

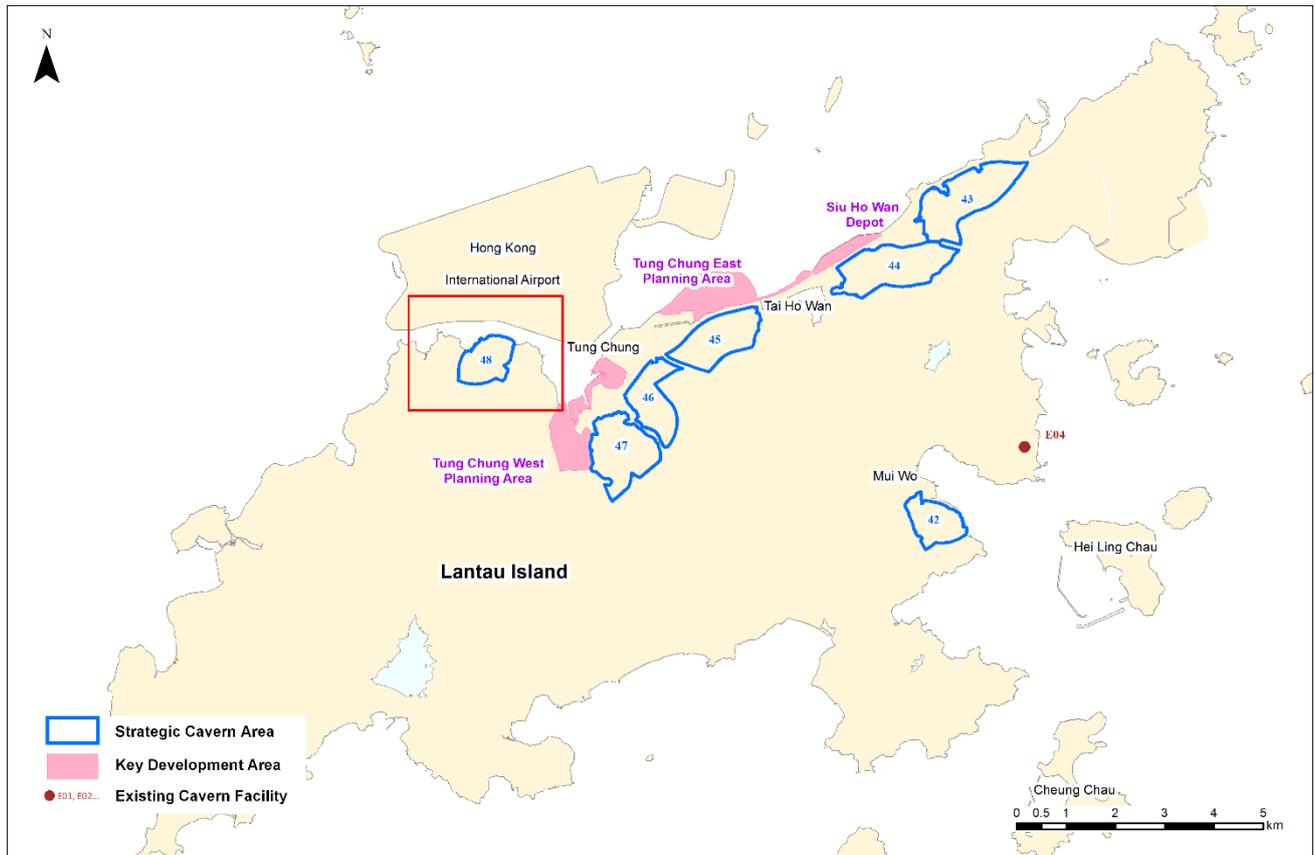
CAVERN MASTER PLAN – INFORMATION NOTE

STRATEGIC CAVERN AREA NO. 48 – KAU LIU

This Information Note describes the characteristics, key development opportunities and constraints of Strategic Cavern Area No. 48 - Kau Liu (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:	82.6 ha
Maximum elevation in the SCVA:	+87 mPD
Minimum elevation in the SCVA:	0 mPD

3. District Context

Location

The SCVA is located in the northern shore of Lantau Island opposite to the island of Chek Lap Kok where the Hong Kong International Airport (HKIA) is situated. It covers the foothill area of Kau Liu. San Tau is to the east of the SCVA, Lantau North (Extension) Country Park is to the south, Sha Lo Wan is to the west and HKIA is to the north across Hau Hok Wan. Tung Chung New Town and Hong Kong Boundary Crossing Facilities (HKBCF) are located to the further east of the SCVA.

The SCVA is generally hilly with a maximum elevation of about +87 mPD. Almost the entire SCVA encroaches onto Lantau North (Extension) Country Park. The vicinity of the SCVA is rural in nature and is mainly occupied by local villages, including Kau Liu Village (at the eastern boundary of the SCVA), San Tau Village (about 250 m to the east of the SCVA) and Sha Lo Wan Tsuen (about 600 m to the west of the SCVA).

Access

There is currently no vehicular access in the vicinity of the SCVA. Marine access to the SCVA could be made via its northern edge along the coastline of North Lantau, subject to provision of pier facilities. Some of the strategic transport infrastructure, including North Lantau Highway, Tuen Mun-Chek Lap Kok Link and Hong Kong-Zhuhai-Macao Bridge (HZMB) (both under construction) are at further east to the SCVA although no road connections are available at present.

Land Use Zoning

The entire SCVA is not covered by any Statutory Plan while the majority of it is designated as the Lantau North (Extension) Country Park. To the north of the SCVA across Hau Hok Wan, the HKIA is covered under the Approved Chek Lap Kok Outline Zoning Plan No. S/I-CLK/14. To the southeast of the SCVA across San Tau, the area is covered under the Approved Tung Chung Valley Outline Zoning Plan No. S/I-TCV/2.

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 coastline and private lots in Hau Hok Wan. The eastern boundary of the SCVA is defined by the San Tau Site of Archaeological Interest and private lots in Kau Liu. The western boundary of the SCVA is also defined by the valley topography. The southern boundary of the SCVA is defined by an extent of 800 m from the potential portal location.

4.2. Geology

The solid geology of the SCVA is primarily fine- to medium-grained granite and microgranite, which belong to Chek Lap Kok Granite. 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- to medium-grained granite within the SCVA are suitable for reuse as construction aggregate. Other 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 9 (Tung Chung) published by the Geotechnical Engineering Office, Civil Engineering and Development Department.

4.3. Planning

At present, the area of the SCVA at Kau Liu is rural in nature with no development except some local villages in the vicinity. The future development of the North Lantau Corridor, which covers the SCVA and the adjoining areas along the coastline, is included in the Sustainable Lantau Blueprint¹ unveiled on 3 June 2017 by the Development Bureau. Several developments to expand the HKIA including the Midfield Development and the proposed third runway with the associated passenger terminal facilities are currently ongoing. As such, in a long-term strategic perspective, there is potential for the SCVA to support these developments so as to release more surface land for other beneficial uses. Provision of appropriate transport and traffic arrangements should be explored to facilitate the potential developments.

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

The development of the SCVA could be integrated with that of the future development under the Sustainable Lantau Blueprint and potential expansion of the HKIA to bring about greater synergy and opportunities. The SCVA could be used to house those facilities required to support the future developments, e.g. storage/warehousing facilities as a back-up area for the Airport Service Area. Existing facilities in the HKIA, including aircraft fuelling and maintenance facilities, could also be relocated to caverns, thereby releasing surface land for other beneficial uses. In particular, housing of bulk oil storage in caverns could make use of the marine access available to the SCVA, providing extensive space for aviation fuel storage facilities.

The SCVA is situated at a strategic location near the HKIA, HKBCF (under construction) and Tung Chung New Town. Though it is the fact that road connection is not available at present, major trunk roads including North Lantau Highway, Tuen Mun-Chek Lap Kok Link and the HZMB (both under construction) further to the east of the SCVA have presented opportunities for regional and cross-boundary connections subject to future additional connection to the SCVA. Should there be new connection to the regional transport infrastructure made available under the Sustainable Lantau Blueprint, the SCVA could house research/testing laboratory in support of the high value-added business and logistics development in HKBCF, as well as to facilitate the development of North Lantau as a whole.

4.4. Environmental

Environmental sensitive receivers to cavern development in the SCVA are the nearby residential areas (e.g. Kau Liu Village and San Tau Village). The SCVA encroaches onto Lantau North (Extension) Country Park substantially. The extent of potential portal location is at the coastal upland with natural hillside landscape and vegetation. San Tau Butterfly Hotspot, fung shui woods in San Tau and the San Tau Beach Site of Special Scientific Interest are located to the east of the SCVA. The SCVA also adjoins the San Tau Site of Archaeological Interest at its east. Sha Lo Wan Site of Archaeological Interest is located about 500 m to the west of the SCVA. There are natural surface water courses within the SCVA.

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.

4.5. Traffic

There is currently no vehicular access in the vicinity of the SCVA. Marine access to the SCVA could be made via its northern edge along the coastline of North Lantau. Some of the strategic transport infrastructure, including North Lantau Highway, Tuen Mun-Chek Lap Kok Link and HZMB (both under construction) are at further east to the SCVA.

The existing pedestrian path along the northern coast of Lantau (i.e. Tung O Ancient Trail) should be retained for pedestrian or hikers.

4.6. Other Key Issues / Constraints on Cavern Development

There is no existing underground facility found in the vicinity or within the SCVA.

5. Potential Land Uses

The potential land uses for the SCVA are as follows:

Land use	Description
Oil Bulk Storage	<p>The SCVA is at a strategic location close to the HKIA. It also has a continuous extent of potential portal locations along the northern coast of Lantau Island opposite to HKIA. There is thus potential for the SCVA to develop suitable land use to support the future development and potential expansion of the HKIA, for example, by housing bulk oil storage, which in general requires direct marine access and extensive storage space.</p> <p>There are existing aviation fuel storage facilities in the HKIA. There is potential to relocate these facilities to caverns in the SCVA to release the surface land for other beneficial uses and for integration with the future development of the HKIA.</p>

Land use	Description
<p style="text-align: center;">Research/Testing Laboratories</p>	<p>The SCVA is at a strategic location close to the HKIA, HKBCF and Tung Chung New Town. Subject to the availability of new road connection to these areas, the SCVA possesses a favourable setting 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 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 style="text-align: center;">Storage/Warehousing</p>	<p>The SCVA is at a strategic location close to the HKIA. Subject to the availability of new road connection to the HKIA, there is potential for the SCVA to develop suitable land use to support the future development and potential expansion of the HKIA, for example, by housing storage/warehousing in caverns, as a back-up area for the Airport Service Area.</p> <p>There are various existing facilities in the Airport Service Area of the HKIA, e.g. aircraft fuelling and maintenance facilities. There is potential to relocate these facilities to caverns in the SCVA to release surface land for other beneficial uses and for integration with the future development of the HKIA.</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 location is shown on the Reference Drawing.

The SCVA is accessed from northern coastline near Kau Liu opposite to Chek Lap Kok. The extent of potential portal location is along the northern boundary of the north Lantau coastline, in which marine access could be established with the provision of landing facilities at suitable location. There is currently no vehicular access to the SCVA. The HZMB is being constructed along the southern shoreline of Chek Lap Kok. A new bridge connecting with South Perimeter Road or HZMB could be a possible future road connection to the SCVA.

The portal for cavern development and its associated works (including slope works) should be sited away from Lantau North (Extension) Country Park as far away as possible to reduce any possible ecological, visual and recreational impacts to the country park and its users.

There are natural slopes above the potential portal location. There may be potential natural terrain hazards in the vicinity which will require further study by project proponents. Any proposed slope works associated with the provision of portal and any other above-ground structures should avoid encroaching onto Lantau North (Extension) Country Park as far as practicable.

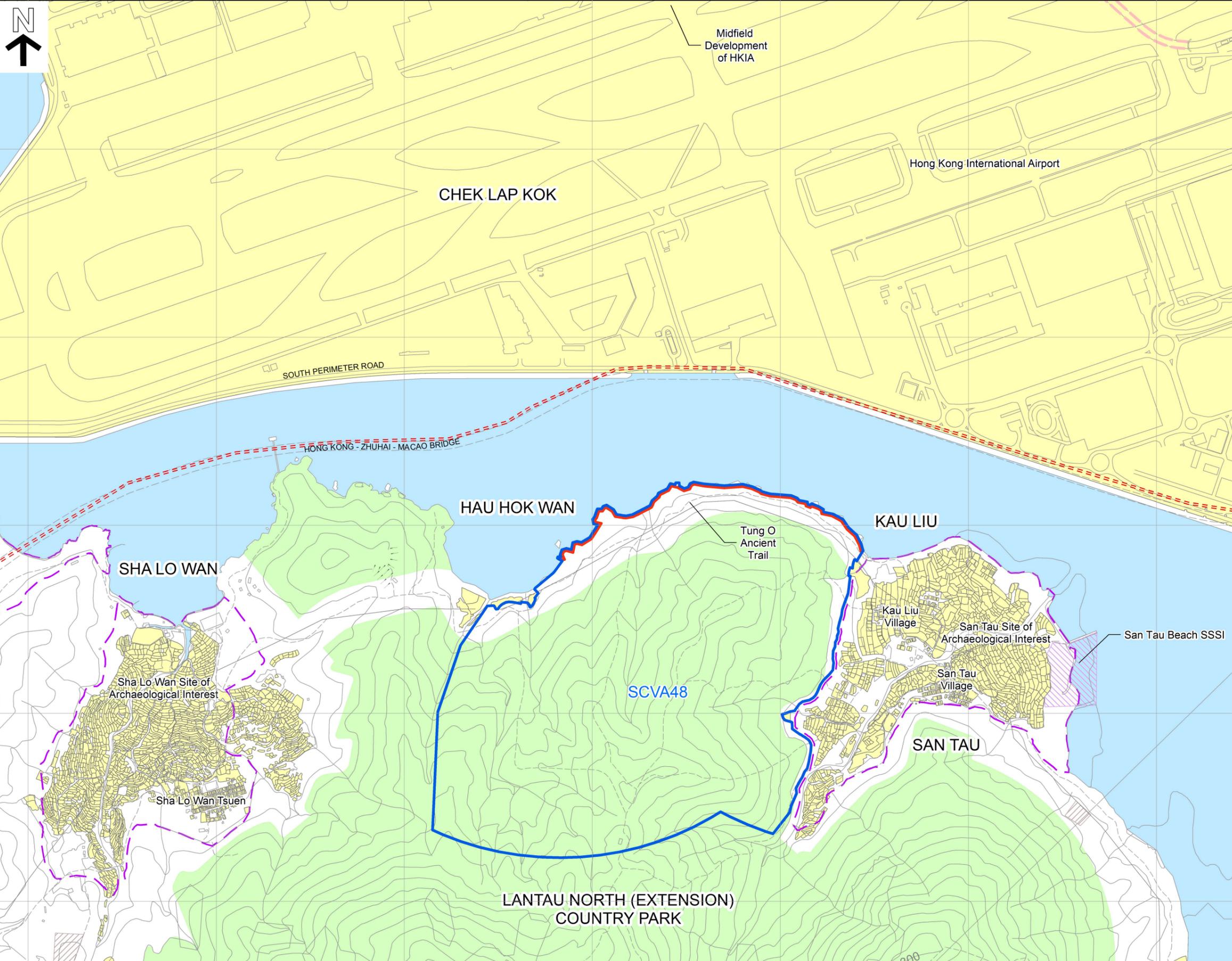
Project proponents should carry out further studies on identifying specific locations of portals for the proposed cavern development.

7. Concluding Remarks

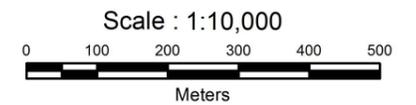
The SCVA is at a strategic location and presents an opportunity for placing suitable land uses in rock caverns to serve the future developments of HKIA (e.g. storage/warehousing and/or oil bulk storage) in the long term. It also has potential to house land uses that could make use of its strategic location to support the development of North Lantau (e.g. research/testing laboratories). However, the lack of existing access to the surrounding areas including HKIA and Tung Chung New Town is one of the main concerns. Additional infrastructural supports have to be provided to the SCVA for cavern development. Project proponents for cavern development should take due consideration of the existing and proposed developments and environmental sensitive receivers in the vicinity, as well as the accessibility of future 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
 - Committed Major Road
 - Vehicle Tunnel
 - Sea
 - Site of Archaeological Interest
 - Graded Historic Building
 - Private Lot
 - Burial Ground
 - Country Park
 - Site of Special Scientific Interest



REFERENCE DRAWING OF STRATEGIC CAVERN AREA NO. 48 - KAU LIU