CAVERN MASTER PLAN – INFORMATION NOTE

STRATEGIC CAVERN AREA NO. 29 – BLACK HILL

This Information Note describes the characteristics, key development opportunities and constraints of Strategic Cavern Area No. 29 - Black Hill (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):**
   - Draft Kwun Tong (South) OZP No. S/K14S/21
   - Draft Tseung Kwan O OZP No. S/TKO/25

   **Area:** 135.6 ha

   **Maximum elevation in the SCVA:** +304 mPD

   **Minimum elevation in the SCVA:** +4 mPD

3. **District Context**

   **Location**

   The SCVA is located to the western side of Tseung Kwan O New Town in the southeast New Territories. It covers the area of Black Hill (Ng Kwai Shan) and Mau Wu Shan. Tseung Kwan O town centre is to the east of the SCVA, Tiu Keng Leng is to the southeast, Yau Tong and Lam Tin are to the southwest, while Sau Mau Ping and Ma Yau Tong are to the northwest.

   The SCVA is generally hilly with a maximum elevation of about +304 mPD. Mau Wu Shan Observation Post (Grade 1 Historic Building) and the former Tiu Keng Leng Police Station are located within the SCVA. These two structures are part of the Tseung Kwan O Heritage Hiking Trail and History and Heritage Information Centre project as proposed by Sai Kung District Council (SKDC) in 2013. The respective trail and information centre are currently under construction by SKDC.

   There are several major residential development areas surrounding the SCVA. To the east of the SCVA, there is the Tseung Kwan O town centre which mainly consists of high-rise residential developments, including Sheung Tak Estate (about 150 m to the east of the SCVA) and Park Central (about 300 m to the east of the SCVA). To the southeast of the SCVA, Tiu Keng Leng comprises high-rise residential developments, including Kin Ming Estate (at the southeast boundary of the SCVA) and Shin Ming Estate (about 150 m to the southeast of the SCVA). To the southwest of the SCVA, Lam Tin is a major residential area with high-density residential developments, such as Kwong Tin Estate (at the southwest boundary of the SCVA) and Hong Nga Court (about 250 m to the southwest of the SCVA). To the northwest of the SCVA, Sau Mau Ping is another major residential area with predominantly high-rise public housing developments, including Sau Mau Ping Estate (about 1,100 m to the northwest of the SCVA) and the ongoing Development at Anderson Road (DAR) for public housing (about 1,100 m to the northwest of the SCVA) with a planned population of 48,000, of which the first population intake has commenced in June 2016. Also to the northwest of the SCVA, Ma Yau Tong is home to local villages.
The development of these residential areas is supported by a number of key Government, Institution and Community (GIC) facilities, including Haven of Hope Hospital (about 150 m to the northeast of the SCVA), Tseung Kwan O Sports Centre and Tseung Kwan O Swimming Pool (about 750 m to the northeast of the SCVA), Tiu Keng Leng Sports Centre (about 300 m to the southeast of the SCVA), and various service reservoirs such as Tseung Kwan O West Low Level Fresh Water Service Reservoir (about 100 m to the north of the SCVA).

Access

The SCVA is accessed from its southeastern edge via Po Shun Road, King Ling Road and Chui Ling Road, and from its northern edge via Po Lam Road. Regional connections could be routed through the nearby Tseung Kwan O Road and Tseung Kwan O Tunnel.

The MTR Kwun Tong Line and Tseung Kwan O Line serve the neighbouring areas of the SCVA. The closest stations include Tseung Kwan O Station (Tseung Kwan O Line; about 450 m to the east of the SCVA), Tiu King Leng Station (interchange station of Tseung Kwan O Line and Kwun Tong Line; about 400 m to the southeast of the SCVA) and Lam Tin Station (Kwun Tong Line; about 700 m to the west of the SCVA).

Land Use Zoning

While the majority of the SCVA is zoned “Green Belt” (“GB”) under the Draft Tseung Kwan O OZP No. S/TKO/25, a small portion of the SCVA at the northwestern boundary is within the “Open Space” (“O”) and “GB” zones on the Draft Kwun Tong (South) OZP No. S/K14S/21. The zonings of the surrounding areas include “GB” to the north, south and southwest, “Village Type Development” to the northeast, “Government, Institution or Community” to the northeast and southeast, “Residential (Group A)” to the east and southwest and “O” to the west.

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

There is 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 burial grounds, private lots, Mau Wu Tsai Village and Po Lam Road. The southern boundary of the SCVA is defined by the valley topography, Chui Ling Road and Tiu Keng Leng Fresh Water Service Reservoir. The eastern boundary of the SCVA is defined by Po Shun Road, King Ling Road and Haven of Hope Hospital. The western boundary of the SCVA is defined by Lam Tin Park, private lots and residential development including Kwong Tin Estate, closed Ma Yau Tong (Central) Landfill, and an extent of 800 m from the potential portal locations.

4.2. **Geology**

The solid geology of the SCVA is primarily coarse ash crystal tuff in the northern and central portions, which belongs to Mount Davis Formation; and fine-grained granite in the southern portion, which belongs to Mount Butler Granite. The SCVA is with the rock types that are suitable for cavern development. A number of geological features, such as faults, photolineaments and quartz veins, are identified within and in areas surrounding the SCVA. The excavated fine-grained granite within the SCVA will be 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 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, Yau Tong and Sau Mau Ping. 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.
The abovementioned high-rise residential developments in areas surrounding the SCVA (e.g. Sheung Tak Estate, Kin Ming Estate, Kwong Tin Estate, Sau Mau Ping Estate) and the local villages (e.g. Mau Wu Tsai Village and Ma Yau Tong) are supported by various GIC facilities (e.g. sports ground, service reservoirs, hospital, schools, etc.). Should there be any need for providing additional land for residential use, the SCVA may provide solution space by, for example, housing some of the suitable community facilities (e.g. leisure centre/sports centre) and/or relocating 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 Black Hill (Ng Kwai Shan) and Mau Wu 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 east 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 3 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 TKOIE. 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. Kin Ming Estate, Sheung Tak Estate, Kwong Tin Estate, Tak Tin Estate, Choi Ming Court, villages in Ma Yau Tong and Mau Wu Tsai Village), and schools (e.g. Qualied College, HKCCCU Logos Academy, HHCKLA Buddhist Ching Kok Secondary School and St. Andrew’s Catholic Primary School). Mau Wu Shan Observation Post (Grade 1 Historic Building) is located in the eastern portion of the SCVA. There are also natural or modified water courses within the SCVA. Burial grounds are also identified in the vicinity of the SCVA. The northwestern boundary of the SCVA adjoins the Ma Yau Tong (Central) Landfill and part of the northwestern portion of the SCVA encroaches onto the Consultation Zone of that landfill site. In respect of potential landfill gas, risk assessment would be required during the planning stage and before commencement of works.

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 southeastern edge via Po Shun Road, King Ling Road and Chui Ling Road, and from its northern edge via Po Lam Road. Regional connections could be routed through the nearby Tseung Kwan O Road and Tseung Kwan O Tunnel, which are located to the north of the SCVA, to connect to other areas of Hong Kong.

The northern access to the SCVA via Po Lam Road is located approximately 3 km from the nearest expressway access point on Lin Tak Road to the west of the SCVA.

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 southern edge of the SCVA. A proposed vehicle tunnel, the Lam Tin Tunnel, will also pass through the southern tip of the SCVA. Owing to the difference in elevations, these tunnels would not pose any insurmountable constraint on cavern development within the SCVA.
In addition to the abovementioned Tseung Kwan O Heritage Hiking Trail and History and Heritage Information Centre project proposed by SKDC, an engineering technical feasibility study under Agreement No. CE 61/2014 (CE) for housing development at Black Hill has been completed. Project Proponents should take due consideration of the latest progress / findings of these projects.

5. **Potential Land Uses**

The potential land uses for the SCVA are as follows:

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<tr>
<th>Land use</th>
<th>Description</th>
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<tr>
<td>Data Centre</td>
<td>TKOIE has developed with a cluster of data centres with 11 data centres are 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.</td>
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<tr>
<td>Research/Testing Laboratories</td>
<td>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. 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).</td>
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<td>Land use</td>
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<tr>
<td>Leisure Centre/Sports Centre</td>
<td>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, Yau Tong and Sau Mau Ping. 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 rising demand from the increasing population. The extent of potential portal locations is in close proximity to the existing residential developments (e.g. Kin Ming Estate and Choi Ming Court) and railway stations in Tsueng Kwan O. The easy access available to the local residents could further enhance the potential for housing such facilities in the SCVA.</td>
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<tr>
<td>Retail/ Food and Beverage</td>
<td>The SCVA is adjacent to the existing major residential communities including those in Tseung Kwan O, Tiu Keng Leng, Lam Tin, Yau Tong and Sau Mau Ping, and railway stations including MTR Tiu King Leng Station which is about 400 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.</td>
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### Service Reservoir

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.

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.

### Warehousing

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.

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 accessed from Po Shun Road, King Ling Road and Chui Ling Road to the southeast and Po Lam Road to the north. All potential portal locations are located at the slope adjacent to the carriageways. Multiple portals may be formed along these potential portal locations. Chui Ling Road and King Ling Road are key traffic routes for the residential developments in the vicinity. Some potential portal locations at Chui Ling Road and King Ling Road are in the proximity to the residential estates. The project proponent should consider and minimise the potential traffic and environmental impact to the local residents when planning cavern development project of a proposed land use.
All extent of potential portal locations are at cut slopes with natural slopes above. There may be potential natural terrain hazards in the vicinity which may require further study by 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 data centres in Tseung Kwan O (e.g. 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 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.