#### COMPANY

### Architectural Services Department, HKSAR Government

PROJECT

The Use of BIM for Landscape Design – Landscape Information Modelling

LOCATION Victoria Park, Causeway Bay; Parks in To Kwa Wan & Kwun Tong

TYPE

Landscape Design and Construction

SCHEDULED TIME OF COMPLETION 2015-2018

"We benefit from L.I.M. as the final products, such as, 2D drawings, illustrations and animation clips, provide a coherent means for the understanding of landscape design proposals."

### — Kevin Li Senior architect Architectural Services Department

BIM PARTNERS INVOLVED Vircon Ltd. Kalloc Studios Asia Ltd.

# BIM Adds Value to Landscape Design Work



Active planting, proper maintenance, preservation of trees and vegetation would enhance the quality of our living environment. Landscape projects bring many benefits yet there are challenging issues to be tackled, sustainable design principles, aesthetic value and other functional requirements to name a few.

Given the interplay between these factors can be complex, building landscape models facilitates the evaluation of various "what-if" scenarios. Design team members can then hold discussions, to identify and resolve potential issues at an early stage.

The conventional approach to design communications relies on 2D drawings. Yet as it's challenging to interpret these drawings and picture the outcome in the three-dimensional real world, this is heavily reliant on design team members' experience. Issues might be under-valued, mis-interpreted or even entirely overlooked.

In a bid to improve the design process, a team in the Architectural Services Department opted

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to use BIM techniques on a trial basis, adapting them to become L.I.M. - Landscape Information Modelling. They used BIM as a platform for holding data collected from topographical surveys, utility mapping, tree surveys, and found such process invaluable for checking data integrity and assessing design options.

# Efficient and Effective Understanding of Designs

"Adopting BIM techniques permit examining of data in context," says Kevin Li, Senior Architect, Architectural Services Department. "Our challenge is to convince stakeholders that there is alternative and more effective way to produce equal or better results. We benefit from L.I.M., as the final products, such as, 2D drawings, illustrations and animation clips, provide a coherent means for the understanding of landscape design proposals."

The gradual adoption of L.I.M. reflects landscape architects and their collaborators being keen to explore ways of enhancing and adding value to landscape work during early design and construction stages. The team



worked on some preliminary explorations, by assembling Landscape Information Models (LIM) for three projects: a proposed extension of a park in To Kwa Wan; a proposed urban park in Kwun Tong and a display in the 2015 Flower Show held in Victoria Park, Causeway Bay.

## A model for all seasons

For the proposed park extension in To Kwa Wan, existing site features and proposed design were incorporated in the landscape information model.

The wealth of information included data on trees, namely, species, location, height and proposed treatment, like whether a tree would be retained or removed. This data assisted indepth understanding and benefited the design process, but will also be used in subsequent tree management.

Using L.I.M., qualitative and quantitative comparisons of design options were conducted easily, such as, a comparison of lawn areas and affected trees. The park's future appearance could be shown, with trees almost instantly growing taller at the click of a mouse button. Plus, the model allowed generation of endless numbers of views and animation showing how the park will look



in different seasons, this flexibility would be unthinkable by application of conventional design tools.

### Before and after views

The site for the proposed urban park in Kwun Tong is small, and ringed by high-rise buildings. This made it especially important for the design team to model shading from the sun throughout the 12 months of a year, showing how different parts of the park will be affected by sunlight. Using the same base model, the team evaluated prevailing wind conditions, to optimize the plant selection.

The model was also useful for generating images to show how the park will look. These were shown along with photographs taken from the same vantage point, it makes Image courtesy of Architectural Services Department, HKSAR Government

the comparison easy for laymen as well as professionals. "The impact of proposed landscape design can be easily demonstrated," says Kevin Li.

### Towards a complete Landscape Information Modelling

The exhibit for the 2015 Flower Show was to feature a collection of flowering plants plus short wooden pillars in a swirling pattern. The design team incorporated locations of particular plants, together with soil depth, plant colour etc, in the landscape information model.

This model not only allowed visualisation of the disposition of plant cluster, the layout plan and planting schedule were automatically generated from the model. Such improvement



Image courtesy of Architectural Services Department, HKSAR Government

on workflow is a time-saving feature yet ensuring the information is consistent.

"The trial runs were not smooth sailing," says Kevin Li. "But the outcomes did stimulate debates and discussions. The exercises focused on how to create a comprehensive set of landscape information across all work stages and the benefits of doing so." He adds that the L.I.M. approach is quite different from current practices, and anticipates further technical developments, such as on software, library objects and work flows for landscape design, which will be important in facilitating the journey to a richer Landscape Information Modelling.



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# About Architectural Services Department, HKSAR Government

Architectural Services Department (ArchSD) performs the following three core functions in relation to Government-owned and Government-funded facilities:

Monitoring and advisory services;
Facilities upkeep; and
Facilities development.

ArchSD commits to provide quality services to the public and explore every opportunity to integrate innovative and sustainable elements into its projects for the betterment of the society with due consideration on cost effectiveness. In recent years, ArchSD projects received some recognition including but not limited to the Hong Kong Institute of Architects Annual Awards, the Hong Kong Institute of Landscape Architects Design Awards, Quality Building Award and Green Building Award.

