A. Introduction

The Audit Commission ("Audit") conducted a review of the implementation of the construction works of the Tuen Mun - Chek Lap Kok Link ("TM-CLKL") and traffic management of TM-CLKL.

2. Hon Louis LOONG Hon-biu declared that he was a Legislative Council ("LegCo") Member representing the Real Estate and Construction Functional Constituency, and contractors in the sector might have carried out the projects concerned.

Background

3. In November 2011 and June 2013, the Finance Committee of LegCo approved a total funding of $46,708 million for the construction of TM-CLKL ("the TM-CLKL project"). The Highways Department ("HyD") was the works agent responsible for implementing the TM-CLKL project. A consultancy agreement was awarded to Consultant X in November 2011 for the design and construction supervision work of the TM-CLKL project; and eight interrelated works contracts (Contracts A to H) were awarded between June 2013 and June 2022. The TM-CLKL project commenced in June 2013, and was substantially completed by December 2024. The Transport and Logistics Bureau ("TLB") estimated that the total expenditure of the TM-CLKL project would be maintained at about $42,200 million, i.e. about 90% of the approved project estimate of $46,708 million.

4. TM-CLKL provides a strategic link connecting the North West New Territories to North Lantau, the Hong Kong International Airport and the Hong Kong-Zhuhai-Macao Bridge ("HZMB"). TM-CLKL includes the Southern Connection (mainly a sea viaduct between North Lantau and the Hong Kong Port ("HKP"), which is a reclaimed artificial island) and the Northern Connection (mainly the Tuen Mun-Chek Lap Kok Tunnel ("TM-CLKT")). The whole section of TM-CLKL was fully commissioned in December 2020. In September 2020, the Transport Department ("TD") awarded the first management, operation and maintenance ("MOM") agreement for TM-CLKT through open tender to Operator A at a fixed lump sum management fee of $298.6 million for four years from 27 December 2020 to 26 December 2024.

Public hearings

5. The Committee held two public hearings on 20 December 2024 and 10 January 2025 to receive evidence. The opening statement made by **Ms CHAN Mable, Secretary for Transport and Logistics**, at the first public hearing is in *Appendix 17*.

Contract expenditure

6. According to paragraph 1.6 of the Director of Audit's Report No. 83 ("the Audit Report"), HyD awarded a consultancy agreement to Consultant X in November 2011 for the design and construction supervision work of the TM-CLKL project. As of August 2024, the consultancy fee paid to Consultant X was $253.6 million. The Committee asked HyD to advise on how the consultancy fee was estimated. **Mr Tony YAU Kwok-ting, Director of Highways** explained at the public hearings, and **Secretary for Transport and Logistics** supplemented in her letter dated 8 January 2025 (*Appendix 18*) that the consultancy fee for the TM-CLKL project was estimated mainly on the basis of the scale and complexity of the project, as well as the estimated number of man-months of professional and technical staff required for completing the relevant design and contract administration works. The consultancy fees relating to the design and contract administration of the TM-CLKL project under the funding approved by the Finance Committee of LegCo in 2011 and 2013 were $61.5 million (in September 2011 prices) and $90.5 million (in September 2012 prices) respectively. The aforesaid fees were about $70.9 million and $122 million in money-of-the-day prices, totalling $193 million. As of December 2024, the consultancy fee paid by HyD was $253.6 million. This amount did not include the management fees and remuneration of the resident site staff, and the fees for the Environmental Project Office and independent environmental chequer services. The actual consultancy fee paid for design and contract administration was higher than the original estimate, mainly due to the additional reference design and detailed design arising from the interfacing issues with the reclamation works of HKP of HZMB.

7. Referring to Table 3 in paragraph 1.8 of the Audit Report about the expenditures of the eight works contracts under the TM-CLKL project, the Committee asked the Administration to explain the factors to be considered in determining the provisions for price adjustments and contingencies in public works contracts, and was concerned whether the provisions for price adjustments would be used to cover additional expenditure incurred in works projects as a result of variation orders issued by consultant or claims by contractors when the project costs and contingencies were insufficient. **Secretary for Transport and Logistics**, **Director of Highways** and

Ms Sabrina LAW Chung, Deputy Secretary for Financial Services and the Treasury (Treasury)3 responded at the public hearings, and **Secretary for Financial Services and the Treasury** further explained in his replies dated 8 and 22 January 2025 (*Appendices 19* and *20*) that:

- the cost of a public works contract mainly comprised the construction cost of works items, provision for contingency and provision for price adjustment. The provision for contingency catered for additional costs arising from unforeseen circumstances (costs of variation orders such as those incurred by worse-than-expected ground conditions, additional works to meet local concerns, etc.). The project team would determine the required amount of contingency having regard to the uniqueness of a project and the risk it faced. The provision for price adjustment was to cope with fluctuations in the costs of labour and materials during the contract period, which helped eliminate uncertainties arising from fluctuations in construction price, so as to lower the risk cost in contractors' bids. The project team would also estimate the project cost for each year within the construction period, and work out the provision for price adjustment required for the contract based on the Government Economist's forecasts on the trend rate of change in prices of public sector building and construction output for the relevant contract period. However, the actual expenditure on price adjustment for each year would depend on the actual annual contract payments during the construction period, and would be adjusted with reference to the index figures of the costs of labour and materials provided by the Census and Statistics Department every month; and

- in the course of implementing public works projects, unforeseen circumstances might arise within the scope of the project, and any additional costs so incurred were generally met by project contingency and savings in construction costs. Only when there was a surplus in the provision for price adjustment, and it was not possible to deploy other resources within the works project, could Controlling Officers use such surplus in the provision for price adjustment to cover such additional costs. Under the existing mechanism, Controlling Officers could deploy resources to cope with unforeseen circumstances in implementing works projects, subject to the approved project estimates and in compliance with the above conditions. Controlling Officers must ensure proper use of funds under their control, having regard to economy, efficiency and effectiveness in the delivery of public service and the use of the public funds. The Financial Services and the Treasury Bureau ("FSTB") considered the current arrangement

reasonable, and would continue to review and enhance the control and monitoring of costs for public works projects together with the Development Bureau ("DEVB").

8. Regarding the provisions for price fluctuation adjustments and contingencies in the works contracts for the TM-CLKL project, **Secretary for Transport and Logistics** supplemented in her letters dated 8 January and 7 February 2025 (*Appendices 18* and *21*) that the provisions for price adjustments in the works contracts for the TM-CLKL project were basically used to cover additional contractual expenditure arising from price increases in labour and materials. However, as other expenditure under the contracts (e.g. additional expenditure arising from the interfacing issues with the reclamation works of HKP of HZMB and the contractors' claims) exceeded expectation and the contingency provisions in the contracts were insufficient, HyD used the surplus in the provisions for price adjustments to cover the additional expenditure arising from unforeseen circumstances under the works contracts. For the eight works contracts under the TM-CLKL project, as of August 2024, except Contracts E, F and G, the provision for price adjustment in the other contracts had been used to cover the additional costs arising from unforeseen circumstances. Details were set out in the letter from the Secretary for Transport and Logistics dated 7 February 2025.

9. The Committee further enquired about the measures in place to optimize the project cost estimate, strengthen cost control and monitor the expenditures of public works projects. **Secretary for Transport and Logistics** and **Deputy Secretary for Financial Services and the Treasury (Treasury)3** responded at the public hearings, and **Secretary for Development** supplemented in her letter dated 23 January 2025 (*Appendix 22*) that:

- DEVB established the Project Cost Management Office in 2016 and upgraded it to become the Project Strategy and Governance Office ("PSGO") in 2019. PSGO would track the development of projects from their inception to completion, including detailed design and funding application stages, by starting the project vetting process from the outset and conducting regular reviews and follow-up actions. Since 2018, public works had deployed the Project Surveillance System to monitor the performance of projects on a continuous basis and provide predictive analyses for forecasting the costs and time performances of ongoing projects. The Government had also since September 2020 adopted parallel tendering, under which the Government would first commence tendering exercise for a works project in order to reflect the

returned tender price in its funding application, thereby providing LegCo with a more accurate construction cost estimate which would reduce the risk of cost overrun; and

- PSGO (and formerly the Project Cost Management Office) had since July 2017 played an independent third party role to examine major variations of public works contracts involving $1.4 million or above. The project team had to provide explanation for the major variations and analyse their implications on the works contract, including construction costs, construction period and operating expenses. PSGO would review the variations based on their cost-effectiveness and provide independent advice to the Controlling Officers after such review. Controlling Officers would then decide whether to issue the variation orders by taking into account PSGO's views and the funding availability of works projects.

10. According to paragraph 1.9(d) of the Audit Report, HyD estimated that the increase in total expenditures of Contracts A to H (net of the inflation costs absorbed in variations) was about $7,387.3 million, which was about 22.6% of the total original contract sum of $32,691.3 million. However, with such substantial increase, the project cost was still within the total approved project estimate of $46,708 million for the TM-CLKL project. The Committee asked HyD to explain whether the above circumstances suggested inaccurate estimation of the cost of the TM-CLKL project at that time. **Secretary for Transport and Logistics** and **Director of Highways** responded at the public hearings, and **Secretary for Transport and Logistics** further explained in her letter dated 8 January 2025 (*Appendix 18*) that:

- the estimate of the Government in seeking funding approval from the Finance Committee of LegCo for the construction works of the TM-CLKL project in 2013 was prepared by HyD and the professional staff of Consultant X in accordance with the established mechanism, objective data and professional analyses. HyD had also set up a designated committee in accordance with the guidelines to monitor and review the estimate of the TM-CLKL project. Due to unforeseen factors encountered in the course of implementing the project, the actual expenditure differed from the estimate; and

- the Government issued internal guidelines in September 2020 which stipulated that, unless exempted by the relevant approving authority, the Government must adopt parallel tendering arrangement for the procurement of all works contracts and works-related consultancy

services funded by the Capital Works Reserve Fund, i.e. to commence the works tender invitation or consultant selection exercises prior to or in parallel to securing funding. The works or consultancy would only commence after funding was obtained from LegCo. At present, one of the main objectives of adopting parallel tendering arrangement was to reflect the returned tender prices as far as practicable in the approved project estimates so as to enhance their accuracy.

11. The Committee further enquired whether the Administration had adopted other measures (such as the use of technology), apart from parallel tendering, to achieve more accurate estimation of project costs, and how it ensured that the consultants engaged could be effective in assessing the project costs. **Secretary for Transport and Logistics** and **Director of Highways** advised at the public hearings, and **Secretary for Transport and Logistics** supplemented in her letter dated 8 January 2025 (*Appendix 18*) that HyD now required public works projects to make extensive use of Building Information Modelling ("BIM") technology from the early planning and design stages of the projects, and to make use of relevant software to assist in the preparation of bills of quantities for works contracts to enhance the accuracy of quantity surveying. HyD was also exploring the use of new technologies for site investigation, such as geophysical survey technology, to better capture the geological conditions and estimate the associated project costs. According to the guidelines in the Project Administration Handbook for Civil Engineering Works, the consultants were required to assign professionals from another independent team within the firm to conduct reviews on the cost-significant items in the bills of quantities prepared by the consultants. The consultants were also required to make reference to the contract price databases of DEVB and HyD to enhance the accuracy of their cost estimates. HyD would also conduct spot-checking on those cost-significant items as appropriate, and conduct quarterly assessments on the consultants' work, including their performance in cost estimate and preparation of tender documents, the results of which would affect the consultants' chances of winning future tenders for the government consultancy agreements.

B. Administration of Contracts A and B

12. According to Note 12 in paragraph 2.2 of the Audit Report, for the 27 days of delay without extensions of time granted by HyD, liquidated damages of $95.8 million in total were imposed and deducted from the payment to Contractor A. The Committee asked HyD to explain how the above damages were calculated. **Director of Highways** advised at the public hearings, and **Secretary for Transport and Logistics** further explained in her letter dated 8 January 2025 (*Appendix 18*) that

in preparing the contract terms for Contract A, Consultant X had specified the latest completion dates for different stages and parts of the relevant works and assessed the potential loss to the Government in the event that the contractor failed to complete the relevant stage or part of the works as scheduled, including additional costs for works supervision, additional sum payable in respect of further price increase, and delay in receiving the return on invested capital, in accordance with the guidelines in the Environment, Transport and Works Bureau Technical Circular (Works) No. 4/2003. The amount of such loss was calculated on a daily basis and specified in the contract as liquidated damages. According to Consultant X's assessment, after taking into account the extensions of time granted for different stages and parts of the works, Contractor A was still liable for delays in certain stages and parts of the works under Contract A and was required to pay liquidated damages of $95.8 million in total.

13. According to paragraphs 2.3 and 2.4 of the Audit Report, there were contractual disputes between HyD and Contractor A, mainly involving claims arising from delays caused by the reclamation works of HKP and the fresh watermain diversion works. Subsequently, the Government made an additional payment to Contractor A under the dispute resolution mechanism specified in the contract. The Committee queried whether the aforesaid incident reflected that Consultant X had made an incorrect estimation of Contractor A's claims, and enquired about the roles and responsibilities of Consultant X under the resolution mechanism. **Director of Highways** responded at the public hearings, and **Secretary for Transport and Logistics** further explained in her letter dated 8 January 2025 (*Appendix 18*) that the contractual disputes between HyD and Contractor A mainly involved interfacing issues with the reclamation contract for HKP and the claims related to the fresh watermain diversion works, and so on. When handling Contractor A's claims, Consultant X made an assessment of costs which the consultant considered reasonable based on the information submitted by the contractor at that time and other site records. If the contractor was not satisfied with the consultant's final assessment, the contractor might lodge a dispute with the Government in accordance with the contractual mechanism. In the course of dispute resolution, the contractor submitted additional information to the Government in support of its claims. HyD also engaged an independent expert to vet the information submitted by the contractor and sought legal advice on the justifications for the disputed issues, the possible arbitration or litigation risks, the estimated legal costs, etc., and recommended to the approving authority the most advantageous option for the Government. The Government's additional payment to Contractor A under the dispute resolution mechanism specified in the contract, taking into consideration the above information and opinion, did not reflect that Consultant X had not reasonably assessed Contractor A's claims. Under the resolution mechanism, the consultant would provide the Government with factual records of the issues in

dispute to assist the Government's expert and legal team in understanding the details of various issues in dispute.

14. According to paragraph 2.5 of the Audit Report, the works under Contract B were substantially completed in June 2020. However, as of August 2024, the account of Contract B had not been finalized. The Committee enquired about the reasons for the account not yet being finalized more than four years after the completion of the works and when the finalization of the account was expected to be completed, as well as the estimated final contract sum of Contract B. **Director of Highways** advised at the public hearings, and **Secretary for Transport and Logistics** supplemented in her letter dated 8 January 2025 (*Appendix 18*) that the account of Contract B had not been finalized more than four years after the completion of the works mainly because at the drafting stage of the Audit Report, the sealing-off works for the tunnel emergency access hatches carried out by Contractor B were just completed in September 2024, and Contractor B was now proceeding with the remaining handover procedures, including updating the operation and maintenance manuals for the service gallery. Based on the latest progress, Consultant X was expected to issue the Certificate of Completion for Maintenance Works to Contractor B and complete the contract finalization in the first half of 2025. The final contract sum for Contract B was expected to be similar to the current latest contract expenditure (i.e. $21,370 million).

15. Regarding the incident of lateral movements of seawall of HKP mentioned in paragraph 2.7(b) and Note 19 of the Audit Report, the Committee asked HyD to explain the cause of the incident and why the Government did not take any substantive follow-up action until 2016 even though it had already noticed the larger-than-expected movement of seawall in 2014. The Committee also enquired whether there was adequate communication regarding the handover issues between the works of Contracts A and B and the HKP reclamation works beforehand, and what lesson HyD had learnt from this incident in the management of public works contracts. **Director of Highways** responded at the public hearings, and **Secretary for Transport and Logistics** further explained in her letter dated 8 January 2025 (*Appendix 18*) that:

- to minimize the environmental impacts of reclamation, HyD, along with the consultant for the reclamation works of HKP of HZMB ("the Reclamation Consultant") decided to adopt the non-dredged method for seawall construction, which was the first of its kind in Hong Kong. Compared with the conventional construction method, the new method could avoid dredging and dumping of large amount of silt, minimize backfilling materials, and reduce marine traffic volume and the amount of suspended solid in the sea during construction. In designing the

non-dredged reclamation, the Reclamation Consultant had taken into account the anticipated settlement and lateral movements of the reclaimed land during the course of the works. HyD appointed an independent overseas expert in 2010 (i.e. before the reclamation contract was tendered) to review the design of the Reclamation Consultant, and the works commenced only after the expert had confirmed that the relevant design was appropriate;

- in October 2014, the seawall of the artificial island of HKP of HZMB experienced a larger-than-expected lateral movement. HyD had immediately investigated the cause of the incident in conjunction with the Reclamation Consultant and contractors. It had also worked with Consultant X to review the impact of the aforesaid movement of seawall on the TM-CLKL project, and had taken follow-up actions which included:

  (a) Contract A: due to the delay in the reclamation works, Contractor A only started to enter and take over the site in phases from July 2015 to July 2016. Consultant X issued several variation orders from July to November 2015, instructing Contractor A to install additional monitoring equipment and carry out ground investigation to verify the actual conditions of the reclamation site and underground soil layers at that time, and providing the necessary information to enable Contractor A to review the design of the foundation of viaduct and structure; and

  (b) Contract B: Contractor B was arranged to carry out drilling at the seawall locations of the artificial island in early 2015. Based on the drilling results, two overseas experts recommended that the tunnel alignment be lowered by 10 metres ("m") to ensure construction safety. Consultant X issued the relevant variation order in September 2015, instructing Contractor B to lower the alignment of the sub-sea tunnel;

- since the non-dredged seawall construction method was the first of its kind in Hong Kong and neither the Reclamation Consultant nor the overseas expert engaged by HyD could envisage the larger-than-expected lateral movement of the top of seawall at that time, Consultant X proceeded with the reference design for Contract A and Contract B on the basis that there would be no significant seawall movement; and

- both the HKP of HZMB and TM-CLKL projects were complex and large-scale infrastructure projects for which the respective critical parts had to be completed within a tight schedule in order to meet the commissioning target of HZMB. For similar projects in the future, HyD would minimize the interfaces between works contracts as far as practicable, including exploring the possibility of using the same contractor to carry out the design and construction of the reclamation and subsequent works, etc., so as to minimize interfacing issues between contracts. In addition, HyD would also adopt the "New Engineering Contract" ("NEC") approach under which the building of partnering relationship between the contracting parties would be fostered through the contract terms of mutual trust and collaboration, as well as the mechanisms such as early warnings and compensation matters specified in the contract. With the risk jointly managed by the contracting parties, the project management performance and its cost-effectiveness would be enhanced as a result.

16. According to paragraphs 2.12(a) and (b) of the Audit Report, before tendering of Contract A, based on the as-built records, HyD estimated that the length of the watermain to be diverted was about 270 m. However, after commencement of Contract A, taking into account the actual site conditions, the actual length of the watermain to be diverted was measured to be about 422 m, which was 56% longer than the estimated length. The Committee requested HyD to explain why the estimated length of the watermain to be diverted as set out in Contract A was based solely on the as-built records without detailed site investigation being conducted at the planning stage. **Director of Highways** advised at the public hearings, and **Secretary for Transport and Logistics** further explained in her letter dated 8 January 2025 (*Appendix 18*) that in recommending the need for excavation of trench pits, the engineering consultant would take into account the as-built records provided by the utility undertaking, the adequacy of underground space in the vicinity of the construction locations, the impact on the traffic due to excavation of trench pits, as well as the cost-effectiveness of excavating trench pits, and so on. In general, at the reference design stage, the engineering consultant would only recommend the excavation of trench pits at some critical locations to ascertain the feasibility of the construction works and to ensure that there would be sufficient space to carry out the necessary construction works. Since the watermain in question was located at Cheung Tung Road on Lantau Island and the underground space in the vicinity of the construction locations was relatively sufficient according to the as-built records provided by the utility undertaking, Consultant X considered that the watermain would not affect the feasibility of the construction works under Contract A and therefore did not excavate any trench pits at the reference design stage. With the advancement of

technology, HyD was exploring more extensive use of non-excavation techniques (e.g. ground-penetrating radar, etc.) in future projects to assist in confirming the actual location of underground pipelines and the length of pipelines that needed to be diverted.

17. According to paragraph 2.14 of the Audit Report, the above watermain diversion works were carried out between April 2015 and March 2017, but the relevant variation order (with a total amount of $9.4 million) was only issued in July 2018 retrospectively after completion of the works. HyD advised that it had been preparing the variation order with Consultant X since 2015. The Committee requested HyD to explain why the relevant variation order could only be issued more than three years after the commencement of the works, and also asked whether HyD had established any mechanism or procedure to allow contractors to commence works before the formal issuance of a variation order under special circumstances. **Secretary for Transport and Logistics** and **Director of Highways** responded at the public hearings, and **Secretary for Transport and Logistics** further explained in her letters dated 8 January and 7 February 2025 (*Appendices 18* and *21*) that:

- HyD, Consultant X and representatives of Contractor A discussed the arrangements for and details of the relevant watermain diversion works in a number of works progress meetings since 2014, and written meeting minutes were formally issued after each meeting. All parties involved in the meetings at that time, including HyD, the resident site staff and the contractor, agreed that the diversion works needed to be carried out first due to the tight construction programme, so all stakeholders were fully aware of the variation and the progress of the relevant works. As some details of the watermain diversion works, including suspension of water supply and temporary water supply arrangements required for the connection of the watermain, had to be adjusted according to the actual situation, HyD and Consultant X arranged to issue the written variation order after the completion of the entire watermain diversion works to reflect all the variations involved in the process; and

- HyD did not establish any mechanism or procedure that allowed contractors to commence works before the issuance of formal variation orders under special circumstances. TLB and HyD considered that it was not a common practice to commence works before the issuance of formal variation orders, and such practice was not desirable. HyD had reminded its consultants and staff again to strictly comply with the contractual terms relating to the issuance of variation orders in writing and the relevant guidelines in the Project Administration Handbook for

Civil Engineering Works. In addition, NEC introduced an early warning mechanism to encourage the client's representatives and contractors to identify and raise potential risks that might affect the project at an early stage, and to jointly negotiate and formulate the optimal solution for the smooth implementation of the project according to the prescribed framework and time frames in the contract.

18. The Committee further enquired about the responsibilities of HyD and Consultant X in the tendering exercise for the TM-CLKL project, as well as HyD's considerations and approval procedures for the issuance of variation orders by Consultant X in respect of the proposed variations in the TM-CLKL project. **Director of Highways** explained at the public hearings, and **Secretary for Transport and Logistics** added in her letter dated 8 January 2025 (*Appendix 18*) that in the tendering exercise for the TM-CLKL project, Consultant X was mainly responsible for preparing cost estimates and tender documents (including applicable contract terms, construction specifications, bills of quantities and drawings for the construction works, etc.) for each works contract based on its reference design or detailed design; while HyD was mainly responsible for checking the above-mentioned work of Consultant X, evaluating the tender submissions, recommending the successful contractors to the Tender Board and awarding the works contracts to the relevant contractors for commencing the construction works. When Consultant X considered that some of the works needed to be varied to suit the actual site conditions, Consultant X first had to estimate the scope and cost of works associated with the proposed variation order. If the estimated cost of the variation order exceeded a certain limit, Consultant X had to obtain prior approval from HyD before issuing the variation order. In vetting and approving the variation orders, the HyD's approving officers would take into account factors such as the justifications for the proposed variation orders, the impact on the progress of works, the cost-effectiveness of the proposed variations, etc., and would record and notify Consultant X in writing of the relevant approval results.

19. Secretary for Transport and Logistics mentioned in her reply dated 8 January 2025 that prior to 21 August 2020, the issuance of variation orders exceeding $300,000 required prior approval from the relevant works departments. The relevant limits were subsequently increased to $800,000 and $1 million in August 2020 and October 2023 respectively in accordance with the guidelines issued by DEVB. The Committee enquired about the reasons behind the above adjustment, and whether variation orders not requiring prior approval should still be reported to the relevant works departments before issuance. **Director of Highways** explained at the public hearings, and **Secretary for Transport and Logistics** added in her letter dated 7 February 2025 (*Appendix 21*) that:

- under the original mechanism, engineering consultants could issue variation orders of $300,000 or less without any prior notice to the relevant works departments. However, engineering consultants were required to submit a copy of each variation order they issued to the works departments and reported all variation orders issued in their monthly progress reports. The works departments would follow up with the engineering consultants immediately if they had any queries; and

- in the 2020 review of the management system of public works consultants, DEVB found that the threshold for authorizing consultants to issue variation orders had not been updated in accordance with the trend movements of tender prices for various types of works since its formulation in 1990s. Hence, the threshold was adjusted upward from the then $300,000 to $800,000 after taking into account factors such as the increase in the Building Works Tender Price Index compiled by the Architectural Services Department, the Civil Engineering Works Index compiled by the Civil Engineering and Development Department, and the Construction Cost Index compiled by HyD over the same period. This helped to streamline the management process and reduce the time required for administrative vetting and approval, so that necessary variation to and adjustment of works could be implemented in a timely manner, thereby speeding up the delivery of the projects and achieving the Government's objective of enhancing speed and efficiency. The above-mentioned limit was updated to $1 million in 2023 in a subsequent review. DEVB issued guidelines to works departments in 2024 requiring them to conduct random checks on not less than 5% of the variations orders that did not require prior approval by the works departments in every six months during the construction period to ensure that the justifications for issuing the variation orders were adequate and the associated cost estimates were reasonable.

20. According to paragraph 2.17 of the Audit Report, during the design stage, Contractor A contended that when circulating various design submissions to Consultant X and relevant stakeholders for comments, such submitted designs were approved by Consultant X beyond the prescribed time frames due to the later-than-expected responses from some stakeholders. Contractor A therefore submitted a claim for additional design fees. The Committee enquired whether Consultant X had played a coordinating role during the consultation process, how much time the relevant stakeholders were given to respond, and what measures would be taken to ensure that consultants and the relevant stakeholders would respond to contractors on matters relating to the design of the project in a timely manner. **Director of Highways**

advised at the public hearings and **Secretary for Transport and Logistics** supplemented in her letter dated 8 January 2025 (*Appendix 18*) that:

- when vetting Contractor A's designs, Consultant X must ensure that the design complied with the basic technical requirements of Contract A. At the same time, Consultant X must also take into account the comments of relevant stakeholders (including other government departments and utility undertakings) on the design. Given the numerous design items involved in the project, some of the more complex designs might need to be adjusted several times in response to stakeholders' comments before a proposal acceptable to all stakeholders could be formulated, resulting in a longer overall preparation time than that expected by Contractor A. For some of the more complex designs, Consultant X had convened design review meetings with the contractor and relevant stakeholders to enhance the efficiency of the approval process;

- Contract A did not specify the response time by which the relevant stakeholders should respond to Contractor A. However, based on the Project Design Plan drawn up by Contractor A, it was anticipated that the relevant stakeholders could respond to the first circulation of the design documents within three weeks and the re-circulation of the revised design documents within two weeks. The review time required by the relevant stakeholders depended not only on the complexity of the design but also on other factors (including the quality of the design submitted and other workload of the relevant stakeholders). Since Contract A was a "design and build" contract, the contractor had to bear reasonable risks associated with the approval of the design; and

- to enhance the efficiency of design submission and approval in the future, HyD was exploring the enhancement of the existing electronic platform to allow contractors, consultants and stakeholders to submit and respond to design documents through electronic means so as to minimize the time required for circulation of documents. The platform could also provide notification to alert the relevant stakeholders on a regular basis to address outstanding design responses and to notify HyD and consultants for early intervention in complex cases.

21. According to paragraphs 2.18 and 2.19 of the Audit Report, after the commencement of Contract A, Contractor A found that the actual rockhead levels at various piling works locations were deeper than the envisaged levels in the

Geotechnical Baseline Report. Between February 2014 and July 2015, Contractor A submitted 31 claims for additional payments in connection with the deviation in sub-surface conditions for piling works. Consultant X certified an additional payment of $52.2 million to Contractor A for these claims. Paragraphs 2.23(d)(ii) and 2.24 of the Audit Report mentioned that HyD agreed to explore new technologies and digital tools for conducting more thorough ground investigations in implementing works contracts involving piling works. The Committee enquired about the relevant details and progress. **Secretary for Transport and Logistics** advised in her letter dated 7 February 2025 (*Appendix 21*) that HyD would proactively utilize geophysical survey techniques when taking forward future works projects. Such techniques could detect changes or anomalies in the geological conditions between drillholes, thus helping project teams to better understand the geological conditions and carry out design work.

22. According to paragraphs 2.25 and 2.26 of the Audit Report, Contractor B was required to carry out reclamation works in Tuen Mun under Contract B. After carrying out further pre-construction ground investigation, Contractor B estimated that the required quantity of rock fill material was about 850 000 cubic metres ("m^3"), which was about 90% more than the quantity of 441 400 m^3 specified in Contract B. Due to the substantial increase in quantity of rock fill material and the need for Contractor B to procure from non-local market, there was an increase in cost by more than two times from $160/$m^3$ to $456/$m^3$. Contractor B submitted a claim for additional payment attributable to the substantial increase in quantity of rock fill material, and Consultant X certified a sum of $115.8 million for the claim. The Committee asked HyD to explain why there was such a serious miscalculation in the quantity of rock fill material and whether this involved professional negligence; whether Consultant X's estimation of the quantity of rock fill material had been checked by HyD before tendering, and what measures would be taken in the future to ensure a more accurate estimation of the materials required for the works. In addition, regarding additional project expenditures arising from this type of cost-significant variation orders and fluctuation of material prices, the Committee enquired whether consideration would be given to establishing an approval mechanism. **Secretary for Transport and Logistics** and **Director of Highways** responded at the public hearings, and **Secretary for Transport and Logistics** further explained in her letters dated 8 January and 7 February 2025 (*Appendices 18* and *21*) that:

- Consultant X had carried out ground investigation in accordance with the guidelines in the Port Works Design Manual during the design stage, but the geological data obtained might not fully reflect the geological conditions of the whole site. Consultant X also specified in the contract documents of Contract B that Contractor B was required to carry out more closely spaced ground investigation after the commencement of

the contract so as to verify the depth of excavation as well as the quantity of rock fill materials required for the construction of the seawall. As Consultant X had already carried out a certain amount of ground investigation in accordance with the guidelines in the Port Works Design Manual during the detailed design stage and assessed the quantity of rock fill material according to the investigation results, HyD considered that Consultant X's recommendations at that time did not involve professional negligence;

- HyD had checked the tender documents (including the drawings and bills of quantities) in accordance with the Project Administration Handbook for Civil Engineering Works before tendering. Based on the ground investigation information at the design stage and the depth of seawall excavation recommended by Consultant X, HyD considered that there were no irregularities in the relevant drawings and bills of quantities. After the commencement of the contract, Contractor B carried out additional ground investigation as required under the contract. Consultant X subsequently worked out the depth of seawall excavation based on the latest ground investigation information and the actual quantity of rock fill material required was larger than the estimate made before tendering. The above situation was not due to any omission in checking of tender documents;

- HyD had reminded its staff and consultants to carry out more ground investigation when taking forward projects involving reclamation, especially in areas with more geological variations, so as to estimate the quantity of fill material required for reclamation as accurately as possible. HyD would also explore the use of geophysical surveys and sonar scanning techniques with a view to capturing geological and seabed information more cost-effectively; and

- the additional cost relating to the procurement of rock fill was incurred as a result of contractual claims, and the total cost of the entire TM-CLK Link project did not exceed the approved project estimate. Under the current mechanism, HyD would manage various works contracts in accordance with the Project Administration Handbook for Civil Engineering Works and other applicable guidelines after the public works projects had obtained funding approval from the Finance Committee of LegCo. Relevant clauses and mechanisms were already included in standard engineering contracts to handle claims that might arise from substantial increases in quantity of works.

23. According to Note 30 in paragraph 2.26 of the Audit Report, HyD gave a "poor" performance rating in the aspect of cost estimates and quality of tender documents/drawings in Consultant X's quarterly performance assessment report from October to December 2013. Given that the quantity of rock fill material specified in Contract B was estimated by Consultant X, the Committee enquired whether, apart from reflecting Consultant X's dereliction of duty in the performance appraisal report, HyD had established a penalty mechanism in the consultancy agreement, e.g. deduction of consultancy fees due to poor performance. **Secretary for Transport and Logistics** and **Director of Highways** responded at the public hearings, and **Secretary for Transport and Logistics** supplemented in her letters dated 8 January and 7 February 2025 (*Appendices 18* and *21*) that:

- notwithstanding the fact that Consultant X had carried out ground investigation according to the guidelines in the Port Works Design Manual and required Contractor B to carry out more closely spaced ground investigation in Contract B to confirm the excavation depth of the seawall and the quantity of rock fill material required, HyD considered that Consultant X could have exercised better professional judgment in arranging for more ground investigation at an earlier stage so as to assess the quantity of rock fill material more accurately. In view of the above considerations, HyD gave a "poor" performance rating to Consultant X in the aspect of cost estimates and quality of tender documents/drawings in its performance report for that quarter. The relevant assessment results would have a bearing on Consultant X's chances of winning tenders for government consultancy agreements within the three years following the issuance of the relevant assessment report. Apart from reflecting Consultant X's performance in the performance assessment report, the consultancy agreement did not include other penalty mechanism such as deduction of consultancy fees for poor performance; and

- it was not appropriate to introduce penalties in consultancy agreements for public works projects so as to deduct the consultancy fee in the event of unsatisfactory performance. It was because the amount of deduction involved could not simply be linked to the performance of the consultants but should be commensurate with the actual loss incurred by the Government. Exercising such penalties might also give rise to disputes and jeopardize the effective implementation of the consultancy agreements. Moreover, the penalty might increase the risk premium in the consultants' tender price, thereby further increasing the overall project cost. It would therefore be more appropriate for the Government to claim compensation from the consultants in accordance

with the legal mechanism when the consultants were found to be professionally negligent in performing their services resulting in loss to the Government. The relevant mechanism had been clearly stipulated in the existing consultancy agreements for public works projects.

24. The Committee further enquired whether Consultant X had participated in tenders for government consultancy agreements within the three years following the issuance of the relevant assessment report and how its bids had fared, and what measures were in place to hold consultants accountable for poor performance. **Secretary for Transport and Logistics** advised in her letter dated 7 February 2025 (*Appendix 21*) that:

- consultancy agreements for public works projects mainly adopted a "two-envelope" tender evaluation approach whereby tenderers were required to submit a technical proposal and a fee proposal at the same time. In assessing the technical proposals, works departments would examine the consultants' job experience, understanding of the projects, proposed manpower inputs, and past performance (including performance reports), etc. In the subsequent assessment of fee proposals, works departments would use the pre-tender estimate of the consultancy fee as the basis to examine whether the consultants' tender prices were reasonable and whether they were commensurate with the proposed manpower inputs. Works departments would calculate a combined score based on the weighting stipulated in the tender documents. Normally, the tenderers with the highest combined score would be awarded the consultancy; and

- Consultant X had participated in tenders for government consultancy agreements within the three years after the issuance of the relevant assessment report and was awarded tenders during the period. The past performance of Consultant X had been reflected in the combined score during tender evaluation. Apart from reflecting the consultant's performance in the performance assessment report, if a report or document submitted by the consultant failed to meet the requirements of the consultancy agreement, the consultant would not be paid for that part of the consultancy fee until the relevant report or document was accepted by HyD.

25. The Committee enquired about the procurement procedures for sourcing additional rock fill material at that time, the considerations for the supplementary procurement price, and the mechanisms and processes for monitoring reclamation works by the works departments. **Director of Highways** and **Mr Patrick NG Wai-hong, Project Manager/Major Works, HyD** explained at the public hearings, and **Secretary for Transport and Logistics** supplemented in her letter dated 8 January 2025 (*Appendix 18*) that:

- between late 2013 and 2014, a number of reclamation projects (including HKP of HZMB, HZMB Hong Kong Link Road and the TM-CLKL project) were underway. As a result, there was a shortage of local rock fill supply at that time. Therefore, Contractor B needed to procure additional rock fill material (about 400 000 m^3) from the Mainland. Shortly thereafter, the transportation cost for procuring rock fill from the Mainland increased significantly, for which Contractor B submitted a claim. Consultant X assessed the additional cost of procuring the rock fill based on the prevailing market conditions and the contractor's quotation, and, as required by the contract, consulted HyD in the process. HyD considered Consultant X's assessment of the relevant claim reasonable; and

- Regarding the mechanisms and processes for the monitoring of the reclamation works under the TM-CLKL project, before commencing reclamation works, Contractor B was required to submit information on the proposed suppliers and specifications of the rock fill material for Consultant X's review. Upon Consultant X's preliminary approval, Consultant X would visit the quarry concerned together with the contractor to inspect and check the rock fill material to ensure its compliance with the contract requirements. During transportation of the rock fill material, Consultant X and Contractor B would use the global positioning system to monitor the transportation time and route of the barges. When the rock fill material was delivered to the reclamation site, Consultant X would board the barge to re-inspect the rock fill material before unloading and collect samples of the rock fill material according to the contract requirements for testing at the Public Works Laboratories to ensure that the rock fill material delivered to the reclamation site would comply with the contract requirements. Consultant X would also monitor the whole unloading process and conduct joint surveys with Contractor B to confirm the quantity of rock fill material used in the works. The relevant survey records would be signed by both Consultant X and Contractor B and submitted to HyD for record.

26. According to paragraphs 2.27 to 2.29 of the Audit Report, when the tender documents for Contract B were circulated to the New Territories Regional Office of HyD, which was responsible for the maintenance of civil works of TM-CLKT, in August 2012, the office did not provide comment on the thermal barrier in tunnel. It was only after Contract B commenced that the office expressed concerns about the spray type thermal barrier specified in Contract B. In the end, Consultant X issued two variation orders under Contract B at a total additional cost of $328.7 million to change the thermal barrier from spray type to board type. The Committee requested HyD to explain why the office did not provide comment early, and whether the additional costs incurred included the removal of the spray type thermal barrier.

27. **Director of Highways** responded at the public hearings, and **Secretary for Transport and Logistics** further explained in her letter dated 8 January 2025 (*Appendix 18*) that when reviewing Contract B's tender documents in 2012, the New Territories Regional Office of HyD did not provide comment at that time, taking into account the fact that both the spray type and board type thermal barriers were both acceptable designs, and that spray type thermal barrier had been applied in the Mainland and overseas. Subsequently, in 2014, fire accidents occurred in some road tunnels in the Mainland where spray type thermal barriers had been used. The repair work involved the removal of coating, inspection of the structure and re-application of the spray type thermal barriers, which was more complicated than expected and required a long period of time which affected the tunnel operation and resulted in higher repair costs. However, the repair of board type thermal barriers was quicker and had less impact on tunnel operation and other electrical and mechanical equipment. By making reference to the experience of the relevant cases and taking into account that TM-CLKT was an extremely important strategic road, the New Territories Regional Office of HyD expressed concerns about the use of spray type thermal barrier in the tunnel in late 2015. Consultant X subsequently recommended that the thermal barrier in the tunnel should be changed to board type to make the long-term inspection, maintenance and repair work more efficient and cost-effective. After obtaining approval from HyD, Consultant X issued the relevant variation order in November 2016. At that time, Contractor B had not yet procured or installed the spray type thermal barriers and therefore the relevant variation order did not result in any unnecessary additional work.

28. According to paragraph 2.33 of the Audit Report, on 28 June and 29 July 2021, significant flooding incidents occurred at the southern portal of TM-CLKT, which caused disruption to tunnel traffic for about three hours and about an hour respectively. Paragraphs 2.42(b)(iii) and 2.43 of the Audit Report mentioned that HyD had agreed to continue to enhance the design of the road drainage system in

response to climate change in implementing tunnel works projects. The Committee enquired about the relevant details and progress. **Secretary for Transport and Logistics** advised in her letter dated 7 February 2025 (*Appendix 21*) that HyD issued new design guidelines in 2023 which stipulated that the drainage system of tunnels must have additional capacity to cope with severe rainstorms due to extreme weather conditions and projected climate change by the end of the 21st century. HyD staff and consultants were required to follow the relevant guidelines in designing the tunnel drainage systems when taking forward works projects.

29. According to paragraphs 2.36 to 2.40 of the Audit Report, with the offer of a lump sum saving of $12 million, Contractor B proposed to the Government the construction of a service gallery underneath the entire length of the carriageway along TM-CLKT and the provision of 45 emergency access hatches along the tunnel carriageway as supplementary evacuation/rescue routes. The above facilities were new designs and being used for the first time in a tunnel in Hong Kong. After the commissioning of TM-CLKT in December 2020, the emergency access hatches continued to malfunction (e.g. accidental opening of access hatch covers) despite rectification works were carried out by Contractor B. In October 2023, the relevant parties decided to seal off all emergency access hatches and the works were subsequently completed in September 2024. The Committee enquired whether HyD had conducted any feasibility study on the aforementioned new designs before accepting Contractor B's proposal, and whether any investigation into the incidents was conducted. Given that the Government had strengthened the monitoring system for the emergency access hatches at a cost of $8.8 million in the light of such incidents, the Committee also questioned whether the cost should be borne by Contractor B. **Director of Highways** responded at the public hearings, and **Secretary for Transport and Logistics** further explained in her letter dated 8 January 2025 (*Appendix 18*) that:

- TM-CLKT is the first sub-sea tunnel in Hong Kong constructed using tunnel boring machine method. Compared with the conventional rectangular immersed tube construction method, the circular tunnel constructed using tunnel boring machine provided additional space underneath the carriageway. Contractor B therefore proposed in the detailed design stage to provide a service gallery underneath the carriageway to make better use of the space at the bottom part of the tunnel and reduce the time required to close the carriageway for routine inspections and maintenance, and also offered a lump sum saving of $12 million to the Government for the relevant proposal. As a result of the proposal, some of the electrical and mechanical equipment originally planned to be placed inside the tunnel would be placed in the service gallery underneath the carriageway instead. As the change might

slightly increase the cost of subsequent electrical and mechanical works contracts to be tendered (e.g. installation of additional airlocks, fans, firefighting equipment and intercoms, etc.), Consultant X had reviewed and confirmed that the aforementioned cost savings would be sufficient to offset the costs that the Government would incur for installing additional equipment in the subsequent electrical and mechanical works contract. Taking into account the above considerations, the Government adopted the new facility proposed by Contractor B;

- the entire proposal for the service gallery (including the emergency access hatches and covers) was put forward by Contractor B at the detailed design stage and relevant government departments (including the Fire Services Department and the Electrical and Mechanical Services Department ("EMSD"), etc.) were consulted to ensure that the proposal complied with the relevant statutory requirements and technical standards. Although this was the first time in Hong Kong that emergency access hatches and covers were provided on carriageway, similar design had been used in pedestrian walkways, cycle tracks and airports in Germany, Belgium and Spain with no adverse incidents reported. After reviewing the proposal and considering responses from various government departments, Consultant X decided to approve the detailed design;

- HyD and Consultant X conducted an investigation after the incidents involving the emergency access hatch covers. The results indicated that although the design of the emergency access hatch covers could withstand vehicle loads, the high density and speed of heavy vehicles travelling on the roads in Hong Kong had resulted in the damage or displacement of the components of the covers, or even their accidental opening due to negative air pressure. After the incidents of the emergency access hatch covers, Contractor B carried out remedial works to all emergency access hatch covers and borne all the costs of associated works; and

- HyD and Consultant X considered it necessary to improve the monitoring equipment in the tunnel and service gallery so that the staff responsible for tunnel management and operation could remotely monitor the real-time situation of all emergency access hatch covers from the control centre for prompt response. After completion of the improvement works, the relevant monitoring equipment effectively assisted the tunnel management and operation, and enabled real-time transmission of the situation of the emergency access hatch covers to the

control centre. Since the improvement of the above monitoring equipment was to facilitate the tunnel management and operation and was not part of the rectification works, the associated costs were borne by HyD.

C. Other contract management issues

30. According to paragraphs 3.2 and 3.3 of the Audit Report, the works under Contract C included the toll plaza and associated works for the Northern Connection of TM-CLKL. Contract C commenced in July 2014 and was completed in September 2019 (see Table 2 in paragraph 1.7 of the Audit Report), with the final contract sum nearing $3.1 billion. However, the 2019 Policy Address announced the initiative of waiving the tolls for TM-CLKT, which rendered the toll plaza and associated facilities of the tunnel immediately obsolete. The Committee enquired about the amount involved in the relevant part of the works. **Director of Highways** responded at the public hearings, and **Secretary for Transport and Logistics** added in her letter dated 8 January 2025 (*Appendix 18*) that the total amount involved in the works for the toll plaza and associated facilities was about $78.95 million, of which about $40.7 million was the cost of demolition works.

31. Regarding the unforeseeable adverse ground conditions encountered for the slope and retaining wall works under Contract C mentioned in paragraphs 3.4 and 3.5 of the Audit Report, the Committee asked why the actual ground conditions were so different from those envisaged at the design stage, and whether there were any new measures or techniques at present that could increase the accuracy of the estimates. **Director of Highways** explained at the public hearings, and **Secretary for Transport and Logistics** added in her letter dated 7 February 2025 (*Appendix 21*) that due to the inherent complexity and variability of the geology, the actual conditions encountered at the construction stage might differ significantly from the ground conditions anticipated at the design stage. Regarding the relevant slope works, Consultant X had made reference to the past ground investigation information and carried out ground investigation in accordance with the relevant guidelines on ground investigation in the area of the proposed slope. As regards the retaining wall works, since Lung Mun Road adjacent to the retaining wall was a single-lane one-way carriageway, it was not feasible to close the road section to carry out ground investigation during the design stage. As such, Consultant X had made reference to the drillhole data in the vicinity of about 15 m away during the design stage. The subsequent discovery of soil joints, lateral joints, longitudinal joints and soft soil layers during the construction of slope and retaining wall was unforeseeable. HyD would proactively utilize the geophysical survey techniques to enhance the accuracy of the ground investigation when taking forward works projects.

32. The Committee further enquired why the actual time and cost implications of the variation order issued for replacing the existing fill below the base of the retaining wall with concrete were more than the estimated potential delay and prolongation cost (i.e. the delay was extended from the original 3.5 months to 273 days, and the prolongation cost was increased from about $13.6 million to $31.5 million). **Secretary for Transport and Logistics** explained in her letter dated 7 February 2025 (*Appendix 21*) that the longer-than-expected delay caused by the relevant variation order was due to the fact that the contractor had to take a longer time to deal with a group of telecommunication ducts during the construction of the retaining wall. Consultant X and the contractor had consulted the relevant telecommunications company on the group of telecommunications ducts prior to the issuance of the variation order. At that time, the telecommunications company was of the view that the section of ducts could be diverted to make room for the construction of the retaining wall. Subsequently, based on a site inspection, the telecommunications company indicated that the diversion works would take more than two years to complete. In order to avoid further delay in the works, the contractor had to provide additional temporary protection and supports so as to support and avoid damage to the group of telecommunications ducts. Such arrangements, coupled with the need to accommodate the relevant ducts and work in a more confined environment, had significantly affected the efficiency of the contractor's work and excavation. In addition, the extended construction period due to the above situation straddled the rainy season which further affected the works.

33. According to paragraphs 3.7 and 3.8 of the Audit Report, after completion of Contract C in September 2019, dislocation of covers of several sewerage manholes and cut-off drains in carriageways occurred in the period between May 2021 and February 2023. Eventually, Consultant X issued three variation orders (valued at a total additional cost of $3 million) to carry out the modification works to prevent dislocation of manhole and drain covers. The Committee asked what lessons HyD had learnt from the above incidents. **Secretary for Transport and Logistics** explained in her letter dated 7 February 2025 (*Appendix 21*) that the above-mentioned incidents were caused by the manhole covers being driven over by more frequent, high-speed and heavy vehicles than expected. HyD would explore the possibility of further upgrading the manhole covers for road sections where frequent, high-speed and heavy vehicles were expected to drive over from the original E600 class (with a capacity of 60 tonnes) to F900 class (with a capacity of 90 tonnes), which was generally applicable to airport runways and was equipped with tightening screws so as to prevent the covers from dislocation. In addition, HyD updated the standard drawings applicable to transverse drains in July 2023 which included the use of thickened drain covers and the provision of more tightening screws to prevent cover dislocation.

34. Referring to paragraphs 3.10 and 3.11 of the Audit Report, the Committee asked HyD to explain why, apart from changing the approved type of thermal barrier in TM-CLKT (see paragraphs 2.27 to 2.29 of the Audit Report), the New Territories Regional Office of HyD had only provided its comments on the change to a design for easier manual dismantling after the final design of the Vitreous Enamel panel walls had been approved, and such design changes involved the issuance of a variation order at a cost of $5.5 million. **Director of Highways** responded at the public hearings, and **Secretary for Transport and Logistics** further explained in her letter dated 7 February 2025 (*Appendix 21*) that Consultant X circulated the tender documents for Contract B and Contract D in 2012 and 2016 respectively. At that time, there was no guideline specifying the type of thermal barrier and that tunnel fittings should be dismantled manually as far as practicable to facilitate inspection and maintenance in the long run. Subsequently, after the commencement of the relevant works contract, the New Territories Regional Office of HyD proposed the use of board type thermal barrier and the split of Vitreous Enamel panel into two rows to enhance the cost-effectiveness of the maintenance work and to avoid disruption to traffic as part of the tunnel tubes needed to be closed for the works. Given that the relevant fittings had yet to be installed before the above changes were made, it did not result in any unnecessary additional works and expenditure. HyD issued new design guidelines in 2023 which required the use of board type thermal barrier in general and tunnel fittings should be dismantled manually as far as practicable, to enable more efficient and cost-effective inspection, maintenance and repair works in the long run.

35. Regarding the omissions and discrepancies of information in the tender documents for Contract D mentioned in paragraph 3.13 of the Audit Report, the Committee requested HyD to explain that, for the vehicular access to be constructed under Contract D, why its concrete paving, drainage and the associated emergency vehicular access signage were not specified in the contract drawings, resulting in the subsequent need to issue a variation order valued at $5.5 million for carrying out the related works, and whether this involved negligence of Consultant X or the relevant staff of HyD. In addition, regarding the 10 instructions issued for clarifying the details of works (involving a total additional cost of $92.6 million) in respect of the discrepancies among contract documents under Contract D (such as drawings and Particular Specifications), the Committee queried whether Consultant X was liable for the above events as Consultant X was responsible for the preparation of the tender documents (including the construction specifications and drawings, etc.). **Director of Highways** responded at the public hearings, and **Secretary for Transport and Logistics** further explained in her letter dated 7 February 2025 (*Appendix 21*) that:

- Consultant X and HyD had checked the tender documents in accordance with the requirements of the relevant guidelines before tendering

Contract D, which involved more than 6 000 pages of documents and 1 800 drawings. This was an isolated omission, and the relevant variation order amounted to about 0.2% of the original contract sum of $2.59 billion, and did not involve any unnecessary additional works. HyD considered that the overall performance of Consultant X in preparing the tender documents was not unacceptable;

- of the 10 instructions for clarifying the details of works, 7 were issued to clarify the construction details due to the need to tie in with the latest situation of other "design-and-build" contracts or updated guidelines on design standards, and the amount involved was about $91.9 million (about 3.55% of the original contract sum of $2.59 billion). The above seven instructions were not caused by Consultant X's omission in preparing the tender documents. The remaining three instructions involved isolated omissions in the preparation of the tender documents by Consultant X and amounted to about $0.7 million (about 0.03% of the original contract sum of $2.59 billion). HyD would holistically review the performance of Consultant X and reflect this in its final performance assessment report as appropriate; and

- HyD updated its internal guidelines in 2018 to explicitly require its staff to scrutinize the tender documents submitted by the engineering consultants, which included spot checking of tender documents, bills of quantities and drawings. HyD and its consultants also made extensive use of the BIM technology in the production of drawings to ensure that the details of sections/elevations/layout plans/reinforcement in all drawings were compatible with each other and to minimize human errors.

36. According to paragraph 3.16 of the Audit Report, Consultant X issued two variation orders under Contract D valued at $3.9 million and $2.6 million respectively for the introduction of the BIM technology and the Smart Fire System Mobile Application to enhance the operational efficiency and fire safety of TM-CLKL. The Committee enquired why the decision to adopt the above technologies was made after the commencement of the works, and what the benefits of the two technologies were. **Director of Highways** explained at the public hearings, and **Secretary for Transport and Logistics** supplemented in her letter dated 7 February 2025 (*Appendix 21*) that as the BIM technology and the Smart Fire System Mobile Application were not widely adopted in the market when the relevant contracts were tendered in 2017, Consultant X did not make the adoption of the relevant technologies a requirement for the contractor in the tender document. Subsequently, in response

to the new guidelines issued in 2019, HyD was required to conduct road safety audits for newly constructed roads. As some of the road works had not yet been completed at the time, the project team proposed to use the BIM technology to produce drive-through simulation videos, so that the road safety auditor could make recommendations on traffic signs and road markings, etc. based on the simulation videos at an early stage. The videos would also help provide clear driving information to the public before the commissioning of TM-CLKL, and they had been uploaded onto TD's website for public viewing and accumulated over 150 000 views so far. The Smart Fire System Mobile Application could automatically notify the tunnel frontline staff of the location of the fire signal through the mobile application when the tunnel fire service installations detected the high temperature warning or fire signal, thus enhancing the speed of response. By allowing the tunnel staff to follow up on the high temperature warning signal immediately, it could help reduce the need for operation of fire engine/ambulance due to false fire alarms so as to better utilize rescue resources. HyD would proactively incorporate suitable new technologies into the tender documents when planning future works projects.

37. With regard to the two fatal accidents at the construction sites of Contracts A and B mentioned in paragraph 3.23 of the Audit Report, the Committee enquired why the summonses against Contractor B and its subcontractor in respect of the fatal accidents were dismissed after trial. In respect of the above two fatal accidents, Contractor A and its subcontractor were convicted and fined, and therefore the performance assessment reports of Contractors A and B were respectively given "very poor" and "poor" ratings in the site safety aspect by HyD. The Committee asked whether HyD had imposed other penalties on the two contractors, such as banning them from participating in tenders. **Director of Highways** explained at the public hearings, and **Secretary for Transport and Logistics** supplemented in her letter dated 7 February 2025 (*Appendix 21*) that regarding the summonses against Contractor B and its subcontractor, the court dismissed the relevant prosecution after trial, having regard to the relevant circumstances of the case. Regarding the safety performance of the contractors, HyD would monitor and follow up site safety matters in accordance with the Construction Site Safety Manual ("CSSM") and the relevant technical circulars and guidelines in taking forward public works projects. In case of poor safety performance of a contractor or even a fatal accident, HyD would handle the matter in accordance with the Contractor Management Handbook and relevant technical circulars, such as suspending the contractor from tendering. For the case of Contractor A, following the fatal industrial accident, a "very poor" performance rating was reflected in the site safety aspect in Contractor A's performance report for that quarter. Its overall performance was also rated as "adverse". However, given that Contractor A's performance (including site safety aspect) improved in the following

quarter and its overall performance was rated as "not adverse", it was not required to disqualify Contractor A from tendering under the mechanism.

38. The Committee noted that according to Note 39 in paragraph 3.2 of the Audit Report, Contractor A and Contractor D were the same company. The Committee asked why Contractor A could still be awarded Contract D in 2018 even though it was given a "very poor" performance rating by HyD in 2016 due to the aforesaid fatal site accident, and whether HyD had taken into account Contractor A's past performance in assessing Contract D's tender documents. **Director of Highways** responded at the public hearings, and **Secretary for Transport and Logistics** further explained in her letter dated 7 February 2025 (*Appendix 21*) that tender evaluation of public works contracts comprised two parts. First, tenderers' technical competence and past performance (including performance reports) were assessed, followed by considering their tender prices. After summation of the technical and price scores, the tender with the highest overall score would be recommended for acceptance. To protect public interest, the financial capability of the tenderer with the highest overall score and the reasonableness of its bid would also be assessed by the works departments, so as to ensure that the successful tenderer was fully capable of completing the works in accordance with the terms of the contract. For tenders with unreasonably low prices, even if they obtained the highest overall scores, they would not be recommended for acceptance. In assessing the tenders for Contract D, HyD had evaluated the technical competence and past performance of the tenderers and their submitted tender prices in accordance with the above evaluation mechanism. Contractor A's performance in site safety of public works projects in the past three years (including the "very poor" performance rating given by HyD in 2016) had also been reflected in the combined scores in the relevant tender assessment. Apart from Contract D, Contractor A was also awarded other public works contracts in these three years.

39. According to paragraph 3.24 of the Audit Report, in the period from the contract commencement dates of the respective contracts to August 2024, 173 non-fatal reportable accidents happened at the construction sites of Contracts A to F and H. According to CSSM, the contractors were required to report the reportable accidents and submit the related reports to Consultant X in a timely manner. However, Consultant X had not compiled the relevant management information on accidents reported by contractors. The Committee was concerned about how HyD could accurately capture the information on the reportable site accidents to ensure effective monitoring of site safety. **Director of Highways** explained at the public hearings and **Secretary for Transport and Logistics** added in her letter dated 7 February 2025 (*Appendix 21*) that:

- Consultant X had kept information on each of the accident, but needed to take time to check the relevant information to verify whether the contractors had reported the accidents on time in accordance with CSSM. Consultant X and HyD could have better compiled management information to facilitate easy access to the relevant records at any time. HyD would develop standardized computer reports and provide guidelines to require consultants managing works contracts to prepare relevant accident management information, including the time sequence of the contractors' reporting of accidents and records of whether the contractors had delayed the reporting of accidents, etc.; and

- according to the guidelines provided in CSSM, if HyD/consultants were aware of any omission/late reporting of accidents by the contractors, they must request the contractors to provide information and accident report forms within three months for inclusion of the accidents in the statistics, or to provide sufficient evidence to prove that the cases concerned were not reportable accidents and should be withdrawn. Otherwise, HyD would take the initiative to include the accident cases in the statistics and assess the performance of the contractors in accordance with the relevant technical circulars.

40. According to paragraph 3.24 of the Audit Report, there were two and seven cases of late submissions of preliminary accident reports by Contractors A and B respectively, with delays ranging from 8 to 98 days. The Committee enquired about the details and follow-up actions concerned, and expressed concern as to whether the aforesaid delay in reporting site accidents by the contractors also contravened the regulation on reporting work injuries under the Employees' Compensation Ordinance (Cap. 282), in addition to violating the requirements stipulated in CSSM. **Director of Highways** responded at the public hearings, and **Secretary for Transport and Logistics** further explained in her letter dated 7 February 2025 (*Appendix 21*) that:

- under subsection (1A) of section 15 of the Employees' Compensation Ordinance, notice of any accident which resulted in the total or partial incapacity of the employee for a period exceeding 3 days immediately following the accident shall be given to the Commissioner for Labour by the employer not later than 14 days after the accident in the prescribed form to report work injuries. In addition, subsection (1B) of section 15 also provided that if the happening of such accident was not brought to the notice of the employer or did not otherwise come to his knowledge within such periods of 14 days referred to in subsection (1A), then such

notice shall be given not later than 14 days after the happening of the accident was first brought to the notice of the employer or otherwise came to his knowledge;

- according to CSSM, the contractor was required to immediately notify the consultant verbally of a fatal or serious injury accident and must submit a preliminary accident report to the consultant within 24 hours. In case of any other reportable accident (i.e. an accident resulting in incapacity for more than three days), the contractor was required to submit to the consultant a specified Injury Report Form within seven days. In the event of deliberate delay in reporting accidents by the contractor, the consultant would reflect it in the relevant sub-item in the contractor's quarterly performance assessment; and

- among the nine accidents, eight cases were minor or non-symptomatic accidents involving slip, finger bruise, foot injury, waist sprain, and so on. The remaining case involved fall of construction materials from a worktable causing injury to a worker. The late reporting of accidents to the consultants by contractors was mainly due to the failure of some injured workers or their employers to report the work injuries to the contractors in a timely manner, and the time taken by the contractors to verify whether the incidents were substantiated (in particular the relatively minor/non-symptomatic ones) or whether they were reportable accidents. However, the timing of the contractors' reporting of the nine site accidents to the Labour Department was in compliance with the requirements of the Employees' Compensation Ordinance mentioned above.

41. The Committee further enquired whether there was a delay in the reporting of fatal site accidents mentioned in paragraph 3.23 of the Audit Report to the Labour Department, and whether the requirements in CSSM were in full compliance with the relevant legislation in Hong Kong. Apart from the follow-up actions mentioned in paragraph 3.30 of the Audit Report, what measures HyD had put in place to enhance site safety (e.g. mechanism of removal from the list), strengthen the monitoring of the contractors' performance in site safety, and ensure that contractors comply with the relevant requirements for timely reporting of construction site accidents. **Director of Highways** responded at the public hearings, and **Secretary for Transport and Logistics** supplemented in her letter dated 7 February 2025 (*Appendix 21*) that the requirements set out in CSSM were in compliance with the relevant legislation in Hong Kong, and Contractor A and Contractor B had duly reported the fatal site accidents mentioned in paragraph 3.23 of the Audit Report in accordance with the

requirements set out in CSSM. According to the Technical Circular (Works) No. 5/2023 issued by the Development Bureau in July 2023, if a contractor on the approved list was involved in a serious accident, the contractor's tender eligibility in the relevant category of public works might be suspended with immediate effect. The regulatory action of tender suspension was not only applicable to future tenders, but also to works contracts for which the contractor had submitted a tender but had not yet been awarded. HyD would actively make use of the Smart Site Safety System to monitor the site conditions in real time to enhance management efficiency and help the project teams keep track of the construction situation, so as to identify potential risks and minimize accidents at an early stage.

42. Paragraph 3.27 of the Audit Report mentioned that for 16 out of 83 months of Contract B's contract period, the conditions for triggering the site safety monitoring procedure[1] were met and reports should be submitted by Contractor B in this regard to report on the problem areas in relation to site safety, actions taken/to be taken to improve the safety performance and ways to monitor the site safety improvement measures. However, Contractor B did not submit the required reports for 3 out of the 16 months. The Committee enquired how HyD monitored/evaluated the site safety improvement measures implemented by Contractor B in the event that the latter failed to submit the reports. **Secretary for Transport and Logistics** explained in her letter dated 7 February 2025 (*Appendix 21*) that the two-month moving average of the accident rate and three-month moving average of the accident rate under the site safety monitoring procedure were a warning mechanism, the main purpose of which was to require the contractors to conduct immediate reviews and take effective measures when the accident rate was on an upward trend, with a view to improving safety performance in the short term so as to bring down the accident rate. The reason for Contractor B's non-reporting of these three months was that it took time to investigate and confirm some of the "reportable" accidents. After the workers had reported or the contractor had completed their investigations, the accident statistics for certain months in the past had to be adjusted upward, resulting in the accident rate exceeding the limit. However, as the site environment had changed at that time and the two-month moving average of the accident rate and three-month moving average of the accident rate figures at that time were already below the maximum limits stipulated in the works contract, the contractor did not submit the supplementary reports. Notwithstanding the above, HyD and Consultant X still held safety review meetings

[1] According to the site safety monitoring procedure laid down in the contracts, the contractors were required to submit a report to Consultant X when: (a) there were two or more accidents in the previous two months and the two-month moving average of the accident rate (i.e. the number of reportable accidents per 100 000 man-hours worked) was higher than 0.6; and/or (b) there were three or more accidents in the previous two months and the three-month moving average of the accident rate was higher than 0.9.

with Contractor A and Contractor B respectively to review in detail all the "reportable" accidents and summarized the safety measures that needed to be improved and documented them in the safety review report for record purpose.

D. Operation and traffic management

43. According to paragraph 4.2 of the Audit's Report, in September 2020, TD awarded the first MOM agreement for TM-CLKT through open tender to Operator A at a fixed lump sum management fee of $298.6 million for four years from 27 December 2020 to 26 December 2024. A new agreement was awarded to the same operator in September 2024 at a fixed lump sum management fee of $553.6 million for six years. In other words, the average annual management fee had been increased by 24% from $74.65 million in the previous agreement to $92.27 million in the new agreement. The Committee enquired about the reason for the above increase, the criteria for tender evaluation and whether Operator A secured the new agreement by bidding with the lowest bid. **Ms Angela LEE Chung-yan, Commissioner for Transport** explained at the public hearings, and **Secretary for Transport and Logistics** supplemented in her letter dated 8 January 2025 (*Appendix 18*) that:

- the tendering exercise for the agreements for MOM for government tunnels was conducted in accordance with the Government's Stores and Procurement Regulations, by way of open tendering and on the principle of "open and fair competition", and in compliance with the tendering procedures and assessment criteria. Regarding the new agreement for MOM for TM-CLKT, TD stipulated in the relevant tender documents that the assessment would be divided into two parts, namely technical assessment and price assessment, which would account for 70% and 30% of the total score respectively. The tender assessment panel (comprising staff members from TD and EMSD) assessed the technical proposals submitted by the tenderers in accordance with the prescribed selection criteria and marking scheme, including the tenderers' capability in the MOM of the relevant traffic and transport facilities, etc., and assessed the price proposals by the tenderers which had passed the technical assessment. The tender assessment panel, after taking into account the total scores obtained by the tenders in both the technical and price assessments, recommended to the Central Tender Board the adoption of the tender with the highest total score. The operator of the new agreement for TM-CLKT was the tenderer with the highest total score among the tenderers and its bid price was the second lowest. TD awarded the new agreement of TM-CLKT after the Central Tender Board had approved the assessment results; and

- it was estimated that the increase in the management fee for the new agreement of TM-CLKT had already reflected factors such as rising operating costs and cumulative inflation in the past few years. Coupled with the continuous increase in traffic volume of TM-CLKT due to the development of HZMB, the Hong Kong International Airport and Tung Chung New Town, TD had increased under the new agreement 10 staff in total (representing an increase of 7% as compared with that in the first agreement) to carry out the duties of traffic control staff and maintenance staff at the tunnel entrances and exits to ensure the safe operation and operational efficiency of the tunnel. As the maintenance period of some tunnel facilities and equipment had expired, the tunnel operator needed to repair or replace the relevant facilities and equipment during the contract period of the new agreement of TM-CLKT, resulting in a corresponding increase in related maintenance expenses. Taking into account the above reasons, TD considered that the increase in management fee of the new agreement for TM-CLKT was reasonable.

44. According to paragraph 4.5 of the Audit Report, the actual number of designated ranks of staff employed by Operator A of TM-CLKT in the period from its commissioning in December 2020 to June 2024 was less than that specified in the MOM agreement, with a monthly staff shortfall ranging from 8 to 30 staff, representing 6% to 21% of the manning level of 140 staff. However, paragraph 4.7 of the Audit Report mentioned that TD found in a review in February 2024 that the traffic volume and associated operation and maintenance needs had increased. Therefore, the manning level in the new MOM agreement, which commenced in December 2024, would increase from 140 to 150. The Committee enquired about the measures put in place by TD to assist and ensure that Operator A could meet the requirements of the new agreement and recruit sufficient staff. **Commissioner for Transport** responded at the public hearings, and **Secretary for Transport and Logistics** supplemented in her letter dated 7 February 2025 (*Appendix 21*) that:

- the operator had organized a number of in-house training courses to enhance the capabilities of serving operators to take up suitable positions. The operator had co-organized a training course with the Hong Kong Institute of Vocational Education in August 2024 to recruit traffic officer trainees through the "Employment First, Training Later" scheme under the Employees Retraining Board ("ERB"). Upon completion of the course, students could be transferred to become traffic officers and officially join the tunnel management industry. The operator had liaised with ERB on the organization of the next training course as soon as possible in 2025. The operator would continue to

conduct staff recruitment publicity through various channels, including placing recruitment advertisements and participating in open recruitment events organized by the Labour Department or major recruitment media to attract newcomers to join the tunnel industry. The operator would also redeploy staff on leave to fill vacancies in designated ranks;

- TD had, where appropriate, allowed the operator to employ some applicants who did not have one year's experience in traffic control or public transport facility management to take up the post of assistant traffic officer, and had provided training for these staff. Upon completion of the training and passing the examination, they could become traffic officers. TD had also given approval for the operator to suitably employ applicants who did not hold a driving licence as traffic officers, starting from the effective date of the new agreement, and assign the applicants to non-driving positions in order to attract new recruits to the tunnel management industry and enhance the supply of manpower resources and recruitment efficiency. In the long run, TD would consider making good use of technology to reduce the manpower requirement, such as studying the installation of sensors on roadside and tunnel equipment to detect out-of-gauge vehicles and the condition of tunnel equipment, thereby reducing the frequency of manual inspections and patrols. TD would liaise with relevant technology companies and consider conducting trials of such technology in the tunnel environment; and

- TD had always been concerned about the manning level of the operator. In fact, the shortage of operation and maintenance staff had improved significantly from its peak. The operator had identified/recruited sufficient staff when the new agreement commenced. Apart from urging the operator to improve the working environment and remuneration, TD would continue to supervise the operator to continuously review their human resource plans and work with them to discuss coping strategies, make timely adjustments and take appropriate measures in the light of the actual circumstances to maintain the stability of its workforce and attract newcomers to join the tunnel management industry, thereby complying with the agreed staffing levels for various types of employees as stipulated in the agreement.

45. Regarding the seven issues that arose during recovery operations conducted by the heavy recovery vehicles ("HRVs") used in TM-CLKT between May 2021 and May 2024 as mentioned in paragraphs 4.15 and 4.16 of the Audit Report, the

Committee enquired why the causes were not ascertained until three years after experiencing a number of similar problems (i.e. September 2024), and requested details of the remedial measures. **Commissioner for Transport** advised at the public hearings, and **Secretary for Transport and Logistics** further explained in her letter dated 7 February 2025 (*Appendix 21*) that:

- TM-CLKT, with a total length of approximately 5 kilometres and a depth of about 60 m below sea level, was currently the longest and deepest road tunnel in Hong Kong. The depth and gradient of the tunnel would affect the stability of a vehicle's centre of gravity, especially when an accident occurred on a steeper section in the tunnel, where the vehicle's centre of gravity might become unstable due to the changes in gravitational force, resulting in the tilting up of front wheels. In addition, the weight of a towed vehicle was also a significant factor contributing to the tilting up of front wheels. If the weight of a towed vehicle exceeded the design load capacity of the recovery vehicle, it would cause the centre of gravity of the recovery vehicle to shift, further increasing the risk of losing stability. EMSD had assigned engineers to conduct professional and technical assessments to verify the performance of the recovery vehicles. The operator had also conducted rounds of on-site demonstrations to simulate the operation of HRVs under different conditions, including the stability, traction and safety of the recovery vehicle. As the entire process involved coordination among various parties, it took time to identify the causes of the problems and improvement solutions; and

- TD and EMSD were considering enhancing the axle load capacity of HRVs and converting the vehicle type concerned from heavy goods vehicles to special purpose vehicles. Subject to the advice/approval from HyD and EMSD, TD expected that the modification works could be completed within 2025. As HRVs were government vehicles, the relevant expenses involved in improving their load-bearing capacity would be borne by the Government. Since the details of the modification work were yet to be finalized, information on the related expenses was not available at this stage. EMSD had set up a hotline for operators to contact EMSD when encountering such situations, so that EMSD could provide technical assistance, analyse and investigate the incident as soon as possible.

46. The Committee further enquired whether the same model of HRVs was used in other tunnels, and whether similar problems had occurred; and whether TD had established appropriate specifications and requirements for the procurement of HRVs for tunnels in accordance with the design and conditions of different tunnels, as well as carried out field tests. **Commissioner for Transport** advised at the public hearings, and **Secretary for Transport and Logistics** supplemented in her letter dated 7 February 2025 (*Appendix 21*) that HRVs of the same type were also currently used in other government tunnels. Records showed that no similar problems had occurred with these HRVs during vehicle recovery operations. The procurement of HRVs was based on operational requirements. Tenders were scrutinized by the Government Logistics Department to ensure that the procurement procedures were in line with the Government's material supply and procurement requirements, and were conducted through open tender. The lifting appliances and lifting gears on each HRV were inspected, examined and tested by registered professional engineers, and certification documents were issued in accordance with the Factories and Industrial Undertakings (Lifting Appliances and Lifting Gear) Regulations (Cap. 59J). Before the delivery of HRVs, TD and EMSD would conduct testing and inspection of the vehicles and make appropriate adjustments to the vehicles if necessary to ensure that the vehicle specifications complied with the tender requirements, operational needs and relevant safety requirements. In the future planning and procurement of HRVs, TD and EMSD would place more emphasis on local conditions in order to formulate technical specifications and requirements that better suit the actual environment.

47. According to paragraph 4.17 of the Audit Report, although over-height vehicle detectors were provided by the Administration to the operator of TM-CLKT, no other equipment or technology was provided for auto-detection of other types of out-of-gauge vehicles (e.g. over-length). In paragraph 4.21(f) of the Audit Report, TD stated that it would explore additional measures to help the operator of TM-CLKT identify out-of-gauge vehicles passing through the tunnel. The Committee enquired about the progress. **Commissioner for Transport** advised at the public hearings, and **Secretary for Transport and Logistics** supplemented in her letter dated 7 February 2025 (*Appendix 21*) that to assist the operator of TM-CLKT in identifying out-of-gauge vehicles, TD and EMSD had approached the relevant technology companies. Their preliminary view was that it was generally feasible to install additional detectors for over-height, over-width, and over-length vehicles on the existing infrastructure, although further studies on the detection of overweight vehicles were needed. TD and EMSD would thoroughly consider the feasibility of using the relevant identification technology in the tunnel environment and conduct appropriate testing, with a view to enhancing the safety and operational efficiency of the tunnel.

48. According to paragraph 4.25 of the Audit Report, TD stated at a meeting of the Tuen Mun District Council in September 2020 that the commissioning of TM-CLKL would not have a significant impact on the traffic in Tuen Mun. According to the research by Consultant X, the congestion on the busier major road sections in Tuen Mun would remain manageable until 2026. However, as pointed out in paragraph 4.26 of the Audit Report, a traffic survey conducted by Consultant X under the project in 2021 after the commissioning of the Northern Connection of TM-CLKL in December 2020 showed that traffic flows at the relevant major road sections in Tuen Mun (including Wong Chu Road) had increased. Furthermore, the volume/capacity ("v/c") ratio of Wong Chu Road had exceeded 1.0 (i.e. indicating the onset of traffic congestion) since 2022 and increased to 1.17 in 2023.[2] The Committee enquired whether TD had conducted further studies or investigations on the traffic congestion situation in Tuen Mun, the current v/c ratio of Wong Chu Road, and the measures taken to improve traffic congestion in Tuen Mun. **Commissioner for Transport** responded at the public hearings, and **Secretary for Transport and Logistics** further explained in her letter dated 7 February 2025 (*Appendix 21*) that:

- in 2020, Consultant X conducted an assessment on the traffic condition of busier major roads in Tuen Mun and anticipated that the traffic condition would still be manageable till 2026, and TD agreed with the assessment at that time. Since then, TD had been monitoring the traffic situation in Tuen Mun. According to TD's observation, Tuen Mun Road (Town Centre Section) and Wong Chu Road were congested during peak hours on weekdays, with a v/c ratio of 1.17 in 2023. However, the overall traffic situation in Tuen Mun was still at a manageable level. As for the traffic data for 2024, they were still being compiled. To maintain the road traffic condition in Tuen Mun at a manageable level, TD formulated corresponding short-term traffic management measures, including arranging for the widening of junction on Ming Kum Road and Lung Mun Road. This enabled vehicles to smoothly travel between Tuen Mun Road (Fu Tei Section) and TM-CLKT using the route along Tsing Tin Road, Ming Kum Road, Tsing Wun Road and Lung Mun Road, thereby diverting traffic away from Tuen Mun Road (Town Centre Section) and Wong Chu Road;

[2] A v/c ratio is an indicator of the traffic condition of a road: (a) a v/c ratio equal to or less than 1.0 means that a road has sufficient capacity to cope with the anticipated volume of vehicular traffic and a v/c ratio above 1.0 indicates the onset of traffic congestion; (b) a v/c ratio between 1.0 and 1.2 indicates a manageable degree of congestion; and (c) a v/c ratio above 1.2 indicates more serious traffic congestion with traffic speeds deteriorating progressively when there is further increase in traffic.

- the Government was taking forward a group of major transport infrastructure projects to connect the Northwest New Territories with Lantau and the urban areas, including Route 11 (section between Yuen Long and North Lantau), Tuen Mun Bypass, Tsing Yi – Lantau Link and Widening of Yuen Long Highway (section between Lam Tei and Tong Yan San Tsuen) to meet the transport and logistics demand arising from the progressive development of the Northwest New Territories. The Government also planned to prioritize the extension works of major roads in Tuen Mun before the commissioning of the Tuen Mun Bypass, including the proposed Lung Fu Road Slip Roads and Hoi Wing Road Slip Road, to enhance the capacity of the road network in the district; and

- TD, in conjunction with HyD, was studying different options to improve congested road sections in the district, including adjusting the road markings on Wong Chu Road to rationalize the traffic in the vicinity of Wong Chu Road slip roads, and taking forward the next phase of the junction improvement works, so as to allow vehicles travelling between Tuen Mun Road and TM-CLKT to travel along Tsing Tin Road, Ming Kum Road, Tsing Wun Road and Lung Mun Road more smoothly. When formulating traffic plans, TD would take into account the future development of the area as a whole, including the implementation of various infrastructure projects and the impact on major roads in Tuen Mun after the implementation of time-varying tolls at the Tai Lam Tunnel.

E. Conclusions and recommendations

Overall comments

49. The Committee:

- is strongly of the view that:

  (a) good cost management in the implementation of works projects can ensure that projects are completed within budget and on time, thereby enabling the proper use of public funds and enhancing the economic benefits of these projects. Maintaining strict fiscal discipline in the delivery of public infrastructure and public works

projects is all the more necessary, especially as the Government is currently facing a significant fiscal deficit;

(b) a project consultant has key roles and functions in facilitating project delivery, which include providing professional technical expertise, planning and design, risk management and serving as a bridge of communication between various stakeholders. As such, the consultant's performance will have a direct impact on the cost-effectiveness and construction efficiency of works projects; and

(c) timely reporting of accidents on construction sites facilitates the responsible works departments to oversee the safety condition of construction sites and identify potential safety risks, thereby enabling them to formulate targeted preventive measures to reduce accidents and protect workers' safety. A robust reporting mechanism for construction site accidents also ensures that the safety management work complies with the requirements of relevant legislation;

<u>Cost control</u>

- notes that the cost of a public works contract mainly comprises the construction cost of works items, provision for contingency and provision for price fluctuation adjustment. The provision for contingency caters for additional costs arising from unforeseen circumstances, such as variation orders due to unpredicted geological conditions or additional works. The provision for price fluctuation adjustment is to cope with fluctuations in the cost of labour and materials during the contract period;

- expresses grave concern that:

  (a) according to both FSTB and DEVB, under the existing mechanism, during the implementation of public works projects, if the provision for contingency in contracts and savings in construction costs are insufficient to cover additional costs incurred due to unforeseen circumstances, and when it is not possible to deploy other resources, and there is a surplus in the provision for price adjustment, Controlling Officers can use the surplus in the price adjustment provision to cover such additional costs, subject to the approved project estimates and in compliance with the above conditions;

(b) TLB advised that the provisions of price adjustments in the works contracts for the TM-CLKL project were basically used to cover additional expenditure arising from price increases in labour and materials. However, as other expenditure under the contracts (e.g. additional expenditure arising from the interfacing issues with the reclamation works of HKP of HZMB and the contractors' claims) exceeded expectation and the contingency provisions in the contracts were insufficient, HyD used the surplus in the provisions for price adjustments to cover the additional expenditure arising from unforeseen circumstances. For the eight works contracts under the TM-CLKL project, five contracts required the use of the surplus in the provisions for price adjustments; and

(c) the total original contract sum of the eight works contracts under the TM-CLKL project was $32,691.3 million. TLB estimated that the final total expenditure for the works contracts would be about $36.6 billion, which exceeded the original total contract sum by 12% (i.e. an increase of about $3.9 billion). Notwithstanding this, even after adding other expenditures (including the costs of resident site staff employed by consultants and consultancy fees) of $5.5 billion to the final total expenditure for the works contracts, the total expenditure for the TM-CLKL project remains within the total funding of $46.708 billion approved by LegCo;

- considers that while HyD has deployed resources under the works projects in accordance with the existing mechanism, and the TM-CLKL project as a whole has not exceeded its approved project estimate with the full coverage by the contingency provision, the total expenditure under the works contracts has in fact exceeded the original total contract sum. Such circumstance is not desirable from the perspective of cost management;

- notes that the Government has adopted parallel tendering since September 2020, which means that the Government will first commence tendering exercise for a works project in order to reflect the returned tender price in its submitted funding application, thereby providing LegCo with a more accurate construction cost estimate. PSGO of DEVB has since 2017 played an independent third party role to review variations of public works contracts involving $1.4 million or above based on the principle of cost-effectiveness, and provide independent advice to the Controlling Officers after such review;

- urges that :

  (a) HyD and other works departments to be mindful of cost control in the implementation of works projects, exercise restraint and maintain strict discipline in resource utilization, and adhere to the original resource allocation in works projects; and

  (b) FSTB and DEVB review the existing mechanism for resource utilization in works projects and explore potential areas for optimization. For example, consideration could be given to establishing a multi-level monitoring mechanism for the use and deployment of resources to enhance transparency and accountability;

- requests that:

  (a) TLB report to the Committee on the total final expenditure of the TM-CLKL project; and

  (b) FSTB and DEVB report to the Committee on the findings of the review of the existing mechanisms for resource utilization in public works projects;

<u>Performance of Consultant X</u>

- notes that:

  (a) in the tendering exercise for the TM-CLKL project, Consultant X was responsible for preparing cost estimates and tender documents (including applicable contract terms, construction specifications, bills of quantities and drawings for the construction works, etc.) for each works contract based on its design; while HyD was responsible for checking the abovementioned work of Consultant X, evaluating the tender submissions, recommending the successful contractors to the Tender Board and awarding the works contracts to the relevant contractors for commencing the construction works; and

  (b) in the course of implementing the TM-CLKL project, Consultant X is the Engineer or Supervising Officer responsible for supervising individual contract works . HyD, being the managing department of the entire project, is responsible for overseeing the

implementation of the contract works (e.g. vetting and approving major variations, and offering views on the assessment of contractual claims) and the performance of Consultant X;

- expresses grave concern that:

  (a) during the design stage, Contractor A contended that when circulating various design submissions to Consultant X and relevant stakeholders for comments, such submitted designs were approved by Consultant X beyond the prescribed timeframes due to the later-than-expected responses from some stakeholders. Contractor A submitted a claim for additional design fees due to delayed responses to and longer-than-expected approvals on various design submissions;

  (b) regarding the retrospective issuance of the variation order (valued at an additional cost of $9.4 million by Consultant X) relating to watermain diversion works under Contract A more than one year after completion of the works in 2017 (i.e. more than three years after commencement of the works in 2015), although HyD stated that all stakeholders were aware at that time that the diversion works needed to be carried out first under the tight construction programme, it acknowledged that this practice was unsatisfactory. In this case, Consultant X did not strictly adhere to the contractual terms for the issuance of variation orders in writing and the relevant guidelines in the Project Administration Handbook for Civil Engineering Works;

  (c) regarding the serious inaccuracy in the estimation of the quantity of fill material required for the reclamation works in Tuen Mun under Contract B, HyD advised that Consultant X had carried out ground investigation in accordance with the guidelines in the Port Works Design Manual and assessed the quantity of rock fill material according to the investigation results. As such, HyD was of the view that Consultant X's recommendations at that time did not involve professional negligence, but considered that Consultant X could have exercised better professional judgement. In the quarterly performance assessment report from October to December 2013, HyD gave a "poor" performance rating to Consultant X in the aspects of cost estimates and quality of tender documents/drawings; and

(d) regarding the 10 instructions issued for clarifying the details of the works in respect of the discrepancies amongst contract documents under Contract D (such as contract drawings and Particular Specifications), three of these instructions were caused by omissions in the preparation of the tender documents by Consultant X, amounting to about $0.7 million;

- strongly urges that:

(a) TLB and DEVB explore, where appropriate, the introduction of risk-sharing clauses in consultancy agreements and a mechanism to deal with compensation events whereby consultants should assume certain responsibilities in relation to the progress, cost control and risk management of works projects. When taking forward a works project, HyD should proactively seek legal advice and consider bringing claims for compensation to protect the Government's interests if the consultant is found to be involved in potential legal liabilities, such as professional negligence or breach of contract;

(b) TLB and DEVB explore the establishment of an explicit reward and punishment mechanism to provide appropriate incentives or impose penalties on consultants based on their performance in order to enhance their performance and accountability; and

(c) during the implementation of works projects, HyD and other works departments should strengthen the management of consultant performance, maintain close communication and regularly share project progress with consultants to understand potential risks and facilitate the timely adoption of contingency measures;

Site safety

- expresses grave concern that:

(a) from the commencement dates of the respective contracts to August 2024, 2 fatal accidents and 173 non-fatal reportable accidents happened at the construction sites of Contracts A to F and H, involving sick leave ranging from 4 to 750 days;

(b) according to the requirements set out in CSSM issued by DEVB, contractors are required to report reportable accidents in a timely

manner and submit the relevant reports to Consultant X. However, Consultant X did not properly compile the relevant management information to make it readily available for inspection;

(c) for reportable accidents, there were two and seven cases of late submission of the preliminary accident report by Contractors A and B respectively, with delays ranging from 8 to 98 days; and

(d) for 16 out of the 83 months for Contract B, the conditions for triggering the site safety monitoring procedure[3] were met. However, for 3 out of the 16 months, Contractor B did not submit the required reports to Consultant X detailing the problem areas in relation to site safety, actions taken/to be taken to improve the safety performance and the way the site safety improvement measures to be monitored;

- notes that:

(a) under subsection (1A) of section 15 of the Employees' Compensation Ordinance (Cap. 282), notice of any accident which results in the total or partial incapacity of the employee for a period exceeding 3 days immediately following the accident shall be given to the Commissioner for Labour by the employer not later than 14 days after the accident in the prescribed form for the purpose of reporting work injuries. In addition, subsection (1B) of section 15 also provides that if the happening of such accident was not brought to the notice of the employer or did not otherwise come to his knowledge within such periods of 14 days referred to in subsection (1A) then such notice shall be given not later than 14 days after the happening of the accident was first brought to the notice of the employer or otherwise came to his knowledge;

(b) the requirements for reporting work injuries in CSSM are higher than the statutory requirements. According to CSSM, the contractor is required to immediately notify the consultant verbally

[3] According to the site safety monitoring procedure laid down in the contracts, the contractors shall submit a report to Consultant X when: (a) there are two or more accidents in the previous two months and the two-month moving average of the accident rate (i.e. the number of reportable accidents per 100 000 man-hours worked) is higher than 0.6; and/or (b) there are three or more accidents in the previous two months and the three-month moving average of the accident rate is higher than 0.9.

of a fatal or serious injury accident and must submit a preliminary accident report to the consultant within 24 hours. For other reportable accidents (i.e. accidents resulting in incapacity for more than three days), the contractor is required to submit to the consultant a specified Injury Report Form within seven days of the occurrence of such accidents. In the event of deliberate delay in reporting accidents by the contractor, the consultant will reflect it in the contractor's quarterly performance assessment;

(c) Contractor A and Contractor B have duly reported the aforementioned two fatal site accidents in accordance with the requirements set out in CSSM; and

(d) regarding the aforementioned nine site accidents which were not reported to the consultant in a timely manner, the timing of the contractors' reporting of the accidents to the Labour Department was in compliance with the requirements of subsection (1A) of section 15 or subsection (1B) of section 15 of the Employees' Compensation Ordinance. Among these nine site accidents, eight cases were minor or non-symptomatic accidents involving slip, finger bruise, foot injury, waist sprain, etc. The remaining case involved fall of construction materials from a work table causing injury to a worker;

- reiterates that while the statutory liability for reporting work injuries lies with the employers of the injured workers, HyD, as the managing department of the TM-CLKL project, has a duty to urge the project consultant to supervise the contractors in reporting construction site accidents in accordance with the requirements of CSSM and ensure strict compliance with the established reporting mechanism to effectively protect the lives, safety and health of workers; and

- notes that:

(c) HyD will develop standardized computer reports and provide guidelines to require consultants managing works contracts to prepare relevant accident management information, including the time sequence of the contractors' reporting of accidents and records on whether the contractors have delayed the reporting of accidents, etc.;

(d) HyD will actively make use of the Smart Site Safety System to monitor the site conditions in real time to help the project teams keep track of the construction situation, so as to identify potential risks and minimize accidents at an early stage; and

(e) the Director of Highways Department agrees with Audit's recommendations in paragraph 3.29 of the Audit Report.

Specific comments

50. The Committee:

Inter-contractual coordination

- expresses grave concern that as a result of the delays of HKP reclamation works under another works contract of HyD and lateral movements of the seawalls of HKP, Contractors A and B were unable to carry out subsequent works under Contracts A and B as planned, causing substantial works variations (involving a total additional cost of $7,937 million) and incurring prolongation costs and disruption costs of $1,006.4 million, and extensions of time granted under Contracts A and B (of 779 and 475 days respectively);

- urges that HyD should:

  (a) strive to minimize the interfaces between works contracts as far as practicable for similar projects in the future, including exploring the possibility of using the same contractor to carry out the design and construction of the reclamation and subsequent works, etc.; and

  (b) explore the adoption of the early contractor involvement approach in public works contracts to facilitate the participation of contractors in the design and site investigation stages of works projects, so as to identify potential risks and problems in the projects at an early stage, thereby avoiding delays or overspending in the works projects;

- notes that:

  (a) HyD will adopt the "New Engineering Contract" approach by introducing mechanisms such as early warning and compensation events in the contracts, with a view to promoting the establishment of partnership relationship and joint risk management between the contracting parties, so that the project management performance and its cost-effectiveness will be enhanced; and

  (b) the Director of Highways has agreed with Audit's recommendations in paragraph 2.10 of the Audit Report;

Pre-construction site investigation

- expresses grave concern and dissatisfaction that:

  (a) before tendering of Contract A, based on the as-built records, HyD anticipated that the length of the watermain to be diverted was about 270 m. However, after commencement of Contract A, taking into account the actual site conditions, the actual length of the watermain to be diverted was measured to be about 422 m, which was 56% longer than the estimated length;

  (b) the actual rockhead levels at various piling works locations under Contract A were deeper than the envisaged levels in the Geotechnical Baseline Report, and there was a need to change the construction method for constructing longer piles. An additional payment of $52.2 million was required for the 31 claims submitted by Contractor A in this regard;

  (c) further pre-construction ground investigation carried out by Contractor B revealed that the estimated quantity of rock fill material required for the reclamation works under Contract B was about 850 000 m^3, which was about 90% higher than the quantity of 441 400 m^3 originally specified in Contract B. Due to a shortage of local rock fill supply at that time, Contractor B needed to procure additional rock fill material from the Mainland, substantially increasing transportation cost. The price of additional rock fill material procured also went up from the original $160/$m^3$ specified in Contract B to $456/$m^3$, resulting in an additional $115.8 million being paid to Contractor B for its claim; and

(d) after the commencement of Contract C, despite the fact that pre-contract ground investigation had been carried out during the design stage, unforeseeable adverse ground conditions were encountered for a particular section of the slope. This resulted in a variation order valued at $176.9 million issued by Consultant X, instructing Contractor C to carry out additional ground investigation, the construction of the slope based on revised design and delay recovery measures; the construction works of another retaining wall under Contract C also encountered unforeseen ground conditions after commencement, resulting in a variation order valued at $21.1 million being issued by Consultant X to address the issues;

- strongly demands that HyD should:

(a) actively explore new technologies that are cost-effective and mature so as to better understand the geological conditions at an early stage of the projects and minimize additional expenditure arising from unanticipated ground conditions; and

(b) when a certain quantity of building materials needs to be re-procured in the course of works projects (such as the abovementioned rock fill issue), consider the establishment of an open tender mechanism for this purpose to ensure that the procurement process complies with the principles of fairness, openness and transparency;

- notes that:

(a) HyD has now required the extensive use of BIM technology in public works projects from the early planning and design stages to improve the accuracy of quantity surveying, and that the use of new technologies (e.g. geophysical survey technology) for site investigation be explored to better understand the geological conditions and estimate the relevant project costs; and

(b) the Director of Highways has agreed with the relevant Audit's recommendations in paragraphs 2.23, 2.42 and 3.18 of the Audit Report;

Tender evaluation mechanism

- notes that:

  (a) consultancy agreements for public works projects mainly adopt a "two-envelope" tender evaluation approach whereby tenderers are required to submit a technical proposal and a fee proposal at the same time. In assessing technical proposals, works departments will examine the consultants' job experience, understanding of the projects, proposed manpower inputs, and past performance (including performance reports), etc. In the subsequent assessment of fee proposals, works departments will use the pre-tender estimate of the consultancy fee as the basis to examine whether the consultants' tender prices are reasonable and whether they are commensurate with the proposed manpower inputs. Works departments will calculate a combined score based on the weighting stipulated in the tender documents. Normally, the tenderer with the highest combined score will be awarded the consultancy; and

  (b) tender evaluation of public works contracts comprises two parts: the tenderers' technical competence and past performance (including performance reports), and their tender prices. After summation of the technical and price scores, the tender with the highest overall score will be recommended for acceptance. The financial capability of the tenderer with the highest overall score and the reasonableness of its bid will also be assessed by the works departments, so as to ensure that the successful tenderer is fully capable of completing the works in accordance with the terms of the contract. Tenders with unreasonably low prices will not be recommended for acceptance, even if they obtain the highest combined scores;

- expresses grave concern that:

  (a) HyD rated Consultant X's performance in cost estimates and quality of tender documents/drawings as "poor" in the quarterly assessment report from October to December 2013. HyD indicated that the result of the assessment would have a bearing on Consultant X's chances of winning tenders for government consultancy agreements within the three years following the issuance of the relevant assessment report. However,

Consultant X had participated in tenders for government consultancy agreements and had been awarded contracts. According to HyD, Consultant X's past performance had been reflected in the combined scores in the tender evaluation; and

(b) Contractor A and Contractor D of the TM-CLKL project were the same company. A "very poor" performance rating was given by HyD in the site safety aspect in Contractor A's performance report for the period from March to May 2016 due to a fatal site accident, but it could still be awarded Contract D two years later in 2018. HyD advised that following the fatal site accident, a "very poor" performance rating was reflected in the site safety aspect in Contractor A's quarterly performance report. Its overall performance was also rated as "adverse". In view of the improvement in Contractor A's performance (including site safety aspect) in the following quarter and that its overall performance was rated as "not adverse", it was not required to disqualify Contractor A from tendering under the mechanism. HyD indicated that in assessing the tenders for Contract D, the technical competence and past performance of the tenderers and their submitted tender prices had been evaluated in accordance with the evaluation mechanism for public works projects. Contractor A's performance in terms of site safety in the past three years (including the "very poor" performance rating given by HyD in 2016) had also been reflected in the combined scores in the relevant tender assessment. In addition to Contract D, Contractor A had also been awarded other public works contracts in those three years;

- notes that according to the Technical Circular (Works) No. 5/2023 issued by DEVB in July 2023, if a contractor on the approved list is involved in a serious incident, the contractor's tender eligibility in the relevant category of public works may be suspended with immediate effect;

- is strongly of the view that it is necessary for the Administration to review the existing tender evaluation mechanism for public works projects in order to give more weight to the past performance of tenderers, and to explore the introduction of a "blacklist" mechanism to increase the deterrent effect and to motivate the industry to improve service quality;

Application of new designs and materials

- expresses grave concern that:

  (a) Contractor B proposed to construct a service gallery underneath the entire length of TM-CLKT carriageway and provide 45 emergency access hatches along the tunnel carriageway as supplementary evacuation/rescue routes. Contractor B offered the Government a lump sum saving of $12 million for the proposal. The above facilities were new designs and were being used for the first time in a tunnel in Hong Kong. After the commissioning of TM-CLKT in December 2020, the emergency access hatches continued to malfunction (i.e. accidental opening of an access hatch cover) despite rectification works (the cost incurred was borne by Contractor B) carried out by Contractor B. In this connection, the Government strengthened the monitoring system for the emergency access hatches cover at a cost of $8.8 million. In October 2023, the relevant parties finally decided to seal off all emergency access hatches;

  (b) when vetting the tender documents in 2012, the office responsible for the maintenance of the civil works of TM-CLKT (i.e. the New Territories Regional Office of HyD) did not provide comment on the spray type thermal barrier in the tunnel. It was only after the commencement of Contract B that the office expressed concerns about the spray type thermal barrier specified in Contract B. In the end, two variation orders (totalling $328.7 million) were issued to implement the works associated with the change to board type thermal barrier for long-term operation and maintenance benefits;

  (c) in April 2016, the New Territories Regional Office of HyD made no comment on the reference design of the Vitreous Enamel panels in the tunnel at the planning stage. The design was finally approved in March 2019 and the office commented on it in the same month, resulting in the need to issue a variation order valued at $5.5 million under Contract D to change to a more maintenance friendly design; and

  (d) after the commencement of Contract D, two variation orders at the cost of $3.9 million and $2.6 million were issued for the introduction of BIM and the Smart Fire System Mobile Application

respectively to enhance the operational efficiency and fire safety of TM-CLKL;

- strongly recommends that HyD should:

  (a) conduct adequate feasibility studies, risk assessments and field tests on the new designs and materials that are proposed to be used in the future to minimize the problems that may occur; and

  (b) enhance internal communication and collaboration, remind the relevant parties to give due consideration to future maintenance needs when selecting designs and materials, and to comment early on the new designs or materials proposed to be used so as to include new proposals as appropriate in tender documents;

- notes that the Director of Highways has agreed to the relevant Audit's recommendations in paragraphs 2.42 and 3.18 of the Audit Report;

Other contract management issues

- expresses grave concern and dissatisfaction that:

  (a) between June and July in 2021, two significant flooding incidents occurred at the south portal of TM-CLKT, disrupting tunnel traffic for about three hours and about an hour respectively. Consultant X issued a variation order valued at $6.4 million for the construction of additional U-channels for the as-constructed gullies;

  (b) Consultant X estimated that the issuance of a variation order under Contract C to replace the soft materials below the base of the retaining wall could result in a potential delay of 3.5 months in completion and prolongation cost of $13.6 million, but the actual impact on time and costs of issuing such a variation order eventually amounted to an extension of time of 273 days (i.e. about nine months) and an additional payment for prolongation cost of $31.5 million;

  (c) after completion of Contract C, dislocation of covers of several sewerage manholes and cut-off drains occurred between May 2021 and February 2023. To avoid affecting road safety, three variation

orders (valued at $3 million) were required to carry out the relevant modification works; and

(d) some of the works relating to the construction of the vehicular access required under Contract D were not specified in the contract, resulting in the need for Consultant X to issue a variation order valued at $5.5 million to carry out the relevant works; and due to the discrepancies among contract documents (e.g. among various contract drawings or between Particular Specifications and contract drawings) under Contract D, Consultant X was also required to issue 10 instructions to clarify the details of works, resulting in an additional cost of $92.6 million;

- strongly urges HyD to draw lessons from relevant experience to enhance the management of works contracts and actively use technology to assist staff in vetting tender documents;

- notes that the Director of Highways has agreed with the relevant Audit's recommendations in paragraphs 2.42 and 3.18 of the Audit Report;

Tunnel operation and traffic management

- expresses serious concern that:

(a) since the commissioning of TM-CLKT in December 2020 and up to June 2024, the actual number of designated ranks of staff employed by TM-CLKT Operator A was less than that specified in MOM agreement, with a monthly staff shortfall ranging from 8 to 30 staff, representing 6% to 21% of the manning level of 140 staff. However, TD found in a review in February 2024 that the traffic volume and associated operation and maintenance needs had increased. Therefore, the manning level in the new MOM agreement commenced in December 2024 had increased from 140 to 150;

(b) HRVs used in TM-CLKT experienced a total of seven issues during recovery operations conducted between May 2021 and May 2024. However, TD, EMSD and the manufacturer of HRVs, could not ascertain the underlying causes of the issues until September 2024 (i.e. three years after the issues first occurred) and possible improvement measures are being explored;

(c) apart from over-height vehicle detectors, TD did not provide Operator A with any other equipment or technology for the automatic detection of other types of over-gauge vehicles (e.g. over-length or over-width vehicles); and

(d) with the full commissioning of the Northern Connection of TM-CLKL in December 2020, the traffic v/c ratio of Wong Chu Road (i.e. one of the relevant major road sections in Tuen Mun) had exceeded 1.0 (i.e. indicating the onset of traffic congestion) since 2022 and increased to 1.17 in 2023;[4]

- recommends that:

(a) TD should take timely measures to facilitate Operator A's employment of adequate manpower as stipulated in the MOM agreement to ensure that the operation of the tunnel will not be affected;

(b) TD and EMSD should set out appropriate specifications and requirements for the procurement of HRVs for tunnels in accordance with the design and conditions of different tunnels, and carry out field tests; and

(c) TD should closely monitor the impact of the commissioning of the Northern Connection of TM-CLKL on the traffic within the Tuen Mun area, and actively explore measures to improve the traffic condition;

- notes that:

(a) the Commissioner for Transport has agreed with Audit's recommendations in paragraphs 4.19 and 4.28 of the Audit Report;

(b) the Director of Electrical and Mechanical Services has agreed with Audit's recommendations in paragraph 4.19(e) of the Audit Report; and

[4] A v/c is an indicator of traffic condition of a road: (a) a v/c ratio equal to or less than 1.0 means that a road has sufficient capacity to cope with the anticipated volume of vehicular traffic; while a v/c ratio above 1.0 indicates the onset of traffic congestion; (b) a v/c ratio between 1.0 and 1.2 indicates a manageable degree of congestion; and (c) a v/c ratio above 1.2 indicates more serious congestion with traffic speeds deteriorating progressively with further increase in traffic.

(c) the Director of Highways has agreed with Audit's recommendations in paragraph 4.20 of the Audit Report; and

- strongly demands TD to report in a timely manner:

(a) details of the conversion works for HRVs and the related expenditure;

(b) the traffic v/c ratio of Wong Chu Road in 2024; and

(c) the implementation timetable of the specific measures and road works to divert traffic in the vicinity of Tuen Mun Road and Wong Chu Road, as well as the latest development of other related improvement proposals.

Follow-up action

51. The Committee wishes to be kept informed of the progress made in implementing the various recommendations made by the Committee and Audit.