

Task Force on Harbourfront Developments in Kowloon, Tsuen Wan and Kwai Tsing

For discussion
on 22 January 2013

TFK/02/2013

Conceptual Design of a Dry Weather Flow Interceptor at Cherry Street Box Culvert

PURPOSE

This paper presents the proposal to construct a dry weather flow interceptor (DWFI) at the Cherry Street Box Culvert (CSBC) and its conceptual design.

BACKGROUND

The Need for a DWFI

2. At present, the water quality at the New Yau Ma Tei Typhoon Shelter (NYMTTS) and the odour associated with it remains unsatisfactory. It is believed that polluted flow, including those from expedient connections, cross-connections between the sewerage and the stormwater drainage system in the area found their way into the CSBC, and in turns discharging into the NYMTTS. According to the water samples collected by Environmental Protection Department (EPD), the average 5-day Biochemical Oxygen Demand (BOD₅) and *E. Coli* level in the stormwater drainage system in West Kowloon are measured at 270mg/L and 13,000,000cfu/100mL respectively. Complaints from nearby residents on the odour problem of NYMTTS were also recorded. It was therefore necessary to construct a DWFI comprising penstocks, emergency bypass culvert, pumping station and associated facilities at the outfall of the CSBC (**Annex 1**) in order to alleviate the pollution and improve the environment at the NYMTTS.

3. It is estimated that upon commissioning of the DWFI system, about 70% of the polluted flow in the CSBC will be intercepted and discharged to the nearby sewerage. The odour problem is expected to be significantly improved upon the implementation of the scheme.

Choice of Site for the DWFI

4. In order to optimize the interception efficiency, the DWFI must be located directly above the downstream section near the outfall of the existing CSBC. The site should be within government land with sufficient space and accessible by public road network to facilitate future operation and maintenance. Three potential site locations (**Annex 2**) were identified for the

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DWFI: Site (A) – at the outfall of CSBC (current site); Site (B) – near the junction of Cherry Street and Lin Cheung Road outside the Central Park; and Site (C) – at the Cherry Street Park.

5. These sites were evaluated based on (1) current use of the site; (2) acceptance by the public; (3) land status and zoning; (4) environmental impacts; (5) time implication; and (6) traffic and ease of access. Site (A) is currently vacant, while Sites (B) and (C) are being used as an open square for functional events and the Cherry Street Park respectively. Should Sites (B) and (C) be selected, the current public enjoyment at these two sites would be affected and the area for public open space would be significantly reduced, which would not be accepted by the public as well as Yau Tsim Mong District Council. Furthermore, Sites (B) and (C) are located adjacent to the busy Cherry Street and will impose an adverse traffic impact during both construction and future operation of the DWFI. Locating the facility in Site (A) along Hoi Fai Road would have comparatively less adverse impact on the traffic. Site (A) is therefore recommended as the most suitable site as it will achieve an early abatement of odour nuisance and cause less impacts to the surrounding areas when comparing with Sites (B) and (C).

CONCEPTUAL DESIGN OF THE DWFI

Outline Zoning Plan

6. According to the Draft South West Kowloon Outline Zoning Plan (OZP) No. S/K20/27, a small part of the Site (A) is zoned as “Government, Institution or Community (G/IC)” and the majority zoned as “Open Space (O)” (**Annex 3**), in this connection, a planning application to the Town Planning Board would be required for implementation of the project. Nevertheless, open space will be provided as much as possible.

Aesthetic Design

7. The majority of DWFI components will be placed underground. Only the upper portion of the penstocks, which cannot be installed entirely underground due to their operation need and minimum sizes required, and flood sensitive components for the pumping station, including switch room, dangerous goods room, transformer room and deodorizer room, will be above ground level (**Annex 4**) due to maintenance requirements. For these above-ground features, minimalist approach and architectural concepts “Green & Enliven” will be applied to blend the design with surrounding areas and future waterfront promenade. The architectural and landscaping treatment (**Annex 5**) will minimize the visual impact of the DWFI and optimize visual permeability for the sea view from Hoi Fai Road.

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Integration with Other Infrastructures

8. The planned Tai Kok Tsui Advance Promenade is located next to northwestern end of the site. The exterior architectural details of the DWFI will blend with the Tai Kok Tsui Advance Promenade's design such that they are in harmony.

Harbour Planning Considerations

9. **Accessible Harbour** – Under the conceptual design, despite of the limited site area, an on average 3.5 metres wide waterfront promenade will be reserved to allow waterfront connectivity with adjacent sites, and the view of the harbour will be maintained. Access from Hoi Fai Road to both ends of the promenade will also be provided to avoid any dead ends.

10. **Maximizing Opportunities for Public Enjoyment** – Open space provision will be optimized to provide opportunities for public enjoyment. Under the conceptual design, about 75% of the "Open Space" which include the waterfront promenade and open area (**Annex 4**) within the site will be open to the public upon completion of the DWFI. Nevertheless, during detailed design stage, we will continue to critically review the design to see if we can further minimize the protrusion effect of the above-ground features and hence further optimize the open space.

11. **Vibrant Harbour** – The aesthetic design of the DWFI would be in harmony with the adjacent Tai Kok Tsui Advance Promenade. We will keep close liaison with relevant departments so as to achieve a harmonic design for the entire promenade.

Minimizing Land Required for the DWFI

12. We have critically reviewed the possibility of reducing the footprint and height of the above-ground features. Minimized land requirement is one of our important design considerations. The footprints of the proposed DWFI will be the minimum area required taking into account functional, operation and maintenance requirements.

PUBLIC CONSULTATION

13. We will consult with the Yau Tsim Mong District Council and other relevant parties on the layout of the DWFI in Q1 2013.

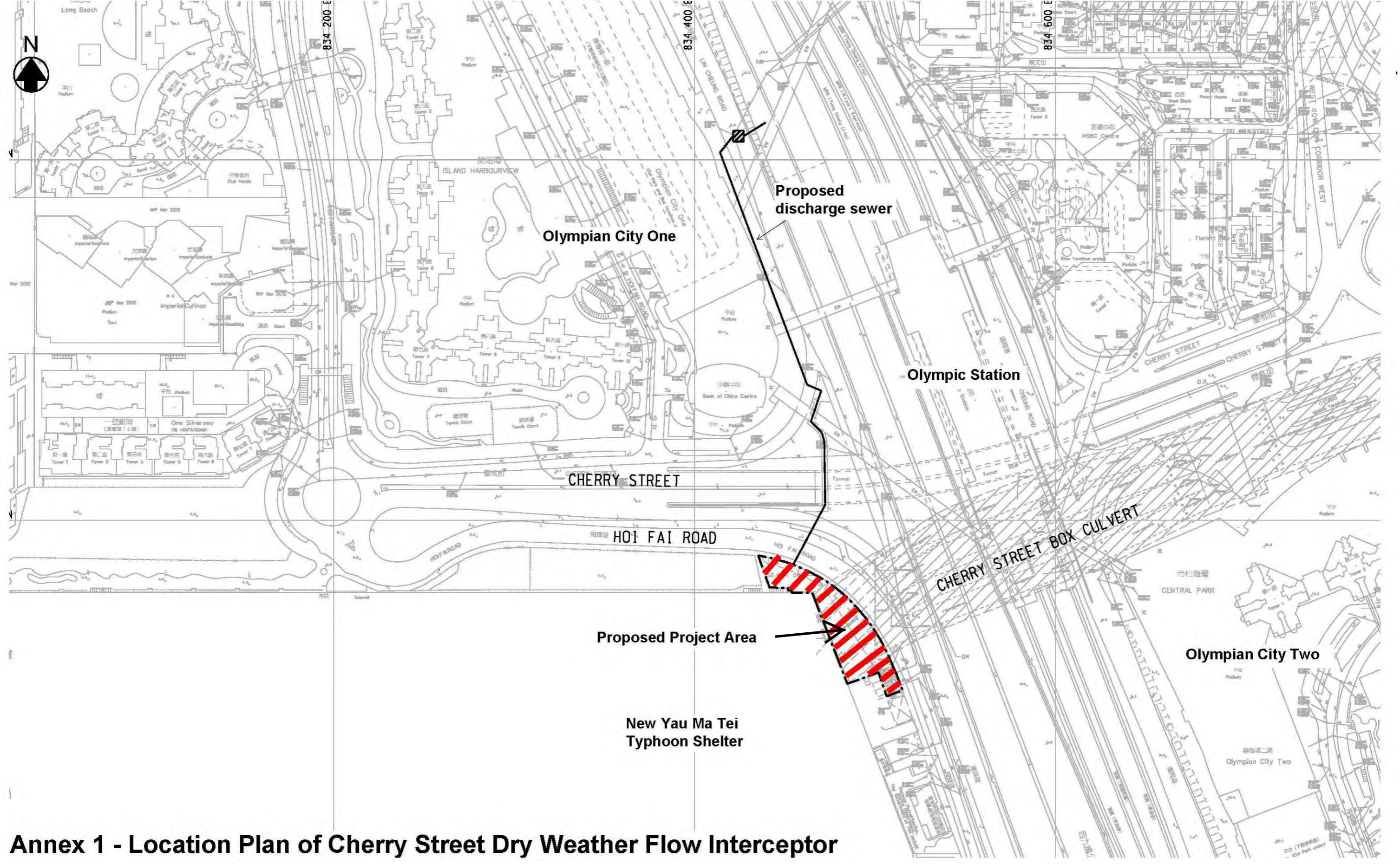
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ADVICE SOUGHT

14. Members are invited to comment on the proposed DWFI and its conceptual design.

**Drainage Services Department
January 2013**



Proposed discharge sewer

Olympian City One

Olympic Station

CHERRY STREET

HOI FAI ROAD

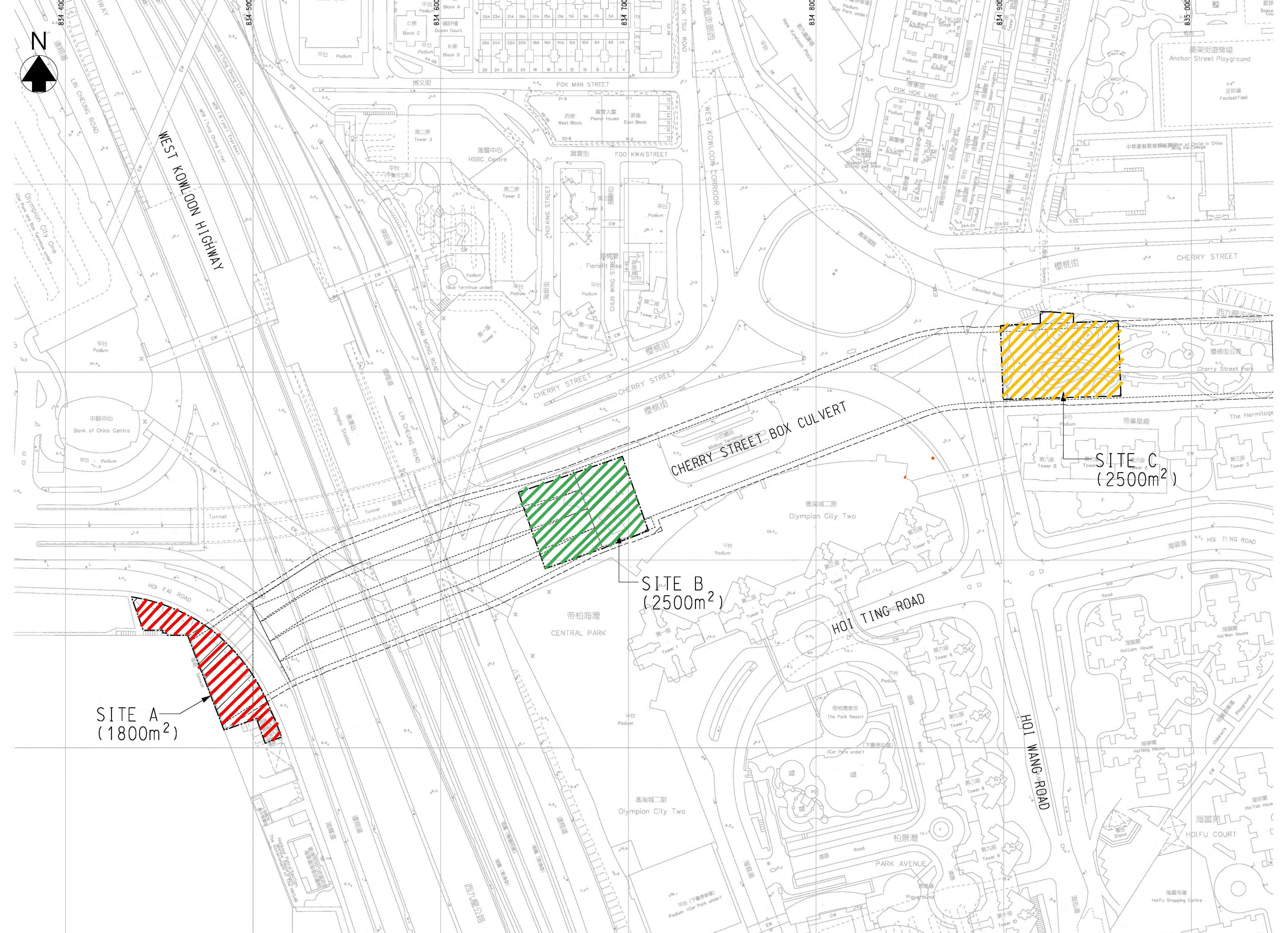
CHERRY STREET BOX CULVERT

Proposed Project Area

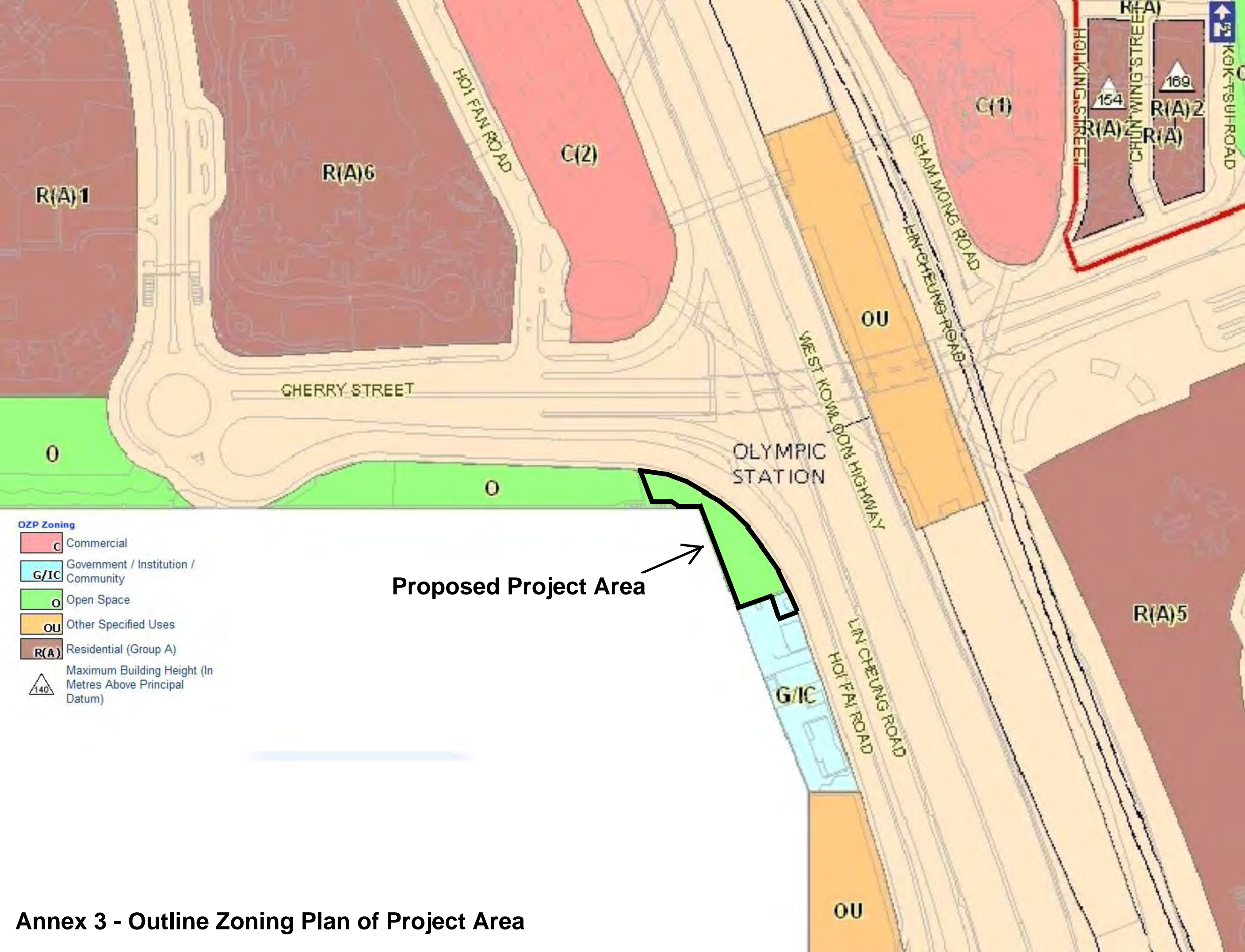
New Yau Ma Tei Typhoon Shelter

Olympian City Two

Annex 1 - Location Plan of Cherry Street Dry Weather Flow Interceptor



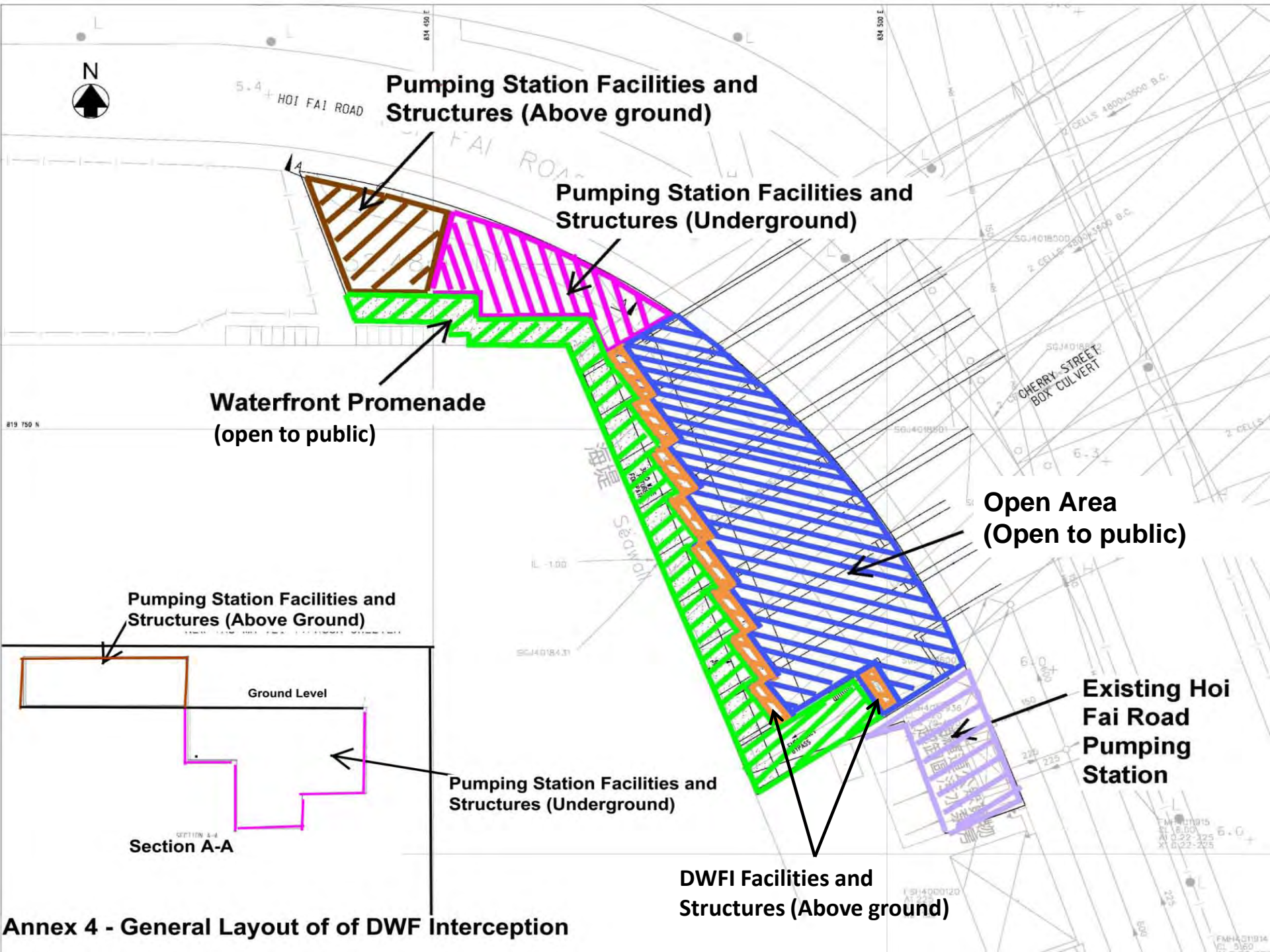
Annex 2 - Location Plan of Potential Sites Along Cherry Street Box



- OZP Zoning**
- C** Commercial
 - G/IC** Government / Institution / Community
 - O** Open Space
 - OU** Other Specified Uses
 - R(A)** Residential (Group A)
 - Maximum Building Height (In Metres Above Principal Datum)

Proposed Project Area

Annex 3 - Outline Zoning Plan of Project Area



5.4 + HOI FAI ROAD

Pumping Station Facilities and Structures (Above ground)

Pumping Station Facilities and Structures (Underground)

Waterfront Promenade (open to public)

Open Area (Open to public)

Pumping Station Facilities and Structures (Above Ground)

Ground Level

Pumping Station Facilities and Structures (Underground)

Section A-A

Existing Hoi Fai Road Pumping Station

DWFI Facilities and Structures (Above ground)

Annex 4 - General Layout of of DWF Interception

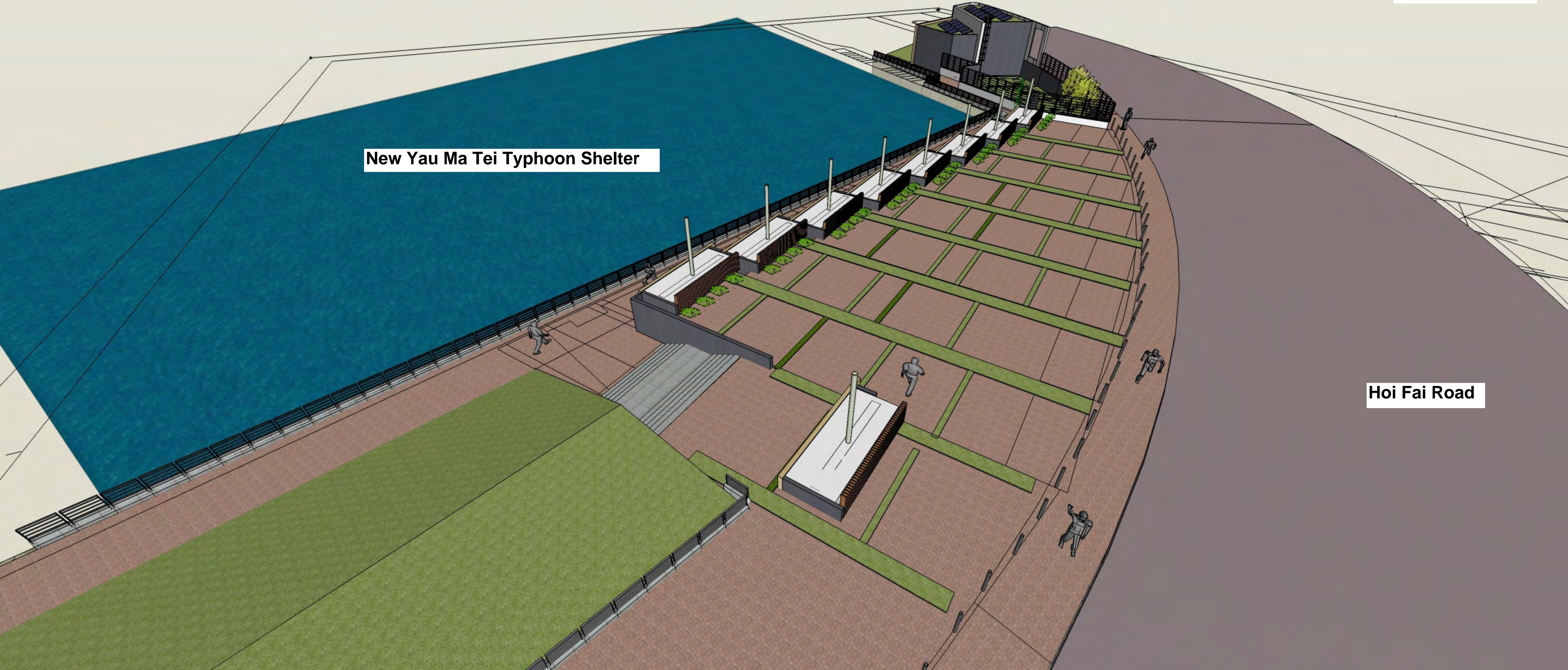


New Yau Ma Tei Typhoon Shelter

Hoi Fai Road

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