

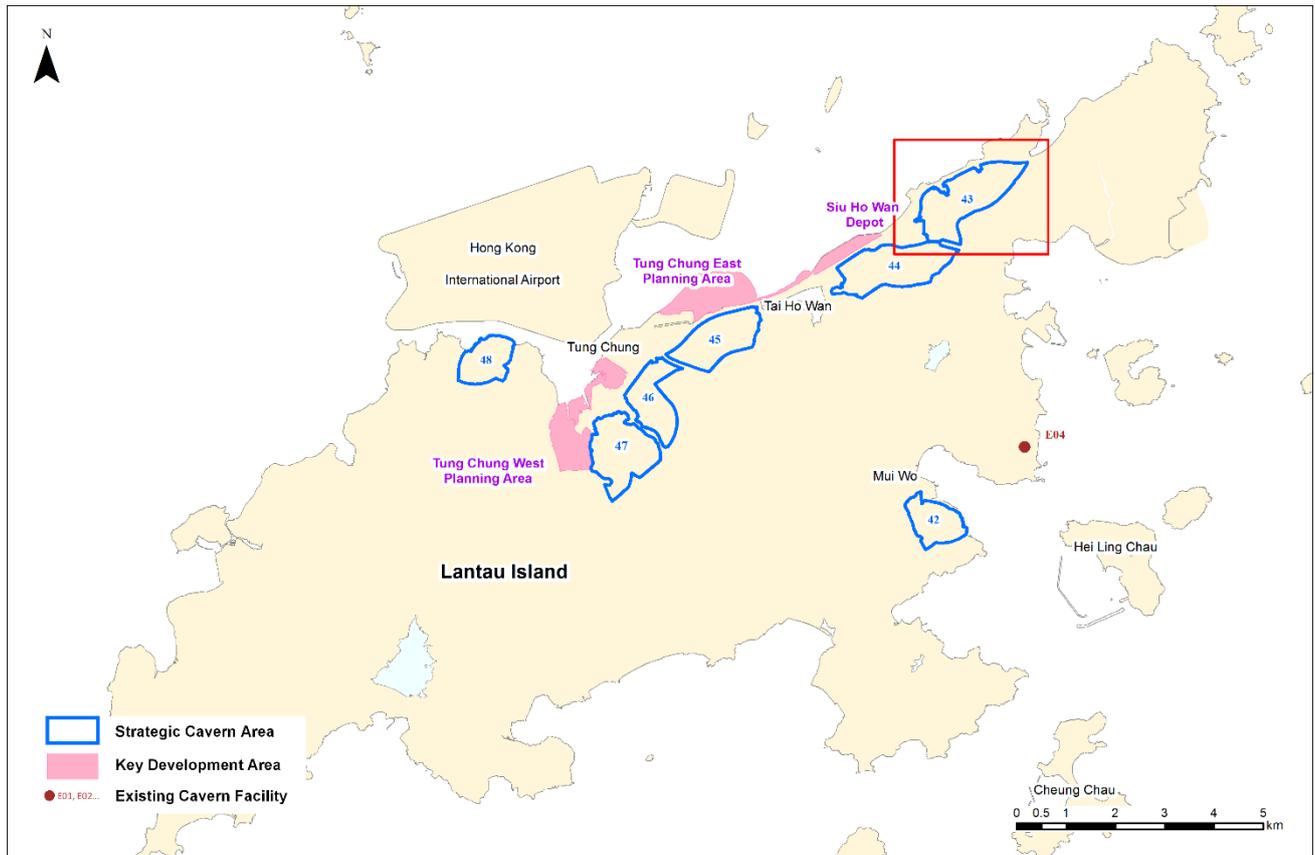
CAVERN MASTER PLAN – INFORMATION NOTE

STRATEGIC CAVERN AREA NO. 43 – SHAM SHUI KOK

This Information Note describes the characteristics, key development opportunities and constraints of Strategic Cavern Area No. 43 - Sham Shui Kok (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):	N/A
Area:	178.3 ha
Maximum elevation in the SCVA:	+296 mPD
Minimum elevation in the SCVA:	+2 mPD

3. District Context

Location

The SCVA is located in the northern part of Lantau Island. It covers the hillside areas of Siu Ho Wan and Tai Che Tung. Sham Shui Kok is located to the north of the SCVA, Sunny Bay is to the northeast, Tai Che Tung and Lantau North (Extension) Country Park are to the south, Siu Ho Wan is to the west, and Tung Chung New Town, Hong Kong International Airport (HKIA), Hong Kong-Zhuhai-Macao Bridge (HZMB) and Hong Kong Boundary Crossing Facilities (HKBCF) (both under construction) are to the further west.

The SCVA is generally hilly with a maximum elevation of about +296 mPD. About half of the SCVA of its central and southern portions encroaches onto Lantau North (Extension) Country Park. The vicinity of the SCVA has not yet been developed but there are a number of key Government, Institution and Community (GIC) facilities. These include Sham Shui Kok Substation (at the northern boundary of the SCVA), North Lantau Transfer Station (about 250 m to the northwest of the SCVA), Sunny Bay Fresh Water Service Reservoir and Sunny Bay Salt Water Service Reservoir (both at the eastern boundary of the SCVA), Siu Ho Wan Sewage Treatment Works (about 400 m to the southwest of the SCVA), Siu Ho Wan Water Treatment Works (at the southwestern boundary of the SCVA), Siu Ho Wan Vehicle Pound, Vehicle Examination Centre and Weigh Station (at the western boundary of the SCVA), Siu Ho Wan Organic Waste Treatment Facilities (currently under construction for commissioning in 2017; at the western boundary of the SCVA), and some maintenance depots (including City Bus Ltd. Siu Ho Wan Bus Depot at the western boundary of the SCVA and Siu Ho Wan Government Maintenance Depot about 1 km to the southwest of the SCVA).

Apart from the existing GIC uses, Siu Ho Wan was identified to have potential for nearshore reclamation under the study of “Enhancing Land Supply Strategy – Reclamation Outside Victoria Harbour and Rock Cavern Development” in 2013. The in progress “Technical Study on Developments at Siu Ho Wan and the Associated Transport Infrastructures – Feasibility Study” will assess the technical feasibility of the proposed reclamation and propose broad land use themes with related transport infrastructures for developments at Siu Ho Wan. The MTRCL is also studying the feasibility of residential development atop the MTR Siu Ho Wan Depot (about 1.6 km to the southwest of the SCVA). In addition, the replacement and rehabilitation of rising mains to Siu Ho Wan Sewage Treatment Works will be developed within the area at Siu Ho Wan.

Access

The SCVA is accessed from its northern, western and southern edges via Cheung Tung Road, an access road to Sham Shui Kok Substation, Sham Shui Kok Drive and Discovery Bay Tunnel Link which is a restricted access road. Regional and cross-boundary connections could be routed through the adjacent North Lantau Highway, Tuen Mun-Chek Lap Kok Link and HZMB (both under construction).

The MTR Airport Express and Tung Chung Line run alongside the North Lantau Highway to the north of the SCVA. There is currently no railway station close to the SCVA.

Land Use Zoning

The entire SCVA is not covered by any Statutory Plan. The area to the immediate south of the SCVA is zoned “Conservation Area” under the Approved Discovery Bay OZP No. S/I-DB/4.

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 Cheung Tung Road, Sham Shui Kok Substation and private lots. The eastern boundary of the SCVA is defined by a geological inferred fault, Sunny Bay Fresh Water Service Reservoir and Sunny Bay Salt Water Service Reservoir. The western boundary of the SCVA is defined by Siu Ho Wan Water Treatment Works and City Bus Ltd. Siu Ho Wan Bus Depot. The southern boundary of the SCVA is defined by Discovery Bay Tunnel Link and Discovery Bay Tunnel. The southeastern boundary of the SCVA is defined by the Conservation Area and by an extent of 800 m from the potential portal locations.

4.2. Geology

The solid geology of the SCVA is primarily feldsparphyric rhyodacite, rhyolite and granite, which belong to East Lantau Rhyodacite and Rhyolite; and coarse ash crystal tuff which belongs to Yim Tin Tsai 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 the areas surrounding the SCVA. The excavated feldsparphyric rhyodacite within the SCVA may be suitable for reuse as construction aggregate, subject to further confirmation by relevant testing on the potential alkali-silica reaction. Nevertheless, the excavated rocks can be used as road base materials and for asphalt production, etc.

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

4.3. Planning

Currently the area in Siu Ho Wan is mainly used for housing various GIC facilities. There are, however, various proposals to develop Siu Ho Wan (including the abovementioned studies for developments at Siu Ho Wan and MTR Siu Ho Wan Depot) and the adjacent areas (including Tung Chung New Town, HKBCF and HKIA). In the 2015 and 2016 Policy Addresses, it was mentioned that there would be potential for development along the existing and future railway lines near Siu Ho Wan. As such, there is potential for the SCVA to support the developments in North Lantau so as to release more surface land for other beneficial uses.

The development of the SCVA could be integrated with the proposed developments in Siu Ho Wan and atop MTR Siu Ho Wan Depot to bring about greater synergy and opportunities. The SCVA could be used to house infrastructure facilities that are required to support the future developments, e.g. housing new or relocating some of the existing GIC facilities in the adjacent areas (e.g. sewage treatment works, refuse transfer facility and maintenance depot), thereby releasing surface land for other beneficial uses. In particular, housing ‘Not-In-My-Backyard’ (NIMBY) type of facilities in caverns could greatly minimise the nuisance to the future community. Furthermore, these would help to reorganise the current land use pattern in Siu Ho Wan so as to enhance the overall development potential of the area. Project proponents should take into account the findings of the abovementioned studies and proposals.

The SCVA is situated at a strategic location near the HKIA, HKBCF and Tung Chung New Town and served with major trunk roads including North Lantau Highway, Tuen Mun-Chek Lap Kok Link and HZMB (both under construction) enabling regional and cross-boundary connections. The Sustainable Lantau Blueprint¹ unveiled by the Development Bureau on 3 June 2017 suggests the strategic economic and housing development at the North Lantau Corridor, and also suggests to strengthen the connectivity of trunk roads along the northern shore of Lantau. This favourable transport infrastructure could be well utilised, for example by housing warehousing, research/testing laboratories and/or data centres in support of the high value-added business and logistics developments in HKBCF, and to facilitate the development of North Lantau as a whole.

4.4. Environmental

Key environmental constraints on cavern development in the SCVA are the Lantau North (Extension) Country Park within and to the south of the SCVA, comprising the natural greenery and lowland forest. Conservation Area is located to the south of the SCVA. There are natural or modified surface water courses within the SCVA. Yam O Site of Archaeological Interest and mangrove site are in close proximity to the northeast of the SCVA. A seawater intake point is in the area to the north of the SCVA.

Bus depots, Siu Ho Wan Sewage Treatment Works, Siu Ho Wan Vehicle Pound, Vehicle Examination Center and Weight Station and Siu Ho Wan Organic Waste Treatment Facilities (under construction for commissioning in 2017) are located close to the SCVA, which may necessitate further investigation on potential land contamination. Also, the SCVA encroaches onto the Potentially Hazardous Installation (PHI) Consultation Zone of Siu Ho Wan Water Treatment Works. Quantitative Risk Assessment will be required during the planning stage before commencement of construction works.

All potential environmental constraints, which may impose restrictions on cavern development, should be identified and taken into account under the Environmental Impact Assessment Ordinance (EIAO) and other relevant ordinances, such as the Country Parks Ordinance. 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.

¹ More information can be obtained from the Sustainable Lantau Blueprint available on the website of the Sustainable Lantau Blueprint, www.lantau.gov.hk.

4.5. Traffic

The SCVA can be accessed from its northern, western and southern edges via Cheung Tung Road, an access road to Sham Shui Kok Substation, Sham Shui Kok Drive and Discovery Bay Tunnel Link which is a restricted access road. Regional and cross-boundary connections can be routed through the adjacent North Lantau Highway via other nearby roads/highways. The connectivity of the SCVA is enhanced by the nearby major transport infrastructure, including the HKIA, HZMB and Tuen Mun-Chek Lap Kok Link (both under construction) as well as the proposed new railway station at Siu Ho Wan.

Access to the North Lantau Highway from the SCVA can be routed through Sunny Bay Road and Penny's Bay Highway (both are about 1.4 km to the east of the SCVA; outside the coverage of the Reference Drawing), or Tung Chung Eastern Interchange (about 5.8 km to the west of the SCVA; outside the coverage of the Reference Drawing).

Discovery Bay Tunnel Link is a toll road with restricted access. Cheung Tung Road is a single carriageway for two-way traffic connecting MTR Sunny Bay Station at the east and Tung Chung at the west. The capacity of Cheung Tung Road should be suitable for various traffic generating activities. Nevertheless, the project proponents would be required to assess the traffic impact on a case by case basis.

4.6. Other Key Issues / Constraints on Cavern Development

Siu Ho Wan/Silver Mine Bay Aqueduct is located approximately 50 m to the southwest of the SCVA. Discovery Bay Tunnel is located about 50 m to the south of the SCVA. Owing to difference in elevation, these tunnels would not pose any insurmountable constraint on cavern development within the SCVA. There is a proposed fresh water tunnel between Siu Ho Wan and Silver Mine Bay Water Treatment Works at the southwestern corner of the SCVA. Project proponents should take into account the existing and proposed underground infrastructure when pursuing cavern development projects.

The SCVA falls within an area that is covered by the Deed of Restrictive Covenant (retrievable at the Lands Registry under Memorial No. 278911) in relation to the Hong Kong Disneyland, which sets height restrictions in the vicinity of the theme park to avoid visual intrusions. Lands Department should be consulted regarding any proposals that may encroach onto the area covered by the deed.

Project proponents need to consult the Coordinating Committee on Land-use Planning and Control relating to Potentially Hazardous Installations (CCPHI) as the SCVA encroaches onto the PHI Consultation Zone of Siu Ho Wan Water Treatment Works.

Project proponents should also take into account the latest progress of the proposed developments at Siu Ho Wan and other developments under the Sustainable Lantau Blueprint.

5. Potential Land Uses

The potential land uses for the SCVA are as follows:

Land use	Description
Data Centre	<p>The SCVA is at a strategic location in North Lantau Corridor where strategic economic and housing development has been suggested under the Sustainable Lantau Blueprint, alongside the HKIA, HKBCF and Tung Chung New Town. The SCVA is supported by major transport infrastructure enabling regional and cross-boundary connections. There is thus potential for the SCVA to house data centres and related facilities, to support the high value-added business and logistics development in North Lantau. This would also be in line with the Government's policy to promote Hong Kong as a data centre hub.</p>
Refuse Transfer Facility	<p>With the potential population intake associated with the proposed developments at Siu Ho Wan and atop MTR Siu Ho Wan Depot, there is potential for the SCVA to support such developments by housing suitable NIMBY type of facilities in caverns, such as refuse transfer facility, to minimise the nuisance to the future community.</p> <p>Existing refuse transfer facility is 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 future development.</p>

Land use	Description
<p>Research/Testing Laboratories</p>	<p>For the same reasons given for “Data Centre” land use, there is potential for the SCVA to house research/testing laboratories, to support the high value-added business and logistics development in North Lantau.</p> <p>The development of research/testing laboratories is in line 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>Maintenance Depot</p>	<p>The SCVA is supported by good road network and is easily accessible by major highways (e.g. North Lantau Highway and the future Tuen Mun-Chek Lap Kok 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>There are existing maintenance depots and related facilities located in the vicinity of the SCVA. Relocation of these facilities to caverns may be considered, thereby releasing the surface land for other beneficial uses and for integration with future development.</p>
<p>Sewage Treatment Plant</p>	<p>Given the potential population intake associated with the proposed developments at Siu Ho Wan and atop MTR Siu Ho Wan Depot, there is opportunity for the SCVA to support the developments by housing suitable NIMBY type of facilities in caverns, such as sewage treatment plant, to minimise the nuisance to the future community.</p> <p>An existing sewage treatment plant is 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>

Land use	Description
Warehousing	Given the potential population intake associated with the proposed developments at Siu Ho Wan and atop MTR Siu Ho Wan Depot and the good connectivity of the SCVA supported by road network and major highways, there is also potential for the SCVA to house warehousing to support the residential developments in the area as well as to serve the high value-added business and logistics development in North Lantau.

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 is generally accessed from Cheung Tung Road and an access road to Sham Shui Kok Substation to the north of the SCVA; Sham Shui Kok Drive and at the slope behind the Siu Ho Wan Water Treatment Works to the west; and Discovery Bay Tunnel Link to the south.

All potential portal locations are located on roadside slopes, and could be accessed by the provision of run-in/out or priority controlled junctions depending on the proposed land-use. They are mostly unrestricted by the existing road configurations, and so would be able to support a range of traffic generating activities. For the potential portal location on Discovery Bay Tunnel Link, which is a restricted access road, the project proponents would have to sort out the land status and right of access issues when planning the cavern project.

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.

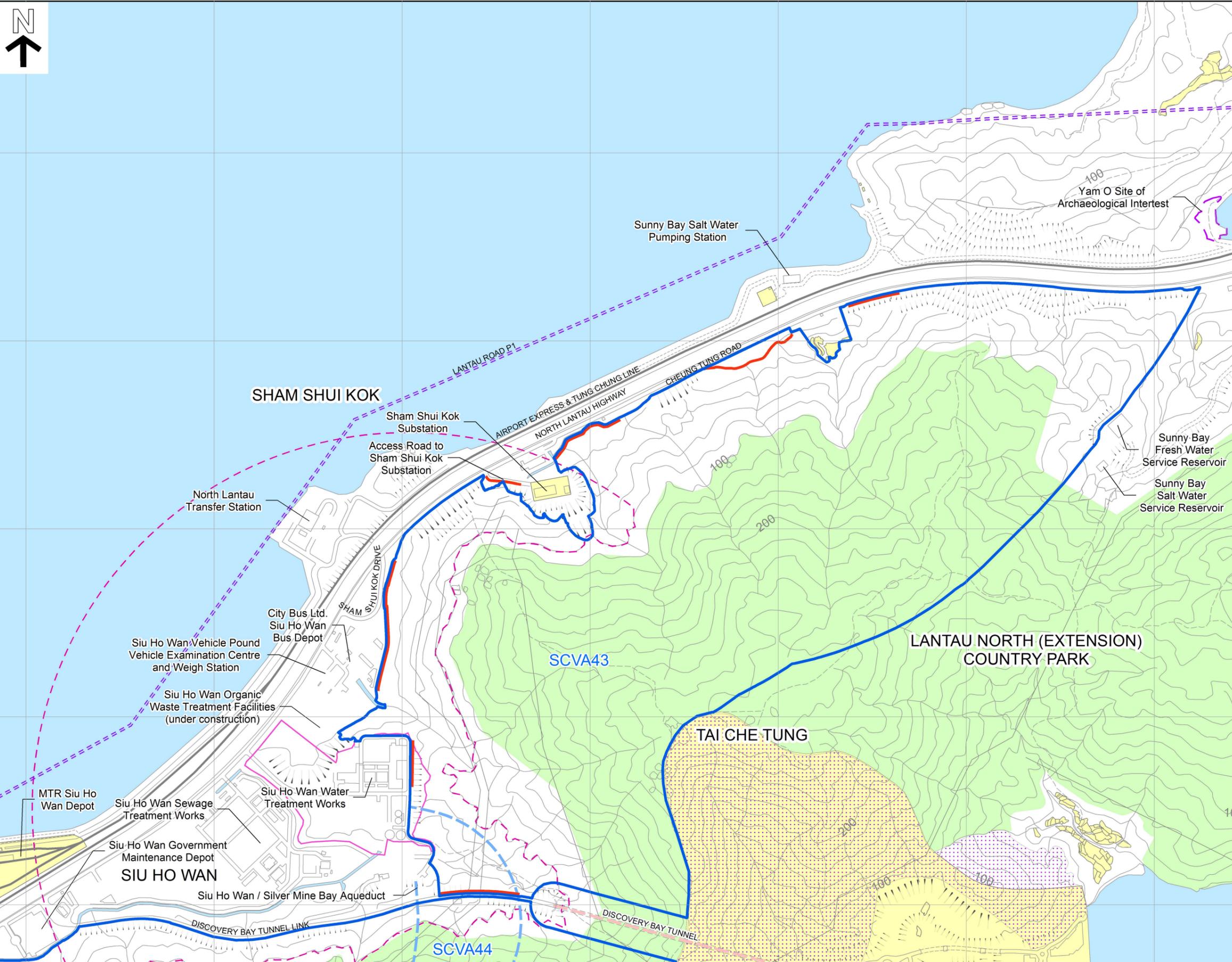
Project proponents should carry out further studies on identifying specific locations of portals for the proposed cavern development.

7. Concluding Remarks

The SCVA presents an opportunity for placing suitable land uses in rock caverns to serve the future developments in Siu Ho Wan (e.g. refuse transfer facility, sewage treatment works, and/or maintenance depot). It also has the potential for housing land uses that could make use of its strategic location and good connectivity to support the development of North Lantau (e.g. research/testing laboratories, data centres and/or warehousing). Project proponents for cavern development should take due consideration of the proposed residential developments, environmental sensitive receivers and the Consultation Zone of the PHI that are in close proximity of the SCVA, accessibility for cavern development and the latest findings of the studies on various developments in North Lantau, to minimise the interfacing issues and bring about greater synergy and opportunities.

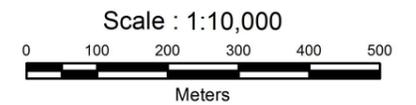
8. Notes

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
-  Water Supplies Department Tunnel
-  River / Nullah / Sea
-  Site of Archaeological Interest
-  Private Lot
-  Potentially Hazardous Installation
-  Consultation Zone of Potentially Hazardous Installation
-  Major Conservation Area
-  Country Park



REFERENCE DRAWING OF STRATEGIC CAVERN AREA NO. 43 - SHAM SHUI KOK