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通訊2015年10月
Newsletter Oct 2015

搬遷鑽石山食水及海水配水庫往岩洞可行性研究

Relocation of Diamond Hill Fresh Water and Salt Water Service Reservoirs to Caverns - Feasibility Study

研究的背景

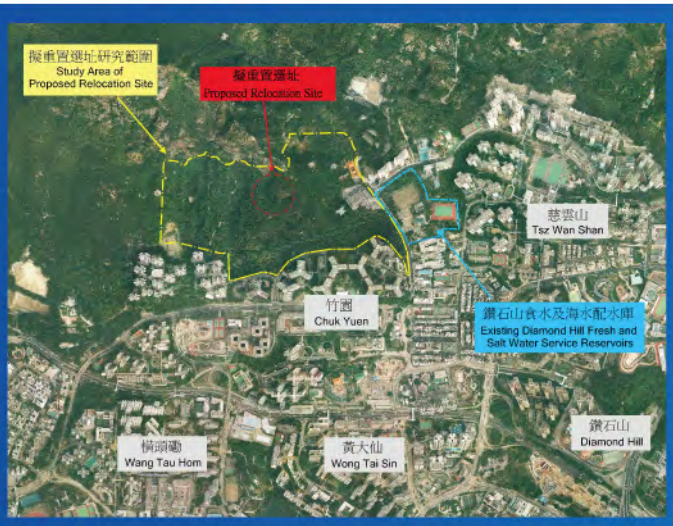
為促進香港的可持續發展，政府積極探討創新的方法去開拓新土地資源，而發展岩洞是其中一個可行的方法。建造岩洞已經是一項頗成熟的技術，在應用方面亦有持續的改進。許多供作不同用途的岩洞計劃已在世界各地包括加拿大、中國、芬蘭、日本、韓國、挪威、新加坡、瑞典、美國和香港成功推行。

根據土木工程拓展署的「增加土地供應:填海及發展岩洞暨公眾參與」研究的結果，香港的地質條件尤其適宜發展岩洞。該項研究建議就搬遷鑽石山食水及海水配水庫往岩洞計劃進行可行性研究，以騰出現址(約3公頃)作興建房屋或其他有利民生的用途，而重置選址初步建議位於黃大仙竹園北邨以北的山坡。

Background of Feasibility Study

To support Hong Kong's sustainable development, the Government actively explores innovative approaches to develop new land resources. One of the possible approaches is rock cavern development. Cavern construction is an established technology that has seen continual improvement in its application. A number of cavern schemes for various uses have been successfully adopted around the world with notable examples in Canada, China, Finland, Japan, Korea, Norway, Singapore, Sweden, the USA and Hong Kong.

According to the findings of the study on "Increasing Land Supply by Reclamation and Rock Cavern Development cum Public Engagement" completed by the Civil Engineering and Development Department, Hong Kong is particularly suitable for developing rock caverns from the geological perspective. The study has recommended a feasibility study on the relocation of Diamond Hill Fresh Water and Salt Water Service Reservoirs (DHSRs) to caverns, with a view to releasing the existing site (about 3 hectares) for housing or other beneficial uses. The relocation site has been preliminarily proposed at the hillsides north to Chuk Yuen North Estate, Wong Tai Sin.



現有鑽石山食水及海水配水庫的簡介
Brief Description of Existing DHSRs

啟用年份: 1957
Commissioning Year: 1957

佔地: 約3公頃
Footprint: Approx. 3 hectares

食水配水庫的儲水量: 23,524立方米
Capacity of Fresh Water Service Reservoir: 23,524m^3

海水配水庫的儲水量: 21,836立方米
Capacity of Salt Water Service Reservoir: 21,836m^3

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搬遷鑽石山食水及海水配水庫往岩洞的效益

Benefits of Relocating the Existing DHSRs to Caverns

• 改善環境
Improve the Environment

- 大部份設施隱藏於岩洞內，與周邊環境融為一體
  Majority of the facilities are hidden inside caverns, integrating with the surrounding environment

• 提升服務質素
Enhance Service Quality

- 減少佔地和優化運作效率
  Minimize the footprint and optimize operational efficiency

• 優化社區
Enhance the Community

- 開拓新土地資源
  Develop new land resources
- 顧及社區需要的均衡發展
  Balanced development with community needs considered

• 未雨綢繆
Prepare for the Future

- 為鑽石山食水及海水配水庫作長遠計劃。如不搬遷，現有設施將來亦需要不同程度的更新
  Long term planning for the existing DHSRs.Different scale of rehabilitation would be required for the existing facilities if DHSRs are not relocated

可行性研究的範圍:
Scope of Feasibility Study:

- 進行詳細的工程可行性研究，包括初步技術和影響評估、擬訂工程設計大綱及制定施工時間表
  Detailed engineering feasibility study, including preliminary technical and impact assessments, preparation of outline design for the engineering works and formulation of implementation programmes

- 為鑽石山食水及海水配水庫現址的未來土地用途進行規劃檢討，以確定搬遷計劃合乎成本效益
  Planning review of the future land use of the existing DHSRs site for the purpose of establishing a business case for the relocation proposal

- 舉行公眾參與活動和諮詢相關持份者
  Public engagement and consultation exercises with relevant stakeholders

搬遷後鑽石山食水及海水配水庫現址的土地用途

Future Land Use of Existing DHSRs Site after the Relocation

政府將會顧及社會需要，均衡發展搬遷鑽石山食水及海水配水庫後騰出的土地。根據目前的初步構思，該土地可用作房屋或其他有利民生的用途，包括考慮提供合適的社區設施和休憩用地，以整體優化社區和環境，促進香港可持續發展。

The Government aims at balanced development at the existing DHSRs site taking into consideration the society needs. The preliminary idea at present is that the site would be used for housing or other beneficial uses to improve the community and environment while supporting the sustainable development of Hong Kong. Community facilities and recreational areas would also be considered as appropriate.

擬議重置選址
Proposed Relocation Site

經過覆檢，研究顧問確定黃大仙竹園北邨以北的山坡是重置鑽石山食水及海水配水庫的合適選址。
竹園北邨以北的山坡具備以下優越條件:

After review, the consultant has confirmed that the hillsides north to Chuk Yuen North Estate, Wong Tai Sin is suitable for the relocation of the DHSRs. The proposed relocation site has the following favourable conditions:

- 該擬重置選址上的地質屬堅固的花崗岩地質，沒有發現明顯的軟弱帶及斷層，非常適合建造大型岩洞。
  The geology of the proposed relocation site, belonging to hard granite with no obvious weak zones and faults, is most suitable for construction of large caverns.

- 該選址的大部分地方為政府土地。
  The majority of the area belongs to government land.

- 透過適當措施，把搬遷工程進行時及重置後的鑽石山食水及海水配水庫運作時所產生的交通影響減至最低。
  With appropriate measures, the traffic impact arising from the construction and operation stages of relocation of the DHSRs could be minimized.

本地及海外發展岩洞的實例
Local and Overseas Examples of Rock Cavern Development

港島西廢物轉運站
Island West Refuse Transfer Station

港島西廢物轉運站是一項在香港島中西區岩洞內興建廢物轉運設施的工程。這岩洞分別長60米、寬27米和高12米，這是迄今為止香港最大跨度的已建成岩洞。

The Island West Transfer Station involved the construction of a waste transfer facility in a rock cavern in the Central and Western District of Hong Kong Island. The cavern is 60 m long, 27 m wide and 12 m high. This is the largest span rock cavern constructed in Hong Kong to date.

港鐵西港島線爆炸品倉庫
The MTR West Island Line Explosives Magazine

現位於域多利道的港鐵西港島線爆炸品倉庫，是用作儲存用來興建西港島線的炸藥。馬蹄形的爆炸品倉庫具有八個小龕，每個容納少量炸藥。爆炸品倉庫開挖長度總計約325米長和壁龕長8.6米、寬5.5米和高4.2米。

The MTR West Island Line Explosives Magazine at Victoria Road was constructed to store explosives for the construction activities relating to the West Island Line. The magazine is designed in a horseshoe shape, with eight small niches, each to hold a small amount of explosives. The excavation totals approximately 325 m in length and the niches are 8.6 m long, 5.5 m wide and 4.2 m high.

赤柱污水處理廠
Stanley Sewage Treatment Works

於1995年啟用的赤柱污水處理廠是香港首個設於岩洞內的污水處理廠。該廠是一所二級污水處理廠，設計污水處理量為每日11,600立方米。廠房建於三個岩洞內，每個約120米長、15米寬和17米高，並由超過450米的通道、通風隧道及豎井連接。

Commissioned in 1995, Stanley Sewage Treatment Works is the first sewage treatment works built in caverns in Hong Kong. It is a secondary sewage treatment works with design daily sewage treatment capacity of 11,600 m^3. It is housed inside three large caverns, each about 120m long, 15m wide and 17m high together with over 450m of access roads, ventilation tunnels and shafts.

狗虱灣爆炸品倉庫
Kau Shat Wan Explosives Depot

狗蝨灣爆炸品倉庫於1997年建成，至今仍是香港炸藥的主要儲存庫。狗蝨灣炸藥庫設施包括一條連接著十個長21米、寬13米和高6.8米的炸藥儲存倉的循環隧道。

The Kau Shat Wan Explosives Depot was completed in 1997 and has since been the principal store of explosives in Hong Kong. The Kau Shat Wan explosives magazine facility comprises one loop access tunnel with 10 nos. of explosive storage chambers of 21 m long, 13 m wide and 6.8 m high.

西區海水配水庫
Western Salt Water Service Reservoirs

香港大學搬遷了兩個水務署的海水配水庫（12,000立方米容量）於岩洞內，以配合他們百週年校園的發展。這兩個岩洞各長50米、寬17.6米和高17米。這成為了本地首個於岩洞建設配水庫的實例。洞穴方案還保留了附近的三座歷史性建築物、減低了樹木砍伐的數量及減少了建築廢物的產生。

The University of Hong Kong has relocated two salt water service reservoirs (12,000 m^3 capacity) of Water Supplies Department (WSD) in rock caverns to accommodate the development of their Centennial Campus.The two rock caverns are each 50 m long, 17.6 m wide and 17 m high. This has set an unprecedented local example of constructing service reservoirs in rock caverns. The cavern scheme preserved three historic graded buildings nearby, minimized tree felling and reduced the amount of construction waste generated.

挪威Steinan地下配水庫
Steinan Underground Water Tank, Norway

發展岩洞在挪威有著悠久的歷史。挪威Steinan地下配水庫於1979年落成啟用，儲水量為22,000立方米。這項目包括建設兩個寬12米和高10米，而長度分別為85米及110米的岩洞。

Rock caverns development has a long history in Norway. Steinan underground water tank was commissioned in 1979 with a capacity of 22,000 m^3. The project included the construction of two caverns of 12 m wide and 10 m high. The lengths of these two caverns are 85 m and 110 m respectively.

第一階段公眾參與
Stage 1 Public Engagement

第一階段公眾參與
Stage 1 Public Engagement

2015年10月至11月
October to November 2015

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- **巡迴展覽**
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You may visit the following project website for more information on the proposed relocation of Diamond Hill Fresh Water and Salt Water Service Reservoirs to caverns:
http://www.dhsrstocaverns.hk/

或循下列途徑查詢/ 發表意見:
Or please express your opinions or enquire by:

熱線: Hotline:
(852) 2608 7617

傳真: Fax:
(852) 2601 3988

電郵: Email:
enquiry@dhsrstocaverns.hk

網站: Website:
http://www.dhsrstocaverns.hk/

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香港灣仔告士打道7號入境事務大樓46樓水務署工程管理部
(請註明「搬遷鑽石山食水及海水配水庫往岩洞 – 可行性研究」)
Mail: Water Supplies Department/ Project Management Division,
46/F, Immigration Tower, 7 Gloucester Road, Wan Chai, Hong Kong
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