



# **BIM in Current MTR Railway Projects**

**SDI Conference 2013**

Presented by

Andrew Lee

Manager – Land Surveying

9 Aug 2013

Harry Wu

Manager – CADD

# BIM in Current MTR Railway Projects

## CONTENT

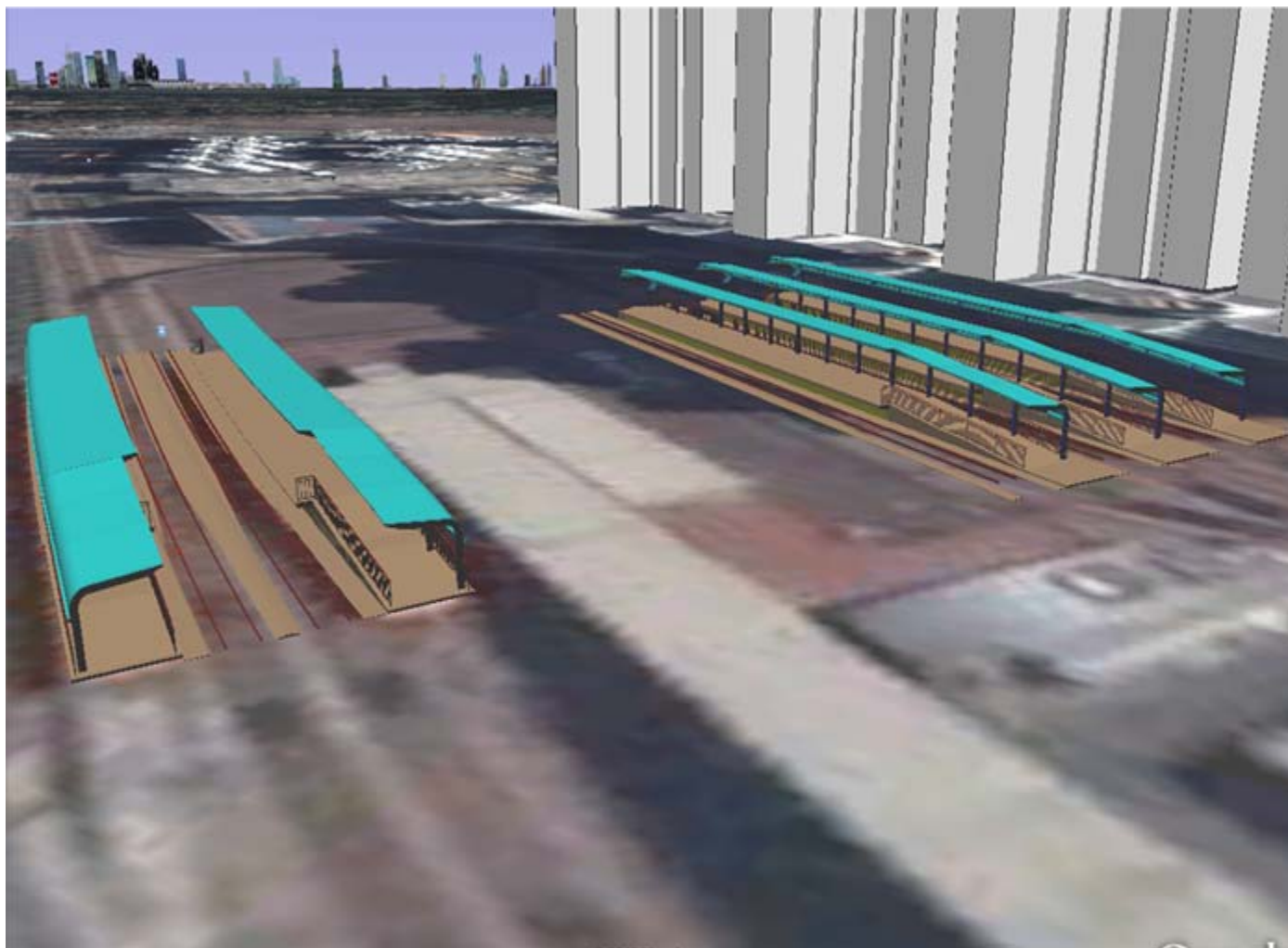
- BIM in MTR
- Current Application
  - Kwun Tong Line Extension (KTE)
  - Express Rail Link (XRL)
  - Shatin to Central Link (SCL)
- Outlook

# BIM for MTR

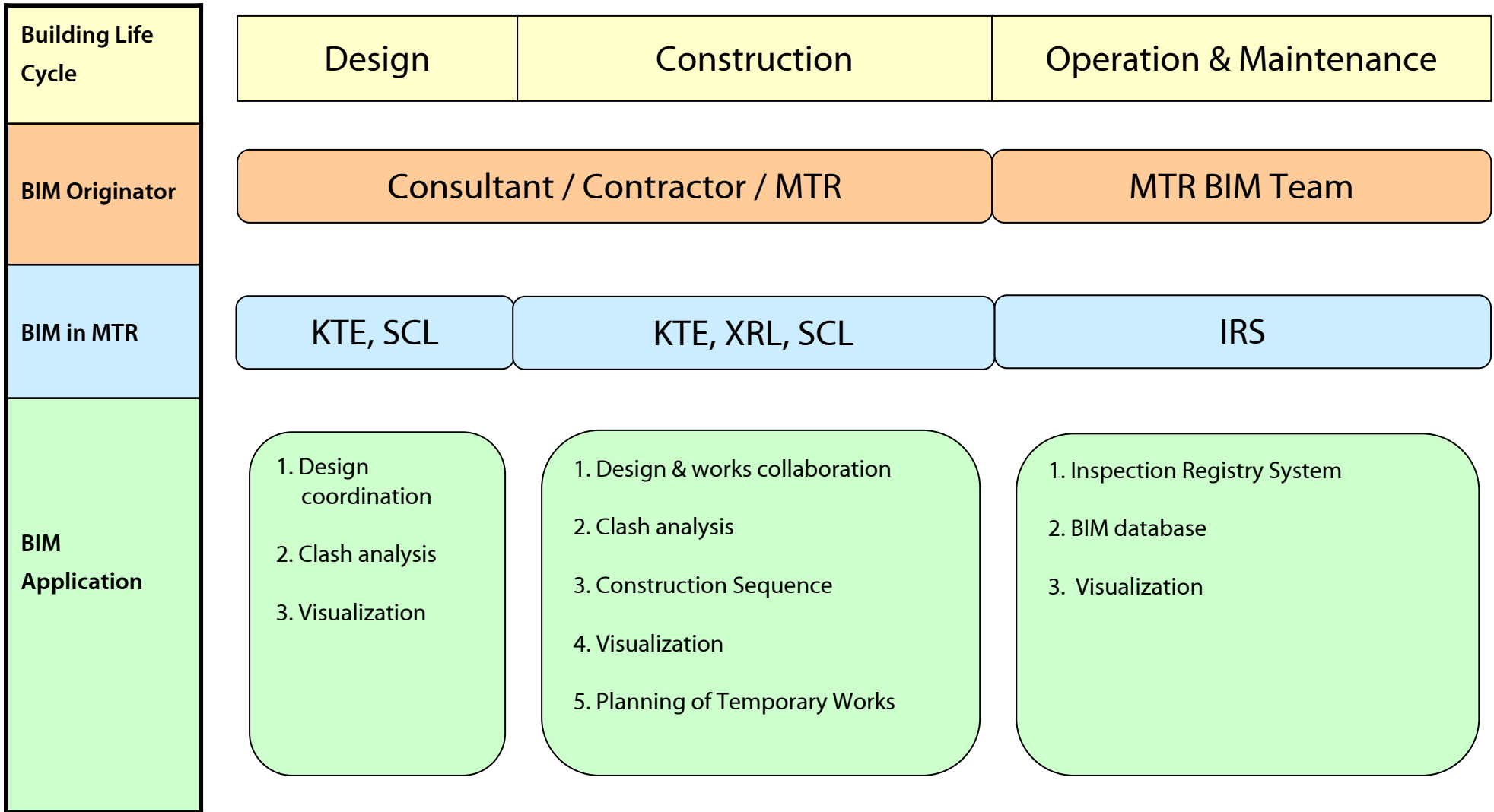
- **Model Detail**
  - **Architectural Components**
  - **Structural Components**
  - **Building Services Components**
    - **Mechanical - air duct, fan unit.....**
    - **Electrical - lighting, cable trunk.....**
    - **Plumbing - pipes, drain.....**
    - **Fire Protection – sprinkler, hose reel....**
  - **MTR Systems Components**
    - **Station / Trackside Furniture**
    - **Signage**
    - **CCTV .....**

# BIM for MTR

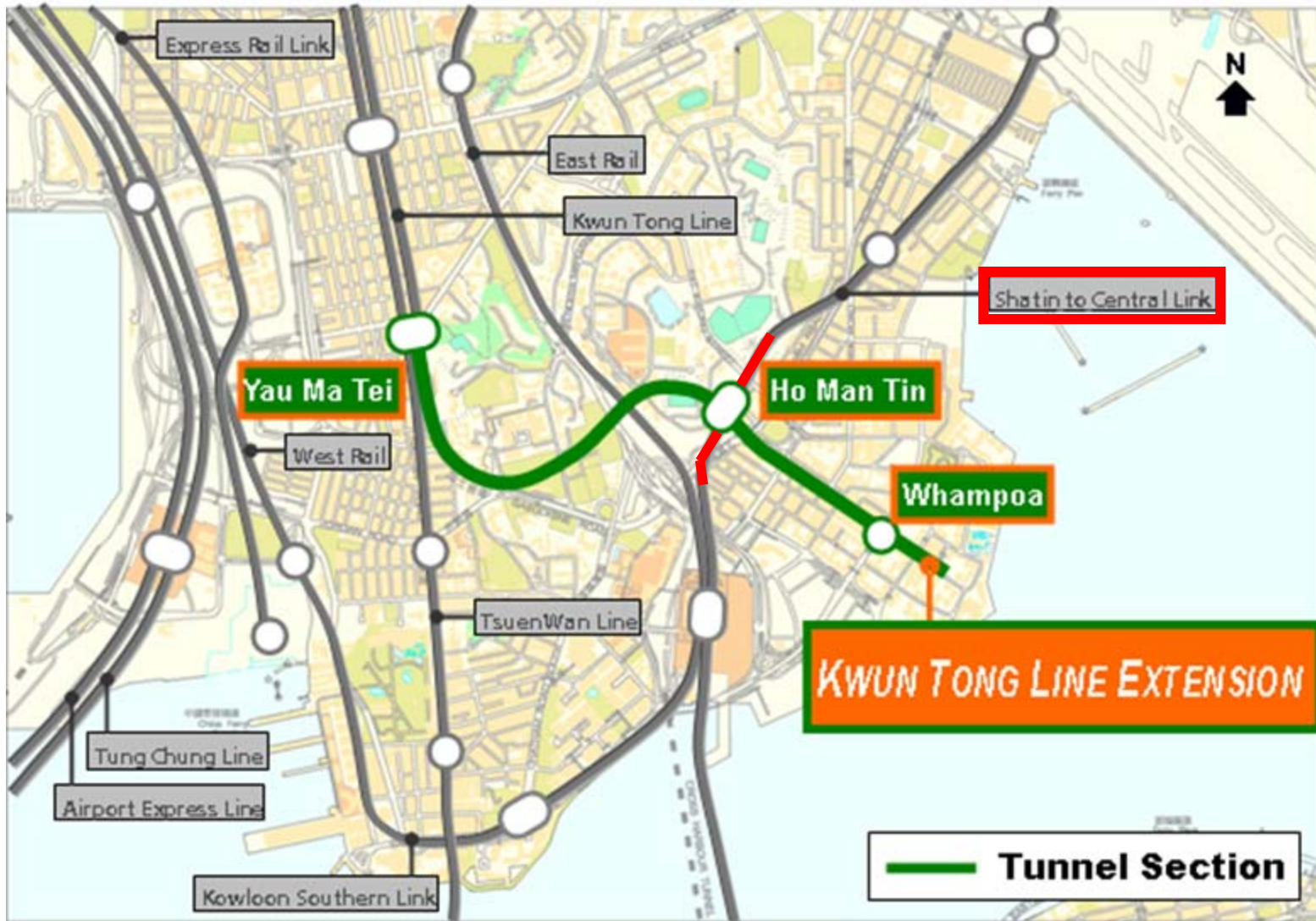
## Tin Yat Light Rail Station



# Application of BIM in MTR

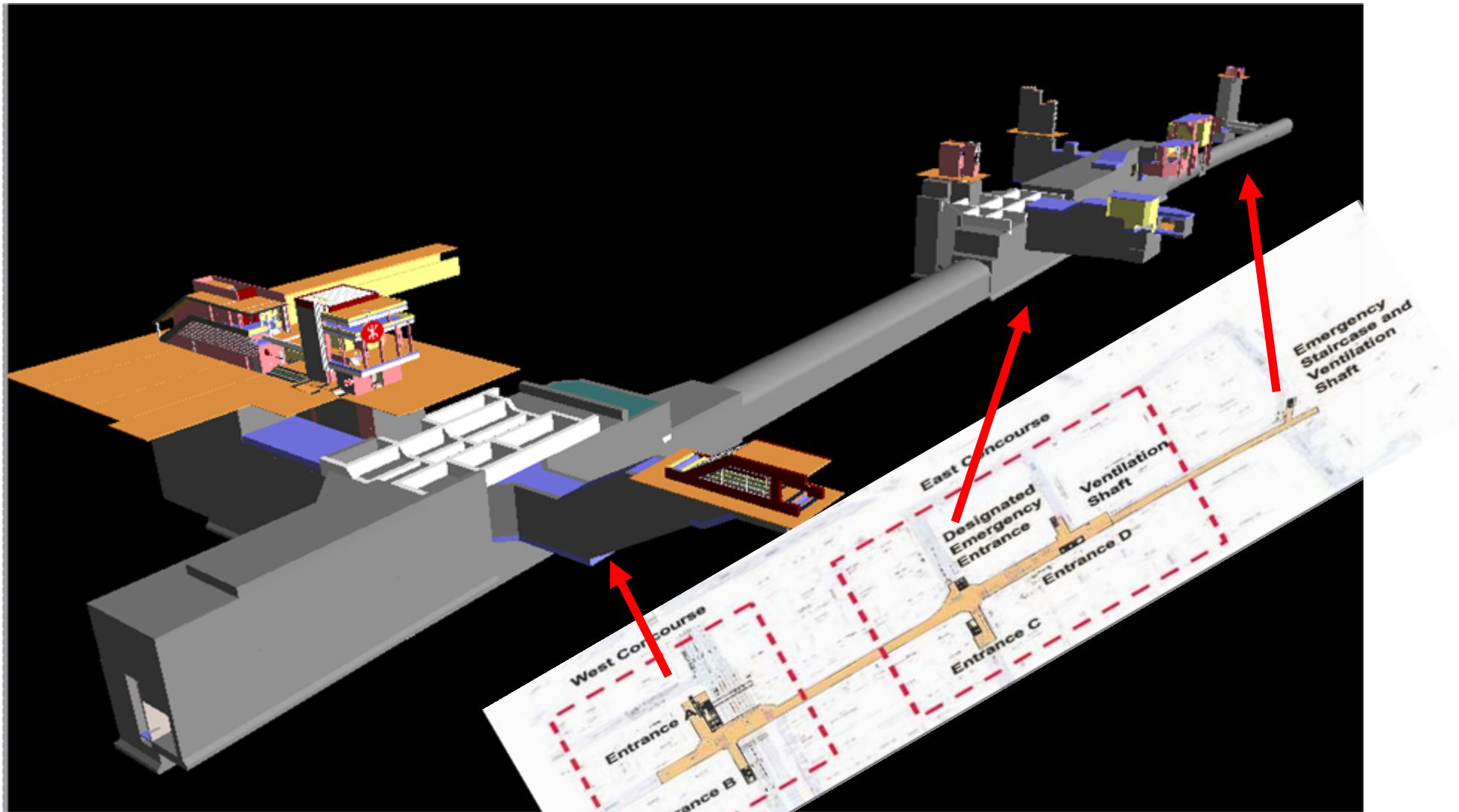


# Kwun Tong Line Extension (KTE)

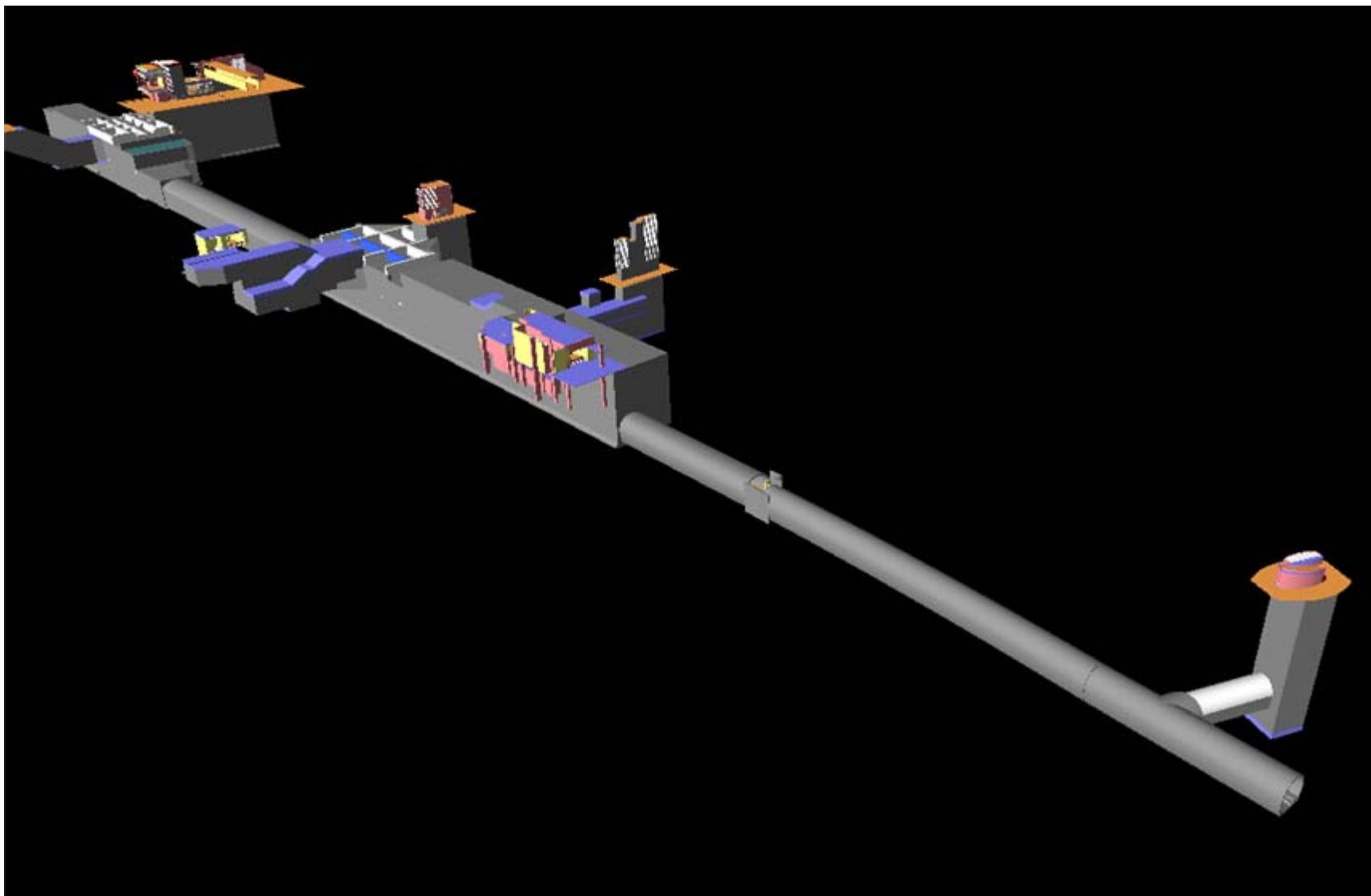




# Kwun Tong Line Extension (KTE)

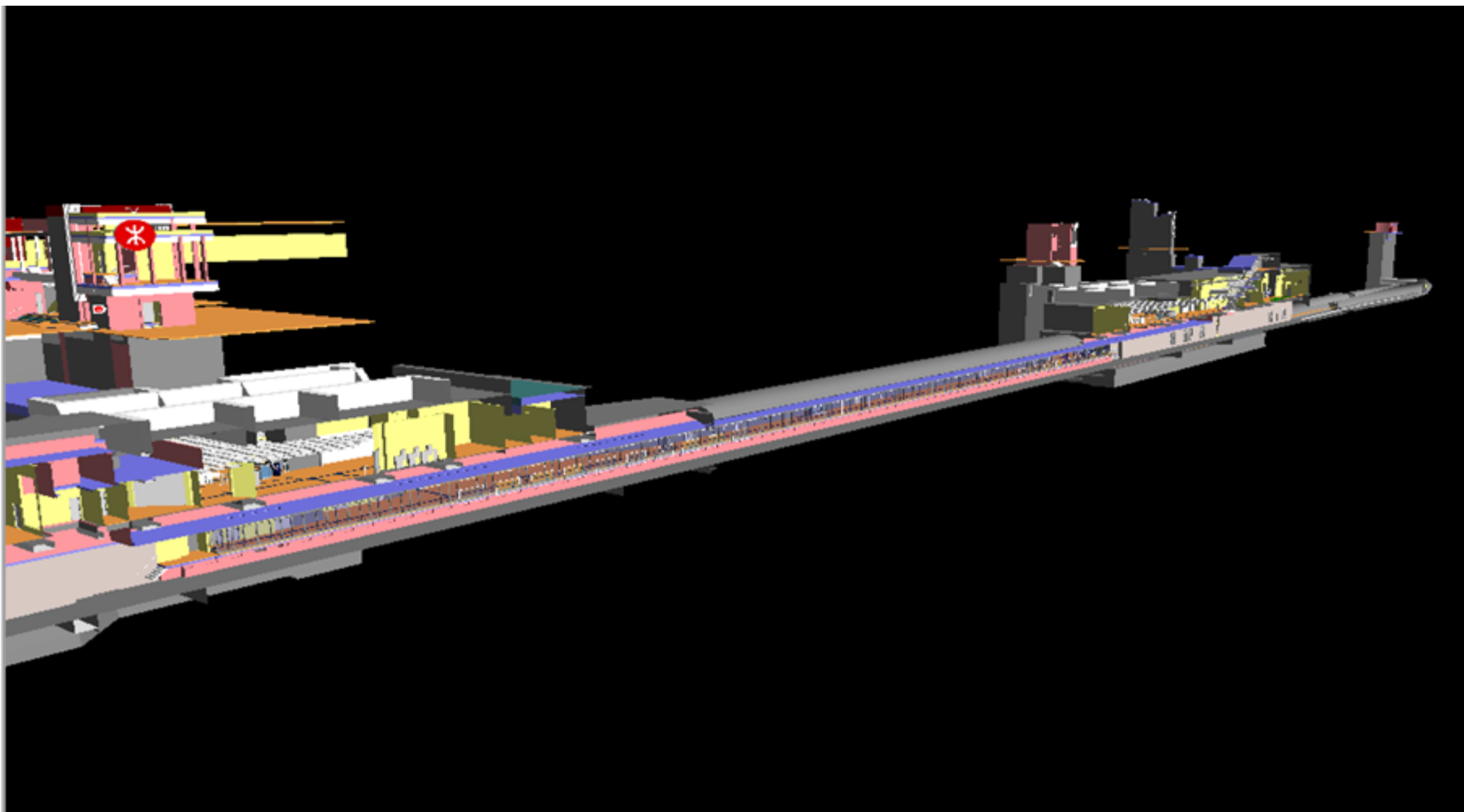


# Kwun Tong Line Extension (KTE)

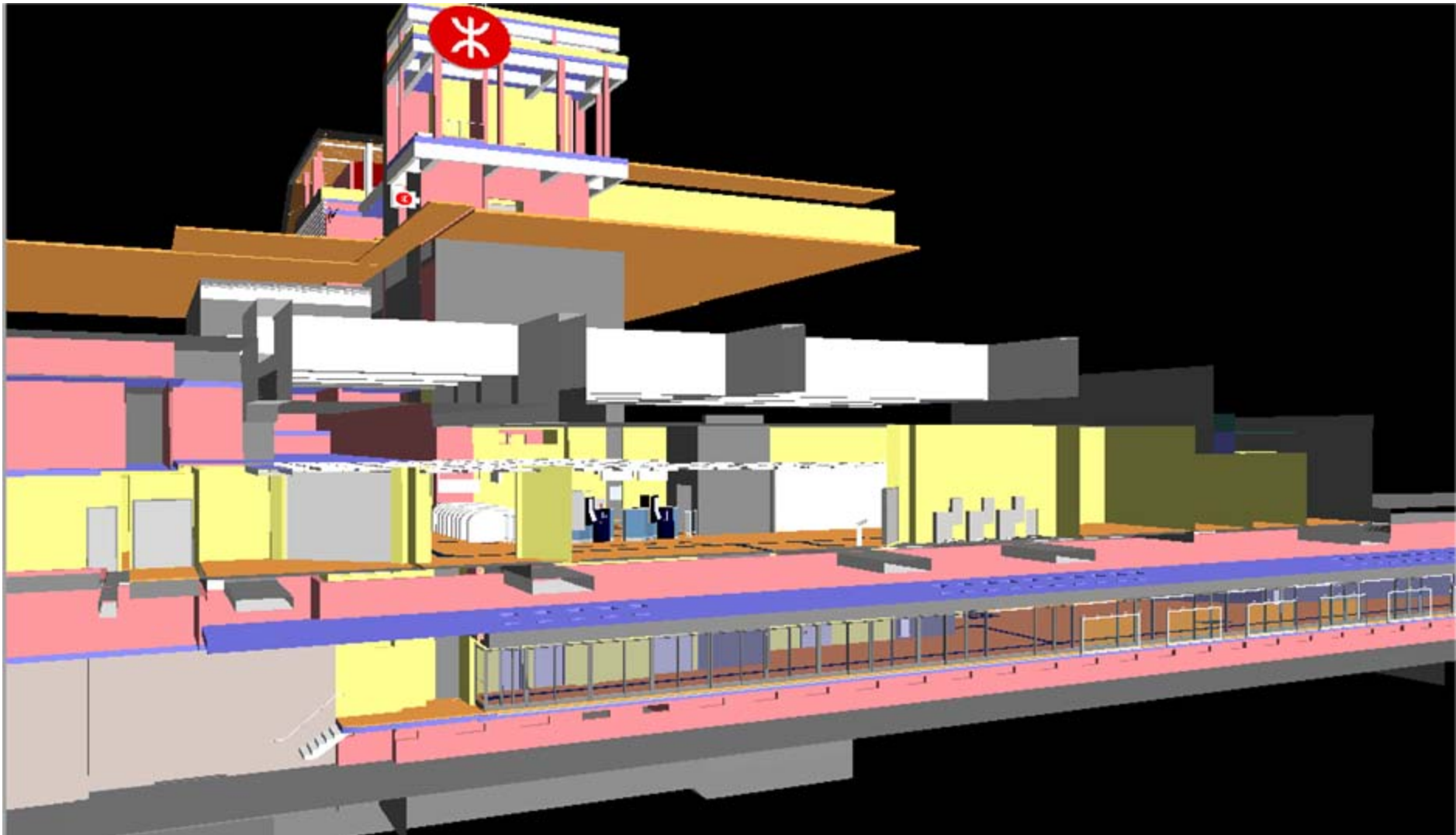




# Kwun Tong Line Extension (KTE)



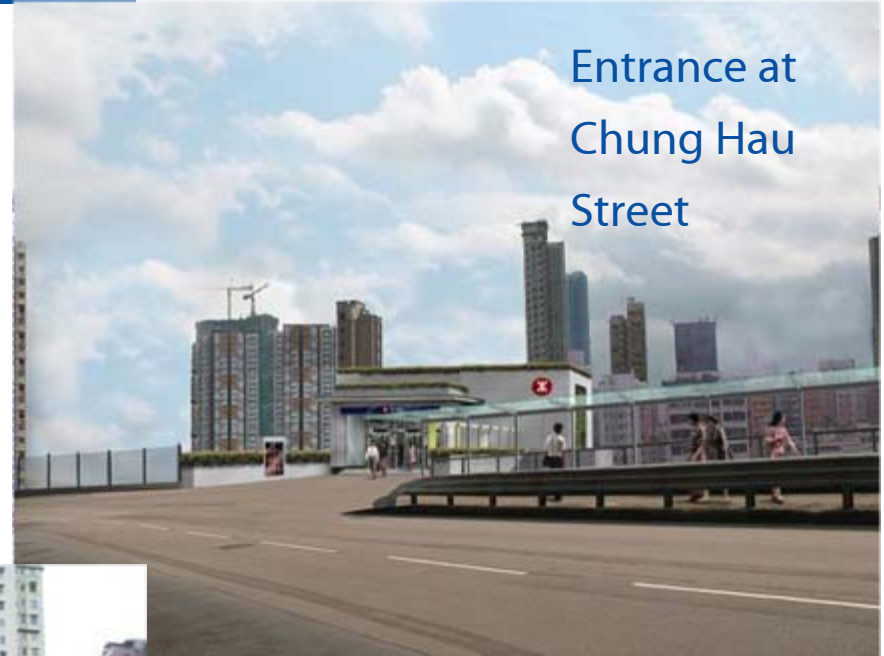
# Kwun Tong Line Extension (KTE)



# Kwun Tong Line Extension (KTE)



Entrance at  
Fat Kwong  
Street



Entrance at  
Chung Hau  
Street



Footbridge  
across Chatham  
Road

# Potential Application in Civil Works

## Kwun Tong Line Extension (KTE)

### 1. Integration of BIM and Survey DTM for Monitoring Excavation Progress



# Kwun Tong Line Extension (KTE)

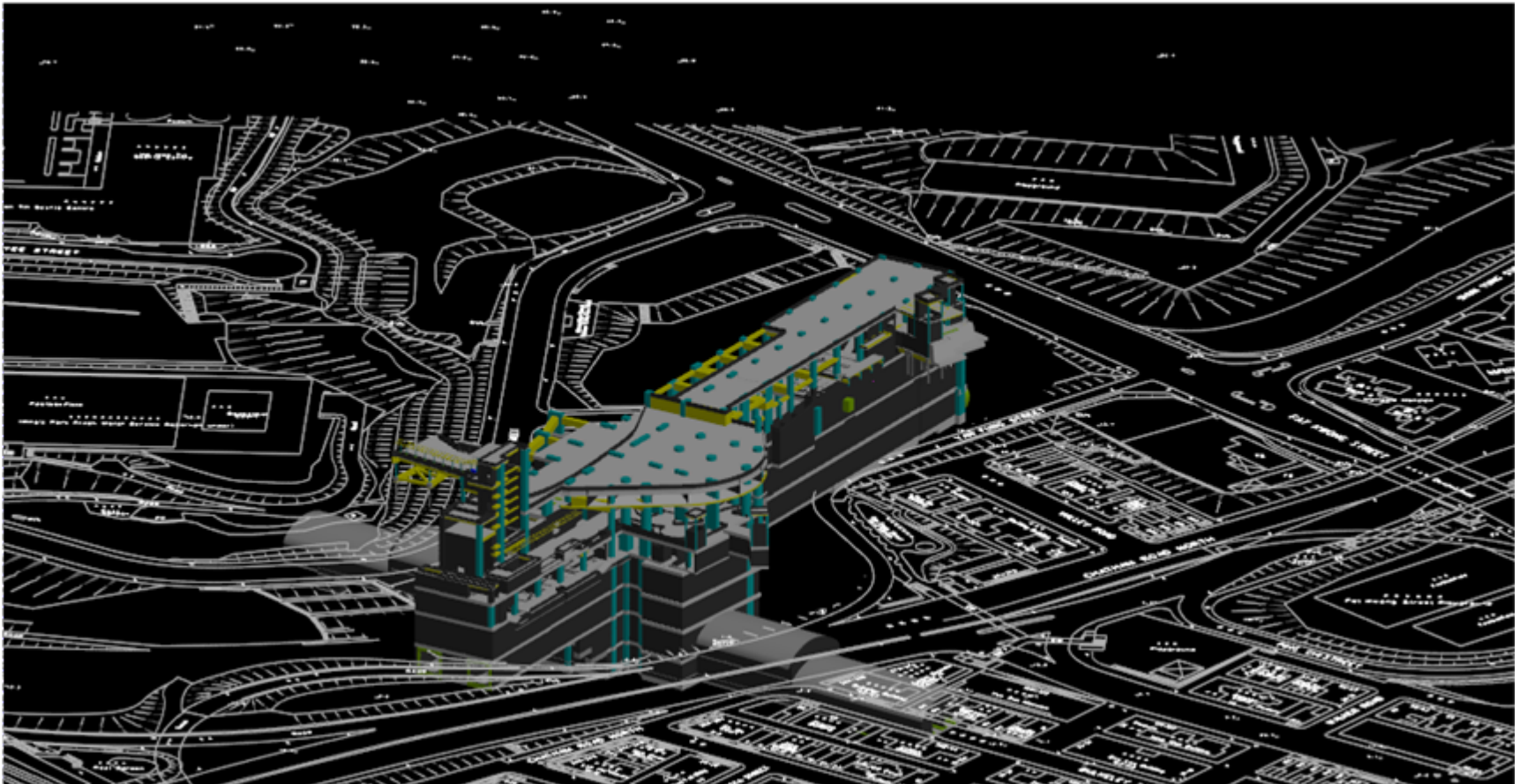
## 1. Integration of BIM and Survey DTM for Monitoring Excavation Progress



0.7 M m<sup>3</sup>

# Kwun Tong Line Extension (KTE)

## 1. Integration of BIM and Survey DTM for Monitoring Excavation Progress

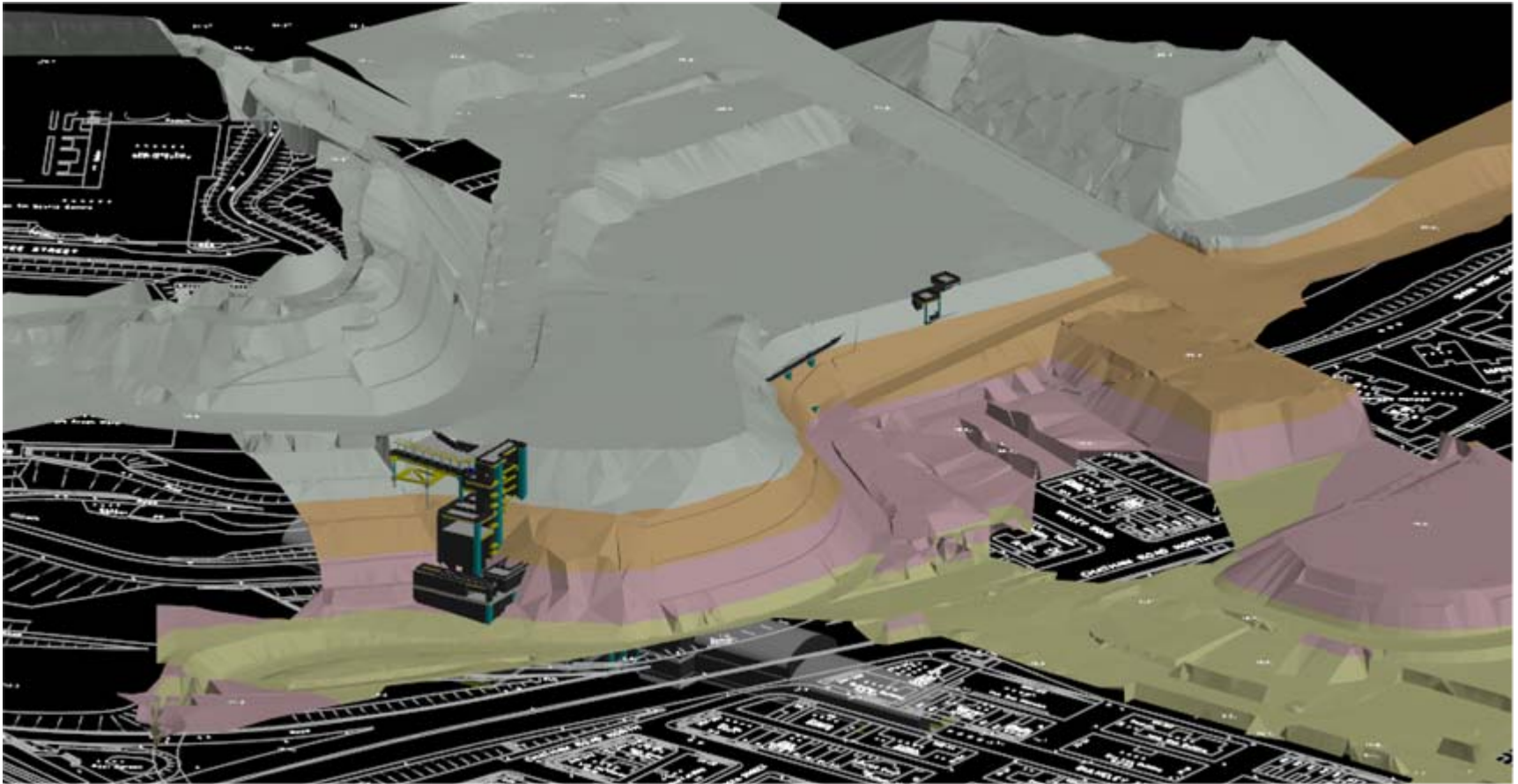


Ho Man Tin Station Structural Model



# Kwun Tong Line Extension (KTE)

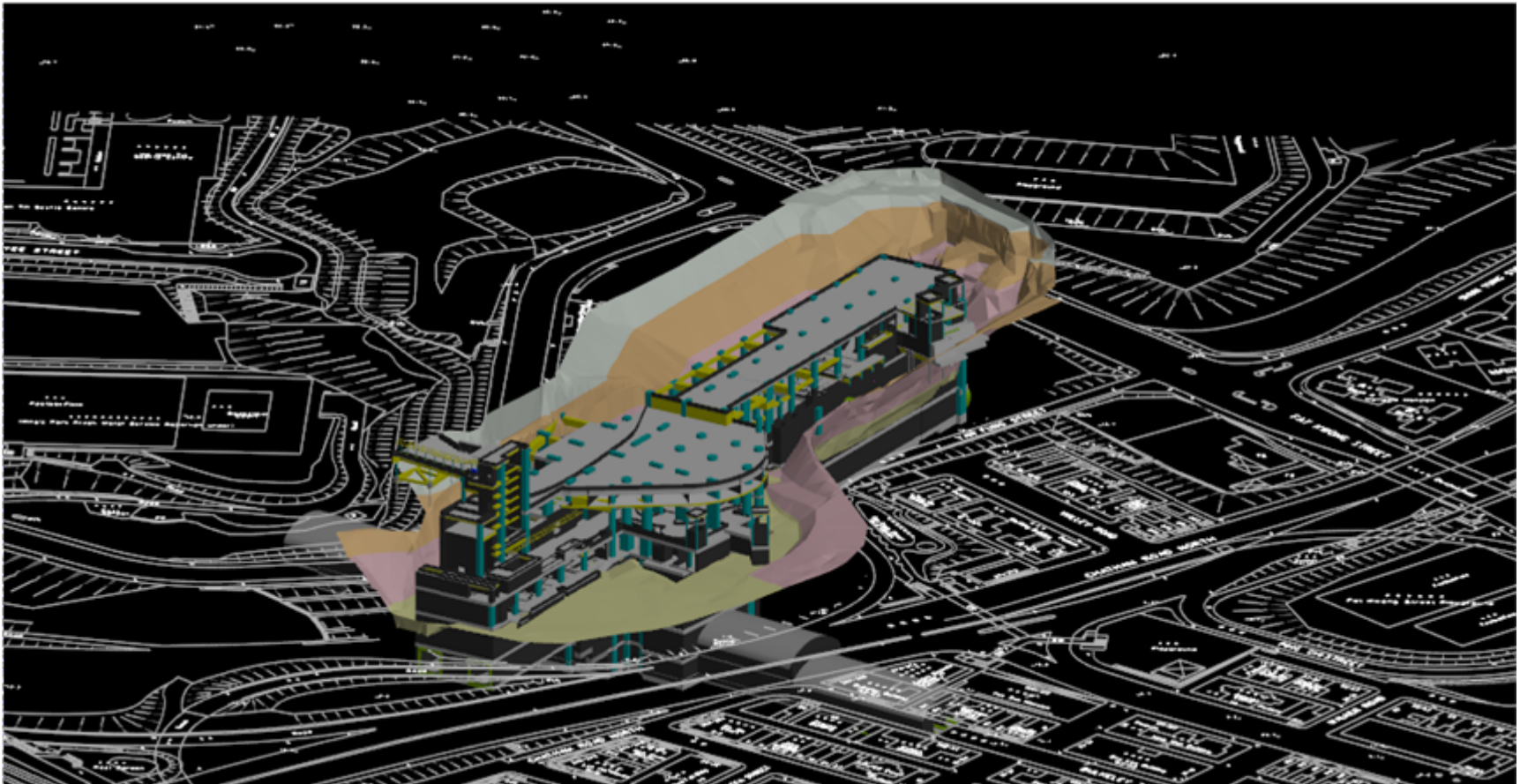
## 1. Integration of BIM and Survey DTM for Monitoring Excavation Progress



Initial Survey DTM dated 14 May 2012

# Kwun Tong Line Extension (KTE)

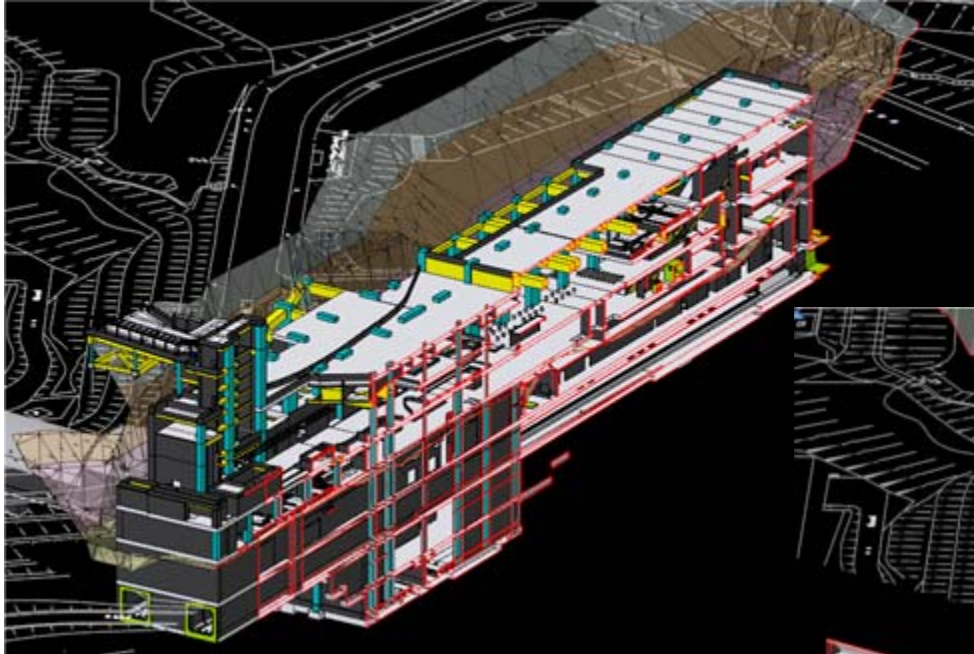
## 1. Integration of BIM and Survey DTM for Monitoring Excavation Progress



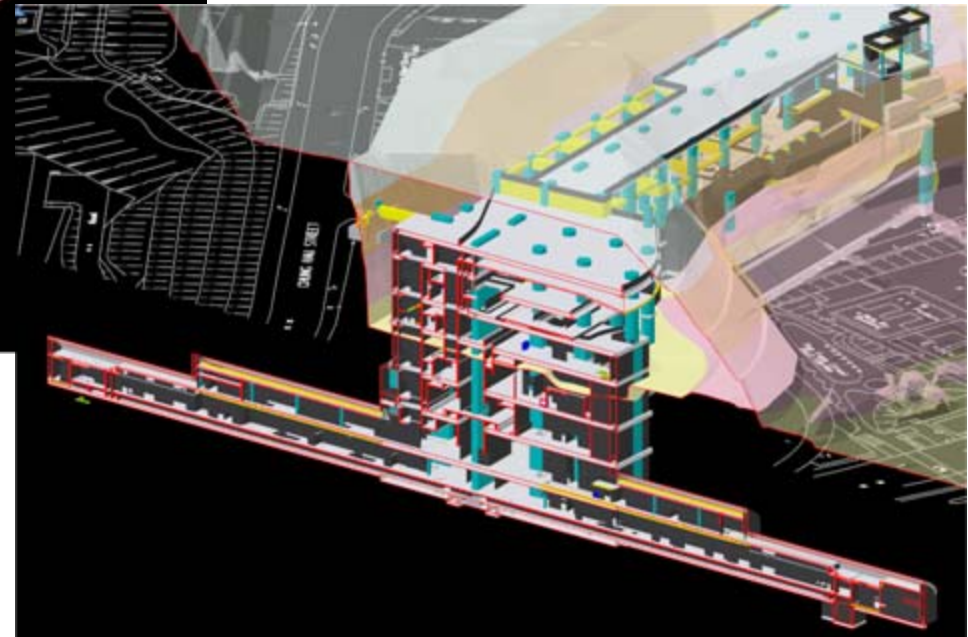
Interim Survey DTM dated 22 Feb 2013

# Kwun Tong Line Extension (KTE)

## 1. Integration of BIM and Survey DTM for Monitoring Excavation Progress



SCL Section



KTE Section



# Kwun Tong Line Extension (KTE)

## 1. Integration Station at Ho Man Tin



# Express Rail Link (XRL)





# Express Rail Link (XRL)





# Express Rail Link (XRL)



2010



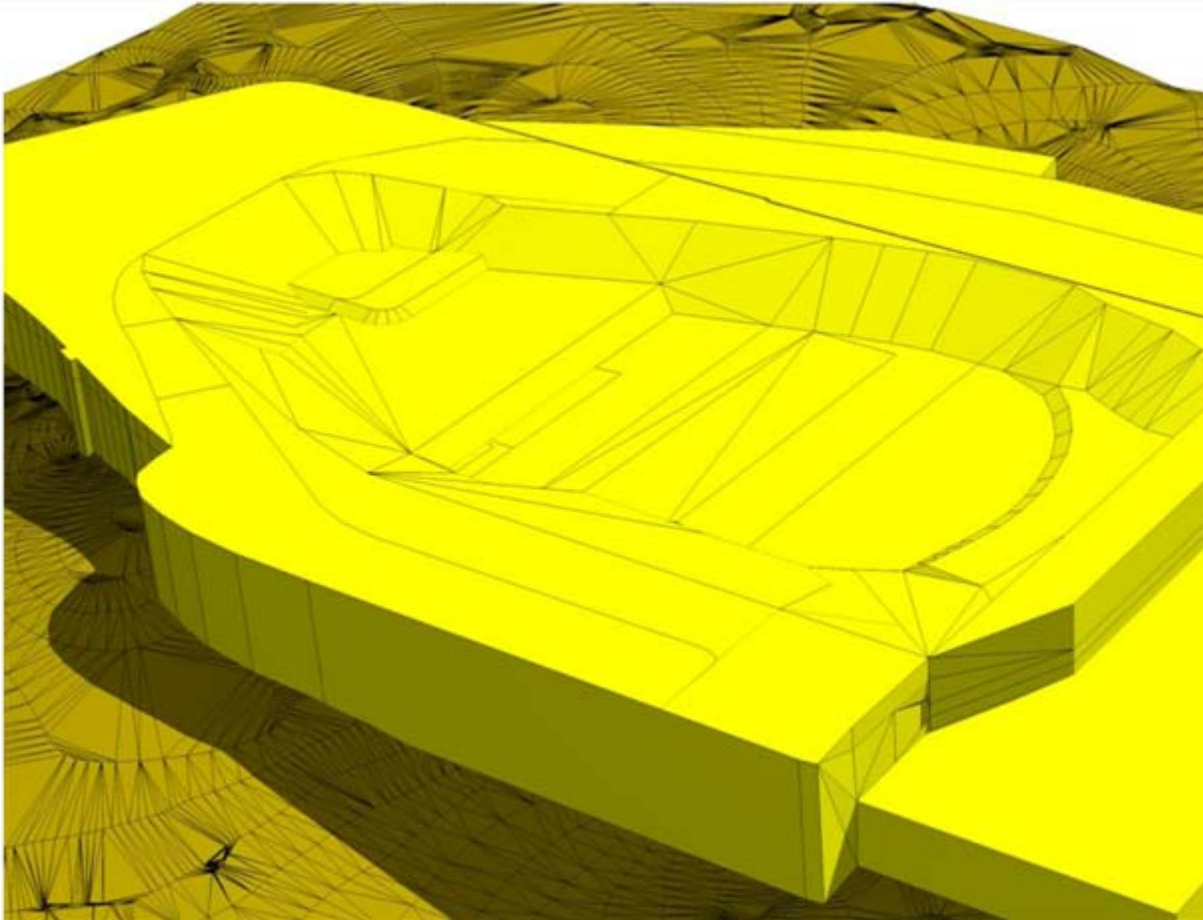
2013

# Express Rail Link (XRL)

- 4D Analysis of Excavation Sequence
- Temporary Works Planning and Method Statement
- Clash / Mismatch Detection
- Design and Construction Review

# Express Rail Link (XRL)

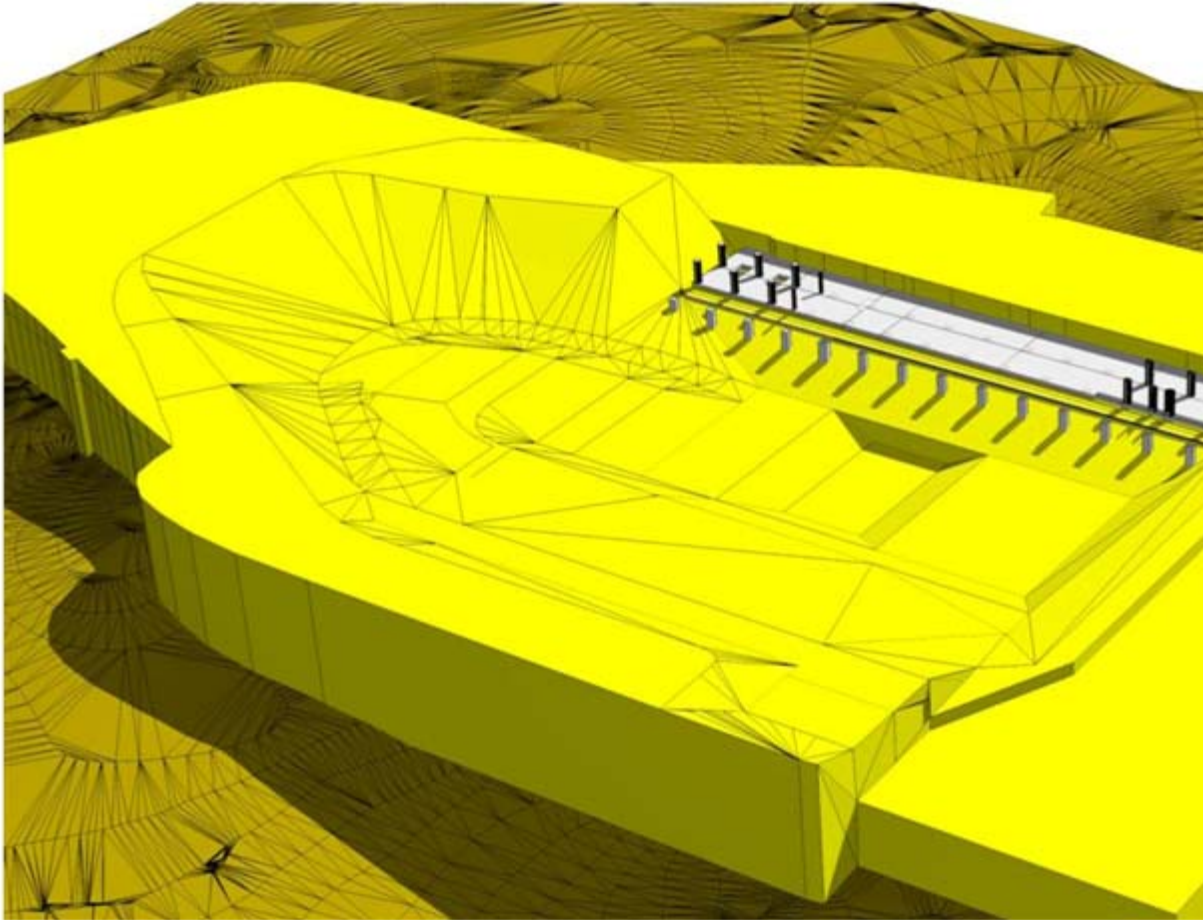
## 1. 4D Analysis of Excavation Sequence





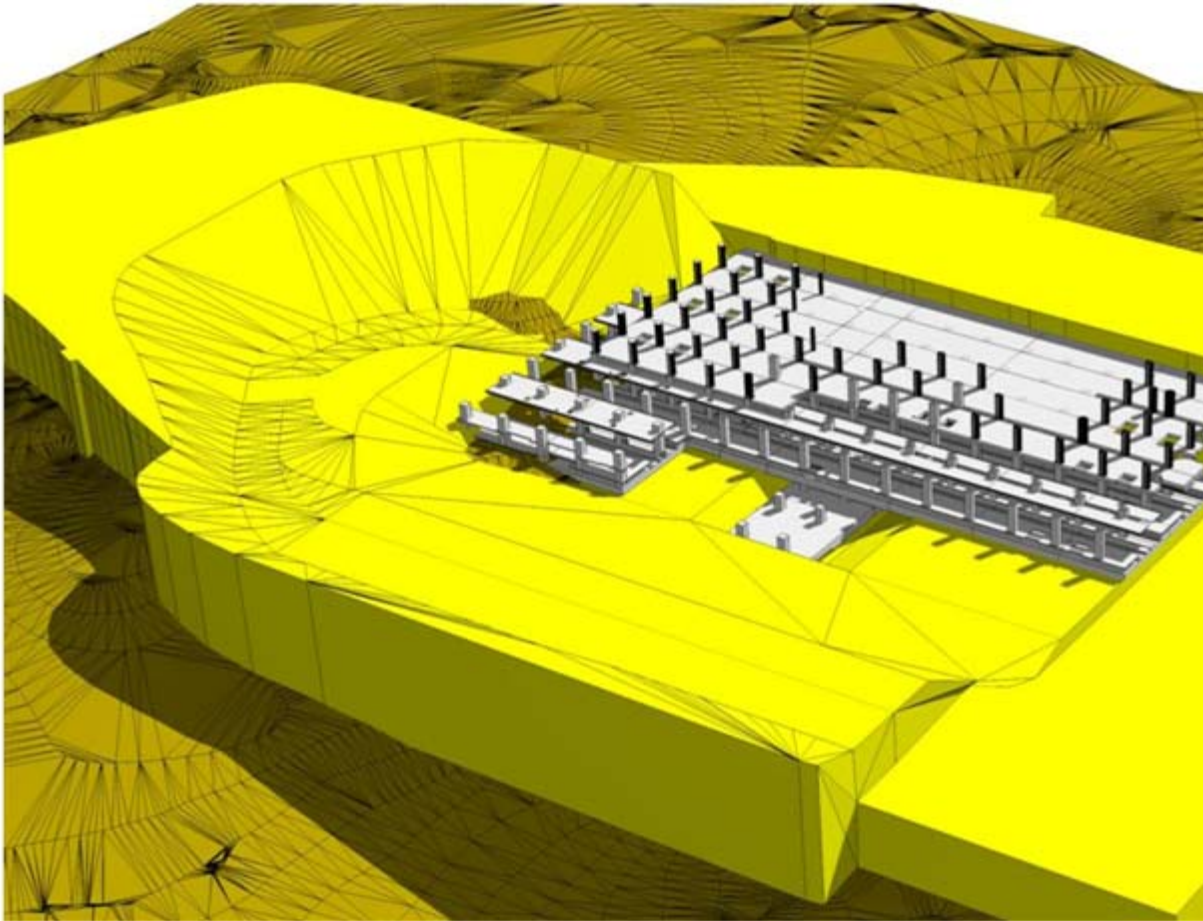
# Express Rail Link (XRL)

## 1. 4D Analysis of Excavation Sequence



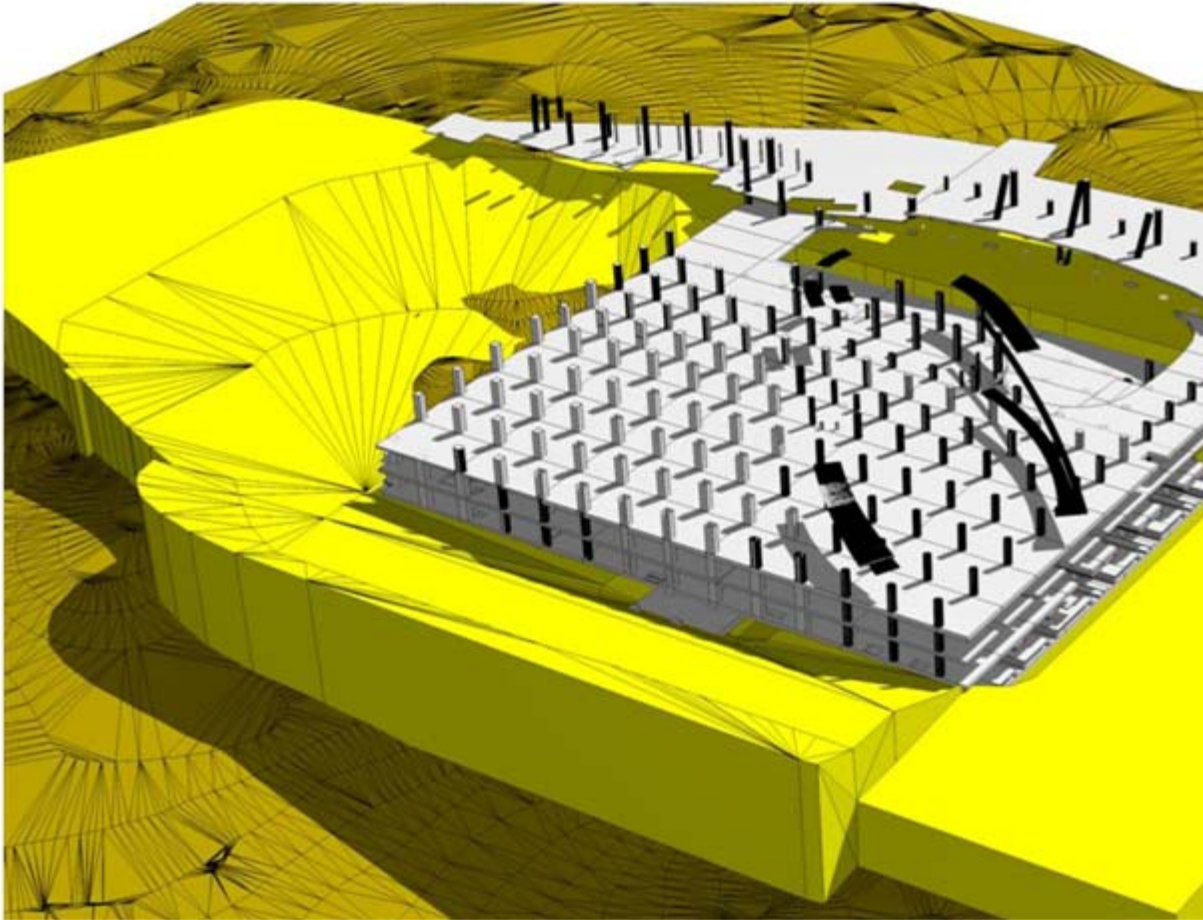
# Express Rail Link (XRL)

## 1. 4D Analysis of Excavation Sequence



# Express Rail Link (XRL)

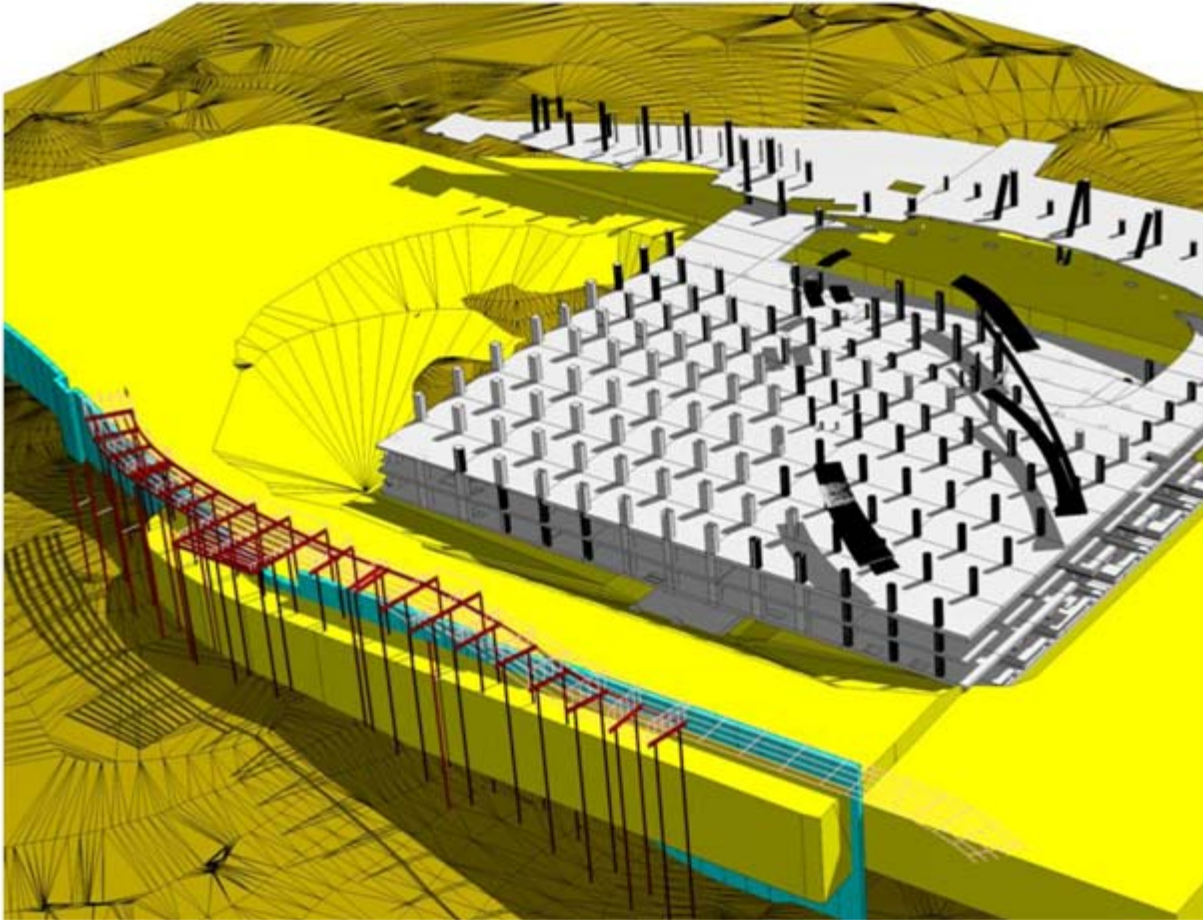
## 1. 4D Analysis of Excavation Sequence





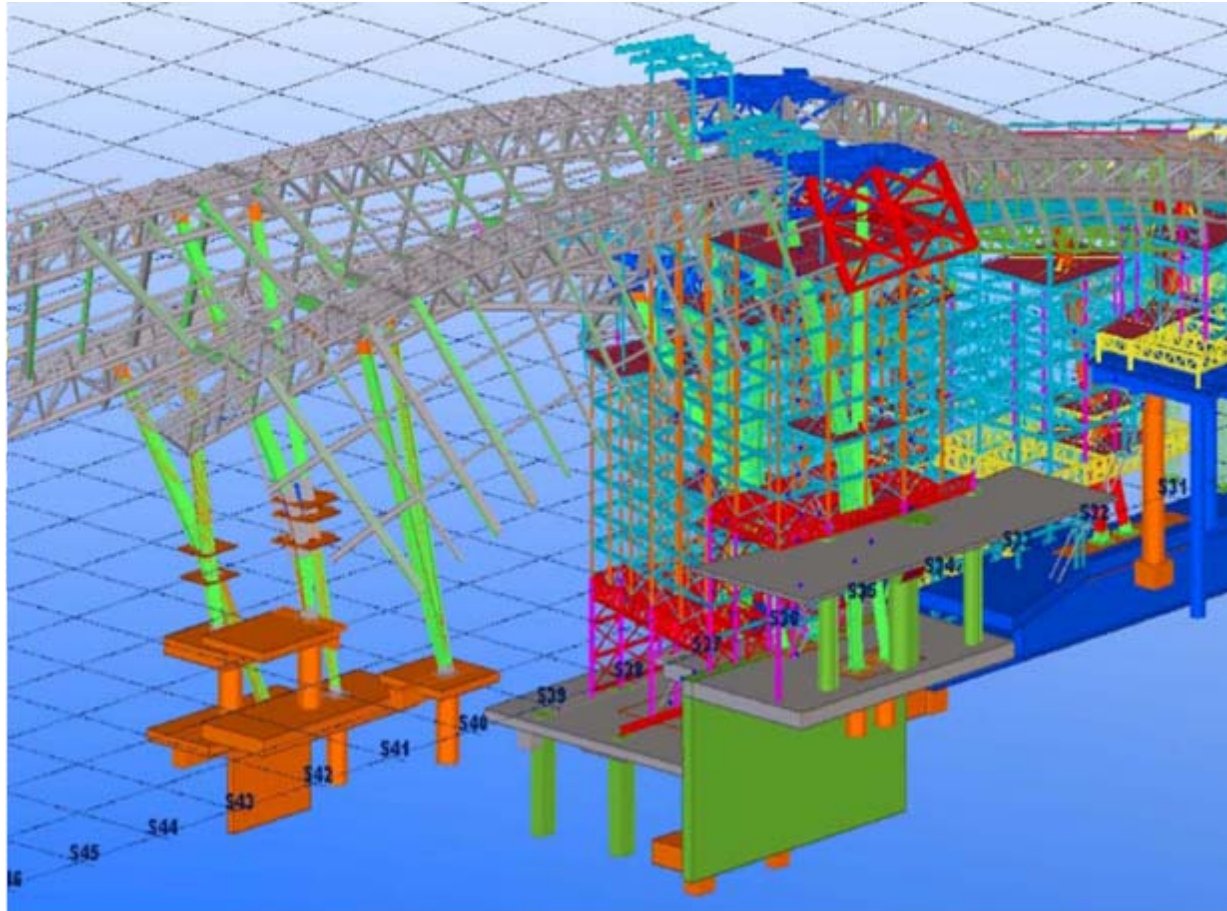
# Express Rail Link (XRL)

## 1. 4D Analysis of Excavation Sequence



# Express Rail Link (XRL)

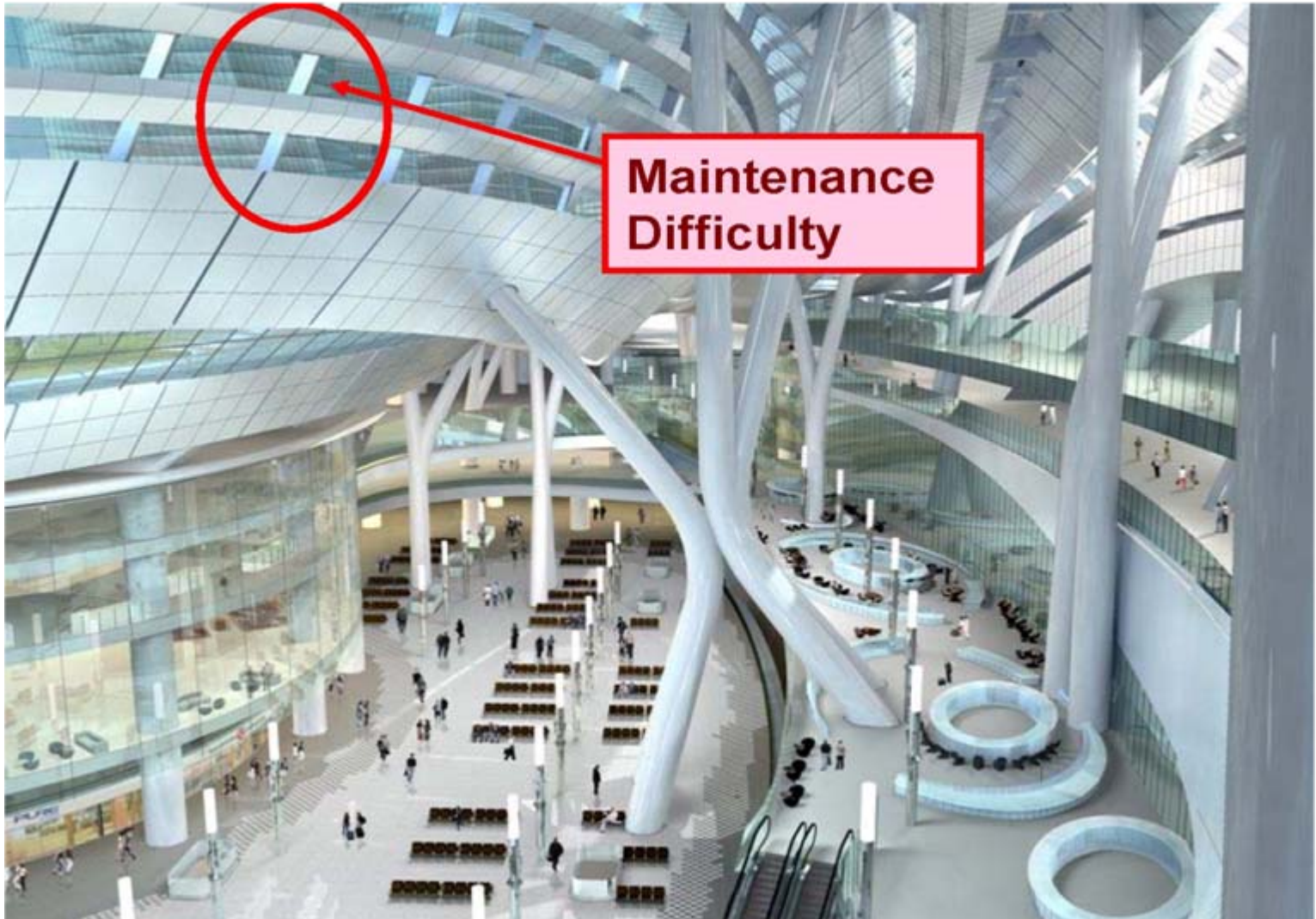
## 2. Planning of Temporary Works and Method Statement





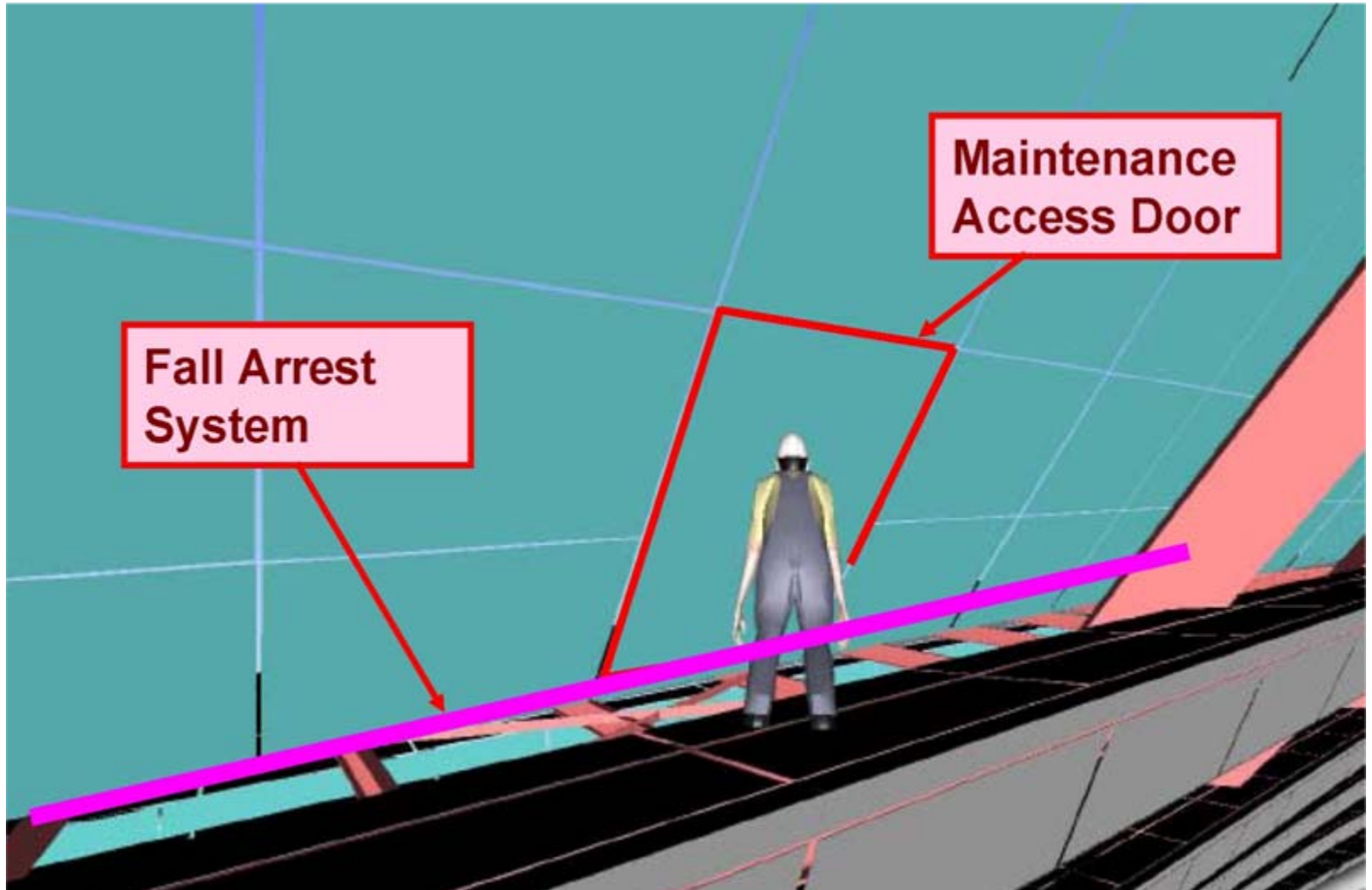
# Express Rail Link (XRL)

## 2. Maintenance



# Express Rail Link (XRL)

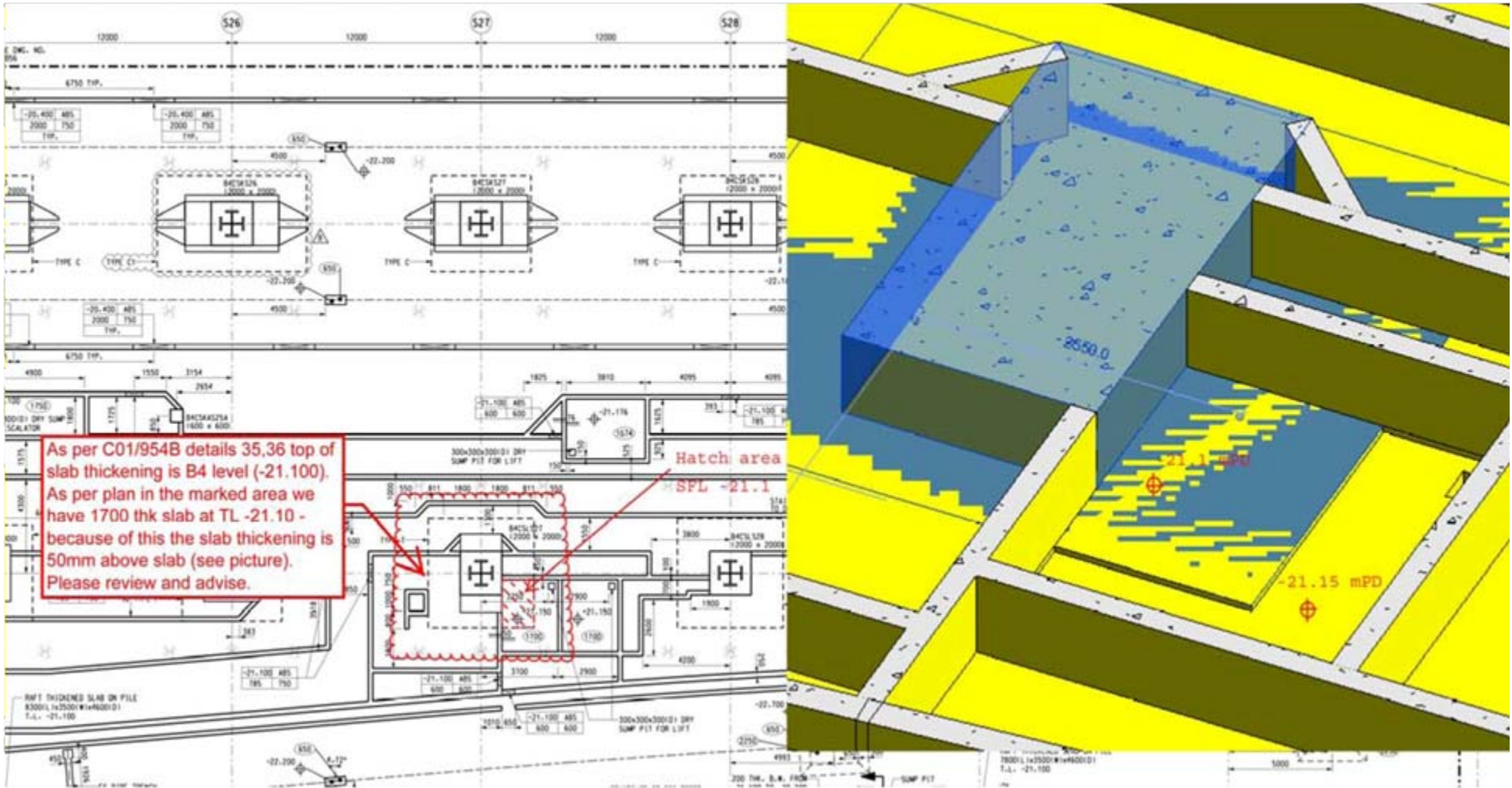
## 2. Maintenance





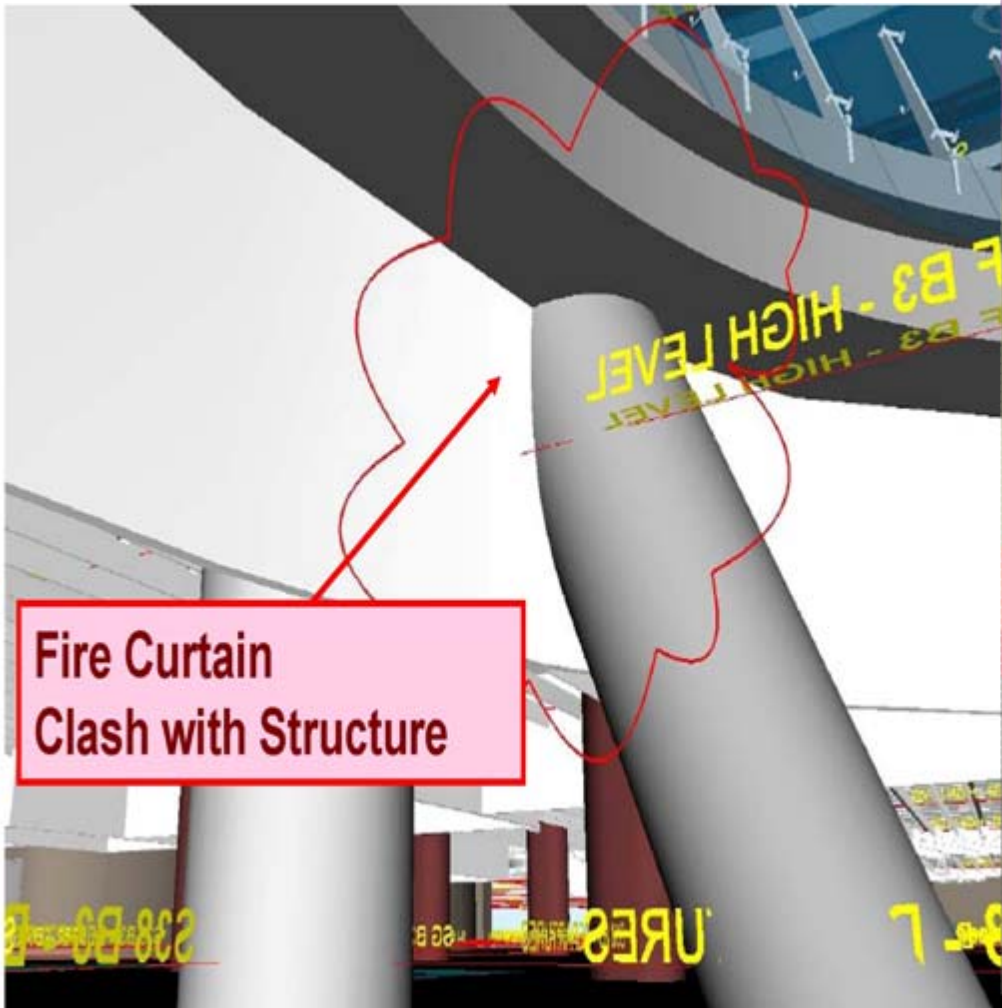
# Express Rail Link (XRL)

## Discrepancies between structural framing and structural details



# Express Rail Link (XRL)

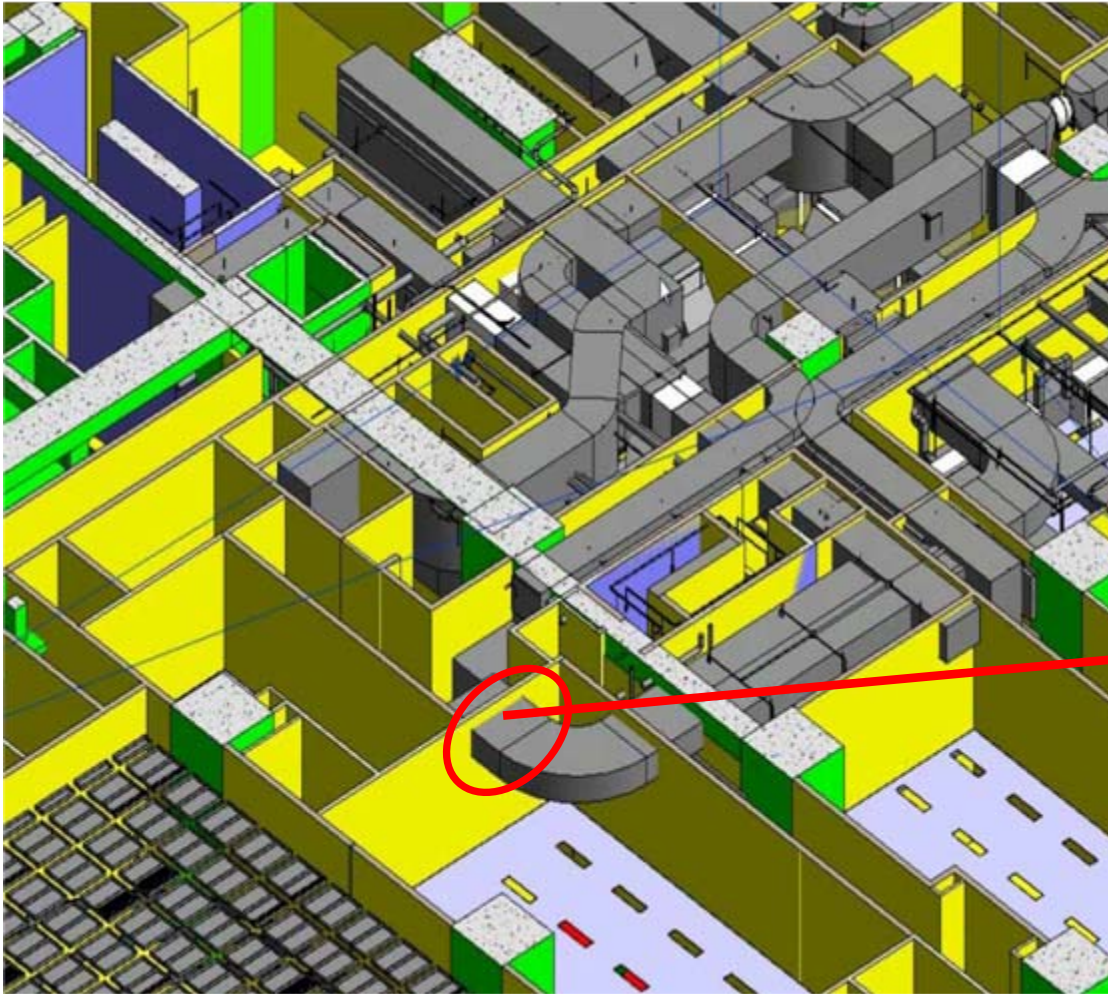
## Clashing Analysis





# Express Rail Link (XRL)

SEM / CSD Coordination





# SCL 走線 Alignment

落馬洲  
Lok Ma Chau

羅湖  
Lo Wu

南北走廊  
North South Corridor

- 東鐵線 East Rail Line
- 沙中線 (紅磡至金鐘段) SCL (Hung Hom to Admiralty Section)

烏溪沙  
Wu Kai Sha

屯門  
Tuen Mun

大圍  
Tai Wai

紅磡  
Hung Hom

金鐘  
Admiralty

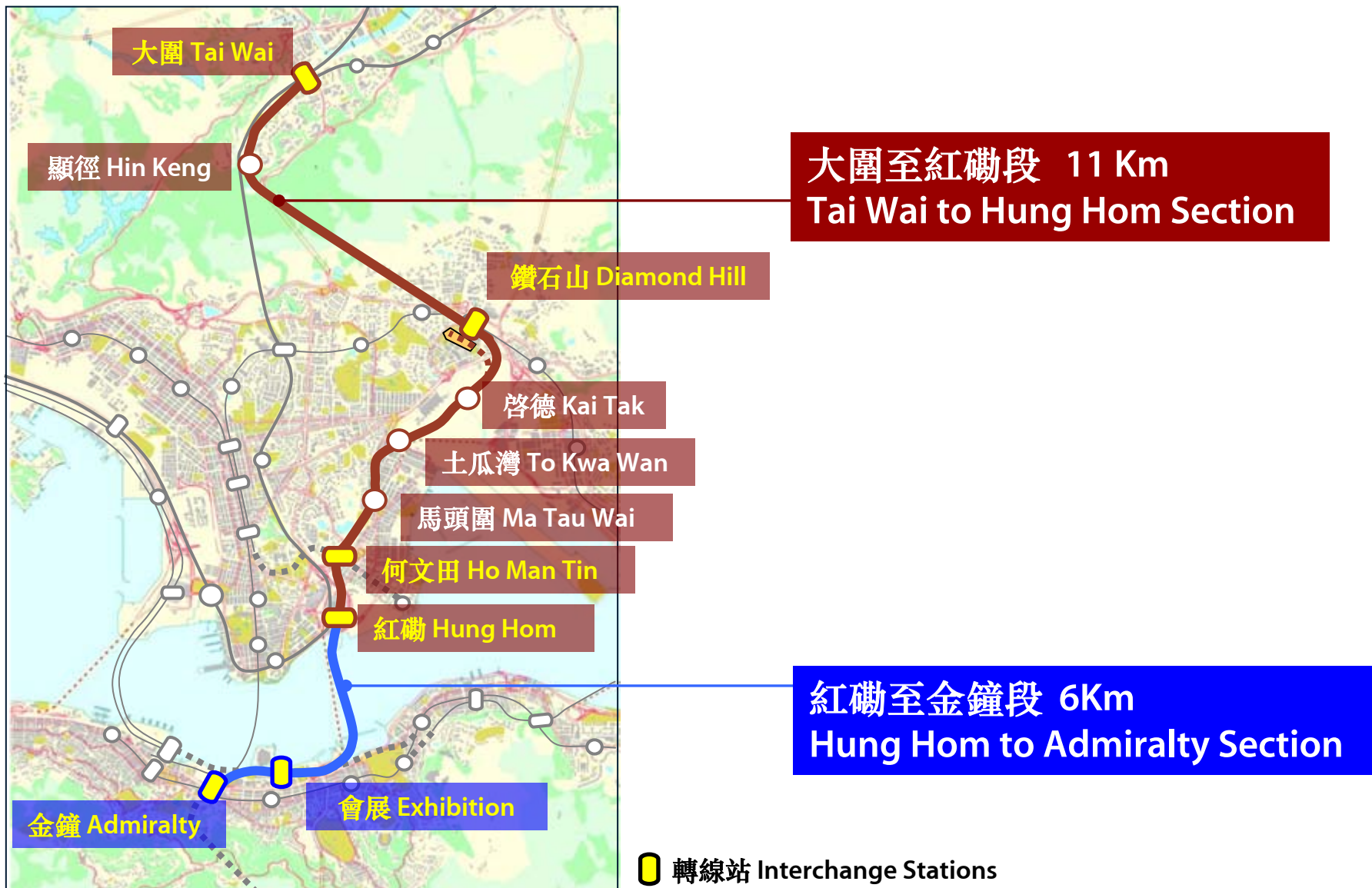
東西走廊  
East West Corridor

- 馬鞍山線 Ma On Shan Line
- 西鐵線 West Rail Line
- 沙中線 (大圍至紅磡段) SCL (Tai Wai to Hung Hom Section)





# SCL 走線 Alignment





# 效益 Benefits



Save Travelling Time



Relieve road traffic condition and pressure on the existing railway lines



Provide convenient access to the old districts and Ka Tak area



Reduce noise and roadside air pollution

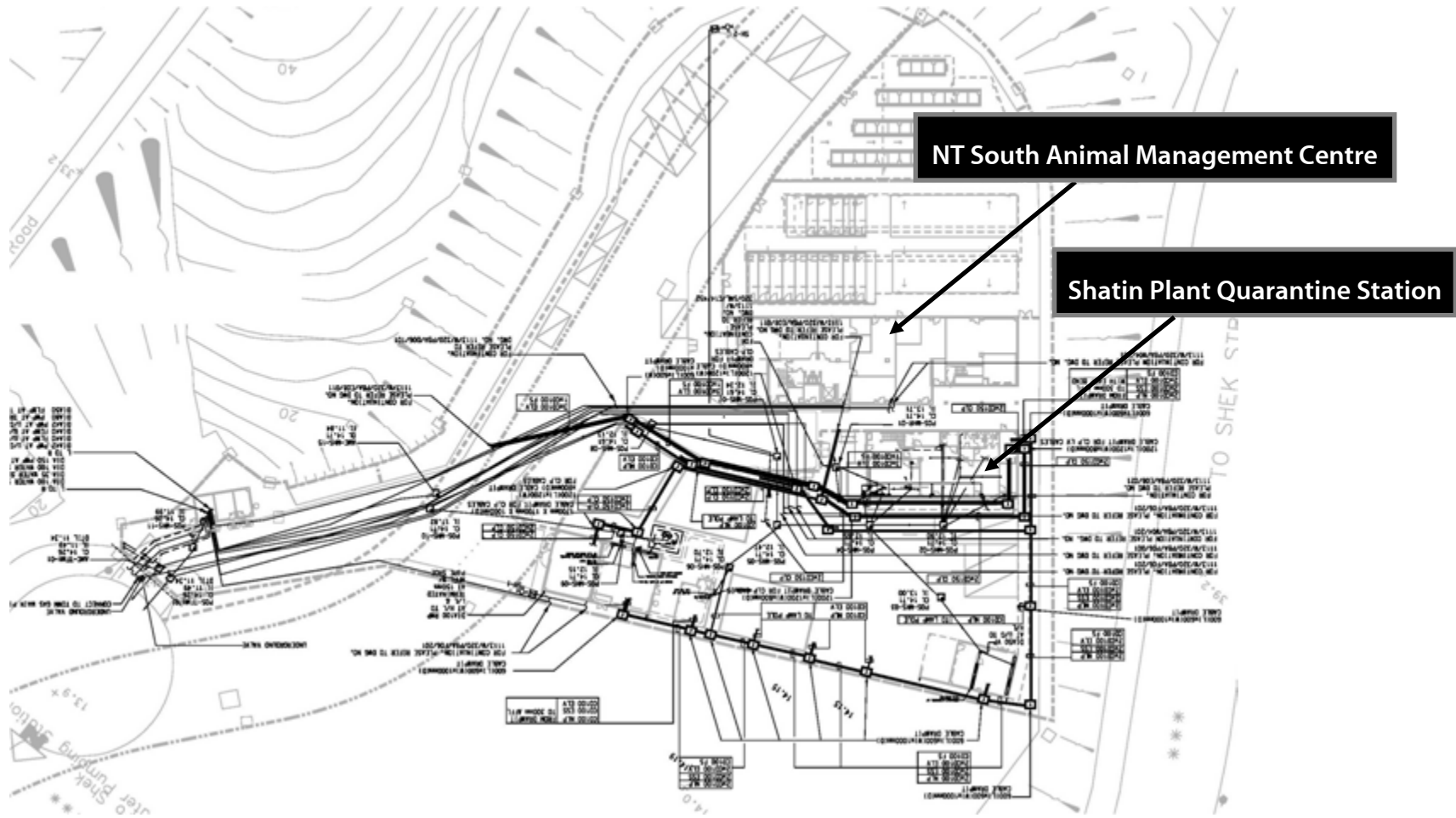


# Shatin to Central Link (SCL)

1. **Underground Services - Contract 1113**
2. **Point Cloud Scanning for BIM Model Verification – Contract 1111**

# Shatin to Central Link (SCL)

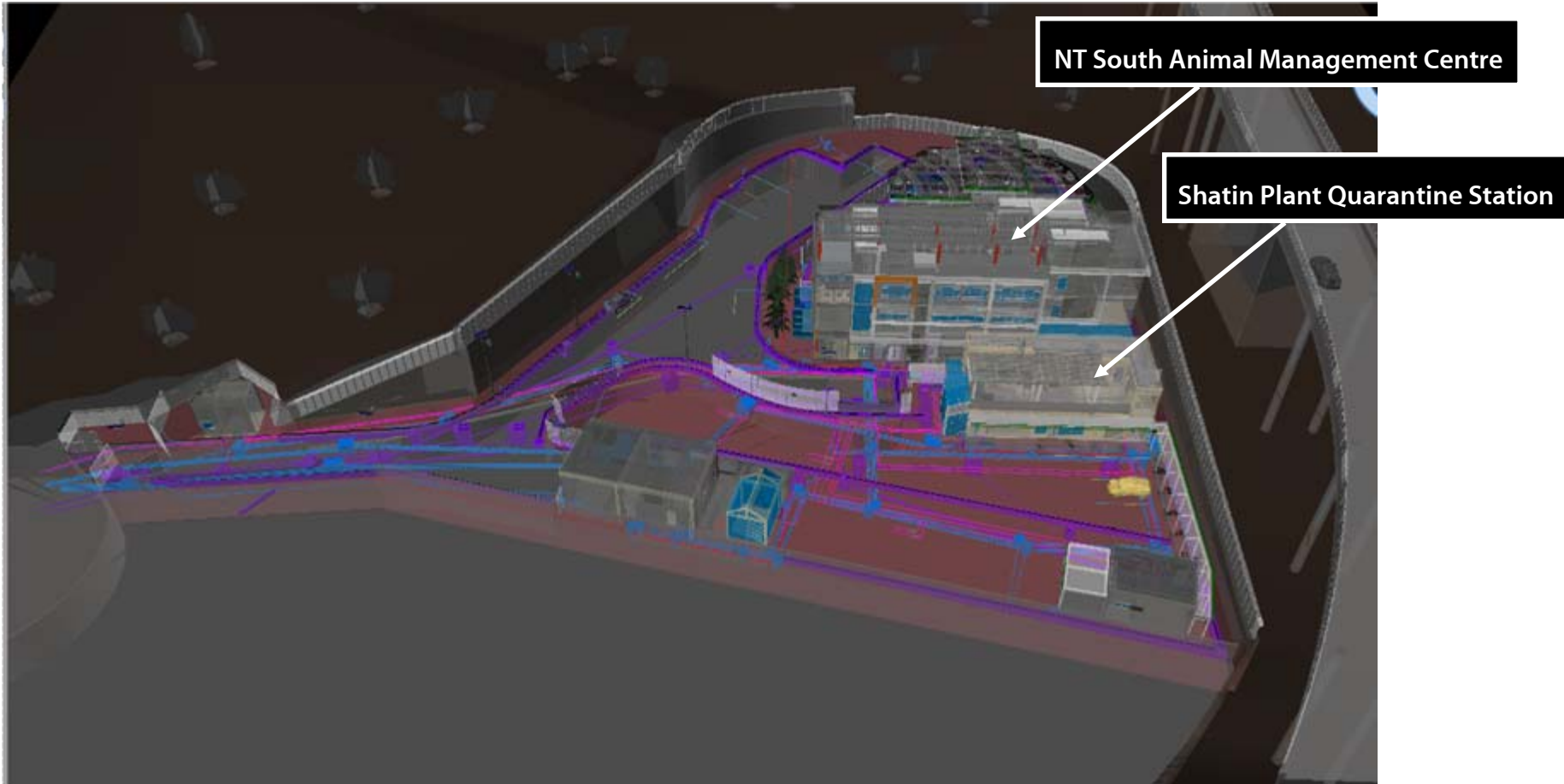
1. Underground Services – Contract 1113 (Reprovisioning of New Territories South Animal Management Centre and Shatin Plant Quarantine Station)





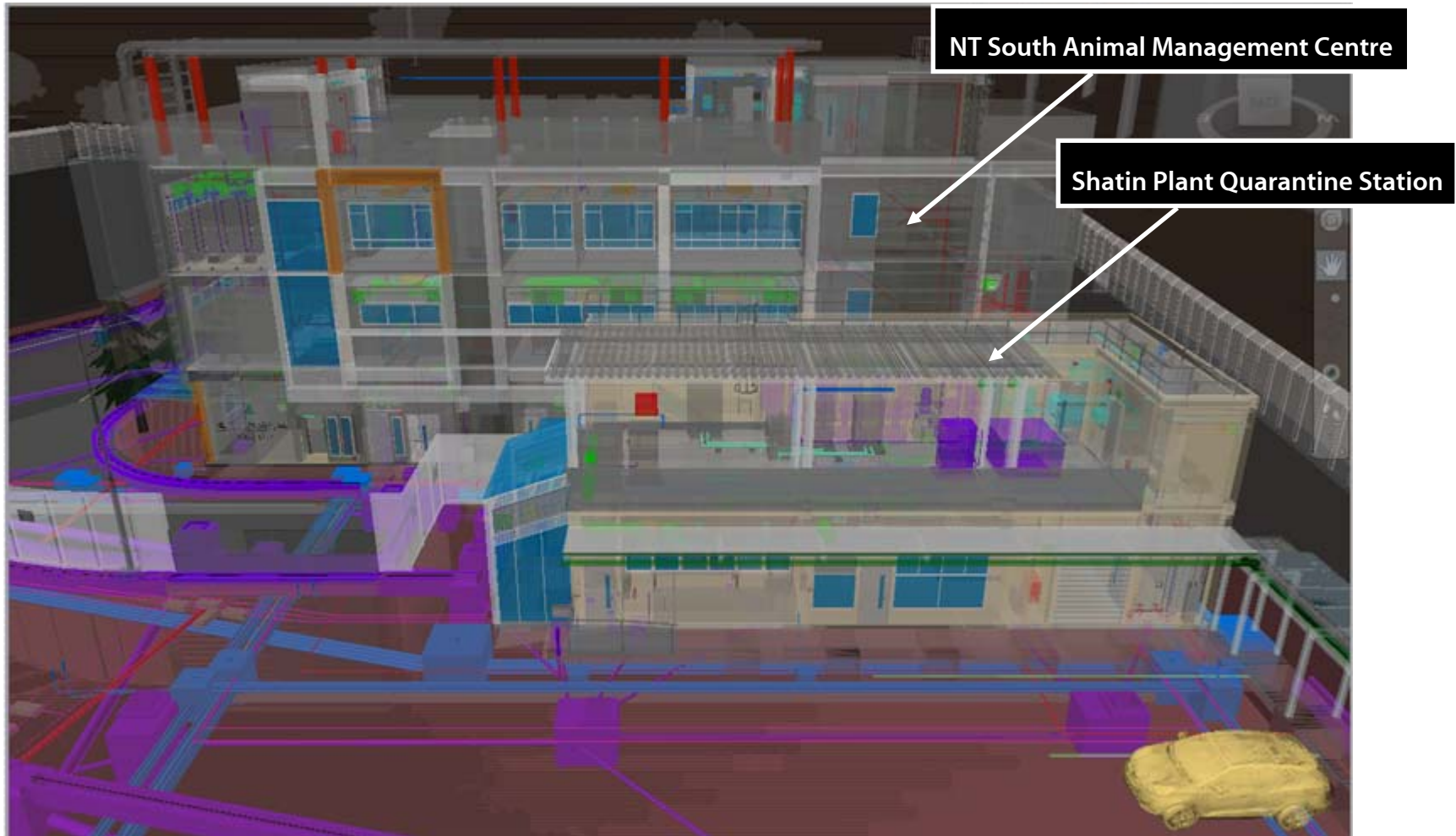
# Shatin to Central Link (SCL)

## 1. Underground Services – Integrated BIM Models



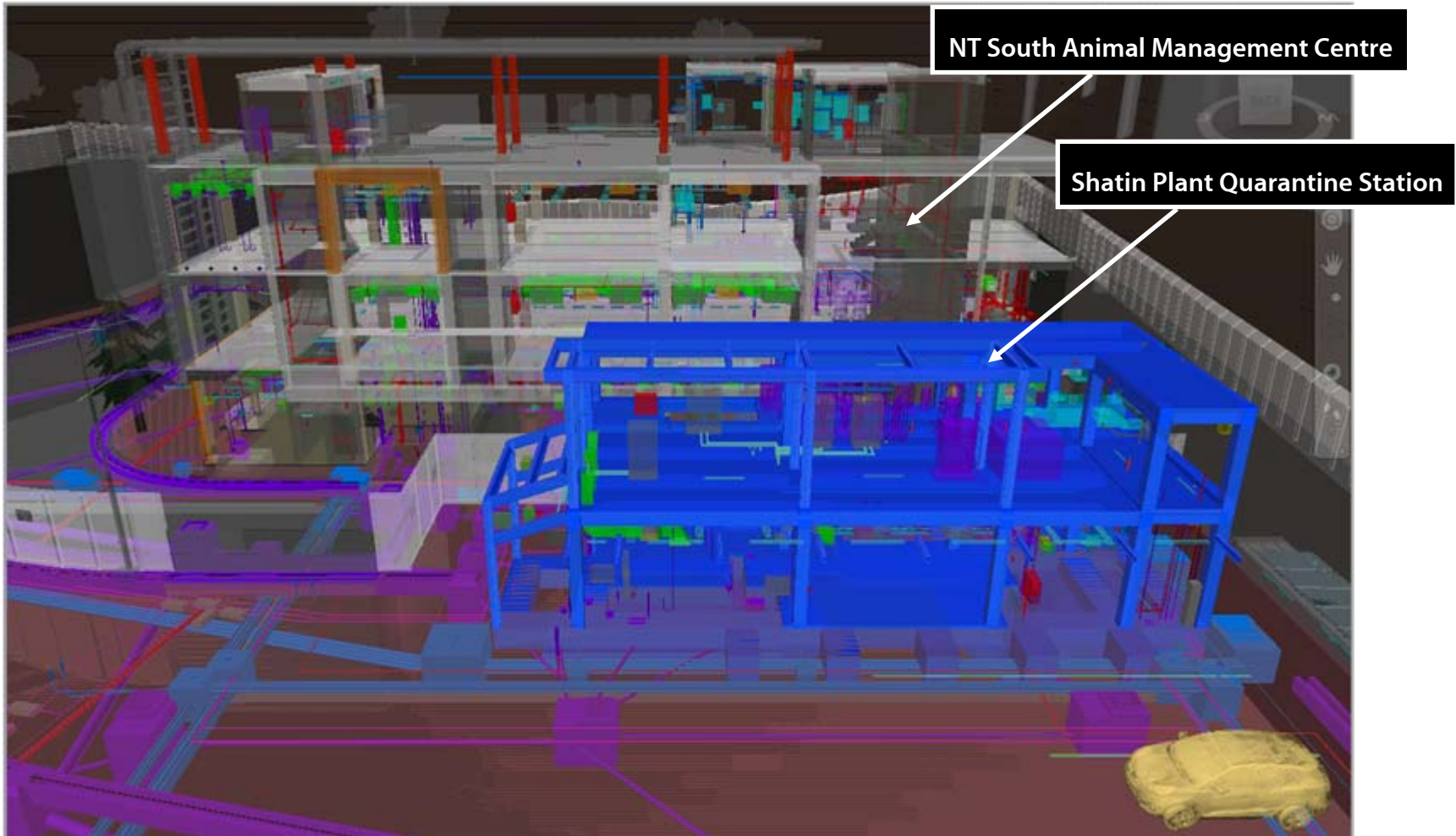
# Shatin to Central Link (SCL)

## 1. Underground Services – Two Main Buildings



# Shatin to Central Link (SCL)

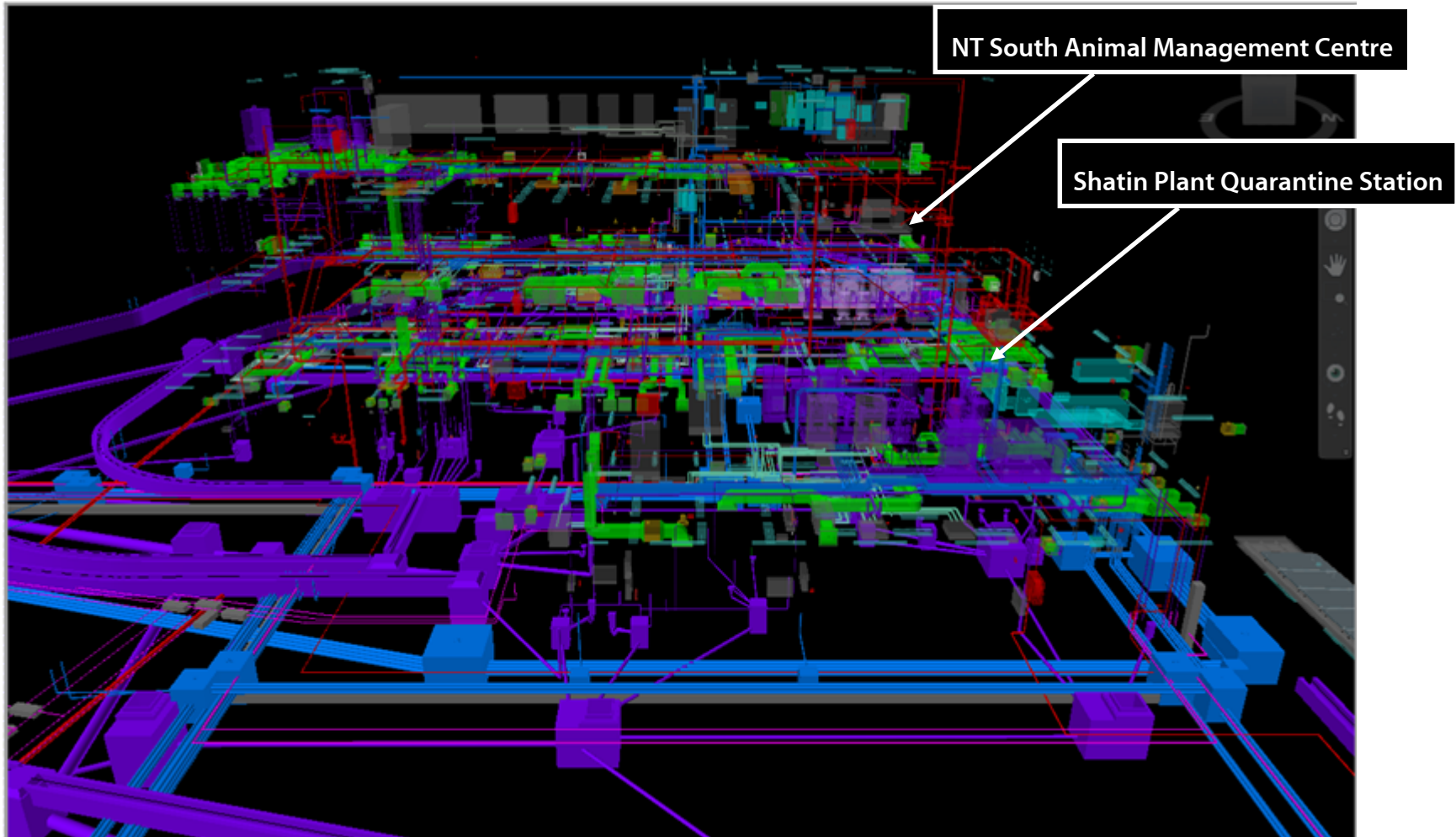
## 1. Underground Services – Two Main Buildings (Structural Framing)





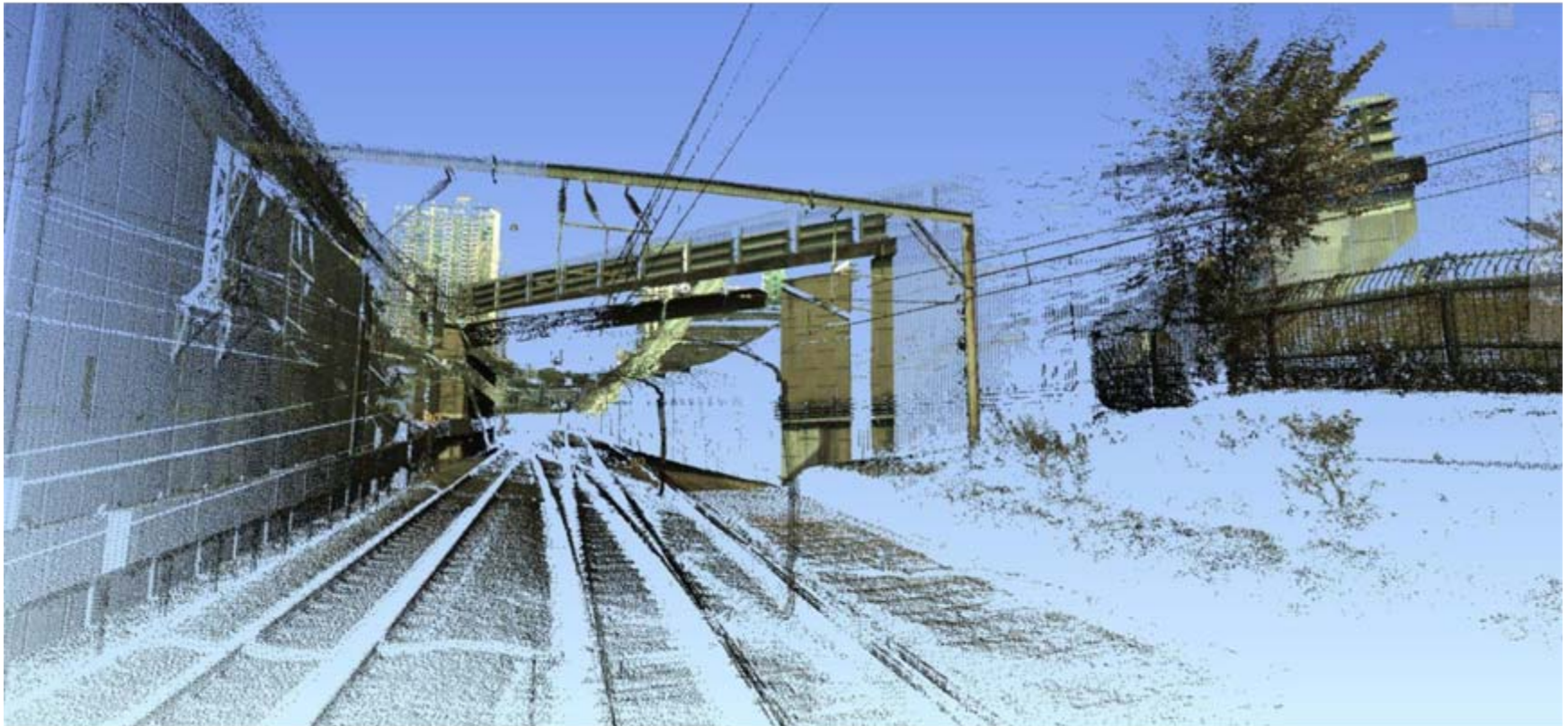
# Shatin to Central Link (SCL)

## 1. Underground Services – MEP Networks



# Shatin to Central Link (SCL)

## 2. Point Cloud Scanning for BIM Model Verification - Contract 1111 (Hung Hom North Approach Tunnels )



# Shatin to Central Link (SCL)

## 2. Point Cloud Scanning for BIM Model Verification - Contract 1111 (Hung Hom North Approach Tunnels )

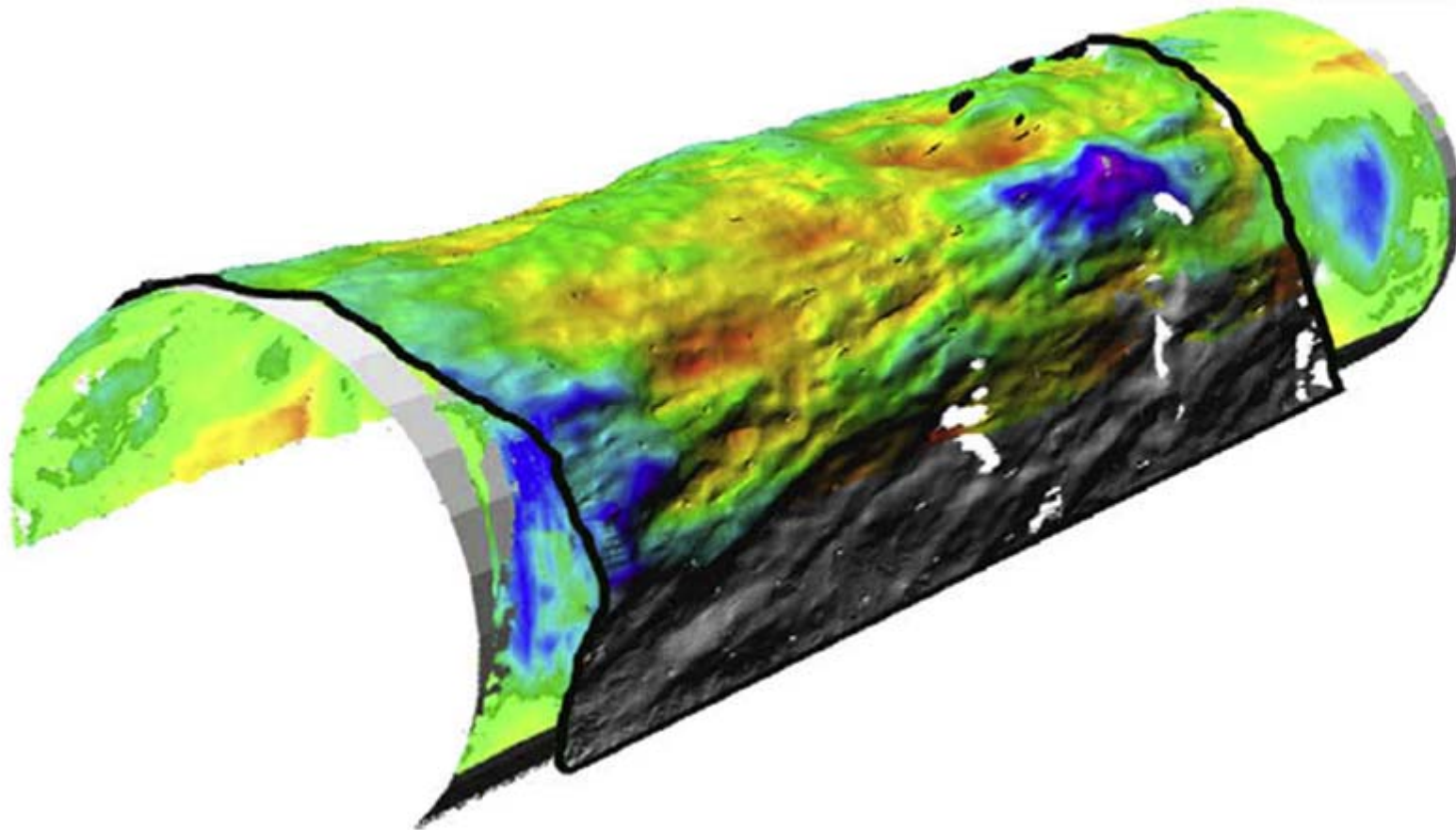




# Point Cloud Data



# Point Cloud Data



# Outlook

## BIM Practice

Project Base for new works / new Infrastructure

Existing Infrastructure



END