



# 沙田至中環綫項目 紅磡站擴建工程 全面評估策略建議

Holistic Proposal for the verification and assurance of  
Hung Hom Station Extension  
under Shatin to Central Link Project

5/12/2018

# 評估目的 – 確定車站結構安全及完整性

Purpose of the study – Verifying the structural safety and integrity of extension works

兩項主要範疇:

Two key focuses:

- 確認月台的竣工狀況與最新收到的修訂設計圖則一致

Verify the as-constructed condition of the platform slabs are consistent with the latest design amendment drawings received



- 釐清螺絲帽接駁的施工質量，以及其他已知或懷疑出現不合規格的狀況，以釋除疑慮

Assess the workmanship of the coupler connections in light of allegations raised, and on other known or suspected irregularities



# 分階段進行全面核實工作

Staged approach for verification works

1



## 整合及覆核 修訂設計圖則及記錄

Compile and check design amendment drawings against construction records

2



## 實地檢測

On-site physical investigation

3



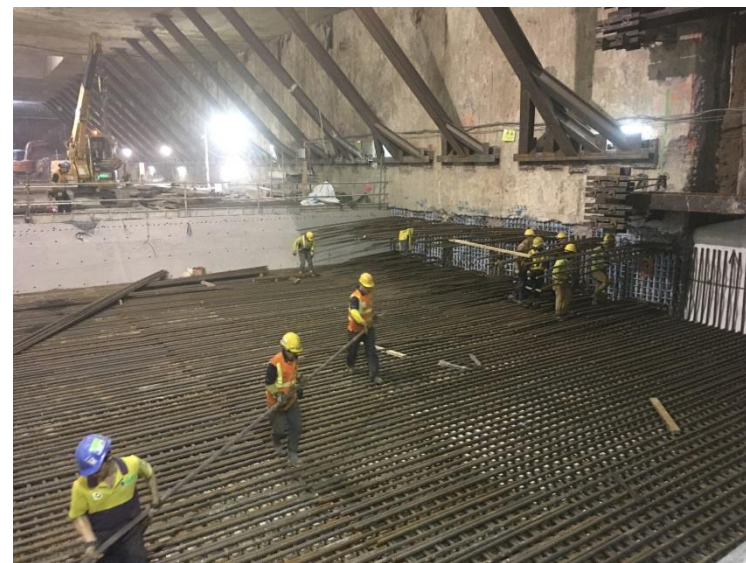
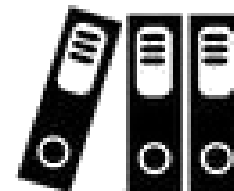
## 設計分析、結構評估

Design analysis and structural assessment

# 第一階段：覆核圖則及記錄

## Stage 1: Check drawings and construction records

- 承建商整合資料，提供最新的修訂設計圖則  
Contractor compiles information to provide the latest design amendment drawings
- 外聘工程技術顧問，檢視建造記錄及施工照片，覆核修訂設計圖則  
External engineering consultants to check design amendment drawings against construction records and photos



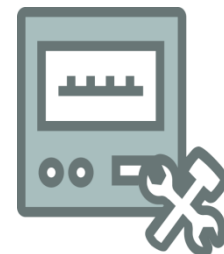
## 第二階段：實地檢測 - 開鑿月台層及非破壞性測試

### Stage 2: On-site investigation – Opening up and non-destructive tests

- 實地檢查的主要考慮，是在檢測過程中確保建築物的質量、完整性及結構安全

Key consideration when designing the opening-up tests:

not to compromise the built quality, integrity and the overall structural safety of the station structure both during and after the investigation



- 按兩大評估目的選取開鑿位置:

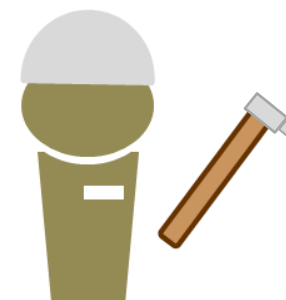
Open-up locations are selected to address the two purposes of the study:

1. 確認竣工狀況 – 工程設計曾有改動及資料不完整的地方

Verify as-constructed condition – areas with design change and incomplete information

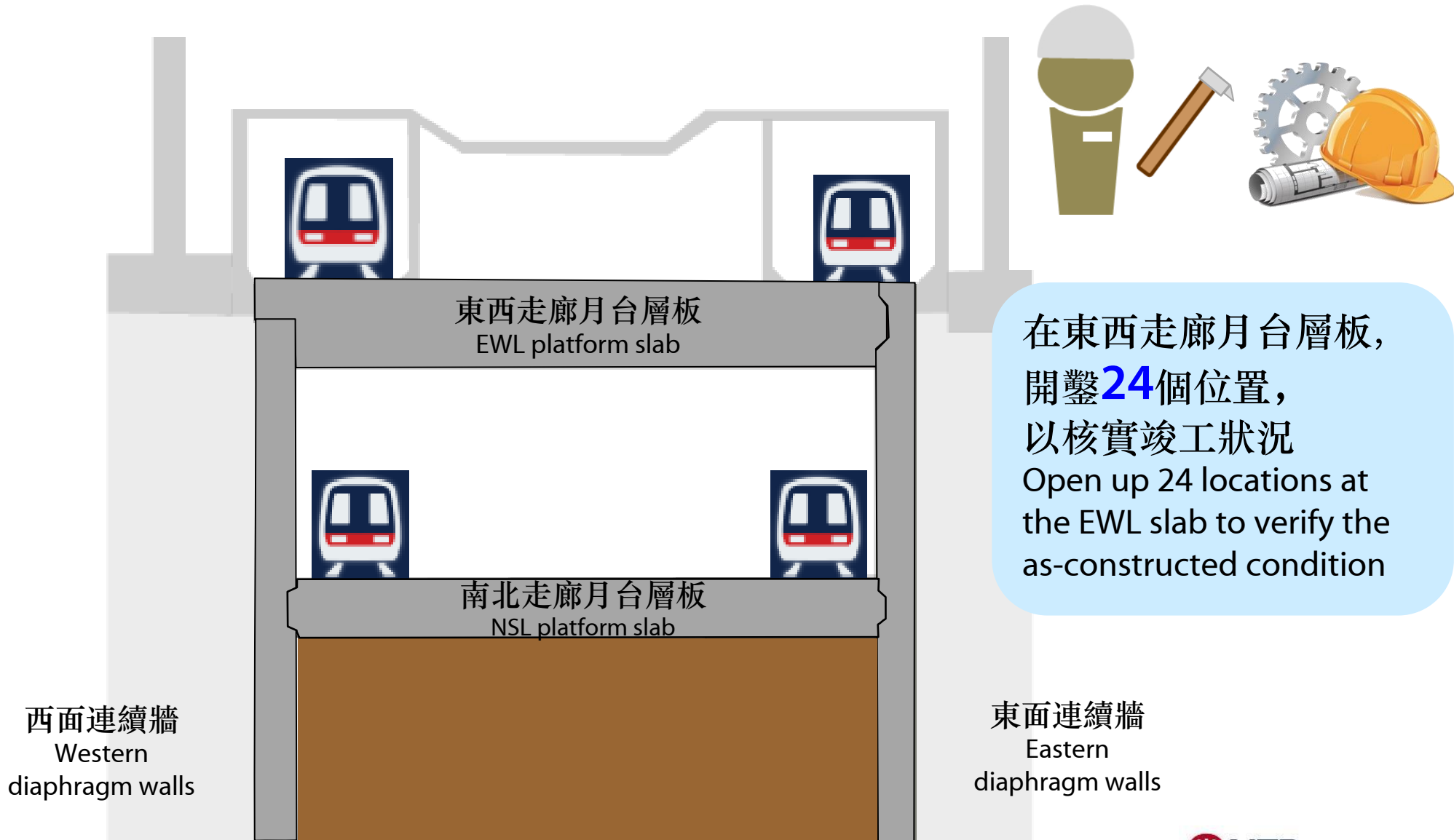
2. 釐清施工質量 – 隨機抽樣

Assess workmanship – random sampling



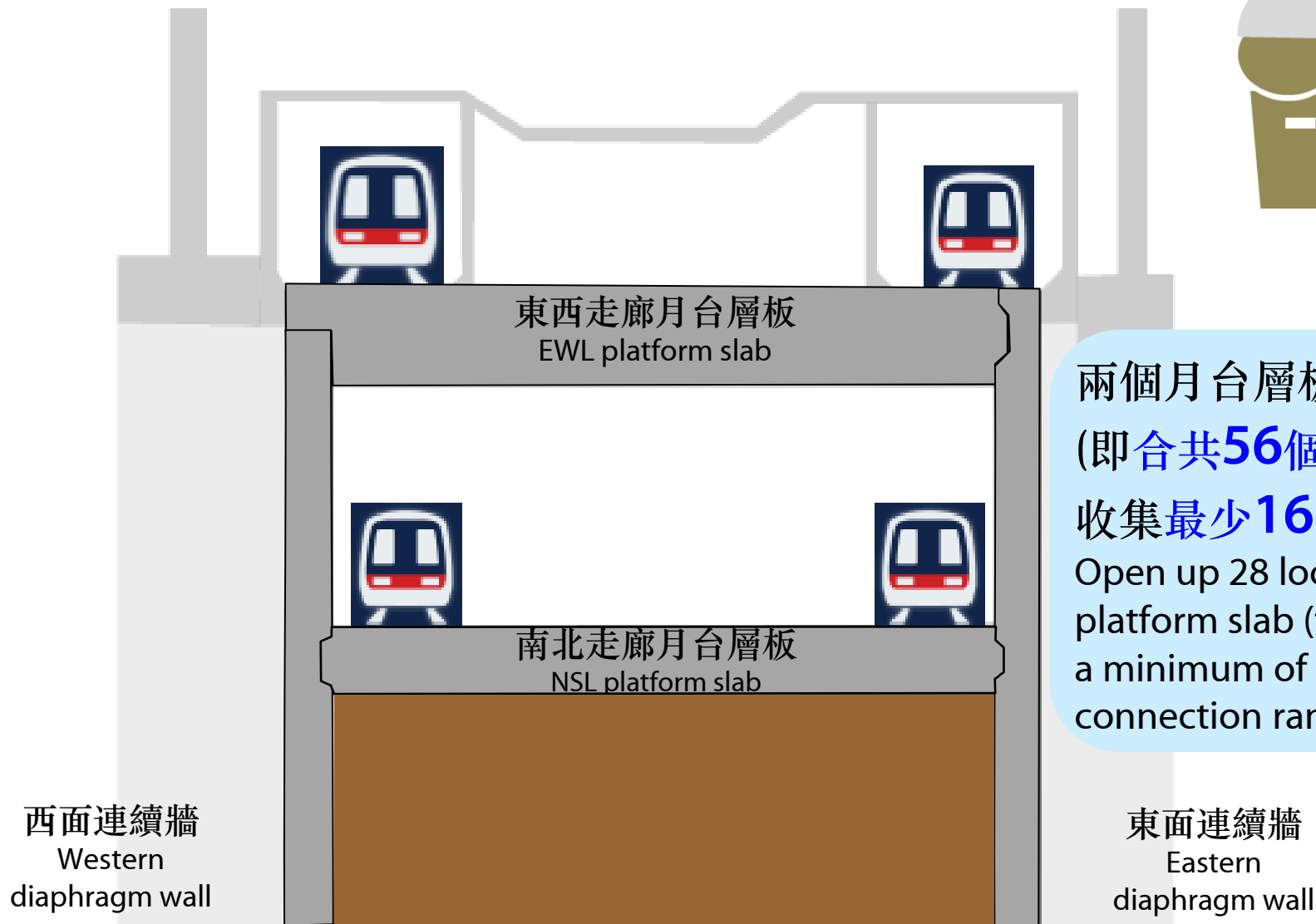
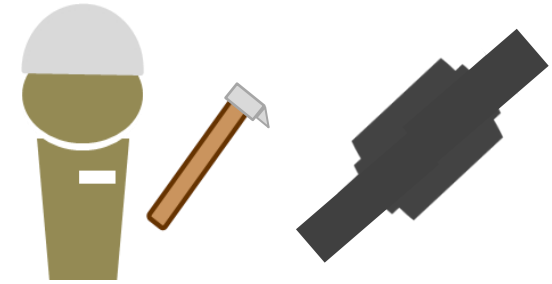
# 第二階段: 實地檢測 - 開鑿以核實竣工狀況

Stage 2: On-site investigation - Opening up to verify as-constructed conditions



## 第二階段：實地檢測 – 開鑿以釐清螺絲帽接駁的質量

Stage 2: On-site investigation – Opening up to verify the workmanship of coupler connection

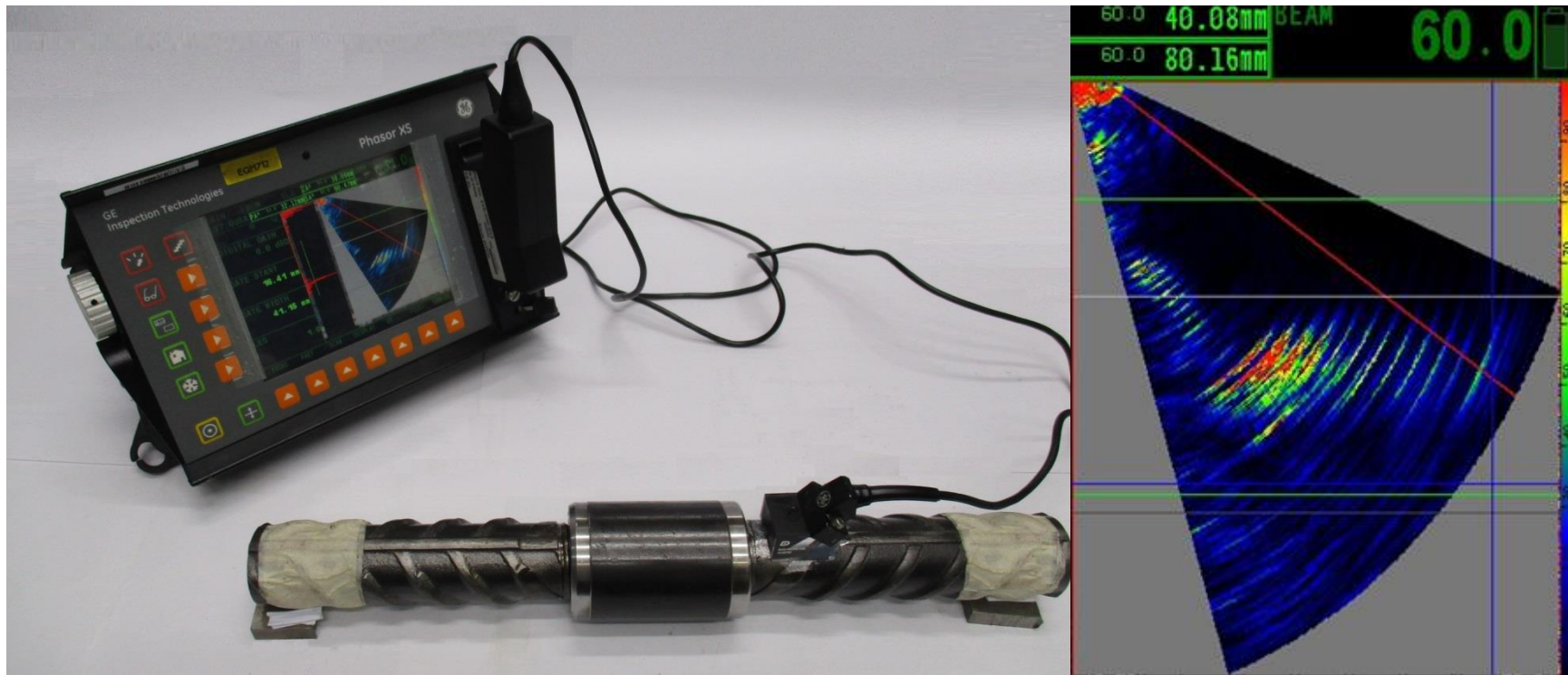
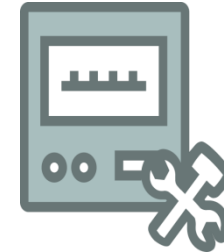


兩個月台層板各開鑿**28**個位置  
(即合共**56**個位置)，  
收集最少**168**個隨機螺絲帽樣本  
Open up 28 locations at each of the  
platform slab (total 56 locations) with  
a minimum of 168 steel bar/coupler  
connection random samples

## 第二階段：實地檢測 - 非破壞性測試

Stage 2: On-site investigation – Non-destructive tests

- 核實螺絲帽的接駁狀況  
Verify the coupler connection



超聲波技術

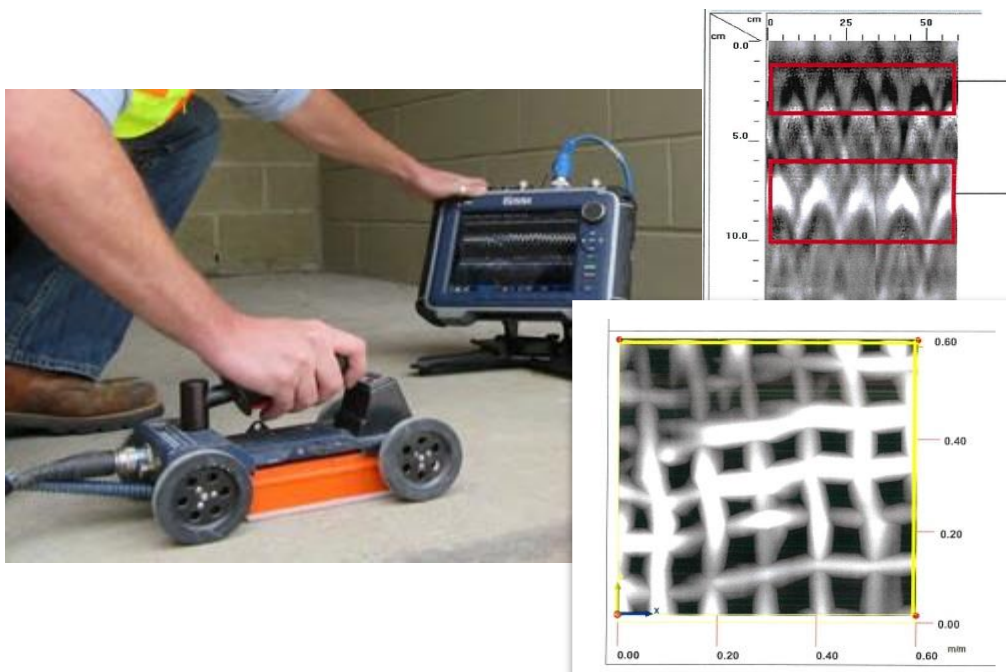
Phased Array Ultrasonic Examination



## 第二階段：實地檢測 - 非破壞性測試

### Stage 2: On-site investigation – Non-destructive tests

- 核實鋼筋的配置及混凝土質量  
Verify condition of steel bar spacing and quality of concrete



透地雷達儀器  
Ground Penetration Radar



鎚敲測試  
Hammer Test

## 第三階段：結構評估

### Stage 3: Structural assessment

- 根據核實結果，就整個車站擴建工程進行詳細結構評估  
Based on findings, structural assessment will be conducted for the platform slabs and station extension structure
- 如有需要，會制定及實施修復措施  
Remedial works will be designed and implemented wherever necessary



# 未來工作

## Way Forward

- 檢測及重置工作預計需要最少16個星期完成，期望盡快展開

Verification tests and reinstatement works are envisaged to take at least 16 weeks to complete and will commence as soon as possible

- 已展開移除路軌及鐵路設施等準備工作  
Preparatory works for implementing the verification works including removal of tracks and railway facilities have started

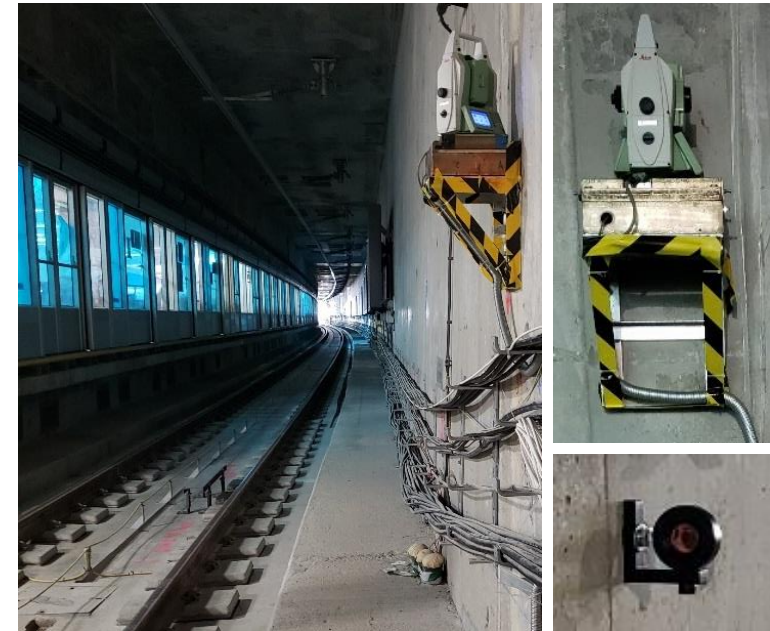


- 港鐵公司會繼續與政府保持聯繫，並根據每階段的核實結果，決定是否需要作進一步的測試工作  
Will maintain close communication with the Government and review any need for further testing in the light of the findings

# 長遠結構監察

## Long-term structural monitoring programme

- 東西走廊月台已安裝結構監察系統  
Structural monitoring system has been installed on the EWL platform
- 為進一步確保車站的結構完整性及耐久程度，會因應測試結果，制訂長遠的監測方案  
Long-term monitoring programme will also be formulated after the exercise for further assurance on the long-term performance and durability of the structure



謝謝  
Thank you