政府總部
運輸及房屋局
運輸科
香港添馬添美道2號
政府總部東翼

Transport and
Housing Bureau
Government Secretariat
Transport Branch
East Wing, Central Government Offices,
2 Tim Mei Avenue,
Tamar, Hong Kong

本局檔號 Our Ref. THB(T) CR /10/1016/99
來函檔號 Your Ref.

Council Business Division
Legislative Council Secretariat
Legislative Council Complex
1 Legislative Council Road, Central
Hong Kong
(Attn.: Ms. Sophie LAU)

17 March 2020

Dear Ms. LAU,

Panel on Transport
Subcommittee on Matters Relating to Railways
Meeting on 3 March 2020
Supplementary information on "Funding application for increase in approved project estimate for the main works of Shatin to Central Link"

Thank you for the Legislative Council Secretariat's email dated 3 March 2020. We provide for Members' reference the following supplementary information on the follow-up actions in relation to the "Funding application for increase in approved project estimate for the main works of Shatin to Central Link ('SCL')" raised at the meeting of the Subcommittee on Matters Relating to Railways held on the same day.

Breakdown of additional cost of about $4,043.5 million arising from the implementation of additional measures to address site constraints under 61TR

2. With a total length of 17 km, the SCL involved a huge amount of underground excavation and construction works at various locations of Hong Kong, Kowloon and the New Territories, and through areas such as urban areas with high-

rises, the Victoria Harbour, and country parks, which involved conditions with complicated strata, geology, and ground water levels. During the design stage, the MTR Corporation Limited ("MTRCL") engaged a specialist contractor on ground investigation to conduct a detailed survey (i.e. PWP Item No. 51TR), and conducted professional assessment on the strata and geological conditions along the SCL. The Geotechnical Baseline Report ("GBR") was developed and incorporated into the tenders as the referenced geotechnical baseline for both parties in the tendering process. The establishment of the GBR can prevent tenderers from translating the risks on ground condition into higher cost estimates and reflecting in the tender prices. In the event that the actual ground conditions deviate from the baseline condition, the GBR can be used as a reference for assessing claims.

3. Nevertheless, the actual geological conditions encountered by the contractors during construction could be rather different from the survey results obtained during the investigation stage. Meanwhile, quite a number of railway sections and facilities are located under roads, public utilities and buildings. As these facilities should remain open for public use during the investigation stage, the extent of ground investigation was limited. The contractors could only conduct detailed ground investigation after the relocation and demolition of the existing facilities, and modify the design when the actual ground conditions were revealed.

4. Furthermore, the SCL passes through a number of developed districts with complicated underground facilities within the sites. During construction, the contractors had to conduct additional works to cope with underground situations unanticipated during the design stage, such as the presence of abandoned or more than expected underground utilities, etc.

5. Even if substantial resources were devoted or the whole SCL project was postponed so as to conduct additional advance site investigation, the relevant underground conditions would still have to be handled during construction and reflected in the project cost estimate. After balancing the pros and cons, the Highways Department ("HyD") and MTRCL have adopted a more prudent and practical approach to take forward the SCL project, i.e. setting out the geological risks to be borne by the contractors in the GBR incorporated in the tenders, and lodging an application for additional funding only when necessary in the light of the actual ground conditions deviating from the baseline conditions.

6. For the aforementioned cost increase of about $4,043.5 million arising

from the implementation of additional measures to address site constraints under 61TR, it includes costs for additional works, design modifications, recovery measures and subsequent works due to delay, etc. The details provided by HyD regarding the respective railway sections are tabulated below:

Railway section	**Examples in which additional cost is incurred**	**Amount**
1. Shatin to Diamond Hill Section and the affected existing railway facilities	In the works of Lion Rock railway tunnels (near Hin Keng), since the actual rock strength was lower than expected, additional bracing and high pressure grouting were required to stabilise the stratum. In the tunneling works of Ma Chai Hang to Diamond Hill Section (near Wong Tai Sin area), stratum with unexpectedly high clay-content was encountered, thus requiring higher frequencies of maintenance and replacement of cutter head components for the Tunnel Boring Machine ("TBM").	$990.7 million
2. Diamond Hill to Kai Tak Section	For the Diamond Hill Station Extension, the unevenness of rock strata was greater than expected, thus leading to difficulties in excavation and requiring some deeper vertical diaphragm walls. In the tunneling works of Diamond Hill to Kai Tak Section, the numbers of underground obstacles (e.g. old piles, abandoned foundations, etc.) encountered were higher than expected, thus requiring adjustment of construction sequence and replacement of cutter head components for the TBM.	$982 million

	In the excavation works of Kai Tak Station and the connected tunnels, the number of underground boulders encountered was higher than expected, thus leading to difficulties in excavation and requiring additional resources to handle.	
3. Kai Tak to To Kwa Wan Section	For Sung Wong Toi Station and To Kwa Wan Station, the underground rock layer was deeper than expected and there were more boulders. In addition to difficulties in excavation, deeper piles, vertical partitioned walls and lateral supporting walls were required. Uncharted underground utilities were found in the vicinity of Sung Wong Toi Station and To Kwa Wan Station. Some of the underground utilities in the area had been used for a certain period of time. Their structural conditions were not satisfactory, thus requiring additional relocation and replacement of the utilities.	$469 million
4. To Kwa Wan to Hung Hom Section and Cross Harbour Tunnel	In the tunnel construction of Ho Man Tin Station and Hung Hum Station, boulders, abandoned steel piles, underground utilities which were uncharted or with mismatched alignments were encountered, thus requiring modification of construction sequence and additional removal and relocation of the relevant utilities. In the excavation works of Causeway Bay Typhoon Shelter and the seabed of	$1,020.3 million

	Victoria Harbour, boulder clusters and hard objects were found in the seabed, thus leading to difficulties in excavation and requiring additional resources to handle.	
5. Wan Chai North to Admiralty Section	In the excavation works of Exhibition Centre Station, three unexploded ordnances of the Second World War were unearthed. Additional immediate precautionary measures were required to ensure the safety of the public and the staff. Also, underground utilities which were uncharted or with mismatched alignments were found in the site areas, thus requiring additional removal, relocation or diversion of the relevant utilities.	$717.4 million

7. As the aforementioned additional estimates involve ongoing contracts and unresolved claims, in order not to affect the future processing of claims from contractors, it is inappropriate for us to disclose details of individual items at this stage.

Yours sincerely,

(Kenny C.M. OR)
for Secretary for Transport and Housing

c.c.

Director of Highways (Attn.: Mr Robert CHAN) (Fax no.: 2714 8176)
MTR Corporation Limited (Attn.: Mr Lam CHAN) (Fax no.: 2795 9991)