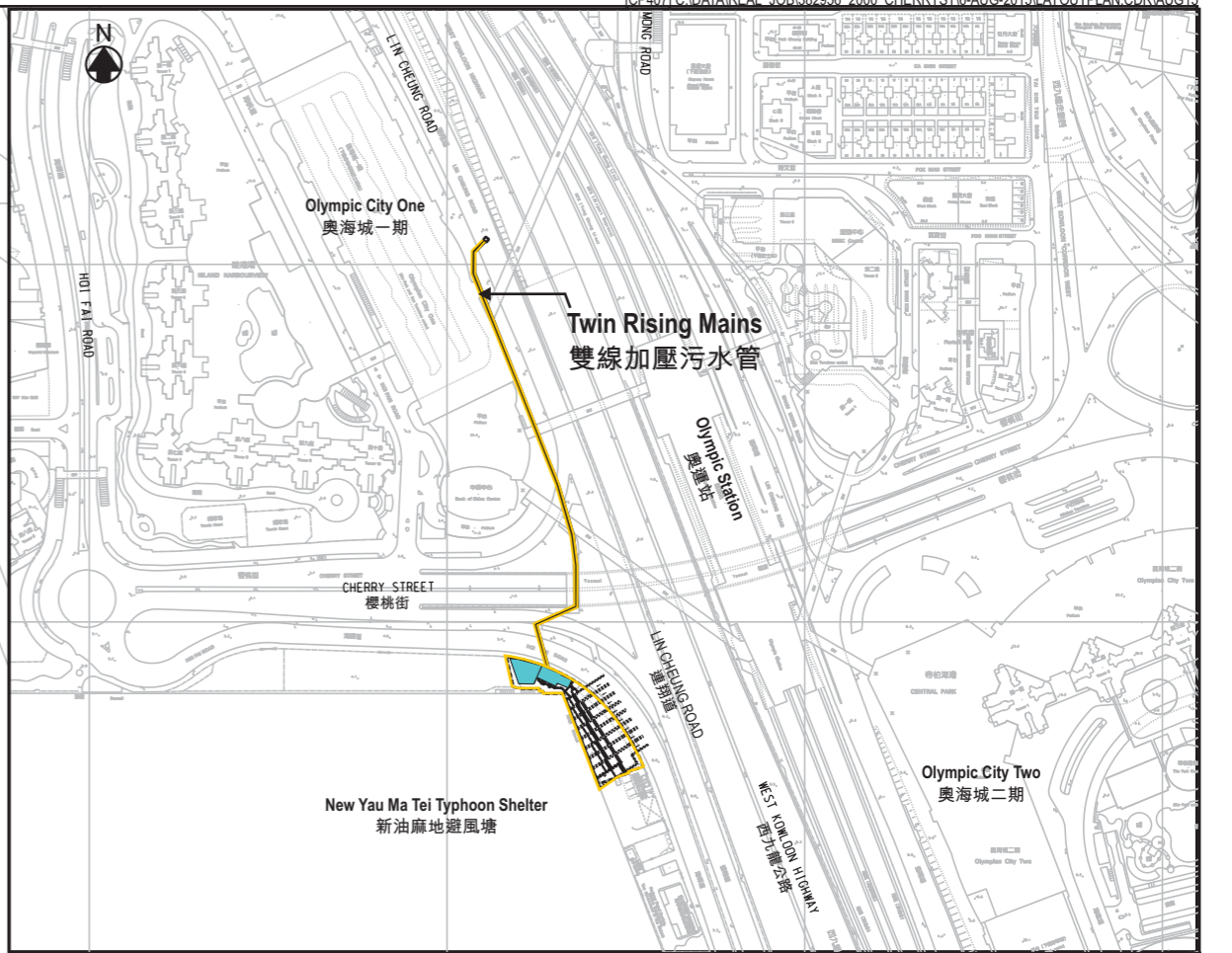
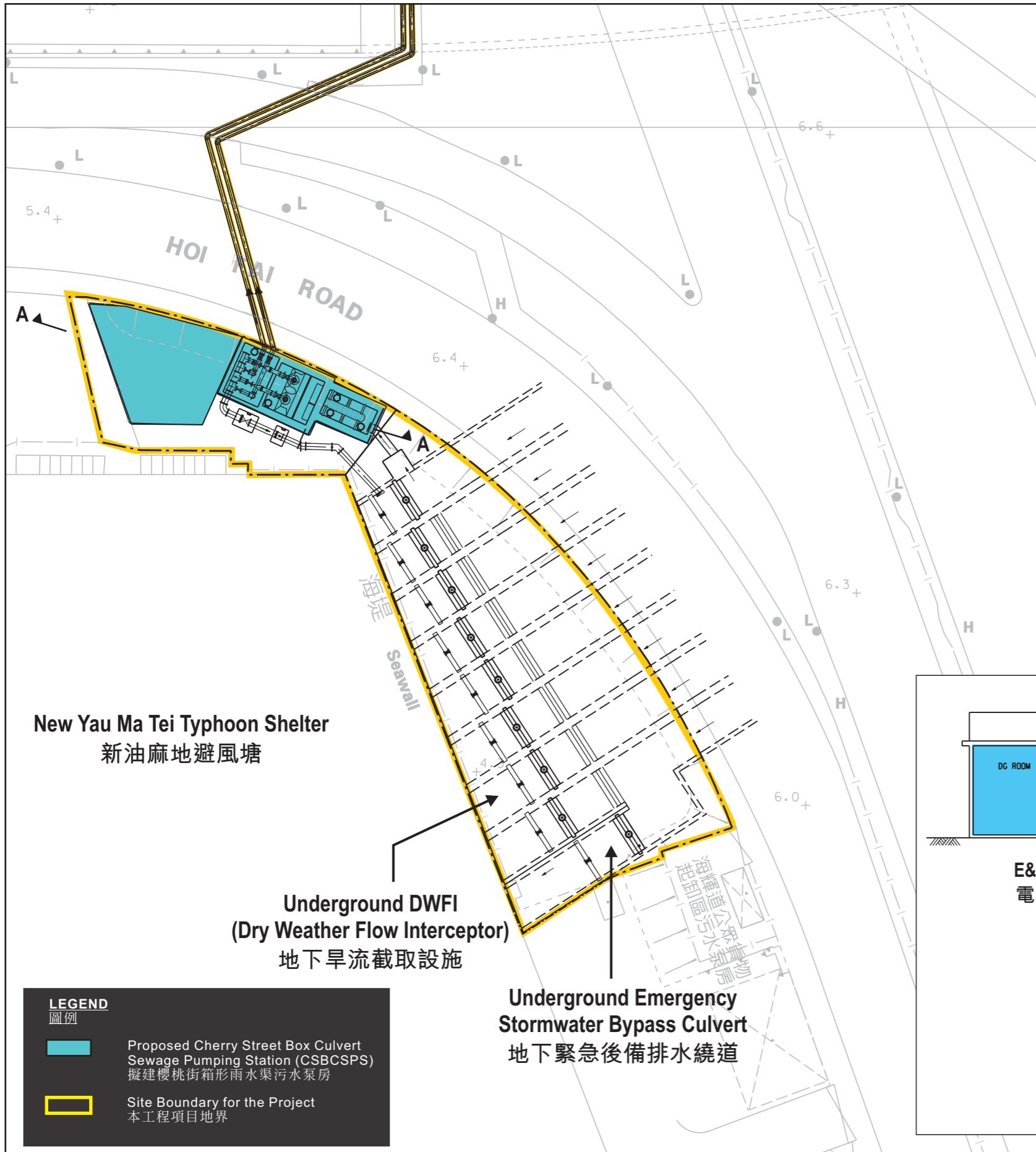
EIAO Reference	Designated Project Title	Pumping Station Capacity (ADWF)	Closest Sensitive Receiver
DIR-239/2014	Public Housing Development at Lin Cheung Road Site - Temporary Sewage Pumping Station and Associated Sewer Pipes	3,000 m ³ /day	15m
DIR-226/2013	Temporary Sewage Pumping Station Ancillary to Tung Chung Area 56 Public Housing Development	2,311 m ³ /day	22m
DIR-180/2009	Control of Water Pollution at Jordan Valley Box Culvert - Sewage Pumping Station (JVBCSPS)	43,200 m ³ /day	81 m
DIR-175/2008	Tuen Mun Sewerage - Investigation, Design and Construction - Western Interceptor Sewer Sewage Pumping Station	54,630 m ³ /day	61 m
DIR-173/2008	Yuen Long Kau Hui No. 2 Sewage Pumping Station	5,900 m ³ /day	30m
DIR-161/2007	Tai Po Tai Wo Road Sewage Pumping Station	12,100 m ³ /day	29 m
DIR-138/2006	PWP ITEM No. 4338DS - Improvement and Upgrading of the Sewerage Systems in Sha Tin / Ma On Shan New Town - Ma On Shan Area 108 Pumping Station	14,500 m ³ /day	75 m
DIR-115/2005	Upgrading of Ting Kok Road Pumping Station No.5	11,520 m ³ /day	60m
DIR-067/2002	Lam Tsuen Valley Sewage Pumping Station under Lam Tsuen Valley Sewerage Project	5,600 m ³ /day	150 m
DIR-057/2001	Sai Kung Area 4 Sewage Pumping Station	7,500 m ³ /day	34 m
DIR-040/2000	PWP Item No. 4274DS - Yuen Long and Kam Tin Sewerage Stage III - Au Tau Sewage Pumping Station	12,200 m ³ /day	80 m
DIR-024/1999	Yuen Long South Sewage Pumping Station (as part of PWP Item No. 4157DS - Yuen Long and Kam Tin Sewerage, Stage II, Phase 2 - Yuen Long South Pumping Station, Rising Main to Castle Peak Road and Sewers)	36,300 m ³ /day	70 m
DIR-020/1999	Sewage Pumping Station at Tung Tau Industrial Area (for PWP Item No. 278CL - Kau Hui Development Phase I, Engineering Works, Area 16, Yuen Long)	5,260 m ³ /day	35 m
DIR-017/1999	PWP Item 4273DS - Port Shelter Sewerage Stage 3 Phase 1 - Tseng Lan Shue Sewerage (Tseng Lan Shue Sewage Pumping Station)	2,930 m ³ /day	15m
DIR-015/1999	Outlying Islands Sewerage Stage 1 Phase II - Peng Chau Village Sewerage Phase 1 - Peng Chau Sewage Pumping Station Replacement	2800 m ³ /day	28 m

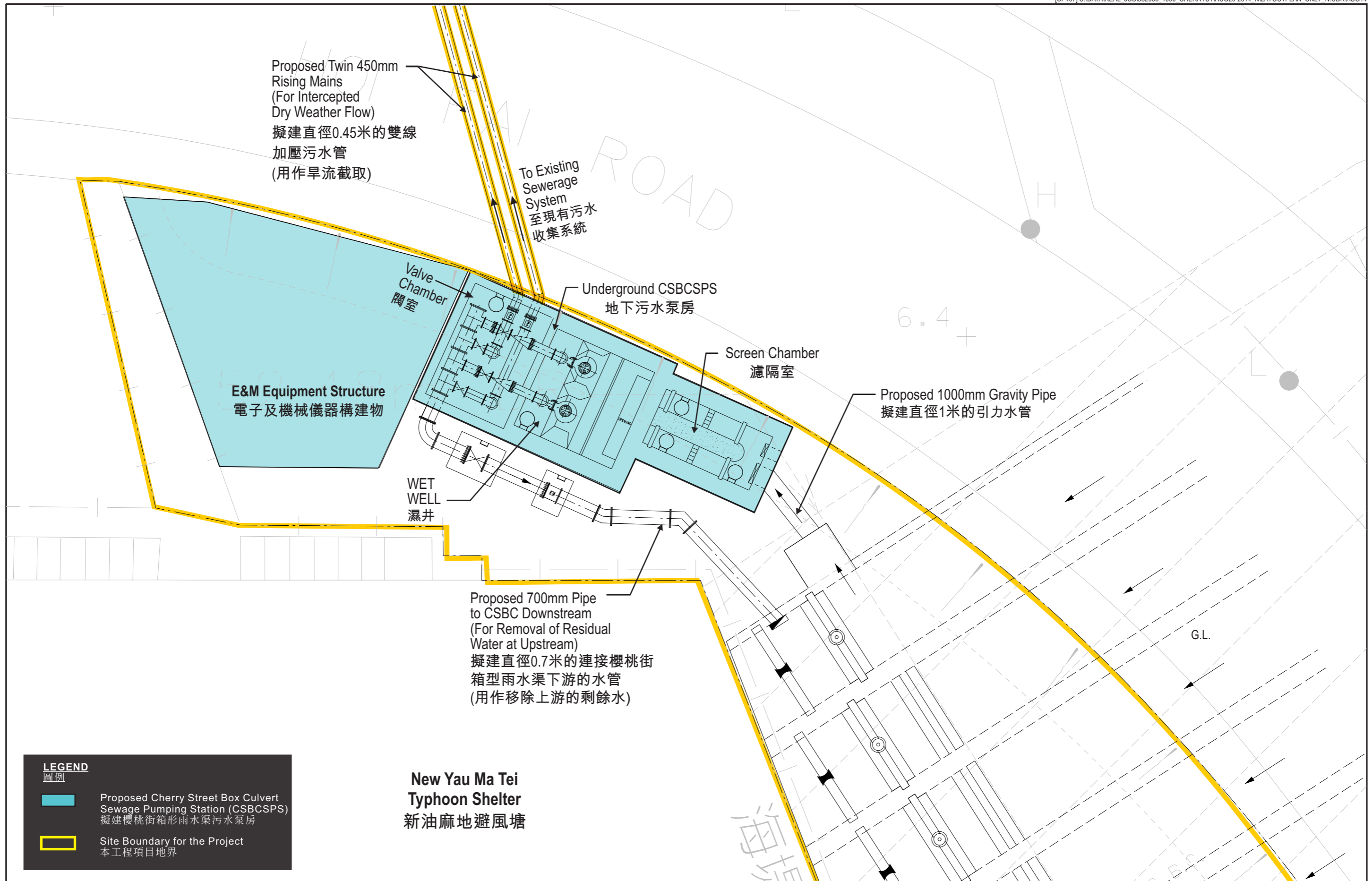
Project Profile for Proposed Sewage Pumping Station and Dry Weather Flow Interceptor at Cherry Street Box Culvert

EIAO Reference	Designated Project Title	Pumping Station Capacity (ADWF)	Closest Sensitive Receiver
DIR-012/1998	PWP Item 4272DS – Port Shelter Sewerage Stage 2 Phase 4 – Tai Chung Hau and Pak Sha Wan Sewerage (Mang Kung Wo Road Sewerage Pumping Station)	4,820 m ³ /day	40m



FIGURES





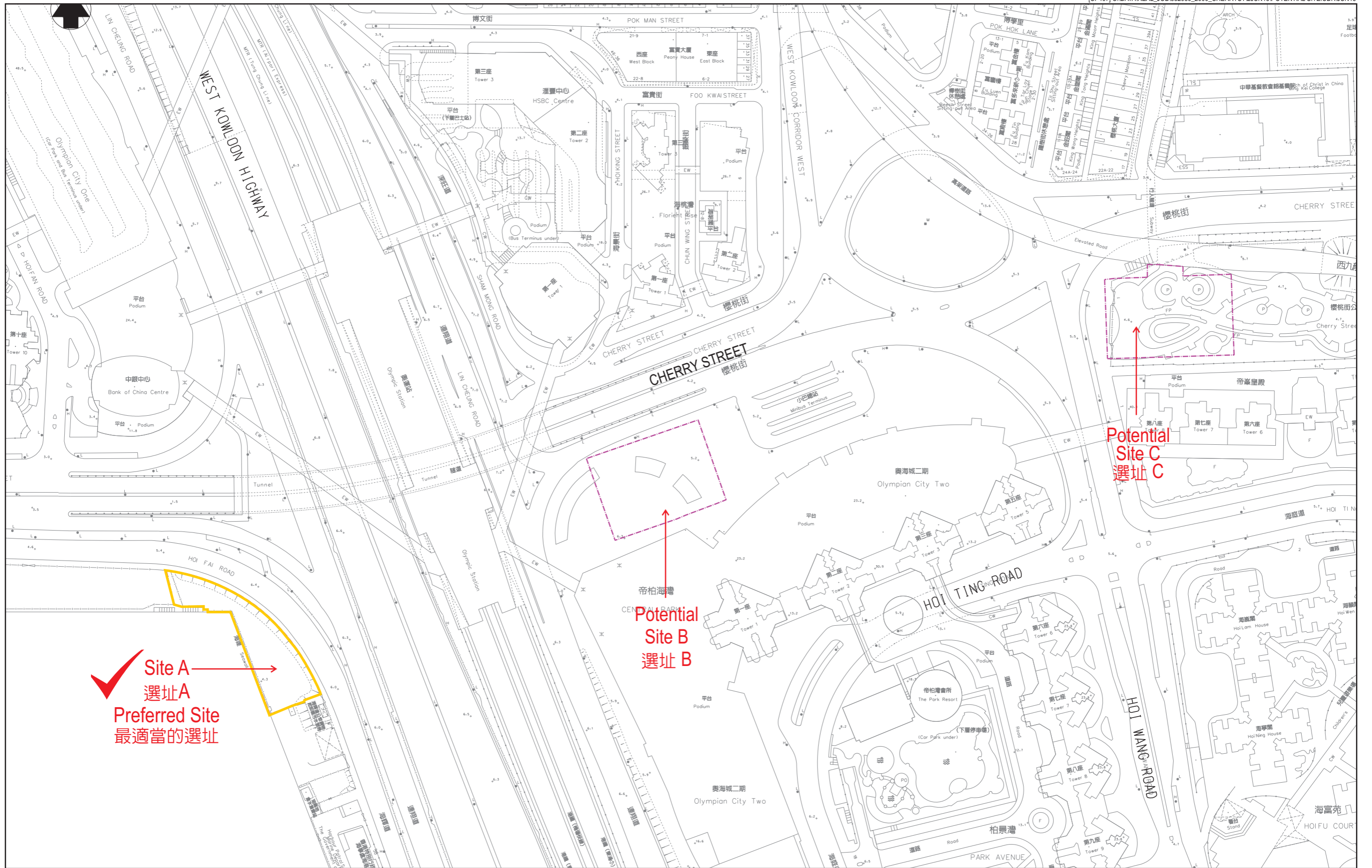
Agreement No. CE 1/2012 (DS) – Construction of Dry Weather Flow Interceptor at Cherry Street Box Culvert and Other Works – Investigation, Design and Construction
合約編號 CE 1/2012 (DS) - 櫻桃街箱形雨水渠旱流截取設施及其他工程 – 勘測研究、設計及建造



Layout Plan of CSBCSPS
櫻桃街箱形雨水渠污水泵房的平面圖

Figure
圖 1.1a





Agreement No. CE 1/2012 (DS) – Construction of Dry Weather Flow Interceptor at Cherry Street Box Culvert and Other Works – Investigation, Design and Construction
 合約編號 CE 1/2012 (DS) - 櫻桃街箱形雨水渠旱流截取設施及其他工程 – 勘測研究、設計及建造

Drainage Services Department
 渠務署

Comparison of Potential Sites on Various Aspects
 比較可選擇的施工地點

Figure
 圖 1.2

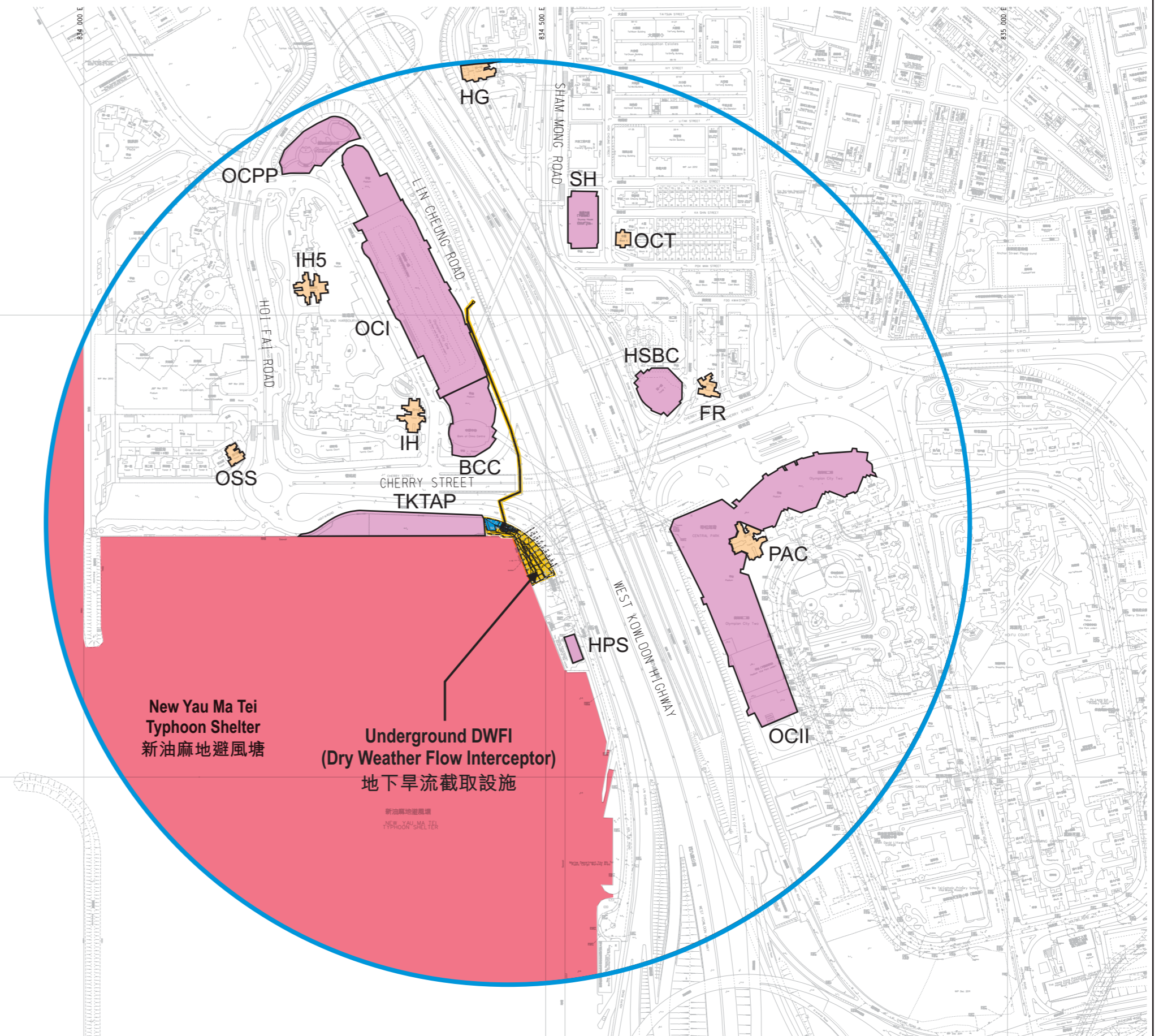
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LEGEND
圖例

-  Proposed Cherry Street Box Culvert Sewage Pumping Station (CSBCSPS)
擬建櫻桃街箱形雨水渠污水泵房
-  Site Boundary for the Project
本工程項目地界
-  Study Boundary 500m
研究範圍500米
-  Existing Air Sensitive Receiver
現有的空氣敏感受體
-  Existing Air and Noise Sensitive Receiver
現有的空氣及嘈音敏感受體
-  Existing Water Sensitive Receiver
現有的水質敏感受體

Agreement No. CE 1/2012 (DS) – Construction of Dry Weather Flow Interceptor at Cherry Street Box Culvert and Other Works – Investigation, Design and Construction
合約編號 CE 1/2012 (DS) - 櫻桃街箱形雨水渠旱流截取設施及其他工程 – 勘測研究、設計及建造



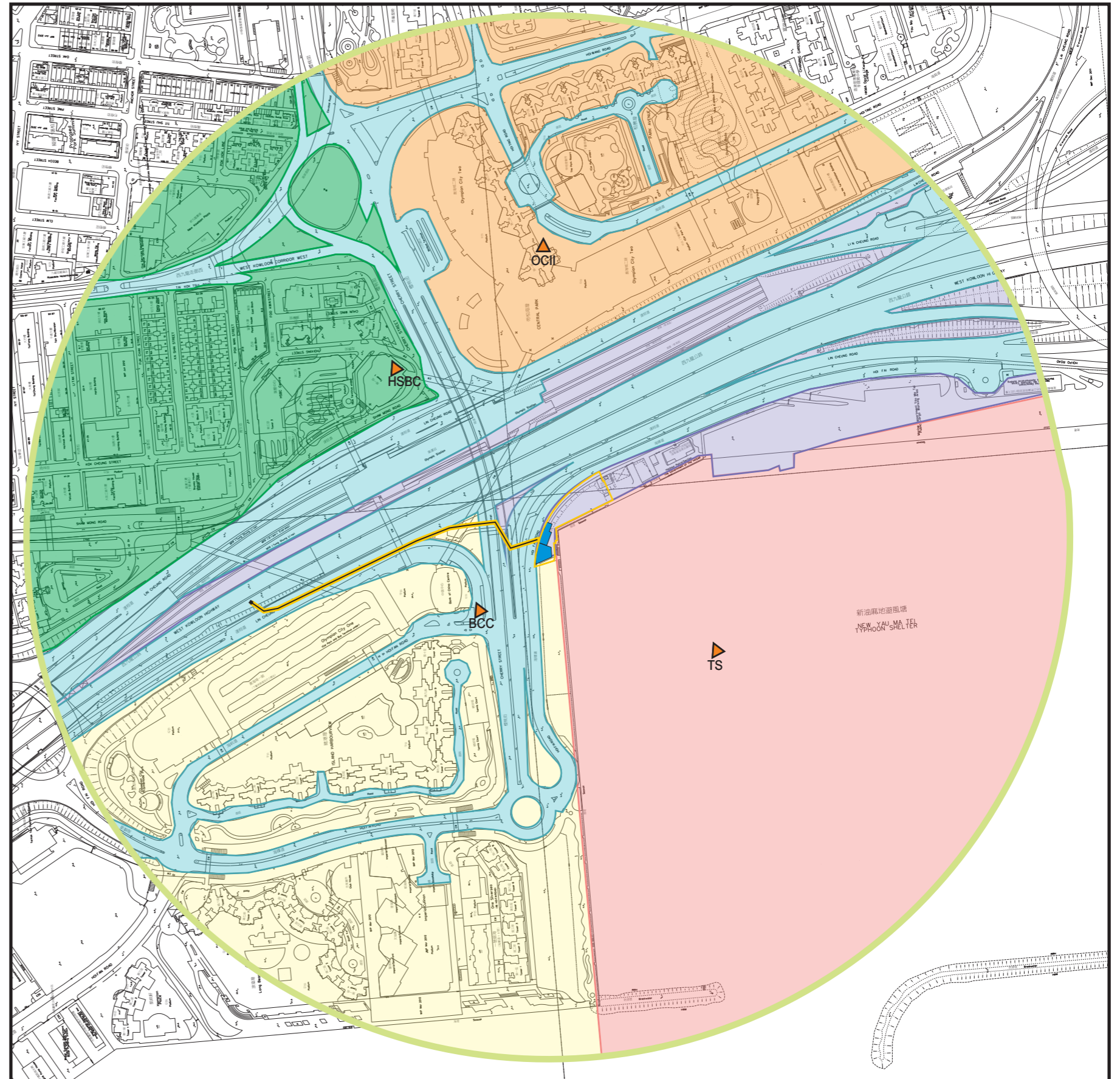
Environmental Sensitive Receivers During Construction and Operation Phases for the Project
本工程項目施工和運作階段的環境敏感受體

Figure
圖 3.1



LEGEND
圖例

-  Existing Representative Visual Sensitive Receiver
現有具代表性的的視覺敏感受體
-  Existing Trees (Indicative only)
現有的樹木
-  Proposed Sewage Pumping Station
(The Project)
擬建污水泵房 (本工程項目)
-  Study Boundary for Landscape
Impact Assessment (500m)
景觀影響評估研究地界 (500米)
-  Site Boundary for the Whole Project
整項工程項目地界
-  LC1 Late 20C/Early21C Commercial/Residential
Complex Landscape
二十世紀後期/二十一世紀初期市區商業/住宅景觀
-  LC2 Typhoon Shelter Landscape
避風塘景觀
-  LC3 Reclamation/Ongoing Major Development Landscape
填海區/興建中主要發展區景觀
-  LC4 City Grid Mixed Urban Landscape
市區網格式混合景觀
-  LC5 Residential Urban Fringe Landscape
市區邊緣住宅景觀
-  LC6 Institutional Landscape
公共機構景觀



Agreement No. CE 1/2012 (DS) – Construction of Dry Weather Flow Interceptor at Cherry Street Box Culvert and Other Works – Investigation, Design and Construction

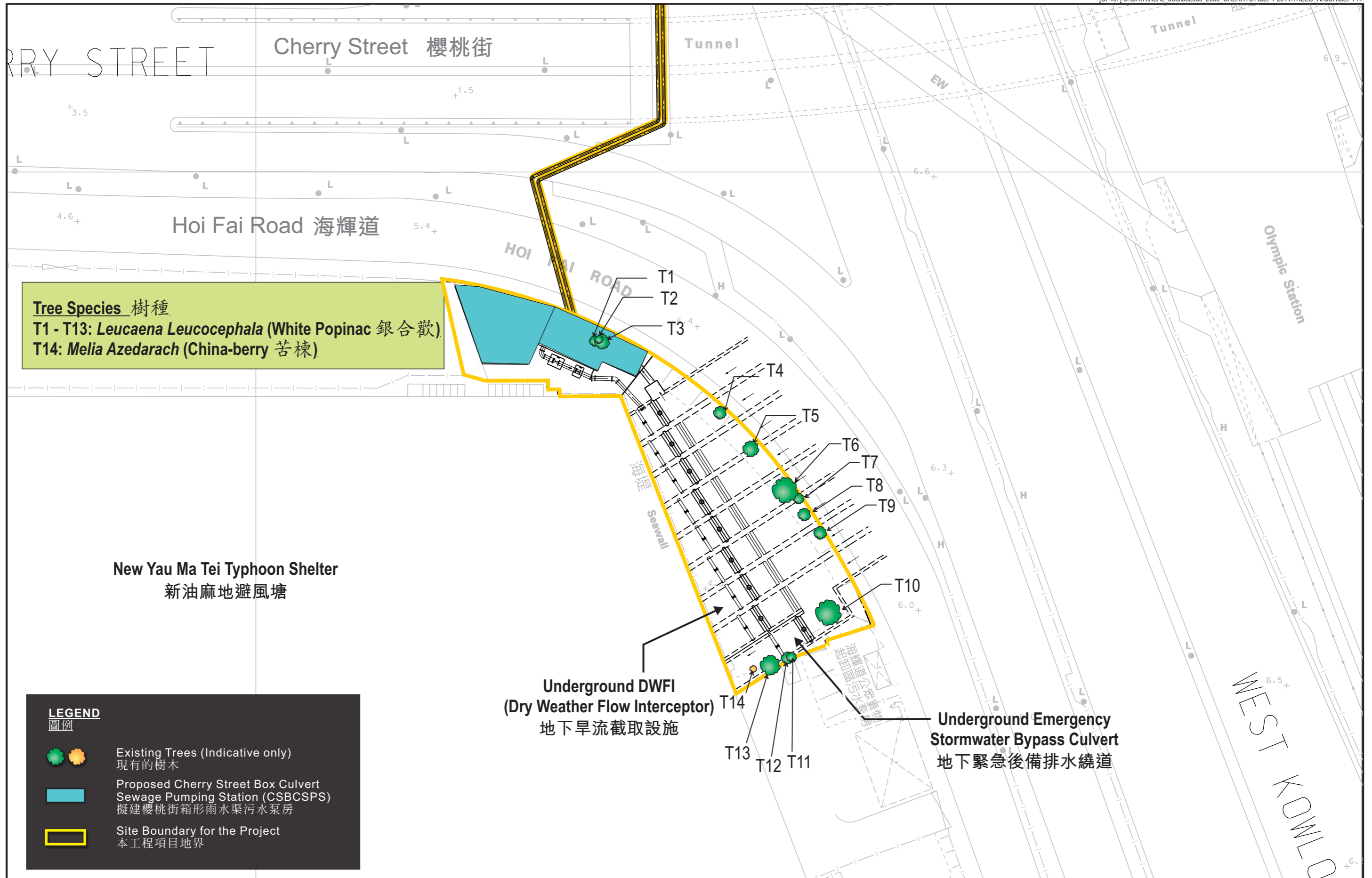


Existing landscape character units and representative visual sensitive receivers (VSR) in the vicinity of the Project
本工程項目計劃中鄰近的景觀特色單位和具代表性的視覺敏感受體

Figure
圖 3.2







Agreement No. CE 1/2012 (DS) – Construction of Dry Weather Flow Interceptor at Cherry Street Box Culvert and Other Works – Investigation, Design and Construction
 合約編號 CE 1/2012 (DS) - 櫻桃街箱形雨水渠旱流截取設施及其他工程 – 勘測研究、設計及建造



Drainage Services Department
 渠務署

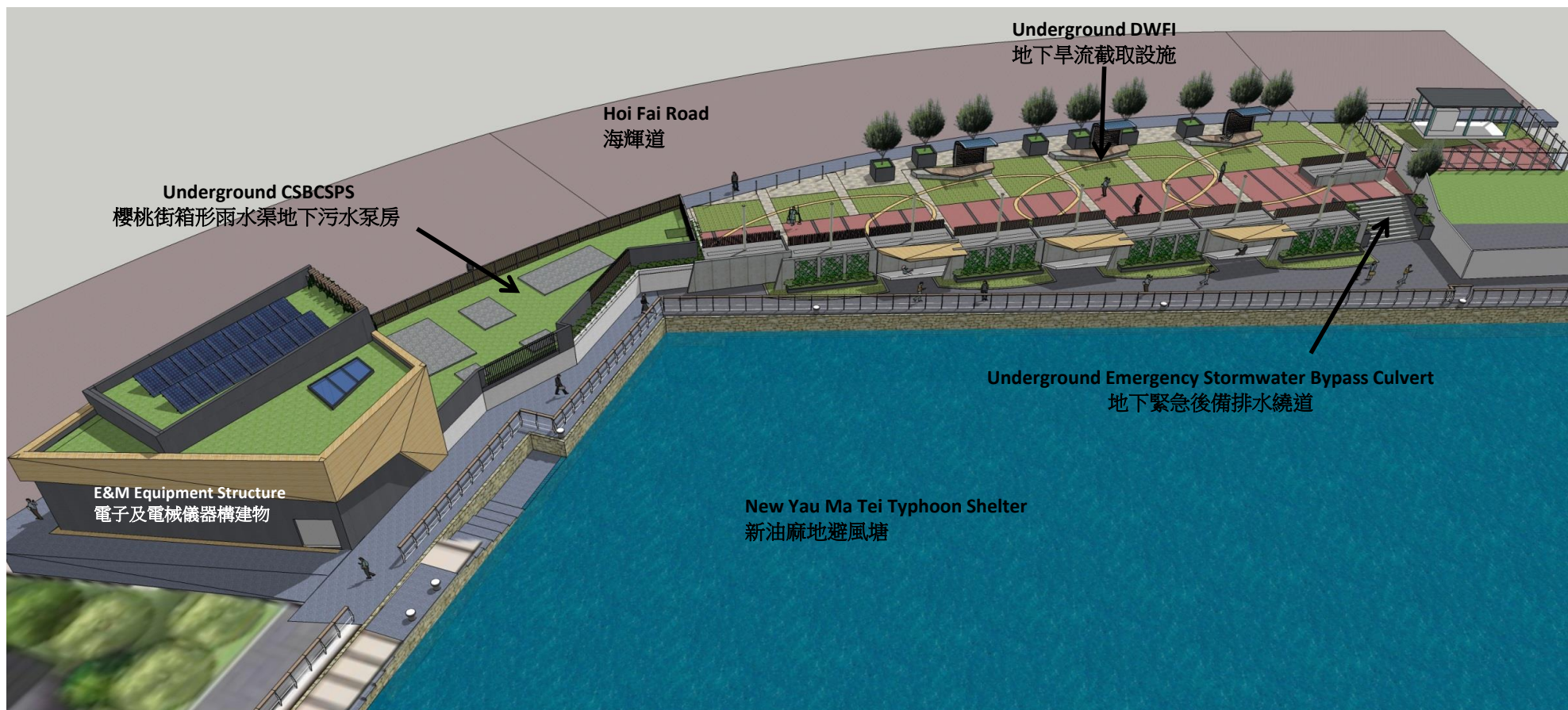
Existing Trees Location within the Project Area
 本工程項目範圍的現有樹木位置



Figure
 圖 4.2

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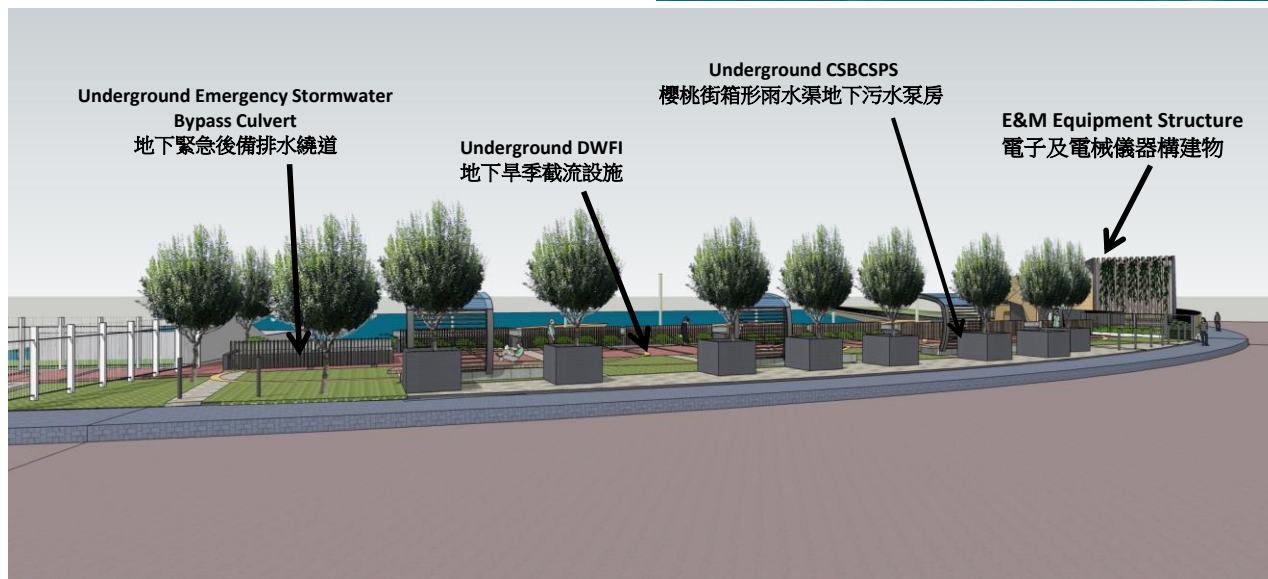
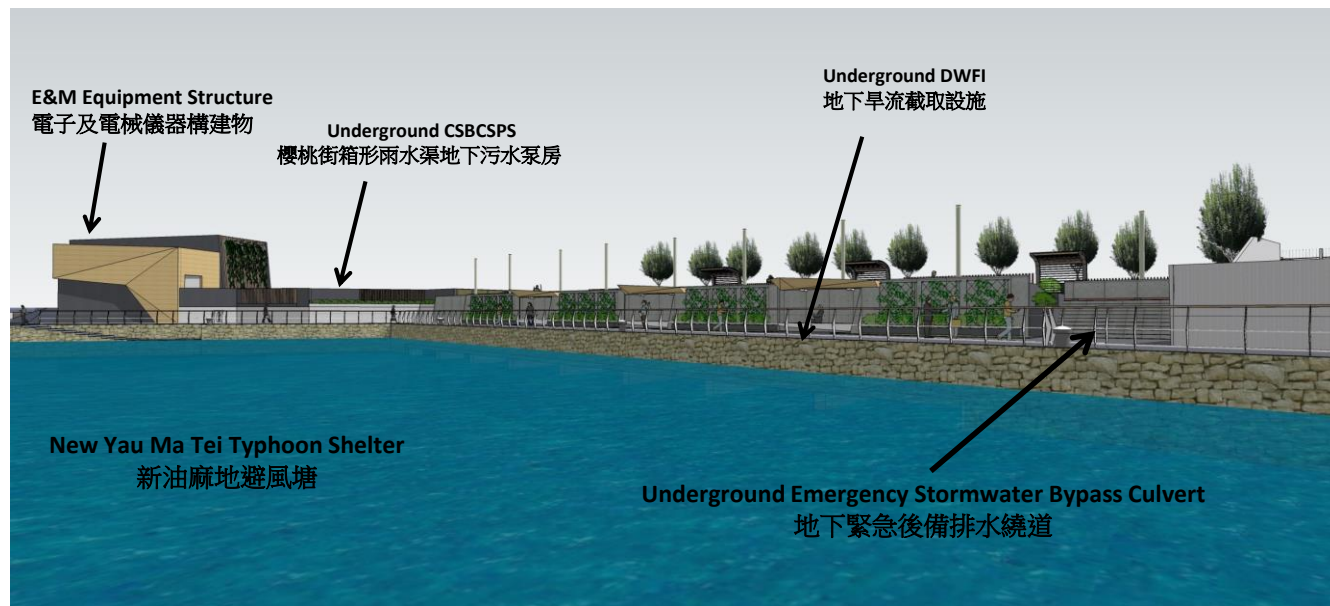


<p>Project</p> <p>Agreement No. CE 1/2012 (DS) - Construction of Dry Weather Flow Interceptor at Cherry Street Box Culvert and Other Works - Investigation, Design and Construction 櫻桃街箱形雨水渠旱流截取設施及其他工程 - 勘测研究、設計及建造</p>	 <p>香港特別行政區政府渠務署 THE GOVERNMENT OF THE HONG KONG SPECIAL ADMINISTRATIVE REGION DRAINAGE SERVICES DEPARTMENT</p>			
<p>Title</p> <p>Preliminary Perspective View of the Project (View looking from the South) 本工程項目的初步透視圖 (從南面觀看)</p>	<p>Figure 5.1</p>	<p>Prepared SW</p>	<p>Checked ET</p>	 <p>BLACK & VEATCH Building a world of difference.</p>





<p>Project</p> <p>Agreement No. CE 1/2012 (DS) - Construction of Dry Weather Flow Interceptor at Cherry Street Box Culvert and Other Works - Investigation, Design and Construction 櫻桃街箱形雨水渠旱流截取設施及其他工程 - 勘測研究、設計及建造</p>	 <p>香港特別行政區政府渠務署 THE GOVERNMENT OF THE HONG KONG SPECIAL ADMINISTRATIVE REGION DRAINAGE SERVICES DEPARTMENT</p>			
<p>Title</p> <p>Preliminary Perspective View of the Project (View looking from northwest) 本工程項目的初步透視圖(從西北面觀看)</p>	<p>Figure 5.1a</p>	<p>Prepared ET</p>	<p>Checked GC</p>	 <p>BLACK & VEATCH Building a world of difference.</p>

View Looking from the South
(從南方觀看)

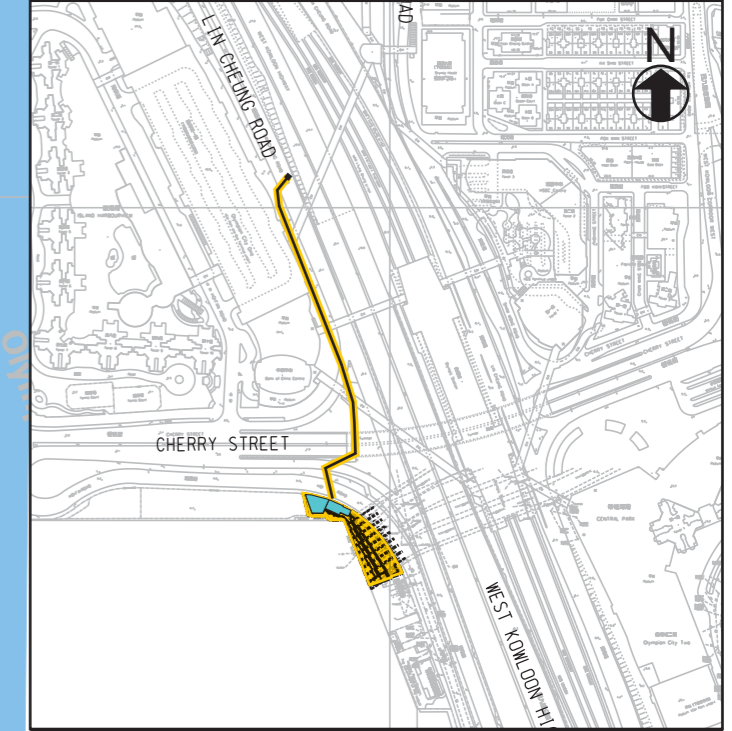
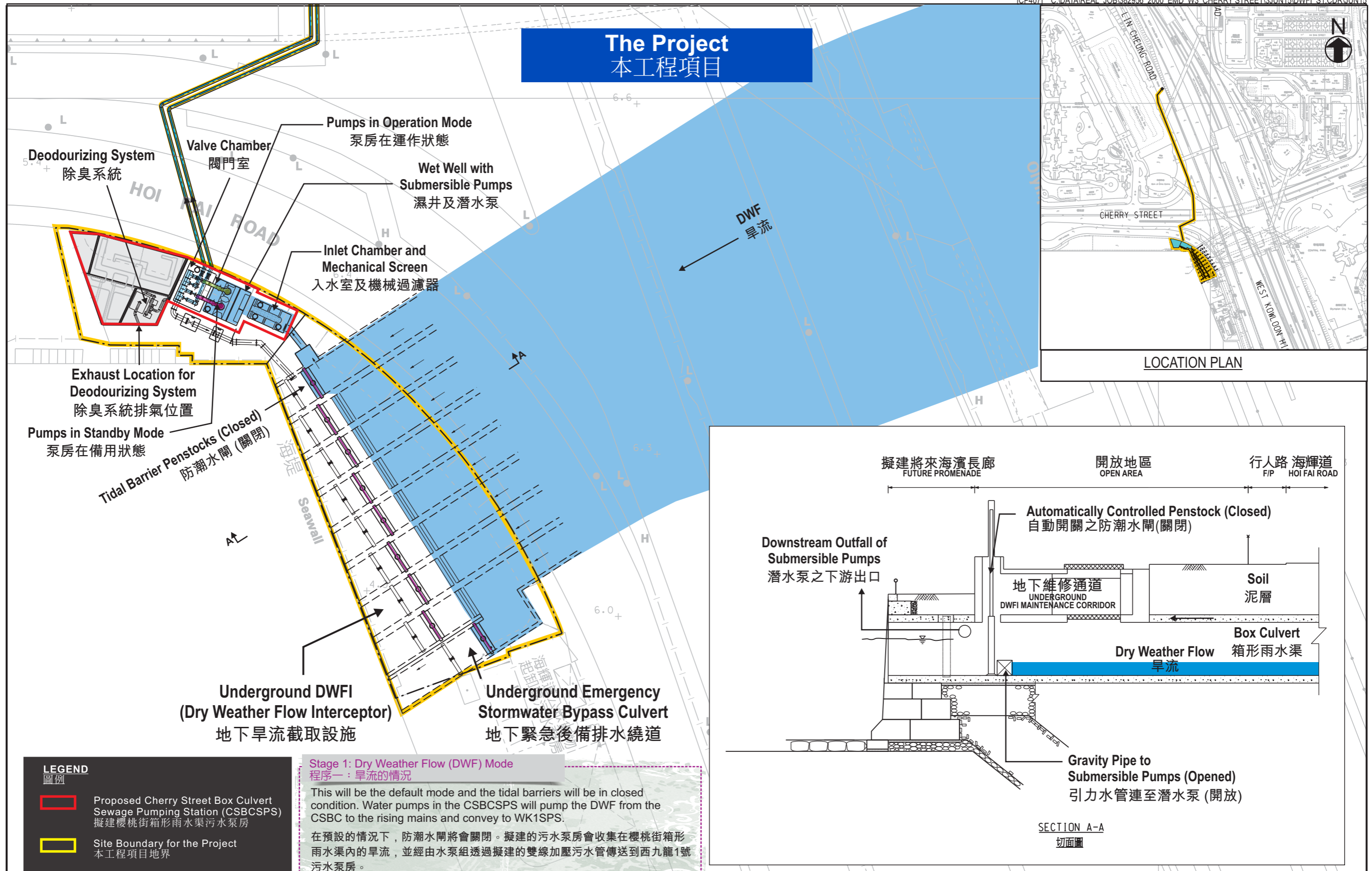


View Looking from the East
(從東方觀看)

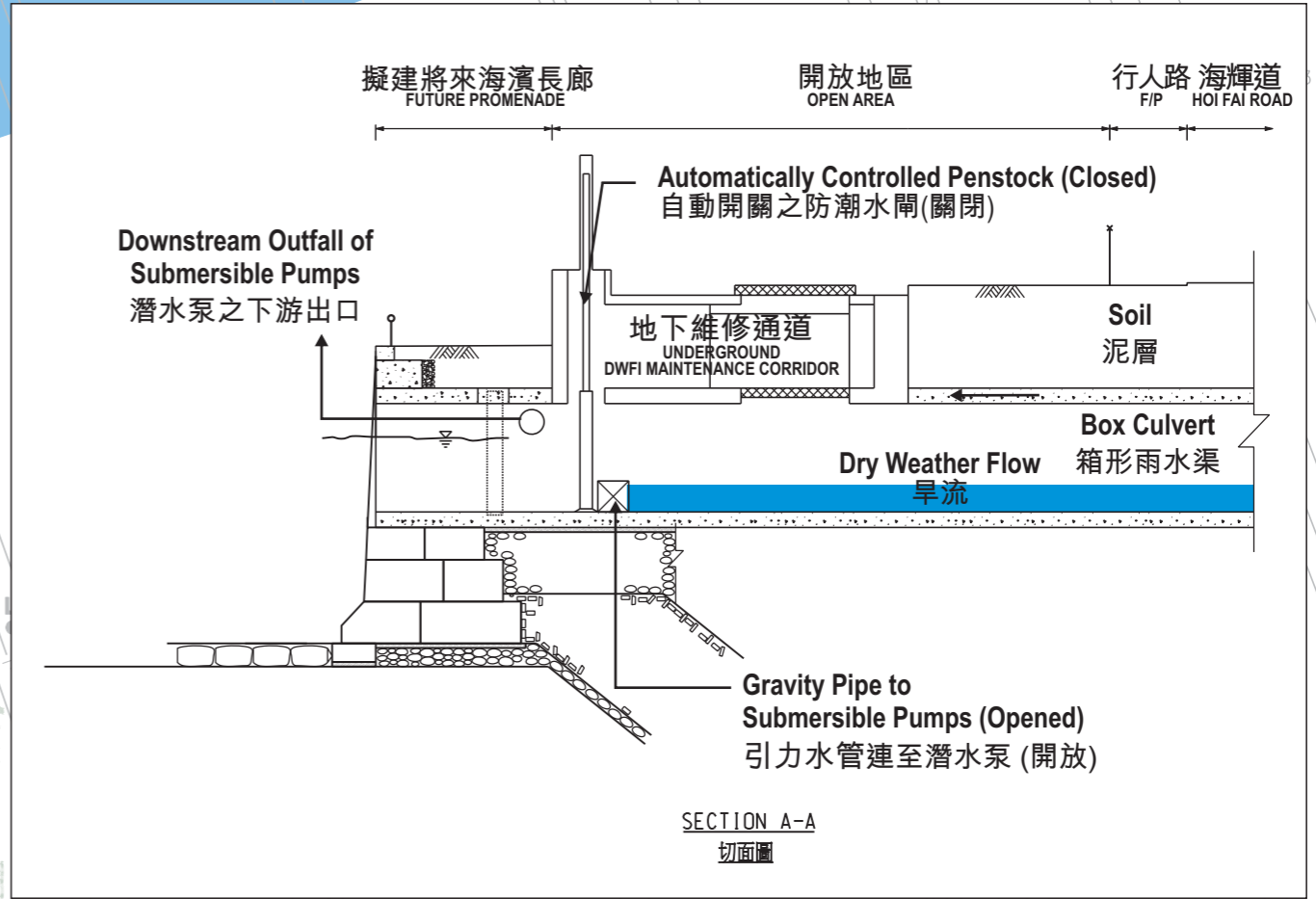
<p>Project Agreement No. CE 1/2012 (DS) - Construction of Dry Weather Flow Interceptor at Cherry Street Box Culvert and Other Works - Investigation, Design and Construction</p>	 <p>香港特別行政區政府渠務署 THE GOVERNMENT OF THE HONG KONG SPECIAL ADMINISTRATIVE REGION DRAINAGE SERVICES DEPARTMENT</p>			
<p>Title Preliminary Perspective Views of the Project (Views looking from the South and East and from the low level) 本工程項目的初步透視圖 (從東方及南方由下而上觀看)</p>	<p>Figure 5.1b</p>	<p>Prepared ET</p>	<p>Checked GC</p>	 <p>BLACK & VEATCH Building a world of difference.</p>

**APPENDIX I
LAYOUT AND SECTIONAL
DRAWINGS SHOWING THE DRY
WEATHER FLOW
INTERCEPTION SCHEME**

The Project 本工程項目



LOCATION PLAN



SECTION A-A
切面圖

LEGEND
圖例

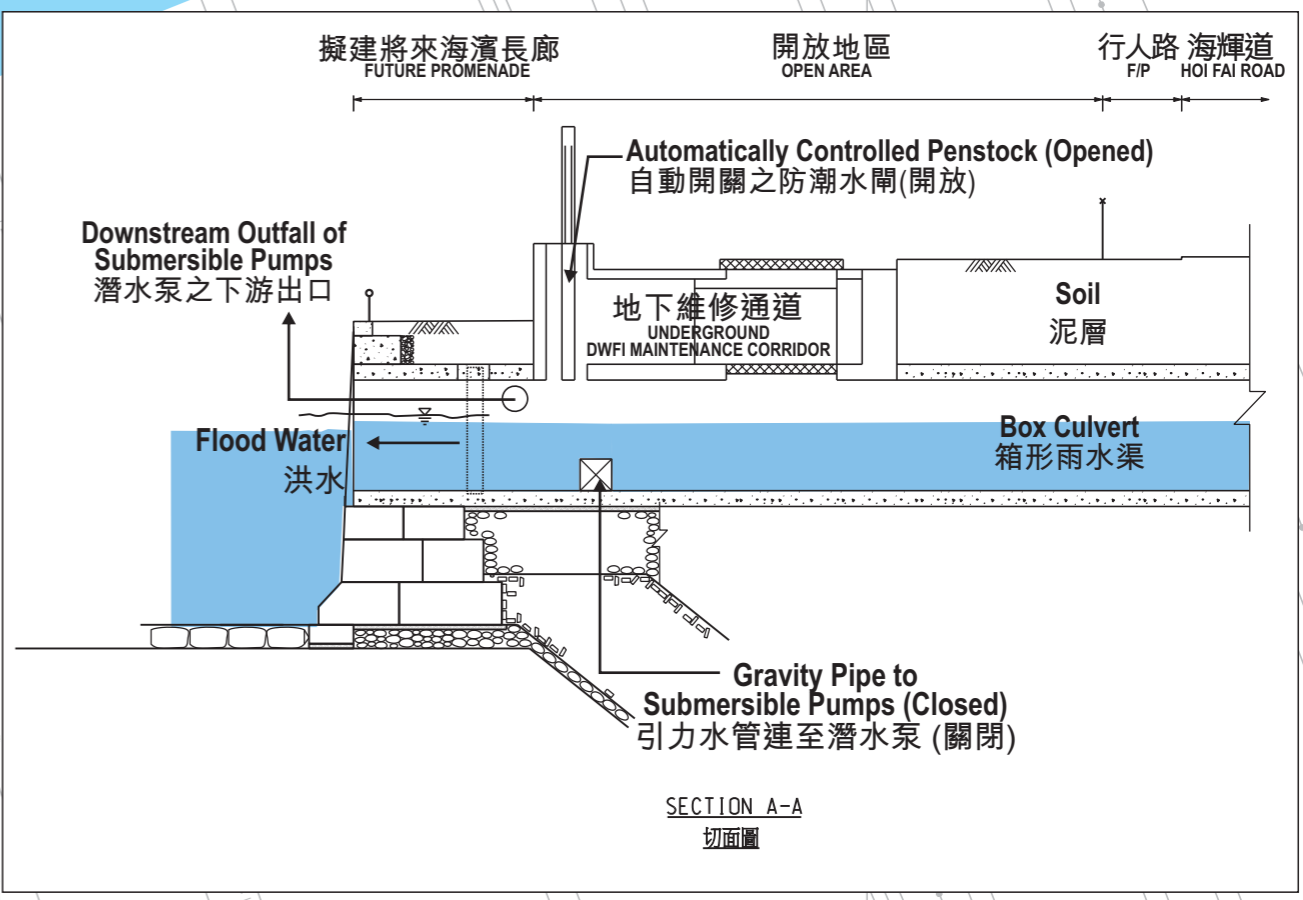
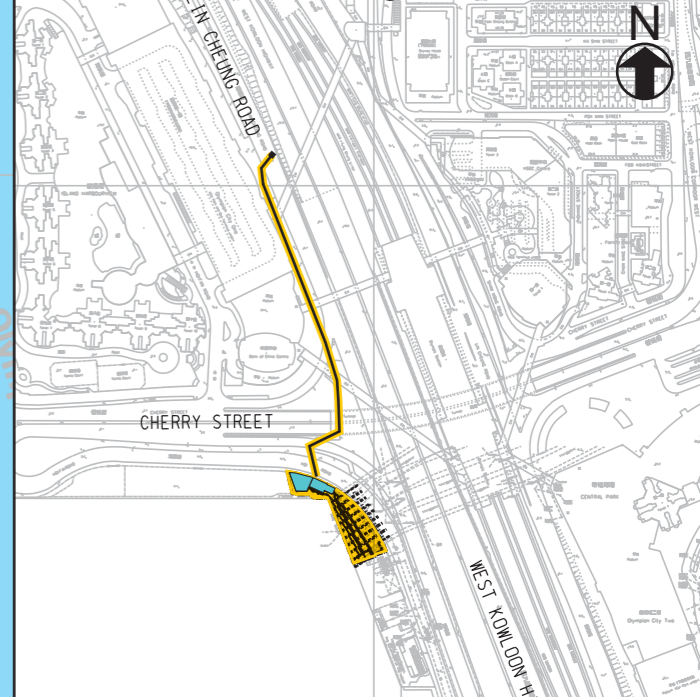
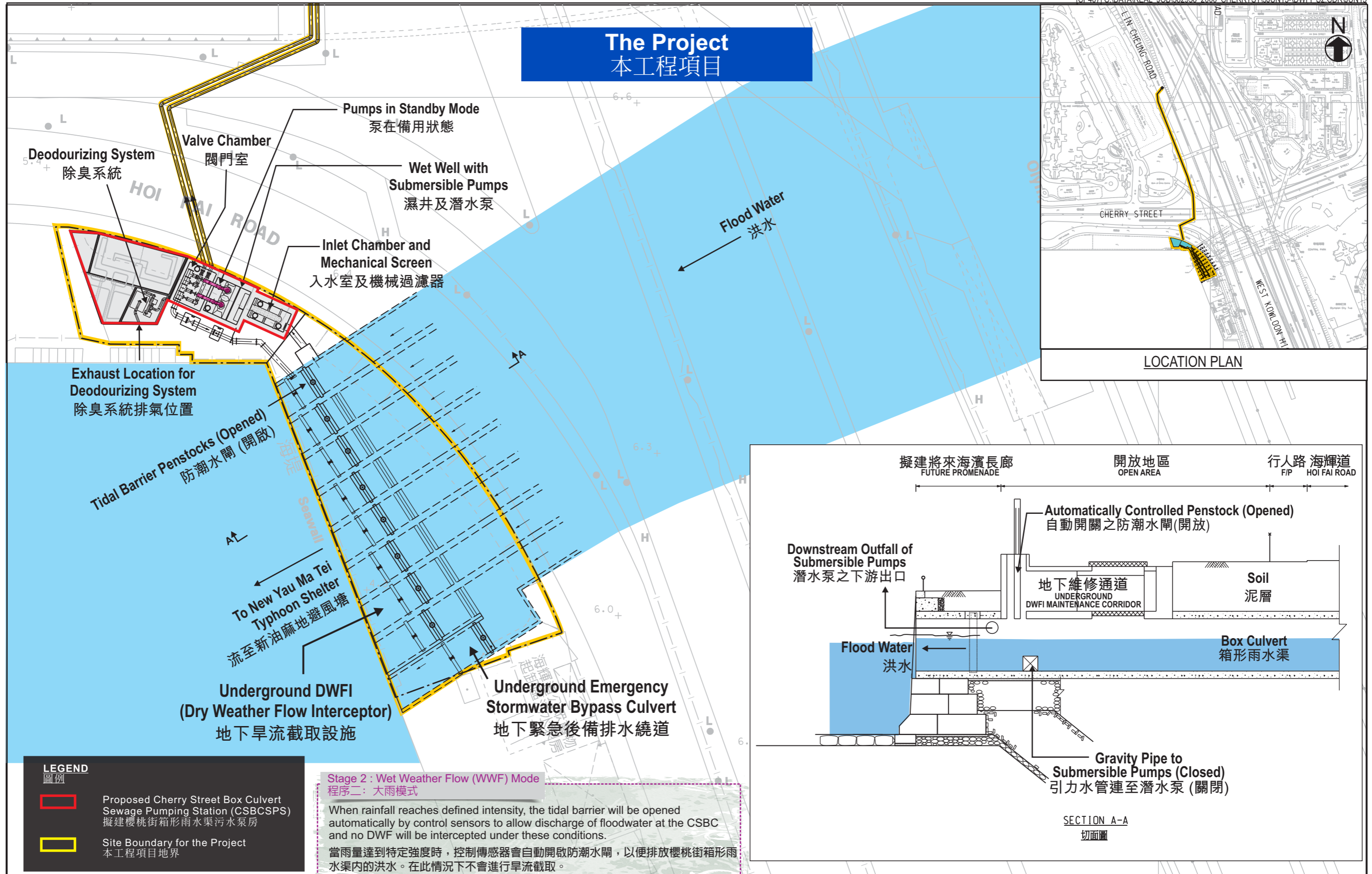
- Proposed Cherry Street Box Culvert Sewage Pumping Station (CSBCSPS)
擬建櫻桃街箱形雨水渠污水泵房
- Site Boundary for the Project
本工程項目地界

Stage 1: Dry Weather Flow (DWF) Mode
程序一：旱流的情況

This will be the default mode and the tidal barriers will be in closed condition. Water pumps in the CSBCSPS will pump the DWF from the CSBC to the rising mains and convey to WK1SPS.

在預設的情況下，防潮水閘將會關閉。擬建的污水泵房會收集在櫻桃街箱形雨水渠內的旱流，並經由水泵組透過擬建的雙線加壓污水管傳送到西九龍1號污水泵房。

The Project 本工程項目



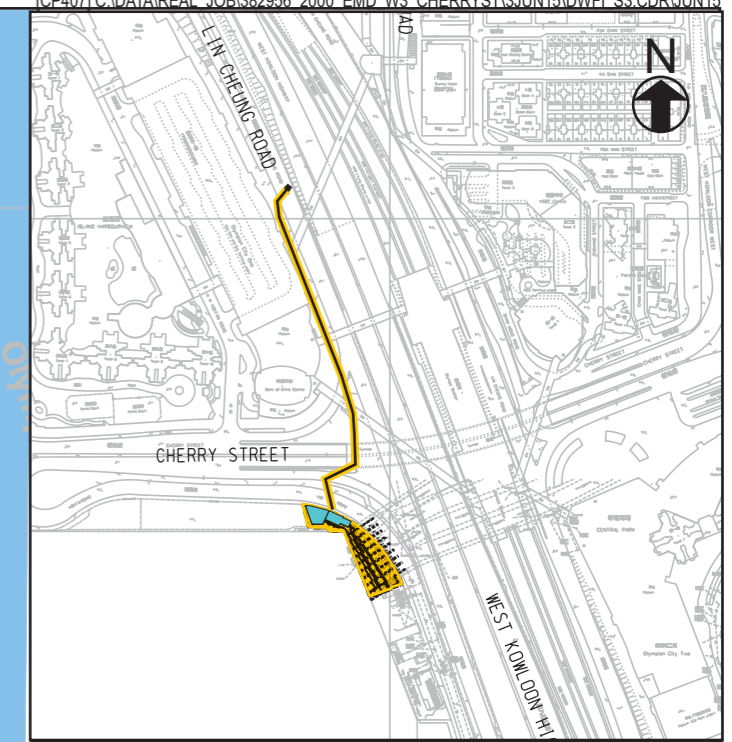
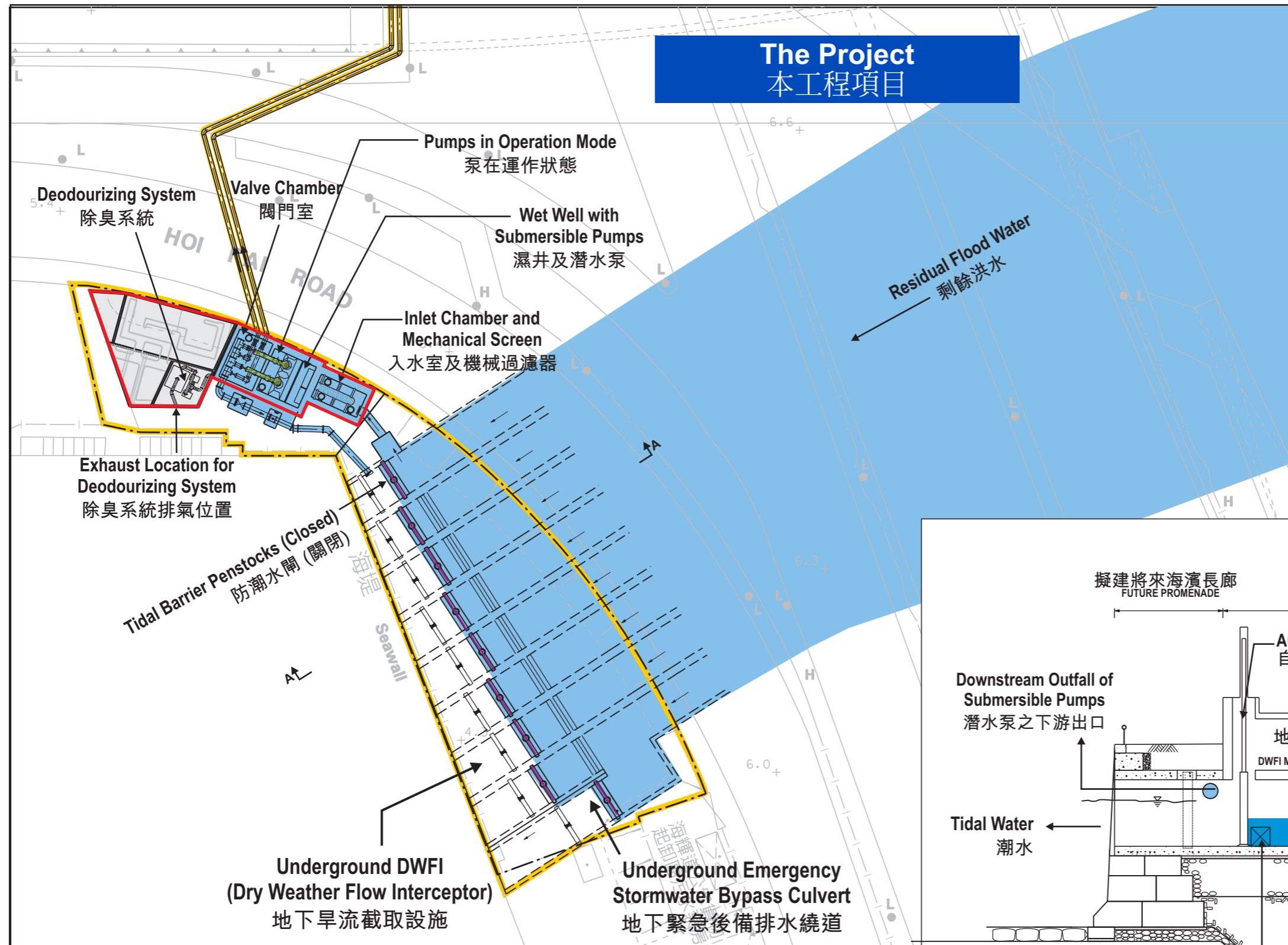
LEGEND
圖例

- Proposed Cherry Street Box Culvert Sewage Pumping Station (CSBCSPS)
擬建櫻桃街箱形雨水渠水泵房
- Site Boundary for the Project
本工程項目地界

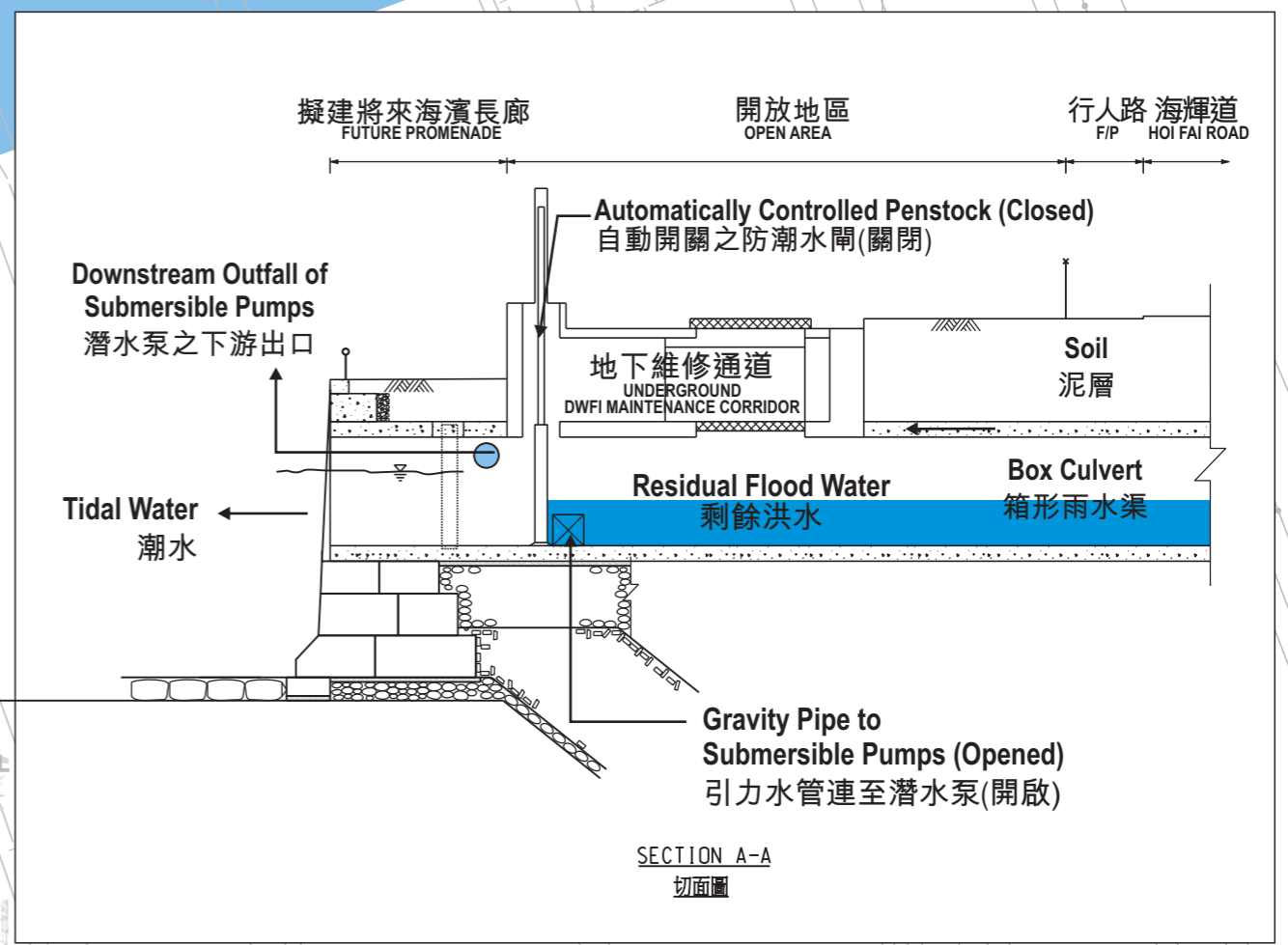
Stage 2 : Wet Weather Flow (WWF) Mode
程序二：大雨模式

When rainfall reaches defined intensity, the tidal barrier will be opened automatically by control sensors to allow discharge of floodwater at the CSBC and no DWF will be intercepted under these conditions.
當雨量達到特定強度時，控制傳感器會自動開啟防潮水閘，以便排放櫻桃街箱形雨水渠內的洪水。在此情況下不會進行旱流截取。

The Project 本工程項目



LOCATION PLAN



SECTION A-A
切面圖

LEGEND
圖例

- Proposed Cherry Street Box Culvert Sewage Pumping Station (CSBCSPS)
擬建櫻桃街箱形雨水渠污水泵房
- Site Boundary for the Project
本工程項目地界

Stage 3: Residual Water Discharge (RWD) Mode
程序三：剩餘水排放模式

After rainfall, the tidal barrier will be closed automatically by control sensors. The residual floodwater trapped at the upstream of the tidal barrier will be pumped to the downstream of the CSBC via water pumps.
大雨過後，控制傳感器會自動關閉防潮水閘。剩餘在防潮水閘上游的洪水會由水泵傳送到櫻桃街箱形雨水渠下游排放。

**APPENDIX II
NOISE IMPACT ANALYSIS**

**APPENDIX II
CONSTRUCTION AND OPERATIONAL NOISE PREDICTION**

1. Introduction

1.1 This appendix provides the details of the analysis of the potential construction and operation noise impacts arisen from the Project to nearby noise sensitive receivers.

2. Environmental Legislation, Plans, Standards and Criteria

2.1 The noise impact evaluation should be in accordance with the methodology and criteria laid out in Annex 5 and Annex 13 of the Technical Memoranda made under the Environmental Impact Assessment Ordinance (EIAO).

2.2 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 analysis:

- 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 Piling (GW-TM); and
- Technical Memorandum on Noise from Percussive Piling (PP-TM)

2.3 The NCO and the accompanying Technical Memoranda provide a mechanism for assessing noise levels and the statutory power to control noise.

2.4 With regard to the analysis of the 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 affect the ASR and therefore the acceptable noise level (see **Table II-1**).

Table II-1 Area Sensitivity Ratings

Type of Area Containing NSR	Degree to which NSR is Affected by Influencing Factor		
	Not Affected	Indirectly Affected	Directly Affected
Rural Area	A	B	B
Urban Area	B	C	C
Low density residential area consisting of low-rise or isolated high-rise developments	A	B	C
Area other than those above	B	B	C

Construction Phase

- 2.5 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 evaluation criterion in the construction noise analysis.

Operation Phase

- 2.6 The operational noise emitted from the Project is controlled under the IND-TM. According to the IND-TM, the Acceptable Noise Levels (ANLs) for different ASRs are given in **Table II-2**. The ANL is based upon the type of area within which the NSR is and the effect of the influencing factors such as major roads and industrial activity.

Table II-2 Acceptable Noise Levels (ANLs)

Time Period	ASR A	ASR B	ASR C
Day (0700 to 1900 hours)	60	65	70
Evening (1900 to 2300 hours)			
Night (2300 to 0700 hours)	50	55	60

- 2.7 When assessed in accordance with the EIAO-TM, the level of the intruding noise at the façade of the nearest sensitive receiver should not exceed 5 dB(A) below the appropriate ANL shown in Table 2 of the IND-TM (or Table II-2 of the above) or, in the case of the background being lower than the ANL by more than 5dB(A), the predicted noise level should not exceed the background noise level.
- 2.8 The West Kowloon Highway is an Influencing Factor (IF) because it has an annual average daily traffic (AADT) flow in excess of 30,000. The 2013 statistics from the Transport Department showed that the road had an AADT flow of 73,380. As the NSRs in the vicinity of the Project are located adjacent to the West Kowloon Highway, the Project site is defined as ASR"C". According to the IND-TM Table 1, Area Sensitivity Ratings (ASRs) C ("Area other than those above") is selected to use as the Acceptable Noise Levels (ANLs).
- 2.9 With the influence of the West Kowloon Highway, it is expected that the background noise level will be higher than daytime and night time noise criteria. The fixed noise criteria for sensitive receivers would be 65 dB(A) in the daytime/evening and 55 dB(A) at night.
- 2.10 The ASR assumed in this analysis is for indicative only. It should be noted that fixed noise sources are controlled under Section 13 of the NCO. Nothing in this analysis shall bind the Noise Control Authority in assessing noise from these sources upon the receipt of complaints. The Noise Control Authority shall assess the noise impacts based on the contemporary conditions.

3. Noise Sensitive Receivers

- 3.1 The potential Noise Sensitive Receivers (NSRs) have been identified in accordance with the criteria set out in the EIAO-TM. The NSRs selected for the analysis are set out in **Table II-3**.

Table II-3 Representative NSRs in the Vicinity of Project Site

I.D.	Sensitive Receiver	Type	Shortest horizontal distance to the proposed CSBCSPS and DWFI (m)	Shortest horizontal distance to the Twin Rising Mains (m)
IH	Island Harbourview Tower 10	Residential	135	80
IH5	Island Harbourview Tower 5	Residential	275	148
PAC	PAC	Residential	217	233
FR	Florient Rise	Residential	245	205
OSS	One Silver Sea	Residential	282	278
OCT	Ocean Court	Residential	328	167
HG	Habour Green Tower 1	Residential	484	240

4. Construction Noise Evaluation

Identification of Noise Source

- 4.1 The main source of noise impacts arising from the construction phase of the Project would be the use of Powered Mechanical Equipment (PME) for carrying out the construction works and is provided in **Appendix IIa**. The inventory of project specific PME for each works type has been developed in collaboration with the engineering designer and DSD and is considered to be appropriate and practical for completing works within the proposed works programme.

Analysis Methodology

- 4.2 The analysis will follow the procedures given in the GW-TM. For the analysis of noise from PME, the distance attenuation was estimated using the standard formula:

$$\text{Distance Attenuation in dB(A)} = 20 \log D + 8 \text{ [where D is the distance in metres]}$$

- 4.3 Sound Power Levels (SWLs) of the equipment were taken from Table 3 of the GW-TM and BS5228: Part 1: 2009. SWLs also make reference to Quality Powered Mechanical Equipment (QPME) system (http://www.epd.gov.hk/cgi-bin/npg/qpme/search_gen.pl?lang=eng&st=sim&valid=Y) and EPD's other PME list (http://www.epd.gov.hk/epd/english/application_for_licences/guidance/files/OtherSWLe.pdf). Groups of equipment likely to be employed for each construction task are shown in **Appendix IIa**. The equipment lists are considered realistic and practicable. All works would be carried out in the non-restricted hours (0700-1900 hours except Sundays and general holidays).

- 4.4 Noise impact was assessed based on the following three assumptions:

- All PME required for construction would be located within the Project site boundary. The horizontal distance was measured from the notional source to the nearest NSR in the vicinity;
- A +3dB(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 residential buildings to the source positions were assessed.

Prediction and Evaluation of Environmental Impacts

- 4.5 The predicted construction noise levels at each NSR are summarized in **Appendix IIa**. Noise exceedance at 3 dB(A) was predicted at IH during surface breaking of twin rising mains.

Mitigation of Potential Adverse Environmental Impacts

- 4.6 The predicted noise level shows that unmitigated construction activities would exceed the noise criteria. Noise control practice by using quiet plant and movable noise barriers are recommended. The contractor shall design and implement movable noise barrier to protect the noise sensitive receivers from excessive noise during surface breaking of twin rising mains. The contractor shall require regularly inspecting and maintaining the noise barrier to ensure its effectiveness.
- 4.7 Calculations of the construction noise levels at the representative NSRs under the mitigation scenario are presented in **Appendix IIa**. With the adoption of quiet plants and movable noise barriers, the construction noise level at the representative NSRs will comply with the required noise criteria.
- 4.8 In addition to the use of quiet plants and movable noise barriers, the good site practices listed below should be adopted to further reduce any impact on the NSRs during the construction of the Project and should be included in the contract.
- Only well-maintained plant 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 plant should be located as far away from the NSRs as reasonably possible;
 - Machines and plant (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 from on-site construction activity.

Cumulative Noise Impact

- 4.9 Cumulative noise impact with proposed Road Improvement Works in West Kowloon Reclamation Development Phase 1 has been assessed. No noise exceedance was predicted and the calculation is shown in **Appendix IIa**. No adverse cumulative noise impact is expected.

Conclusion

- 4.10 With the adoption of quiet plants and movable noise barriers, the predicted mitigated construction noise levels at the representative NSRs comply with the daytime noise criteria. Thus, no adverse construction noise impact would be expected.

5. Operational Noise Evaluation

Identification of Noise Source

- 5.1 Fixed plant noise impact would arise during the operation phase of the CSBCSPS, underground DWFI and emergency stormwater bypass culvert. The major noise sources from them would be the operation of sewage pumps, deodorizer fans, mechanically raked bar screens, exhaust fans, overhead crane and penstocks based on the DSD's Design Memorandum. No operation noise from twin rising mains is expected.

Analysis Methodology

- 5.2 The noise analysis will follow the procedures given in the IND-TM. For the analysis of noise from equipment, the distance attenuation was estimated using the standard formula as mentioned in Section 4.2.
- 5.3 The estimated Sound Power Level (SWL) of equipment was referenced from the specifications of similar items of equipment provided by the contractor/plant supplier and other similar projects. The estimated sound power level of sewage pump, mechanically raked bar screen and exhaust fans were made reference from the Project Profile for Control of Water Pollution at Jordan Valley Box Culvert - Sewage Pumping Station (JVBCSPS) (EIAO Register No. DIR-180/2009). The pump sets and mechanical raked bar screen facilities will be located within the underground structure of the CSBCSPS within a concrete building. This is expected to have a noise attenuation of 20 dB(A). A 10 dB(A) noise attenuation is assumed for the acoustic louvers fitted for the ventilation fans.
- 5.4 Noise impact was assessed on the basis of the following assumptions:
- The distance separation was measured from the Project to the nearest NSR in the vicinity;
 - 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 impact at the nearest NSR façade was assessed.

Prediction and Evaluation of Environmental Impacts

- 5.5 Noise exceedance was found at IH without mitigation measure. Acoustic louvers for

the extraction fan for deodorization unit and extraction fan for ventilation are proposed as mitigation measures.

- 5.6 The noise prediction results showed that the operation noise levels at representative NSRs would comply with the daytime and night time noise criteria. The predicted mitigated noise levels at identified NSRs are summarized in **Appendix IIb**.

Conclusion

- 5.7 The noise impacts associated with the operation of the CSBCSPS, underground DWFI and emergency stormwater bypass culvert were assessed. The analysis result indicated that the operation noise levels predicted at representative NSRs would not exceed the noise criteria.

Appendix IIa

Construction Noise Analysis

Summary of the Construction activities for CSBCSPS, DWFI, underground emergency stormwater bypass culvert and Twin Rising Mains:

(A) Construction Activities of CSBCSPS

Sheet Piling

Excavation

Piling

Construction of Substructure/Structure

Backfilling

E&M Installations

Finishing and Landscaping Works

(B) Construction Activities of underground DWFI and emergency stormwater bypass culvert

Sheet Piling

Excavation

Modification Works for Existing Box Culvert

Construction of Substructure/Structure

Backfilling

E&M Installations

Finishing and Landscaping Works

(C) Construction Activities of Twin Rising Mains Laying

Surface Breaking for Pavement/Road

Excavation

Rising Main Laying

Backfilling

Reinstatement

Table of Predicted Noise Levels (PNL) at Representative NSRs

Likely Powered Mechanical Equipment for Construction of the (A) CSBCSPS, (B) underground DWFI compound and emergency stormwater bypass culvert and (C) Rising Main Laying [Unmitigated]

Surface Breaking of Pavement/Road (C only)

Type of PME	TM Code / Other reference	Number of Equipment	SWL, dB(A)	Assume Percentage of On-time Usage	Summation of SWL, dB(A)	Total SWL, dB(A)
Breaker, excavator mounted (pneumatic)	027	1	122	80%	121	121

Sheet Piling (A) & (B)

Type of PME	TM Code / Other reference	Number of Equipment	SWL, dB(A)	Assume Percentage of On-time Usage	Summation of SWL, dB(A)	Total SWL, dB(A)
Piling, vibrating hammer	*	1	115	80%	114	116
Lorry	141	1	112	85%	111	

Excavation (A), (B) & (C)

Type of PME	TM Code / Other reference	Number of Equipment	SWL, dB(A)	Assume Percentage of On-time Usage	Summation of SWL, dB(A)	Total SWL, dB(A)
Excavator/loader, wheeled/tracked	081	1	112	80%	111	117
Dump truck	067	1	117	80%	116	

Piling (A)

Type of PME	TM Code / Other reference	Number of Equipment	SWL, dB(A)	Assume Percentage of On-time Usage	Summation of SWL, dB(A)	Total SWL, dB(A)
Piling, large diameter bored, reverse circulation drill	166	1	100	80%	99	117
Generator, silenced, 75 dB(A) at 7 m	102	1	100	80%	99	
Concrete pump, stationary/lorry mounted	047	1	109	70%	107	
Dump truck	067	1	117	80%	116	

Modification Works for Existing Box Culvert (B only)

Type of PME	TM Code / Other reference	Number of Equipment	SWL, dB(A)	Assume Percentage of On-time Usage	Summation of SWL, dB(A)	Total SWL, dB(A)
Saw/Groover, Concrete (petrol)	203	1	115	80%	114	114
Generator, silenced, 75 dB(A) at 7 m	102	1	100	80%	99	
Water pumps, submersible (electric)	283	1	85	80%	84	

Rising Main Laying (C only)

Type of PME	TM Code / Other reference	Number of Equipment	SWL, dB(A)	Assume Percentage of On-time Usage	Summation of SWL, dB(A)	Total SWL, dB(A)
Crane, mobile/berge mounted (diesel)	048	1	112	80%	111	113
Concrete lorry mixer	044	1	109	60%	107	
Generator, silenced, 75 dB(A) at 7 m	102	1	100	80%	99	

Construction of Substructure/Structure (A) & (B)

Type of PME	TM Code / Other reference	Number of Equipment	SWL, dB(A)	Assume Percentage of On-time Usage	Summation of SWL, dB(A)	Total SWL, dB(A)
Crane, mobile/berge mounted (diesel)	048	1	112	80%	111	115
Concrete lorry mixer	044	1	109	60%	107	
Generator, silenced, 75 dB(A) at 7 m	102	1	100	80%	99	
Poker, vibratory, hand-held	170	1	113	80%	112	

Backfilling ((A), (B) & (C)

Type of PME	TM Code / Other reference	Number of Equipment	SWL, dB(A)	Assume Percentage of On-time Usage	Summation of SWL, dB(A)	Total SWL, dB(A)
Excavator/loader, wheeled/tracked	081	1	112	75%	111	118
Dump truck	067	1	117	80%	116	
Compactor, vibratory	050	1	105	80%	104	
Crane, mobile/berge mounted (diesel)	048	1	112	70%	110	
Generator, silenced, 75 dB(A) at 7 m	102	1	100	80%	99	

E&M Installations (A) & (B)

Type of PME	TM Code / Other reference	Number of Equipment	SWL, dB(A)	Assume Percentage of On-time Usage	Summation of SWL, dB(A)	Total SWL, dB(A)
Crane, mobile/berge mounted (diesel)	048	1	112	90%	112	114
Lorry	141	1	112	85%	111	

Finishing and Landscaping Works (A) & (B)

Type of PME	TM Code / Other reference	Number of Equipment	SWL, dB(A)	Assume Percentage of On-time Usage	Summation of SWL, dB(A)	Total SWL, dB(A)
Excavator/loader, wheeled/tracked	081	1	112	50%	109	115
Crane, mobile/berge mounted (diesel)	048	1	112	60%	110	
Lorry	141	1	112	80%	111	

Reinstatement (C only)

Type of PME	TM Code / Other reference	Number of Equipment	SWL, dB(A)	Assume Percentage of On-time Usage	Summation of SWL, dB(A)	Total SWL, dB(A)
Concrete lorry mixer	044	1	109	60%	107	113
Poker, vibratory, hand-held	170	1	113	80%	112	

Notes:

SWL = Sound Power Level of a Powered Mechanical Equipment (PME)

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

* = Sound Power Levels of Other Commonly Used PME (source: Guidance Notes for Licence Application in EPD website)

Commonly Use website: http://www.epd.gov.hk/epd/english/application_for_licences/guidance/files/OtherSWL.e.pdf

Table of Predicted Noise Levels (PNL) at Representative NSRs

Likely Powered Mechanical Equipment for Construction of the (A) CSBCSPS, (B) underground DWFI and emergency stormwater bypass culvert and (C) Rising Main Laying
[Mitigation 1- Quiet Plant]

Surface Breaking of Pavement/Road (C only)

Type of PME	TM Code / Other reference	Number of Equipment	SWL, dB(A)	Assume Percentage of On-time Usage	Summation of SWL, dB(A)	Total SWL, dB(A)
Breaker, excavator mounted (pneumatic)	027	1	122	80%	121	121

Sheet Piling (A) & (B)

Type of PME	TM Code / Other reference	Number of Equipment	SWL, dB(A)	Assume Percentage of On-time Usage	Summation of SWL, dB(A)	Total SWL, dB(A)
Piling, vibrating hammer	*	1	115	80%	114	114
Lorry [2]	*	1	105	85%	104	

Excavation (A), (B) & (C)

Type of PME	TM Code / Other reference	Number of Equipment	SWL, dB(A)	Assume Percentage of On-time Usage	Summation of SWL, dB(A)	Total SWL, dB(A)
Excavator/loader, wheeled/tracked	081	1	112	80%	111	112
Dump truck [1]	*	1	105	80%	104	

Piling (A)

Type of PME	TM Code / Other reference	Number of Equipment	SWL, dB(A)	Assume Percentage of On-time Usage	Summation of SWL, dB(A)	Total SWL, dB(A)
Piling, large diameter bored, reverse circulation drill	166	1	100	80%	99	110
Generator, super silenced, 70 dB(A) at 7 m	103	1	95	80%	94	
Concrete pump, stationary/lorry mounted	047	1	109	70%	107	
Dump truck [1]	*	1	105	80%	104	

Modification Works for Existing Box Culvert (B only)

Type of PME	TM Code / Other reference	Number of Equipment	SWL, dB(A)	Assume Percentage of On-time Usage	Summation of SWL, dB(A)	Total SWL, dB(A)
Saw/Groover, Concrete (petrol)	203	1	115	80%	114	114
Generator, super silenced, 70 dB(A) at 7 m	103	1	95	80%	94	
Water pumps, submersible (electric)	283	1	85	80%	84	

Rising Main Laying (C only)

Type of PME	TM Code / Other reference	Number of Equipment	SWL, dB(A)	Assume Percentage of On-time Usage	Summation of SWL, dB(A)	Total SWL, dB(A)
Crane, mobile	QPME-EPD-01477	1	104	80%	103	108
Concrete lorry mixer	044	1	109	60%	107	
Generator, super silenced, 70 dB(A) at 7 m	103	1	95	80%	94	

Construction of Substructure/Structure (A) & (B)

Type of PME	TM Code / Other reference	Number of Equipment	SWL, dB(A)	Assume Percentage of On-time Usage	Summation of SWL, dB(A)	Total SWL, dB(A)
Crane, mobile	QPME-EPD-01477	1	104	80%	103	109
Concrete lorry mixer	044	1	109	60%	107	
Generator, super silenced, 70 dB(A) at 7 m	103	1	95	80%	94	
Poker, vibratory, hand-held (electric)	*	1	102	80%	101	

Backfilling ((A), (B) & (C))

Type of PME	TM Code / Other reference	Number of Equipment	SWL, dB(A)	Assume Percentage of On-time Usage	Summation of SWL, dB(A)	Total SWL, dB(A)
Excavator/loader, wheeled/tracked	081	1	112	75%	111	113
Dump truck [1]	*	1	105	80%	104	
Compactor, vibratory	050	1	105	80%	104	
Crane, mobile	QPME-EPD-01477	1	104	70%	102	
Generator, super silenced, 70 dB(A) at 7 m	103	1	95	80%	94	

E&M Installations (A) & (B)

Type of PME	TM Code / Other reference	Number of Equipment	SWL, dB(A)	Assume Percentage of On-time Usage	Summation of SWL, dB(A)	Total SWL, dB(A)
Crane, mobile	QPME-EPD-01477	1	104	90%	104	107
Lorry [2]	*	1	105	85%	104	

Finishing and Landscaping Works (A) & (B)

Type of PME	TM Code / Other reference	Number of Equipment	SWL, dB(A)	Assume Percentage of On-time Usage	Summation of SWL, dB(A)	Total SWL, dB(A)
Excavator, mini-robot mounted	*	1	94	50%	91	106
Crane, mobile	QPME-EPD-01477	1	104	60%	102	
Lorry [2]	*	1	105	80%	104	

Reinstatement (C only)

Type of PME	TM Code / Other reference	Number of Equipment	SWL, dB(A)	Assume Percentage of On-time Usage	Summation of SWL, dB(A)	Total SWL, dB(A)
Concrete lorry mixer	044	1	109	60%	107	108
Poker, vibratory, hand-held (electric)	*	1	102	80%	101	

Notes:

SWL = Sound Power Level of a Powered Mechanical Equipment (PME)

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

* = Sound Power Levels of Other Commonly Used PME (source: Guidance Notes for Licence Application in EPD website)

Commonly Use website: http://www.epd.gov.hk/epd/english/application_for_licences/guidance/files/OtherSWLe.pdf

QPME = Quiet Powered Mechanical Equipment (Source: An Administrative System on the Use of QPME in EPD website)

QPME website: http://www.epd.gov.hk/cgi-bin/npg/qpme/search_gen.pl?lang=eng&st=sim&valid=Y

[1] = Dump truck, with grab, (5.5 tonne < gross vehicle weight ≤ 38 tonne)

[2] = Lorry, with crane/grab, (5.5 tonne < gross vehicle weight ≤ 38 tonne)

Table of Predicted Noise Levels (PNL) at Representative NSRs

Likely Powered Mechanical Equipment for Construction of the (A) CSBCSPS, (B) underground DWFI and emergency stormwater bypass culvert and (C) Rising Main Laying

[Mitigation 2 - Quiet Plant with Movable Barrier]

Surface Breaking of Pavement/Road (C only)

Type of PME	TM Code / Other reference	Number of Equipment	SWL, dB(A)	Assume Percentage of On-time Usage	Barrier correction, dB(A)	Corrected SWL, dB(A)	Total SWL, dB(A)
Breaker, excavator mounted (pneumatic)	027	1	122	80%	-5	116	116

Sheet Piling (A) & (B)

Type of PME	TM Code / Other reference	Number of Equipment	SWL, dB(A)	Assume Percentage of On-time Usage	Barrier correction, dB(A)	Corrected SWL, dB(A)	Total SWL, dB(A)
Piling, vibrating hammer	*	1	115	80%	0	114	114
Lorry [2]	*	1	105	85%	0	104	

Excavation (A), (B) & (C)

Type of PME	TM Code / Other reference	Number of Equipment	SWL, dB(A)	Assume Percentage of On-time Usage	Barrier correction, dB(A)	Corrected SWL, dB(A)	Total SWL, dB(A)
Excavator/loader, wheeled/tracked	081	1	112	80%	0	111	112
Dump truck [1]	*	1	105	80%	0	104	

Piling (A)

Type of PME	TM Code / Other reference	Number of Equipment	SWL, dB(A)	Assume Percentage of On-time Usage	Barrier correction, dB(A)	Corrected SWL, dB(A)	Total SWL, dB(A)
Piling, large diameter bored, reverse circulation drill	166	1	100	80%	0	99	110
Generator, super silenced, 70 dB(A) at 7 m	103	1	95	80%	0	94	
Concrete pump, stationary/lorry mounted	047	1	109	70%	0	107	
Dump truck [1]	*	1	105	80%	0	104	

Modification Works for Existing Box Culvert (B only)

Type of PME	TM Code / Other reference	Number of Equipment	SWL, dB(A)	Assume Percentage of On-time Usage	Barrier correction, dB(A)	Corrected SWL, dB(A)	Total SWL, dB(A)
Saw/Groover, Concrete (petrol)	203	1	115	80%	0	114	114
Generator, super silenced, 70 dB(A) at 7 m	103	1	95	80%	0	94	
Water pumps, submersible (electric)	283	1	85	80%	0	84	

Rising Main Laying (C only)

Type of PME	TM Code / Other reference	Number of Equipment	SWL, dB(A)	Assume Percentage of On-time Usage	Barrier correction, dB(A)	Corrected SWL, dB(A)	Total SWL, dB(A)
Crane, mobile	QPME-EPD-01477	1	104	80%	0	103	108
Concrete lorry mixer	044	1	109	60%	0	107	
Generator, super silenced, 70 dB(A) at 7 m	103	1	95	80%	0	94	

Construction of Substructure/Structure (A) & (B)

Type of PME	TM Code / Other reference	Number of Equipment	SWL, dB(A)	Assume Percentage of On-time Usage	Barrier correction, dB(A)	Corrected SWL, dB(A)	Total SWL, dB(A)
Crane, mobile	QPME-EPD-01477	1	104	80%	0	103	109
Concrete lorry mixer	044	1	109	60%	0	107	
Generator, super silenced, 70 dB(A) at 7 m	103	1	95	80%	0	94	
Poker, vibratory, hand-held (electric)	*	1	102	80%	0	101	

Backfilling ((A), (B) & (C)

Type of PME	TM Code / Other reference	Number of Equipment	SWL, dB(A)	Assume Percentage of On-time Usage	Barrier correction, dB(A)	Corrected SWL, dB(A)	Total SWL, dB(A)
Excavator/loader, wheeled/tracked	081	1	112	75%	0	111	113
Dump truck [1]	*	1	105	80%	0	104	
Compactor, vibratory	050	1	105	80%	0	104	
Crane, mobile	QPME-EPD-01477	1	104	70%	0	102	
Generator, super silenced, 70 dB(A) at 7 m	103	1	95	80%	0	94	

E&M Installations (A) & (B)

Type of PME	TM Code / Other reference	Number of Equipment	SWL, dB(A)	Assume Percentage of On-time Usage	Barrier correction, dB(A)	Corrected SWL, dB(A)	Total SWL, dB(A)
Crane, mobile	QPME-EPD-01477	1	104	90%	0	104	107
Lorry [2]	*	1	105	85%	0	104	

Finishing and Landscaping Works (A) & (B)

Type of PME	TM Code / Other reference	Number of Equipment	SWL, dB(A)	Assume Percentage of On-time Usage	Barrier correction, dB(A)	Corrected SWL, dB(A)	Total SWL, dB(A)
Excavator, mini-robot mounted	*	1	94	50%	0	91	106
Crane, mobile	QPME-EPD-01477	1	104	60%	0	102	
Lorry [2]	*	1	105	80%	0	104	

Reinstatement (C only)

Type of PME	TM Code / Other reference	Number of Equipment	SWL, dB(A)	Assume Percentage of On-time Usage	Barrier correction, dB(A)	Corrected SWL, dB(A)	Total SWL, dB(A)
Concrete lorry mixer	044	1	109	60%	0	107	108
Poker, vibratory, hand-held (electric)	*	1	102	80%	0	101	

Notes:

SWL = Sound Power Level of a Powered Mechanical Equipment (PME)

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

* = Sound Power Levels of Other Commonly Used PME (source: Guidance Notes for Licence Application in EPD website)

Commonly Use website: http://www.epd.gov.hk/epd/english/application_for_licences/guidance/files/OtherSWLE.pdf

QPME = Quiet Powered Mechanical Equipment (Source: An Administrative System on the Use of QPME in EPD website)

QPME website: http://www.epd.gov.hk/cgi-bin/npg/qpme/search_gen.pl?lang=eng&st=sim&valid=Y

[1] = Dump truck, with grab, (5.5 tonne < gross vehicle weight ≤ 38 tonne)

[2] = Lorry, with crane/grab, (5.5 tonne < gross vehicle weight ≤ 38 tonne)

Table of Predicted Noise Levels (PNL) at Representative NSRs

Construction of CSBCSPS

RNSR ID	Construction Works Involved	Distance of RNSR from Notional Point, m	Unmitigated Sound Power Level, dB(A)	Predicted Noise Level (unmitigated), dB(A)	Mitigated 1 Sound Power Level, dB(A)	Predicted Noise Level (Mitigated 1), dB(A)
OSS One Silver Sea	Sheet Piling	282	116	62	114	60
	Excavation	282	117	63	112	58
	Piling	282	117	63	110	56
	Construction of Substructure/Structure	282	115	61	109	55
	Backfilling	282	118	64	113	59
	E&M Installations	282	114	60	107	53
	Finishing and Landscaping Works	282	115	61	106	52
IH Island Harbourview Tower 10	Sheet Piling	135	116	68	114	66
	Excavation	135	117	69	112	64
	Piling	135	117	69	110	62
	Construction of Substructure/Structure	135	115	67	109	61
	Backfilling	135	118	70	113	65
	E&M Installations	135	114	66	107	59
	Finishing and Landscaping Works	135	115	67	106	58
IH5 Island Harbourview Tower 5	Sheet Piling	275	116	62	114	60
	Excavation	275	117	63	112	58
	Piling	275	117	63	110	56
	Construction of Substructure/Structure	275	115	61	109	55
	Backfilling	275	118	64	113	59
	E&M Installations	275	114	60	107	53
	Finishing and Landscaping Works	275	115	61	106	52
PAC Park Avenue Central Block 1	Sheet Piling	217	116	64	114	62
	Excavation	217	117	65	112	60
	Piling	217	117	65	110	58
	Construction of Substructure/Structure	217	115	63	109	57
	Backfilling	217	118	66	113	61
	E&M Installations	217	114	62	107	55
	Finishing and Landscaping Works	217	115	63	106	54
FR Floriant Rise	Sheet Piling	245	116	63	114	61
	Excavation	245	117	64	112	59
	Piling	245	117	64	110	57
	Construction of Substructure/Structure	245	115	62	109	56
	Backfilling	245	118	65	113	60
	E&M Installations	245	114	61	107	54
	Finishing and Landscaping Works	245	115	62	106	53
OCT Ocean Court	Sheet Piling	328	116	61	114	59
	Excavation	328	117	62	112	57
	Piling	328	117	62	110	55
	Construction of Substructure/Structure	328	115	60	109	54
	Backfilling	328	118	63	113	58
	E&M Installations	328	114	59	107	52
	Finishing and Landscaping Works	328	115	60	106	51
HG Habour Green Tower 1	Sheet Piling	484	116	57	114	55
	Excavation	484	117	58	112	53
	Piling	484	117	58	110	51
	Construction of Substructure/Structure	484	115	56	109	50
	Backfilling	484	118	59	113	54
	E&M Installations	484	114	55	107	48
	Finishing and Landscaping Works	484	115	56	106	47

NOTES:

Mitigation 1 : Use of Quiet Equipment

3 dB(A) façade correction has been included in the Predicted Noise Level

EIAO-TM daytime construction noise standards: residential premises 75 dB(A); educational institution 70 dB(A), (65 dB(A) during examination)

Residential NSR exceedance

Table of Predicted Noise Levels (PNL) at Representative NSRs

Construction of underground DWFI and emergency stormwater bypass culvert

RNSR ID	Construction Works Involved	Distance of RNSR from Notional Point, m	Unmitigated Sound Power Level, dB(A)	Predicted Noise Level (unmitigated), dB(A)	Mitigated 1 Sound Power Level, dB(A)	Predicted Noise Level (Mitigated 1), dB(A)
OSS One Silver Sea	Sheet Piling	282	116	62	114	60
	Excavation	282	117	63	112	58
	Modification Works for Existing Box Culvert	282	114	60	114	60
	Construction of Substructure/Structure	282	115	61	109	55
	Backfilling	282	118	64	113	59
	E&M Installations	282	114	60	107	53
	Finishing and Landscaping Works	282	115	61	106	52
IH Island Harbourview Tower 10	Sheet Piling	135	116	68	114	66
	Excavation	135	117	69	112	64
	Modification Works for Existing Box Culvert	135	114	66	114	66
	Construction of Substructure/Structure	135	115	67	109	61
	Backfilling	135	118	70	113	65
	E&M Installations	135	114	66	107	59
	Finishing and Landscaping Works	135	115	67	106	58
IH5 Island Harbourview Tower 5	Sheet Piling	275	116	62	114	60
	Excavation	275	117	63	112	58
	Modification Works for Existing Box Culvert	275	114	60	114	60
	Construction of Substructure/Structure	275	115	61	109	55
	Backfilling	275	118	64	113	59
	E&M Installations	275	114	60	107	53
	Finishing and Landscaping Works	275	115	61	106	52
PAC Park Avenue Central Block 1	Sheet Piling	217	116	64	114	62
	Excavation	217	117	65	112	60
	Modification Works for Existing Box Culvert	217	114	62	114	62
	Construction of Substructure/Structure	217	115	63	109	57
	Backfilling	217	118	66	113	61
	E&M Installations	217	114	62	107	55
	Finishing and Landscaping Works	217	115	63	106	54
FR Floriant Rise	Sheet Piling	245	116	63	114	61
	Excavation	245	117	64	112	59
	Modification Works for Existing Box Culvert	245	114	61	114	61
	Construction of Substructure/Structure	245	115	62	109	56
	Backfilling	245	118	65	113	60
	E&M Installations	245	114	61	107	54
	Finishing and Landscaping Works	245	115	62	106	53
OCT Ocean Court	Sheet Piling	328	116	61	114	59
	Excavation	328	117	62	112	57
	Modification Works for Existing Box Culvert	328	114	59	114	59
	Construction of Substructure/Structure	328	115	60	109	54
	Backfilling	328	118	63	113	58
	E&M Installations	328	114	59	107	52
	Finishing and Landscaping Works	328	115	60	106	51
HG Habour Green Tower 1	Sheet Piling	484	116	57	114	55
	Excavation	484	117	58	112	53
	Modification Works for Existing Box Culvert	484	114	55	114	55
	Construction of Substructure/Structure	484	115	56	109	50
	Backfilling	484	118	59	113	54
	E&M Installations	484	114	55	107	48
	Finishing and Landscaping Works	484	115	56	106	47

NOTES:

Mitigation 1 : Use of Quiet Equipment

3 dB(A) façade correction has been included in the Predicted Noise Level

EIAO-TM daytime construction noise standards: residential premises 75 dB(A); educational institution 70 dB(A), (65 dB(A) during examination)

Residential NSR exceedance

Table of Predicted Noise Levels (PNL) at Representative NSRs

Construction of Twin Rising Mains

RNSR ID	Construction Works Involved	Distance of RNSR from Notional Point, m	Unmitigated Sound Power Level, dB(A)	Predicted Noise Level (unmitigated), dB(A)	Mitigated 1 Sound Power Level, dB(A)	Predicted Noise Level (Mitigated 1), dB(A)	Mitigated 2 Sound Power Level, dB(A)	Predicted Noise Level (Mitigated 2), dB(A)
OSS One Silver Sea	Surface Breaking	278	121	67	121	67	116	62
	Excavation	278	117	63	112	58		
	Rising Main Laying	278	113	59	108	54		
	Backfilling	278	118	64	113	59		
	Reinstatement	278	113	59	108	54		
IH Island Harbourview Tower 10	Surface Breaking	80	121	78	121	78	116	73
	Excavation	80	117	74	112	69		
	Rising Main Laying	80	113	70	108	65		
	Backfilling	80	118	75	113	70		
	Reinstatement	80	113	70	108	65		
IH5 Island Harbourview Tower 5	Surface Breaking	148	121	73	121	73	116	68
	Excavation	148	117	69	112	64		
	Rising Main Laying	148	113	65	108	60		
	Backfilling	148	118	70	113	65		
	Reinstatement	148	113	65	108	60		
PAC Park Avenue Central Block 1	Surface Breaking	233	121	69	121	69	116	64
	Excavation	233	117	65	112	60		
	Rising Main Laying	233	113	61	108	56		
	Backfilling	233	118	66	113	61		
	Reinstatement	233	113	61	108	56		
FR Floriant Rise	Surface Breaking	205	121	70	121	70	116	65
	Excavation	205	117	66	112	61		
	Rising Main Laying	205	113	62	108	57		
	Backfilling	205	118	67	113	62		
	Reinstatement	205	113	62	108	57		
OCT Ocean Court	Surface Breaking	167	121	72	121	72	116	67
	Excavation	167	117	68	112	63		
	Rising Main Laying	167	113	64	108	59		
	Backfilling	167	118	69	113	64		
	Reinstatement	167	113	64	108	59		
HG Habour Green Tower 1	Surface Breaking	240	121	68	121	68	116	63
	Excavation	240	117	64	112	59		
	Rising Main Laying	240	113	60	108	55		
	Backfilling	240	118	65	113	60		
	Reinstatement	240	113	60	108	55		

NOTES:

Mitigation 1 : Use of Quiet Equipment

Mitigation 2 : Installation of movable noise barrier during surface breaking activity of twin rising mains.

3 dB(A) façade correction has been included in the Predicted Noise Level

EIAO-TM daytime construction noise standards: residential premises 75 dB(A); educational institution 70 dB(A), (65 dB(A) during examination)

Residential NSR exceedance

Table of Predicted Noise Levels (PNL) at Representative NSRs

RNSR ID	Construction Works Items	Distance of RNSR from Notional Point, m	Unmitigated Sound Power Level, dB(A)	Construction Activity with Highest Predicted Noise Level	Predicted Noise Level (unmitigated), dB(A)	Total PNL (unmitigated), dB(A)	Mitigated 1 Sound Power Level, dB(A)	Construction Activity with Highest Predicted Noise Level	Predicted Noise Level (Mitigated 1), dB(A)	Total PNL (Mitigated 1), dB(A)	Mitigated 2 Sound Power Level, dB(A) Note [B]	Construction Activity with Highest Predicted Noise Level	Predicted Noise Level (Mitigated 1), dB(A)	Total PNL (Mitigated 1), dB(A)
OSS	CSBCSPS	282	118 *	Backfilling	64	71	114 **	Sheet piling	60	69	114 **	Sheet piling	60	66
	underground DWFI and emergency stormwater bypass culvert	282	118 *	Backfilling	64		114 **	Modification Works for Existing Box Culvert	60		114 **	Modification Works for Existing Box Culvert	60	
	Twin Rising Mains	278	121 ***	Surface Breaking	67		121 ****	Surface Breaking	67		116 ****	Surface Breaking	62	
	Proposed Road Improvement Works in West Kowloon Reclamation Development Phase I	337	120 #	Pile Caps	64		111 #	See Notes [A]	55		111 #	See Notes [A]	55	
IH	CSBCSPS	135	118 *	Backfilling	70	80	114 **	Sheet piling	66	79	114 **	Sheet piling	66	75
	underground DWFI and emergency stormwater bypass culvert	135	118 *	Backfilling	70		114 **	Modification Works for Existing Box Culvert	66		114 **	Modification Works for Existing Box Culvert	66	
	Twin Rising Mains	80	121 ***	Surface Breaking	78		121 ****	Surface Breaking	78		116 ****	Surface Breaking	73	
	Proposed Road Improvement Works in West Kowloon Reclamation Development Phase I	172	120 #	Pile Caps	70		111 #	See Notes [A]	61		111 #	See Notes [A]	61	
IH5	CSBCSPS	275	118 *	Backfilling	64	74	114 **	Sheet piling	60	73	114 **	Sheet piling	60	69
	underground DWFI and emergency stormwater bypass culvert	275	118 *	Backfilling	64		114 **	Modification Works for Existing Box Culvert	60		114 **	Modification Works for Existing Box Culvert	60	
	Twin Rising Mains	148	121 ***	Surface Breaking	73		121 ****	Surface Breaking	73		116 ****	Surface Breaking	68	
	Proposed Road Improvement Works in West Kowloon Reclamation Development Phase I	392	120 #	Pile Caps	63		111 #	See Notes [A]	54		111 #	See Notes [A]	54	
PAC	CSBCSPS (The Project)	217	118 *	Backfilling	66	74	114 **	Sheet piling	62	71	114 **	Sheet piling	62	68
	underground DWFI and emergency stormwater bypass culvert	217	118 *	Backfilling	66		114 **	Modification Works for Existing Box Culvert	62		114 **	Modification Works for Existing Box Culvert	62	
	Twin Rising Mains	233	121 ***	Surface Breaking	69		121 ****	Surface Breaking	69		116 ****	Surface Breaking	64	
	Proposed Road Improvement Works in West Kowloon Reclamation Development Phase I	171	120 #	Pile Caps	70		111 #	See Notes [A]	61		111 #	See Notes [A]	61	

Table of Predicted Noise Levels (PNL) at Representative NSRs

RNSR ID	Construction Works Items	Distance of RNSR from Notional Point, m	Unmitigated Sound Power Level, dB(A)	Construction Activity with Highest Predicted Noise Level	Predicted Noise Level (unmitigated), dB(A)	Total PNL (unmitigated), dB(A)	Mitigated 1 Sound Power Level, dB(A)	Construction Activity with Highest Predicted Noise Level	Predicted Noise Level (Mitigated 1), dB(A)	Total PNL (Mitigated 1), dB(A)	Mitigated 2 Sound Power Level, dB(A) Note [B]	Construction Activity with Highest Predicted Noise Level	Predicted Noise Level (Mitigated 1), dB(A)	Total PNL (Mitigated 1), dB(A)
FR	CSBCSPS	245	118 *	Backfilling	65	74	114 **	Sheet piling	61	71	114 **	Sheet piling	61	68
	underground DWFI and emergency stormwater bypass culvert	245	118 *	Backfilling	65		114 **	Modification Works for Existing Box Culvert	61		114 **	Modification Works for Existing Box Culvert	61	
	Twin Rising Mains	205	121 ***	Surface Breaking	70		121 ****	Surface Breaking	70		116 ****	Surface Breaking	65	
	Proposed Road Improvement Works in West Kowloon Reclamation Development Phase I	208	120 #	Pile Caps	69		111 #	See Notes [A]	60		111 #	See Notes [A]	60	
OCT	CSBCSPS	328	118 *	Backfilling	63	73	114 **	Sheet piling	59	72	114 **	Sheet piling	59	68
	underground DWFI and emergency stormwater bypass culvert	328	118 *	Backfilling	63		114 **	Modification Works for Existing Box Culvert	59		114 **	Modification Works for Existing Box Culvert	59	
	Twin Rising Mains	167	121 ***	Surface Breaking	72		121 ****	Surface Breaking	72		116 ****	Surface Breaking	67	
	Proposed Road Improvement Works in West Kowloon Reclamation Development Phase I	400	120 #	Pile Caps	63		111 #	See Notes [A]	54		111 #	See Notes [A]	54	
HG	CSBCSPS	484	118 *	Backfilling	59	70	114 **	Sheet piling	55	69	114 **	Sheet piling	55	65
	underground DWFI and emergency stormwater bypass culvert	484	118 *	Backfilling	59		114 **	Modification Works for Existing Box Culvert	55		114 **	Modification Works for Existing Box Culvert	55	
	Twin Rising Mains	240	121 ***	Surface Breaking	68		121 ****	Surface Breaking	68		116 ****	Surface Breaking	63	
	Proposed Road Improvement Works in West Kowloon Reclamation Development Phase I	580	120 #	Pile Caps	60		111 #	See Notes [A]	51		111 #	See Notes [A]	51	

NOTES:

Mitigation 1 : Use of Quiet Equipment

3 dB(A) façade correction has been included in the Predicted Noise Level

EIAO-TM daytime construction noise standards: residential premises 75 dB(A); educational institution 70 dB(A), (65 dB(A) during examination)

*: Noisiest construction activities (unmitigate) is backfilling as the worst case scenario for noise level prediction

**: Noisiest construction activities (Quiet Plant) is sheet piling or modification work of existing box culvert as the worst case scenario for noise level prediction

***: Noisiest construction activities (unmitigate) is surface breaking as the worst case scenario for noise level prediction

****: Noisiest construction activities (movable noise barrier) is surface breaking as the worst case scenario for noise level prediction

#: Noisiest construction activity of Scheme H (Part A) is Pile Caps as the worst case unmitigated scenario for noise level prediction (Agreement No. CE44/2011 (HY) - Proposed Road Improvement Works in West Kowloon Reclamation Development Phase I)

[A] Noisiest construction activities of Scheme H (Part A) are Shifting of WKH and Lin Cheung Road, Piling, Bridge Decks and Road Works which all at 111 dB(A) level as the worst case Mitigated 1 scenario for the noise level prediction (Agreement No. CE44/2011 (HY) - Proposed Road Improvement Works in West Kowloon Reclamation Development Phase I)

[B] Mitigation Measure is only applied to surface breaking during twin rising mains construction

Residential NSR exceedance

Agreement No. CE1/2012(DS) - Construction of Dry Weather Flow Interceptor at Cherry Street Box Culvert and Other Works - Investigation, Design Construction Programme

Stage	Activities	2016											
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
CSBCSPS													
1	Sheet Piling												
2	Excavation												
3	Piling												
4	Construction of Substructure												
5	Backfilling and Extraction of Piles												
6	E&M Installations												
7	Finishing and Landscaping Works												
underground DWFI and emergency stormwater bypass culvert													
1	Sheet Piling												
2	Excavation												
3	Piling												
4	Modification Works for Existing Box Culvert												
5	Construction of Structure												
6	Backfilling and Extraction of Piles												
7	E&M Installations												
8	Finishing and Landscaping Works												
Twin Rising Mains Laying*													

* approximately 10 consecutive work front repeating the following process:

	Rising Main Laying*	days
1 ^Φ	Surface Breaking for Pavement/Road	2
2 ^Φ	Excavation	7
3 ^Φ	Rising Main Laying	5
4 ^Φ	Backfilling	5
5 ^Φ	Reinstatement	5

Φ: Construction activities will not carry out concurrently

Agreement No. CE1/2012(DS) - Construction of Dry Weather Flow Interceptor and Construction Construction Programme

Stage	Activities	2017											
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
CSBCSPS													
1	Sheet Piling												
2	Excavation												
3	Piling												
4	Construction of Substructure												
5	Backfilling and Extraction of Piles												
6	E&M Installations												
7	Finishing and Landscaping Works												
underground DWFI and emergency stormwater bypass culvert													
1	Sheet Piling												
2	Excavation												
3	Piling												
4	Modification Works for Existing Box Culvert												
5	Construction of Structure												
6	Backfilling and Extraction of Piles												
7	E&M Installations												
8	Finishing and Landscaping Works												
Twin Rising Mains Laying*													

* approximately 10 consecutive work front repeating the following process:

	Rising Main Laying*	days
1 ^Φ	Surface Breaking for Pavement/Road	2
2 ^Φ	Excavation	7
3 ^Φ	Rising Main Laying	5
4 ^Φ	Backfilling	5
5 ^Φ	Reinstatement	5

Φ: Construction activities will not carry out concurrently

**Agreement No. CE1/2012(DS) - Construction of Dry Weather Flow Interceptor
Construction Programme**

Stage	Activities	2018											
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
CSBCSPS													
1	Sheet Piling												
2	Excavation												
3	Piling												
4	Construction of Substructure												
5	Backfilling and Extraction of Piles												
6	E&M Installations												
7	Finishing and Landscaping Works												
underground DWFI and emergency stormwater bypass culvert													
1	Sheet Piling												
2	Excavation												
3	Piling												
4	Modification Works for Existing Box Culvert												
5	Construction of Structure												
6	Backfilling and Extraction of Piles												
7	E&M Installations												
8	Finishing and Landscaping Works												
Twin Rising Mains Laying*													

* approximately 10 consecutive work front repeating the following process:

	Rising Main Laying*	days
1 ^Φ	Surface Breaking for Pavement/Road	2
2 ^Φ	Excavation	7
3 ^Φ	Rising Main Laying	5
4 ^Φ	Backfilling	5
5 ^Φ	Reinstatement	5

Φ: Construction activities will not carry out concurrently

**Agreement No. CE1/2012(DS) - Construction of Dry Weather Flow Interceptor
Construction Programme**

Stage	Activities	2019											
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
CSBCSPS													
1	Sheet Piling												
2	Excavation												
3	Piling												
4	Construction of Substructure												
5	Backfilling and Extraction of Piles												
6	E&M Installations	■											
7	Finishing and Landscaping Works		■	■	■	■	■						
underground DWFI and emergency stormwater bypass culvert													
1	Sheet Piling												
2	Excavation												
3	Piling												
4	Modification Works for Existing Box Culvert												
5	Construction of Structure	■	■	■	■	■	■						
6	Backfilling and Extraction of Piles							■	■	■	■	■	■
7	E&M Installations												
8	Finishing and Landscaping Works												
Twin Rising Mains Laying*													

* approximately 10 consecutive work front repeating the following process:

	Rising Main Laying*	days
1 ^Φ	Surface Breaking for Pavement/Road	2
2 ^Φ	Excavation	7
3 ^Φ	Rising Main Laying	5
4 ^Φ	Backfilling	5
5 ^Φ	Reinstatement	5

Φ: Construction activities will not carry out concurrently

**Agreement No. CE1/2012(DS) - Construction of Dry Weather Flow Interceptor
Construction Programme**

Stage	Activities	2020											
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
CSBCSPS													
1	Sheet Piling												
2	Excavation												
3	Piling												
4	Construction of Substructure												
5	Backfilling and Extraction of Piles												
6	E&M Installations												
7	Finishing and Landscaping Works												
underground DWFI and emergency stormwater bypass culvert													
1	Sheet Piling												
2	Excavation												
3	Piling												
4	Modification Works for Existing Box Culvert												
5	Construction of Structure												
6	Backfilling and Extraction of Piles												
7	E&M Installations												
8	Finishing and Landscaping Works												
Twin Rising Mains Laying*													

* approximately 10 consecutive work front repeating the following process:

	Rising Main Laying*	days
1 ^Φ	Surface Breaking for Pavement/Road	2
2 ^Φ	Excavation	7
3 ^Φ	Rising Main Laying	5
4 ^Φ	Backfilling	5
5 ^Φ	Reinstatement	5

Φ: Construction activities will not carry out concurrently

Appendix IIb

Operational Noise Analysis

Operation Noise Impact Assessment

Sound Power Level (unmitigated) of Equipment

Equipment	Number of Equipment	SWL, dB(A)	Tonality Effect	Corrected SWL, dB(A)	Total SWL, dB(A)
CSBCSPS					
Sewage Pumps	2	92	6	101	103
Mechanical Raked Bar Screen	1	89	0	89	
Extraction Fan for Deodourization Unit	1	89	6	95	
Extraction Fan for Ventilation	1	89	6	95	
Overhead Crane for Sewage Pumps	1	88	0	88	
underground DWFI and emergency stormwater bypass culvert					
Electric Actuator for Penstocks	17	78	0	90	90

SWL = Sound Power Level

The estimated sound power level of sewage pump, mechanically raked bar screen and exhaust fans were made reference from the Project Profile for Control of Water Pollution at Jordan Valley Box Culvert - Sewage Pumping Station (JVBCSPS) (EIAO Register No. DIR-180/2009).

The overhead crane shall be used during the maintenance or replacement work only

In accordance with IND-TM, 6 dB(A) for tonality correction was applied to sewage pumps, extraction fan for deodourization unit and extraction fan for ventilation as a conservation approach.

Operation Noise Impact Assessment

Sound Power Noise Level with mitigation measures

Equipment	Number of Equipment	SWL, dB(A)	SWL, dB(A)	Tonality Effect	Screening Barrier / Enclosure Reduction**, dB(A)	Corrected SWL, dB(A)	Total SWL, dB(A)
CSBCSPS							
Sewage Pumps	2	92	95	6	-20	81	89
Mechanical Raked Bar Screen	1	89	89	0	-20	69	
Extraction Fan for Deodourization Unit	1	89	89	6	-10	85	
Extraction Fan for Ventilation	1	89	89	6	-10	85	
Overhead Crane for Sewage Pumps	1	88	88	0	-20	68	
underground DWFI and emergency stormwater bypass culvert							
Electric Actuator for Penstocks	17	78	90	0	0	90	90

Pumps are fully housed in a 200 mm thick reinforced concrete structure with provision of acoustic louvers

** 20 dB(A) reduction from acoustic shielding due to enclosed building design; 10 dB(A) reduction from acoustic louvers

In accordance with IND-TM, 6 dB(A) for tonality correction was applied to sewage pumps, extraction fan for deodourization unit and extraction fan for ventilation as a conservation approach.

SWL = Sound Power Level

Operation Noise Impact Assessment

Predicted Noise Level (PNL) at Noise Sensitive Receivers (unmitigated) during Operational Phase

Noise Sensitive Receivers	Distance, (m)	Total SWL, dB(A)	PNL, dB(A)	Exceed Noise Criteria		(ANL-5) Criteria Daytime*	(ANL-5) Criteria Nighttime*
				Daytime	Nighttime		
CSBCSPS							
OSS	282	103	49	NO	NO	65	55
IH	135	103	55	NO	NO	65	55
IH5	275	103	49	NO	NO	65	55
PAC	234	103	51	NO	NO	65	55
FR	252	103	50	NO	NO	65	55
underground DWFI and emergency stormwater bypass culvert							
OSS	311	90	35	NO	NO	65	55
IH	148	90	42	NO	NO	65	55
IH5	290	90	36	NO	NO	65	55
PAC	217	90	39	NO	NO	65	55
FR	245	90	38	NO	NO	65	55
CSBCSPS, underground DWFI and emergency stormwater bypass culvert							
Overall Noise Impact to OSS			49	NO	NO	65	55
Overall Noise Impact to IH			56	NO	Yes	65	55
Overall Noise Impact to IH5			50	NO	NO	65	55
Overall Noise Impact to PAC			51	NO	NO	65	55
Overall Noise Impact to FR			50	NO	NO	65	55

The operation noise emitted from the CSBCSPS is controlled under the IND-TM. According to the IND-TM Table 2, Area Sensitivity Ratings (ASRs) C ("Area other than those above") is selected to use as the Acceptable Noise Levels (ANLs). With reference to EIAO-TM Annex 5 Table 1A Noise Standards for Planning Purposes, 5 dB(A) below the appropriate ANL shown in Table 2 or background being lower than the ANL by more than 5 dB(A) shall be used for fixed noise source assessment. The NSRs in the vicinity of CSBCSPS are located adjacent West Kowloon Highway, i.e. the study area is defined as ASR"C". According to the Annual Traffic Census 2013, AADT is 73,380. Thus, it is expected that the background noise level will be higher than daytime and night time noise criteria. In accordance with IND-TM Table 2, the ANL for sensitive receivers would be 65dB(A) in the daytime/evening and 55 dB(A) at night.

Operation Noise Impact Assessment

Predicted Noise Level (PNL) at Noise Sensitive Receivers (mitigated) during Operational Phase

Noise Sensitive Receivers	Distance, (m)	Total SWL, dB(A)	PNL, dB(A)	Exceed Noise Criteria		(ANL-5) Criteria Daytime*	(ANL-5) Criteria Nighttime*
				Daytime	Nighttime		
CSBCSPS							
OSS	282	89	35	NO	NO	65	55
IH	135	89	41	NO	NO	65	55
IH5	275	89	35	NO	NO	65	55
PAC	234	89	36	NO	NO	65	55
FR	252	89	36	NO	NO	65	55
underground DWFI and emergency stormwater bypass culvert							
OSS	311	90	35	NO	NO	65	55
IH	148	90	42	NO	NO	65	55
IH5	290	90	36	NO	NO	65	55
PAC	217	90	39	NO	NO	65	55
FR	245	90	38	NO	NO	65	55
CSBCSPS, underground DWFI and emergency stormwater bypass culvert							
Overall Noise Impact to OSS			38	NO	NO	65	55
Overall Noise Impact to IH			45	NO	NO	65	55
Overall Noise Impact to IH5			39	NO	NO	65	55
Overall Noise Impact to PAC			41	NO	NO	65	55
Overall Noise Impact to FR			40	NO	NO	65	55

The operation noise emitted from the CSBCSPS is controlled under the IND-TM. According to the IND-TM Table 2, Area Sensitivity Ratings (ASRs) C ("Area other than those above") is selected to use as the Acceptable Noise Levels (ANLs). With reference to EIAO-TM Annex 5 Table 1A Noise Standards for Planning Purposes, 5 dB(A) below the appropriate ANL shown in Table 2 or background being lower than the ANL by more than 5 dB(A) shall be used for fixed noise source assessment. The NSRs in the vicinity of CSBCSPS are located adjacent West Kowloon Highway, i.e. the study area is defined as ASR"C". According to the Annual Traffic Census 2013, AADT is 73,380. Thus, it is expected that the background noise level will be higher than daytime and night time noise criteria. In accordance with IND-TM Table 2, the ANL for sensitive receivers would be 65dB(A) in the daytime/evening and 55 dB(A) at night.

**APPENDIX III
PAST HISTORY OF LAND USE**



Site Boundary for the Project
本工程項目地界

Date of Photo Taken	API Reference	Flight	Site History
19-May-49	Y01646	8000	Entrance of Yau Ma Tei Typhoon Shelter (Sea) Offshore area

Project
Agreement No. CE 1/2012 (DS) - Construction of Dry Weather Flow Interceptor at Cherry Street Box Culvert and Other Works - Investigation, Design and Construction
 合約編號 CE 1/2012 (DS) 櫻桃街箱形雨水渠旱流截取設施及其他工程 - 勘测研究、設計及建造

Title
Appendix III Past History of Land Use of the Project Area (Sheet 1 of 4)
 附錄三 本工程項目範圍的過往土地用途 (圖一之四)

Prepared
ET

Checked
GC





Site Boundary for the Project
本工程項目地界

Date of Photo Taken	API Reference	Flight	Site History
16-Apr-92	A30379	4000	Reclamation outside Yau Ma Tei Typhoon Shelter commenced from northern and southern end New sea wall is under construction

Project
Agreement No. CE 1/2012 (DS) - Construction of Dry Weather Flow Interceptor at Cherry Street Box Culvert and Other Works - Investigation, Design and Construction
 合約編號 CE 1/2012 (DS) 櫻桃街箱形雨水渠旱流截取設施及其他工程 - 勘测研究、設計及建造

Title
Appendix III Past History of Land Use of the Project Area (Sheet 2 of 4)
 附錄三 本工程項目範圍的過往土地用途 (圖二之四)

Prepared
ET

Checked
GC





WEST KOWLOON 4-8-98 2500' CN20819

Sheet No. 11

Survey & Mapping Office - Hong Kong Government
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Site Boundary for the Project
本工程項目地界

Date of Photo Taken	API Reference	Flight	Site History
08-Apr-98	CN20818	2500	Construction of CSBC is completed Open space after site clearance

Project Agreement No. CE 1/2012 (DS) - Construction of Dry Weather Flow Interceptor at Cherry Street Box Culvert and Other Works - Investigation, Design and Construction 合約編號 CE 1/2012 (DS) 櫻桃街箱形雨水渠旱流截取設施及其他工程 - 勘测研究、設計及建造			
Title Appendix III Past History of Land Use of the Project Area (Sheet 3 of 4) 附錄三 本工程項目範圍的過往土地用途 (圖三之四)		Prepared ET	Checked GC





Site Boundary for the Project
本工程項目地界

Date of Photo Taken	API Reference	Flight	Site History
20-Dec-08	CW84249	2000	Site clearance carried out, an entrance was constructed at the proposed site

Project
Agreement No. CE 1/2012 (DS) - Construction of Dry Weather Flow Interceptor at Cherry Street Box Culvert and Other Works - Investigation, Design and Construction

合約編號 CE 1/2012 (DS) 櫻桃街箱形雨水渠旱流截取設施及其他工程 - 勘测研究、設計及建造

Title
Appendix III Past History of Land Use of the Project Area (Sheet 4 of 4)
 附錄三 本工程項目範圍的過往土地用途 (圖四之四)

Prepared
ET

Checked
GC



**APPENDIX IV
TREE INFORMATION**

項目名稱: 顧問合約編號CE 1/2012 (DS) 櫻桃街箱形雨水渠旱流截取設施及其他工程 - 勘測研究、設計及建造
Project Name: Agreement No. CE 1/2012 (DS) - Construction of Dry Weather Flow Interceptor at Cherry Street Box Culvert and Other Works - Investigation, Design and Construction

項目編號 (Project No.): 382956

評估日期 (Date): 2013 年1月 (January 2013)

Tree Survey Schedule
樹木調查表

Tree No. 樹木編號	Tree Species (Botanical Name) 樹木品種學名	Tree Size 樹木大小			Remarks 備註
		Tree Height (m米) 樹木高度	Tree Crown Spread (m米) 樹冠濶度	Diameter Breast Height (DBH) (m米) 胸徑	
T1	<i>Leucaena leucocephala</i> (銀合歡)	7.0	4.0	0.14	within CSBCSPS area
T2	<i>Leucaena leucocephala</i> (銀合歡)	5.0	3.0	0.12	within CSBCSPS area
T3	<i>Leucaena leucocephala</i> (銀合歡)	8.0	6.0	0.17	within CSBCSPS area
T4	<i>Leucaena leucocephala</i> (銀合歡)	4.0	5.0	0.13	Outside CSBCSPS area
T5	<i>Leucaena leucocephala</i> (銀合歡)	8.0	7.0	0.21	Outside CSBCSPS area
T6	<i>Leucaena leucocephala</i> (銀合歡)	12.0	10.0	0.28	Outside CSBCSPS area
T7	<i>Leucaena leucocephala</i> (銀合歡)	4.0	4.0	0.10	Outside CSBCSPS area
T8	<i>Leucaena leucocephala</i> (銀合歡)	5.0	5.0	0.16	Outside CSBCSPS area
T9	<i>Leucaena leucocephala</i> (銀合歡)	4.5	5.0	0.12	Outside CSBCSPS area
T10	<i>Leucaena leucocephala</i> (銀合歡)	13.0	8.0	0.41	Outside CSBCSPS area
T11	<i>Leucaena leucocephala</i> (銀合歡)	6.0	4.0	0.10	Outside CSBCSPS area
T12	<i>Leucaena leucocephala</i> (銀合歡)	14.0	5.0	0.18	Outside CSBCSPS area
T13	<i>Leucaena leucocephala</i> (銀合歡)	13.0	8.0	0.21	Outside CSBCSPS area
T14	<i>Melia azedarach</i> (苦楝)	3.5	2.5	0.10	Outside CSBCSPS area

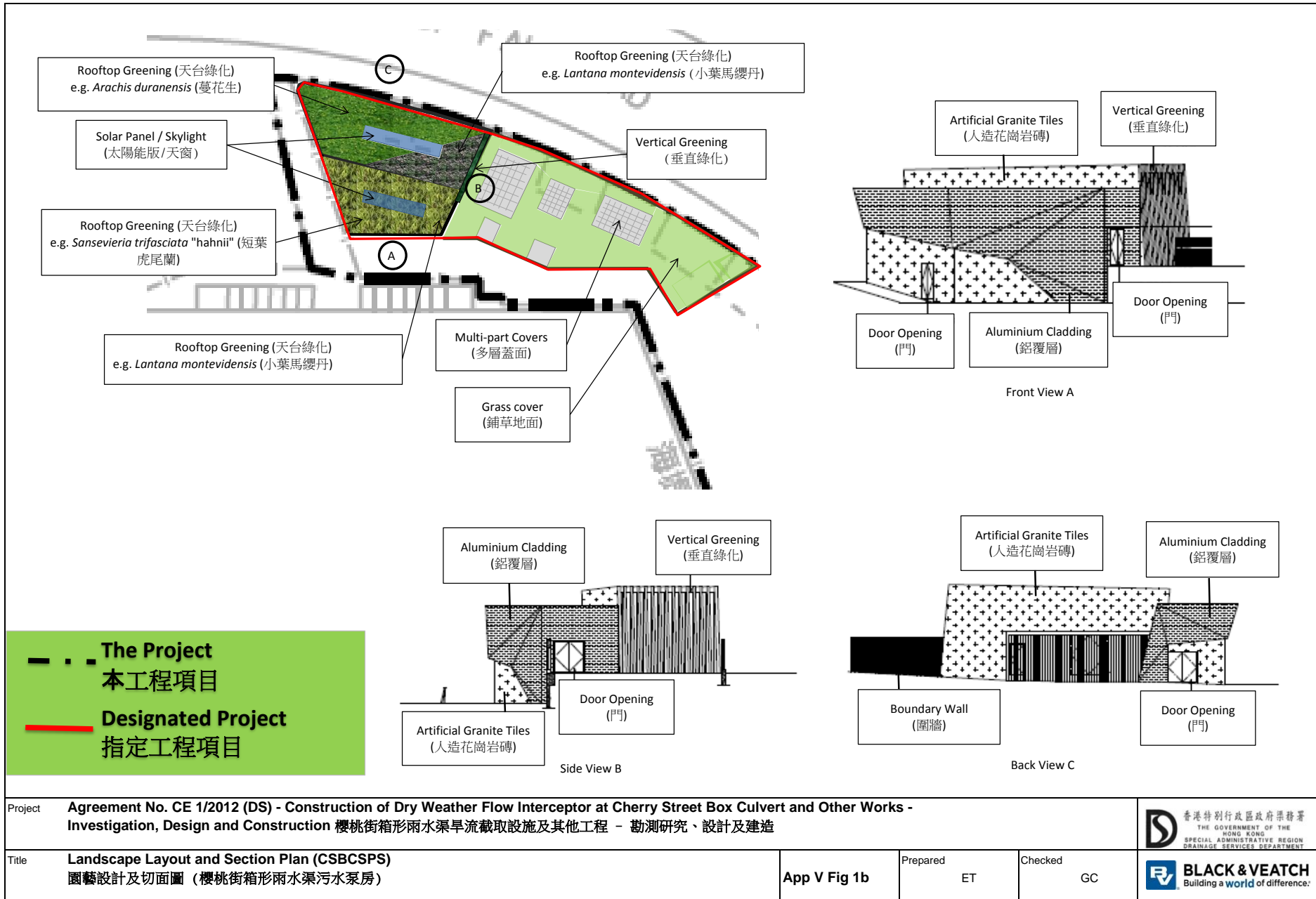
Summary: 14 trees recommended for Felling

總結: 建議採伐14棵樹木

**APPENDIX V
PERSPECTIVE VIEW OF THE
PROJECT WITH LANDSCAPE
AND VISUAL MITIGATION
MEASURES**



Project		Agreement No. CE 1/2012 (DS) - Construction of Dry Weather Flow Interceptor at Cherry Street Box Culvert and Other Works - Investigation, Design and Construction 櫻桃街箱形雨水渠旱流截取設施及其他工程 - 勘测研究、設計及建造				
Title	Landscape Layout Plan 園藝設計圖	App V Fig 1a	Prepared ET	Checked GC		



Project **Agreement No. CE 1/2012 (DS) - Construction of Dry Weather Flow Interceptor at Cherry Street Box Culvert and Other Works - Investigation, Design and Construction 櫻桃街箱形雨水渠旱流截取設施及其他工程 - 勘测研究、設計及建造**

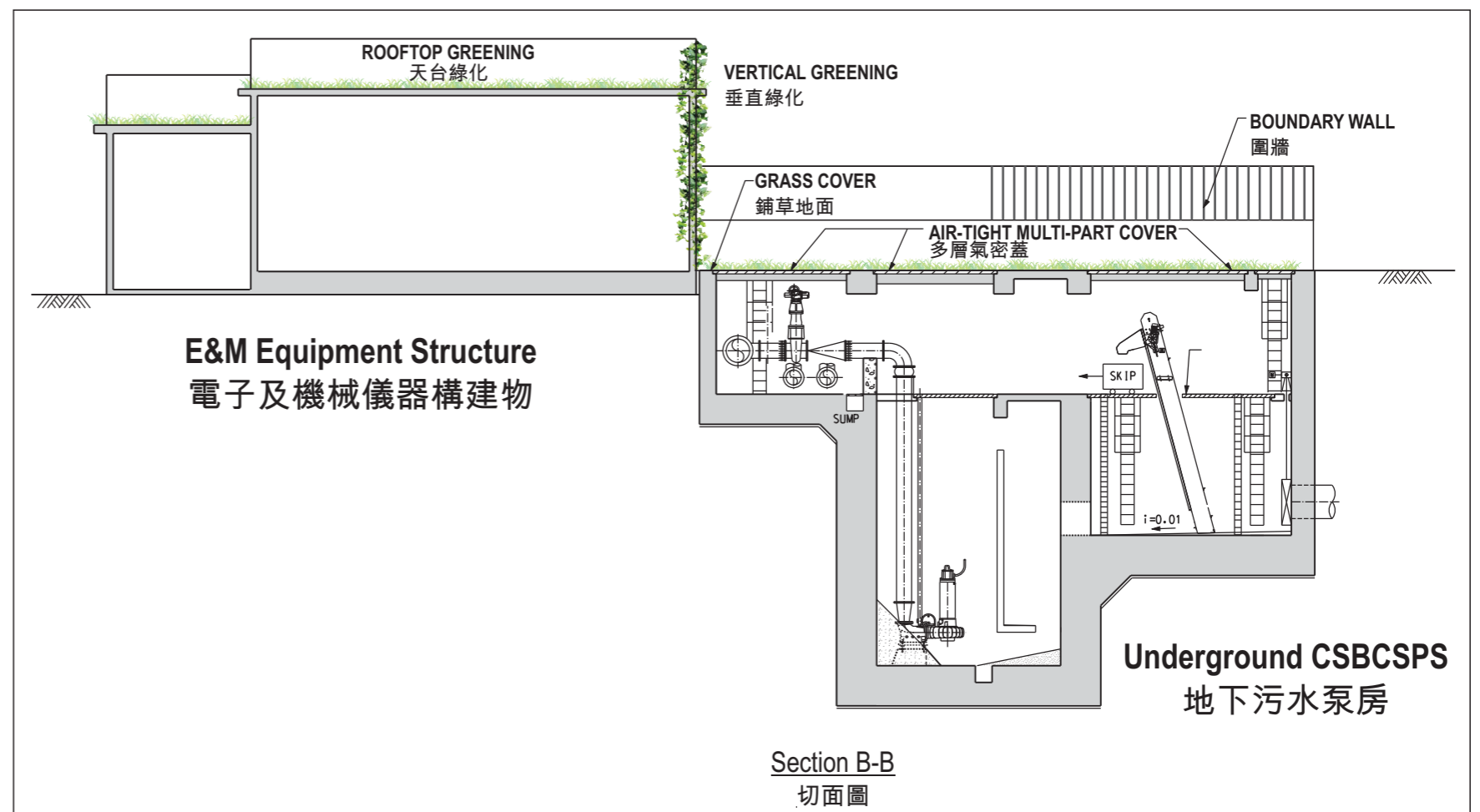
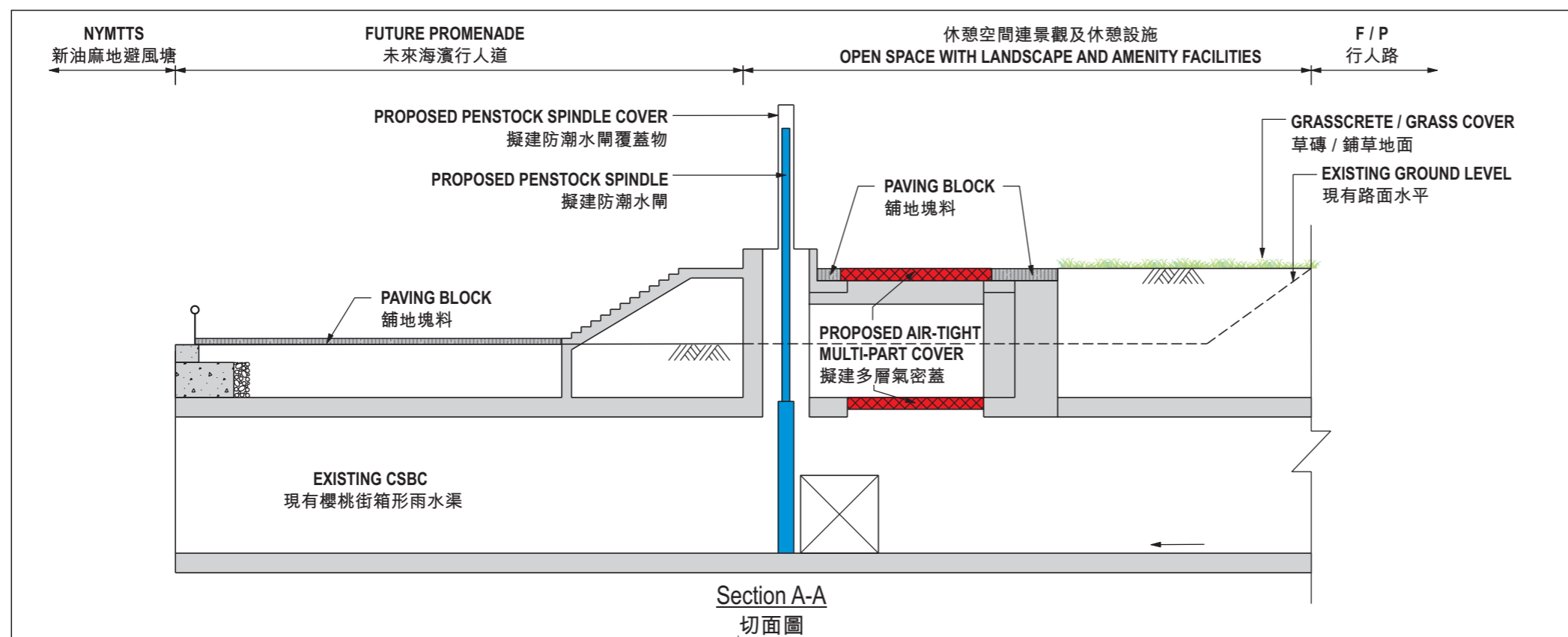


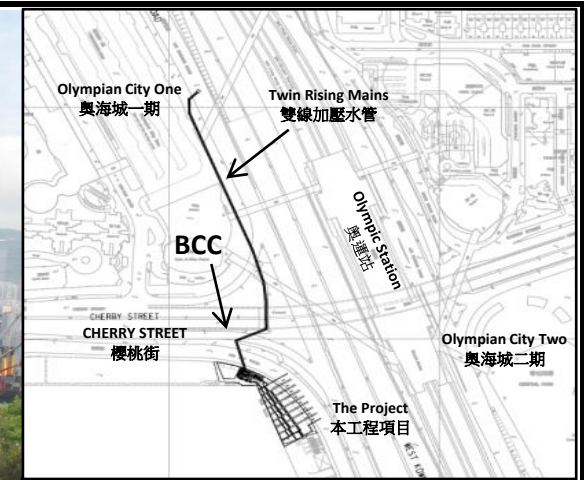
Title **Landscape Layout and Section Plan (CSBCSPS) 園藝設計及切面圖 (櫻桃街箱形雨水渠污水泵房)**

App V Fig 1b

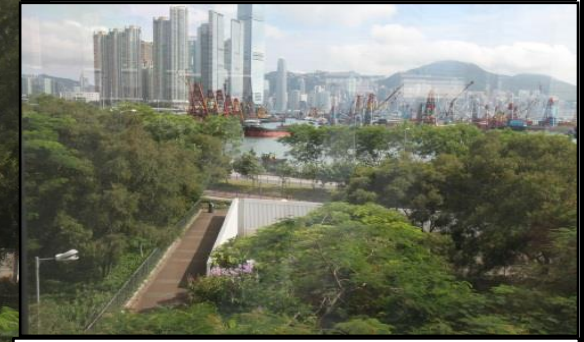
Prepared ET
 Checked GC







Location Plan
位置圖



Existing View from BCC
從中國銀行中心看到的現有景觀

Agreement No. CE 1/2012 (DS) - Construction of Dry Weather Flow Interceptor at Cherry Street Box Culvert and Other Works - Investigation, Design and Construction 櫻桃街箱形雨水渠旱流截取設施及其他工程 - 勘测研究、設計及建造



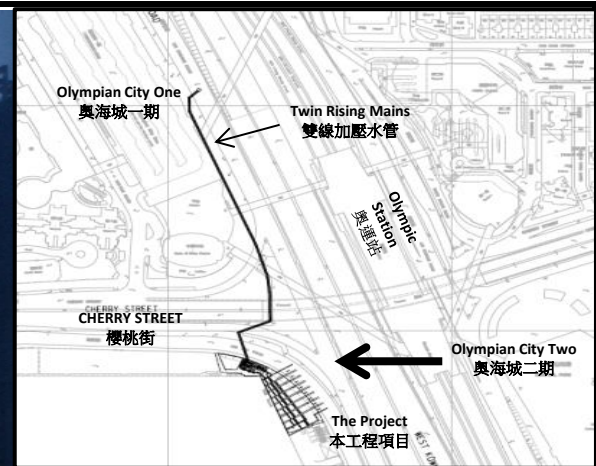
Perspective Views from Existing VSRs (for 10 years) - View From Bank of China Centre (BCC)
從現有視覺敏感受體(中國銀行中心)看到的透視圖(10年後)

Appendix V
Fig 1d (Sheet 1 of 4)





VIEW FROM OC II



Location Plan
位置圖



Existing View from OCII
從奧海城二期看到的現有景觀

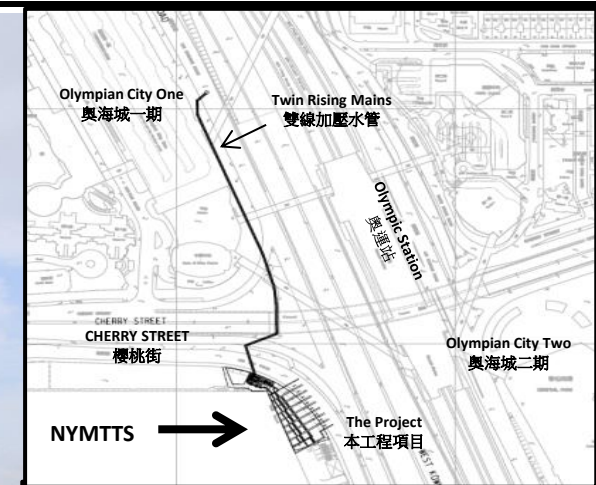
Agreement No. CE 1/2012 (DS) - Construction of Dry Weather Flow Interceptor at Cherry Street Box Culvert and Other Works - Investigation, Design and Construction 櫻桃街箱形雨水渠旱流截取設施及其他工程 - 勘測研究、設計及建造



Perspective Views from Existing VSRs (for 10 years) - View From Olympian City Two (OC II)
從現有視覺敏感受體(奧海城二期)看到的透視圖(10年後)

Appendix V
Fig 1d (Sheet 2 of 4)





Location Plan
位置圖



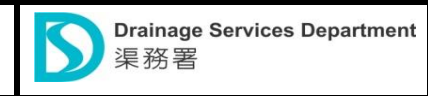
Existing View from New Yau Ma Tei Typhoon Shelter
從新油麻地避風塘看到的現有景觀

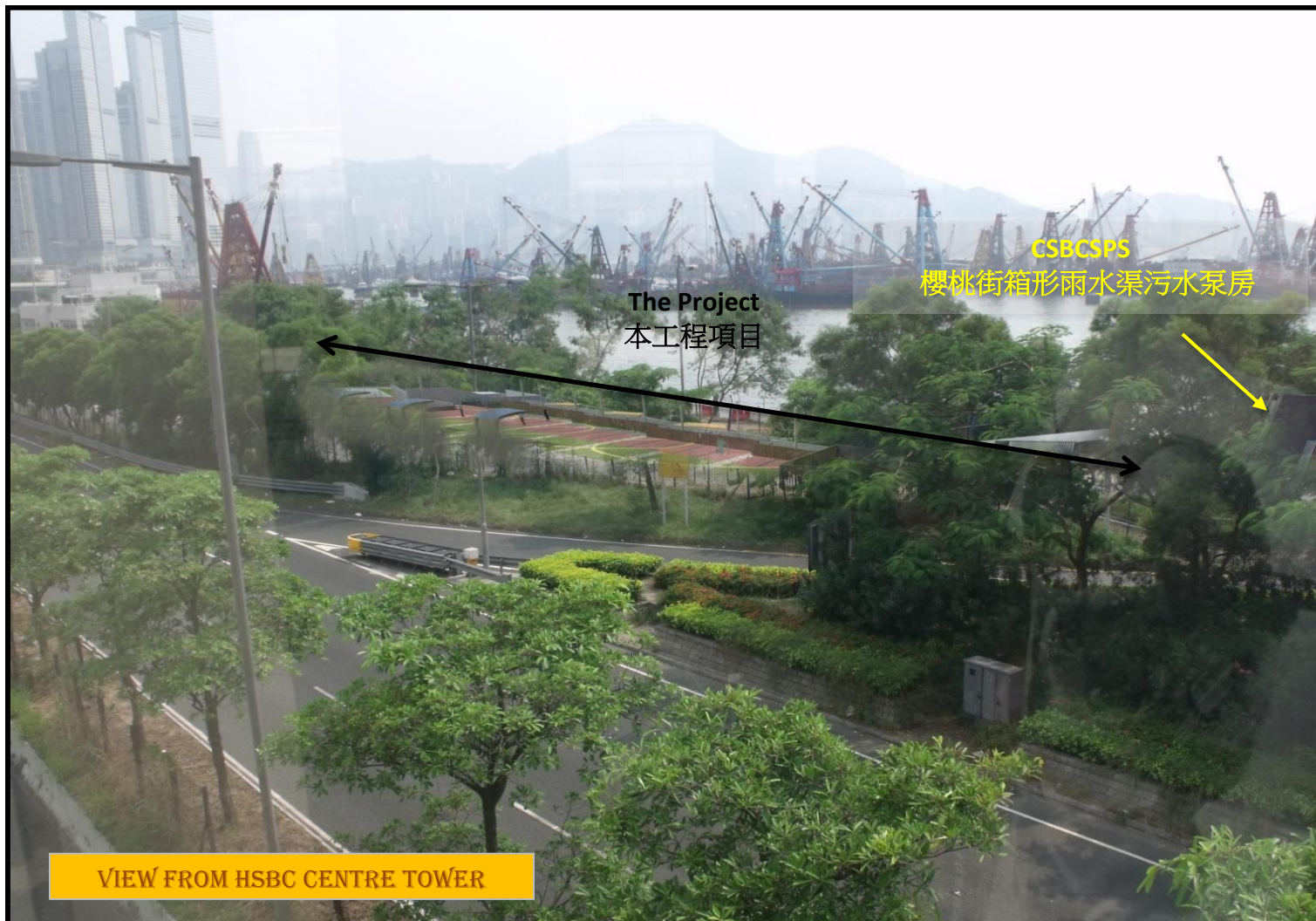
Agreement No. CE 1/2012 (DS) - Construction of Dry Weather Flow Interceptor at Cherry Street Box Culvert and Other Works - Investigation, Design and Construction 櫻桃街箱形雨水渠旱流截取設施及其他工程 - 勘测研究、設計及建造



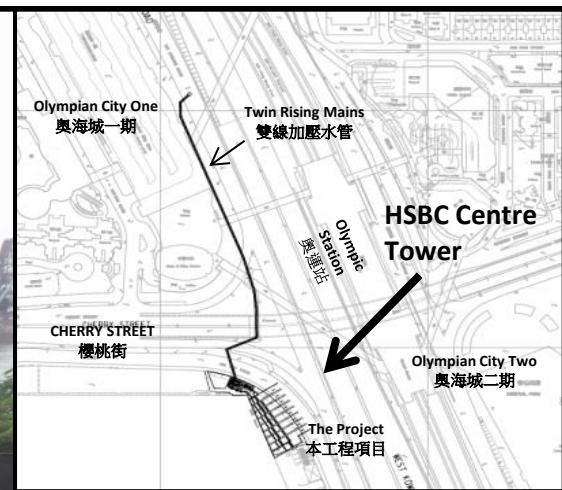
Perspective Views from Existing VSRs (for 10 years) - View From New Yau Ma Tei Typhoon Shelter (NYMTTS)
從現有視覺敏感受體(新油麻地避風塘)看到的透視圖(10年後)

Appendix V
Fig 1d (Sheet 3 of 4)





VIEW FROM HSBC CENTRE TOWER



Location Plan 位置圖



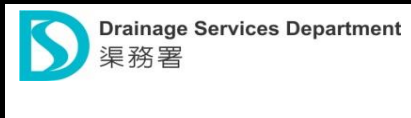
Existing View from HSBC Centre Tower
從滙豐中心看到的現有景觀

Agreement No. CE 1/2012 (DS) - Construction of Dry Weather Flow Interceptor at Cherry Street Box Culvert and Other Works - Investigation, Design and Construction 櫻桃街箱形雨水渠旱流截取設施及其他工程 - 勘测研究、設計及建造



Perspective Views from Existing VSRs (for 10 years) - View From HSBC Centre Tower
從現有視覺敏感受體(滙豐中心)看到的透視圖(10年後)

Appendix V
Fig 1d (Sheet 4 of 4)



Trees



Liquidambar formosana (楓香)

Groundcovers





Arachis duranensis (蔓花生)



Lantana montevidensis (小葉馬纓丹)



Sansevieria trifasciata "hahnii" (短葉虎尾蘭)

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Title	Planting Images of Proposed Trees and Groundcovers 植物圖像	Figure App V Fig 1e	Prepared ET	Checked GC	 BLACK & VEATCH Building a world of difference.