

## COMPANY

Hong Kong Housing Authority,  
the Government of the Hong Kong Special  
Administrative Region  
Hanison Construction Company Limited

## PROJECT

From Blueprint to Beyond: BIM for the Building's  
Full Life Cycle - Public Housing Development at  
Hin Fat Lane, Tuen Mun

## LOCATION

Hin Fat Lane, Tuen Mun

## TYPE

Building Project

## SCHEDULED TIME OF COMPLETION

Q4 2024

# From Blueprint to Beyond: BIM for the Building's Full Life Cycle



"We are honored to share our project for Hin Fat Lane, "From Blueprint to Beyond: BIM for the Building's Full Life Cycle." This project showcases innovative BIM applications across the entire lifecycle of the Public Housing Development at Hin Fat Lane, Tuen Mun. Through the integration of digital solutions, we have enhanced efficiency, sustainability and maintainability, contributing to the advancement of sustainable and efficient construction practices."

## -Tim LI

Chief Architect/ 3,  
Hong Kong Housing Authority,  
the Government of the Hong Kong  
Special Administrative Region

## -LUN Tim Ho

Director,  
Hanison Construction  
Company Limited

## BIM PARTNERS

Wong Ouyang (Building Services) Limited  
One Bite Design Studio Limited  
Ove Arup & Partners Hong Kong Limited  
isBIM Limited

## AUTODESK PRODUCTS USED

Autodesk® AutoCAD®  
Autodesk® BIM 360®  
Autodesk® Dynamo Studio  
Autodesk® Navisworks®  
Autodesk® Navisworks® Manage  
Autodesk® ReCap® Pro  
Autodesk® Revit®



West Elevation

Image Courtesy of Hong Kong Housing Authority, the Government of the Hong Kong Special Administrative Region

## Project Background

The Public Housing Development at Hin Fat Lane, Tuen Mun, includes a 34-storey domestic block (872 units) on a 3-storey podium with a lower ground floor housing an estate management office, covered landscape and play areas, ancillary facilities, and external works.

Hin Fat Lane has been a live testing ground for advanced Building Information Modeling, pushing the boundaries of how we plan, design, build, and manage public assets. This project stands out as one of our first to achieve full BIM integration from the earliest design sketches to project handover, covering the entire building life cycle.

## BIM in Design Stage

The digital transformation journey began with the integration of BIM and Geospatial

Information Systems at the design stage. This allowed for accurate visualization of the building's real-world context, assessing environmental impact, flood risks, and ecological concerns from an early stage. Visualizing data through digital models enabled early risk identification and sensitive urban integration.

## BIM in Pre-Construction Stage

During pre-construction, digital tools helped us go further. For the General Building Plan submission, the project team used our self-developed BIM plug-in to automate many parts of the regulatory submission process—from calculating floor areas to ensuring travel distance in fire safety requirements. What used to take weeks now happened in days.

For the foundation design, we developed a generative design tool known as BIM-SAFD, which automatically generate optimized foundation schemes, help engineers evaluate the best pile locations, and automatically produce drawings and schedules for construction and budget planning. This drove efficiency and accuracy, supporting both our engineers and surveyors with data-driven precision.

In the tender phase, the complete BIM model allowed bidders to thoroughly assess site challenges and propose innovative methods, including 4D construction planning videos. This transparency improved buildability and site planning while reducing risks.

### **BIM in Construction Stage**

Once construction began, BIM continued to drive our process. By linking every construction activity to a 4D BIM model—we could visualize, plan, and manage every stage more effectively. This allowed early detection and avoidance of scheduling conflicts and resource bottlenecks, reducing delays and improving overall efficiency.

To make sure everyone stayed on the same page, we used Autodesk BIM 360 as our Common Data Environment. This meant every team member accessed the most up-to-date information at all times, reducing errors and fostering real-time collaboration. Communication became seamless, with all issues and requests for information tracked and resolved quickly through a centralized platform, keeping the project steady and on schedule.

Quality on BIM modelling was paramount. To ensure compliance with our Housing Authority's BIM standard, "Autodesk Model Checker" was used and customised to our specific needs to automate BIM model checking for compliance, flagging any issues and ensuring models were properly built, guaranteeing robust digital handovers.

### **BIM for Post Construction Stage**

But the innovation didn't stop when the building was complete. Hin Fat Lane became a pivotal pilot for establishing our in-house "Asset Information Requirements" for the BIM era—setting the data standards necessary for efficient, long-term management of our buildings. We benchmarked against international standards and tailored requirements for our housing portfolio, ensuring that essential asset data like equipment details, maintenance schedules, and warranties, were captured and embedded in our digital model for operational use.

A unified BIM-GIS portal will consolidate data from housing estates, enabling dashboards for real-time monitoring, predictive maintenance, and lifecycle cost estimations. The Asset Management System, connected to these digital model such as Hin Fat Lane model, uses big data analytics to shift from reactive to preventive upkeep—maximizing efficiency and resource planning.

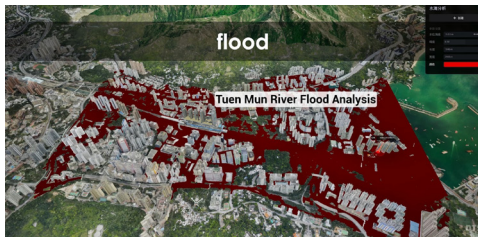
Use of smart monitoring on photovoltaic panels, EV charging facilities, and real-time IoT sensors for water and drainage, let us detect and solve issues immediately—saving time, cost, and resources. All of this is underpinned by a robust digital infrastructure that ensures the free and secure flow of BIM, GIS, and IoT data, empowering smarter, evidence-based decisions.

To ensure continual progress, we've launched an Asset Management Consultancy Study—defining our digital roadmap, aligning IT investments with long-term goals for smart facility management. We are also carrying out trials of Augmented Reality at Hin Fat Lane, allowing field technicians to access BIM and IoT data visually via tablets, streamlining inspections and guided repairs.

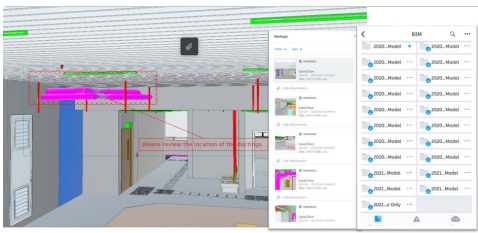
The Public Housing Development at Hin Fat Lane—a landmark project completed in 2024 showcases the Housing Authority's commitment to digital innovation and smarter building management. It represents the future of public housing—where integrated digital solutions lead to more efficient, sustainable, and resilient building management, setting a new standard for public asset development and operations.



New Asset Management System for Building Maintenance and Management  
Image Courtesy of Hong Kong Housing Authority, the Government of the Hong Kong Special Administrative Region



PIMAP showcase of BIM & GIS Integration  
Image Courtesy of Hong Kong Housing Authority, the Government of the Hong Kong Special Administrative Region



Project team coordination through CDE Platform (BIM360)  
Image Courtesy of Hong Kong Housing Authority, the Government of the Hong Kong Special Administrative Region and Hanison Construction Company Limited



4D simulation  
Image Courtesy of Hong Kong Housing Authority, the Government of the Hong Kong Special Administrative Region and Hanison Construction Company Limited



Architectural Model  
Image Courtesy of Hong Kong Housing Authority, the Government of the Hong Kong Special Administrative Region



Structural Model  
Image Courtesy of Hong Kong Housing Authority, the Government of the Hong Kong Special Administrative Region



MEP Model  
Image Courtesy of Hong Kong Housing Authority, the Government of the Hong Kong Special Administrative Region