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26 April 2019

Dear Ms LAU,

Panel on Transport
Subcommittee on Matters Relating to Railways
Meeting on 1 February 2019

Thank you for your letter of 12 February 2019. Below is our response to the six motions passed under the item about the progress update of the construction of the Shatin to Central Link (“SCL”) at the meeting held on 1 February 2019.

1. Consolidated response to the motions stipulated in LegCo paper no. CB(4)527/18-19(01) and CB(4)527/18-19(04)

Target commissioning date

In view of a delay of about 11 months caused by the archaeological works, discovery and conservation options for the archaeological features at Sung

Wong Toi Station from 2012 to 2014, the commissioning date of “Tai Wai to Hung Hom Section” under the SCL is deferred to the end of 2019. The Highways Department (“HyD”) has been coordinating and overseeing the construction of SCL. With the efforts of the construction team, the delay recovery measures implemented at the “Tai Wai to Hung Hom Section” is picking up the pace progressively. Hence, the target commissioning date of this section could originally be advanced to about mid-2019. However, due to the series of Hung Hom Station incidents and associated investigation works last year, the target commissioning date will need to be further reviewed.

Feasibility of the modes of staged commissioning

At the request of the Government, the MTR Corporation Limited (“MTRCL”) is studying the feasibility and different proposals of partial commissioning of the East West Corridor of the SCL, with a view to commissioning as many stations and railway section as possible if needed. Partial commissioning proposals should take into account the technical feasibility of partially commissioning a railway section, the capacity of the railway system, the modification to the signaling system, the compatibility of the road transport, etc. There is no decision at this stage. The Government, in collaboration with the MTRCL, would continue to actively explore and make a decision at appropriate time, giving priority to practicability and railway operational safety.

2. Consolidated response to the motions stipulated in LegCo paper no. CB(4)527/18-19(02) and CB(4)527/18-19(03)

Opening up platform slabs for sampling tests

To verify the as-constructed conditions of the structures including the platform slabs of the Hung Hom Station Extension, MTRCL has formulated a three-stage holistic assessment strategy. The first stage is a review of relevant construction records and checking of the latest design amendment drawings by the MTRCL. In the second stage, MTRCL will open up part of the platform slabs in the East West Corridor (“EWC”) and the North South Corridor (“NSC”) to verify the details of the rebar connections and whether the couplers and rebars have been properly connected. In the third stage, MTRCL will consolidate the test results of the first two stages and conduct a detailed structural analysis to ascertain the acceptability of the entire structure and determine the need of strengthening works.

The opening-up at the second stage has two purposes: (i) in respect of areas where information is incomplete, conduct physical inspection by opening

up of concrete to verify the as-constructed conditions of the platform slab and diaphragm wall connections at the Hung Hom Station Extension . (This involves opening-up 24 locations at platform slab in the EWC for inspection); and (ii) in view of the allegations on rebar cutting, MTRCL has to open up certain connections between the slabs and diaphragm walls for detailed inspection and to verify the quality of the coupler connections by non-destructive tests. In accordance with the results of random selection, MTRCL opens up 28 locations each at the platform slabs in the EWC and NSC, i.e., a total of 56 locations allowing the exposure of at least 168 steel bars or couplers for inspection. Depending on the circumstances, more samples may be needed.

The Government considers that inspections by opening up shall be conducted in a stringent, fair and safe manner to ensure reliability of the results. Therefore, the Government has invited an expert team from the Department of Statistics and Actuarial Science of the University of Hong Kong to conduct random sampling of the opening up locations. Random sampling involves firstly random selection of 56 locations at platform slabs, and then random selection of a particular layer of rebar by opening up, based on the latest drawings provided by MTRCL and depending on the number of layers of steel bars in the slab. As each opening-up location is about 400 mm wide, a group of three steel bars can be exposed for examination. This is cluster sampling, commonly used in statistics.

Termination of the use of Phased Array Ultrasonic Test

The Phased Array Ultrasonic Test (“PAUT”) is an effective, non-destructive test which can preserve the steel bars and serve better than the irreversible, destructive method by cutting off and unscrewing the steel bars for direct measurement. It would also minimize the impact on the overall structural integrity of the Hung Hom Station Extension Works.

Given the discovery of a large difference between the measurements of embedded length by the PAUT and direct measurement through cutting of rebars and couplers, the Government requested the MTRCL to investigate into the underlying reasons. The MTRCL and its technical team have already investigated the incident, carried out an in-depth study, enhanced the PAUT to improve its accuracy and reliability, and conducted validation on the enhanced PAUT. The enhanced PAUT has been repeatedly examined and validated in laboratories and on-site by the MTRCL. Validation results reveal that, in comparison with the enhanced PAUT results, direct measurements of embedded length of all samples of threaded rebars and couplers fall within the allowable tolerance of 3mm.

On 14 March 2019, the Government accepted the MTRCL's proposal on the enhanced PAUT to continue the opening-up investigation under the second stage of the holistic assessment strategy. The MTRCL resumed testing on 15 March 2019, and as of 25 April 2019, tested 186 couplers by the enhanced PAUT. The test results were uploaded to the Highways Department's website

(https://www.hyd.gov.hk/en/road_and_railway/railway_projects/scl/index.html) for the SCL project for public reference.

3. Consolidated response to the motions stipulated in LegCo paper no. CB(4)527/18-19(05) and CB(4)527/18-19(06)

Expansion of the terms of reference of the Commission of Inquiry

On 19 February 2019, the Chief Executive in Council approved the expansion of the terms of reference of the Commission of Inquiry under the chairmanship of Mr Michael Hartmann to ascertain the relevant facts and to recommend appropriate improvement measures in relation to the recently revealed violations at the North Approach Tunnels, South Approach Tunnels and Hung Hom Stabling Sidings under the SCL Works Contract No. 1112. In view of the expanded scope of the inquiry, the Chief Executive in Council has approved a further extension of time for the Commission of Inquiry to submit its report to the Chief Executive by 30 August 2019, or such time as the Chief Executive in Council may allow.

Continuation of the work under Holistic Assessment Strategy

The Commission of Inquiry's Interim Report was released on 26 March 2019. It pointed out that the diaphragm wall and platform slab construction works at the Hung Hom Station Extension were safe. We will seriously consider and follow up the recommendations of the Commission of Inquiry to promote public safety and assurance on the quality of the works for railway projects. Since MTRCL has failed to submit comprehensive as-constructed records and working drawings used during construction of the Hung Hom Station Extension, and in view of other quality problems of the works, MTRCL is obliged and has agreed to complete the three-stage holistic assessment strategy to enhance safety. MTRCL will submit the relevant report to the Commission of Inquiry before the Commission completes its works. The Government will urge the MTRCL to expedite the test under the second stage and the structural analysis under the third stage based on the tests results to review the

objective data and results of analysis. Throughout the process, the Government will carry out stringent checking.

Investigation into other stations

Regarding other major stations, the Government has commenced a three-tier audit. Firstly, the Government has already asked MTRCL to conduct an internal audit on major works under other stations, including whether site records are complete and whether design drawings have been amended in accordance with established procedures. Secondly, HyD and its Monitoring and Verification Consultant will conduct audits on other stations under the supervision of the Expert Adviser Team of Transport and Housing Bureau. The first stage of HyD's audit covers To Kwa Wan Station and Diamond Hill Station and will focus on the quality control of works and supervision records to review structural safety and make suggestions. Depending on the results of the audits, we will adjust the scope of the audits for the remaining stations. Finally, for the purpose of vetting, MTRCL must submit to the Government relevant completion certificates, record drawings, test reports on construction materials and certificates.

Yours sincerely,

[Chinese version signed]

(PANG Ka-yu)

for Secretary for Transport and Housing

c.c.:
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