

## COMPANY

Architectural Services Department, HKSAR  
TFP Farrells Limited

## PROJECT

Expansion of Museum Project at  
Tsim Sha Tsui East

## LOCATION

2 Science Museum Road and 100 Chatham Road  
South, Tsim Sha Tsui, Hong Kong

## TYPE

Building Project (Expansion and A&A)

## SCHEDULED TIME OF COMPLETION

2030

“The BIM process requires a paradigm shift involving changes in mindset and behaviour from all parties in the project team. We must see it as our opportunity to create new synergies and revolutionise the construction industry adopting smart innovative technologies that allow us to create better places.”

— **Billy Law,**

Chief Project Manager, 302, Architectural Services Department, HKSAR

— **Jose Luis Dominguez,**

Senior Associate - Project BIM Manager, TFP Farrells Limited

## BIM PARTNER

AECOM Asia Company Limited

## AUTODESK PRODUCTS USED

Autodesk® AutoCAD®

Autodesk® BIM 360®

Autodesk® Dynamo Studio

Autodesk® Navisworks® Manage

Autodesk® Revit®

Autodesk® Vehicle Tracking

# INTEGRATION



Aerial View of the Design Proposal for The Museum Expansion at Tsim Sha Tsui East (Design subject to future design development)  
Image Courtesy of Architectural Services Department, HKSAR and TFP Farrells Limited

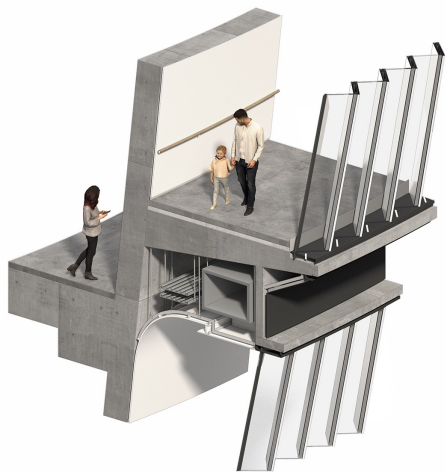
## The Museum Complex

The proposed project is to expand the museum complex at Tsim Sha Tsui East by constructing new annex buildings with new facilities; and renovation of the affected and out-of-date facilities at the site. One of the challenges in this project is to maintain the museum partially open to public during the construction and renovation works.

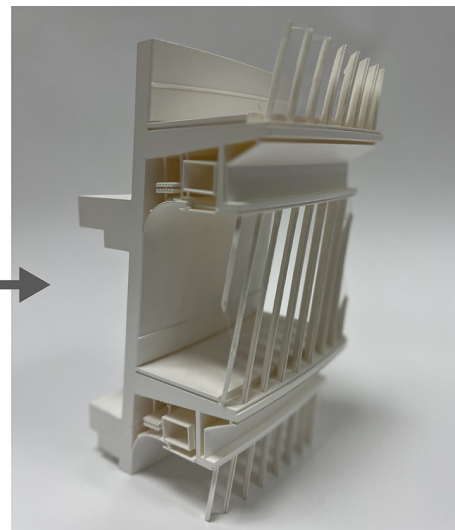
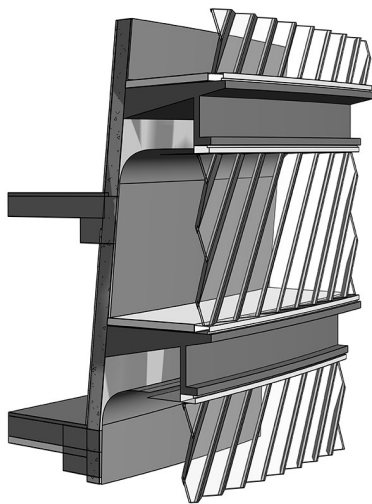
The project consists of three annex buildings with 5 storey above 2-level basement, providing almost a double of existing exhibition spaces, new educational facilities, new supporting facilities, public open spaces, ancillary car park and roof garden. The existing façade will also be up-lifted to provide a holistic outlook to the overall museum complex.



BIM Models prepared for Future Operation Uses and Digital Twin  
Image Courtesy of Architectural Services Department, HKSAR and TFP Farrells Limited



Enhanced 3D Modelling Visualization  
Image Courtesy of Architectural Services Department, HKSAR and TFP Farrells Limited



Autodesk Revit Models to 3D Printing  
Image Courtesy of Architectural Services Department, HKSAR and TFP Farrells Limited

The existing outdoor spaces and approaches to the museum will be rejuvenated and re-organized, with an overall enhancement to accessibilities by the general public and disabilities. The design proposal creates better places for the public to enjoy and interact, offers more connectivity across the site and a more welcoming public realm at ground level.

**BIM Integration**

The proposed expansion of the museum complex and the new designed shared facilities will enhance the total museum experiences and will create new synergies and opportunities through the common goals of exploration, knowledge, inspiration and resonance. The same approach of Integration is the inspiration for the project team to embrace BIM opportunities. We believe that Building Information Modelling (BIM) is not just a tool, it is an attitude and commitment. It requires a paradigm shift involving changes in mindset and behaviour from all parties in the project team, as well as a clear definition of roles, responsibilities, and expectations. Integration of BIM in this project is not a one-time event, but a continuous improvement process that will adapt to the changing needs and demands of the project. BIM in this project is not intended to only support the integration of the various disciplines and systems, such as architecture, engineering,

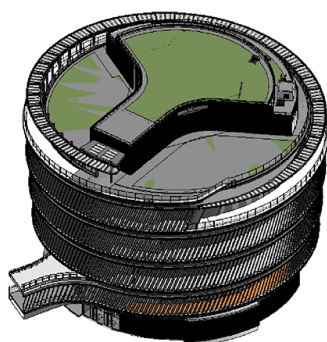
construction, and facility management, enhancing performance and quality but also to provide a comprehensive and dynamic representation of the project lifecycle, from planning to operation, enabling better monitoring and evaluation. There is the ambition of BIM Models prepared for future operation uses, for building a Digital Twin that will boost a better Asset Management and that will allow the Museum to step into Web 3.0 and Metaverse.

**BIM Benefits**

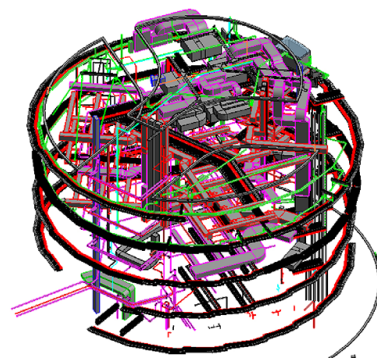
The implementation of a Common Data Environment (CDE) such as Autodesk BIM 360 allows the project team to work with a Single Source of Truth for storage and coordination of information and collaboration with others. The adoption

of BIM has improved our collaboration and communication between the different project stakeholders, leading us to better decision-making and fewer errors in the design phase which will result in a potential return on investment (ROI) in terms of time and cost savings from reduced rework and change orders.

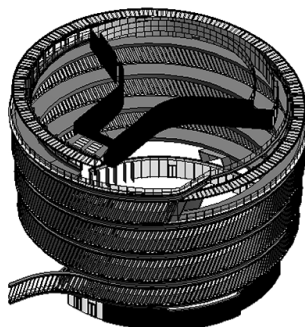
We work with enhanced visualization and analysis via the use of Autodesk technologies such as Revit, Navisworks and other Autodesk Add-ins (i.e: Enscape™). This allows the team to achieve a better design optimization, energy efficiency analysis, and clash detection, among other things. As a result, the project will gain benefit of a potential ROI in terms of improved



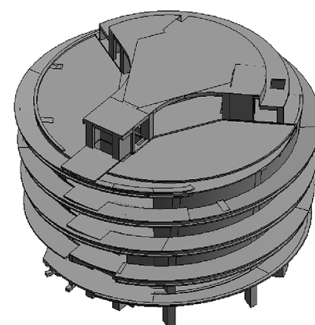
ARCHITECTURAL MODEL



MEP MODEL



FAÇADE MODEL

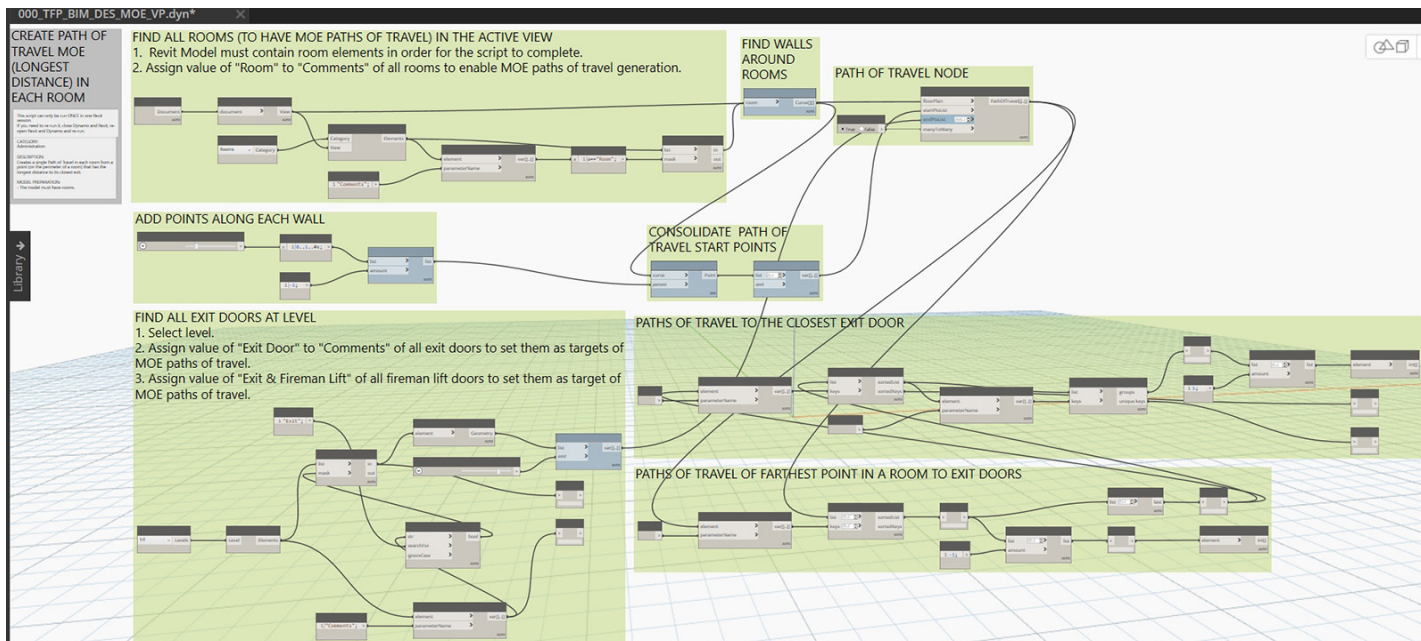


STRUCTURAL MODEL



Design Team reviewing the project in BIM  
Image Courtesy of Architectural Services Department, HKSAR and TFP Farrells Limited

Interdisciplinary Model Set Up to Facilitate Project Team Collaboration  
Image Courtesy of Architectural Services Department, HKSAR and TFP Farrells Limited



Dynamo Automation Tool for Compliance Checking of Statutory Requirements  
Image Courtesy of Architectural Services Department, HKSAR and TFP Farrells Limited

building performance, reduced construction errors and delays, and cost savings from optimized building systems.

Our commitment to reduce project risks and improved project efficiency is supported by the adoption of BIM in this project. Autodesk Software, Revit add-ins and the possibility of Autodesk software to be also used in an open BIM application workflow allows the team to streamline the design process, allowing for faster and more efficient design iterations and approvals which will result in a potential ROI in terms of reduced design time, improved design quality, and reduced project costs.

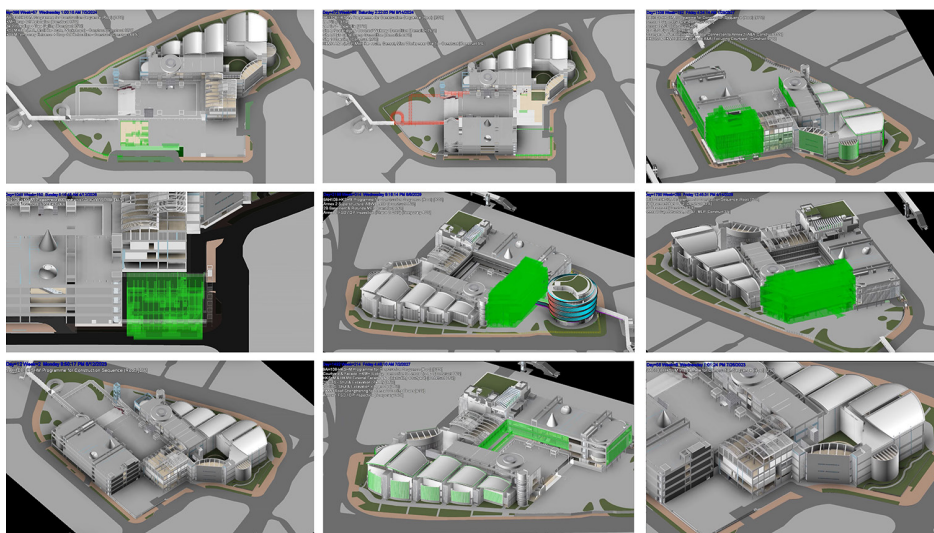
BIM automation tools such as Dynamo and other Autodesk plugins are used by the project team to check compliance with statutory requirements and automate traditional manual tasks; By allowing us to 3D printing from Autodesk Revit models, OpenBIM is a design review tool and communication with our client. The early adoption of BIM

in the design stage of the project has enhanced the buildability and possibility of MEP DfMA – MiMEP Module (Modular Integrated Mechanical, Electrical and Plumbing services). The project team is also adopting the use of the different BIM technologies such as HAP E20 to calculate the cooling load of each space and model the annual energy performance.

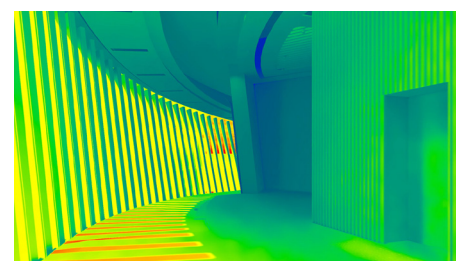
The project team has adopted BIM to improve the project outcomes, improve the building performance and increase tenant satisfaction to ensure the final building meets the owner’s requirements and expectations. BIM technologies have been implemented to add value for design including its complex phasing planning. In particular, LCSD has requested that the museums shall remain in operation during the course of construction. With the need for complicated phasing and sequencing during construction to suit operational needs, the use of BIM will definitely be beneficial to the programme and cost

control, as well as future operation in long run.

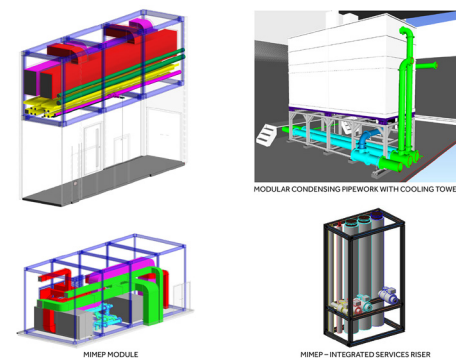
The adoption of BIM in this project is a key factor for its success and a new way of collaborating, innovating and delivering better outcomes for our client and the environment.



Phasing Planning Simulation - 4D BIM  
Image Courtesy of Architectural Services Department, HKSAR and TFP Farrells Limited



Lighting Study using Enscape™ as a plugin for Autodesk® Revit®  
Image Courtesy of Architectural Services Department, HKSAR and TFP Farrells Limited



MiMEP Modules – DfMA  
Image Courtesy of Architectural Services Department, HKSAR and TFP Farrells Limited



建築署  
Architectural Services  
Department

**FARRELLS**



Design Proposal of The Museum Expansion at Tsim Sha Tsui East From Granville Square (Design subject to future design development)  
Image Courtesy of Architectural Services Department, HKSAR and TFP Farrells Limited

### About Architectural Services Department, HKSAR

Architectural Services Department (ArchSD) was found in 1986 serving as one of the works departments under the Development Bureau of the HKSAR Government for the development and upkeep of public facilities.

Our aim is to provide efficient and cost-effective professional and project management services for the design, construction, maintenance and refurbishment of government buildings and facilities. We also provide professional and technical advice to the Government and quasi-government organisations.

### About TFP Farrells Limited

Farrells is an international firm of architects, urban planners and designers. Founded in 1965 by Sir Terry Farrell, an architect-planner and a leading proponent of urbanism, Farrells draws on its unique heritage to create human-centric places that work for the users, the environment and investors. With offices in Hong Kong, London and Shanghai, Farrells offers end-to-end services from concept to completion for projects spanning the spectrum of scales and sectors.