

Site Formation and Infrastructure Provision Works for Discovery Bay Master Plan 6.0

INTRODUCTION

Discovery Bay is a major development on Lantau Island in Hong Kong developed by the Hong Kong Resort Company Limited. Atkins has been involved in its progressive expansion over the years including the civil engineering design works for Master Plan 6.0. The site developed under Master Plan 6.0 covers an area of approximately 41.2 ha and the infrastructure provided will support an additional 185,000m² residential Gross Floor Area (GFA) for a population of 5,500.

The development comprises housing; a hotel and commercial centre; ferry pier; a highway / tunnel connection to the North Lantau Expressway and Airport; potable water and sewage connections to Siu Ho Wan Water Treatment works and Siu Ho Wan Sewage Treatment works; community and recreation facilities and public works:

- 1.6Mm³ site formation
- 1,400m of seawalls
- 3km of roads; 630m highway tunnel
- Ferry Pier
- Sewage, water supply, drainage



OUR SOLUTION

The site is undeveloped land and 11.3ha of platforms were formed for development. The platforms vary in level in order to provide better views for individual residential blocks and to conform to the overall topography.

The site formation work included 50m high soil/rock cut slope with soil nails. Due to the remoteness of the site, both importation of fill materials and disposal of surplus excavation materials would be expensive and would create a major environmental impact. By careful planning and phasing of the works, a balance of cut and fill was achieved.

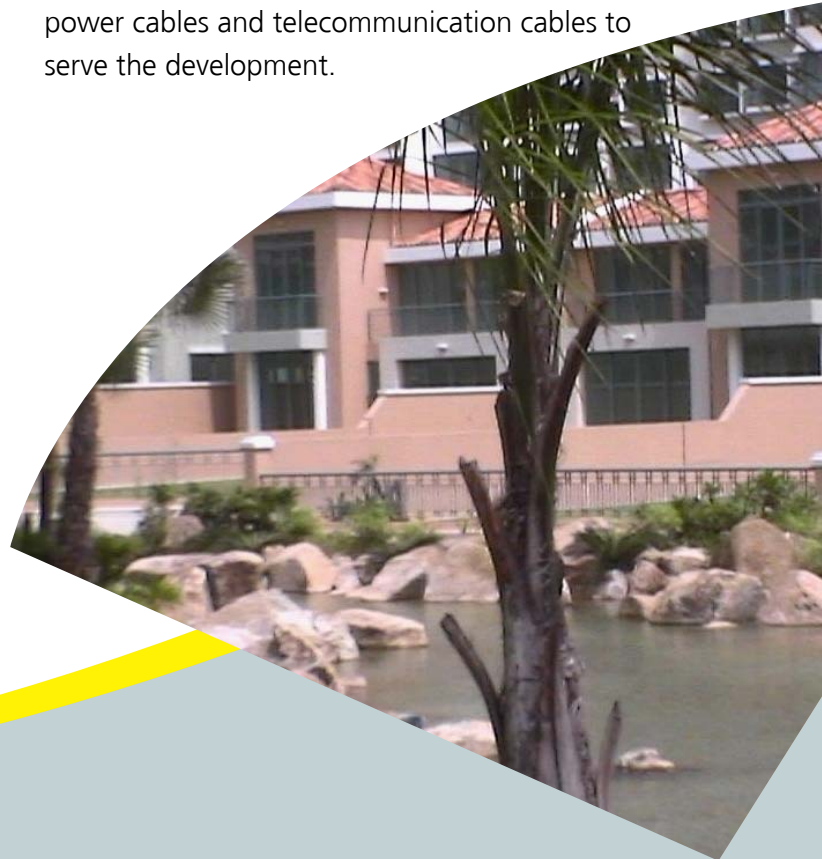
Blasting was adopted for rock excavation at the steep sided knoll (in the middle of the site) for forming the building platform. ACL was responsible for preparing the blasting assessment report and for seeking approval from the Buildings Department of Hong Kong Government.

A new mangrove area to compensate for the existing mangroves affected by the works was provided at the southern end of the reclamation. Existing stream courses were diverted to the new mangrove area to provide fresh water while an opening at the seawall will allow seawater to flush in. Mangrove substrates extracted from existing mangroves were used to fill up the new mangrove area and mangroves were then transplanted back from a nursery.

12.3ha of land was reclaimed at Yi Pak Wan and San Pak Wan for provision of a future ferry pier, commercial complex, hotel development and clubhouse facilities.

The seawall included both vertical and sloping seawall. Vertical seawall is provided at the northern side of the reclamation to facilitate berthing for the future ferry pier. In addition, landing points have also been provided for public use.

A road link consisting of tunnel and bridges was provided for connecting Discovery Bay with the expressway. The 14m span single tube bi-direction tunnel is about 600m in length. A fire escape walkway is provided inside the tunnel that will serve as a fire protected walkway for emergency escape in case of accident. Utility troughs are located under the fireman walkways and fire escape corridor for housing potable water supply pipe, sewerage discharge pipe, power cables and telecommunication cables to serve the development.





OUR APPROACH

A wide range of our skills was used to resolve the many technical challenges for such a major development in a difficult location. These included geotechnical, structural, highways, marine, drainage, water supply, traffic and tunnelling. All of these were integrated under a strong management team.

Atkins successfully obtained the numerous statutory approvals required including that for the first private sector highway tunnel in Hong Kong.

Full support was also provided to our site team during the construction stage.

OUTCOMES

The project was successfully completed and we are now working on Discovery Bay Master Plan 7.0.

