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Panel on Development

Meeting on 28 October 2008

Background brief on new agreement for supply of Dongjiang water

Purpose

This paper provides background information on the supply of Dongjiang water to Hong Kong and summarizes the views and concerns expressed by Members on the subject.

Background

2. The long-term supply of Dongjiang (DJ) water to Hong Kong is secured under the agreements signed in 1989 and 1998 with the Guangdong (GD) Provincial Government, subject to periodic review of water prices and supply quantities. On 12 April 2006, the Administration reached agreement with the GD authorities on the details of water supply arrangements for the period up to 2008.

Unit price of DJ water and annual supply quantities before the agreement on 12 April 2006

3. The 1989 Water Supply Agreement stipulated that the adjustment of water prices should be based on operation costs having regard to the relevant price indices and the exchange rate between the Hong Kong dollar and Reminbi. In 1999, it was observed that the high inflation rate in preceding years would render the increase in water prices unrealistic. After much deliberation, the Administration managed to agree with the GD side in 2001 that the water price for 2000 should be frozen at the 1999 level, i.e. \$3.085 per cubic metre. For the years from 2001 to 2004, Hong Kong had been procuring DJ water at this unit price on a provisional basis.

4. As part of the 1989 Agreement, the annual supply quantity for 1995 was 690 million cubic metres (mcm), which was to be increased by 30 mcm per year to the ultimate annual capacity of 1 100 mcm in 2008. However, in 1998, both sides entered into a supplementary loan agreement for the construction of a dedicated aqueduct to improve the quality of DJ water, and at the same time agreed to reduce the quantities of water supply between 1998 and 2004 to suit Hong Kong's needs. The annual supply quantities beyond 2004 would be subject to further negotiation. In addition, both sides consented to defer the implementation of the ultimate annual capacity of 1 100 mcm from 2008 to a later date to be decided by mutual agreement.

New water supply arrangements agreed on 12 April 2006

5. On 12 April 2006, the two sides concluded negotiations by making new arrangements for DJ water supply as follows --

- (a) The provisional unit price of DJ water in use from 2001 to 2004 at \$3.085/cu.m was confirmed.
- (b) A fully flexible supply of DJ water up to 2008 was guaranteed on the basis of a package deal as follows --
 - (i) the lump sum for 2005 would be \$2,529.7 million (i.e. same as the 2004 level); and
 - (ii) the annual lump sum for 2006 to 2008 would be \$2,494.8 million (i.e. \$34.9 million below the 2004 level) to be paid at equal monthly instalments.
- (c) The ultimate annual DJ water supply quantity of 1 100 mcm was maintained while the target date for achieving this objective would be subject to future review.
- (d) The GD side would strive to supply DJ water with quality up to the latest national Type II Standard of GB 3838-2002.

Benefits of the new arrangements

6. According to the Administration, the new arrangements would guarantee a fully flexible supply of DJ water up to the end of 2008 while catering for Hong Kong's water demand even under extreme drought conditions. Despite the anticipated inflation between 2005 and 2008, the Administration had managed to cap the annual expenditure in the purchase of DJ water at not exceeding the 2004 level. The new arrangements also made it possible for the Administration to inform the

GD side the actual demand of the territory on a monthly basis, thereby enabling better control of the storage level in Hong Kong and minimizing overflow and saving pumping costs.

7. As regards the quality of the DJ water, whilst the quality has shown considerable improvement with the commissioning of the dedicated aqueduct system in 2003, the GD side would continue its efforts to protect the water environment and strive to upgrade the water quality in compliance with the latest national Type II Standard of GB 3838-2002.

Main issues of concern highlighted by the Administration

8. The Administration has pointed out that DJ water supply to Hong Kong is facing the following challenges --

- (a) Increasing water demand in GD -- Cities such as Shenzhen, Dongguan, Huizhou and Guangzhou are competing with Hong Kong for DJ water to sustain their rapid development.
- (b) Escalating water prices in Mainland -- GD is under tremendous pressure to increase water prices in order to regulate the rather keen competition from different municipalities for fresh water in the region.
- (c) Environmental cost -- GD is investing heavily on pollution control measures and is hence expecting that Hong Kong, a key consumer of DJ water, should share part of the burden.
- (d) Financial implications on the GD side -- If the annual payment for the DJ water decreases significantly below the original level envisaged in the existing agreements, financial pressure on the GD side will build up since it is required to repay the loan under the 1998 Loan Agreement to the Administration. Besides, given GD's rapid economic growth in recent years, inflation has been biting into the operation costs for the Dongshen water supply system and, thereby, exerting pressure on the price of the DJ water.

Alternative options

9. The average annual water consumption of Hong Kong for the years 2005 to 2009 is estimated to be about 990 mcm and the local catchment could only provide about 295 mcm (29.8 %) of fresh water under an average yearly rainfall. To make up the shortfall, DJ water remains the most viable option available. For water conservation, the Administration will continue to launch public education activities

through different means and to impose a tiered charging regime to encourage domestic households to save water. Besides, to reduce water leakage, the Administration would advance the completion of the massive watermains replacement and rehabilitation programme from 2020 to 2015.

10. For some years, the Administration has been studying possible alternative water resources, with desalination offering a palatable alternative for potable water. So far, two suitable sites have been identified capable of providing a total maximum of 200 mcm fresh water annually. Nevertheless, the main concern is that the production cost of desalination plants with the present technology is still far higher than DJ water. The other two options are the reuse of treated sewage effluent and the expansion of local water gathering grounds. For the former, the Administration has commenced a trial scheme on effluent reuse at the Ngong Ping and Shek Wu Hui Sewage Treatment Plants since March 2006. The expansion of the local water gathering ground is seen at present as the most expensive option, given its impact on land development and possible objection from interested parties.

Discussions at Council meetings

11. Members have been concerned about the supply and quality of DJ water. A motion on DJ water supply was carried at the Council meeting on 8 February 2006. Under the motion, the Administration was urged to improve the notification mechanism for contamination of potable water supply to Hong Kong and enhancing coordination in the supply of potable water to Hong Kong. The motion came amidst rising public concerns with the deterioration of the quality of DJ water in recent years due to commercial and industrial development along DJ. The progress report provided by the Administration in response to the motion was in **Appendix I**.

12. In a written question raised at the Council meeting held on 12 December 2007, a Member asked whether the Dongjiang River Basin Water Resources Allocation Scheme being actively pursued by the GD authorities would have an impact on the quantity of potable water supply to Hong Kong and the water prices (see **Appendix II**). The Administration responded that the aforesaid scheme was still being drafted then by the GD side, and no details were yet available to the Hong Kong side. Meanwhile, given that the current water supply agreement would expire at the end of 2008, the Administration had started negotiation with the GD authorities for a new agreement.

Discussions at the Panel on Development

13. In the 2003 Policy Address, the Administration pledged to implement a Total Water Management (TWM) programme to enhance water conservation and water resource protection, and to explore new water resources. To this end, the Water Supplies Department commissioned a comprehensive study to examine fresh water demand and supply situations in Hong Kong and evaluate water demand and supply management measures in Hong Kong. In May 2008, based on findings of the study, the Administration promulgated a proposal on a TWM strategy for the period up to the year 2030 and consulted the Panel on Development at its meeting on 27 May 2008.

14. The strategy is meant to better prepare Hong Kong for uncertainties in terms of acute weather conditions leading to low rainfall. It also helps enhance Hong Kong's role as a good partner of other municipalities in the Pearl River Delta in promoting sustainable use of water in the light of the rapid growth in water demand in the region. The strategy seeks to proactively manage water demand and supply in an integrated and sustainable manner.

15. According to the Administration, surface water collected locally accounts for 20 to 30% of the water supply. About 70 to 80% of water is imported from DJ. The water supply from DJ will be sufficient for Hong Kong to cope with the projected demand in the next two decades.

16. At the Panel meeting, some members were worried that due to rapid economic development in the Mainland, demand for water in the region was on the rise. As a result, the quota of DJ water made available to Hong Kong might be reduced. The Administration advised that the Administration had been liaising with the relevant Mainland authorities on a monthly basis on the quantity of DJ water to be supplied to Hong Kong, taking note of local reservoirs storage. The Administration assured members that the ultimate annual DJ water supply quantity of 1 100 mcm had been secured through the relevant purchase agreement.

References

17. A list of relevant papers is in **Appendix III**.

Legislative Council Meeting of 8 February 2006

**Motion Debate on
"Improving the notification mechanism for
contamination of potable water supply to Hong Kong and
enhancing coordination in the supply of potable water to Hong Kong"**

Progress Report

INTRODUCTION

This paper sets out the progress of actions taken by the Administration in response to the captioned motion which was carried at the Legislative Council meeting of 8 February 2006.

THE MOTION

2. The following motion moved by Hon Albert Jinghan CHENG, as amended by Hon WONG Ting-kwong and further amended by Hon Fred LI Wah-ming, was carried -

"That this Council urges the HKSAR Government, in discussing the finalization of the specific details of a new water supply agreement, to improve jointly with the Guangdong Provincial Government the existing notification mechanism for contamination of potable water supply to Hong Kong, including imposing a time limit for notification; to formulate a contingency mechanism jointly operated by Guangdong and Hong Kong for dealing with unexpected incidents of water supply; to discuss ways to enhance coordination in the supply of potable water to Hong Kong and allow flexibility in determining the supply quantity, so as to avoid drawing unneeded water when there was overflow from local reservoirs and hence resulting in wastage; and to discuss the further upgrading of the quality standard of potable water supply to Hong Kong; the Guangdong Provincial Government and the HKSAR Government should be allowed to review the water supply quantity according to needs on a monthly basis; in addition, the HKSAR Government should also examine expanding the existing reservoirs or further perfecting the interconnection of reservoirs, so as to increase the water storage capacity of local reservoirs."

THE ADMINISTRATION'S FOLLOW UP ACTIONS

Emergency notification mechanism for Dongjiang water supply

3. In partnership with the Guangdong authorities, we have already jointly established an emergency notification mechanism for supply of Dongjiang water. If there is any major pollution incident occurring upstream of the Dongjiang water intake or in the vicinity of the Dongshen Water Supply System affecting the quality of water supply to Hong Kong, the Guangdong side will inform the Water Supplies Department (WSD) of the HKSAR Government by telephone or fax. WSD will collaborate with the Guangdong side to take suitable control measures and follow-up actions to safeguard the quality of water supply. In this regard, both governments have appointed responsible contact persons to ensure that communication is direct, swift and precise.

4. Under the Dongjiang Water Supply System, raw water is delivered from Dongjiang via a dedicated aqueduct system to the Shenzhen Reservoir where it may take a few days before entering Hong Kong. Therefore, should any major pollution incident occur upstream of the Dongjiang water intake or in the vicinity of Dongshen Water Supply System, there will be ample time for triggering the emergency notification mechanism and for initiating necessary contingency measures aiming to protect the quality of water supply to Hong Kong against possible contamination. Nevertheless, we will continue exploring with the Guangdong side on the practicality of setting a time frame for notification.

Contingency measures

5. WSD has drawn up a series of contingency measures to cope with the situation where emergency incidents have impacted on the quality of Dongjiang water supply to Hong Kong. Major measures include immediately stepping up monitoring and control of water quality; discharging Dongjiang water received at Muk Wu Pumping Station as necessary; maintaining close liaison with the Guangdong side with a view to reducing or suspending the supply of Dongjiang water to Hong Kong; and/or replacing Dongjiang water supplied to water treatment works with local water sources.

Flexibility and monthly review of supply quantities

6. On 12 April 2006, we have reached an agreement with the Guangdong side on the water supply arrangements for the period up to 2008, which allow greater flexibility in the daily supply rate to tie in with the seasonal

fluctuations in the local yield. We will inform the Guangdong side on a monthly basis our demand for Dongjiang water according to actual needs. This will enable us to have better control of the storage level in Hong Kong, thus minimizing the rare occasions of overflow at some reservoirs after heavy rainstorms and saving pumping costs.

Dongjiang water quality

7. Since commissioning of the designated aqueduct system in mid-2003, the ingress of pollution during the transfer of Dongjiang water to Shenzhen Reservoir has been eliminated resulting in remarkable improvement in the quality of raw water delivered to Hong Kong. Under the new water supply arrangements, the Guangdong side will strive to further upgrade the water quality in compliance with the latest national Type II Standard of GB 3838-2002. We will benefit from reduced expenses in water treatment due to the enhanced quality of Dongjiang water. We will co-ordinate closely with the Guangdong side which are committed to continually improving the water environment of Dongjiang.

Expansion of existing reservoir system

8. WSD had carried out a feasibility study on the proposal to expand the existing reservoir system. The study concluded that increasing the existing storage capacities of reservoirs could have adverse implications on the environment and would not be cost-effective when compared to other feasible methods in providing additional water resources, such as desalination.

9. On expansion of water resources, we have embarked upon various research projects comprising the pilot scheme at Ngong Ping on the use of reclaimed water, which has formally commenced operation in March 2006, and also the pilot study on desalination by reverse osmosis technology scheduled for completion in about a year's time. In addition, we are making preparations for implementing a demonstration scheme in Shek Wu Hui on wider use of reclaimed water later this year. Based on the data and experience accumulated from these research projects, we will aim at formulating in late 2007 the long-term strategy and implementation plan for the total water management programme.

Further improvement to reservoir network

10. WSD is planning an Inter-reservoir Transfer Scheme which will be designed to transfer the overflow from the Kowloon Group Reservoirs to Lower Shing Mun Reservoir, thereby reducing the discharge into the drainage system in Lai Chi Kok area and at the same time, transforming the overflow into potable water resources. We will continue to look into other practical options with a view to further improving the reservoir network, subject to their technical feasibility and cost effectiveness.

**Environment, Transport and Works Bureau
April 2006**

**Written question raised by Hon Frederick FUNG Kin-kee
at the Legislative Council meeting on 12 December 2007
and the Administration's reply**

Question:

It has been reported that the Guangdong authorities will soon implement the Dongjiang River Basin Water Resources Allocation Scheme to limit the quantity of water to be drawn by cities along the Dongjiang River. In this connection, will the Government inform this Council:

- (a) whether it has communicated with the Guangdong authorities about the aforesaid measure; if it has, of the details, and whether it has assessed the impact of such a measure on the quantity of potable water supply to Hong Kong in the short term;
- (b) given that the provisions on the quantity and price of water supply in the water supply arrangements signed between the Government and the Guangdong authorities are valid for the period up to 2008 only, whether it has assessed the impact of the aforesaid measure on the price and mode of potable water supply to Hong Kong after 2008; and
- (c) what it has done and will do to explore other water resources?

Reply:

- (a) The Guangdong and Hong Kong authorities meet regularly on Dongjiang water supply. At the meeting held in October 2007, the Guangdong authorities advised that the "Dongjiang Water Resource Allocation Scheme" (the Scheme) was being drafted. However, they did not reveal any details of the Scheme, nor indicate that the Scheme would directly affect the Dongjiang water supply to Hong Kong.
- (b) The current Dongjiang Water Supply Agreement will expire by the end of 2008. We have started negotiation with the Guangdong authorities for a new water supply agreement. Since the Scheme is still being drafted, we are not able to evaluate at this stage what effect it would bring on the negotiation of the new water supply agreement.

- (c) We have just completed a pilot desalination plant study using reverse osmosis technology. We are also conducting pilot schemes on the use of reclaimed water at Ngong Ping and Shek Wu Hui. Under the pilot schemes, treated effluent after further processing would be put to non-potable use such as flushing and irrigation.

Separately, we are proceeding with a study on the total water management. We will take into account major factors such as environment, cost effectiveness and sustainability, as well as information and data collected through the foregoing pilot schemes to formulate a long term strategy for the total water management. The study is expected to be completed in 2008.

Appendix III

New agreement for supply of Dongjiang water

List of relevant papers

Date	Meeting	References
8 February 2006	A motion on "Improving the notification mechanism on potable water supply to Hong Kong and enhancing coordination in the supply of potable water to Hong Kong" moved by Mr Albert CHENG, as amended by Mr WONG Ting-kwong and Mr Fred LI, was passed at the Council meeting.	<p>Hansard (Pages 227 to 275) http://www.legco.gov.hk/yr05-06/english/counmtg/hansard/cm0208ti-translate-e.pdf</p> <p>Progress Report http://www.legco.gov.hk/yr05-06/english/panels/plw/papers/plwcb1-watersupply-e.pdf</p>
April 2006	A paper on "DongJiang Water Supply" was issued by the Administration to the Panel on Planning, Lands and Works for information.	<p>Administration's information paper CB(1)1305/05-06(01) http://www.legco.gov.hk/yr05-06/english/panels/plw/papers/plwcb1-1305-1e.pdf</p>
12 December 2007	A written question on "Supply of Dongjiang water to Hong Kong" was raised by Mr Frederick FUNG at the Council meeting.	<p>Hansard (Pages 73 to 74) http://www.legco.gov.hk/yr07-08/chinese/counmtg/floor/cm1212-confirm-ec.pdf</p>
27 May 2008	The item on "A Strategy for Total Water Management in Hong Kong" was discussed by the Panel on Development.	<p>Discussion paper http://www.legco.gov.hk/yr07-08/english/panels/plw/papers/dev0527cb1-1602-8-e.pdf</p> <p>Minutes of meeting http://www.legco.gov.hk/yr07-08/english/panels/plw/minutes/de080527.pdf</p>