COMPANY
Nan Fung Development Limited

PROJECT
**LP6**

LOCATION
**1 Lohas Park Road, Phase VI of LOHAS Park, Tseung Kwan O**

TYPE
**Mass Residential Development**

SCHEDULED TIME OF COMPLETION
**Q3 2020**

# Using BIM for Resolving Cross-Discipline Clashes and 4D Simulations

南豐集團 NAN FUNG GROUP

## About Nan Fung Development Limited

Founded in 1954, Nan Fung Development Limited is a subsidiary of Nan Fung Group, one of the largest privately-held conglomerates in Hong Kong with global interests in real estate development and investment and holds a well-diversified, substantial financial investment portfolio. The Group has a track record spanning over 50 years with over 165 projects including residential, commercial and industrial buildings. The Group's vertically integrated team enables significant synergies across development to property management.

In recent years, the Group expanded its investment focus on ICE (Innovation, Creativity and Entrepreneurship), exemplified by its signature project, the Mills, a revitalization of its legacy yarn factories into a hub promoting tech-style and destination for culture and learning. The Group also made significant progress in investments related to life sciences in the US via Pivotal; and in Mainland China via an affiliate, New Frontier, which focuses on healthcare, elderly care, education and new technology.

BIM PARTNERS

**Dennis Lau & Ng Chun Man Architects & Engineers Limited**

**Hip Hing Construction Company Limited**

AUTODESK PRODUCTS USED

**BIM 360 TEAM**

**Collaboration for Revit**

**Navisworks Manage**

**RECAP Pro**

**Revit**

## Project Description

The residential development at Phase VI of LOHAS Park consists of 4 high-rise residential towers with 2,392 units sitting on a 2-storey podium clubhouse and 2-level basement carpark. The development sits on the waterfront with a 38,000 square feet clubhouse comprising various facilities, including a 20m heated indoor swimming pool and a 40m outdoor swimming pool.

## Project Challenges

The project team encountered many cross-disciplinary clashes from design to construction. For the project of this scale, review of architectural, structural elements and building services in conjunction by overlaying 2D drawings would be inefficient. Lack of collaboration among subcontractors often resulted in many interfacing clashes during the production of CSD and CBWD. Moreover, the project adopted a top down construction method and the concreting zones had to be determined by the progress of its plant rooms.

## Solutions for challenges

BIM has provided a comprehensive platform to review multi-disciplinary coordination issues compared to using traditional 2D drawings. The client, architect and other stakeholders were able to review the virtual mock up using BIM and make more informed decisions. Semi-automated review of structural openings for building services aided in improving the quality of CSDs. Overall, BIM has enhanced communication among stakeholders and subcontractors, and provided a platform to improve building services coordination.

4D simulation also helped in resources planning. With the 4D simulation of concreting sequence prior to construction, the delivery of the main plant room and installation of E&M services could be done within the schedule of programme.

## How does BIM benefit the project?

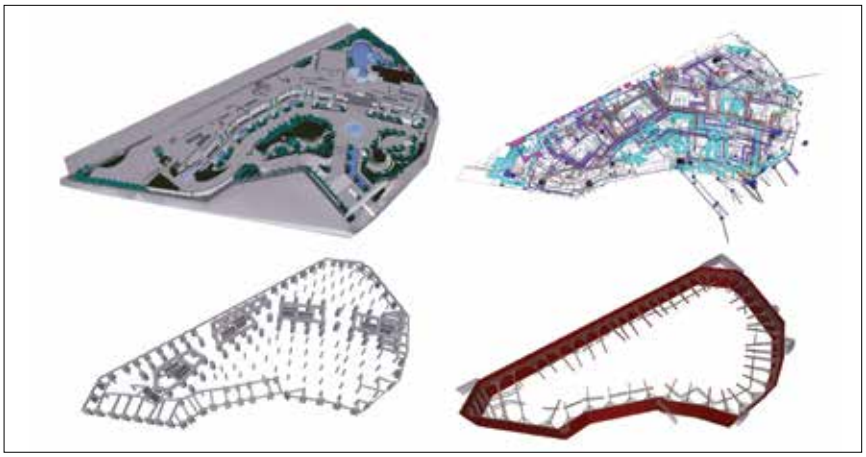
The potential risks of the project have been significantly reduced because of the involvement of all main stakeholders in the BIM process. BIM was the Common Data Environment (CDE) to minimize information discrepancy between teams. The CDE has enabled all trades' drawings to be updated with latest changes along project stages. For critical areas with congested building services, BIM virtual mock-ups created prior to construction eliminated risk of dispute and timely coordination of different trades. 4D simulation also helped with better logistic planning for material delivery and construction sequencing.

## Better with BIM

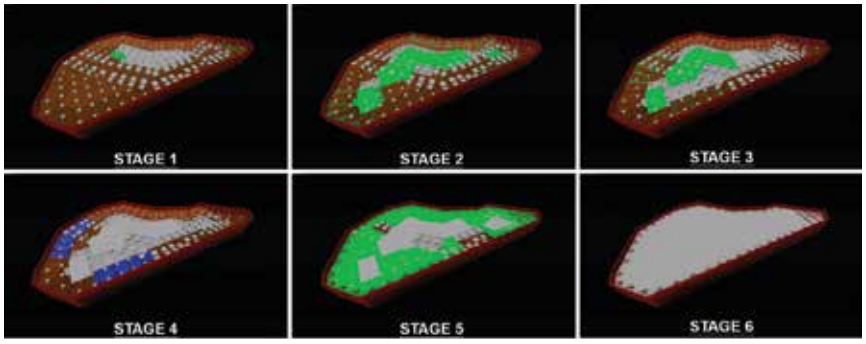
The construction method simulation of building services installation sequence facilitated the project team to better plan the works before installation and gave site staff clearer understanding of the work sequence, thus improving the efficiency and site safety. BIM also improved the quality of building services routing arrangement with consideration of installation and maintenance space required.

For underground structures, 3D laser scanning technology was implemented to allow structural engineers to obtain precise measurement of as-built portions. With the accurate as-built model verified by 3D laser scanning, subsequent works could be modified, minimizing abortive works.

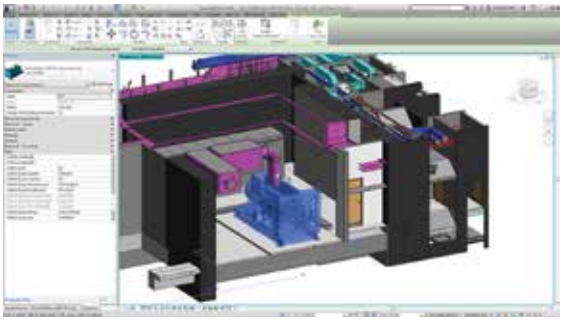
Overall view of Lohas Park Phase 6 at Tseung Kwan O
Image courtesy of Nan Fung Development Limited



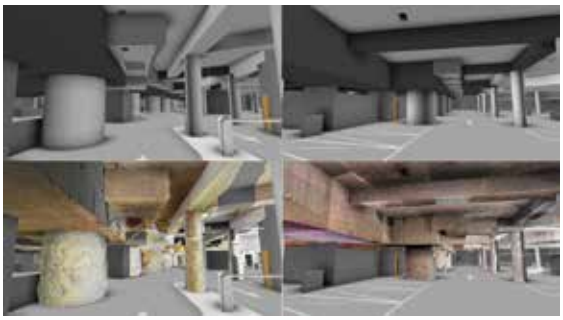
Multi-disciplinary project BIM models of podium and substructure
Image courtesy of Nan Fung Development Limited



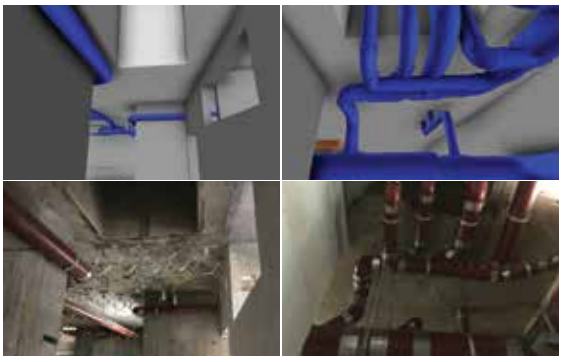

4D construction sequence simulation was utilized to determine optimum concreting sequence
Image courtesy of Nan Fung Development Limited



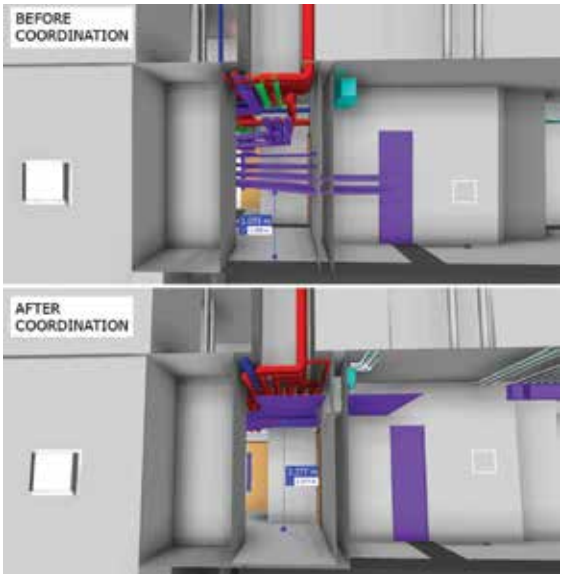
Equipment and asset information embedded in project BIM model
for future Facility Management
Image courtesy of Nan Fung Development Limited



Laser scanning technology was deployed on site to obtain
accurate as-built models
Image courtesy of Nan Fung Development Limited



BIM model with coordinated building services has facilitated
E&M installation on-site
Image courtesy of Nan Fung Development Limited




CSD Coordination in BIM
Image courtesy of Nan Fung Development Limited