

The Audit Commission (“Audit”) conducted a review on the project for the expansion of the Tai Po Water Treatment Works (“TPWTW”) (“the Project”) and operation and maintenance of TPWTW.

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

3. In order to maintain a continuous supply of treated water during the planned in-situ reprovisioning of the Sha Tin Water Treatment Works, the Project was implemented to increase the output capacity of TPWTW. Two consultancies were awarded to a consultant (Consultant M) and three works contracts (Contracts A to C) were awarded to three contractors (Contractors A to C). The works commenced in February 2010 and was substantially completed in December 2019. As of March 2023, \$4,986.4 million (77%) of the approved project estimate totalling \$6,480 million (under Project Votes I to III) had been incurred. The Water Supplies Department (“WSD”) was the works agent responsible for implementing the Project and the operation and maintenance of TPWTW.

4. The Committee noted the following findings from the Director of Audit’s Report No. 81:

Construction works of TPWTW

- the size of washwater storage tanks proposed by Contractor B in Contractor’s Proposals deviated from the Employer’s Requirements as given on the Employer’s Drawings. However, the Employer’s Drawings were not binding on the contractor. During the construction stage of Contract B, in August 2013, Consultant M rejected the sizes of the two washwater storage tanks proposed by Contractor B in its design submissions in the Contractor’s Proposals submitted at the tender stage in March 2012. As the Employer’s Requirements did not clearly spell out the important parameters for calculating the necessary capacity of the washwater tanks and other operation requirements, a variation order of \$78.7 million was issued under Contract B to increase the volume of washwater storage tanks;

- the condition survey report submitted by Consultant M in March 2010 did not include the results of the conditions of existing waterstops installed at the existing compartment of the Butterfly Valley Fresh Water Primary Service Reservoir. After commencement of works under Contract C, additional physical tests on samples of existing waterstops found that all samples failed to meet the specified requirements and the test results inferred that all waterstops were likely to be defective. In the event, a variation order of \$2.7 million was issued to remove and replace the defective waterstops;
- in the meeting held between WSD and Consultant M in June 2009, the proposed scope of works for inclusion in Contract A was discussed. After the award of Contract A in February 2010, additional issues on the operation and maintenance of existing TPWTW had been further identified by Consultant M. In the event, 14 variation orders of \$5.5 million were issued under Contract A between February and July 2012 to instruct Contractor A to carry out the enhancement works;
- in April 2009 and December 2012, the Public Works Subcommittee of the Finance Committee of the Legislative Council was informed that the trenchless method would be adopted where practicable. However, Consultant M did not identify any parts of the water mains that must be constructed by trenchless techniques to avoid unacceptable traffic conditions in the final traffic impact assessment report submitted in February 2010;
- in March 2017, Consultant M submitted the application for approval for storage of dangerous goods for the on-site chlorine generation plant at TPWTW to the Fire Services Department which advised WSD in April 2017 that the siting of dangerous goods store immediately above or below another dangerous goods store was not acceptable. WSD took about seven months to implement the alternative measures to address the problems;
- as of August 2022 (i.e. upon the finalization of Contract B's account), the cost of the variation order issued to supply and install five sets of on-site chlorine generation plant (one of the sets was located at the Ngau Tam Mei Water Treatment Works) had increased significantly from the original total estimated cost of \$220 million to the final value of \$373.2 million;

Other contract management issues

- project costs were not estimated as accurately as possible:
 - (a) in mid-December 2012, WSD submitted the funding proposal for Project Vote III of \$6,176.7 million (covering Contract B) to the Public Works Subcommittee of the Finance Committee of the Legislative Council. The sum allowed for Contract B in the project cost estimate was \$4,795 million (i.e. \$1,542.9 million (47%) more than the recommended tender sum of \$3,252.1 million); and
 - (b) as of March 2023, the total expenditure under Project Vote III was \$4,724.5 million (i.e. \$1,452.2 million (24%) less than its approved project estimate of \$6,176.7 million);
- of the 52 omitted items under Contract C, three items (with value ranging from \$2 million to \$3.8 million) accounted for \$8.7 million (78%) of the total value of \$11.2 million. According to Consultant M, these three items were provided in the contract drawings but omitted from the Bills of Quantities;
- as of December 2020 (end of the 12-month maintenance period), 358 (2%) of the 22 373 defects or outstanding works items identified under Contract B had not yet been rectified or completed by Contractor B;
- of the 11 non-fatal reportable accidents happened at the construction site of Contract B between June 2014 and January 2019, late reporting by Contractor B was found in 10 accidents, ranging from 14 to 263 days;
- Contractor B's performance reports of the relevant period had not reflected instances related to its late reporting of seven reportable accidents and unauthorized access to the chlorine building by its worker in June 2018;
- Contractor B were rated as "very poor" or "poor" in some aspects of the quarterly performance reports;

Operation and maintenance of TPWTW

- as of July 2023, of the 283 works orders for maintenance works of TPWTW (with a target commencement date within the period from January 2020 to March 2023) that had been finalized, Audit noted that:
 - (a) the actual expenditures of 36 (13%) works orders were higher than the original estimates; and
 - (b) the works of 6 (2%) works orders were completed after the target completion dates;
- WSD should keep under review the demand of treated water of TPWTW. The treated water out from TPWTW was approaching the output capacity of 800 million litres per day for some days;¹ and
- the record sheet for recording the water quality test results of TPWTW and the follow-up actions taken was a manual record. There was scope to digitalize the manual record sheet.

5. The Committee did not hold any public hearing on this subject. Instead, it asked for written responses regarding the construction works of TPWTW and other contract management issues. The replies from the **Director of Water Supplies** are in *Appendix 8*.

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

¹ For example, in 2022, there were 179 days with treated water out from TPWTW over 700 million litres (with maximum daily volume of 766 million litres).