

CAVERN MASTER PLAN – INFORMATION NOTE

STRATEGIC CAVERN AREA NO. 30 – YAU TONG

This Information Note describes the characteristics, key development opportunities and constraints of Strategic Cavern Area No. 30 - Yau Tong (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 Plans (OZPs):	Approved Cha Kwo Ling, Yau Tong, Lei Yue Mun OZP No. S/K15/25 Draft Tseung Kwan O OZP No. S/TKO/25
Area:	108.8 ha
Maximum elevation in the SCVA:	+205 mPD
Minimum elevation in the SCVA:	0 mPD

3. District Context

Location

The SCVA is located to the east of Yau Tong in the east Kowloon. It covers the area of Devil's Peak (Pau Toi Shan) and Chiu Keng Wan Shan. Tseung Kwan O town centre is to the northeast of the SCVA, Tiu Keng Leng is to the east, Yau Tong to the west and Lam Tin to the northwest.

The SCVA is generally hilly with a maximum elevation of about +205 mPD. Yau Tong No. 2 Fresh Water Service Reservoir is located in the middle portion of the SCVA, and Che Ting Tsuen and Ma Pui Tsuen are located in the southern portion of the SCVA. There are several residential developments surrounding the SCVA. To the northeast of the SCVA, there is the Tseung Kwan O town centre which mainly consists of high-rise residential developments, including Choi Ming Court (about 400 m to the northeast of the SCVA) and Park Central (about 600 m to the northeast of the SCVA). To the east of the SCVA, Tiu Keng Leng comprises high-rise residential developments, including Shin Ming Estate (at the northeastern boundary of the SCVA), Kin Ming Estate (about 250 m to the northeast of the SCVA) and Ocean Shores (at the northeast boundary of the SCVA). To the west and northwest of the SCVA, Yau Tong and Lam Tin are two major residential areas with high-rise residential developments including Lei Yue Mun Estate (at the western boundary of the SCVA), Ko Yee Estate (at the western boundary of the SCVA), Kwong Tin Estate (about 250 m to the northwest of the SCVA), Hong Nga Court (about 650 m to the northwest of the SCVA), and local villages including On Li Sai Tsuen and Ma Wan Tsuen (both at the southwestern boundary of the SCVA).

A number of key Government, Institution and Community (GIC) facilities support the development of these residential areas, including Tiu Keng Leng Fresh Water Service Reservoirs (about 100 m to the north of the SCVA), Yau Tong Fresh Water Service Reservoir and Yau Tong Salt Water Service Reservoir (both about 100 m to the northwest of the SCVA), and Lam Tin South Sports Centre (about 500 m to the northwest of the SCVA). Also, the Tseung Kwan O Chinese Permanent Cemetery and Tseung Kwan O Columbarium (both at the eastern boundary of the SCVA) are the GIC facilities supporting both local communities and the territory.

Access

The SCVA is accessed from its northern boundary via Chui Ling Road, and western boundary via Wilson Trail off Ko Chiu Road, Cha Kwo Ling Road, an access road to Yau Tong No. 2 Fresh Water Service Reservoir and Pik Wan Road. Regional connections could be routed through the nearby Tseung Kwan O Road, Tseung Kwan O Tunnel and Eastern Harbour Crossing.

The MTR Kwun Tong Line and Tseung Kwan O Line serve the neighbouring areas of the SCVA. The closest stations include Tiu King Leng Station (interchange station of Tseung Kwan O Line and Kwun Tong Line; about 50 m to the north of the SCVA), Yau Tong Station (interchange station of Tseung Kwan O Line and Kwun Tong Line; about 400 m to the west of the SCVA) and Lam Tin Station (Kwun Tong Line; about 1,100 m to the northwest of the SCVA).

Land Use Zoning

The SCVA straddles two OZPs including the Approved Cha Kwo Ling, Yau Tong, Lei Yue Mun OZP No. S/K15/25 and the Draft Tseung Kwan O OZP No. S/TKO/25. While the majority of the SCVA is zoned “Green Belt” (“GB”) under the two OZPs, a small portion of the SCVA in the west is zoned “Government, Institution or Community” (“G/IC”) under the Draft Cha Kwo Ling, Yau Tong, Lei Yue Mun OZP. Some isolated small portions along the southeastern boundary of the SCVA on the coastline are not covered by any Statutory Plan. The zonings of surrounding areas includes “GB” to the north and east, “Residential (Group A)” and “G/IC” to the north and west, “Village Type Development” to the southwest, “Other Specified Uses” annotated “Cemetery” to the east and “Other Specified Uses” annotated “Ventilation Building” to the west.

For details of the latest land use zonings on the OZPs, 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 O King Road and Chui Ling Road. The eastern boundary of the SCVA is defined by Tseung Kwan O Chinese Permanent Cemetery and the valley topography. The western boundary of the SCVA is defined by Pik Wan Road, Ko Chiu Road and residential developments, including Ko Chun Court, Ko Yee Estate and Lei Yue Mun Estate. The southern boundary of the SCVA is defined by On Li Sai Tsuen, Ma Wan Tsuen and the coastline.

4.2. Geology

The solid geology of the SCVA is primarily medium-grained granite in the western portion, which belongs to Kowloon Granite; fine-grained granite in the central and eastern portions, which belongs to Mount Butler Granite; and fine ash tuff in the southeastern portion, which belongs to Mount Davis Formation. The SCVA is with the rock types that are suitable for cavern development. A number of geological features, such as faults, photolineaments and isolated dykes, are identified within and in areas surrounding the SCVA. The excavated fine-grained granite and medium-grained granite within the SCVA are suitable for reuse as concrete aggregate. Other excavated rock can be used as road base material and for asphalt production, etc.

Further geological information of the SCVA can be found on the 1:20,000-scale Geological Map Sheet 11 (Hong Kong & Kowloon) published by the Geotechnical Engineering Office, Civil Engineering and Development Department.

4.3. Planning

The SCVA is surrounded by various high-density urban developments, including those in Tseung Kwan O, Tiu Keng Leng, Lam Tin and Yau Tong. These are the major residential communities in the district, and there is potential for the SCVA to support their development. The surrounding areas are also well connected by major road networks and railways to the rest of the territory. It is noteworthy that an engineering technical feasibility study for columbarium development at Devil's Peak is currently being carried out under Agreement No. CE 54/2011 (CE).

The abovementioned high-rise and high density residential developments in areas surrounding the SCVA (e.g. Kin Ming Estate, Park Central, Shin Ming Estate and Lei Yue Mun Estate) and the local villages (e.g. On Li Sai Tsuen and Ma Wan Tsuen) are supported by various GIC facilities (e.g. sports ground, service reservoir, schools, etc.). Should there be any need for providing additional land for residential use, the SCVA may provide solution space by, for example, relocating some of the suitable community facilities (e.g. leisure centre/sports centre) and/or infrastructure facilities (e.g. service reservoir) to caverns. 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 the district while preserving the natural landscape in Devil's Peak (Pau Toi Shan) and Chiu Keng Wan Shan as a green backdrop to the surrounding residential communities.

Given the close proximity of the SCVA to various major residential areas and railway stations, the SCVA also has the potential to support uses which require good connectivity and easy access by the locals and the general public, such as retail (e.g. large retail complex, outlet malls, etc.), food and beverage and warehousing (e.g. mini-storage). The development of these land uses could contribute to meet the potential demand from the local communities as well as from the territory.

Tseung Kwan O New Town located to the northeast of the SCVA is a major developed area with residential communities as well as commercial and industrial related uses. In particular, a data centre cluster has been developed in the Tseung Kwan O Industrial Estate (TKOIE) (about 2.4 km to the southeast of the SCVA) with 11 data centres being in use to serve the financial, cloud and hosting sectors. There is also a plan to develop a Data Technology Hub in the TKOIE¹. Thus, there is potential for the SCVA to provide additional space to support future expansion of the industry by housing more data centres and related facilities in caverns, which is in line with the Government's policy objective of promoting Hong Kong as a data centre hub. Other related uses, such as research/testing laboratories, can be considered as well to support the high value-added research and development/testing development in the area.

¹ For more details on the proposed Data Technology Hub, please refer to the Legislative Council Paper for Finance Committee No. FCR (2016-17)31 for discussion on 27 May 2016, prepared by the Innovation and Technology Bureau, May 2016.

4.4. Environmental

Environmental sensitive receivers to cavern development in the SCVA are the nearby residential developments (e.g. Shin Ming Estate, Ko Chun Court, Ko Yee Estate, Lei Yue Mun Estate, Kwong Tin Estate, Ocean Shores, Ma Wan Tsuen, Che Ting Tsuen, Ma Pui Tsuen and On Li Sai Tsuen) and school (e.g. Caritas Bianchi College of Careers). The Fortifications at Devil's Peak (Grade 2 historic buildings) are located in the southern portion of the SCVA and Tin Hau Temple at Ma Wan Tsuen (Grade 3 historic building) is in southern boundary of the SCVA. The southeastern boundary of the SCVA is on the natural coastline of Junk Bay. In addition, a Coastal Protection Area is located to the southwest of the SCVA. There are natural and modified water courses within the SCVA.

All potential environmental constraints, which may impose restrictions on cavern development, should be identified and taken into account in cavern development proposals 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 northern boundary via Chui Ling Road, from its western boundary via Wilson Trail off Ko Chiu Road, Cha Kwo Ling Road, the access road to Yau Tong No. 2 Fresh Water Service Reservoir and Pik Wan Road. Regional connections could be routed through the nearby Tseung Kwan O Road, Tseung Kwan O Tunnel and Eastern Harbour Crossing.

The extent of potential portal locations at Chui Ling Road in the northern boundary is easily accessible from the expressway network. The connection to the nearest expressway, i.e. Tseung Kwan O Tunnel Road, is reasonably short in distance which allows for easy connection to other areas of Hong Kong.

The extent of potential portal locations at the western boundary can be easily accessed via the existing primary road network through Lei Yue Mun Road, Kwun Tong Bypass and Eastern Harbour Crossing. Access from other areas of Hong Kong is convenient via the expressway network that links with Kwun Tong Bypass and Eastern Harbour Crossing.

Special traffic and transport arrangements including road closure may be implemented to the roads close to the extent of potential portal locations along Wilson Trail leading to the Tseung Kwan O Chinese Permanent Cemetery during Ching Ming and Chung Yeung Festivals. Also, there have been local concerns (including those from Kwun Tong District Council members) on the traffic capacity of the local roads in Kwun Tong. Project proponents should take account of the above when formulating cavern development proposals.

The southeastern boundary of the SCVA is on the coastline of Junk Bay. Provision of direct marine access can be considered as it may be beneficial to some potential land uses that require marine transport.

4.6. Other Key Issues / Constraints on Cavern Development

A Drainage Services Department's tunnel, namely the Harbour Area Treatment Scheme Stage 1 tunnel, passes through the northern portion of the SCVA. A railway tunnel of the Tseung Kwan O Line, passes through the central and northern portions of the SCVA. Tiu Keng Leng Station is located approximately 50 m to the northeastern boundary of the SCVA. A proposed vehicle tunnel, the Lam Tin Tunnel, will pass through the northern portion of the SCVA. Owing to the difference in elevations, these tunnels and station would not pose any insurmountable constraint on cavern development within the SCVA.

There is an engineering technical feasibility study for columbarium development at Devil's Peak being carried out under Agreement No. CE 54/2011 (CE). Project Proponents should take due consideration of the latest progress of the study.

5. Potential Land Uses

The potential land uses for the SCVA are as follows:

Land use	Description
Data Centre	TKOIE has developed with a cluster of data centres with 11 data centres in operation, and a Data Technology Hub is being proposed. There is potential for the SCVA to provide solution space to support the industry by housing data centres and related facilities in caverns. This would also be in line with the Government's policy of promoting Hong Kong as a data centre hub.

Land use	Description
<p style="text-align: center;">Research/Testing Laboratories</p>	<p>Similar to the reason described for “Data Centre” in the above, there is potential for the SCVA to house research/testing laboratories, to support the high value-added research and development/testing development in the area.</p> <p>The development of research/testing laboratories also aligns with the six strategic industries where Hong Kong enjoys clear advantages, as outlined in the 2010/11 Policy Address (i.e. education facilities, medical services, testing and certification services, innovation and technology, environmental industries, cultural and creative industries).</p>
<p style="text-align: center;">Leisure Centre/Sports Centre</p>	<p>The SCVA is located close to a large population catchment as it is adjacent to various existing major residential communities including those in Tseung Kwan O, Tiu Keng Leng, Lam Tin and Yau Tong. There is potential for the SCVA to support the potential expansion of these areas by providing additional supporting community facilities, such as leisure centre/sports centre to meet the demand when such a need arises.</p> <p>The extent of potential portal locations is in close proximity to the existing residential developments (e.g. Shin Ming Estate and Lei Yue Mun Estate) and the railway stations in Tseung Kwan O. The easy access available to the local residents could further enhance the potential for housing such facilities in the SCVA.</p>

Land use	Description
<p style="text-align: center;">Retail/ Food and Beverage</p>	<p>The SCVA is adjacent to the existing major residential communities including those in Tseung Kwan O, Tiu Keng Leng, Lam Tin and Yau Tong, and the railway stations including MTR Tiu King Leng Station which is about 50 m from the SCVA. Given the SCVA is close to a large population catchment and is easily accessible via existing public transport, provision of retail/food and beverage services in large retail complex, e.g. outlets-cum-recreational activities, in the SCVA would help ease the increasing demand from the nearby communities.</p>
<p style="text-align: center;">Service Reservoir</p>	<p>As described above, the SCVA is adjacent to existing major residential communities. Also, Tseung Kwan O is home of various residential developments 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 for the SCVA to develop suitable land uses to support the potential expansion of the surrounding residential areas, by relocating some of the suitable infrastructure facilities, such as service reservoirs, 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 and for integration with the future development.</p>
<p style="text-align: center;">Warehousing</p>	<p>Given the SCVA is located near the existing large residential communities with good accessibility, there is potential for the SCVA to develop related land uses, such as mini-storage, to support the residential developments in these areas and meet the demand from the local communities and from the territory.</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 SCVA can be accessed from the section of Wilson Trail connecting Ko Chui Road, the roundabout adjacent to Lei Yue Mun Estate connecting Cha Kwo Ling Road, and the slope adjacent to Yau Tong No. 2 Fresh Water Service Reservoir to the west of the SCVA; the open space near the junction between O King Road and Pik Wan Road to the northwest; and Chui Ling Road to the northeast.

The potential portal locations on Wilson Trail and Chui Ling Road are on roadside slopes and access could be made via provision of suitable run-in/out or priority controlled junctions, depending on the proposed land use. The access via Chui Ling Road should take into account the nearby MTR Tiu Keng Leng Station to avoid conflict and to better integrate if possible.

The potential portal locations at the slope adjacent to Yau Tong No. 2 Fresh Water Service Reservoir and the roundabout near Lei Yue Mun Estate are on restricted-access roads. Given that the restricted nature, they would unlikely be able to support high traffic generating activities, without major upgrading of the access roads. Project proponents should liaise with relevant stakeholders/parties for permission to use the restricted roads.

The potential portal location near the junction of O King Road and Pik Wan Road is located in a valley below the road level. The access to the potential portal may be feasible by provision of a dedicated access road across the valley. The project proponent should carry out engineering design and traffic assessment to establish the feasibility.

The project proponents may also explore the feasibility using O King Road as access and potential portal locations. O King Road currently is a non-exclusive right-of-way granted to the Ocean Shores. Lands Department shall be consulted if necessary.

The southeastern boundary of the SCVA is on the coastline. Potential portal access via marine transport to cavern facilities may be explored by the project proponents.

There are natural slopes above the potential portal locations. There may be potential natural terrain hazards in the vicinity 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 placing suitable land uses in rock caverns to serve the neighbouring residential communities (e.g. leisure centre/sports centre and service reservoir) as well as to utilise its locational advantage with good accessibility by housing land uses (such as retail/food and beverage and warehousing) that would meet both the local and territorial demand. Also, there is potential for the SCVA to facilitate the growth of the data centres in Tseung Kwan O (i.e. by housing data centres and related facilities), as well as to support the strategic high value-added research and development/testing related industrial growth of Hong Kong (e.g. by housing research/testing laboratories). Project proponents for cavern development should take due consideration of the existing/planned and proposed residential developments, environmental sensitive receivers and the accessibility for cavern development, to minimise the interfacing issues and bring about greater synergy and opportunities.

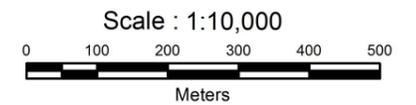
8. Notes

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
- Proposed Major Road
- Vehicle Tunnel
- Drainage Services Department Tunnel
- Sea
- Graded Historic Building
- Private Lot
- Closed Landfill Site
- Consultation Zone of Closed Landfill Site
- Coastal Protection Area (CPA)



REFERENCE DRAWING OF STRATEGIC CAVERN AREA NO. 30 - YAU TONG