# Relocation of Yau Tong Group Fresh Water and Salt Water Service Reservoirs to Caverns

Project Profile

4110332/BIN/005

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# 1 BASIC INFORMATION

## 1.1 Project Title

1.1.1 The title of the Project is "Relocation of Yau Tong Group Fresh Water and Salt Water Service Reservoirs to Caverns" (hereinafter referred to as "the Project").

## 1.2 Purpose and Nature of the Project

1.2.1 The 2011-12 Policy Address announced that the Government would adopt a multi-pronged approach, including rock cavern development (RCD), for expanding land resources. Civil Engineering and Development Department (CEDD) took initiative to commission a study on "Enhancing Land Supply Strategy: Reclamation outside Victoria Harbour and Rock Cavern Development".

1.2.2 Relocation of Yau Tong Group Fresh Water and Salt Water Service Reservoirs (YTFW&SWSRs) to caverns would potentially release the existing site of about 6 hectares for housing and/or other beneficial uses.

1.2.3 The Project aims to relocate the YTFW&SWSRs, including Yau Tong Fresh Water Service Reservoir (YTFWSR), Yau Tong No. 2 Fresh Water Service Reservoir (YT No.2 FWSR) and Yau Tong Salt Water Service Reservoir (YTSWSR) into caverns for releasing the existing YTFWSR, YT No.2 FWSR and YTSWSR sites for housing and/or other compatible and beneficial uses while ensuring a reliable, adequate and quality supply of water.

## 1.3 Name of the Project Proponent

1.3.1 Water Supplies Department (WSD), the Government of the Hong Kong Special Administrative Region.

## 1.4 Location and Scale of the Project and History of the Site

1.4.1 The existing YTFWSR and YTSWSR, and YT No.2 FWSR are located at Pik Wan Road and Ko Chiu Road at Yau Tong respectively. The storage capacities of the existing YTFWSR, YT No.2 FWSR and YTSWSR are 22,799 $m^3$, 48,453 $m^3$ and 2,574 $m^3$, respectively.

1.4.2 The proposed YTFW&SWSRs will be relocated into caverns at hillsides south of O King Road, Yau Tong. The proposed Project site lies within the approved Cha Kwo Ling, Yau Tong, Lei Yue Mun Outline Zoning Plan No. S/K15/26 and the approved Tseung Kwan O Outline Zoning Plan No. S/TKO/28. The proposed site mainly falls within areas zoned "Green Belt" ("GB").

1.4.3 The proposed storage capacities of the relocated fresh water and salt water service reservoirs in caverns are approximately 73,000 $m^3$ and 3,000 $m^3$ respectively. A vehicular access tunnel and an emergency man access tunnel will connect the caverns to Pik Wan Road and existing YT No.2 FWSR, respectively. Some ancillary facilities will be constructed near the vehicular access tunnel portal. The proposal might be subject to revisions during the option evaluation in the investigation and design phases of the Project. The two portals fall within an area zoned as "Government, Institution or Community" ("GIC") and "Green Belt" ("GB"), according to the Cha Kwo Ling, Yau Tong, Lei Yue Mun Outline Zoning Plan No. S/K15/26.

1.4.4 The demolition of existing facilities and construction of infrastructures at the released sites are not included in the Project and will be carried out by other Government departments/project proponents.

1.4.5 The location plan for the relocated YTFW&SWSRs is shown in **Figure 1**.

## 1.5 Number and Types of Designated Projects to be covered by the Project Profile

1.5.1 The Project is a Designated Project under Item Q.2, Part I of Schedule 2 of the Environmental Impact Assessment (EIA) Ordinance, "Underground Rock Caverns", which requires an environmental permit from Environmental Protection Department for its construction and

operation.

## 1.6 Name and Telephone Number of Contact Persons

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# 2 OUTLINE OF PLANNING AND IMPLEMENTATION PROGRAMME

## 2.1 Project Planning and Implementation

2.1.1 WSD commenced a feasibility study "Relocation of Yau Tong Group Fresh Water and Salt Water Service Reservoirs to Caverns – Feasibility Study" in December 2017. The Feasibility Study recommended to construct the relocated YTFW&SWSRs in a series of proposed caverns linked by access tunnels and adits, which are considered technically feasible.

2.1.2 WSD engaged Binnies Hong Kong Limited as Consultants in June 2022 to undertake the investigation, design and construction supervision on relocating the YTFW&SWSRs into caverns. WSD will operate and maintain the completed works.

## 2.2 Project Programme

2.2.1 Construction of the Project is tentatively scheduled to commence in 2024 for completion by 2030. Tentative programme for commissioning of the relocated YTFW&SWSRs and terminating the operation of the existing YTFWSR and YTSWSR, and YT No.2 FWSR will be undertaken in 2030. The EIA study of the Project is tentatively scheduled to commence in the second half of 2022 for completion by 2023.

## 2.3 Project Interface

2.3.1 The Project would have potential interface with the following projects as shown in **Table 2.1**. This list will be updated during drafting of EIA Report and close liaison will be maintained with the respective project proponents/teams. Any interfacing issues and cumulative impacts from these concurrent projects during construction and operation phases will be identified and assessed. The locations of concurrent projects are shown in **Figure 2**.

**Table 2.1 Potential Concurrent Projects**

| Item | Project Name | Approximate Nearest Distance to Works Boundary (m) | Target Works Programme |
|---|---|---|---|
| 1 (SRA) | Potential Residential Development (by Housing Department) Between Ko Chiu Path and Pik Wan Road; Ko Chiu Road and Pik Wan Road, Yau Tong | 2 | October 2023 – November 2028 |
| 2 (SRB) | Potential Public Housing Development (Phase 4 of Lei Yue Mun Estate) | 351 | Works in progress with completion scheduled in 2024/25 |
| 3 (SRC) | Potential Private Residential Development at Ex- Yau Tong Ventilation Building Site on Ko Chiu Road | 65 | Works in progress with completion scheduled for 2025 |
| 4 (SRD) | Potential Comprehensive Development (including residential, commercial, hotel, Government, Institution or Community Uses, Public Vehicle Park and Pier (landing steps) and minor relaxation of Plot Ratio restriction (A/K15/112) | 289 | Not available (Note 1) |

| Item | Project Name | Approximate Nearest Distance to Works Boundary (m) | Target Works Programme |
|---|---|---|---|
| Note 1:<br>Detailed information and implementation programme of those planned/committed development projects are yet to be available, further review should be conducted in the EIA study to check if those projects are concurrent projects and cumulative impact shall be assessed as required. | | | |

## 2.4 Brief Description of the Project

2.4.1 The relocated YTFW&SWSRs will be constructed in a series of caverns linked by access tunnels and adits which will be constructed with three and one compartments respectively when relocated.

2.4.2 Ancillary facilities to be constructed near the tunnel portal(s) may include transformer room, switch room, emergency generator room, administration building, control room, and ventilation building.

2.4.3 Subject to review, minor valve installation and some ancillary mainlaying works at other locations (such as Pik Wan Road and Ko Chiu Road) may be required.

2.4.4 The scope of the Project comprises the following:

(a) Construction of the relocated YTFW&SWSRs and the associated facilities and water mains;

(b) Construction of caverns, tunnels, adits, portals and ventilation shaft(s) for accommodating the relocated YTFW&SWSRs and the associated facilities;

(c) Decommissioning of the existing YTFW&SWSRs and the associated facilities; and

(d) All other associated works that are incidental to and necessary for the completion of the Project.

2.4.5 The major construction activities of the Project include earthworks, drilling and blasting, construction of concrete structures, handling and transportation of excavated materials, mainlaying, installation of electrical and mechanical equipment and material transportation. The operation of the existing YTFWSR, YTSWSR and YT No.2 FWSR and the associated facilities will be terminated after the completion of the testing and commissioning of the relocated YTFW&SWSRs. Under the Project, the existing YTFWSR, YTSWSR and YT No.2 FWSR and associated facilities will be retained after termination of the operation. The subsequent demolition works will be carried out by other Government departments/project proponents.

2.4.6 There is no existing access road to the proposed tunnel portal(s). A new access will be constructed to comply with the requirements of vehicular access tunnel to the proposed caverns.

2.4.7 The need for ventilation shaft(s) will be further reviewed to fulfil the ventilation requirement in EIA stage. At present, a ventilation system with inlet/exhaust locating within the tunnel portal areas is proposed.

## 2.5 Continuous Public Involvement

2.5.1 In order to solicit comments and opinions from the public and stakeholders on the proposed relocation of YTFW&SWSRs to cavern, Public Engagement (PE) was carried out from July 2018 to March 2019 during Feasibility Stage which consists of questionnaires, pamphlets, roving exhibitions and meetings with resident representatives and Kwun Tong and Sai Kung District Councils.

# 3 POSSIBLE IMPACT ON THE ENVIRONMENT

## 3.1 Possible Environmental Impacts during Construction of the Project

### 3.1.1 Air Quality

Potential air quality impacts may arise from dust emissions generated by construction activities such as tunnel and cavern excavation, cutting, filling, rock crushing, stockpiling, construction vehicle movements.

### 3.1.2 Noise

A considerable amount of aboveground construction works will be generated from construction of relocated YTFW&SWSRs. Construction noise generated from the use of Powered Mechanical Equipment (PME) during site clearance, drill-and-blast and drill-and-break for tunnels and caverns, excavation, backfilling, construction of aboveground structures.

### 3.1.3 Water Quality

Potential water quality impacts may arise due to the following:

- Construction site run-off and drainage from works areas;
- General construction activities such as dust suppression sprays, washing of construction vehicles/equipment etc.;
- Sewage generated by construction workforce;
- Potential groundwater infiltration;
- Potential accidental spillage of chemicals; and
- Construction works in close proximity of inland watercourses.

### 3.1.4 Ecology

The majority of construction activities will be carried out in caverns or in urbanized areas. Potential impacts include the direct loss of habitats (mainly at plantation and shrubland-grassland mosaic) due to the construction of an emergency man access tunnel, vehicular access tunnel and ventilation shaft(s) (if any) identified during feasibility study stage. Indirect impact to the surrounding habitats, associated wildlife due to disturbance from construction works (e.g. construction dust, noise, silty run-off) may be expected. The proposed tunnel and cavern will be installed with water-proof lining to prevent infiltration of groundwater infiltration into the tunnel and cavern. Therefore, drawdown of stream courses locating above works area/groundwater table are considered unlikely, and thus unlikely to cause indirect ecological impacts.

### 3.1.5 Waste Management

Construction and demolition (C&D) materials including excavated materials will be generated during the construction of caverns and tunnels, earthworks and water main laying works. There will also be a limited amount of general refuse and chemical waste generated during construction.

### 3.1.6 Land Contamination

Land contamination is not expected at the caverns inside bedrock which is an undeveloped area. Proposed relocation site of YTFW&SWSRs and fresh/salt watermains are located in an undeveloped area within hilly terrain and covered by vegetation. No previous contaminative land use at these sites have been identified.

3.1.7 Landscape & Visual Impacts

Potential short-term landscape and visual impacts during construction include site clearance, removal of existing vegetation and trees, construction of aboveground structures, presence of equipment and storage of construction materials.

Based on preliminary desktop review, the major Landscape Character Area (LCAs) of the Project Site are "Coastal Upland and Hillside Landscape" with high / medium sensitivity and "Miscellaneous Urban Fringe Landscape" with medium / low sensitivity. The existing trees/vegetation within the works areas of the aboveground structures may need to be removed. The aboveground works areas will be reinstated after completion of works.

The detailed landscape and visual baseline condition and impact assessment will be conducted during EIA stage in accordance with EIAO-TM, EIAO GN No. 8/2010 and other relevant guidelines.

3.1.8 Cultural Heritage

The nearest single known heritage site within the 500m assessment area consists of the Fortifications at Devil's Peak (Grade 2) which is about 224m to the nearest work boundaries. This defensive military complex consists of Devil's Peak Redoubt, fire command post, Gough Battery and Pottinger Battery. Desk-study and field visit indicated that further military structures associated with Gin Drinker's Line and defense of Hong Kong during World War II may be present within the proposed cavern site area.

3.1.9 Human Health

No adverse human health is anticipated during construction phase with sufficient ventilation provided.

3.1.10 Hazards

Explosives will be required for tunnel and cavern excavation using drill–and-blast method. There will be no overnight storage of explosives under this Project. There are hazards associated with the transportation and use of explosives, and these will all be subjected to close control in accordance with the requirements of Mines Division of CEDD.

## 3.2 Possible Environmental Impacts during Operation of the Project

3.2.1 Air Quality

No major air pollutant emission source (e.g., odour) is expected during the operation of the relocated YTFW&SWSRs.

3.2.2 Noise

Most of the fixed noise sources associated with the relocated YTFW&SWSRs would be operated inside the cavern and thus substantially enclosed. The cavern structure is an effective natural barrier for airborne noise propagation and the actual noise reduction performance is subject to the design and material of portal door. Inlet/exhaust of ventilation system locating at tunnel portals would be potential fixed noise sources during operation of the relocated YTFW&SWSRs. In view of the low traffic arising from the Project for maintenance, road traffic noise impact would be limited.

3.2.3 Water Quality

Cleansing water during regular cleansing and maintenance of the service reservoirs will be generated, which will be treated following the WSD's current standard practice and complying with Water Pollution Control Ordinance (WPCO) before discharging to drainage systems. Overflow / bypass water from the relocated YTFW&SWSRs will be generated. Non-point source surface run-off from new impervious areas and sewage and wastewater generated from the operation of the proposed development (e.g. sewage/wastewater from

administration building, ventilation building, etc.) are also potential sources of water quality impact associated with the Project during operation phase.

3.2.4 Ecology

The proposed YTFW&SWSRs will be located inside caverns, hence no significant effect on terrestrial ecology is expected.

3.2.5 Waste Management

The relocated YTFW&SWSRs are for storage of fresh water and salt water. Hence waste implication is minimal during operation phase.

3.2.6 Land Contamination

Only routine maintenance of the associated mechanical equipment will be properly carried out. No land contamination issue is anticipated during operation phase.

3.2.7 Landscape & Visual Impacts

Potential landscape and visual impacts may arise from the presence of aboveground structures including the tunnel portals and ancillary facilities during operation phase.

3.2.8 Cultural Heritage

No adverse impact to cultural heritage resource is anticipated during operation phase.

3.2.9 Human Health

No adverse human health is anticipated during operation phase since sufficient ventilation will be provided.

3.2.10 Hazards

No hazard is anticipated during operation phase.

## 3.3 Summary

3.3.1 The potential environmental impacts during construction and operation phases of the Project are summarized in **Table 3.1**

**Table 3.1 Summary of Potential Environmental Impacts**

| Aspects | Construction Phase | Operation Phase |
|---|---|---|
| Air Quality | √ | × |
| Noise | √ | √ |
| Water Quality | √ | √ |
| Ecology | √ | × |
| Waste Management | √ | × |
| Land Contamination | × | × |
| Landscape & Visual Impacts | √ | √ |
| Cultural Heritage | √ | × |
| Human Health | × | × |
| Hazards | √ | × |

# 4 MAJOR ELEMENTS OF THE SURROUNDING ENVIRONMENT

## 4.1 Existing and Planned Sensitive Receivers

4.1.1 The major sensitive receivers and sensitive parts of the natural environment in the vicinity of the Project are presented in **Table 4.1** and **Figure 2** as follows:

**Table 4.1 Major Sensitive Receivers and Sensitive Parts of Natural Environment**

| SR ID | Description | Type of SRs | No. of Floors | Approximate Nearest Distance to Works Boundary (m) |
|---|---|---|---|---|
| SR1 | Lei Yue Mun Estate, Lei Sang House | Residential | 40 | 221 |
| SR2 | Ko Cheung Court, Ko Fei House | Residential | 40 | 97 |
| SR3 | Ko Yee Court, Ko Yuet House | Residential | 8 | 48 |
| SR4 | Lingnan Temple (嶺南古廟) | Place of Public Worship | 1 | 33 |
| SR5 | Ko Yee Estate Football Field | Recreational | - | 31 |
| SR6 | Ko Yee Estate, Ko Yuen House | Residential | 24 | 22 |
| SR7 | Ko Chun Court, Chun Mau House | Residential | 22 | 8 |
| SR8 | Ko Chun Court, Chun Yat House | Residential | 21 | 18 |
| SR9 | Ko Chun Court, Chun Ying House | Residential | 21 | 28 |
| SR10 | Ko Chun Court, Chun Wui House | Residential | 21 | 14 |
| SR11 | Hong Kong Chinese Women's Club Madam Wong Chan Sook Ying Memorial Care & Attention Home for the Aged | Home for aged | 4 | 21 |
| SR12 | Pik Wan Road Rest Garden | Recreational | - | 63 |
| SR13 | Ko Chiu Road Rest Garden | Recreational | - | 51 |
| SR14 | Yau Mei Court, Yun Mei House | Residential | 36 | 85 |
| SR15 | Evangelize China Fellowship Holy Word School | Educational | 5 | 130 |
| SR16 | Lei Yue Mun Road Playground | Recreational | - | 148 |
| SR17 | Temporary structure | Place of Public Worship | - | 79 |
| SR18 | The Hong Kong Buddhist Association Buddhist Ho Nam Kam College | Educational | 5 | 104 |
| SR19 | The Hong Kong Taoist Association Chan Lui Chung Tak Memorial School | Educational | 7 | 73 |
| SR20 | Hong Shui Court | Residential | 36 | 106 |
| SR21 | Rennie's Mill Lion Pavilion | Recreational | - | 133 |
| SR22 | Yau Chui Court, Wing Mei House | Residential | 40 | 176 |
| SRA | Future air and noise sensitive receivers of the potential Development Between Ko Chiu Path and Pik Wan Road; Ko Chiu Road and Pik Wan Road, Yau Tong | Residential | - | 2 [Note 1] |
| SRB | Future air and noise sensitive receivers of the potential Development (Phase 4 of Lei Yue Mun Estate) | Residential | - | 351 [Note 1] |
| SRC | Future air and noise sensitive receivers of the potential Development at Ex- Yau Tong Ventilation Building Site on Ko Chiu Road | Residential | - | 65 [Note 1] |

| SR ID | Description | Type of SRs | No. of Floors | Approximate Nearest Distance to Works Boundary (m) |
|---|---|---|---|---|
| SRD | Future air and noise sensitive receivers of the potential Development at Various Marine / Private Lots and Adjoining Government Land, Yau Tong Bay, Yau Tong | Comprehensive Development (including Residential, Commercial, Hotel, Government, Institution or Community Uses, Public Vehicle Park and Pier | - | 289 [Note 1] |
| VSR1 | Hikers at Devil's Peak | Recreational | - | 226 |
| VSR2 | Hikers at Chiu Keng Wan Shan | Recreational | - | 44 |
| VSR3 | Hikers at Black Hill | Recreational | - | 667 |
| VSR4 | Recreational users of the Yau Tong Service Reservoir | Recreational | - | 20 |
| VSR5 | Visitors to the Bauhinia Trail | Recreational | - | 145 |
| VSR6 | Travelers along Pik Wan Road | Recreational | - | 13 |
| WSR1 | Inland Watercourse southern to Hong Shui Court (natural channel, seasonal) | Watercourse | - | 45 |
| WSR2 | Inland Watercourse on Chiu Keng Wan Shan (semi-modified channel, seasonal) | Watercourse | - | Overlapping with the proposed cavern [2] |
| WSR3 | Inland Watercourse on Chiu Keng Wan Shan (semi-modified channel, seasonal) | Watercourse | - | Overlapping with the proposed cavern [2] |
| WSR4 | Inland Watercourse northeast of Yau Tong No.2 Fresh Water Service Reservoir (semi-modified channel, seasonal) | Watercourse | - | 22 |
| WSR5 | Inland Watercourse southern to Yau Tong No.2 Fresh Water Service Reservoir (natural channel, seasonal) | Watercourse | - | Adjacent to proposed works area |
| WSR6 | Cooling Water Intake For Yau Tong Bay Ice Plant | Marine | - | - |
| WSR7 | Cha Kwo Ling WSD Flushing Water Intake | Marine | - | - |
| WSR8 | Yau Tong WSD Flushing Water Intake | Marine | - | - |
| VT3 | Sam Ka Tsuen Typhoon Shelter | Marine water monitoring station | - | - |
| Note 1: The layout of proposed caverns tunnel and portals is subject to change during the detailed design stage.<br>Note 2: The construction of the proposed cavern/tunnel are at underground. There is no interface between the construction activities and the watercourses. | | | | |

## 4.2 Major Elements of the Surrounding Environment Affecting the Project

4.2.1 It is envisaged that no major element of the surrounding environment is likely to affect the proposed works.

# 5 ENVIRONMENTAL PROTECTION MEASURES TO BE INCORPORATED INTO THE DESIGN AND ANY FURTHER ENVIRONMENTAL IMPLICATIONS

## 5.1 Construction Phase

5.1.1 Air Quality

Air quality impact assessment will be carried out under EIA and appropriate mitigation measures related to cavern construction works will be recommended and implemented as appropriate.

5.1.2 Noise

Mitigation measures shall include the use of quiet powered mechanical equipment (PME), adoption of temporary noise barriers; and good construction site practices to minimize the noise impact from general construction activities. Noise mitigation measures will be implemented, if necessary, during construction phase to ensure compliance of the relevant criteria of EIAO-TM.

5.1.3 Water Quality

The Professional Persons Environmental Consultative Committee Practice Note 1/94 Construction Site Drainage (ProPECC PN 1/94) shall be followed to minimize the chance of erosion and reduce suspended solids from site runoff before discharge to minimize the potential water quality impact. For the construction of tunnels and caverns, practical groundwater control measures should be implemented to minimize the potential groundwater infiltration. Chemicals will be stored within project boundary at a bunded area, and a separate drainage system will be provided as appropriate to avoid any spilled chemicals from entering the storm drain in case of accidental spillage. Also, adequate tools for cleaning up spilled chemicals will be stored on site and appropriate training shall be provided to staff to further prevent potential adverse water quality impacts from happening. The practices outlined in ETWB TC (Works) No. 5/2005 "Protection of Natural Streams/Rivers from Adverse Impacts Arising from Construction Works" should also be adopted where applicable to minimise the water quality impacts upon any natural streams or surface water system. Temporary diversion is recommended wherever practicable to allow a dry condition for works within the watercourses. The temporary arrangement should be carried out in dry condition before the commencement of the proposed works.

5.1.4 Ecology

The proposed works may arise direct habitat loss and indirect impact from human activities, dust, noise, lighting, runoff or discharge of effluent from Project sites during construction. Ecological impact assessment will be carried out under EIA and appropriate mitigation measures will be recommended and implemented as appropriate.

5.1.5 Waste Management

A comprehensive Construction and Demolition Material Management Plan (C&DMMP) will be drawn up at an early stage before construction, with a view to minimizing the generation of C&D materials, and enhancing the on-site and off-site reuse of excavated material, in particular the rock spoil from cavern construction. Close liaison with the Public Fill Committee and Fill Management Division of CEDD will be maintained in the investigation, design and construction phases.

Other mitigation measures include the adoption of good housekeeping practices, and sorting and segregation of wastes for reuse and disposal.

5.1.6 Land Contamination

No mitigation measure is anticipated during construction phase.

5.1.7 Landscape & Visual Impacts

Site hoardings with design compatible to the surrounding environment will be installed to minimize the visual impact of construction activities. The extent of works areas of aboveground structures will be minimized. Site layout will be carefully designed to minimize the impact on sensitive landscape resources. Natural environmental features (e.g. natural stream) will be retained as far as possible. The existing trees will be retained and affected trees will be transplanted as far as possible. All temporary works areas will be reinstated properly upon completion of construction.

5.1.8 Cultural Heritage

Cultural heritage impact assessment will be carried out under EIA study and mitigation measures will be recommended and implemented if required.

5.1.9 Human Health

Adequate ventilation would be maintained at the relocated YTFW&SWSRs to remove excessive radon from inside the caverns. Relevant provisions of the Occupational Safety and Health Ordinance (Cap 509) and the Factories and Industrial Undertakings Ordinance (Cap 59), especially on the requirements on provision of ventilation at workplace, shall be fully observed. Guidance Notes on Ventilation and Maintenance of Ventilation Systems, published by the Labour Department, would be followed.

5.1.10 Hazards

There will be no overnight storage of explosives under this Project. Potential hazards associated with the transportation and use of explosives for tunnel and cavern construction will be assessed in detail during EIA stage. Close liaison will be maintained with the Mines Division of CEDD, and all relevant requirements will be incorporated. Safety precautions and control measures will be proposed and implemented to minimize potential hazards.

## 5.2 Operation Phase

5.2.1 Air Quality

No impact on air quality is expected and no mitigation measure is required during operation.

5.2.2 Noise

Noise mitigation measures will be implemented, if necessary, during operation phase to ensure compliance of the relevant criteria of EIAO-TM. Examples of noise mitigation measures include use of quiet PME, provision of enclosure for the fixed plant, use of acoustic louvres/silencer at openings and away from NSRs, etc.

5.2.3 Water Quality

Treatment and disposal of cleansing water during regular cleaning and maintenance of service reservoirs shall follow the WSD's current standard practice and comply with WPCO. Overflow / bypass water from the relocated YTFW&SWSRs will be diverted from overflow pipes to the u-channel within the cavern and discharge to the stormwater drainage properly. The surface runoff may contain a small amount of suspended solids, oil, grease and grit that may cause water quality impacts to the nearby water bodies. The impacts upon water quality will be minimal provided that a proper drainage system will be provided to receive surface run-off at the planning and design stages. Besides, minimal sewage will be generated from the intermittent use of sanitary fitments inside the proposed ancillary building during maintenance. The sanitary fitments will not open to the public and the ancillary building is unmanned. It is anticipated that the usage of toilet is very limited. Small amount of wastewater will be generated from the administration building and ventilation building. The sewage and wastewater will be properly collected and conveyed to the existing sewerage

system. The associated water quality impact on the receiving water bodies will be assessed during EIA stage.

5.2.4 Ecology

Potential ecological impacts during operation phase of the Project will be further studied in EIA and mitigation measures will be recommended.

5.2.5 Waste Management

Good housekeeping practices will be adopted to minimize potential impacts from the waste generated, including the use of closed containers for transportation.

5.2.6 Land Contamination

No mitigation measure is anticipated during operation phase.

5.2.7 Landscape & Visual Impacts

Compensatory trees planting will be provided for any unavoidable tree felling. Landscaping will be provided to enhance the tunnel portals and ancillary facilities to be constructed near the tunnel portal(s). Architectural aspects including colour schemes and types of external finishing will be designed to be in harmony with the surrounding environment.

5.2.8 Cultural Heritage

No mitigation measure is anticipated during operation phase.

5.2.9 Human Health

Adequate ventilation would be maintained at the relocated YTFW&SWSRs to remove excessive radon from inside the caverns. Relevant provisions of the Occupational Safety and Health Ordinance (Cap 509) and the Factories and Industrial Undertakings Ordinance (Cap 59), especially on the requirements on provision of ventilation at workplace, shall be fully observed. Guidance Notes on Ventilation and Maintenance of Ventilation Systems, published by the Labour Department, would be followed.

5.2.10 Hazards

No mitigation measure is required during operation phase.

## 6 USE OF PREVIOUS APPROVED EIA REPORT

6.1.1 There is no previously approved EIA report for the Project. However, the following reports may be relevant for reference:

- AEIAR-167/2012 – Shatin to Central Link - Tai Wai to Hung Hom Section
- AEIAR-194/2016 – Development of Anderson Road Quarry site - Rock Cavern Developments
- AEIAR-202/2016 – Sha Tin Cavern Sewage Treatment Works
- AEIAR-232/2021 – Relocation of Diamond Hill Fresh Water and Salt Water Service Reservoirs to Caverns

**END OF TEXT**

# FIGURES

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## 圖例 LEGEND:

- 擬建岩洞範圍 PROPOSED CAVERN EXTENT
- 擬建水管 PROPOSED WATER MAINS
- 將騰出的現址 EXISTING SITE TO BE RELEASED
- 現有油塘食水配水庫 EXISTING YAU TONG FRESH WATER SERVICE RESERVOIR
- 現有油塘二號食水配水庫 EXISTING YAU TONG NO.2 FRESH WATER SERVICE RESERVOIR
- 現有油塘海水配水庫 EXISTING YAU TONG SALT WATER SERVICE RESERVOIR
- 擬建行車通道方案 PROPOSED OPTION FOR VEHICULAR ACCESS TUNNEL
- 綠化帶 GREEN BELT
- 在隧道入口擬建的附屬設施 PROPOSED ANCILLARY FACILITIES NEAR ACCESS PORTAL
- 擬建緊急行人通道方案 PROPOSED OPTION FOR EMERGENCY MAN ACCESS TUNNEL

擬建緊急行人通道方案
PROPOSED EMERGENCY MAN ACCESS TUNNEL PORTAL

## 注 NOTES:

1. 擬建岩洞、隧道和入口的佈局有待詳細設計。
THE LAYOUT OF PROPOSED CAVERNS, TUNNEL AND PORTALS IS SUBJECT TO DETAILED DESIGN.
2. 為保證清晰，其他附帶工程沒有顯示。
OTHER ASSOCIATED WORKS ARE NOT SHOWN FOR CLARITY.

合約編號 Agreement No.
CE 88/2021 (WS)

工程項目名稱 Project Title
搬遷油塘食水及海水配水庫群往岩洞
RELOCATION OF YAU TONG GROUP FRESH WATER AND SALT WATER SERVICE RESERVOIRS TO CAVERNS – INVESTIGATION, DESIGN AND CONSTRUCTION

附圖名稱 Figure Title
位置圖
LOCATION PLAN

草圖編號 Drawing No.
圖一 Figure 1

修訂 Revision
–

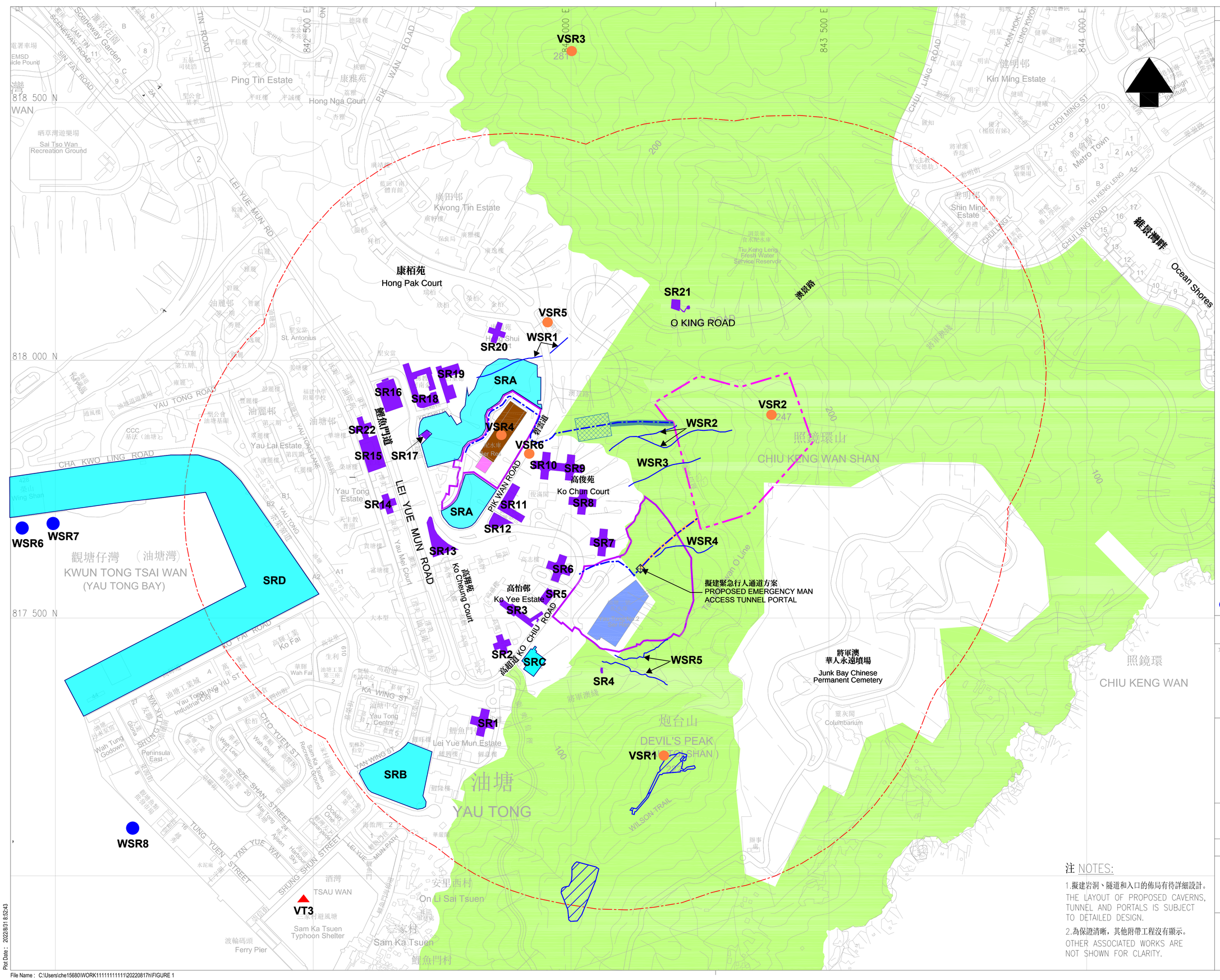
比例 Scale
A1 1 : 5000
A3 1 : 10000

業主 Client
水務署 Water Supplies Department

顧問 Consultant
BINNIES HONG KONG LIMITED
賓尼斯工程顧問有限公司

Plot Date : 2022/8/31 8:52:43

File Name : C:\Users\che15680\WORK\11111111111\20220817h\FIGURE 1

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LEGEND:

- 擬建岩洞範圍 PROPOSED CAVERN EXTENT
- 擬建水管 PROPOSED WATER MAINS
- 將騰出的現址 EXISTING SITE TO BE RELEASED
- 500米評估範圍 500m ASSESSMENT AREA
- 現有油塘食水配水庫 EXISTING YAU TONG FRESH WATER SERVICE RESERVOIR
- 現有油塘二號食水配水庫 EXISTING YAU TONG NO.2 FRESH WATER SERVICE RESERVOIR
- 現有油塘海水配水庫 EXISTING YAU TONG SALT WATER SERVICE RESERVOIR
- 擬建行車通道方案 PROPOSED OPTION FOR VEHICULAR ACCESS TUNNEL
- 綠化帶 GREEN BELT
- 在隧道入口擬建的附屬設施 PROPOSED ANCILLARY FACILITIES NEAR ACCESS PORTAL
- 擬建緊急行人通道方案 PROPOSED OPTION FOR EMERGENCY MAN ACCESS TUNNEL
- 現有文化遺產 EXISTING CULTURAL HERITAGE SITE
- 現有的敏感受體 EXISTING SENSITIVE RECEIVERS
- 規劃中的敏感受體 PLANNED SENSITIVE RECEIVERS
- 海水水質監測站 MARINE WATER MONITORING STATION
- 視覺敏感受體 VISUALLY SENSITIVE RECEIVERS
- 水敏感受體 WATER SENSITIVE RECEIVERS

Agreement No.
CE 88/2021 (WS)

工程項目名稱 Project Title
搬遷油塘食水及海水配水庫群往岩洞
RELOCATION OF YAU TONG GROUP FRESH WATER AND SALT WATER SERVICE RESERVOIRS TO CAVERNS – INVESTIGATION, DESIGN AND CONSTRUCTION

Figure Title
敏感受體及同期進行項目位置
Locations of Sensitive Receivers and Concurrent Projects

Drawing No.
圖二 Figure 2

Revision
–

Scale
A1 1 : 5000
A3 1 : 10000

業主 Client
水務署
Water Supplies Department

顧問 Consultant
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BINNIES HONG KONG LIMITED
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注 NOTES:

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Plot Date : 2022/8/31 8:52:43

File Name : C:\Users\che15680\WORK11111111111\20220817h\FIGURE 1