

LCQ13: Overflowing of reservoirs

Following is a question by the Hon Kenneth Leung and a written reply by the Secretary for Development, Mr Michael Wong, in the Legislative Council today (October 28):

Question:

In 2017, 2018 and 2019, the overflow quantities of the various reservoirs in Hong Kong were 48.4 million, 44.4 million and 33.8 million cubic metres respectively, which were equivalent to about 5.5 per cent of the quantities of Dongjiang water purchased in the respective years. In as early as 2004, the Drainage Services Department (DSD) planned to implement the Inter-reservoirs Transfer Scheme (IRTS) to divert the rainwater collected in the Kowloon Byewash Reservoir to the Lower Shing Mun Reservoir, so as to reduce the overflow from the former and increase the yield of the latter, and to reduce flood risk in the Lai Chi Kok area. The DSD informed this Council in the following year that the construction works for the IRTS would commence in 2010 and was expected to complete in 2012. However, the authorities for several years did not seek funding approval from this Council for the construction works for the IRTS. Moreover, despite the recommendation in Report No. 64 of the Director of Audit published in April 2015 that the authorities should expedite the implementation of the IRTS, not until 2019 did the relevant works commence. In this connection, will the Government inform this Council:

- (1) of the reasons for the delay in the commencement of the works for the IRTS;
- (2) whether the progress of the works has been affected by the coronavirus disease 2019 epidemic; if so, of the estimated changes in the construction cost and completion date of the works;
- (3) of the overflow quantity (in cubic metres), in each of the past five years, of each reservoir which overflowed; and
- (4) of the other measures put in place before the completion of the aforesaid works to reduce wastage of fresh water due to reservoir overflow and to enable efficient use of such fresh water?

Reply:

President,

The overflow from impounding reservoirs in Hong Kong from 2017 to 2019 as mentioned in the question occurred in small and medium impounding reservoirs built between the 19th century and the mid-20th century. As these impounding reservoirs were designed to meet the water demand at that time, they have relatively small storage capacities. They are prone to overflow

when the rainwater collected exceeds their capacities during heavy rainstorms. Therefore, impounding reservoirs are designed with overflow facilities, and overflow is in fact an operational constraint.

â€‹The responses to the Hon Leung's four queries are as follows:

(1) and (2) With a view to improving the flood protection capability in areas of Sham Shui Po, Cheung Sha Wan and Lai Chi Kok, the Drainage Services Department (DSD) formulated the Lai Chi Kok Transfer Scheme (LCKTS) in 2005, recommending implementation of the Inter-reservoirs Transfer Scheme (IRTS) and construction of the Lai Chi Kok Drainage Tunnel (LCKDT).

The key function of the IRTS is to transfer part of the surface runoff collected from the Kowloon Group of Reservoirs to the Lower Shing Mun Reservoir, thereby creating a designated storage capacity in the Kowloon Byewash Reservoir to receive further surface runoff from the catchment.

The DSD has implemented the LCKTS in phases. The first phase involved the construction of the LCKDT spanning between 2008 and 2012. Surface runoff collected from the upstream catchment would be discharged directly to the Victoria Harbour through the tunnel, thus reducing the burden of the existing stormwater drainage systems in both the midstream and downstream catchments.

Regarding the IRTS under the second phase, the DSD conducted a review of the respective construction programme in the second half of 2009. As many tunneling projects were under construction at that time, there was a shortage of skilled labourers and machinery for the tunneling works. In consideration of the contribution of the first phase in reducing the burden on the stormwater drainage systems in the areas concerned, the DSD deferred the construction programme of the IRTS by five years with the support of the Development Bureau (DEVB). Subsequently, in response to the Fifth Assessment Report published by the United Nations Intergovernmental Panel on Climate Change in end 2014, the DSD in association with relevant departments conducted a review of Hong Kong's rainfall forecast and stormwater drainage design standards. In parallel, the DSD actively re-examined the detailed design and construction methods of the IRTS as well as conducting a series of review, including environmental impact assessment, geotechnical assessment, risk assessment for tunnel construction, natural terrain landslide hazards assessment, construction and demolition material management and traffic impact assessment. The DSD also consulted relevant stakeholders to solicit their views. In response to the Report No. 64 of the Director of Audit, the DEVB and the DSD accepted the recommendation of the Audit Commission to expedite the implementation of the IRTS.

The funding application for the IRTS was approved by the Finance Committee of the Legislative Council in June 2018 and the respective construction works commenced in February 2019. The DSD has implemented various measures with a view to alleviating the adverse impacts on the project arising from the COVID-19 pandemic. The estimated project cost (\$1,222 million in money-of-the-day prices) and completion date (i.e. fourth quarter of 2022) remain unchanged.

(3) The annual overflow quantities from impounding reservoirs in the past five years are tabulated below:

Year	Overflow Quantities from Reservoir/Reservoir Group (million cubic metres)				
	Tai Tam Group of Reservoirs	Kowloon Group of Reservoirs	Aberdeen Group of Reservoirs	Tai Lam Chung Reservoir	Shek Pik Reservoir
2015	0	2.21	1.06	0	0.03
2016	3.66	3.90	3.50	8.90	8.53
2017	10.35	11.01	4.64	13.99	8.41
2018	5.15	2.91	2.93	13.59	19.80
2019	6.40	2.93	4.00	0.59	19.86

(4) Before the completion of the aforesaid works, the Water Supplies Department is taking measures to use the raw water stored in the Kowloon Group of Reservoirs as far as practicable to allow more storage space for collecting rainwater, hence reducing overflow.