

# Task Force on Harbourfront Developments on Hong Kong Island

For discussion  
on 1 December 2022

TFHK/05/2022

## Conceptual Design of Dry Weather Flow Interceptors at Wan Chai East, Causeway Bay and Shau Kei Wan

### PURPOSE

This paper seeks Members' views on the conceptual design of the Dry Weather Flow Interceptors (DWFIs) at Wan Chai East, Causeway Bay and Shau Kei Wan.

### BACKGROUND

2. The Government has been striving to enhance the Victoria Harbour waterfronts, and develop new promenades and open space. In the densely populated old urban districts on both sides of Victoria Harbour, due to vibrant city activities, some polluted surface run-off will inevitably drain into the harbour via the stormwater drainage system and affect the quality of the near-shore waters. The non-point pollution sources of surface run-off are extensive, including roadside wet markets, outdoor eateries and various cleaning activities in public places and back alleys etc. Besides, misconnection of foul sewers from old buildings to stormwater drainage system may discharge sewage into the stormwater drainage system, hence affecting the coastal water quality and environment of Victoria Harbour.

3. To improve the water quality and alleviate odour nuisance at the waterfront of Wan Chai East, Causeway Bay and Shau Kei Wan, Drainage Services Department (DSD) is planning to construct DWFIs each at Wan Chai East, Causeway Bay and Shau Kei Wan. The proposed locations are indicated in **Annex A**.

4. Upon completion of the DWFIs, the coastal water quality and the general environment at Wan Chai East, Causeway Bay and Shau Kei Wan waterfront will be improved.

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## SCOPE OF WORKS

5. The proposed scope of works comprises the following –
- (a) Wan Chai East DWFI**
    - (i) Construction of a DWFI, including a filtering station, a flow interception device (FID) with automatic penstocks;
    - (ii) Construction of an underground pumping station and associated electrical and mechanical (E&M) kiosk;
    - (iii) Construction of an underground bypass box culvert and associated pipelines; and
    - (iv) Ancillary works including landscaping works, aesthetic works and minor works.
  - (b) Causeway Bay DWFI**
    - (i) Construction of a DWFI, including a filtering station, and a FID with automatic penstocks;
    - (ii) Construction of an underground bypass box culvert and associated pipelines; and
    - (iii) Ancillary works including landscaping works, aesthetic works and minor works.
  - (c) Shau Kei Wan DWFI**
    - (i) Construction of a DWFI, including a filtering station, and four FIDs each with automatic penstocks and an E&M kiosk. The filtering station and a FID at Oi Tak Street Box culvert are located outside the Harbourfront Area;
    - (ii) Construction of four underground bypass box culverts and associated pipelines; and

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- (iii) Ancillary works including landscaping works, aesthetic works and minor works.

## **SITE SELECTION**

6. FID is an essential component in the DWFI operating system. It must be located directly above the downstream section near the outfall of the existing box culvert, in order to optimize the interception efficiency. The intercepted dry weather flow (DWF) will then be conveyed to the filtering station for mechanical filtering via interception pipelines.

7. Wan Chai East, Causeway Bay and Shau Kei Wan are dense urban areas where land availability is a critical issue for the proposed DWFI and associated facilities.

8. With constraints identified for the proposed Wan Chai East DWFI project, portion of Tunnel Approach Rest Garden (TARG) and a government land GLA-THK 4EHGS2016\_11A<sup>1</sup> at the corner of Wan Shing Street and Hung Hing Road were selected. The edge area of Victoria Park was selected for the proposed Causeway Bay DWFI project. For the proposed Shau Kei Wan DWFI project, portion of GLA-HK 1055 (Aldrich Bay Park), GLA-HK 920 (Aldrich Bay Promenade) and EHX-550 (existing short-tenancy carpark) were selected.

## **CONCEPTUAL DESIGN OF WAN CHAI EAST DWFI**

### **Outline Zoning Plan**

9. According to the Approved Wan Chai North OZP No. S/H25/4, the proposed filtering station will fall within "Government,

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<sup>1</sup> At present, the government has planned to set up a parking area for coaches at this government land on Wan Shing Street. In order to make good use of land resources, we adopt the initiative of "single site, multiple use" for building the filtering station on top of the coach parking area.

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Institution or Community (2)” (“G/IC(2)”) subject to a maximum building height of 20mPD. The filter station is regarded as “Public Utility Installation (PUI)”, where the use of PUI is always permitted within the “G/IC” zone. Planning permission is not required. Whilst for the site of the FID, the underground pumping station and the associated E&M kiosk as well as the underground bypass box culvert at the TARG is zoned as “Other Specified Uses (Amenity Area)” (“OU(A)”) on the Wan Chai North Outline Zoning Plan (OZP) No. S/H25/4, a planning permission under Section 16 under Town Planning Ordinance (S16 Application) will be required for the use of “PUI”.

## **Aesthetic Design**

10. A two-storey filtering station is designed to well integrate with the surroundings and hence the building façade will adopt the wavy patterns echoing to the Wan Chai harbourfront environment and align the language within this vernacular area. About 700 m<sup>2</sup> footprint of filtering station will be constructed at the corner lot of Hung Hing Road and Wan Shing Street. The building height will be at approximately 19mPD including about 5.5m height clearance on the ground floor for the co-use with the coach park, with a basement approximately 7m below ground level.

11. The FID is proposed to intercept the DWF at the existing Wan Chai East Box Culvert box culvert underneath the TARG. Double-leaf penstock will be adopted to reduce the structure height above ground. To further minimize the visual impact, the FID is designed to form part of the park by covering it up with planter features integrated with shaded seating bench for blending in with the garden environment. The pumping station will be housed at the underground with only a small E&M kiosk at the above-ground due to operation and maintenance need.

12. The preliminary architectural and landscaping design of Wan Chai East DWFI filtering station and FID is shown in **Annex B**.

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## CONCEPTUAL DESIGN OF CAUSEWAY BAY DWFI

### Outline Zoning Plan

13. According to the Approved North Point Outline Zoning Plan (OZP) No. S/H8/26, the sites for filtering station, FID, and underground bypass box culvert at Causeway Bay are zoned as “Open Space” (“O”). A planning permission under Section 16 under Town Planning Ordinance (S16 Application) will be required for the use of “PUI”. Nevertheless, the area to be occupied by the filtering station and FID will be kept to the minimum and open space will be provided as much as possible.

### Aesthetic Design

14. A single storey filtering station with a footprint of about 650 m<sup>2</sup> will be constructed at the edge of Victoria Park. The main roof will be approximately 7m above ground, with a 5m tall machine house above the main roof. The basement will be approximately 7m below ground.

15. The majority of DWFI components will be placed underground. Only flood sensitive E&M components for the filtering station, including transformer room, switch room and deodorization room, and upper portion of penstocks of the FID will be located above ground level due to operation and maintenance needs. For these above-ground structures, minimalist approach will be applied to blend the design with the surrounding areas of Victoria Park.

16. The preliminary architectural and landscaping design of Causeway Bay DWFI filtering station and FID is shown in **Annex C**.

## CONCEPTUAL DESIGN OF SHAU KEI WAN DWFI

### Outline Zoning Plan

17. According to the Approved Shau Kei Wan Outline Zoning Plan (OZP) No. S/H9/18, the sites for filtering station, FIDs, E&M

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kiosks and underground bypass box culverts at Shau Kei Wan are zoned as “Open Space” (“O”). Planning permissions under S16 Application will be required for the use of “PUI”. Nevertheless, the above area to be occupied by the filtering station, FIDs and E&M kiosks will be kept to the minimum and open space will be provided as much as possible.

## **Aesthetic Design**

18. A single storey filtering station with a footprint of about 720 m<sup>2</sup> will be constructed at the western portion of Hing Man Street Carpark. The building height will be approximately 8m tall, with a basement approximately 7m below ground level.

19. The majority of DWFI components will be placed underground. Only flood sensitive E&M components for the filtering station, including transformer room, switch room and deodorization room, and upper portion of penstocks of the FIDs will be located above ground level due to operation and maintenance needs. For these above-ground structures, minimalist approach will be applied to blend the design with surrounding areas, such as the Aldrich Bay Park and Aldrich Bay Promenade.

20. The preliminary architectural and landscaping design of Shau Kei Wan DWFI filtering station and FID is shown in **Annex D**.

## **ENVIRONMENTAL MITIGATION MEASURES**

### **Construction Stage**

21. Dust suppression measures such as water spraying and tarpaulin covering for excavated materials would be implemented before disposal.

22. Noise mitigation measures such as adoption of quiet Powered Mechanical Equipment (PME) and movable noise barriers would be implemented to minimize noise impacts on the surrounding.

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## Operation Stage

23. All generated wastes would be properly packed, covered and handled within the filtering station. The loading/unloading area for dump trucks would be located within the enclosed filtering station and equipped with deodourization unit to minimize the potential odour leakage.

24. To minimize potential noise impact due to the operation of the filtering station and FID, the mechanical screens and pump sets would be placed at underground and housed in filtering station with soundproof door.

## HARBOUR PLANNING PRINCIPLES

25. We consider that the proposal aligns with the Harbour Planning Principles in the following aspects –

### **(a) Preserving Victoria Harbour and Sustainable Development**

The purpose of the DWFI projects is to reduce the amount of pollutants discharging into Victoria Harbour and to alleviate the visual and odour problems by filtering the contaminated dry weather flows before discharging into Victoria Harbour.

Upon completion of the DWFIs, the near-shore water quality and the general environment of Victoria Harbour along Wan Chai East, Causeway Bay and Shau Kei Wan Promenades will be enhanced. Victoria Harbour will be protected and preserved for Hong Kong people and visitors as a natural public asset.

### **(b) Integrated Planning and Stakeholder Engagement**

The projects will integrate seamlessly with the adjacent neighbourhood, especially the Victoria Park, Aldrich Bay

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Park, Aldrich Bay Promenade, Wan Chai promenade and the TARG. Close liaison has been maintained with the Leisure and Cultural Services Department (LCSD) for planning and design of the DWFIs and landscaping to optimize the open space.

## **(c) Public Enjoyment**

We have critically reviewed the possibility of reducing the footprint and height of the above-ground features, in order to maximize opportunities for public enjoyment. Minimized land requirement is one of our important design considerations. The footprints of the DWFIs will be the minimum areas required taking into account functional, operation and maintenance requirements.

Under the Wan Chai East DWFI, the FID in TARG will be covered up by soft landscape to screen out the hardcore installations. In addition to the landscape feature, the project will provide additional sheltered seating area in the garden. Injection of some green feature and fun gadgets would be proposed, like the solar panel to support lighting, charging mobile devices, and installing selfie stand, table, cup stands, etc. to enhance the public enjoyment. For the filtering station, planting at the boundary of the coach park area will be proposed to soften the visual impact and enhance the walking experience at Wan Shing Street.

Under the Causeway Bay DWFI project, we will provide flowering trees in addition to the compensatory trees planting in Victoria Park for public enjoyment.

## **(d) Vibrant Harbour**

The aesthetic design of the DWFIs would be in harmony with the adjacent Victoria Park, Aldrich Bay Park, and Aldrich Bay Promenade, Wan Chai promenade and the TARG. We will keep close liaison with LCSD so as to



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achieve a harmonic design of the DWFIs and ancillary works to integrate with the surrounding environment.

## **PUBLIC CONSULTATION**

### **Wan Chai East DWFI**

26. We consulted the Development, Planning & Transport Committee of Wan Chai District Council on the layout of Wan Chai East DWFI project on 22 November 2022.

### **Causeway Bay DWFI**

27. We consulted the Development, Planning and Transport Committee under Wan Chai District Council on the layout of Causeway Bay DWFI project in July 2022. The committee have no adverse comment on the conceptual design of the DWFI. In addition, we consulted Wan Chai East Area Committee (WCEAC), the Incorporated Owners of Victoria Park Mansion, the Incorporated Owners of Chesterfield Mansion and the shops in the vicinity in November 2022. WCEAC had no adverse comment on the conceptual design of the DWFI.

### **Shau Kei Wan DWFI**

28. We will consult the Eastern District Council in the 1<sup>st</sup> quarter of 2023. Their views will be incorporated to the design of the DWFI.

## **PROGRAMME**

29. For Causeway Bay DWFI Project, it is anticipated to commence in the 3<sup>rd</sup> quarter of 2023 for completion by end of 2026.

30. For Wan Chai East and Shau Kei Wan DWFI Projects, it is anticipated to commence the works in the 3<sup>rd</sup> quarter of 2024 for completion in the 3<sup>rd</sup> quarter of 2028.

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## **ADVICE SOUGHT**

31. Members are invited to give views on the conceptual design of the three DWFIs.

## **APPENDICES**

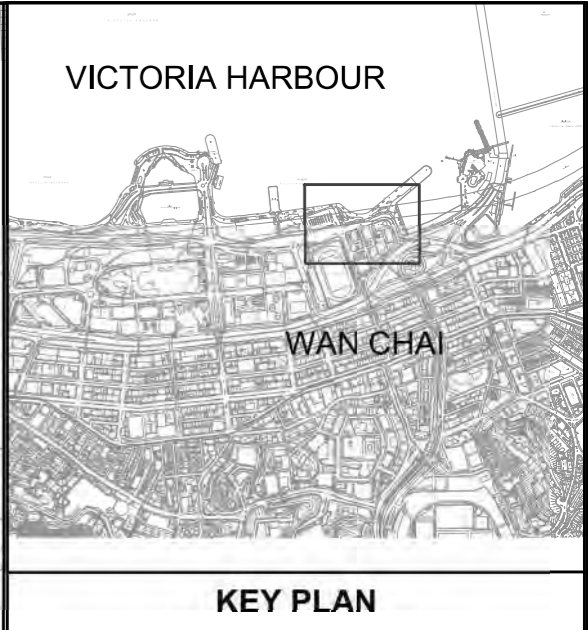
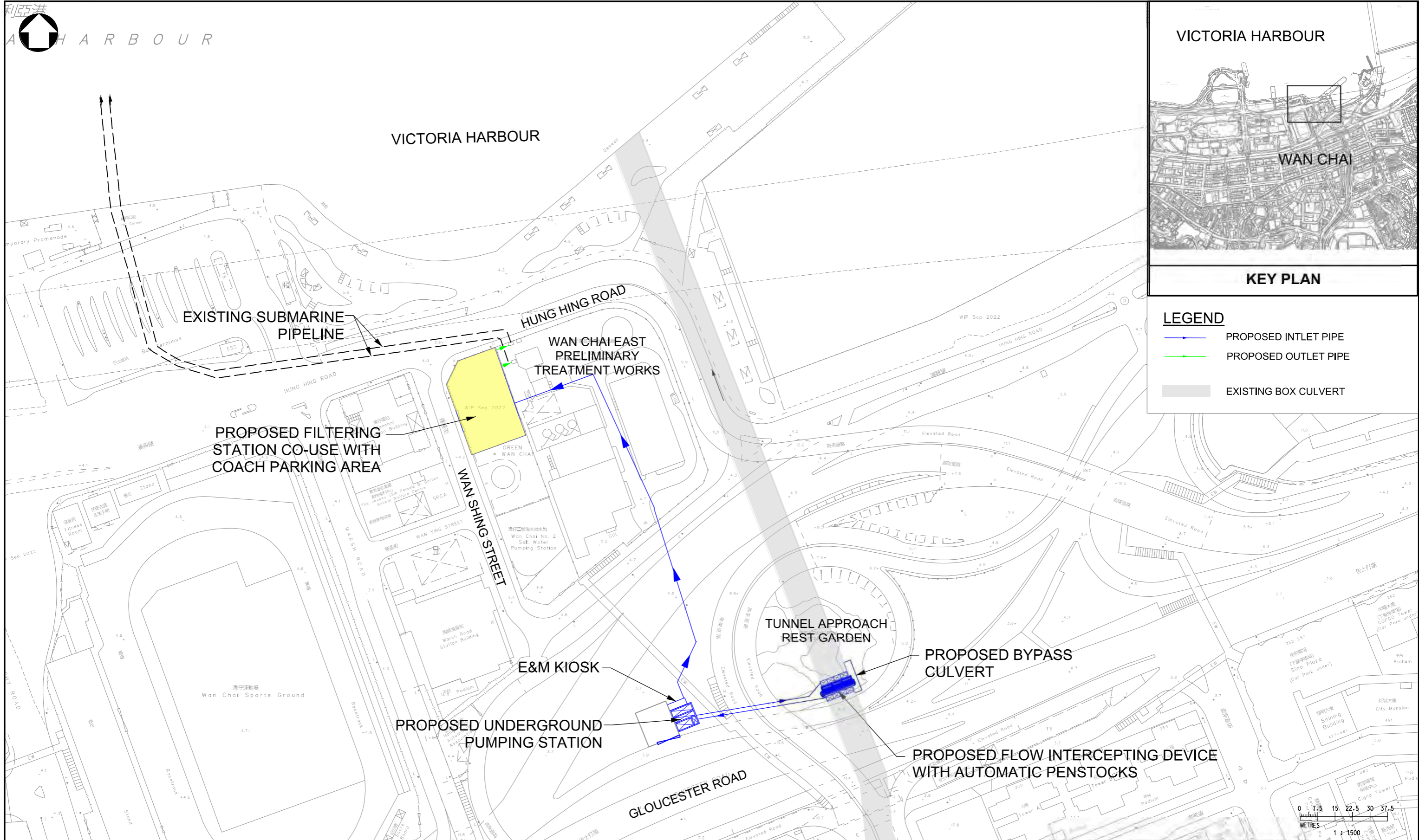
**Annex A** Location Plans

**Annex B** Architectural and Landscaping Conceptual Design of Wan Chai East DWFI

**Annex C** Architectural and Landscaping Conceptual Design of Causeway Bay DWFI

**Annex D** Architectural and Landscaping Conceptual Design of Shau Kei Wan DWFI

**Drainage Services Department  
November 2022**



**LEGEND**

- > PROPOSED INTLET PIPE
- > PROPOSED OUTLET PIPE
- █ EXISTING BOX CULVERT

DRAWING TITLE:

## LOCATION PLAN OF PROPOSED DRY WEATHER FLOW INTERCEPTOR AT WAN CHAI EAST

系統管理部  
SYSTEM MANAGEMENT DIVISION

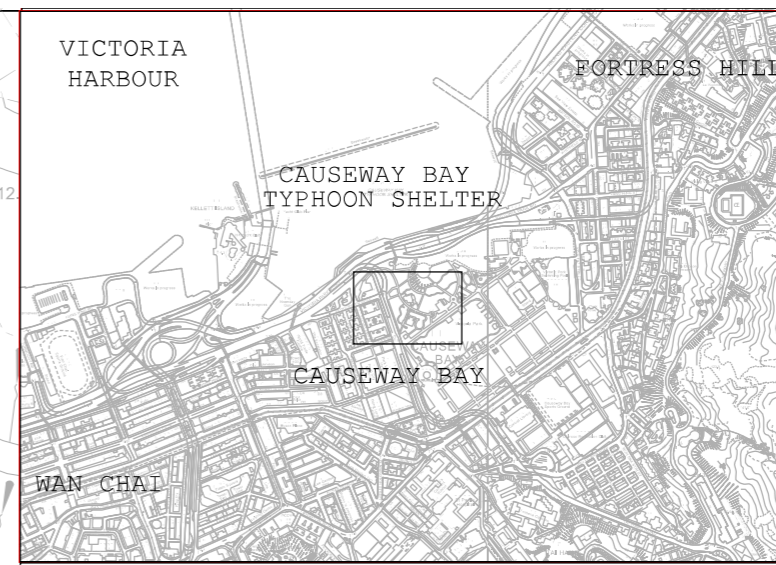
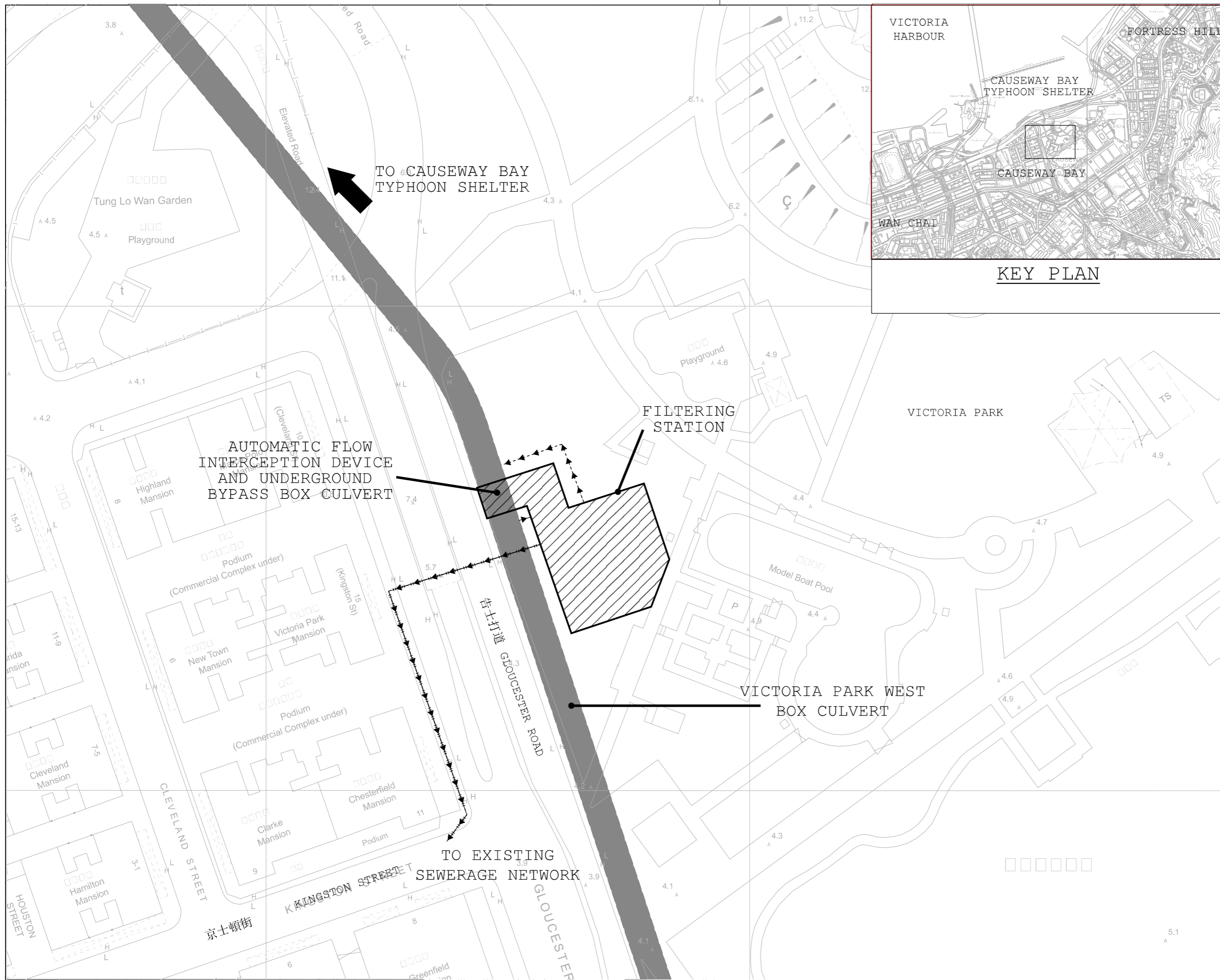
香港特別行政區政府渠務署  
DRAINAGE SERVICES DEPARTMENT  
GOVERNMENT OF THE HONG KONG  
SPECIAL ADMINISTRATIVE REGION

SCALE:  
**1:1500 (A3)**

DATE:  
09 NOV 2022

DRAWING NO:  
**ANNEX A |**





KEY PLAN

- LEGEND :
- PROPOSED DRY WEATHER FLOW INTERCEPTOR
  - PROPOSED INTERCEPTION PIPE
  - PROPOSED FILTERED WATER PIPE
  - PROPOSED FOUL WATER PIPE

no.	date	description	initial
REVISION			
		name	date
drawn			
checked			
approved			

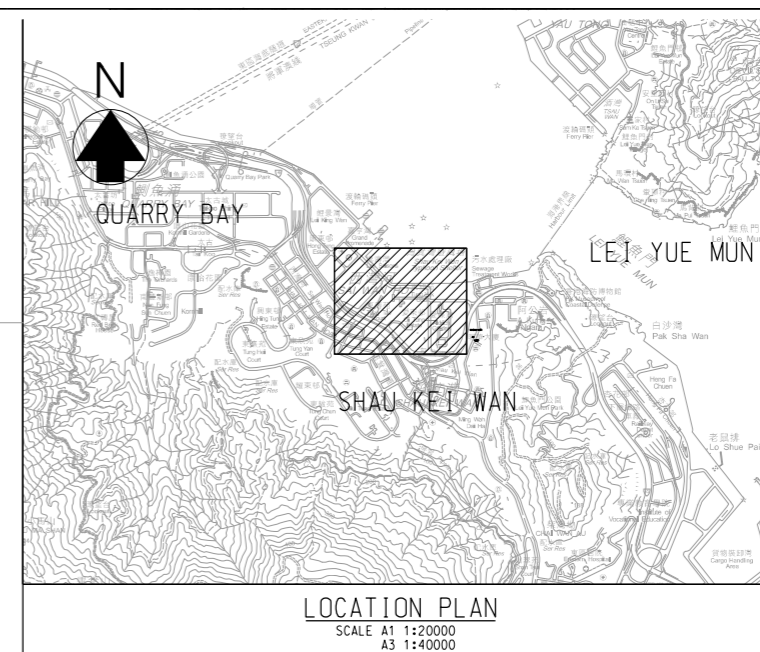
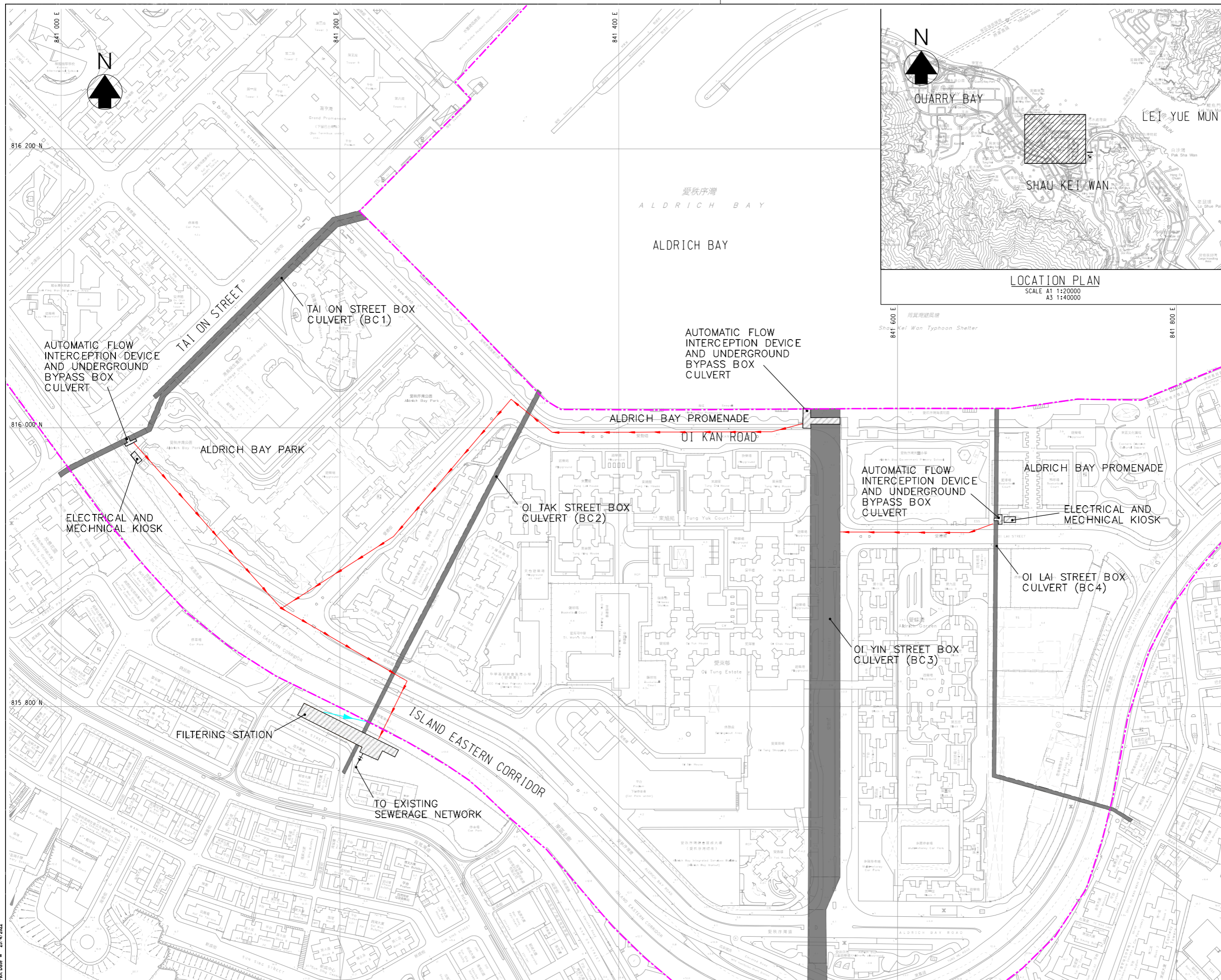
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 PWP NO. 4442DS  
 CONSTRUCTION OF DRY WEATHER FLOW INTERCEPTOR AT CAUSEWAY BAY

drawing no. <b>ANNEX A</b>	scale A1 1 : 500 A3 1 : 1000
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- LEGEND :**
- PROPOSED DRY WEATHER FLOW INTERCEPTOR
  - PROPOSED INTERCEPTION PIPE
  - PROPOSED FILTERED WATER PIPE
  - PROPOSED FOUL WATER PIPE
  - HARBOURFRONT AREAS UNDER TASK FORCE ON HARBOUR DEVELOPMENTS ON HONG KONG ISLAND

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REVISION			
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checked			
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drawing title			
PWP NO. 4451DS CONSTRUCTION OF DRY WEATHER FLOW INTERCEPTOR AT SHAU KEI WAN			
drawing no.		scale	
ANNEX A		A1 1 : 1000 A3 1 : 2000	
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香港特別行政區政府渠務署 THE GOVERNMENT OF THE HONG KONG SPECIAL ADMINISTRATIVE REGION DRAINAGE SERVICES DEPARTMENT			

Pkt Date = 25/4/2022



# Filtering Station at Wan Shing Street



DRAWING TITLE:

## ARCHITECTURAL AND LANDSCAPING CONCEPTUAL DESIGN OF WAN CHAI EAST DWFI

系統管理部 SYSTEM MANAGEMENT DIVISION	SCALE: N.T.S
 香港特別行政區政府渠務署 DRAINAGE SERVICES DEPARTMENT GOVERNMENT OF THE HONG KONG SPECIAL ADMINISTRATIVE REGION	DATE: 09 NOV 2022
	DRAWING NO: WSP/CE39/HF/002



# Flow Interception Device at Tunnel Approach Rest Garden



DRAWING TITLE:

## ARCHITECTURAL AND LANDSCAPING CONCEPTUAL DESIGN OF WAN CHAI EAST DWFI

系統管理部 SYSTEM MANAGEMENT DIVISION	SCALE: N.T.S
 香港特別行政區政府渠務署 DRAINAGE SERVICES DEPARTMENT GOVERNMENT OF THE HONG KONG SPECIAL ADMINISTRATIVE REGION	DATE: 09 NOV 2022
DRAWING NO: ANNEX B	





Flow Interception Device (FID)

Filtering Station

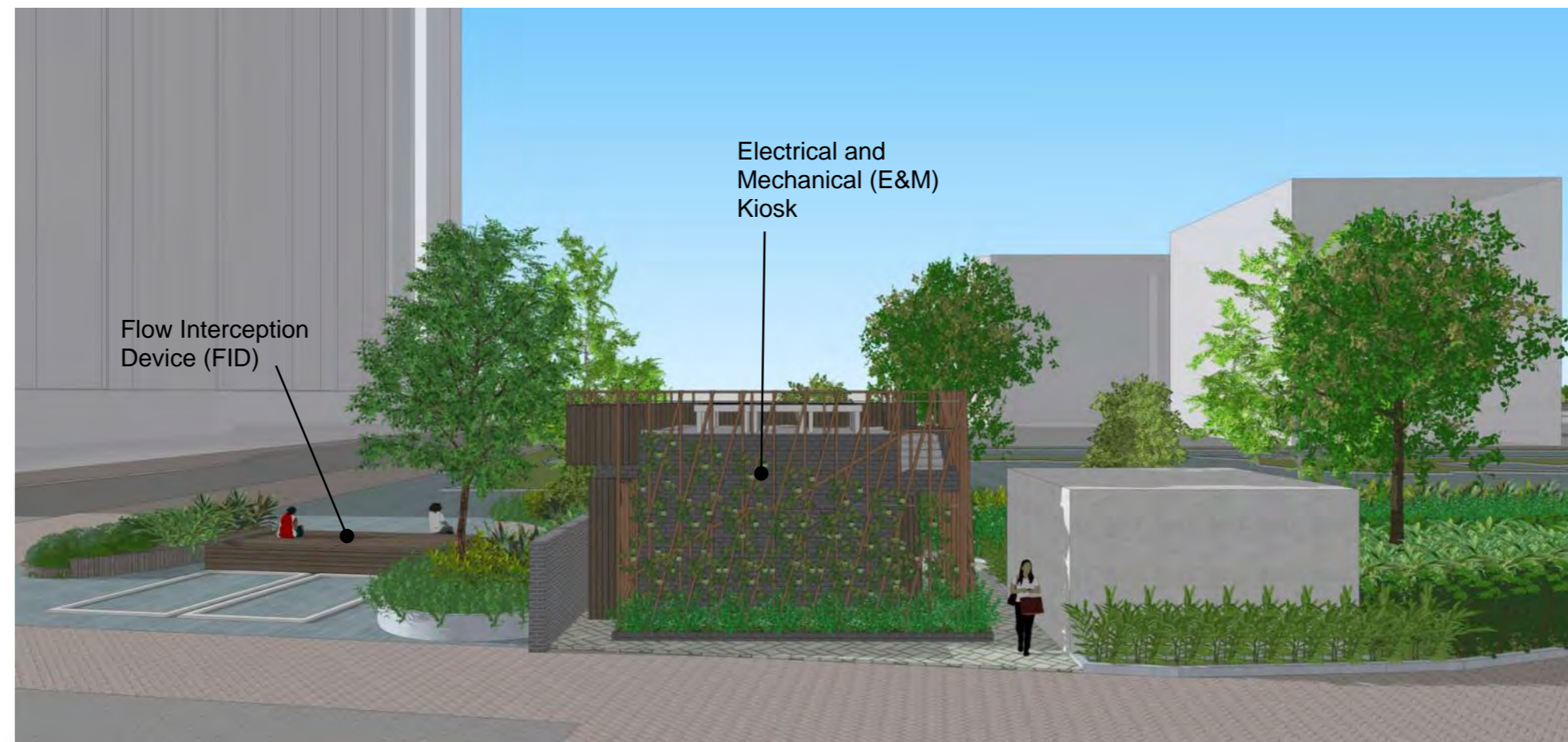
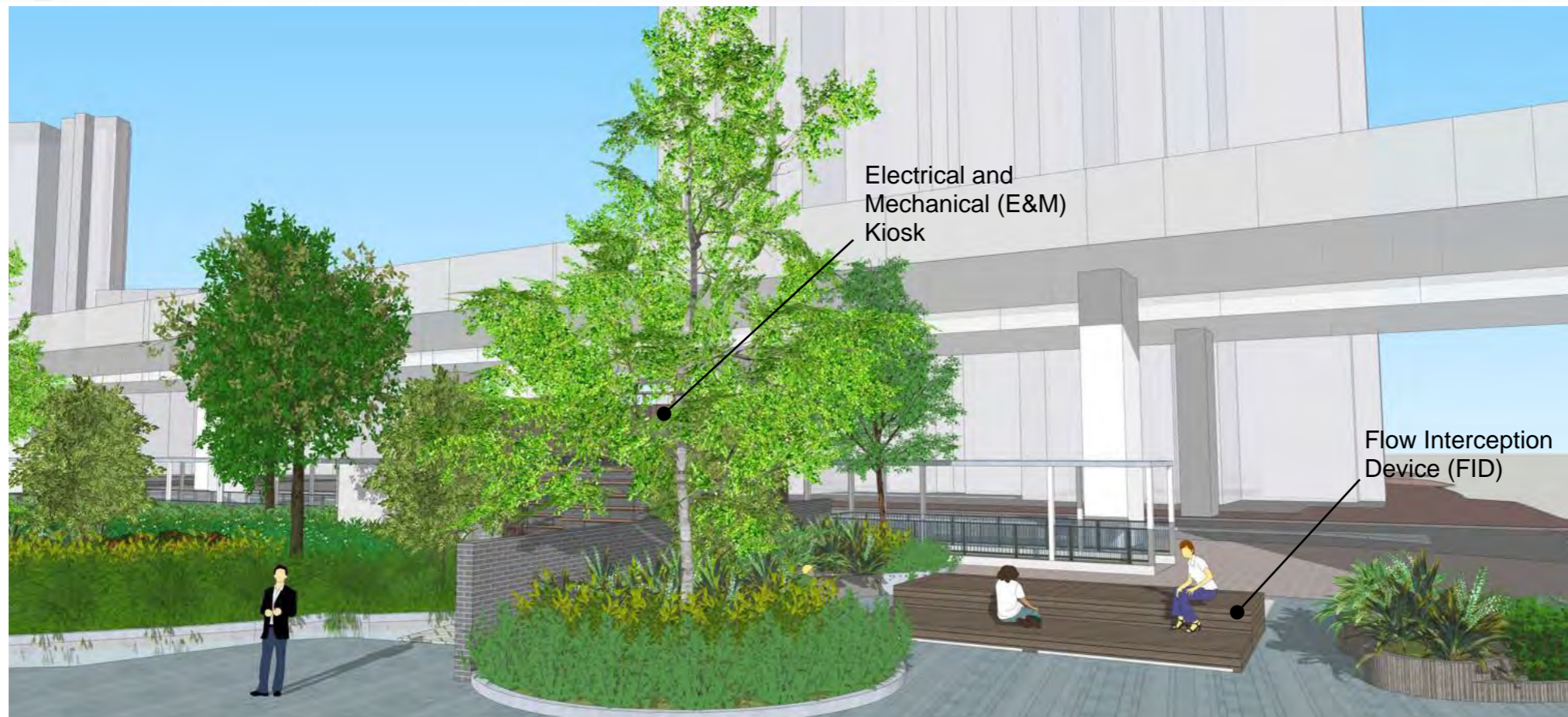
GLOUCESTER ROAD



Filtering Station

Plot Date : 19/5/2022 12:06:19









Flow Interception Device (FID)

Plot Date: 18/5/2022 12:08:19


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 DRAINAGE SERVICES DEPARTMENT

部門 office  
**系統管理部**  
 SYSTEM MANAGEMENT DIVISION

Project Title:  
 PWP NO. 4451DS  
 CONSTRUCTION OF DRY WEATHER FLOW  
 INTERCEPTOR AT SHAU KEI WAN

Drawing Title:  
 SHAU KEI DWFI  
 FLOW INTERCEPTION DEVICE FOR OI YIN  
 STREET BOX CULVERT  
 CONCEPTUAL DESIGN

Drawing no. ANNEX D		
Prepared XYL	Checked ZH	Scale A3 - NTS





Flow Interception Device (FID) underground

Electrical and Mechanical (E&M) Kiosk

Oi Lai Street