

COMPANY
Sun Hung Kai Properties Limited

PROJECT
Proposed Residential Development at Inland Lot No. 8963, Stubbs Road

LOCATION
Stubbs Road, Hong Kong

TYPE
Residential Development

SCHEDULED TIME OF COMPLETION
2019

BIM Smooths the Way on Tough Terrain

“The BIM model helped a lot with assessing headroom and check for clashes. If we can spot issues before construction, it will improve safety, there will be less abortive work, and we can ensure adequate headroom for future buyers.”

—**Charles C. L. Lam**
 Project Manager, Sun Hung Kai Properties

- BIM PARTNERS
- Sun Hung Kai Architects and Engineers Limited**
 - Ronald Lu & Partners (Hong Kong) Limited**
 - Ove Arup & Partners Hong Kong Limited**
 - J. Roger Preston Limited**
 - CHHADA SIEMBIEDA & Associates Limited**
 - Sanfield Building Contractors Limited**
 - Forida Limited**



Visualization using VR experience
 Image courtesy of Sun Hung Kai Properties Limited

Sun Hung Kai Properties finds BIM model helps overcome challenges of building luxury housing on challenging hillside site

Sun Hung Kai Properties is creating a residential development project that includes five seven-storey residential and nineteen three-storey individual houses, along with two basement car parks and a private clubhouse with swimming pool. This may seem straightforward on flat land, but the project site is a steep Hong Kong hillside.

“It’s very difficult terrain,” says Ir C. K. Hui, Senior Construction Manager, Sun Hung Kai Properties. “This is a hilly site, with the back of the site about 40 metres higher than the entrance. We need a road to meander up, and are cutting away the slope to build. After completely cutting away the rock, in several steps, we’ll have a retaining wall that’s about 20 metres high.”

The challenging site was one key reason for using BIM. Also, the design process was set to be fast tracked, with a need to allow



Visualization using VR experience
 Image courtesy of Sun Hung Kai Properties Limited



3D Section View of Retaining Wall along Hillside
Image courtesy of Sun Hung Kai Properties Limited

other parties such as Structure, Building Services, Interior Design, and Landscape to efficiently keep up-to-date with the design.

Planning and explaining site formation

The BIM consultant, Forida Limited, prepared a BIM Execution Plan spanning identification of BIM work scopes; setting up the BIM roles of different parties; identification of BIM tasks at different stages; setting up BIM Milestones in accordance with main project activities; and proposed workflows for BIM and information exchanges.

“We started with a preliminary design study, with a BIM model that helped us optimise how to cut the slope more efficiently,” says Lam Chi Kai, BIM

Manager, Sun Hung Kai Properties. “The model helped us to understand the site formation process. Engineers gave us information, and we could appreciate why the retaining wall was in the place they advised.”

There was a time element in the model, with a sequence for where to cut, and at which levels. When presented to senior management, this helped explain why site formation would take a relatively long time, along with details of which areas would be cut, which would be level – making the approval process easier.

Tracking and resolving issues on site

“Half the buildings would be sunk into the ground, and the site has multiple levels, making it challenging to plan the

electrical and mechanical aspects,” says Charles C. L. Lam, Project Manager, Sun Hung Kai Properties. “The BIM model helped a lot with assessing headroom and check for clashes. If we can spot issues before construction, it will improve safety, there will be less abortive work, and we can ensure adequate headroom for future buyers.”

During the design stage, architects made changes through viewing the model, which was especially useful for aspects that are very difficult to see on 2D drawings, such as levels, and ramps. Consultants and engineers assessing the model found over 500 issues before construction began. They were also helped by a BIM team working on site, who generated combined services drawings for drainage, and combined builders’ work drawings.

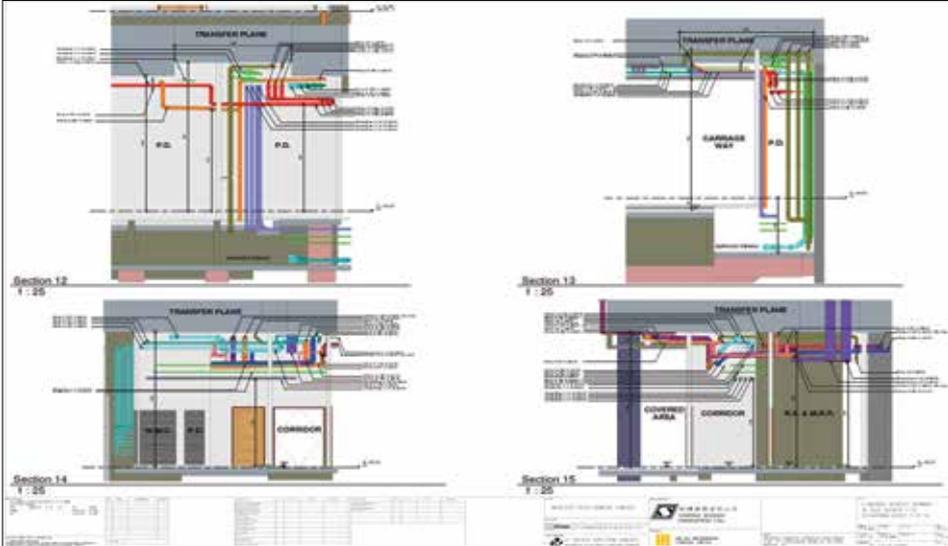
“We had issue management within Revit software – tracking and resolving issues on site, or requesting more information,” says Kenneth S. K. Lau, of Forida. “The team could visualise changes, and give feedback.”

The BIM model was also used for showing how the luxury apartment interiors might look with different materials. This helped narrow down the choices for materials, which would be finally assessed in a walk in, mock up apartment room based on the BIM model.

The BIM model has also been used to simulate the real views of CCTV, to ensure



Headroom and Building Services Spaces Coordination and Clash Detection in Model
Image courtesy of Sun Hung Kai Properties Limited



Combined Building Services Drawing Production directly from Model
Image courtesy of Sun Hung Kai Properties Limited

that all CCTV cameras are optimally located, minimising possible blind spots.

Benefits beyond anticipation

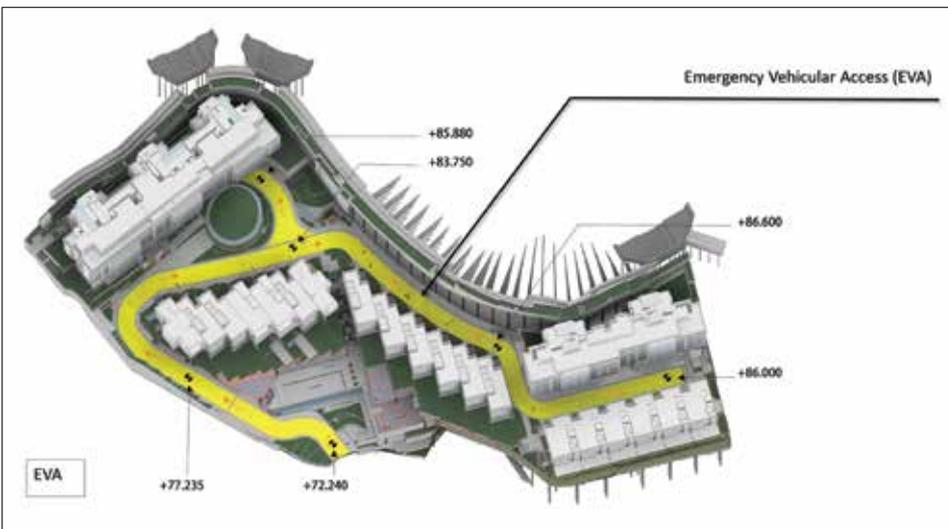
Looking at the benefits of BIM for this project, Mr Lam considers the improvement in safety is most precious.

Sun Hung Kai Properties has been utilising BIM since 2011, and while it is integrated in several projects, from planning to construction and handover, 2D design remains important, partly as the industry has not fully switched to BIM.

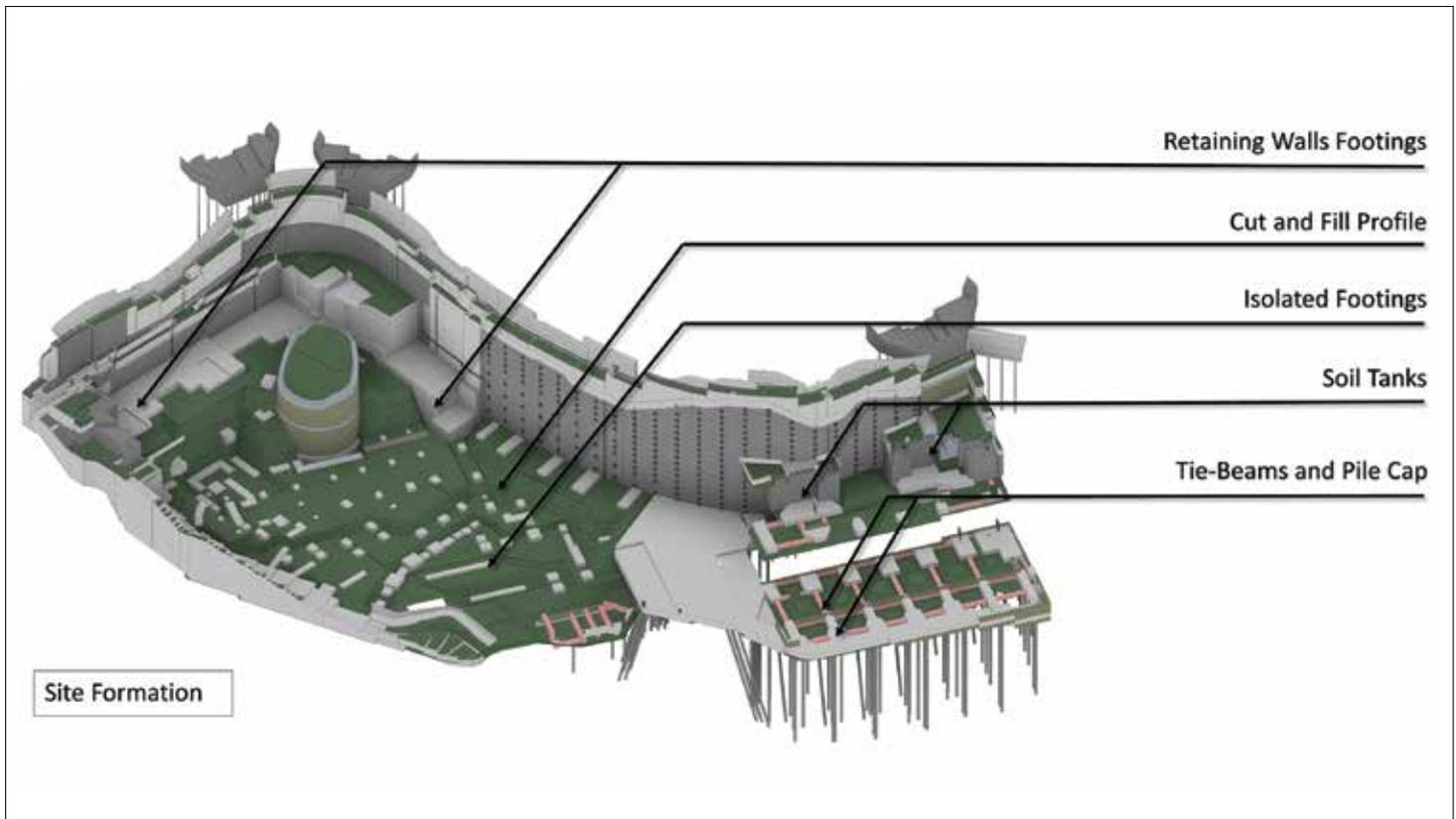
“In the past five or six years, we have been transitioning from 2D based to

more focus on 3D – the role of BIM is growing,” says Mr Lam. “More consultants and contractors are thinking in terms of 3D. BIM helps coordination, we can cut sections through models, check headroom and clashes.”

While BIM seems favoured for projects with unusual aspects like the hillside site, or complex designs, Mr Lam remarks, “There are no easy projects. For more conventional projects, BIM can show a completed building before construction commences. The benefit is far more than we first anticipated.”



EVA Design with BIM Assistance
Image courtesy of Sun Hung Kai Properties Limited



Foundation Elements Coordination with BIM
Image courtesy of Sun Hung Kai Properties Limited

About Sun Hung Kai Properties Limited

Sun Hung Kai Properties Limited (“SHKP”) was publicly listed in 1972 and is now one of the largest property companies in Hong Kong. It specializes in developing premium-quality residential projects, offices and shopping centres. The Group employs more than 37,000 people.

Sun Hung Kai Properties puts its long-standing belief in ‘Building Homes with Heart’ into practice, on the one hand by developing residences of the finest quality and offering first-class service to its customers, and also by contributing to the good of the community to make Hong Kong a better home for everyone.

The Group understands that buying a home is one of the biggest decisions people make in their lives, and so it spares no effort to deliver the very best. Vertical integration from planning, material sourcing and construction through to project monitoring and property management ensures high standards in every aspect of a development.

The Group’s seasoned management team follows prudent strategies for long-term business development and the company’s philosophy includes a strong sense of corporate social responsibility, both to its customers and to the public. The Group works for the benefit of the community with wide-ranging initiatives to protect the environment, care for the less fortunate and foster educational development.

Sun Hung Kai Properties – We’re ‘Building Homes with Heart’.