



CIC BIM Talks on “Integration of Safety and BIM – DSD’s Upgrading of San Wai Sewage Treatment Works Project”

First Part by Ir. Albert WONG, Senior Engineer, Drainage Services Department

Second Part by Ir. C. Y. HUNG, Chief Resident Engineer, AECOM

Employer:



Supervising Officer:



Contractor:





Previous CIC BIM Talks held on 6 December 2018

i DRAINAGE SERVICES

Upgrade service in existing footprint



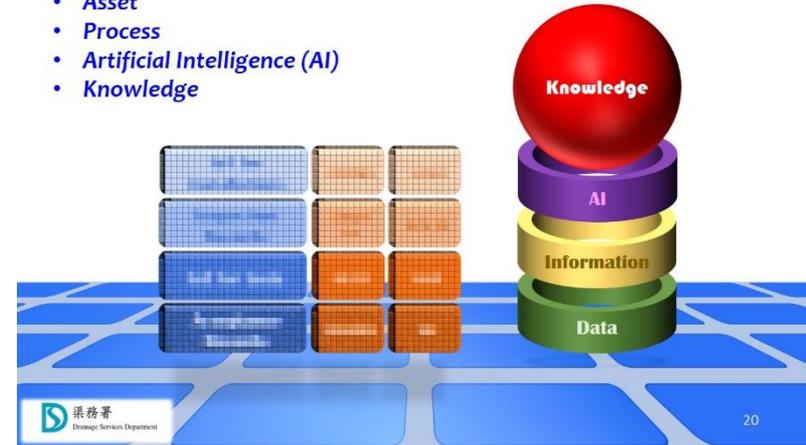
Sha Tau Kok Sewage Treatment



DSD goes Digital – a Living Twin

BIM as an information hub of the

- Asset
- Process
- Artificial Intelligence (AI)
- Knowledge



CIC BIM Talks on

"i DRAINAGE SERVICES" – BIM and DSD Goes Digital



Bernard Wong
Senior Engineer/BIM
Drainage Services Department
Government of the HKSAR
6 December 2018



8th IWA-ASPIRE Conference and Exhibition

Smart Solutions for Water Resilience

31 OCTOBER - 2 NOVEMBER 2019
HONG KONG



Zero 意外
ACCIDENT
地盤零意外 關懷建未來
Zero Accident, we Build, we Care



Beneficial to Building, Structural and MEP Engineers

BIM for Fire Safety

BIM FOR CONSTRUCTION HEALTH AND SAFETY

STEFAN M... AND ROLA...



BIM - Construction Safety Design

4D BIM Simulation For Safety Validation

This could be you
 Falls from height are a leading cause of death in construction.
 STOP THE STOP WORK ORDERS!

BIM Year 2019 Certification and Accreditation Schemes Launch Ceremony
 2019 建築信息模擬年暨建築信息模擬認可及認證計劃啟動禮

CONSTRUCTION INDUSTRY COUNCIL
 建築業議會

iM approach to Construction Site Safety Planning

to prevent injuries on the job ...
 ic-tools-prevent-injuries-job-s...
 inner are among the firms to incorporate

Published by **nbs**

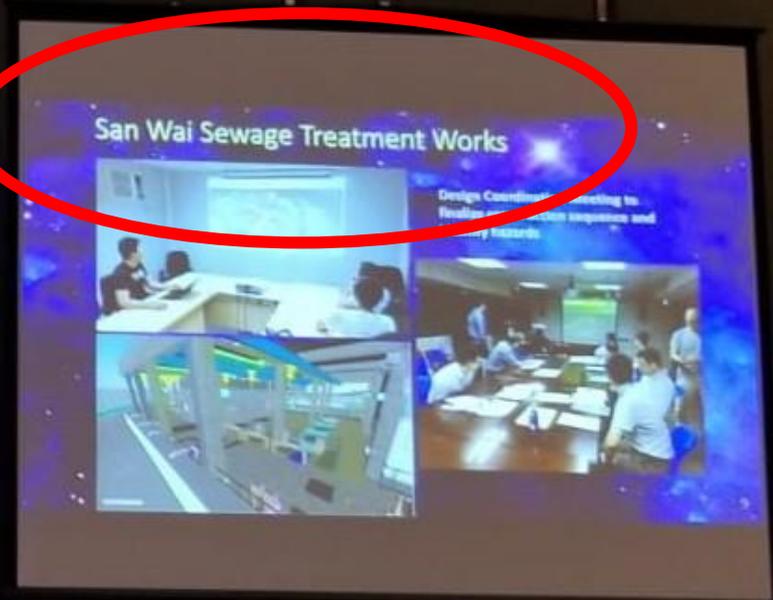
BIM SHOW LIVE
 11-12 APRIL 2019 MANAMA INTERNATIONAL CONVENTION CENTRE

BIM FOR HEALTH & SAFETY VIRTUALLY SORTED



Building Information Modeling (BIM) and Safety: Automatic Safety ...

https://www.google.com/search?q=BIM+Safety&tbm=isch&source=iu&ictx=1&fir=NGYwo2G8t_RRM%253A%252CqNoSS8xYrubZLM%252C_&vet=1&usq=AI4_-kR...



"Integration of Safety and BIM - DSD's Upgrading of San Wai Sewage Treatment Works Project"



Upgrading of San Wai Sewage Treatment Works

Design, Build and Operate Contract (Construction Period from May 2016 to end 2020 plus 15 years of operation period)

- Contract sum of \$3,142million.
- Chemically Enhanced Primary Treatment plus UV disinfection with total treatment capacity of 200,000 m³/day (ADWF)
- Site coverage area of over 23,000 m²

BIM Strategy

DESIGN

BIM Coordination Meeting

Clash Analysis

3D Visualizations for Stakeholders

VR – Design Collaboration /
Appreciation of the Quality of Space

Design for Safety

CCTV Design

Tree and Landscape Plan

BUILD

Site Utilization

3D Visualizations for All Site Staff

Construction Sequence

Proposed Changes

IoT - Site Safety

Point Cloud - Verification

OPERATE

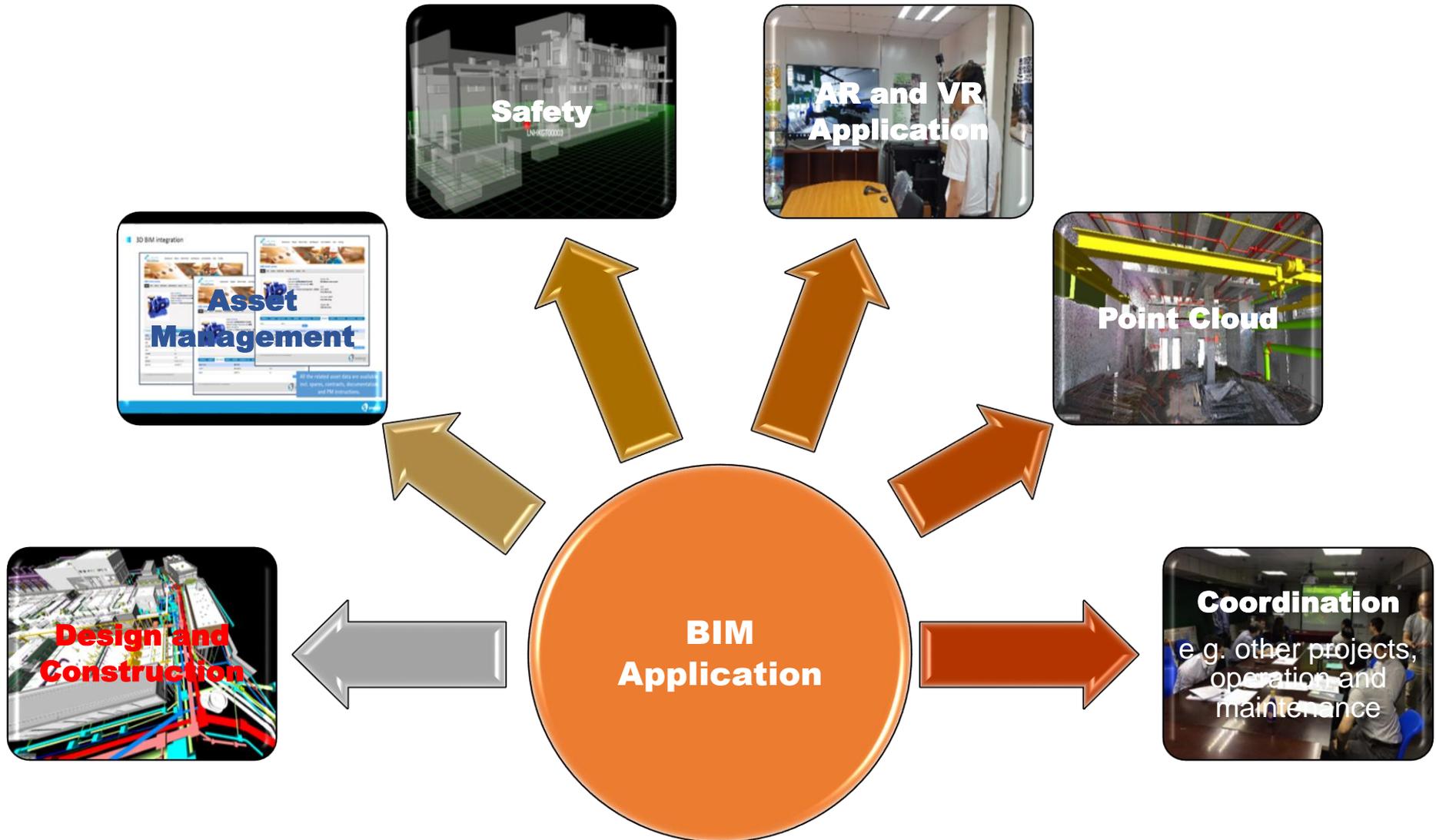
Assets / Facilities Management – BIM

AR – Visualization on Future
Modification / For Visitors

VR – Operation and Safety Training

IoT - Staff and Visitors Safety

BIM - San Wai Sewage Treatment Works Project



San Wai Sewage Treatment Works



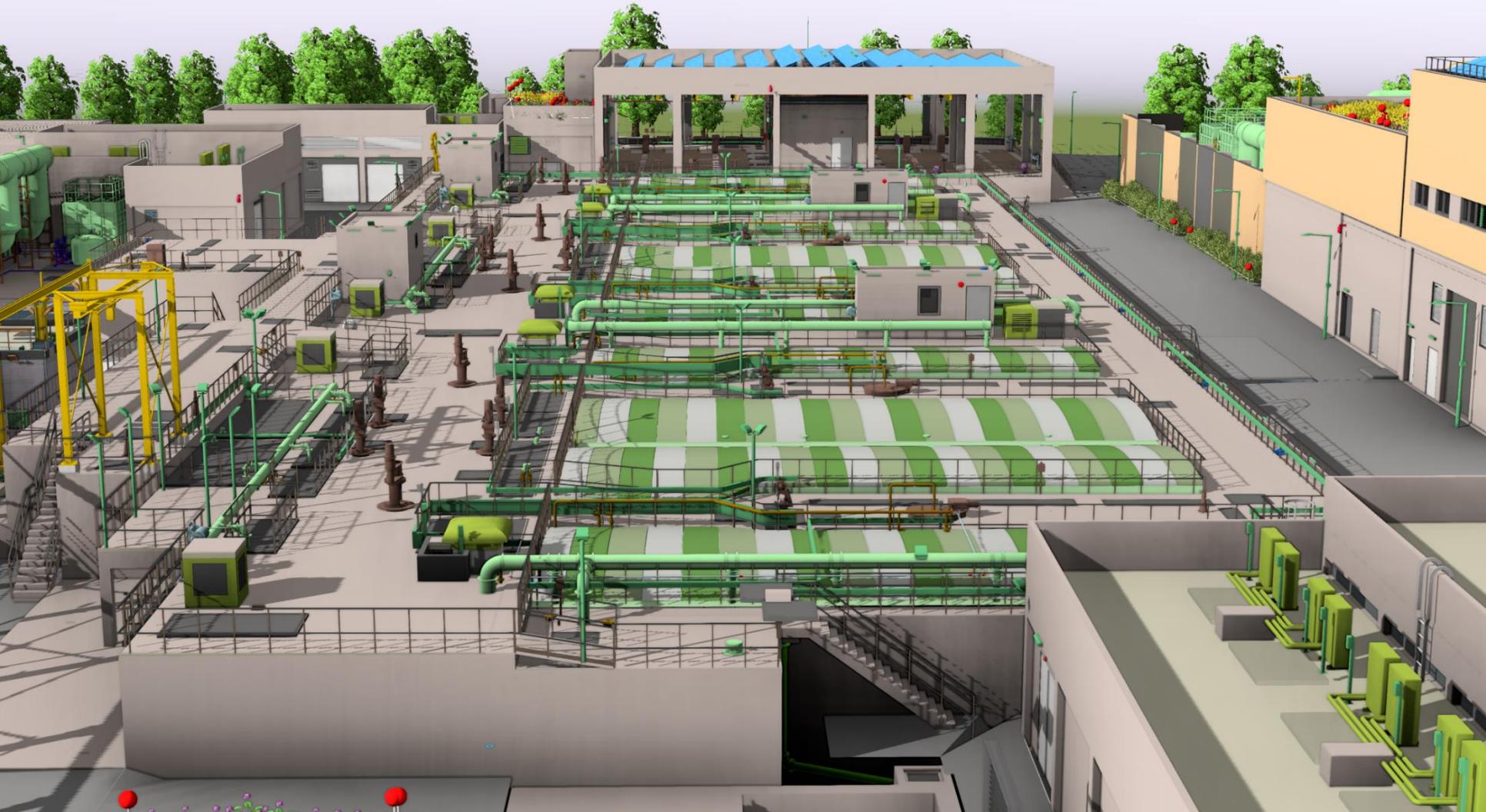
San Wai Sewage Treatment Works



Chemically Enhanced Primary Treatment Building



Chemically Enhanced Primary Treatment Building



Sludge Dewatering Building



Sludge Dewatering Building



Additional Centrifuge Installation



Existing Site Conditions



Safety Achievements

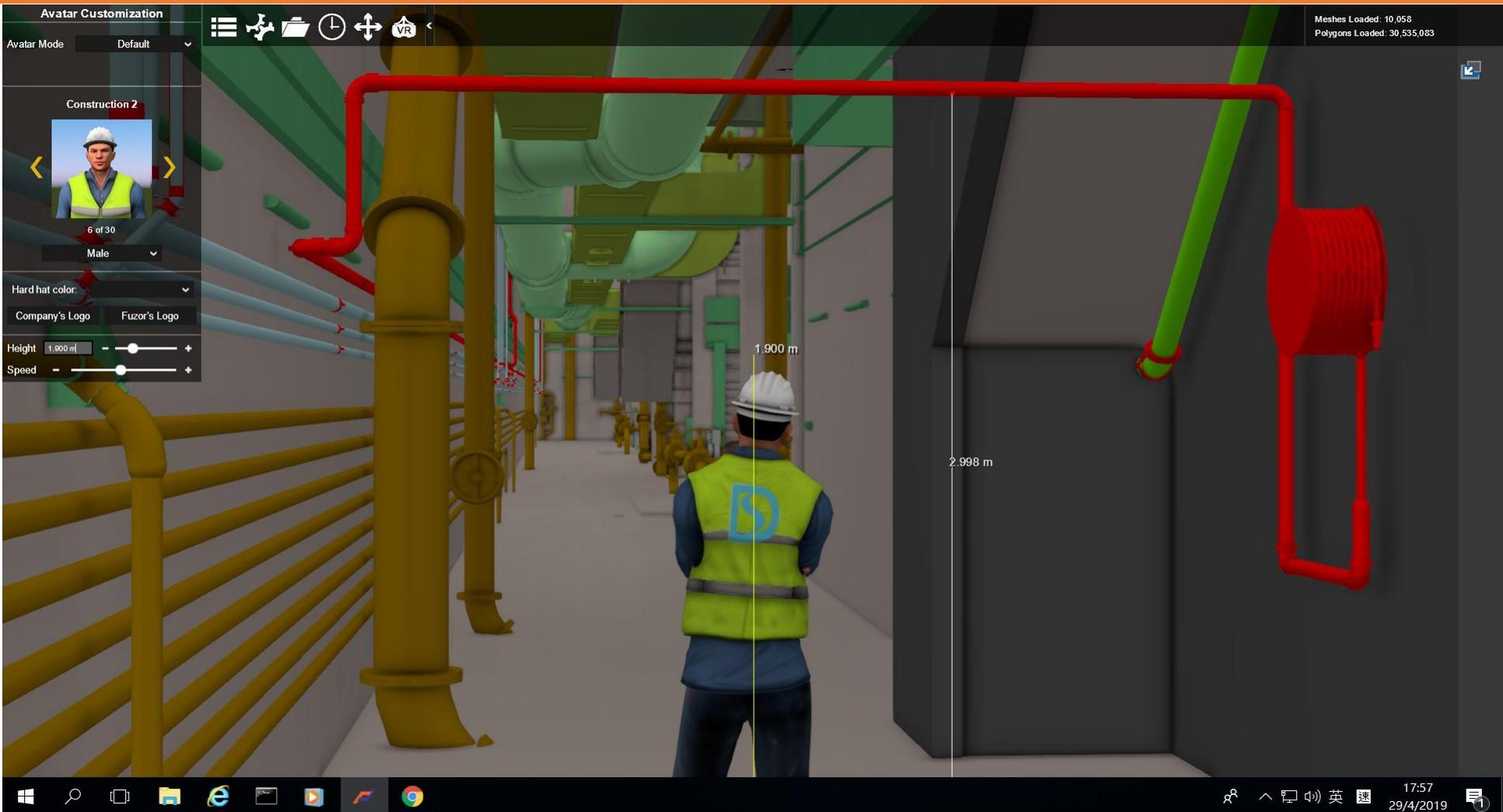


24th Considerate Contractors Site Award Scheme

Construction Sites Safety and Housekeeping Award Scheme (2018)

International Design for Safety Awards

Clearance Check



Point Cloud to BIM



Verification of Field Conditions against BIM



Inaccessible
limited space
survey



Light weight and easy
to use



Quick capture with data ready in around 3 mins

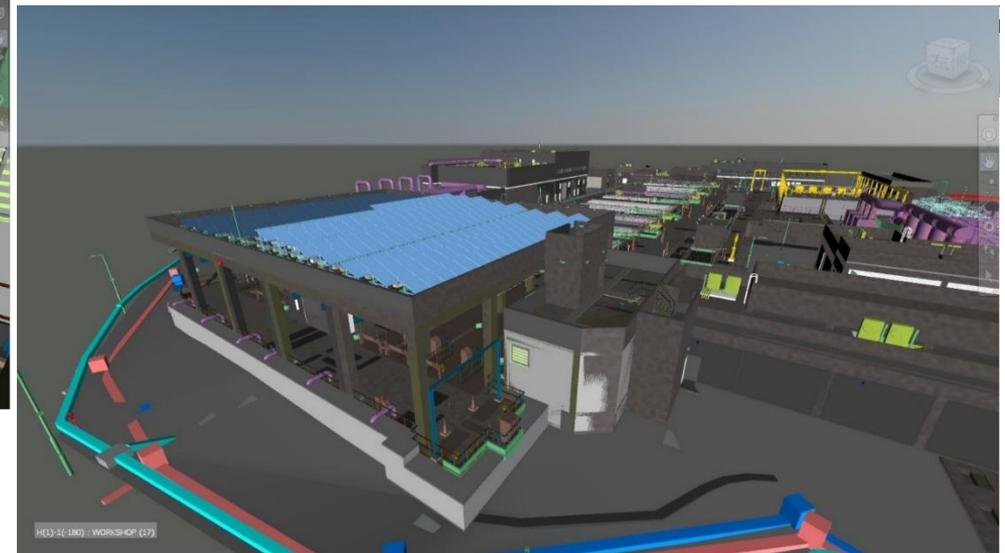
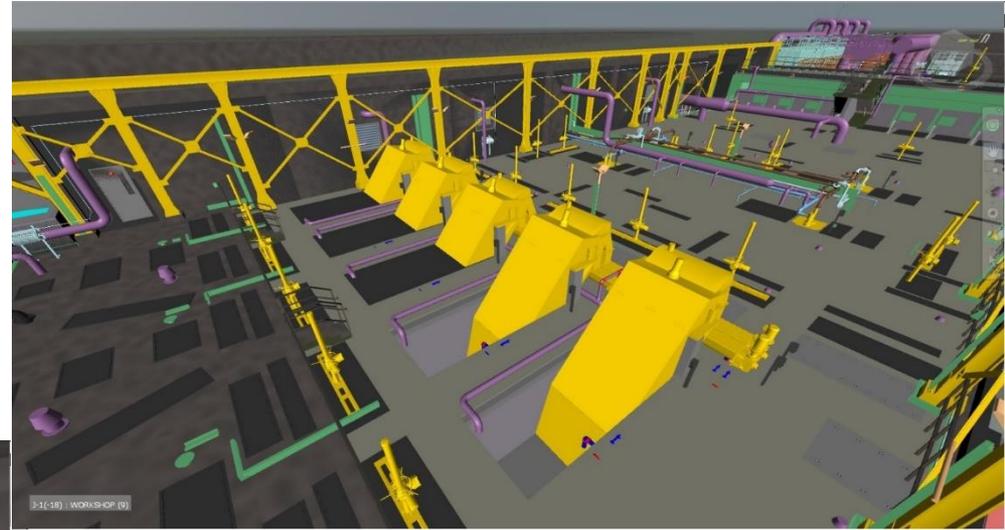
THANK YOU



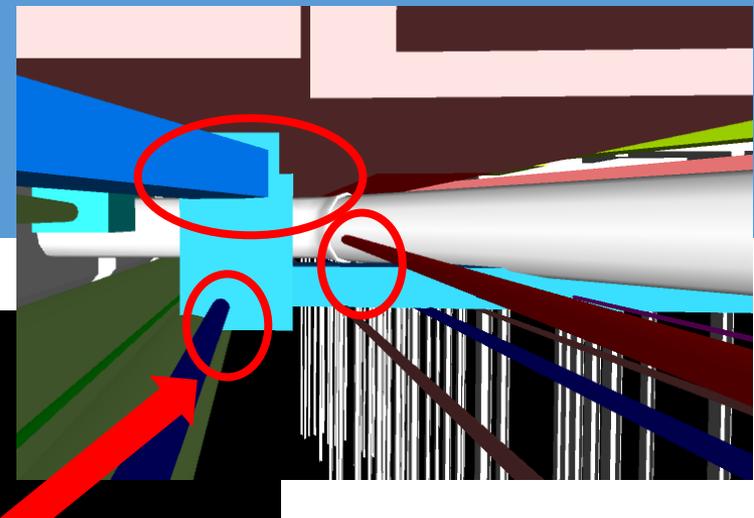
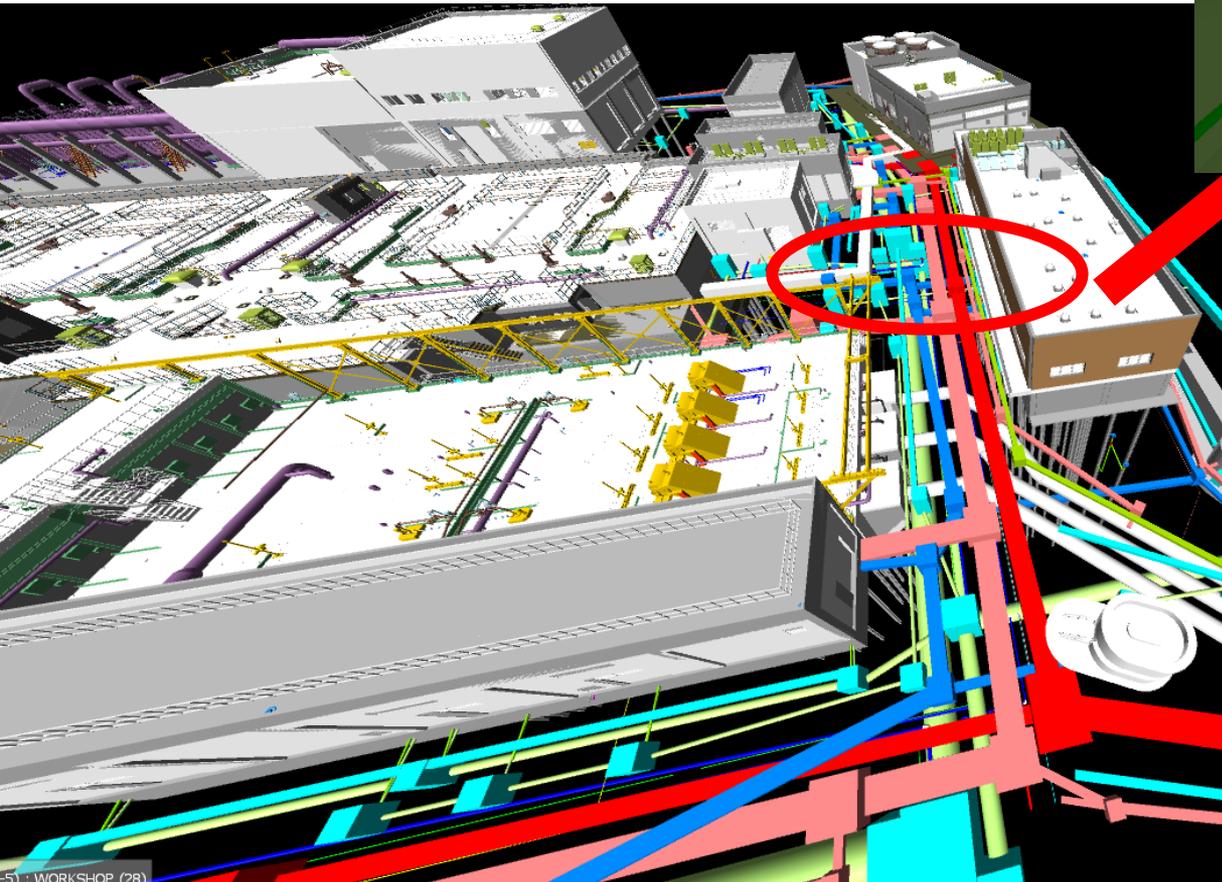
Design Options

Quick incorporation of newly proposed equipment to the BIM Model

- Inclined UV System
- Step Screens
- Additional PV Panels



Clash Analysis



Autodesk Navisworks Clash Report

| Site UU Updated sewer | Tolerance | Clashes | New | Active | Reviewed | Approved | Resolved | Type | Status |
|-----------------------|-----------|---------|-----|--------|----------|----------|----------|------|--------|
| | 0.001m | 20 | 0 | 20 | 0 | 0 | 0 | Hard | OK |

| Image | Clash Name | Status | Distance | Clash Point | Item 1 Layer | Item 2 Layer |
|-------|------------|--------|----------|--|------------------------------------|-------------------|
| | Clash27 | Active | -0.856 | x:816261.633, y:834305.451, z:19.800 | C-PIPENETWORK-STRC_CHAMBER_SURFACE | Pipe_Trench |
| | Clash28 | Active | -0.264 | x:816266.016, y:834359.255, z:19.062 | OAP920__ | Pipe_Trench |
| | Clash29 | Active | -0.225 | x:816221.480, y:834346.824, z:18.718 | OAP920__ | C-PIPENETWORK_HV_ |
| | Clash30 | Active | -0.209 | x:816131.961, y:834306.741, z:19.902 | OAP920__ | C-PIPENETWORK_HV_ |
| | Clash31 | Active | -0.203 | x:816271.451, y:834301.697, z:19.637 | OAP920__ | C-PIPENETWORK_HV_ |
| | Clash32 | Active | -0.132 | x:816261.683, y:834305.451, z:20.850 | C-PIPENETWORK-STRC_CHAMBER_SURFACE | GX_DRAW_XREF |
| | Clash33 | Active | -0.103 | x:816262.980, y:834305.451, z:20.950 | C-PIPENETWORK-STRC_CHAMBER_SURFACE | GX_DRAW_XREF |