

Honorable Mentions

COMPANY

Drainage Services Department,
HKSAR Government
AECOM Asia Company Limited
The Jardine Engineering Corporation, Limited

PROJECT

Contract No. DE/2018/03- Shek Wu Hui
Effluent Polishing Plant – Main Works Stage
1 – Sidestream Treatment Facilities and E&M
Works for Sludge Treatment Facilities

LOCATION

Shek Wu Hui, Hong Kong

TYPE

Design and Build

SCHEDULED TIME OF COMPLETION

Q1 2024

Achieving UNITY with BIM: From cross-disciplinary collaboration to full life-cycle management



About Drainage Services Department, HKSAR Government

Drainage Services Department of the HKSAR Government has a vision to provide world-class wastewater and stormwater drainage services enabling the sustainable development of Hong Kong, China. The mission includes improving drainage services in cost-effective and environmentally responsible manner, enhancing a caring, harmonious, safe and healthy work environment that fosters staff development and mindset for change, as well as strengthening relationships with community, industry and worldwide counterparts.

About AECOM Asia Company Limited

AECOM is one of the largest global providers of design, engineering, construction, and management services. The firm serves a broad spectrum of end markets including infrastructure, water, transportation, and energy. Based in Los Angeles, AECOM has a presence in over 150 countries and employs 87,000.

About The Jardine Engineering Corporation, Limited

Jardine Engineering Corporation (JEC) is a leading provider of engineering services, sourcing and contracting expertise. The company enables its customers to operate their facilities at world-class standards by providing the contracting expertise to design, supply and install building and specialised processes; facility operation and management; asset enhancement and energy management; and the sourcing of electrical and mechanical equipment and architectural fixtures. Established in Shanghai in 1923, JEC is headquartered in Hong Kong and operates throughout Asia.

BIM PARTNER

Syntegrate

AUTODESK PRODUCTS USED

Autodesk® AutoCAD®

Autodesk® BIM 360® Design

Autodesk® BIM 360® Docs

Autodesk® Navisworks® Manage

Autodesk® Revit®

Project Description

The existing Shek Wu Hui Sewage Treatment Works (SWHSTW), commissioned in 1984, is the first large-scale secondary sewage treatment plant in Hong Kong. SWHSTW is located at the North District with a design capacity of 93,000 m³/day in 2018. Owing to rapid population growth in the catchment, the existing SWHSTW is being transformed into Shek Wu Hui Effluent Polishing Plant (SWHEPP) to increase its treatment capacity by two-fold almost and at the same time upgrade the sewage treatment level from secondary to tertiary in order to meet very stringent discharge standards.

Project Challenges

SWHEPP Project is being delivered under different contracts, for which civil & structure is being constructed under a separate contract concurrently with this Electrical & Mechanical contract.

Both contracts are being carried out simultaneously. In order to enhance the design effectiveness, one of the challenges in this project is to collaborate efficiently with information exchanged accurately and timely. To avoid consequential effects on site, whenever there is any problematic design, they should be solved as early as possible.

This is the key to success in delivering multi-disciplinary contracts under the SWHEPP project.

Solutions for challenges

We used Revit as the core platform to conduct E&M system design and exchange these 3D geometric information for collaboration. It is to ensure the quality of information and the data are being collected from the originator. Our design can be presented clearly and been understood easily by other delivery teams in the 3D environment.

For effective collaboration, Independent BIM Consultant (IBC) acts an important role to monitor the BIM operation in SWHEPP. IBC uses the Common Data Environment (CDE) BIM 360 to oversee the collaboration among different contracts based on the agreed protocol. IBC also chairs regular Inter-contractor Task Group to identify and resolve any design challenges.

How does BIM benefit the project?

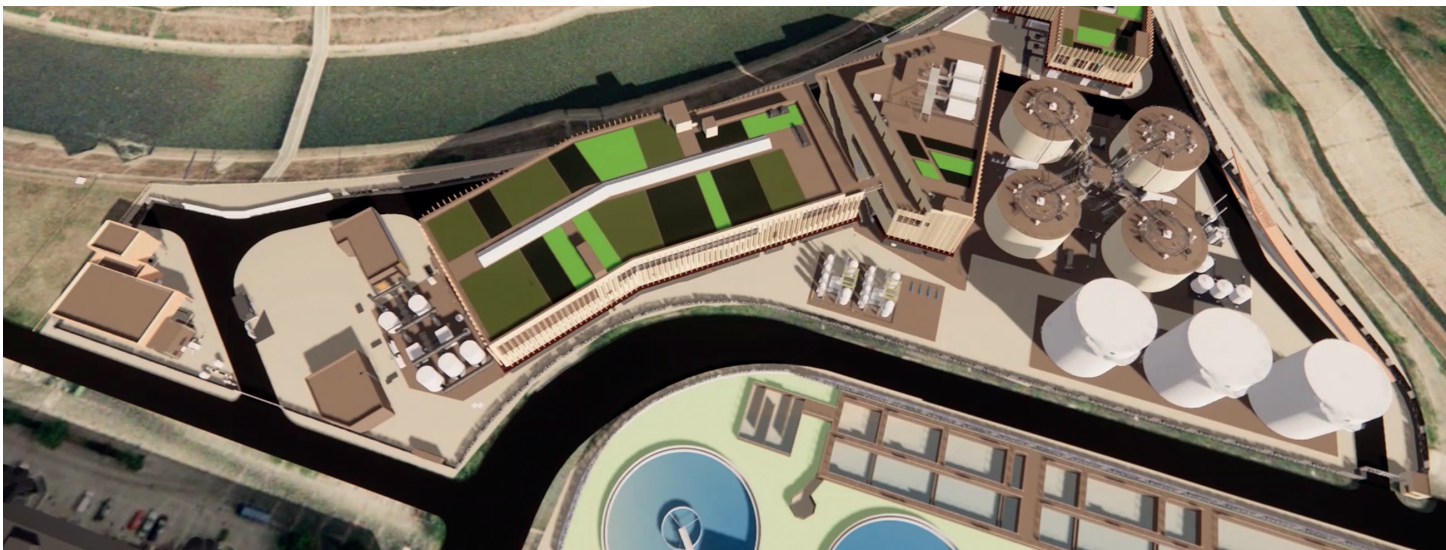
BIM has been adopted in SWHEPP and fully used from the design stage. We applied different dimensions of BIM uses, and the project is benefited in different areas, such as project management, construction process control, cross-disciplinary collaboration, communication with external stakeholders, decision making and risk management.

During the construction stage, with the BIM model, the complicated system E&M design can be clearly presented to the sub-contractors before site installation. Our team also uses BIM model to manage the site installation and Quality Control matters, to ensure design can be smoothly performed on site.

Better with BIM

With BIM and CDE, the project information is being managed properly and easily in different stages of project, the metadata are recorded by the system automatically and avoid erroneous information due to human mistakes. It makes our information procedure through BIM reliable and valuable.

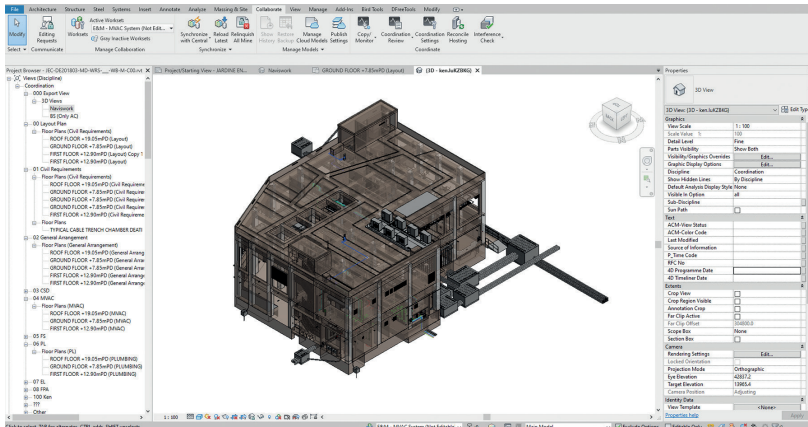
BIM is the starting point to transform the construction industry into digitalization. The model can be used together with other technologies (AR, VR, BIM to Field, Field to BIM) to perform analysis and forecast any potential issues. Eventually BIM creates a strong connection between the virtual world and the real world.



Overview of Shek Wu Hui Effluent Polishing Plant
Image Courtesy of Drainage Services Department, HKSAR Government and AECOM Asia Company Limited and The Jardine Engineering Corporation, Limited



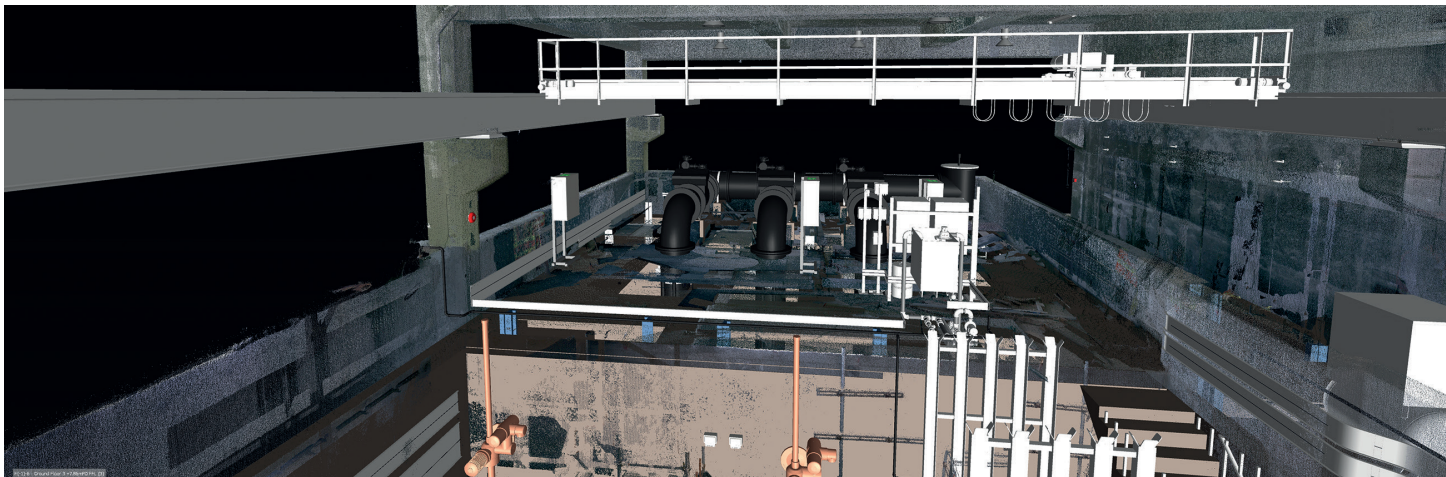
E&M Design of Deodorization Unit
Image Courtesy of Drainage Services Department, HKSAR Government and AECOM Asia Company Limited and The Jardine Engineering Corporation, Limited



Revit Working Environment of BIM model
Image Courtesy of Drainage Services Department, HKSAR Government and AECOM Asia Company Limited and The Jardine Engineering Corporation, Limited



AR Application on Site
Image Courtesy of Drainage Services Department, HKSAR Government and AECOM Asia Company Limited and The Jardine Engineering Corporation, Limited



As-fitted 3D scan analysis against E&M installation
Image Courtesy of Drainage Services Department, HKSAR Government and AECOM Asia Company Limited and The Jardine Engineering Corporation, Limited