

MERIT

CKR - Digitalisation Journey
HyD Central Kowloon Route Project Team

ORGANISATIONS TO BE CREDITED

- Highways Department
- Arup - Mott MacDonald Joint Venture
- Alchmex – Paul Y Joint Venture
- Bouygues Travaux Publics
- Build King - SK ecoplant Joint Venture
- Gammon Construction Limited

PROJECT LOCATION

West Kowloon to Kowloon Bay / Central Kowloon Route

TYPE OF WORK

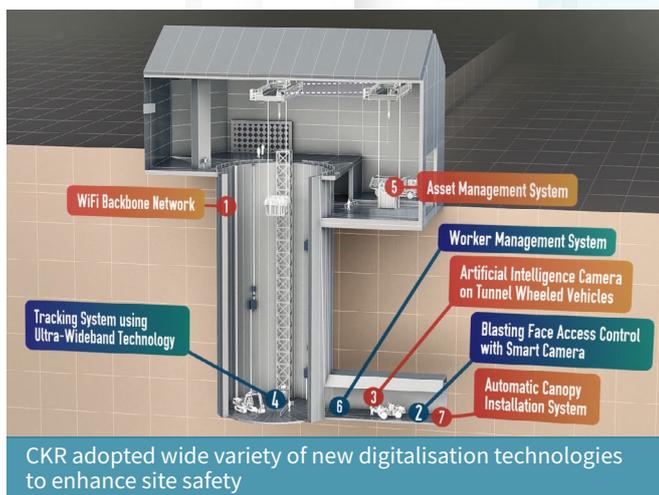
New build

PROJECT TIMESCALE

DEC 2017 to AUG 2025

INTRODUCTION OF PROJECT

Central Kowloon Route is a dual three-lane carriageway with a total length of about 4.7km, linking Yau Ma Tei Interchange of West Kowloon with Kai Tak Development Area and road network of Kowloon Bay, forming a trunk road across central Kowloon. It comprises construction depressed road and elevated road connecting to existing/ future road networks at West Kowloon and Kowloon Bay; administration building, ventilation buildings and facilities for the management and operation of the tunnel; and associated environmental, civil, marine, landscape, public utility, drainage, fire services and electrical and mechanical (E&M) works.



THREE WINNING FACTS

Digitalisation Project Information System

CKR is the first public works project developed with an integrated Digital Works Supervision System (iDWSS) to transform data from 6 individual contract-wide DWSS to a single project-wide management platform providing data analysis with Key Performance Indicators to facilitate management decision on key aspects for improving quality, safety and environmental performance. BIM uses include design/ construction coordination and collaboration, estimating, scheduling, site investigation, handover of as-built assets, plus a drive-through model combining 6 contract-wide BIM models as a traffic management tool. Furthermore, eRISC system is integrated with CKR BIM model to enhance construction quality assurance.

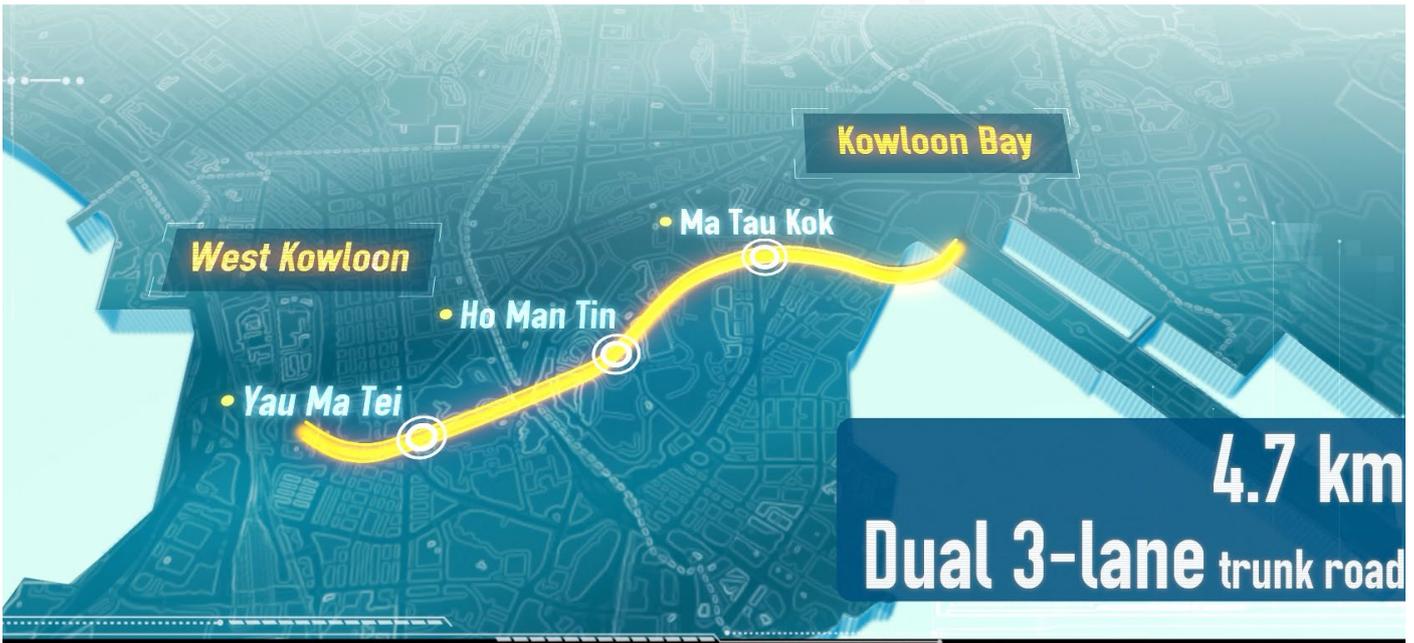
Smart Safety System

CKR adopts new digitalisation technologies like backbone communication network, ultra-wideband tracking, worker management system, asset management system, blasting face access control, artificial intelligence stereoscopic camera, smart safety helmet, to ensure site safety inside tunnel. For public and site safety management, ‘happy monitoring’ and ‘Early Rainstorm and Tidal Alert System’ are adopted to provide real-time safety monitoring of existing structures and external environment conditions. In minimising risk on amount of working at height, Design for Safety and Design for Manufacture and Assembly are used with aid of BIM technique on site utilisation planning.

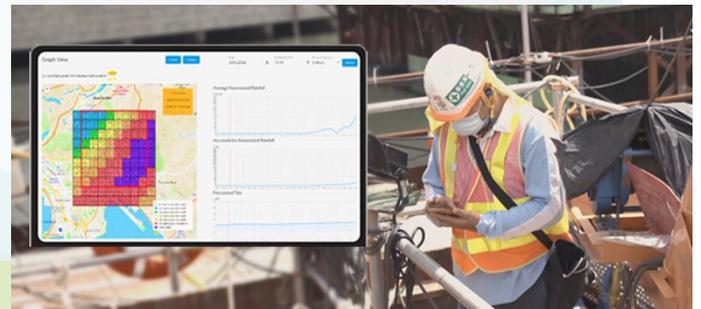
Automated Construction System (ACS)

CKR has pursued the automatic canopy installation system and automatic drilling mast system to reduce the labour intensiveness and long working hour fatigue for the canopy and the bracket installation in tunnel. The automated and standardised installations reduce the safety risk of working at height and the manual handling drilling process, while greatly improve the efficiency of installation works.

3D concrete printing has also been initiated for construction of U-channel. This initiative has advantages of higher productivity, enhanced consistency of fabrication quality, lower dependence on skilled labour, better operation safety and environmentally friendly.



Integrated Digital Works Supervision System (iDWSS), transform data from 6 individual contract-wide DWSS to a single project-wide management platform



Early Rain/Tide Alert System, to enable site personnel to monitor and manage instantly to protect frontline from risk of safety