For discussion
28 October 2014

Legislative Council Panel on Development

Supply of Dongjiang Water

PURPOSE

The current agreement with the Guangdong (GD) authorities for the supply of Dongjiang (DJ) water is due to expire at the end of 2014. This paper briefs Members on the proposed new agreement for the supply of DJ water in the next three years between 2015 and 2017 ("the new agreement"), its financial implications and our proposal of seeking a supplementary provision of $47.9 million from the Finance Committee (FC) to meet the additional DJ water purchase cost in 2014-15 due to the new agreement which will come into effect on 1 January 2015. Opportunity is also taken to provide Members with an update on measures implemented under the Total Water Management Strategy.

PROPOSAL

2. Following several rounds of discussions with the GD authorities since early 2014 and taking account of the requirements of Hong Kong in water supply, it is proposed that the new agreement for supply of DJ water in the next three years between 2015 and 2017 shall include the following major features -

(a) To meet the actual needs of Hong Kong with 99% reliability[1] in water supply for the three-year period between 2015 and 2017, the package deal lump sum approach adopted in the current DJ water supply agreement is to be retained with the annual lump sum water prices[2] for 2015 to 2017 adjusted to $4,222.79 million, $4,491.52 million and $4,778.29 million respectively;

(b) The ultimate annual DJ water supply quantity of 1 100 million cubic metres (mcm) is to be maintained whilst the date for supplying this quantity will be subject to future review; and

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[1] "99%" reliability means that water supply is maintained round-the-clock even under extreme drought condition with a return period of 1 in 100 years. "Return period" is the average number of years during which an event will occur once statistically. A longer return period means a rarer chance of occurrence. To ensure 99% reliability of water supply, the Water Supplies Department estimates that an annual supply ceiling of 820 mcm of DJ water will be required in the period between 2015 and 2017.

[2] The annual lump sum water prices for 2012 to 2014 under the current agreement are $3,538.70 million, $3,743.30 million and $3,959.34 million respectively.

(c) The GD side is to maintain the quality of DJ water supplied to Hong Kong in compliance with Type II[3] waters in the Environmental Quality Standards for Surface Water (GB 3838-2002), which is the highest national standard for surface water applicable for the abstraction for human consumption.

3. The provision earmarked in the 2014-15 Estimates for the purchase of DJ water is based on the annual lump sum water price of $3,959.34 million for 2014 under the current agreement. As the proposed annual lump sum water price for 2015 under the new agreement is higher than that for 2014, the provision is inadequate to meet the anticipated expenditure for purchase of DJ water in 2014-15. We therefore need to apply for a supplementary provision of **$47.9 million** from the FC to meet the additonal water purchase cost.

4. Members are invited to note the major features of the proposed new agreement and its financial implications, and support our application for the supplementary provision from the FC before the new agreement comes into effect on 1 January 2015.

JUSTIFICATION

5. The current DJ water supply agreement is due to expire at end of 2014. Since early 2014, we have commenced discussion with the GD side on the new agreement for supply of DJ water in the next three years between 2015 and 2017. The objective is to ensure that Hong Kong will continue to have a reliable and flexible supply of DJ water to meet our needs. We aim to enter into the new agreement with the GD side by the end of 2014 before the expiry of the current agreement. The major considerations in arriving at the proposed new agreement are detailed in paragraphs 6 to 19 below.

Provision of Reliable Water Supply to Hong Kong

6. The local fresh water resources mainly come from rainfall but the yield collected from local catchment is inadequate to meet the needs of Hong Kong. The amount of local yield is also unstable due to fluctuation in rainfall year by year[4]. DJ water, which now provides about 70% to 80% of our fresh water supply, is able to fill the gap arising from the inadequate local yield. Therefore, a reliable and stable DJ water supply arrangement is essential for Hong Kong.

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[3] There are five types of surface water standards designated for specific environmental functions and protection objectives in the Environmental Quality Standards for Surface Water (GB 3838-2002). Type I standard is mainly applicable to source water and national nature reserve and is not for abstraction for human consumption. Type II standard is mainly applicable to first class protection area for the abstraction for human consumption. It is therefore the highest national standard for surface water applicable for the abstraction for human consumption.

[4] In the last 30 years (1984-2013), the annual rainfall recorded in Hong Kong varied from 1 477 mm to 3 343 mm and the annual yield collected from our local catchment fluctuated between 103 mcm and 364 mcm.

7. With the fast pace of economic development of Shenzhen and some GD cities including Heyuan, Huizhou, Dongguan and Guangzhou competing for DJ water, the GD authorities have promulgated the "Water Resources Distribution Plan in the Dongjiang River Basin of Guangdong Province"《廣東省東江流域水資源分配方案》(Distribution Plan) setting out the maximum amount of water that Shenzhen, respective cities in the GD Province and Hong Kong can draw from DJ. The Distribution Plan allocates an annual quantity of 1 100 mcm for Hong Kong. Whilst Hong Kong is allocated with such right, we have requested and the GD side has agreed to defer the supply up to this full quantity until further notice, taking into account the slower pace of growth of fresh water demand in Hong Kong. Although GD has already invested on its infrastructure capable of supplying this full quantity of water, they have agreed to our request to specify an annual supply ceiling of a lower quantity in the DJ water supply agreements based on the needs of Hong Kong. The allocated annual quantity of 1 100 mcm is instead stipulated in the previous and current DJ water supply agreements as an ultimate annual supply quantity.

"Package deal lump sum" approach

8. In the last three DJ water supply agreements since 2006, the "package deal lump sum" approach has been adopted to ensure a reliable and flexible supply of DJ water to meet the actual needs of Hong Kong. Under this approach, we are able to import DJ water as needed each year up to an annual supply ceiling specified in the supply agreements. This approach secures a reliable supply of fresh water for Hong Kong and avoids unnecessary wastage of the DJ water resources.

9. Some Legislative Council (LegCo) Members have previously requested the Government to explore the adoption of an alternative "payment on actual supply quantity" (按量付費) approach. We have raised the suggestion during our discussion with the GD side for the new agreement. As there will be no annual supply quantity specified under this payment approach, the GD side considers that they will have difficulty to guarantee that the water supply quantity requested by Hong Kong can be met given the keen competition for the limited DJ water resources.

10. Moreover, Hong Kong and GD are under the same climatic setting (rainfall pattern, temperature, etc.). When our local yield reduces during drought years, the quantity of DJ water available for distribution will also dwindle. In the event of drought, there would be no guarantee that the GD side could meet our demand for a higher DJ water supply quantity. Therefore, under the "payment on actual supply quantity" approach, we will be exposed to a risk of inadequate water supply to Hong Kong during drought events unless we set a "reserved quantity" for possible need during drought years in the supply agreement and pay for it. However, such arrangement is effectively the same as the "package deal lump sum" approach.

11. With the "payment on actual supply quantity" approach, a unit water price will need to be determined. Since there is no specified supply quantity, the GD side may have to make due allowance for the uncertainty in the actual supply quantity

in fixing the unit water price to ensure a reasonable income to cover their operation expenses and investment return. Hong Kong may end up paying more under the "payment on actual supply quantity" approach than the current "package deal lump sum" approach.

12. The "package deal lump sum" approach allows flexibility in the supply quantity of DJ water to meet our actual needs. We will not import DJ water more than necessary, thereby avoiding wastage of the precious DJ water resources and saving in pumping cost.

13. In view of the above, we propose to retain the "package deal lump sum" approach for the new agreement.

Water Price

14. Similar to previous agreements, adjustment of DJ water price is based on changes in operation costs, exchange rate between Renminbi (RMB) and Hong Kong dollar (HKD) as well as the relevant price indices of both sides.

15. It is noted that the average annual rate of change in RMB/HKD exchange rate is about +3.18% in the past three years from 2011 to 2013. Besides, the average annual rate of change of the relevant price indices of GD and Hong Kong is about +4.04% over the same period. After rounds of negotiation, the GD side has agreed to the upward adjustments of the annual lump sum water price by 6.65%, 6.36% and 6.38% for the respective years of 2015, 2016 and 2017. The proposed water prices from 2015 to 2017 in the new agreement will therefore be those set out in paragraph 2 above. Taking account of the actual rates of change of RMB/HKD exchange rate and the relevant price indices of GD and Hong Kong during 2011 to 2013, we consider the proposed adjustments reasonable.

Water Quantity

16. Following the promulgation of the Total Water Management (TWM) Strategy in 2008, we have made endeavour to contain the growth of fresh water demand through the implementation of various water demand management initiatives. Whilst there has been a steady growth in population in Hong Kong, we managed to contain the growth of our fresh water demand in the past few years, thereby containing the growth of demand for DJ water.

17. The current agreement has adopted an annual supply ceiling of 820 mcm. The Water Supplies Department has carried out a detailed analysis based on the latest fresh water demand forecast and estimated that the annual demand for DJ water in the coming three years between 2015 and 2017 with 99% reliability of water supply will not exceed 820 mcm. We propose to retain the current supply ceiling of 820 mcm in the new agreement to maintain the reliability of water supply in Hong Kong.

18. The current agreement stipulates an ultimate annual supply quantity of 1 100 mcm. According to our long-term demand forecast, this ultimate supply quantity will be adequate to meet the actual needs of Hong Kong beyond 2032. In view of the keen competition for fresh water resources from other GD cities and the need to ensure reliable water supply to Hong Kong in the long term, we propose to retain this ultimate annual supply quantity of 1 100 mcm in the new agreement whilst the date for supplying this quantity will be subject to future review by both GD and Hong Kong sides.

Water Quality

19. The GD side has agreed to maintain in the new agreement the quality of DJ water supplied to Hong Kong in compliance with Type II waters in the Environmental Quality Standards for Surface Water (GB3838-2002), which is the highest national standard for surface water applicable for the abstraction for human consumption. According to our water quality monitoring data, the quality of DJ water supplied to Hong Kong has met this standard.

FINANCIAL IMPLICATIONS

20. Based on the proposed water prices in the new agreement, we estimate that the annual purchase costs of DJ water from 2014-15 to 2017-18 (up to December 2017), on financial year basis, are as follows -

	$ million
2014-15	4,007.24[5]
2015-16	4,271.65[6]
2016-17	4,543.66[7]
2017-18 (Up to December 2017)	3,909.51[8]

21. The 2014-15 Estimates has included a provision of $3,959.34 million for purchase of DJ water. We plan to seek a supplementary provision of $47.9 million[9] from the FC in late 2014 to meet the additional DJ water purchase cost in

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[5] DJ water purchase cost for April to December 2014 and February to March 2015 is ($3,959.34M x 9 / 11 + $4,222.79M x 2 / 11). No payment is made in January because water is not drawn in December due to shutdown of the DJ water supply system for annual maintenance.

[6] DJ water purchase cost for April to December 2015 and February to March 2016 is ($4,222.79M x 9 / 11 + $4,491.52M x 2 / 11).

[7] DJ water purchase cost for April to December 2016 and February to March 2017 is ($4,491.52M x 9 / 11 + $4,778.29M x 2 / 11).

[8] DJ water purchase cost for April to December 2017 is ($4,778.29M x 9 / 11).

[9] Additional DJ water purchase cost for February to March 2015 is ($4,222.79M x 2 / 11 - $3,959.34M x 2 / 11).

2014-15. The funding requirement in subsequent years i.e. 2015-16, 2016-17 and 2017-18, will be sought in the Annual Estimates Exercises.

TOTAL WATER MANAGEMENT

22. The local yield provides 20% to 30% of the fresh water supply in Hong Kong while 70% to 80% is imported from DJ. Importation of DJ water remains the most economical option to make up the shortfall of the local yield at present.

23. With a view to achieving a balanced demand and supply of water resources to support the sustainable development of Hong Kong, we promulgated the Total Water Management (TWM) Strategy in 2008 which is a long-term strategy covering two limbs viz. water demand management and water supply management. Since then, we have introduced various demand and supply management measures to take forward the Strategy.

Water Demand Management

24. On water demand management, we have stepped up the effort to promote water conservation and reduce water loss. The setting up of the temporary Water Resources Education Centre helps enhance the knowledge of the younger generation on water resources and water conservation whereas the Mobile Showroom conducts roving exhibitions regularly in different districts to strengthen the public awareness and knowledge of water conservation. We have extended the voluntary "Water Efficiency Labelling Scheme" this year to cover flow controllers in addition to showers for bathing, water taps, washing machines and urinal equipment. We have also extended our plan to promote water conservation to both domestic and commercial consumers. For domestic consumers, we have taken forward the "Let's Save 10L Water" campaign in which, apart from the software side of providing tips on water conservation, we provide the hardware, flow controllers, to participants of this campaign to facilitate them to put water conservation into practice. For commercial customers, we are developing best water using practices for various trades.

25. Separately, we will maintain our on-going effort to reduce water leakage through replacing and rehabilitating some 3 000 km of aged water mains scheduled for completion by 2015. Besides, we will also put our focus on water pressure management and district monitoring of the water mains network so as to enhance efficiency in water loss control and management of the water mains network. To conserve fresh water, we have been using seawater for toilet flushing in the metropolitan areas and most of the new towns, covering a population of around 80%. With the completion of the relevant projects, the seawater flushing supply system will be extended to Pokfulam, Yuen Long and Tin Shui Wai areas. Further extension of the system will be made wherever it is economically justified.

Water Supply Management

26. On water supply management, to meet the challenges arising from climate change and continued growth in population, we are exploring some new water resources which are insensitive to climate change, such as seawater desalination and water reclamation. We will complete a consultancy study in early 2015 on the setting up a seawater desalination plant at Tseung Kwan O and formulation of its implementation strategy and programme. Subject to the findings of the study, the desalination plant is expected to commence operation in 2020. Although the initial annual output of the plant will account for just 5% of our total fresh water consumption (with provision for expansion to 10%), we believe seawater desalination can serve as an important water source for Hong Kong in the long run as technology advances. On water reclamation, we will commence the study on supplying reclaimed water to the north-eastern part of the New Territories including Sheung Shui, Fanling and the New Development Areas for toilet flushing and other non-potable uses. We are also exploring wider use of grey water and rainwater harvesting in new Government projects.

Review of TWM Strategy

27. As the current TWM Strategy was formulated in 2008, we have engaged consultants to conduct a review of the Strategy to revisit the water management measures implemented, and taking account of the latest population growth and impact of climate change, formulate an updated strategy to ensure sustainable use of precious water resources and timely introduction of new initiatives to strengthen our resilience and preparedness against uncertainties and challenges.

Development Bureau
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