

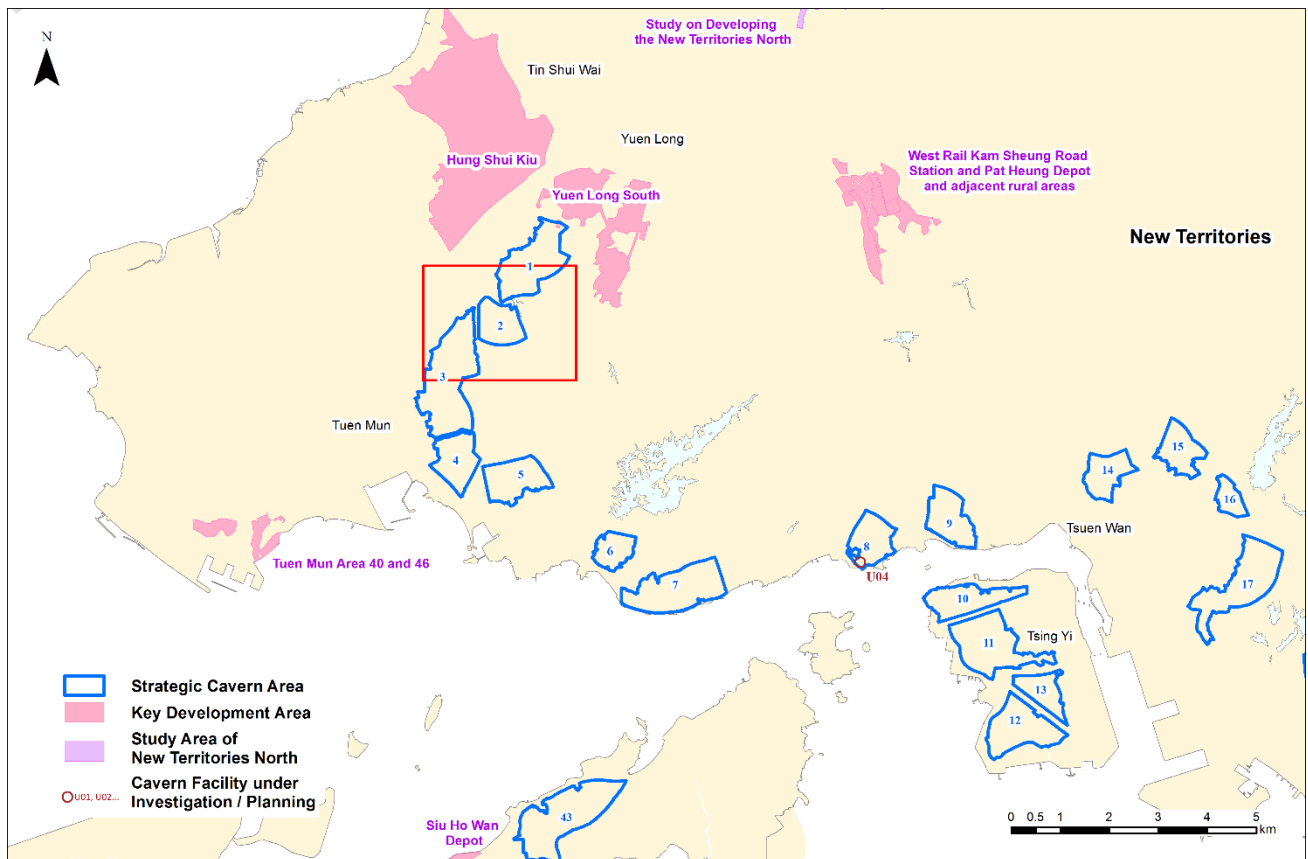
CAVERN MASTER PLAN – INFORMATION NOTE

STRATEGIC CAVERN AREA NO. 02 – LAM TEI

This Information Note describes the characteristics, key development opportunities and constraints of Strategic Cavern Area No. 02 - Lam Tei (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):	Draft Lam Tei and Yick Yuen OZP No. S/TM-LTY Y/9
Area:	69.8 ha
Maximum elevation in the SCVA:	+293 mPD
Minimum elevation in the SCVA:	+31 mPD

3. District Context

Location

The SCVA is located in the western part of the New Territories. To the north of the SCVA is the Hung Shui Kiu New Development Area (HSKNDA) and Yuen Long South Development Area (YLSDA). The northern part of Tuen Mun New Town is located to the west of the SCVA. The majority of the SCVA, including its eastern, western and southern portions, encroaches onto Tai Lam Country Park.

The SCVA is generally hilly with a maximum elevation of about +293 mPD. It partially overlaps in the northern side with Lam Tei Quarry, which has been scheduled to cease operation in 2022. The “Preliminary Land Use Study for Lam Tei Quarry and the Adjoining Areas – Feasibility Study” (the Preliminary Land Use Study) commenced in June 2016. In the proximity to the north and west of the SCVA, there are a number of key Government, Institution and Community (GIC) facilities, including Yuen Long Fresh Water Service Reservoir and Yuen Long Water Treatment Works (about 700 m to the north of the SCVA), Tuen Mun Fresh Water Primary Service Reservoir (about 250 m to the west of the SCVA), Tuen Mun Water Treatment Works (about 800 m to the west of the SCVA) and Lingnan University (about 600 m to the west of the SCVA). The areas to the northwest of the SCVA are mainly residential developments including a number of local village settlements. The nearest of which is Fu Tei Ha Tsuen (about 300 m to the northwest of the SCVA). To the north of the SCVA, Tin Shui Wai and Yuen Long are another two new towns with high-density residential developments. Their population is expected to grow further with the HSKNDA¹ and the YLSDA².

¹ The HSKNDA is a proposed new development area with about 218,000 population. It is positioned as a “Regional Economic and Civic Hub” for the Northwest New Territories providing about 150,000 jobs. First population intake is expected by 2024 and full development is targeted by 2037/38. [Source: Information Digest and Revised Recommended Outline Development Plan (RRODP), Hung Shui Kiu New Development Area Planning and Engineering Study, Planning Department and Civil Engineering and Development Department, September 2016]

² The YLSDA is a proposed extension of the Yuen Long New Town housing a total population of about 88,000 with provisions of supporting facilities. It will create about 10,500 jobs and first population intake is expected by 2027. [Source: Information Digest, Planning and Engineering Study for Housing Sites in Yuen Long South – Investigation, Planning Department and Civil Engineering and Development Department, August 2017]

Access

The SCVA is accessed from its northern edge via the access road on the west of Lam Tei Quarry that connects to Fuk Hang Tsuen Road. Regional connections could be routed through the nearby Yuen Long Highway, Tuen Mun Road and Castle Peak Road, which are located to the north and northwest of the SCVA.

The MTR Light Rail Transit (LRT) runs along Castle Peak Road and the nearest station is Lam Tei Station, which is at about 1 km to the northwest of the SCVA. Siu Hong Station of the MTR West Rail Line is located at about 1.3 km to the west of the SCVA, which connects Lam Tei to Kowloon. An additional MTR West Rail Station, Hung Shui Kiu Station, is proposed at the HSKNDA, which is about 2 km to the northwest of the SCVA (subject to study).

Land Use Zoning

Under the Draft Lam Tei and Yick Yuen OZP No. S/TM-LTY9/9, the northern part of the SCVA is zoned “Green Belt” and “Other Specified Uses” annotated “Quarry” (the part overlaps with Lam Tei Quarry). The remainder of the area is not covered by any Statutory Plan and is designated as Country Park. The zonings of the surrounding areas include “Green Belt” and isolated “Government, Institution or Community” to the west of the SCVA, with the rest being the Tai Lam Country Park.

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 the southern quarry face of Lam Tei Quarry. The eastern and western boundaries of the SCVA are defined by the Hung Shui Hang Irrigation Reservoir and Lam Tei Irrigation Reservoir and their connecting rivers respectively. The southern boundary of the SCVA is defined by an extent at 800 m from the potential portal location.

4.2. Geology

The solid geology of the SCVA is fine-grained granite, which belongs to Tai Lam Granite. The SCVA is with the rock type that is 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 granite within the SCVA is suitable for reuse as construction aggregate.

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

4.3. Planning

The SCVA is close to the existing urban development (i.e. Tuen Mun New Town), the proposed key development areas (i.e. HSKNDA and YLSDA) and Lam Tei Quarry and the adjoining areas. Given that the SCVA is well connected to the rest of the territory by several highways and railways, there is potential for the SCVA to support the development of these areas in its vicinity.

The northern part of Tuen Mun New Town, located to the west of the SCVA, is a local hub of high-density residential developments (e.g. Fu Tai Estate) mixed with GIC facilities (e.g. hospital, water treatment works, service reservoir, school, etc.). The SCVA will be able to provide the solution space to support the potential expansion of Tuen Mun New Town, for example, by relocating some of the suitable government facilities into caverns thereby releasing surface land for other beneficial uses such as residential developments and community facilities. This could help improve the quality of the built environment for more effective utilisation of land resources in Tuen Mun New Town.

The SCVA is immediately adjoining Lam Tei Quarry, which has been scheduled to cease operation in 2022. Project proponents should take into account the findings of the Preliminary Land Use Study, such that the development of the SCVA could be integrated with that of Lam Tei Quarry to bring about greater synergy effects and opportunities for future development. The SCVA could also be used to house those supporting infrastructure facilities that are required by the proposed residential developments in HSKNDA and YLSDA. In particular, it is considered suitable for housing ‘Not-In-My-Backyard’ (NIMBY) type of facilities, such as refuse transfer station or sewage treatment works, to minimise the nuisance to the community.

Given the convenient access provided by the quarry site, there is potential to carry out underground quarrying in the SCVA if there is a significant time lapse between the cessation of surface quarry operation and the planned development of Lam Tei Quarry. The after use of the cavern space formed by underground quarrying should be taken into account at its planning and operation stage. The caverns so formed could be utilised to support future development of Lam Tei Quarry and the adjoining areas.

The SCVA may overlap with the proposed possible alignment of Tuen Mun Eastern Bypass and Route 11 which link to Yuen Long and Lantau Island. The development of the SCVA shall also consider the design and capacity of the proposed traffic network being planned/implemented at the time.

4.4. Environment

Environmental sensitive receivers to cavern development in the SCVA include the nearby school (i.e. Lingnan University) and residential areas (e.g. Fu Tei Ha Tsuen). There are water courses in close proximity to the SCVA (i.e. Hung Shui Hang and Lam Tei irrigation reservoirs). In addition, two traditional burial grounds and the Fu Tei Ha Site of Archaeological Interest are located to the northwest of the SCVA. A significant portion of the SCVA also encroaches onto Tai Lam Country Park and partly encroaches onto the Water Gathering Grounds.

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, 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

Currently, the only direct access to the SCVA is through Lam Tei Quarry, which is further connected to Castle Peak Road through Fuk Hang Tsuen Road. Road widening along Fuk Hang Tsuen Road, which may be constrained by nearby developments, should be further studied if it is required to cope with the additional traffic demand arising from the development of the SCVA. The future development of Lam Tei Quarry, the proposed Tuen Mun Eastern Bypass and Route 11 may provide new access roads to the SCVA. In this regard, the development of the SCVA could be integrated with that of Lam Tei Quarry and the proposed major road developments to minimise the interfacing issues. Project proponents should refer to the latest available information on the nearby developments in order to bring about greater synergy for future development. The project proponent shall assess the combined traffic impact due to the development of Lam Tei Quarry and the SCVA. Further advice on the scope of the Traffic Impact Assessment shall be sought by the project proponents.

The SCVA is connected to Tuen Mun New Town by local roads. The SCVA is also connected to Yuen Long Highway and Kong Sham Western Highway via the Lam Tei Interchange, which is at 1.3 km to the northwest of the SCVA. This allows for road network connection to the northwest New Territories, to Shenzhen and in future, to Lantau via the Tuen Mun – Chek Lap Kok Link.

4.6. Other Key Issues / Constraints for Cavern Development

There are pylons and overhead power lines running above the SCVA. In addition, the Water Supplies Department's Tai Lam Chung Supply Tunnel connecting to Tuen Mun Water Treatment Works is located at about 400 m away from the southwestern boundary of the SCVA. Owing to the difference in elevations, the pylons, overhead power lines and the tunnel would unlikely pose any conflicts or insurmountable constraints to the cavern development within the SCVA.

Conversely, there will be interfacing issues in case the development of the SCVA could not be integrated with that of Lam Tei Quarry. Project proponents should take into account the future development and proposed land uses of Lam Tei Quarry under the Preliminary Land Use Study.

5. Potential Land Uses

The potential land uses for the SCVA are as follows:

Land use*	Description
Service Reservoir	Lam Tei is home of various local villages (e.g. Fu Tei Ha Tsuen). The nearby HSKNDA and YLSDA are also proposed

Land use*	Description
	<p>for residential developments as a new community in the district and an extension of Yuen Long New Town respectively. There is thus opportunity to develop suitable land use to support the development of these residential areas, by relocating and/or expanding 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 facilities to caverns may be considered, thereby releasing the surface land for other beneficial uses and for integration with the future development.</p>
Sewage Treatment Plant	<p>For the same reason as described above, the SCVA has the potential to support the development of the existing and proposed residential communities, by housing suitable ‘NIMBY’ type of facilities, such as sewage treatment plant, to caverns. This could also minimize the nuisance to the existing/proposed communities.</p> <p>The potential portal location of the SCVA is away from existing/proposed residential areas, which makes it more compatible with such land use.</p>
Refuse Transfer Station	<p>For the same reason as described above, the SCVA has the potential to support the development of the existing and proposed residential communities, by housing suitable ‘NIMBY’ type of facilities, such as refuse transfer station, to caverns. This could also minimize the nuisance to the existing/proposed communities.</p> <p>The potential portal location of the SCVA is away from existing/proposed residential areas, which makes it more compatible with such land use.</p>
Underground Quarrying	<p>The SCVA is adjoining Lam Tei Quarry site, of which the site setting is favourable for underground quarrying. The rock type is suitable for aggregate production. Convenient access could</p>

Land use*	Description
	<p>be provided via the quarry site if there is a significant time lapse between the cessation of surface quarry operation and planned development of Lam Tei Quarry. If the implementation could be synchronised and integrated with that of the future Lam Tei Quarry development, adverse impacts on both developments may be minimised.</p> <p>There is a steady demand for aggregate production in Hong Kong and it is more sustainable to produce aggregate locally than import. The underground space so created could also be utilised for supporting future development of Lam Tei Quarry and should be taken into account at its planning and operation stage.</p>

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

* Upon the recommendations of the Preliminary Land Use Study, the list of potential land uses to be accommodated in the SCVA should be updated.

6. Extent of Potential Portal Locations

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

The SCVA is accessed from the existing quarry face at the southern side of Lam Tei Quarry, which could provide an easy access to the hillside for cavern development. The future development of Lam Tei Quarry may provide new access roads to serve the cavern facilities. Multiple portals could be formed on the quarry face at different elevations if needed. The project proponents shall consider the latest design and capacity of the traffic network and assess whether road upgrades are required to support traffic load induced by the cavern developments. Based on the site setting, the potential of natural terrain hazards affecting the potential portal location is unlikely.

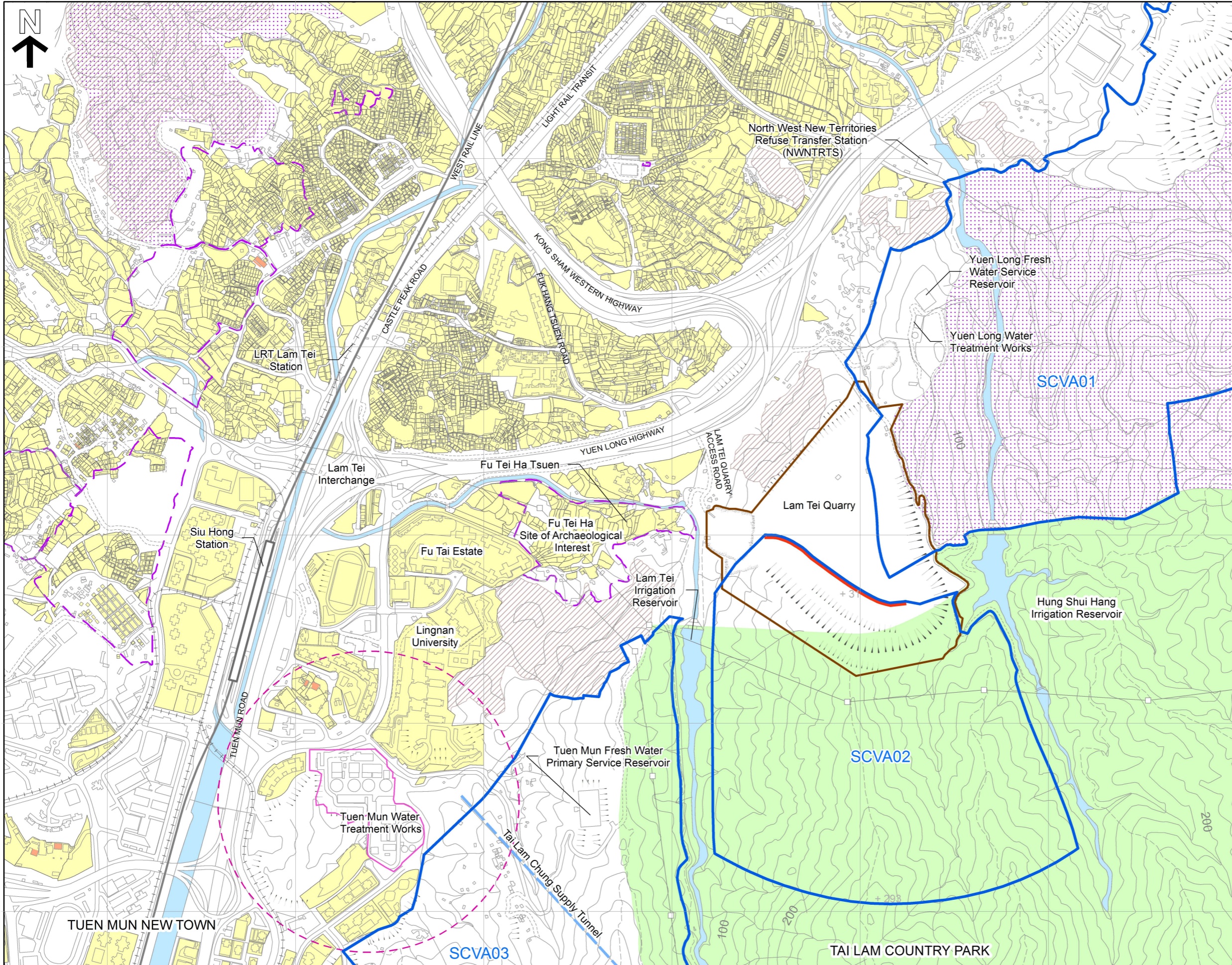
Project proponents should carry out further studies on identifying specific locations of portals for the proposed cavern development.

7. Concluding Remarks

The SCVA presents an opportunity for locating suitable land uses in rock caverns to serve the neighbouring existing and proposed residential communities (e.g. by housing service reservoirs). It also has the potential to house ‘NIMBY’ type of facilities (e.g. sewage treatment plant and refuse transfer station) to minimise the nuisance to the community. The development of the SCVA could be integrated with the development of Lam Tei Quarry site by accommodating underground quarrying which will provide local rock resources. Project proponents for cavern development should take due consideration of the existing and proposed residential developments, environmental sensitive receivers, accessibility for cavern development including the proposed Tuen Mun Eastern Bypass and Route 11, and findings of the Preliminary Land Use Study, to minimise the interfacing issues and bring about greater synergy and opportunities.

8. Notes

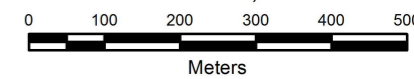
The Cavern Master Plan and all supporting documents do not exempt project proponents for cavern development from following the relevant statutory and planning procedures. Information including the potential land uses and the extent of potential portal locations indicated in this Information Note should 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
- Quarry
- Existing Railway Line
- Existing Light Rail
- Water Supplies Department Tunnel
- Reservoir / River / Nullah
- Site of Archaeological Interest
- Graded Historic Building
- Private Lot
- Burial Ground
- Potentially Hazardous Installation
- Consultation Zone of Potentially Hazardous Installation
- Major Conservation Area
- Country Park

Scale : 1:10,000



REFERENCE DRAWING OF STRATEGIC CAVERN AREA NO. 02 - LAM TEI

CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT
PLANNING DEPARTMENT



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VERSION: 1

SCVA 02