

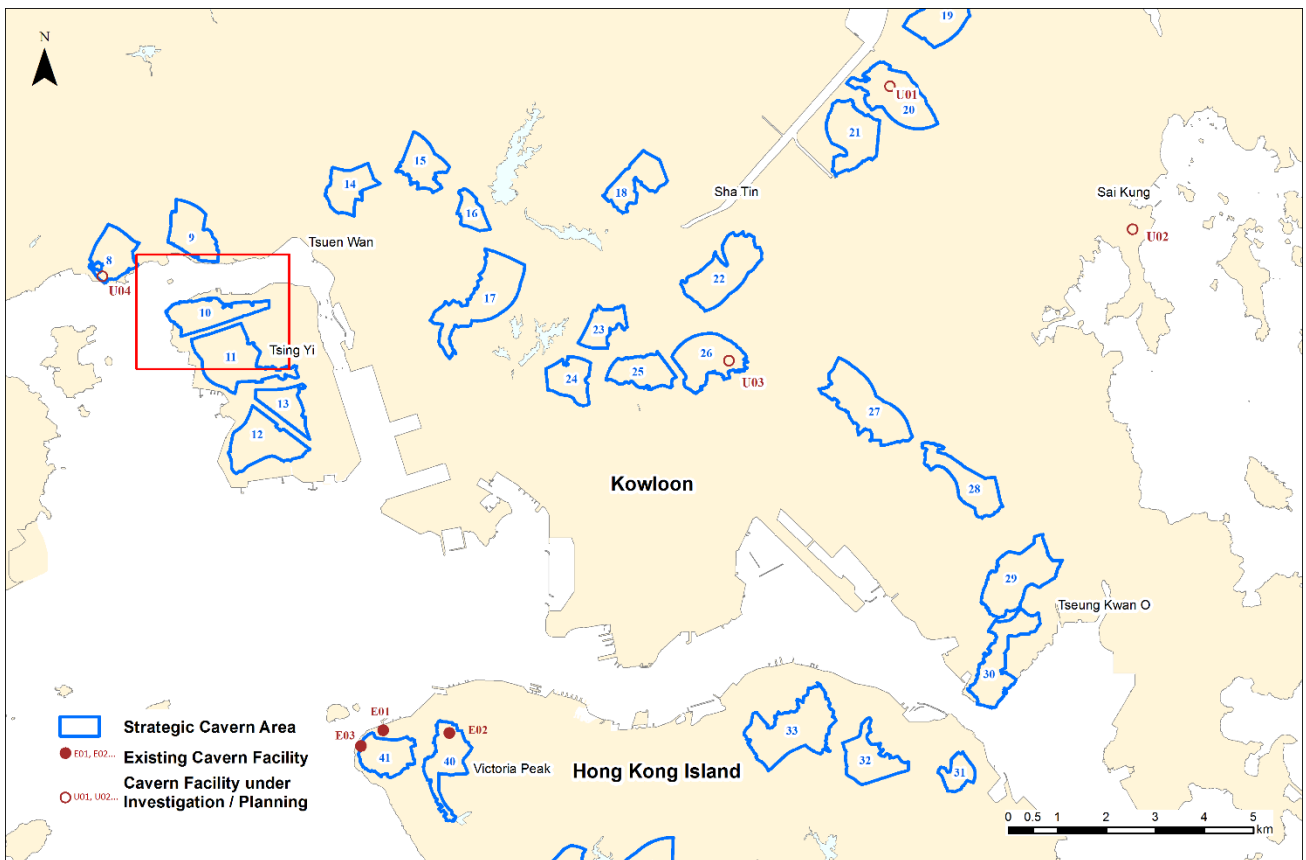
CAVERN MASTER PLAN – INFORMATION NOTE

STRATEGIC CAVERN AREA NO. 10 – TSING YI NORTH

This Information Note describes the characteristics, key development opportunities and constraints of Strategic Cavern Area No. 10 - Tsing Yi North (the SCVA). It indicates the potential land uses suitable for cavern development within the area, but would not pre-empt other possible land uses put forward by the project proponents with justifications. It also denotes the extent of potential portal locations. The spatial context of the SCVA is illustrated in the Reference Drawing appended to this Information Note.

Reference should be made to the Explanatory Statement of the Cavern Master Plan for its background and purposes, as well as the definition and delineation criteria of SCVAs.

1. Location Plan



2. Strategic Cavern Area Details

Outline Zoning Plan (OZP):	Approved Tsing Yi OZP No. S/TY/28
Area:	86.0 ha
Maximum elevation in the SCVA:	+213 mPD
Minimum elevation in the SCVA:	0 mPD

3. District Context

Location

The SCVA is located at the northwestern portion of Tsing Yi Island, which is situated to the west of Kwai Chung and Tsuen Wan. It occupies the areas of Wok Tai Wan, Yau Kom Tau and Cheung Shue Tau. Ngau Kok Wan is to the north of the SCVA, Fung Shue Wo is to the east, Shek Wan is to the south, and the coastal area facing Ma Wan Channel is to the west.

The SCVA is generally hilly with a maximum elevation of about +213 mPD. In the SCVA, the Lantau Link Visitors Centre is located at the western portion. To the north of the SCVA, there is focused development of industrial undertakings including shipyards and cement plant along the northwestern coast of Tsing Yi. To the southwest of the SCVA, there are also focused industrial developments including oil depots, dockyards, container related uses as well as concrete batching plant and asphalt plant along the western coast of Tsing Yi (please refer to Reference Drawing of SCVA No. 11 for the location of the facilities). To the east and southeast of the SCVA, there are residential areas of Tsing Yi which consists of a number of high- to medium-rise residential developments and local village settlements. These include Cheung On Estate (about 150 m to the northeast of the SCVA), Cheung Wang Estate and Cheung Hang Estate (about 200 m and 250 m to the southeast of the SCVA) and Tsing Yu New Village (about 450 m to the southeast of the SCVA).

In the proximity of the SCVA, there are a number of key Government, Institution and Community (GIC) facilities supporting the development of Tsing Yi including clusters of water service reservoirs, such as Tsing Yi North High Level Fresh Water Service Reservoir (about 50 m to the southeast of the SCVA), Tsing Yi North High Level Salt Water Service Reservoir (about 100 m to the southeast of the SCVA), Tsing Yi North Low Level Fresh Water Service Reservoir (about 300 m to the southeast of the SCVA) and Tsing Yi North Low Level Salt Water Service Reservoir (about 350 m to the southeast of the SCVA).

Access

The SCVA is accessed from its western, central, northern and southeastern edges via North West Tsing Yi Interchange, Tsing Yi North Coastal Road and Liu To Road respectively. Regional connections could be routed through the nearby Tsing Long Highway, Cheung Tsing Highway and Lantau Link.

The MTR Airport Express/Tung Chung Line runs through Tsing Yi with Tsing Yi Station at about 700 m to the east of the SCVA.

Land Use Zoning

Under the Approved Tsing Yi OZP No. S/TY/28, the majority of the SCVA falls within an area zoned “Green Belt” (“GB”), with an area in the western portion zoned “Other Specified Uses” annotated “Viewing Platform” and an area in the eastern portion zoned “Government, Institution or Community” (“G/IC”). The surrounding areas of the SCVA are mainly zoned “GB” to the south, “G/IC” and “Residential (Group A)” to the southeast, “Other Specified Uses” annotated “Recreational and Tourism Related Uses” to the north and southwest, and “Other Specified Uses” annotated “Boatyard and Marine-oriented Industrial Uses” and “Other Specified Uses” annotated “Cement Plant” to the north.

For details of the latest land use zonings on the OZP, please refer to the Town Planning Board website (<http://www.tpb.gov.hk>).

There is currently no existing or planned cavern facility within the SCVA.

4. Summary of Characteristics of Strategic Cavern Area

4.1. Boundary

The northern boundary of the SCVA is defined by Tsing Yi North Coastal Road, private lots, coastline and areas zoned “Other Specified Uses” annotated “Boatyard and Marine-oriented Industrial Uses” and “Other Specified Uses” annotated “Recreational and Tourism Related Uses”. The eastern and western boundaries of the SCVA are defined by the railway tunnel and coastline respectively. The southern boundary of the SCVA is defined by the railway tunnel and Liu To Road.

4.2. Geology

The solid geology of the SCVA is primarily coarse ash crystal tuff, which belongs to Yim Tin Tsai Formation; coarse ash crystal tuff and tuff breccia locally within the northern portion of the SCVA, which belong to Shing Mun Formation; and fine-grained granodiorite within the eastern portion of the SCVA, which belongs to Tai Po Granodiorite. The SCVA is with the rock types that are suitable for cavern development. A number of geological features, such as faults and isolated dykes, are identified within and in the areas surrounding the SCVA. The excavated fine-grained granodiorite within the SCVA is suitable for reuse as construction aggregate. Other excavated rocks within the SCVA can be used as road base materials and for asphalt production, etc.

Further geological information of the SCVA can be found in the 1:20,000-scale Geological Map Sheet 6 (Yuen Long) and Geological Map Sheet 10 (Silver Mine Bay) published by the Geotechnical Engineering Office, Civil Engineering and Development Department.

4.3. Planning

The SCVA is sandwiched between the existing industrial area and residential area in Tsing Yi. Given the SCVA is well connected to the rest of the territory by various major highways, there is potential for the SCVA to support the development of these areas.

The northwestern and western coasts of Tsing Yi, which are to the north and southwest of the SCVA respectively, have been developed as hubs of various industrial uses that require direct marine access and extensive land, including shipyards, cement plant, dockyards, oil depots and container related uses. The advantageous geographical setting and extensive road network connections of Tsing Yi, which are favourable for such kinds of industrial development including shipyards with territorial significance, could be further utilised. The SCVA could provide new space to support the potential expansion of these industrial activities, for example, by housing industrial type of storage/warehousing related uses in caverns. Since part of the northwestern boundary of the SCVA abuts the boundary of Victoria Harbour as defined by the former Harbour-front Enhancement Committee, should any aboveground structures and marine access be included in future cavern development proposals in that area, relevant Government departments, including but not limited to the Harbour Unit of the Development Bureau, should be consulted.

On the eastern and southeastern sides of the SCVA, there are major residential development areas in Tsing Yi. These consist of various high- to medium-rise residential developments (e.g. Cheung On Estate) and local village settlements (e.g. Tsing Yu New Village) supported by a number of GIC facilities (e.g. sports ground, sewage treatment works, service reservoirs, etc.). Should there be any need for providing additional land for residential use, the SCVA may provide the solution space by, for example, relocating some of the suitable infrastructure facilities into caverns (e.g. service reservoirs). By doing so, surface land could be released for other beneficial uses (e.g. residential developments and/or community facilities), and it could also enable more effective utilisation of land resources in Tsing Yi while preserving the natural landscape in Yau Kom Tau and Cheung Shue Tau as a natural buffer between the industrial and residential areas.

The SCVA is strategically located in the urban fringe with easy access to the rest of the territory, including Ma Wan and Lantau via the Lantau Link, Ting Kau and Northwest New Territories via Tsing Long Highway, Tsuen Wan via Tsing Tsuen Bridge, Kwai Chung and the Kowloon mainland via Cheung Tsing Bridge, Tsing Yi Bridge and Kwai Tsing Bridge (please refer to Reference Drawing of SCVA No. 13 for the location of the bridges), and Stonecutters Island and the west Kowloon area via Stonecutters Bridge (please refer to Reference Drawing of SCVA No. 12 for the location of the bridge). This distinctive advantage could be well utilized in developing land uses that require convenient transport infrastructure for serving a large catchment area, such as maintenance depot.

As stated in Section 3, the SCVA encroaches onto the “GB” zone under the Approved Tsing Yi OZP No. S/TY/28. According to its Explanatory Statement, the “GB” zone serves the purpose of protecting the existing ridgeline which provides physical barriers separating the oil depots in the south and west of Tsing Yi from residential developments in the north-east. The land above +150 mPD in the “GB” zone is designated as ‘No Borrow Area’ by the Coordinating Committee on Land-use Planning and Control relating to Potentially Hazardous Installations (CCPHI) in 1988, where borrowing and alternation of landforms are prohibited. Any alteration of the ridge below 150mPD has to be agreed with concerned departments including the Gas Standards Office of Electrical and Mechanical Services Department. Project proponents shall consult relevant departments if the proposed land uses and portals involve alternation of the ridge below 150mPD.

4.4. Environmental

Environmental sensitive receivers to cavern development in the SCVA are the nearby residential developments (e.g. Cheung On Estate, Cheung Wang Estate and Cheung Hang Estate) located close to the extent of potential portal locations. There may be potential land contamination in the areas of industrial facilities, e.g. shipyards, dockyards, cement plants, etc., located close to the northern and southwestern boundary of the SCVA and further investigation may be required in future cavern development project in the vicinity. Additionally, some natural water courses and streams are located within the SCVA.

All potential environmental constraints, which may impose restrictions on the cavern development, should be identified and taken into account under the Environmental Impact Assessment Ordinance (EIAO) and other relevant ordinances. Project proponents are required to take into account the potential environmental constraints when planning each cavern development project and undertaking the environmental impact assessment under the EIAO to determine its environmental acceptability, potential environmental impacts and environmental mitigation measures required.

4.5. Traffic

The SCVA can be accessed from its western, central, northern and southeastern edges via North West Tsing Yi Interchange, Tsing Yi North Coastal Road and Liu To Road respectively. Regional connections could be routed through the nearby Tsing Long Highway, Cheung Tsing Highway and Lantau Link.

The majority of the extent of potential portal locations is accessed from the expressways. Access to certain direction of an expressway limits the accessibility as it requires the vehicles to arrive and depart in a single direction. However, access to the expressway network does allow for efficient connection to other areas of Hong Kong. The expressways that pass through Tsing Yi are of high capacity that would be able to accommodate various high traffic generating land uses, provided that such traffic generated by the lands uses would not adversely affect the function or strategic nature of the expressways.

As the SCVA is located at the northwestern coast of Tsing Yi, direct marine access can be considered and may be beneficial to some potential land uses that require marine transport. Since part of the SCVA abuts the boundary of Victoria Harbour as defined by the former Harbour-front Enhancement Committee, should any aboveground structures and marine access be included in future cavern development proposals in that area, relevant Government departments, including but not limited to the Harbour Unit of the Development Bureau, should be consulted.

4.6. Other Key Issues / Constraints on Cavern Development

A railway tunnel for the Airport Express and Tung Chung Line is located at 50 m away from the southern boundary of the SCVA. Due to the horizontal separation, this tunnel would not pose any insurmountable constraint to cavern development in the SCVA.

5. Potential Land Uses

The potential land uses for the SCVA are as follows:

Land use	Description
Maintenance Depot	<p>The SCVA is located at the urban fringe connected with extensive road network with high traffic capacity, and is easily accessible via various major highways, such as Tsing Long Highway, Cheung Tsing Highway and Lantau Link. There is thus potential to develop suitable land uses that require convenient transport infrastructure for serving a large catchment area, such as maintenance depot.</p> <p>Some potential portal locations of the SCVA are away from existing residential areas, which make the SCVA compatible with such land use.</p>
Service Reservoir	<p>Tsing Yi is home of various residential developments (e.g. Cheung On Estate, Cheung Hang Estate, etc.) and has the potential for further growth given it is located in an urban setting equipped with well-established infrastructural systems. There is thus opportunity to develop suitable land uses to support the potential expansion of the residential areas, by relocating some of the suitable infrastructure facilities, such as service reservoir, to caverns.</p> <p>Existing service reservoirs are found in the vicinity of the SCVA. Relocation of the facility to caverns may be considered, thereby releasing the surface land for other beneficial uses (e.g. residential developments and/or community facilities).</p>

Land use	Description
Storage / warehousing	<p>Tsing Yi is a hub of various industrial uses that require direct marine access and extensive land, including the focused development of shipyards, cement plant, dockyards, oil depots and container related uses to the north and southwest of the SCVA. Given that the SCVA is also easily accessed via various major highways, there is thus potential to develop suitable land uses to support the potential expansion of these industrial activities of territorial significance, for example, by developing related warehousing facilities in caverns.</p> <p>Some potential portal locations of the SCVA are fronting the existing industrial areas including shipyards and away from the existing residential areas, which make the SCVA compatible with such land use.</p>

Note: Zoning amendment/planning application may be required to facilitate the pursuit of the above potential land uses.

6. Extent of Potential Portal Locations

The extent of the potential portal locations is shown on the Reference Drawing.

The potential portal locations are at Liu To Road, Tsing Yi North Coastal Road and its slip road, slip road branched from the North West Tsing Yi Interchange, and at the slope at the western boundary of the SCVA.

The potential portal location at Liu To Road is located at the slope alongside the carriageway. The potential portal locations at expressways or its slip roads, including Tsing Yi North Coastal Road and its slip road, and the slip road branched from the North West Tsing Yi Interchange, could be accessed directly from the adjacent carriageways. However, the connections to portals may require adequate merging and diverging arrangements. The construction of portals and/or the merging and diverging arrangement for these accesses would likely involve slope excavation and construction of retaining structures.

The potential portal location at the western boundary of the SCVA will require necessary road works to enable access by vehicle subject to further investigation and detailed design. As the SCVA is located along the coast, it may be accessed by marine traffic. Project proponents should take into account the need for such upgrades so that road or marine access can be provided to this potential portal location.

There are natural slopes above some of the potential portal locations. There may be potential natural terrain hazards in the vicinity of the potential portal locations which may require further study by the project proponents.

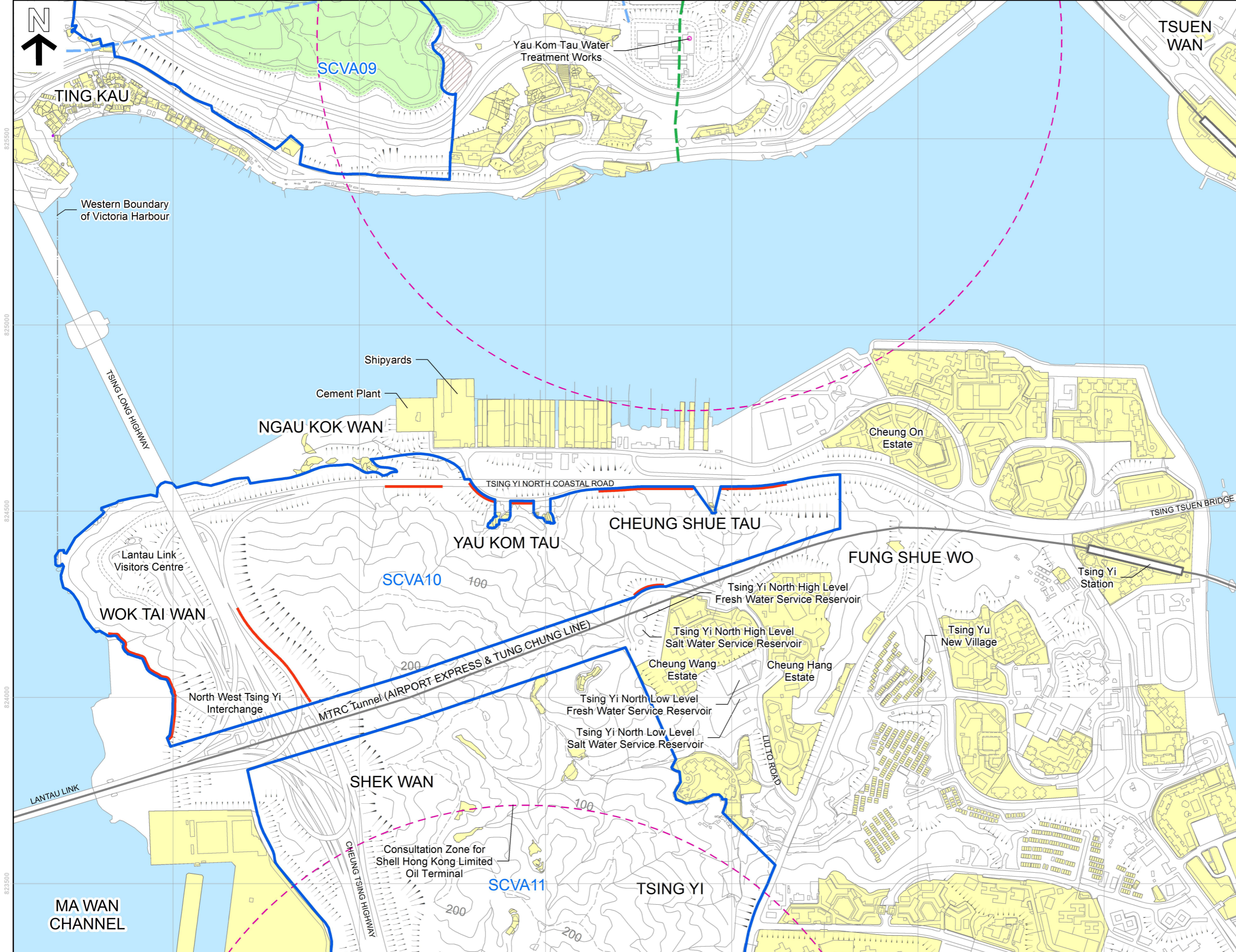
Project proponents should carry out further studies on identifying specific locations of portals for the proposed cavern development.

7. Concluding Remarks

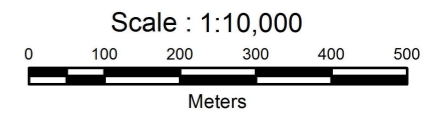
The SCVA presents an opportunity for locating suitable land uses in rock caverns to serve the neighbouring residential communities (e.g. by housing service reservoirs). It can also facilitate the growth of the local industrial hub with territorial significance by housing its related uses (e.g. storage/warehousing). There is also potential to locate maintenance depot which could well utilise its strategic location and comprehensive transport network. Project proponents for cavern development should take due consideration of the existing and potential residential/industrial developments, environmental sensitive receivers and accessibility for cavern development, to minimise the interfacing issues and bring about greater synergy and opportunities.

8. Notes

The Cavern Master Plan and all supporting documents do not exempt project proponents for cavern development from following the relevant statutory and planning procedures. Information including the potential land uses and the extent of potential portal locations indicated in this Information Note should serve as reference materials only. In formulation of development proposals, project proponents should conduct the necessary studies and assessments relevant to each project stage. Reference should be made to the “Implementation” section of the Explanatory Statement of the Cavern Master Plan for further details.



- Legend**
- Strategic Cavern Area
 - Extent of Potential Portal Locations
 - Existing Railway Line
 - Drainage Services Department Tunnel
 - Water Supplies Department Tunnel
 - Reservoir / Sea
 - Site of Archaeological Interest
 - Private Lot
 - Burial Ground
 - Potentially Hazardous Installation
 - Consultation Zone of Potentially Hazardous Installation
 - Country Park



REFERENCE DRAWING OF STRATEGIC CAVERN AREA NO. 10 - TSING YI NORTH