Quarries in Hong Kong

Key Messages: Two existing quarries in Hong Kong are being rehabilitated to form green areas suitable for a variety of uses. These quarries are also major suppliers of rock products to the local construction industry and important sites for recycling surplus rock generated from local construction sites.

Background

Under an innovative scheme developed by the Government and local industry, the two existing quarries (Anderson Road and Lam Tei Quarries) are being rehabilitated to form attractive green areas. On completion, these areas will be suitable for a variety of uses that are beneficial to the community.

The plan to rehabilitate quarries was formulated in 1989 as an outcome of the Metroplan Landscape Strategy for Urban Fringe and Coastal Areas, which identified quarries as areas of degraded landscape requiring rehabilitation. The rehabilitation works typically involve major recontouring, extensive tree and shrub planting and erosion control.

Quarry Rehabilitation Contracts

A quarry rehabilitation contract is essentially a large site formation contract with rehabilitation works being implemented in parallel with the rock excavation. All quarry rehabilitation contracts are revenue earning. In a revenue-earning contract, the contractor is required to pay the Government for the rights enjoyed under the contract, such as processing and selling of rock excavated within the quarries, manufacturing and selling of concrete and asphalt products. These rights generate earnings for the contractor which are used, in part, to cover the cost of the works and payments to the Government associated with the contract. Under certain circumstances, the contractor may also be given permission to do other work, such as processing of imported rock. The Government collected revenue of about $43.3 million in 2015 from the quarry contracts.

Anderson Road and Lam Tei Quarries are existing quarries operating under rehabilitation contracts. The rehabilitation works for Turret Hill Quarry, Lamma Quarry and Shek O Quarry were completed in June 1995, December 2002 and January 2011, respectively.
Rehabilitated Turret Hill Quarry

The rehabilitated Turret Hill Quarry site is located to the northeast of Shatin New Town, covering an area of 25 hectares. The quarry was established in the mid 1960s. The rehabilitation contract was signed in April 1989 and completed in June 1995. About 8.5 million tonnes of rock were excavated from the quarry under this contract.

The following works were carried out under the contract:

(a) flattening of the existing steep quarry faces to about 40°, typically with benches at 20 m vertical intervals;

(b) provision of ledges and crevices on the rock faces to retain soil and moisture for vegetation; and

(c) establishment of a self-sustaining soil-plant system involving soil replacement, hydroseeding and transplanting to blend in with the natural environment.

The vegetation planted in the quarry has established and blends in well with the surrounding environment. A portion of the site is currently occupied by the Environmental Protection Department as a refuse transfer station and the remaining portion is used by the Construction Industry Council Training Academy as a training ground.

Rehabilitated Lamma Quarry

The rehabilitated Lamma Quarry site is located on the north side of Sok Kwu Wan on Lamma Island, covering an area of 49 hectares with about 1 km of coastline.

The rehabilitation contract was signed in December 1995 and was completed in December 2002. The total amount of rock excavated from the quarry was 14.7 million tonnes. The following works were carried out under the contract:

(a) formation of a new landform comprising a broad, gently sloping series of platforms bounded to the north with slopes which merge with the natural hillside;

(b) formation of a 4 hectare man-made lake with a natural, non-engineered appearance and gently shelving edges which can support reed beds; and

(c) landscaping and planting of self-sustaining tree species with a similar biodiversity to the surroundings.
Rehabilitated Shek O Quarry

Shek O Quarry is located on the west coast of Cape D’Aguilar Peninsula on Hong Kong Island, covering an area of 45 hectares.

The rehabilitation contract was signed in March 1994 and completed in January 2011. The total amount of rock excavated from the quarry was about 26.6 million tonnes and the following works were carried out under the contract:

(a) formation of a new Shek O Road to eliminate the hairpin bend of the old Shek O Road and shorten the road by 600 m, which was completed in 1997;

(b) provision of nesting sites for peregrine falcons on the southern boundary cliffs;

(c) creation of a new landform to blend in with the natural landscape of Cape D’Aguilar Peninsula, with a marine cove suitable for recreational purposes; and

(d) planting of self-sustaining tree species to blend in with the natural environment.

The site has been rehabilitated with the provision of a green cover planted with trees and shrubs. Today, many of these trees and shrubs have fully established and blended in nicely with the natural species in the area.

Anderson Road Quarry

Anderson Road Quarry is located on the south-western ridge of Tai Sheung Tok on the Kowloon Peninsula, covering an area of 86 hectares.

The rehabilitation contract (No. GE/96/10) was signed in March 1997 and was originally scheduled to be completed in December 2013. Since 2009, several supplementary agreements have been signed, principally to enable the contractor to process and market the surplus rock excavated from the adjacent Development at Anderson Road project and to undertake additional rock excavation to fast-track the future development project at the quarry site. The latest supplementary agreement allows the contractor to continue to operate processing plant on part of the site until mid-2017. About 43 million tonnes of rock have been excavated under the current contract. The quarry supplied about 2.2 million tonnes of rock products to the local construction industry in 2015. The contractor is required to carry out the following works under the contract:

(a) formation of a new landform consisting of 7 benches, separated by 20 m high,
65° rock slopes at the central portion (overall height about 200 m), 3 benches separated by 20 m high rock slopes at the east and west ends, and a platform of about 40 hectares; and

(b) provision of a green cover to the final landform to blend in with the natural environment.

The site is being rehabilitated progressively to create attractive green areas. As the slopes and benches are completed, they are planted with trees and flowering shrubs to establish suitable habitats for birds and other animals.

**Lam Tei Quarry**

Lam Tei Quarry is located about 3 km north of Tuen Mun New Town, covering an area of about 30 hectares. It has been operating as a quarry since 1982. The first rehabilitation contract (No. GE/2006/03) commenced in October 2006 and was completed in July 2015. Given the strategic need to maintain a local quarry and the scheduled closure of Anderson Road Quarry, a further rehabilitation contract (No. GE/2014/01) was signed in March 2015 and is scheduled to be completed in 2022. The following works have been carried out under the previous contracts:

(a) formation of a new landform consisting of 11 benches, separated by 10 m to 15 m high 60° to 70° cut slopes, and a platform of 12 hectares;

(b) re-vegetation of the final landform to a stable condition to eventually blend in with the surrounding natural environment; and

(c) provision of a self-sustaining ecosystem with a similar bio-diversity to the surrounding environment.

The rehabilitation works under the current contract are essentially a continuation of those under previous contracts. In addition, the final platform will be lowered by a further 20 m and in doing so about 5 million tonnes of rock will be excavated. The quarry supplied only about 0.2 million tonnes of rock products to the local construction industry in 2015, but should increase to about 1 million tonnes of production per year once the contractor has fully established the quarry operation.

The vegetation planted under the completed contracts is well established and the additional planting works under the current contract are in progress.
Important Sites for Recycling of Surplus Rock Generated from Local Construction Sites

The two existing quarries help to conserve Hong Kong’s scarce natural resources by receiving surplus rock generated from local construction sites and recycling it into aggregates and other rock products. This also helps relieve the pressure on the public fill reception facilities and thereby extend their life span. The Government also collects additional revenue for the imported rock. In the past 5 years, the total quantity of rock imported to the two quarries, namely, Anderson Road Quarry and Lam Tei Quarry, for recycling was about 7.3 million tonnes.

Major Suppliers of Rock Products to Local Construction Industry

The two existing quarries are major suppliers of rock products to the local construction industry. In 2015, the total consumption for rock products in Hong Kong was about 17.6 million tonnes. The two quarries supplied about 2.4 million tonnes of rock products (i.e. 14% of the market demand) to the local construction industry.

Supply of Rock Products in the Future

To ensure an adequate supply of rock products, Mines Division monitors closely the supply and demand for rock products in Hong Kong.

The rock production operations at Anderson Road Quarry and Lam Tei Quarry are scheduled to end in 2017 and 2022, respectively. As a result, the supply of rock products to local industry will have to rely increasingly on imports from the Mainland. To mitigate the risk to supplies due to possible fluctuation or disruption of imports, as well as to have the capacity to recycle surplus rock generated from local construction sites, it is beneficial to continue to develop local quarries. Therefore, the Government is currently investigating the feasibility of developing new quarries in Hong Kong.

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