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Legislative Council of the Hong Kong Special Administrative Region

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Delegation of the Panel on Development

Report on the duty visit to the Dongjiang River Basin

14 and 15 April 2017

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CHAPTER 1 — INTRODUCTION

Purpose of the report

1.1 This report presents the major findings of the Delegation of the Panel on Development ("the Panel") from its duty visit to the Dongjiang River Basin ("DJ River Basin") in four cities of Guangdong ("GD") Province (Heyuan, Huizhou, Dongguan and Shenzhen) on 14 and 15 April 2017 in respect of the operation of the water supply system of Dongjiang water ("DJ water") supplied to Hong Kong and the quality of DJ water.

Background

1.2 At present, about 20% to 30% of Hong Kong's fresh water supply is from rainfall and the remaining 70% to 80% is DJ water imported from GD Province. Under the "package deal lump sum" approach adopted since 2006, Hong Kong may import DJ water as needed up to an annual ceiling quantity of 820 million cubic metres[1] to ensure a 99% reliability of water supply in Hong Kong.[2] Under the 2015-2017 DJ water supply agreement signed between the Hong Kong Special Administrative Region ("HKSAR") Government and the GD Provincial Government, the annual lump sum water prices are HK$4,222.79 million in 2015, HK$4,491.52 million in 2016 and HK$4,778.29 million in 2017 respectively.

1.3 Given that DJ water is the major source of fresh water supply in Hong Kong, the quality of DJ water is always of public concern. Dr Hon Helena WONG wrote to the former Panel Chairman on 11 December 2015 expressing concern on certain issues relating to the quality of DJ water and suggested that a visit by the Panel be made within the 2015-2016 legislative session to the DJ River Basin and pumping

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[1] According to the Administration, the actual quantity of DJ water to be imported each year is dependent on the amount of local yield, reservoir storage level and water demand.

[2] According to the Administration, "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.

stations receiving DJ water to understand the operation of the DJ water supply system and the measures taken to protect DJ water from pollution. The Panel agreed to take forward Dr WONG's suggestion of conducting the aforesaid visit. The former Panel Chairman then wrote to the Secretary of Development making a request to understand the following matters on site and asked the Administration to assist in lining up the visit:

(a) the operation of the water supply system of DJ water supplied to Hong Kong;

(b) the facilities and measures taken to safeguard as well as monitor and control the quality of DJ water supplied to Hong Kong; and

(c) the purpose and progress of the Comprehensive Remediation Project for the Water Environment of the Shawan River Basin.

1.4 In its correspondence with the Panel on the aforesaid matter in April and May 2016, the Administration advised that the GD Provincial authorities welcomed the Panel's visit to the DJ River Basin and the facilities supporting the supply of DJ water to Hong Kong. However, the GD Provincial authorities considered the period before or after the tide season a better timing for conducting the visit and were pleased to arrange a visit for the Panel to the DJ River Basin in autumn or winter.

1.5 At the Panel's meeting on 8 November 2016, members agreed that the proposed duty visit to the DJ River Basin be pursued. In its reply to the Panel on 22 December 2016, the Administration suggested the visit be conducted on 19 and 20 February 2017. The Panel approved the aforesaid suggestion on 6 January 2017 and agreed that the duty visit be open to non-Panel Members. At its meeting on 13 January, the House Committee granted permission for the Panel to conduct the duty visit. Later, the Administration suggested that the visit be rescheduled to 14 and 15 April 2017. The Panel agreed to the suggestion at the meeting held on 28 February 2017.

Objectives of the duty visit

1.6 The objectives of the Panel's duty visit to the DJ River Basin are as follows:

(a) to obtain first-hand information on the measures taken by the GD Provincial authorities in safeguarding the quality of DJ water supplied to Hong Kong;

(b) to observe the quality of DJ water at various points of the Dongjiang-Shenzhen Water Supply System ("Dongshen Water Supply System"); and

(c) to exchange views with the GD Provincial authorities on issues of mutual concern related to the supply of DJ water to Hong Kong.

Composition of the Delegation

1.7 The Delegation comprised the following 18 members:

Hon Kenneth LAU Ip-keung, MH, JP (Deputy Chairman of the Panel cum Delegation Leader)
Dr Hon Helena WONG Pik-wan (Deputy Delegation Leader)
Ir Dr Hon LO Wai-kwok, SBS, MH, JP (Deputy Delegation Leader)
Hon CHAN Kin-por, BBS, JP
Hon Paul TSE Wai-chun, JP
Hon LEUNG Kwok-hung
Hon YIU Si-wing, BBS
Hon Charles Peter MOK, JP (non-Panel Member)
Hon CHAN Han-pan, JP
Hon LEUNG Che-cheung, BBS, MH, JP
Hon Kenneth LEUNG
Hon Alice MAK Mei-kuen, BBS, JP
Dr Hon Elizabeth QUAT, JP (non-Panel Member)
Dr Hon Junius HO Kwan-yiu, JP
Hon Holden CHOW Ho-ding
Hon SHIU Ka-chun
Hon Tanya CHAN
Hon LAU Kwok-fan, MH

18 members of the Delegation pose for a group photo

Standing from left: Hon LEUNG Kwok-hung, Hon LEUNG Che-cheung, Hon Charles Peter MOK, Dr Hon Elizabeth QUAT, Hon YIU Si-wing, Hon Kenneth LEUNG, Hon SHIU Ka-chun, Hon CHAN Han-pan, Hon Kenneth LAU Ip-keung (Leader), Hon LAU Kwok-fan, Ir Dr Hon LO Wai-kwok (Deputy Leader), Hon Holden CHOW Ho-ding, Hon Alice MAK Mei-kuen, Hon CHAN Kin-por, Dr Hon Junius HO Kwan-yiu and Hon Paul TSE Wai-chun

Seated from left: Dr Hon Helena WONG Pik-wan (Deputy Leader) and Hon Tanya CHAN

1.8 There were six staff members accompanying the Delegation. Apart from Ms Anita SIT, Assistant Secretary General, and Ms Sharon CHUNG, Clerk to the Panel, two staff members (Mr Raymond CHOW and Miss Queenie LAM) were responsible for logistical arrangements and two others (Ms Brenda YEUNG and Mr Robert LAW) for issuing press releases, handling media enquiries and photographing.

1.9 Appointed by the Development Bureau ("DEVB") and the Water Supplies Department ("WSD"), a number of officials responsible for water supplies policies and works projects joined the visit and accompanied the Delegation to provide technical advice and assist in lining up the visit. The list of the officials concerned is appended below:

DEVB

Mr Eric MA Siu-cheung (Secretary for Development)
Mr HON Chi-keung (Permanent Secretary for Development (Works))
Mr Vincent MAK Shing-cheung (Deputy Secretary for Development (Works))
Mr Vitus NG (Principal Assistant Secretary (Works))
Mr VY Ek-chin (Chief Assistant Secretary (Works))

WSD

Mr Enoch LAM Tin-sing (Director of Water Supplies)
Mr WONG Chung-leung (Deputy Director of Water Supplies)
Mr CHAU Sai-wai (Assistant Director/Development)
Mr Kelvin KWOK Yau-ting (Chief Chemist)

Visit programme

1.10 The visit lasted two days. Departing from Hong Kong on the early morning of 14 April, the Delegation arrived at Heyuan of GD Province in the afternoon. The two-day visit programme is listed below:

14 April 2017 (Friday)	
PM	Visit Xinfengjiang Reservoir by boat Visit the Green Way along the right bank of Dongjiang in Huizhou Visit the Dongjiang River Basin Water Quantity and Quality Monitoring and Control Centre and attend a seminar with Mainland officials
15 April 2017 (Saturday)	
AM	Visit Taiyuan Pumping Station in Dongguan
PM	Visit the Bio-nitrification Plant at Shenzhen Reservoir Receive a briefing on the Comprehensive Remediation Project for the Water Environment of the Shawan River Basin Visit Shenzhen Reservoir

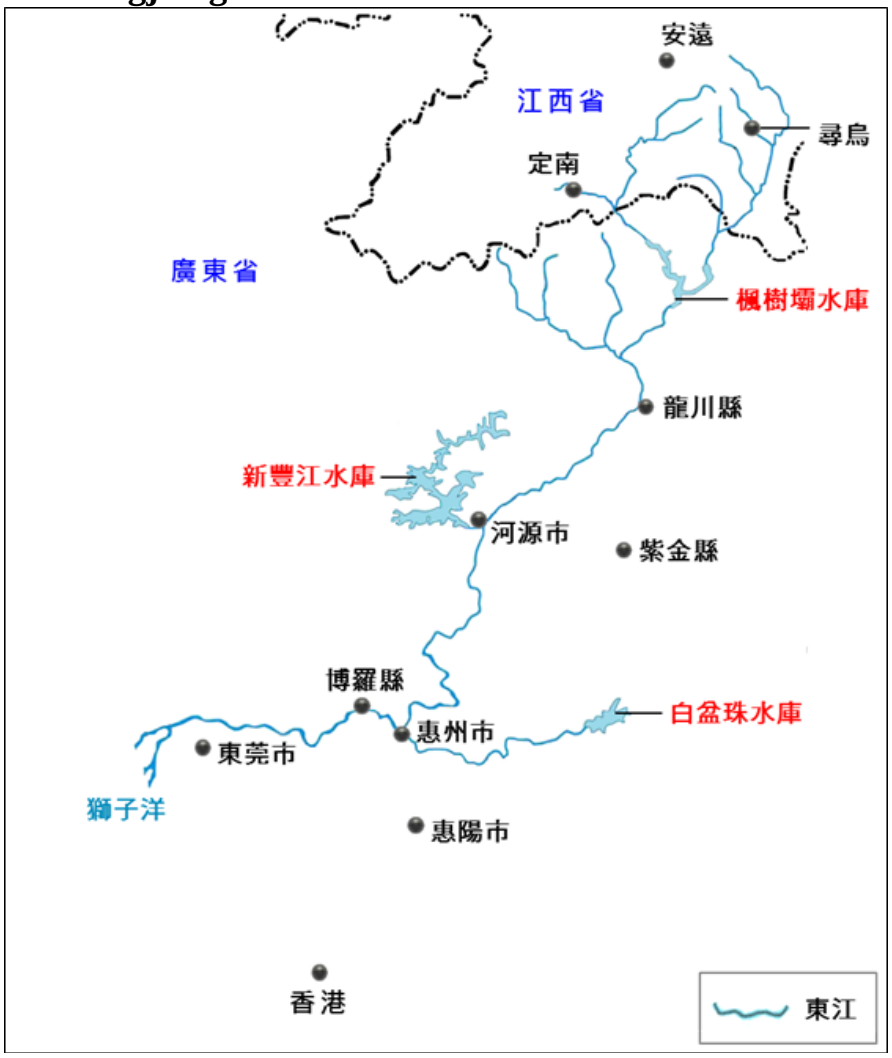
Routing of the Panel on Development's
Duty Visit to the Dongjiang River Basin

(Route map provided by WSD)

Dongjiang River Basin

2.1 Dongjiang is one of the three major river systems in the Pearl River Basin. Its sources are located at the Xunwu, Anyuan and Dingnan Counties in Jiangxi Province. After convergence in Heheba at Longchuan County of GD Province, the combined river is called Dongjiang. The total area of the DJ River Basin is 35 340 km^2, with a total area of 31 840 km^2 within GD Province, representing 90% of the total river basin area. The total length of the main course of Dongjiang is 562 km, of which 127 km flows through Jiangxi Province and the remaining 435 km in GD Province passing through Longchuan, Heyuan, Huizhou, Dongguan and other areas and converging into the Shizi Ocean (**Figure 1**).

Figure 1 — Dongjiang River Basin



Xinfengjiang Reservoir

2.2 The first location the Delegation visited was Xinfengjiang Reservoir located in Heyuan of GD Province. Built in 1958, Xinfengjiang Reservoir (also known as Wanlu Lake) is the largest reservoir among the three large-size reservoirs at the middle-upper stream of the DJ River Basin (the other two are Fengshuba Reservoir and Baipenzhu Reservoir), with a storage capacity of 13.9 billion cubic metres, equivalent to 50 High Island Reservoirs in Hong Kong. It is a large-size reservoir with the main functions of water supply, power generation and flood prevention.

Xinfengjiang Reservoir

2.3 Accompanied by Mr BIAN Li-ming, Deputy Director of the Water Resources Department of GD Province and representatives from the Water Resources Bureau, the Environmental Protection Bureau as well as the Bureau of Housing, Urban and Rural Planning and Construction of Heyuan

Municipality, the Delegation visited Xinfengjiang Reservoir by boat. According to the officials concerned, Xinfengjiang Reservoir has been listed in the 15 key lakes and reservoirs supported by the State. The "Protection Methods for Water Resources in Xinfengjiang, Fengshuba and Baipenzhu Reservoir Areas in the Dongjiang River Basin, Guangdong Province" (《廣東省東江流域新豐江楓樹壩白盆珠水庫庫區水資源保護辦法》) issued by the People's Government of GD Province in March 2011 set out a series of measures to enhance the protection of the reservoir areas and the respective reservoir protection zones, including the requirement to seek advice from the Bureau of Dongjiang River Basin Administration for construction projects within reservoir protection zones and the prohibition of polluting activities (such as quarrying, mining and extensive poultry farming) within reservoir protection zones.

The Delegation visits Xinfengjiang Reservoir by boat

2.4 The Delegation notes that Heyuan Environmental Protection Bureau and the authorities concerned attach great importance to the ecological conservation of Xinfengjiang Reservoir and the improvement of the Reservoir's water quality. The measures currently taken include "three prohibitions" (prohibition of planting eucalypts that may absorb water, prohibition of highway construction and prohibition of polluting industries within reservoir protection zones), stepping up the construction of town-level sewage treatment plants along Dongjiang and associated pipe network, stepping up the remediation of diffuse pollution caused by the agricultural industry and stepping up the rainwater and sewage diversion planning and construction in central urban areas. To preserve precious water resources, all industrial projects in Heyuan have to be confined in designated industrial parks, while the Municipal Government will reject projects that do not meet wastewater discharge standards. In 1994, the Heyuan Municipal Government turned down a multi-billion-yuan joint venture project with Japanese enterprises for building Asia's largest paper pulp mill. Other similar projects that have been rejected include a leather factory involving an investment in the region of tens of millions of yuan.

A representative from the Water Resources Bureau of Heyuan Municipality (first from right) briefs the Delegation on the measures taken by various authorities concerned to protect the water quality of Xinfengjiang Reservoir

Green Way along the right bank of Dongjiang in Huizhou

2.5 After visiting Xinfengjiang Reservoir, the Delegation proceeded to Huizhou. Huizhou is one of the large cities along Dongjiang. Upon arrival at Huizhou, the Delegation first visited the Green Way, a 18.8-km walking trail built along Dongjiang. By walking along the Green Way, visitors can observe the quality of water at the Huizhou section of the main course of Dongjiang in a short distance.

The Delegation with Mr Eric MA Siu-cheung, Secretary for Development (back row, sixth from right), Mr HON Chi-keung, Permanent Secretary for Development (Works)(front row, third from right) and Mr Enoch LAM Tin-sing, Director of Water Supplies (front row, first from right) at the Green Way in Huizhou

2.6 The Delegation learns that, to safeguard the quality of DJ water, the People's Government of Huizhou Municipality revised the "Measures of Huizhou Municipality on Subsidizing the Operation of Town-level Domestic Sewage Treatment Facilities" (《惠州市鎮級生活污水處理設施運營補助辦法》) in 2015 to raise the standards of subsidization and expand the scope of subsidies, so as to enhance the motivation of town-level sewage treatment operators and increase the sewage treatment capacity. In addition, 11 town-level sewage treatment plants and over 200 rural domestic sewage treatment facilities were planned by the Municipal People's Government in 2015. The People's Government of Huizhou Municipality also attaches great importance to the ecological construction in Huizhou and the expenditure spent on tree planting and water control by the Municipal People's Government is about Renminbi ("RMB") 4 billion yuan a year.

Members of the Delegation observe the quality of water at the Green Way along the right bank of Dongjiang in Huizhou

Dongjiang River Basin Water Quantity and Quality Monitoring and Control Centre

2.7 The Delegation also paid a visit to the Dongjiang River Basin Water Quantity and Quality Monitoring and Control Centre ("the Centre") in Huizhou. In 2014, the Water Resources Department of GD Province invested a total of RMB 98.85 million yuan to put in place the Dongjiang River Basin Water Quantity and Quality Monitoring and Control System ("the Monitoring and Control System") at the Centre.

The Delegation observes the distribution model of the monitoring and control points at the Centre

2.8 Through video surveillance platform and computer network, the Monitoring and Control System connects and communicates with various municipal water resources bureaux and hydrological bureaux within the River Basin as well as province-wide and country-wide water resources information network to conduct remote and real-time monitoring of water resources protection and usage in the DJ River Basin and ensure the

effective implementation of the Water Resources Distribution Plan in the DJ River Basin.

2.9 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》) promulgated by the People's Government of GD Province in August 2008 sets out the maximum amount of water Hong Kong and seven cities of GD Province can draw from Dongjiang. The annual supply ceiling for Hong Kong is 1 100 million cubic metres (**Table 1**).

Table 1 — "Water Resources Distribution Plan in the Dongjiang River Basin of Guangdong Province"

(million cubic metres)

	Allocated annual quantity	
	Under normal yield	**Under drought**
Huizhou	2 533	2 405
Dongguan	2 095	1 944
Heyuan	1 763	1 706
Shenzhen	1 663	1 608
Guangzhou	1 362	1 285
Hong Kong	1 100	1 100
Shaoguan	122	113
Meizhou	26	22
Total	**10 664**	**10 183**

Source: The People's Government of GD Province: Notice of 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的通知》)(2008)

2.10 The Monitoring and Control System collects relevant information about the following 55 targets for monitoring, control and management purposes:

(a) 3 major controlling reservoirs (i.e. Xinfengjiang Reservoir, Fengshuba Reservoir and Baipenzhu Reservoir) — water level, water storage capacity, inflow and outflow, rainfall in reservoir areas and real-time video of their operation;

(b) 11 important controlling sections — water level, water flow, water quality and real-time video;

(c) 12 cascade power stations — water level above and below the gate, water flow and real-time video;

(d) 19 important intake points managed by the province — the amount of water intake, water quality and real-time video; and

(e) 10 main effluent discharge points to the river — water quality and real-time video.

The Delegation learns about the operation of
the Monitoring and Control System at the Centre

2.11 The Delegation then held a seminar with representatives from the Water Resources Department of GD Province and other organizations at the Centre. Please refer to Chapter 3 of the Report for details.

Taiyuan Pumping Station in Dongguan

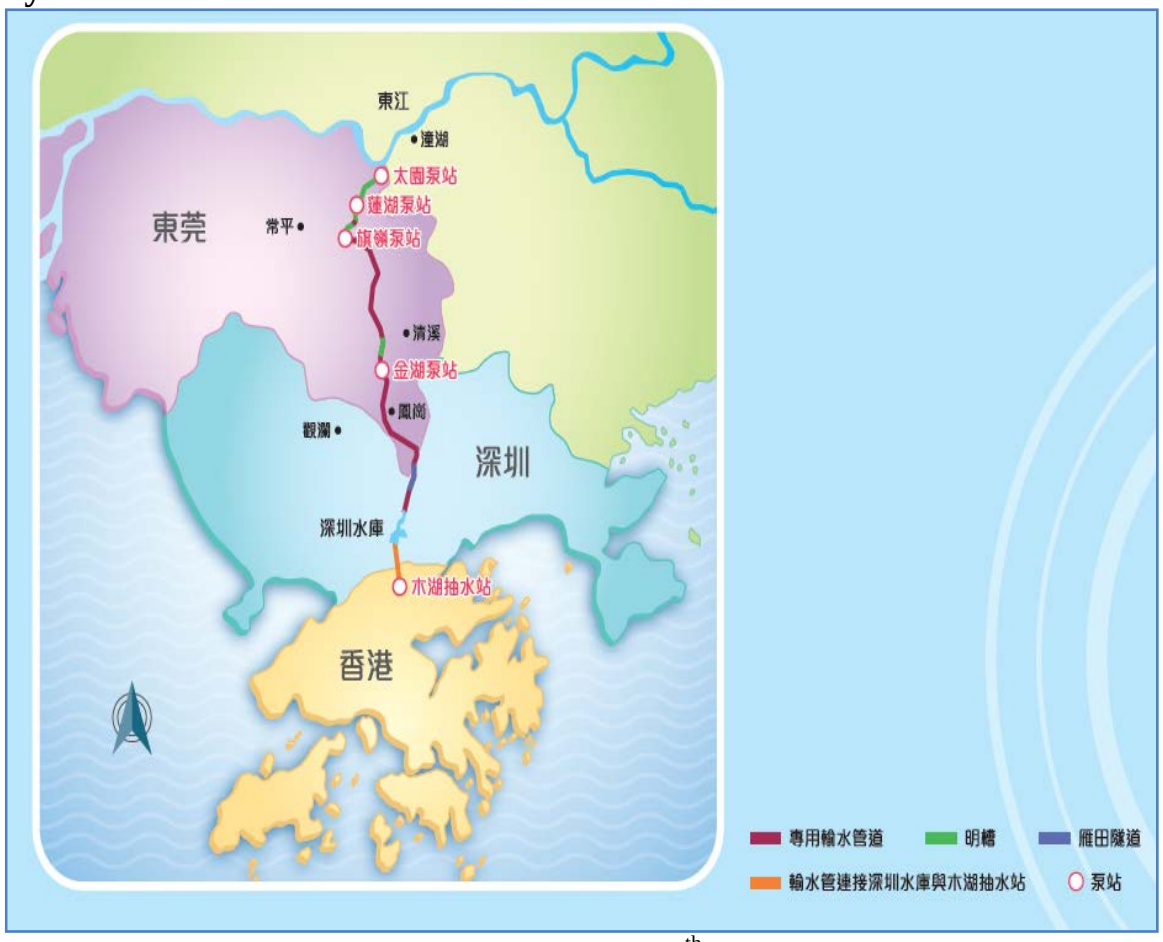
2.12 On the second day, the Delegation first paid a visit to Taiyuan Pumping Station in Dongguan. Taiyuan Pumping Station is an important part of the Dongshen Water Supply System as well as the intake point of DJ water supplied to Hong Kong.

Taiyuan Pumping Station in Dongguan

2.13 DJ raw water is transferred from Taiyuan Pumping Station, flowing through Lianhu Pumping Station and Qiling Pumping Station, to Shenzhen

Reservoir through dedicated aqueduct. The water is then conveyed through pipelines to Shenzhen crossing the border to Muk Wu Pumping Station in Hong Kong (**Figure 2**).

Figure 2— Water Conveyance Route of the Dongshen Water Supply System



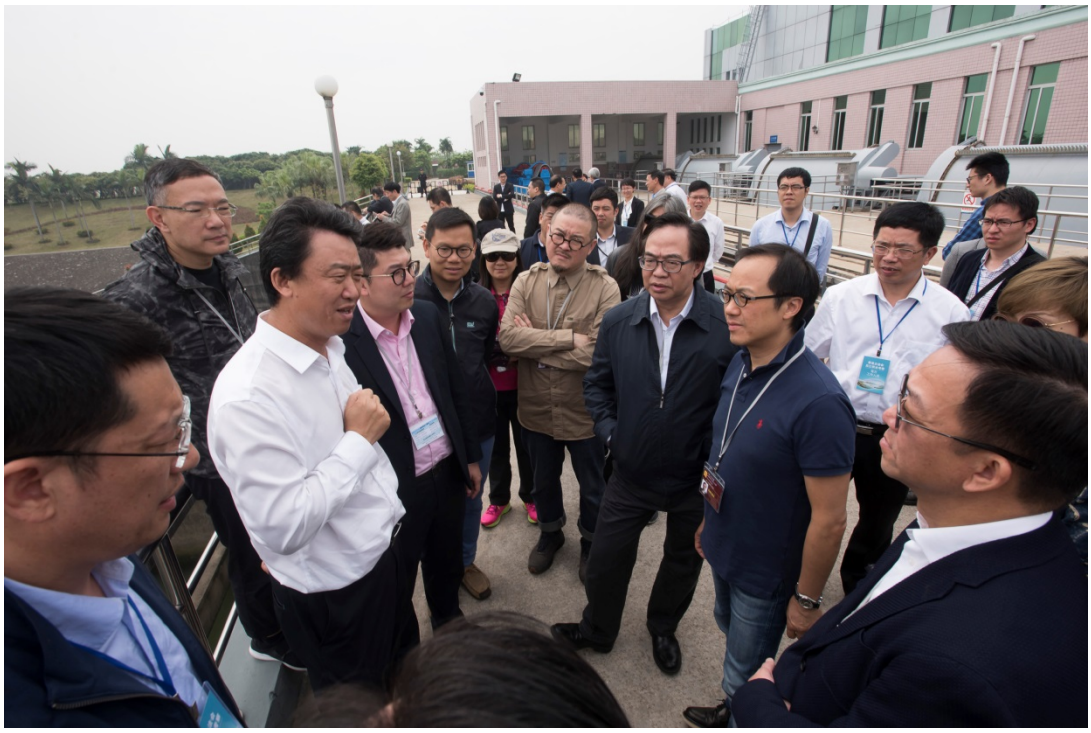
Source: WSD: "The Roving Exhibition for the 50th Anniversary of Dongjiang Water Supply to Hong Kong" (2015)

2.14 The Dongshen Water Supply System was built by the Central People's Government in December 1963, with a construction cost of RMB 38 million yuan, for supply of DJ water to Hong Kong. The entire water supply system was completed in February 1965 and has formally supplied water to Hong Kong since March that year.

2.15 The Dongshen Water Supply System is located at the downstream of Dongjiang within the cities of Dongguan and Shenzhen. Its intake point is situated at Qiaotou Town in Dongguan. Initially, the water delivery line extended 83 km passing through Sima, Qiling, Matan, Tangxia, Shangpu, Yantian and other areas. Six river barrages and eight pumping stations were built. DJ water passes through the channel of natural rivers, such as the Shima River, in reverse flow direction by means of pumping and then flows into Shenzhen Reservoir. After three stages of expansion and a comprehensive improvement project, the length of the water delivery line of the Dongshen Water Supply System has been reduced to 68 km, comprising facilities such as four pumping stations (Taiyuan, Lianhu, Qiling and Jinhu), two sets of independent power supply networks and two regulating reservoirs.

The Delegation learns about the water conveyance route of the Dongshen Water Supply System through an exhibition model at Taiyuan Pumping Station

2.16 Taiyuan Pumping Station is located at the south bank of Dongjiang in Dongguan and the northeast of Qiaotou Town. Built in 1998, the Pumping Station has five main water pumps and one standby pump, with a designed capacity of 100 cubic metres per second (i.e. 3 153 million cubic metres per year) and a pumping head of 11 metres. According to Mr XU Yeqin, President of Guangdong Yuegang Water Supply Co. Ltd. that manages the Dongshen Water Supply System, machines used at the Pumping Station are imported from foreign countries (including Canada and Austria).



Mr XU Yeqin, President of Guangdong Yuegang Water Supply Co. Ltd. (third from left), briefs the Delegation on the operation of Taiyuan Pumping Station

Members of the Delegation with representatives
from DEVB and WSD at Taiyuan Pumping Station

2.17 The Delegation notes that the Shima River located near Taiyuan Pumping Station converges with Dongjiang (**Figure 3**). Before Taiyuan Pumping Station was built in 1998, DJ water supplied to Hong Kong might be contaminated by the water of the Shima River at the intake point in Dongguan. Upon the commissioning of Taiyuan Pumping Station, the intake point was relocated upward for about 350 metres to the upstream of the Shima River for better quality of DJ water, so as to ensure DJ water flowing into the Dongshen Water Supply System will not be affected by the water quality of the Shima River. To further safeguard the quality of DJ water, the authorities concerned in Dongguan carried out the Shima River Sewage Diversion Works in 2005 to block contaminated water from the Shima River by making use of a rubber dam, diverge the contaminated water to an eastbound canal and finally discharge the water into the Shizi Ocean from Humen, so that DJ water will not be contaminated.

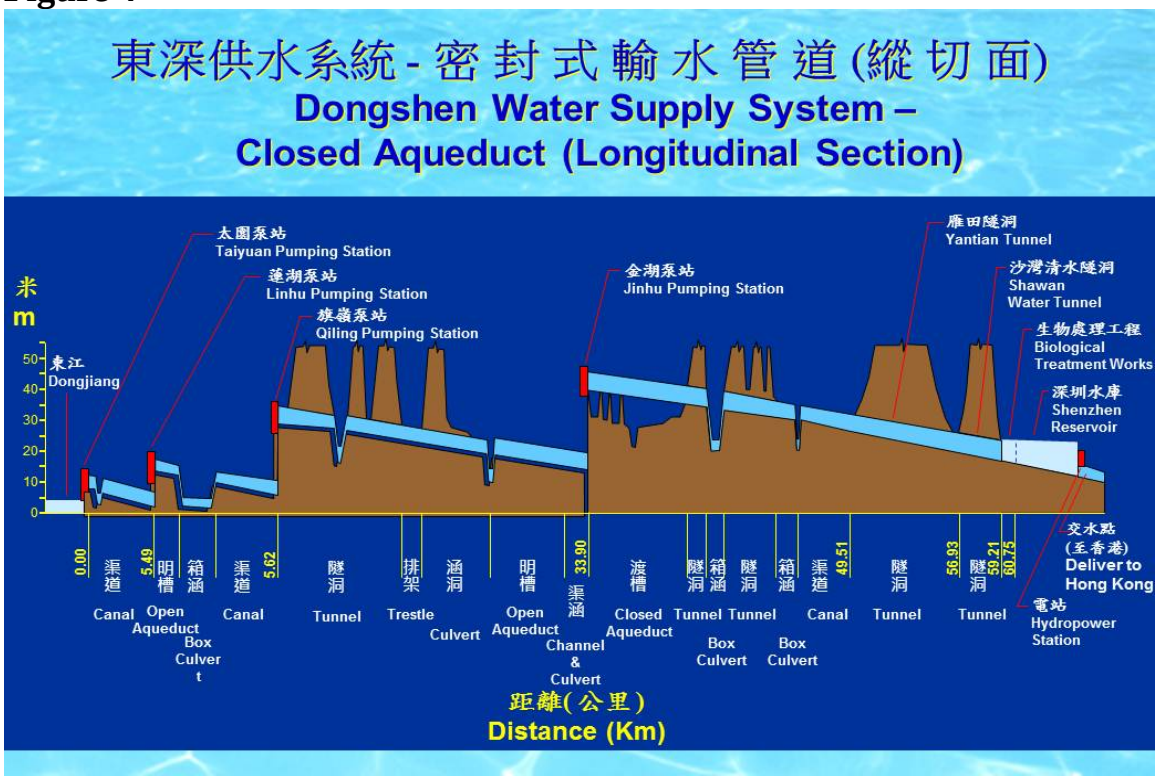
Figure 3 — Location of the Shima River and the eastbound canal

Source: WSD

Rubber dam on the Shima River prevents contaminated water from flowing into Dongjiang

2.18 Improvement works of the Dongshen Water Supply System were carried out in 2000 to 2003. The most important part of the improvement works was the construction of a dedicated aqueduct from Taiyuan Pumping Station to Shenzhen Reservoir with a length of about 59 km. The aqueduct includes a water tunnel of about 22 km and a dedicated aqueduct of about 37 km, forming a closed water supply system with pumping stations, closed aqueducts, tunnels, reservoirs and dedicated aqueducts (**Figure 4**) for separation of clean and dirty water, while raw water from Dongjiang is conveyed directly from the intake point at Taiyuan Pumping Station to Shenzhen Reservoir. The designed supply capacity of the dedicated aqueduct is 2 423 million cubic metres per year, of which the volume of water supplied to Hong Kong can be up to 1 100 million cubic metres per year, while the rest is allocated for use by cities and towns along the route according to the allocation plan.

Figure 4



Source: WSD

Bio-nitrification Plant at Shenzhen Reservoir

2.19 The Delegation departed from Dongguan for Shenzhen at noon on 15 April. The first destination was the Bio-nitrification Plant situated at the inlet of Shenzhen Reservoir. In January 1998, the People's Government of GD Province invested RMB 280 million yuan to build the Plant, which was commissioned in early 1999.

Bio-nitrification Plant at Shenzhen Reservoir

2.20 The Bio-nitrification Plant receives DJ water imported from dedicated aqueduct, making use of the biological contact oxidation process to degrade the contaminants in the water for the purpose of water purification. The biological contact oxidation process is to fill the biological contact oxidation tank with a certain amount of packed bed, using biological film attached on the packed bed and fully-supplied oxygen to oxidize the organic substances in wastewater through biological oxidation to achieve purification.

A staff member of the Bio-nitrification Plant
at Shenzhen Reservoir (first from right) explains to the Delegation
the operation of the Bio-nitrification Plant

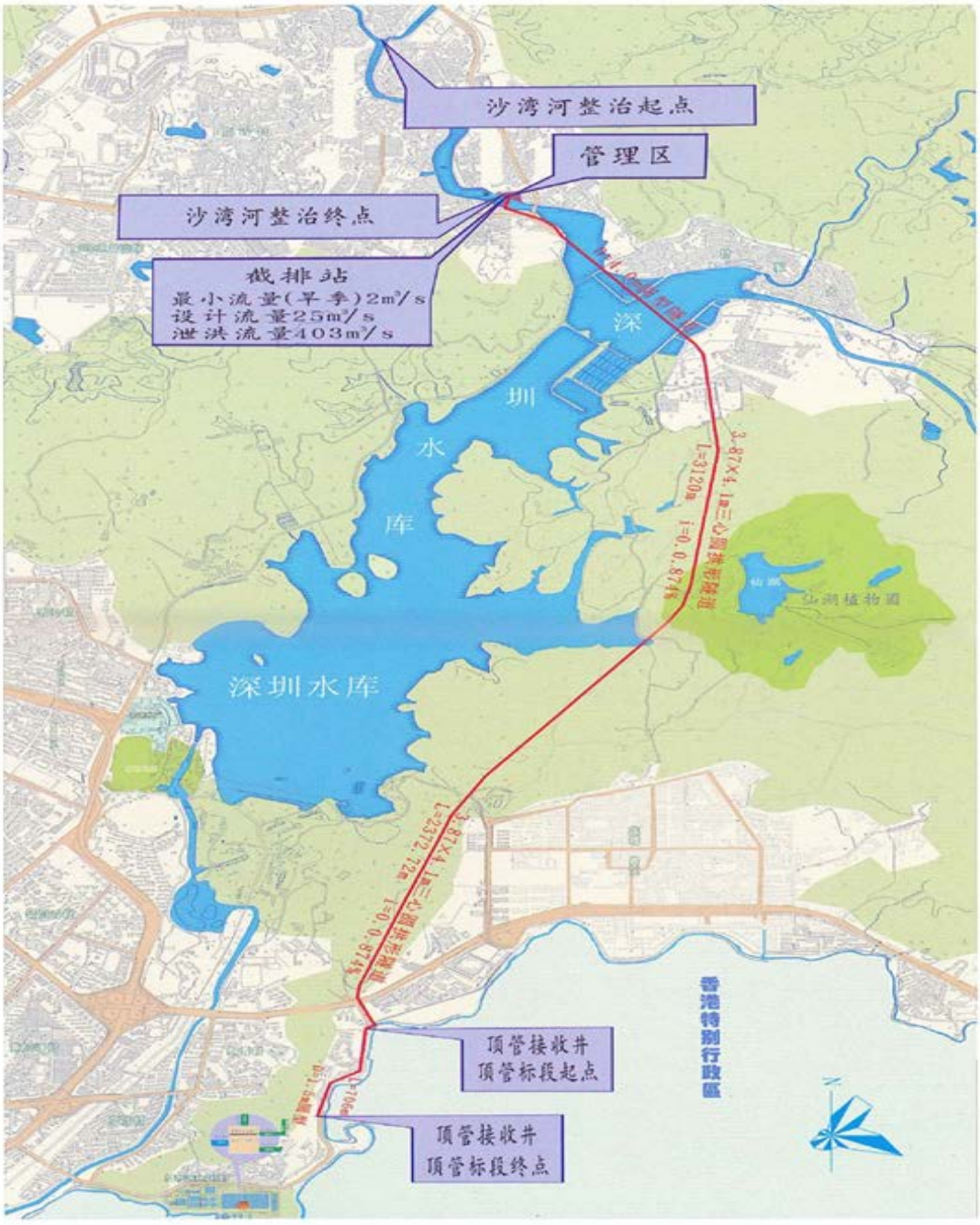
2.21 Facilities of the Bio-nitrification Plant include: inlet sedimentation zone, biological treatment tank, contaminant blocking and cleaning facilities and outlet sedimentation zone. The capacity of raw water treated is 4 million cubic metres per day.

The Delegation visits the Bio-nitrification Plant

Comprehensive Remediation Project for the Water Environment of the Shawan River Basin

2.22 The Shawan River lies to the north of Shenzhen Reservoir. Before being polluted by domestic effluent, it was originally part of the river network that formed the catchment of Shenzhen Reservoir. The Shenzhen authorities completed the "Shawan River Sewage Interception Works" in 2003 to intercept the contaminated water that flows into the Shawan River so that the contaminated water is trapped within the Shawan River Gate Dam at the tail of Shenzhen Reservoir. The contaminated water then flows into Luofang Sewage Treatment Plant in Liantang through underground tunnel for centralized treatment before discharging into the Liantang River.

Figure 5 — General layout plan of the Basin Sewage Interception Works System at Shenzhen Reservoir



Source: WSD

2.23 The Shenzhen authorities launched the Comprehensive Remediation Project for the Water Environment of the Shawan River Basin in December 2016 to safeguard the water quality of Shenzhen Reservoir. According to the Shenzhen authorities, as the aforesaid Remediation Project was in progress and the nearby roads were quite narrow, the coach of the Delegation was not allowed to go to the site. The Shenzhen authorities briefed the Delegation on the purpose and overview of the Remediation Project as well as the operation of the Shawan River Sewage Interception at the 110 Command Centre of the Dongshen Branch of the Shenzhen Public Security Bureau. The Dongshen Branch of the Shenzhen Public Security Bureau is responsible for the safety and security of the Dongshen Water Supply System and assists in protecting the water quality. Through a number of monitoring screens installed at the 110 Command Centre, members of the Delegation could take a look at the site of the Remediation Project. No photo-taking is allowed at the Command Centre.

The Shenzhen authorities brief the Delegation on the purpose and overview of the Comprehensive Remediation Project for the Water Environment of the Shawan River Basin at the 110 Command Centre of the Dongshen Branch of the Shenzhen Public Security Bureau (No photo-taking is allowed at the Command Centre)

2.24 The Delegation learns that the major works of the Project include desilting the river channel, relocating riverbank, improving flood prevention, repairing ecological landscape, laying sewage pipes along the River for interception and expanding sewage treatment plant to deal with the problem of the Shawan River being contaminated by domestic effluent. The entire Project is expected to be completed in 2019, with a total investment of RMB 550 million yuan.

2.25 Members of the Delegation are concerned that, although the Shawan Interception Point was built in 2003 by the Shenzhen authorities to prevent contaminated water of the Shawan River from flowing into Shenzhen Reservoir, such contaminated water will flow into Shenzhen Reservoir during rainstorms as and when floodwater discharge is needed.

2.26 The Shenzhen authorities have advised that Shenzhen Water (Group) Co. Ltd. is responsible for the daily management of the Shawan Interception Point. Their staff members on duty will notify Guangdong Yuegang Water Supply Co. Ltd. of the situation when the water level of the River reaches 27.6 metres. Guangdong Yuegang Water Supply Co. Ltd. will assign staff members to understand the situation on site. Guangdong Yuegang Water Supply Co. Ltd. has set up a video surveillance spot at the Interception Point. In accordance with the management regulations, the standard is that floodwater discharge will begin at the Shawan Interception Point when water level in front of the gate reaches 29.31 metres. Therefore, the water of the Shawan River in general will not flow into Shenzhen Reservoir. It is only when the water level rises steeply to the alert threshold as a result of heavy rainstorm during flood season that the Shenzhen authorities may need to discharge the floodwater into Shenzhen Reservoir for the safety of the public.

2.27 WSD has supplemented that both the GD and Hong Kong sides have established a notification mechanism in respect of floodwater discharge at the Shawan Interception Point, so that WSD can receive early alert about the condition of floodwater discharge in order to make prompt and appropriate arrangements and take measures accordingly. This can ensure that the quality of all raw water will be fully compliant with the World Health Organization's standards in respect of chemical, microbial and

radiological quality after treatment at WSD's water treatment works. In fact, in the event of any major contamination incident affecting the quality of DJ water supplied to Hong Kong, the Department of Environmental Protection of GD Province or Guangdong Yuegang Water Supply Co. Ltd. will immediately notify WSD. WSD will take appropriate control measures and actions accordingly, including:

(a) immediately stepping up the monitoring and control of the quality of DJ water at Muk Wu Pumping Station;

(b) reducing or suspending the supply of DJ water where necessary depending on the actual water quality condition;

(c) discharging all incoming DJ water if necessary;

(d) redeploying local water sources to supply various water treatment works; and

(e) collecting more detailed information from the GD Provincial authorities so as to formulate further actions required.

Shenzhen Reservoir

2.28 The final destination in the Delegation's visit to the DJ River Basin was Shenzhen Reservoir. Built in 1959, Shenzhen Reservoir is located at the Luohu District of Shenzhen, which is the last regulating reservoir of the Dongshen Water Supply System on lower Shawan River. It was included in the Dongshen Water Supply System in 1964 and has formally supplied water to Hong Kong since March 1965.

Shenzhen Reservoir

2.29 The main dam of Shenzhen Reservoir is 25.5 metres tall. The total storage capacity amounts to 51 million cubic metres and its catchment area covers 60.5 km^2. It consists of a main dam, a left auxiliary dam, a right auxiliary dam, a spillway and a water tunnel; four water supply culverts; two hydropower stations. Shenzhen Reservoir is a middle-size reservoir regulated by both cascade pumping station and reservoir for water storage, floodwater retention, water purification and water supply to Hong Kong and Shenzhen. The GD Provincial Government has designated certain parts of Shenzhen Reservoir as water source protection zones, in which 7.40 km^2 belongs to the first-grade protection zone and 51.58 km^2 belongs to the second-grade protection zone. No polluting construction project is allowed within these protection zones.

Mr WANG Gang, Deputy Secretary General of
the Shenzhen Municipal Government (first from left),
briefs the Delegation on the development of Shenzhen

The Delegation visits Shenzhen Reservoir

2.30 The Guangdong Yuegang Water Supply Co. Ltd., which is responsible for the management of the Dongshen Water Supply System, has advised that the Company has a dedicated water quality protection team to make an overall plan for water quality management works: the Company's water quality management team will carry out water quality inspection and observation daily; water quality laboratories have been set up along the

Dongshen Water Supply System with dedicated water quality management officers monitoring and controlling water quality; a water environment monitoring centre has also been established to be in charge of the testing of water quality and scientific researches on water quality protection.

A representative of Guangdong Yuegang Water Supply Co. Ltd. (first from left) briefs the Delegation on the operation of the Dongshen Water Supply System

Members of the Delegation with representatives from various organizations, including Water Resources Department of GD Province, Shenzhen Municipal Government, Guangdong Yuegang Water Supply Co. Ltd., DEVB and WSD, at Shenzhen Reservoir

CHAPTER 3—SEMINAR

3.1 A seminar was held between the Delegation and representatives from the Water Resources Department of GD Province, the Bureau of Dongjiang River Basin Administration, the Department of Environmental Protection of GD Province, the Department of Agriculture of GD Province and the Department of Housing and Urban-rural Development of GD Province at the Dongjiang River Basin Water Quantity and Quality Monitoring and Control Centre in Huizhou from 5:30 pm to 6:30 pm on 14 April 2017. Officials of the HKSAR Government, including Secretary for Development, Permanent Secretary for Development (Works) and Director of Water Supplies, also attended the seminar. At the seminar, members of the Delegation expressed their views on various issues, including the price of DJ water supplied to Hong Kong, the measures taken by the GD Provincial authorities for safeguarding the quality of DJ water and the distribution of DJ water.

Seminar between the Delegation and representatives from the GD Provincial authorities on issues relating to DJ water supplied to Hong Kong

Price of Dongjiang water

A comparison between the price of DJ water supplied to Hong Kong and that supplied to Dongguan/Shenzhen

3.2 Members of the Delegation have enquired about the reasons why the price of DJ water supplied to Hong Kong (e.g. the water price in 2017 is HK$5.8 per cubic metre) is higher than the prices of DJ water supplied to Dongguan, Shenzhen and other cities (it is noted that the prices are around HK$1 per cubic metre).

3.3 The Water Resources Department of GD Province has explained that the supply of water to cities in GD Province by the Water Resources Department is a kind of public service, while the concessionary price of water supply is a subsidy, of which the nature is similar to the first 12 cubic metres of free water consumed by members of the public in Hong Kong. The price of water supply is managed and controlled by the Government rather than being determined by the market, which does not fully reflect the real value of water resources. In addition, apart from paying water tariffs, the relevant authorities in Shenzhen, Dongguan and other cities also need to spend much on the protection of water resources, including the construction of water resources redeployment projects, sewage treatment plants and waste disposal plants, as well as carrying out river remediation and environmental improvement works. Furthermore, Shenzhen, Dongguan and other cities have devoted their precious land resources for the construction of the Dongshen Water Supply System, while such land values have not been fully reflected in the cost of Dongshen water supply. For Shenzhen Reservoir alone, its area covers up to 70 km^2 (including catchment area and protection zones in which development is not allowed). If 30% of the land could be used for development, the value would have exceeded RMB 700 billion yuan at a conservative estimate. Hence, the water prices paid by Shenzhen, Dongguan and other cities are notionally lower than that paid by Hong Kong, but the actual costs paid for water by these cities are far higher than that paid by Hong Kong.

"Package deal lump sum" approach and "quantity-based charging" approach

3.4 Since 2006, the "package deal lump sum" approach has been adopted in the DJ water supply agreement, with an annual water supply ceiling of 820 million cubic metres. The GD and Hong Kong sides agree on the water price before signing a three-year water supply agreement triennially. For example, according to the existing water supply agreement, the lump sum water prices for 2015, 2016 and 2017 (with water supply of 820 million cubic metres per year) are HK$4,222.79 million, HK$4,491.52 million and HK$4,778.29 million respectively. In accordance with the long-term water supply agreement signed between the GD and Hong Kong sides in 1989, the maximum capacity of water that could be drawn by Hong Kong might reach 1 100 million cubic metres per year. The GD side agreed that the time of reaching this ultimate capacity would be subject to further negotiation.

3.5 The actual draw-down of DJ water is determined by WSD each month after taking into account local reservoir and rainfall conditions to minimize reservoir overflow. In other words, the annual DJ water imported by Hong Kong does not necessarily reach the maximum capacity specified in the agreement (i.e. 820 million cubic metres), but an agreed annual lump sum payment is still required to make to GD Province in exchange for a guarantee of water supply up to the annual supply ceiling each year.

3.6 Some Delegation members have pointed out that incoming DJ water required by Hong Kong in recent years was below 820 million cubic metres per year. For instance, only 612 million cubic metres of DJ water was imported in 2013 and 629 million cubic metres in 2016, while the water price under the water supply agreement was fully paid, thus wasting hundreds of millions of public money every year. In this connection, some members have enquired whether the GD side can supply DJ water to Hong Kong on a "quantity-based charging" approach.

3.7 The Water Resources Department of GD Province has advised that the water resources development and utilization rate in the DJ River Basin has already reached 28.6%, which is close to the "safety red line" (33%).

Nevertheless, with average annual per capita water resources of only 1 000 cubic metres per year, the DJ River Basin is regarded as an area of water scarcity according to international assessment standards. Therefore, the GD Provincial authorities have implemented the DJ water resources distribution plan, which annually regulates water quantity in the basin according to the total amount of allocated water resources, so as to ensure an efficient usage of limited water resources. In determining the annual water quantity regulation plan, the Water Resources Department has to pre-determine the maximum quantity of water required by various areas (including Hong Kong) per year. In addition, due to the very high electricity consumption required for operating the Dongshen Water Supply System each year, the operation and administration authorities have to make an application for electricity to be consumed in the coming year to the power dispatch department at the end of each year in order to ensure adequate electricity supply, while the electricity consumption index is determined based on the planned maximum amount of water supply per year, so users are required to pre-determine their annual intake plan. Furthermore, annual maintenance or repairs have to be carried out for the operating facilities of the Dongshen Water Supply System and the coming year's maintenance or repair plan should be formulated at the end of each year to ensure the safety of water supply. To formulate such plan, it is also necessary to pre-determine the amount of annual water supply. Hence, same as various Mainland users, Hong Kong is required to determine the maximum draw-down for the coming year annually. The Water Resources Department of GD Province considers that a quantity-based charging approach using the pre-determined maximum amount of water drawn per year is basically the same as the existing package deal lump sum approach. If the Hong Kong side does not determine the maximum amount of water drawn per year and adopts the quantity-based charging approach, while hoping to have guaranteed water supply, the GD side has to assess the unit price of water supplied to Hong Kong. The eventual water price to be paid by the Hong Kong side per year may not necessarily be lower than the current water price.

3.8 DEVB officials have advised that the actual DJ water imported by Hong Kong in 2011 was 818 million cubic metres, which was close to the ceiling quantity. Although the amount of DJ water imported by Hong

Kong in certain years did fall short of the ceiling quantity, the amount usually exceeded 700 million cubic metres. Therefore, pre-determining 820 million cubic metres of water is to take out insurance for more than 100 million cubic metres of additional water supply, so as to prevent Hong Kong from water rationing due to water shortage during extreme drought years. If the HKSAR Government abandons such guaranteed water supply of 820 million cubic metres, under the circumstances that other cities along Dongjiang are in need of additional water resources, the quota of DJ water given up by Hong Kong will be transferred to these cities.

Increase in the water price

3.9 Some members of the Delegation pointed out that the quantity of DJ water purchased by Hong Kong has remained unchanged since 2006, i.e. 820 million cubic metres per year, but the annual rate of increase in water price is close to or even exceeds 6%, and the cumulative rate of increase over the past 12 years is almost 100%.

3.10 The Water Resources Department of GD Province has advised that the water price under the Water Supply Agreement is based on operational costs, the exchange rate between RMB and Hong Kong dollar as well as the changes in price indices of both GD and Hong Kong. From 2006 to 2008, the total tariff for the water supplied to Hong Kong by the GD side per year was HK$2,494.8 million, equivalent to RMB 2,570 million yuan based on the exchange rate at that time. The total water tariff in 2017 is HK$4,778.29 million, equivalent to RMB 4,060 million yuan based on the current exchange rate. The cumulative rate of increase over the past 12 years was 58% instead of almost 100%, while the compound annual growth rate was 3.9%. From 2006 to 2017, the cumulative rate of increase in the relevant consumer price index of the GD Province is about 36%. The minimum wage standard in Shenzhen sees a rise from RMB 810 yuan per month in 2006 to RMB 2,130 yuan per month in 2017, representing an increase of 163%. From the above figures, the rate of increase in water price is far lower than the rate of increase in operating costs. Since 2009, the GD side has only requested to convert the total water price to an amount approximate to the purchasing power of the total water price in 2006, but the actual purchasing power decreases year by year. From 1985 to 2017, the

Mainland broad money has expanded by 303 times, representing a compound annual growth rate of 21% over a period of around 30 years, while the compound annual growth rate of the price of water supplied to Hong Kong by the GD side was only 3.9% over the past 12 years. Therefore, the purchasing power of RMB 4,060 million yuan in 2017 is far lower than the purchasing power of RMB 2,570 million yuan in 2006.

Members of the Delegation raise questions and express views at the seminar.

Measures taken to protect the quality of Dongjiang water

3.11 Some members of the Delegation have advised that they have confidence in the water quality at the middle-stream and upstream of Dongjiang, especially the water quality at Xinfengjiang Reservoir. However, when river water flows through densely populated large cities, such as Huizhou, Dongguan and Shenzhen, it may be contaminated by domestic wastewater, industrial and agricultural effluent. They are concerned about how the wastewater will be treated, and if members of the public violate the law and pollute the river, whether law enforcement work has been carried out rigorously.

3.12 The Water Resources Department of GD Province has emphasized that great importance has been attached to the protection of the quality of DJ water to ensure that the quality of DJ water supplied to Hong Kong is in compliance with the National Standards set out for Type II waters in the "Environmental Quality Standards for Surface Water GB3838-2002". The Department of Environmental Protection and the Department of Agriculture of GD Province have advised that long-term measures taken by the GD Provincial authorities for protecting the quality of DJ water include establishing statutory regimes, setting up management organizations, reasonably allocating water resources, formulating basin ecological compensation mechanism, constructing modernized surveillance system, etc. As regards laws and regulations, the GD Provincial authorities have implemented laws and regulations as well as guidelines concerning the protection of the quality of DJ water and the prevention and mitigation of pollution, mainly including the implementation of the "Regulations of Guangdong Province on Water Quality Protection of Dongjiang Water System" (《廣東省東江水系水質保護條例》) and the "Protection Methods for Water Resources in Xinfengjiang, Fengshuba and Baipenzhu Reservoir Areas in the Dongjiang River Basin, Guangdong Province" (《廣東省東江流域新豐江楓樹壩白盆珠水庫庫區水資源保護辦法》), and a rigorous water resources control system based on the three red-line control specified in the "Opinions of the State Council on Applying the Strictest Water Resources Control System" (《國務院關於實行最嚴格水資源管理制度的意見》).

3.13 Relevant works carried out in recent years include rigorously controlling the construction of water-related projects in the DJ River Basin, stepping up the construction of sewage treatment facilities, enhancing the mitigation of pollution caused by livestock and poultry farming, stepping up the construction of public ecological forests and so on. Regarding the control on water-related projects, six cities (including Guangzhou, Shenzhen, Shaoguan, Heyuan, Huizhou and Dongguan) in the DJ River Basin have rejected about 7 000 heavily polluting water-related projects and knocked out 1 391 heavily polluting enterprises since 2011. As for the mitigation of pollution caused by livestock and poultry farming, the aforesaid six cities have cleared a total of about 19 000 illegal livestock and poultry farms since 2011.

Distribution of Dongjiang water

3.14 Given the rapid development of cities in the DJ River Basin and ever-growing population, the demand for fresh water is also on the rise. Some Delegation members are concerned about how the GD Provincial authorities can increase the amount of DJ water allocated to various cities.

3.15 The Water Resources Department of GD Province has advised that, as mentioned previously, the annual amounts of DJ water allocated to seven cities of GD Province (Meizhou, Heyuan, Shaoguan, Huizhou, Dongguan, Guangzhou and Shenzhen) and Hong Kong are currently based on the "Water Resources Distribution Plan in the Dongjiang River Basin of Guangdong Province" promulgated by the GD Provincial People's Government in 2008. The maximum DJ water resources development and utilization rate is 33% as specified in the Distribution Plan. At present, the DJ water resources utilization rate has reached 28.6%. Although there is still little room for increment, the GD Provincial authorities have to implement water resources conservation and protection measures since the demand for DJ water in various cities is higher than the supply. A special fund for provincial water resources conservation and protection is arranged annually to support the water resources conservation and protection works carried out by cities and counties in the DJ River Basin. Shenzhen and

Dongguan have been included as pilot cities for building national water-saving societies. Heyuan, Dongguan and Huizhou have also put in place water conservation measures, including high-efficiency water-saving irrigation work projects in Heyuan, the construction of water-saving showcase for the agricultural industry and highly water-consuming industries in Dongguan, and water-saving reform projects in irrigation districts of Huizhou.

Conclusion

3.16 Representatives from the GD Provincial authorities concerned and members of the Delegation attending the seminar share the view that this has been a precious opportunity for them to exchange views. The Delegation has gained a better understanding of the price of DJ water, the protection of water quality and the distribution of DJ water, while the GD Provincial authorities concerned could directly hear the views of Members of the HKSAR Legislative Council on issues relating to DJ water. The Delegation is in particular concerned about the price of DJ water supplied to Hong Kong, in the hope that the HKSAR Government may, during its negotiation with the GD side on the next DJ water supply agreement, secure the best water supply terms and price for the people of Hong Kong.

Hon Kenneth LAU Ip-keung, Delegation Leader, presents a souvenir to Mr BIAN Li-ming, Deputy Director of the Water Resources Department of GD Province after the seminar

Hon Kenneth LAU Ip-keung, Delegation Leader, and Mr LIU Xiao-jun, Vice-mayor of Huizhou, exchange souvenirs

CHAPTER 4— OBSERVATIONS

4.1 Members of the Delegation generally consider that the duty visit is a precious opportunity for Members of the Legislative Council to visit relevant Mainland facilities on site in respect of an important livelihood-related project which supports the supply of DJ water to Hong Kong, to better understand the relevant policies and operational details, and to exchange views with the Mainland officials.

4.2 During the two-day visit, accompanied by the Mainland officials in charge of water resources, environmental protection, agricultural development as well as urban-rural planning and construction, the Delegation visited a number of water resources and water quality monoriting and control facilities along Dongjiang. Firstly, the Delegation observed the quality of DJ water at Xinfengjiang Reservoir in Heyuan and the Green Way along the right bank of Dongjiang in Huizhou, and gained an understanding of the work of local governments in protecting the quality of DJ water. The Delegation then went to the Dongjiang River Basin Water Quantity and Quality Monitoring and Control Centre in Huizhou to learn about how the Bureau of the Dongjiang River Basin Administration monitored and controlled water source and water quality, and held a seminar with the Mainland officials at the Centre, expressing concerns and views on the distribution of DJ water resources, water quality and water price. On the second day, the Delegation went downward along Dongjiang from Huizhou to Dongguan to visit Taiyuan Pumping Station and better understood the construction and operation of the Dongshen Water Supply System. Lastly, the Delegation went to Shenzhen and paid a visit to the Bio-nitrification Plant at Shenzhen Reservoir to learn about how bio-nitrification method is used to purify the water quality of DJ raw water. The Delegation also received briefings given by representatives of the authorities concerned on the main dam of Shenzhen Reservoir on the works relating to the management of the Dongshen Water Supply System and the monitoring and control of water quality. In addition, the Shenzhen authorities also explained to the Delegation the progress of the Comprehensive Remediation Project for the Water Environment of the Shawan River Basin at the 110 Command Centre of the Dongshen Branch of the Shenzhen Public Security Bureau.

4.3 The Delegation is of the view that the aforesaid visits and seminar as well as informal exchange of views with the Mainland and Hong Kong officials during the two-day visit have enabled them to better understand the issues relating to DJ water supplied to Hong Kong (including the operation of the water conveyance system, the determination of water price, the protection and control of water quality), which could facilitate discussions and follow-ups of relevant issues in the Legislative Council and relevant committees in future. To sum up, the Delegation considers the visit programme substantial and meaningful. The observations of the Delegation in respect of individual areas are stated below.

Payment of water price under the "package deal lump sum" approach

4.4 The Delegation notes the views of the GD Provincial authorities that on the assumption of the GD side switching to adopt a "quantity-based charging" approach to supply DJ water to Hong Kong, the water price to be paid by the Hong Kong side will not be lower than the current water price paid under the existing "package deal lump sum" approach. The GD Provincial authorities have emphasized that cities drawing DJ water (including Hong Kong) are required to annually determine the maximum quantity of water to be drawn for the coming year (please refer to Chapter 3 of the Report for details). If it is charged on the basis of the maximum quantity of water drawn, the total price payable will be the same as the current price under the "package deal lump sum" approach. If the Hong Kong side does not determine the maximum amount of water drawn per year but requests the adoption of a quantity-based charging approach, while hoping to have guaranteed water supply, the GD side has to assess the unit price of DJ water supplied to Hong Kong. The eventual water price to be paid by the Hong Kong side per year may not necessarily be lower than the current water price.

4.5 Some Delegation members consider that the Hong Kong side has made annual payment for 820 million cubic metres of DJ water since 2006, but the water consumed per year always falls short of such supply quantity. In certain years, the actual water supply was less than the ceiling quantity by more than 100 million cubic metres or even 200 million cubic metres. In

other words, there is a waste of public money in the region of hundreds of millions of dollars every year. The HKSAR Government must review the current payment model with the GD side, and strive for the adoption of a "quantity-based charging" approach by the GD side.

4.6 Some members of the Delegation have pointed out that, if the "quantity-based charging" approach is adopted, it is necessary to calculate the unit price of DJ water supplied to Hong Kong, but this is not a task that can be accomplished in one move. For instance, under the whole catchment and water supply system, which kinds of direct costs and indirect costs should be included in the formula for determining the unit price? How should fixed recurrent expenditure be allocated? How should non-fixed recurrent expenditure be handled? These are complicated cost accounting and management problems, and it is necessary for the GD and Hong Kong Governments to reach a consensus on the calculation method.

4.7 Some Delegation members have suggested that the HKSAR Government can strive for a two-portion payment method to purchase DJ water, i.e. one portion to be paid on the actual amount of water drawn and the other portion is a lump sum payment as a premium for "insurance", so as to ensure that water can be drawn up to the ceiling as and when necessary. Some members have also suggested that the Government might consider lowering the insurance factor for water resources, i.e. lowering the ceiling of annual DJ water supply. For example, the ceiling of water supply can be reduced to 700 million cubic metres to achieve a lower lump sum price. On the other hand, the Hong Kong side must negotiate with the GD side to ensure that, when the ceiling quantity is fully consumed, the Hong Kong side can still purchase additional water based on the unit price where necessary and gets priority in water supply.

4.8 The Delegation considers that the HKSAR Government has to strive for the best water supply terms, highly transparent price bargaining mechanism and most reasonable price for Hong Kong, and should report to the Panel on the results of negotiation with the GD side before signing the next water supply agreement. Under the circumstances that various cities in GD Province are facing the problem of shortage in fresh water resources, Hong Kong should not rely too heavily on DJ water, and should proactively

increase the self-sufficiency rate of fresh water and better manage water resources. In the short-to-medium term, the Government should promote the use of harvested rainwater and recycled wastewater, increase reservoir storage capacity, expand the areas using non-edible water for toilet flushing and enable seawater desalination and water reclamation to become fresh water supply sources in Hong Kong as soon as possible, with a view to progressively reducing the consumption of DJ water. Some Delegation members are of the view that, in the long run, Hong Kong should develop towards a "sponge city", establishing a rainwater management system that covers the whole territory and using underground rainwater collection system and stormwater storage space to create an "underground sponge", so as to absorb, purify and store water during rainy days and draw the water stored for use when necessary.

Water Quality of Dongjiang Water

4.9 The Delegation notes that the GD Provincial authorities have formulated a series of laws and regulations and taken various measures to protect the quality of DJ water, including rigorously controlling the construction of water-related projects in the DJ River Basin, stepping up the construction of sewage treatment facilities, controlling the pollution caused by livestock and poultry farming, and carrying out round-the-clock real-time monitoring and control of the quality, quantity and safety of the Dongshen Water Supply System. The Delegation is particularly impressed by the following major facilities:

(a) A number of environmental protection and greening works have been conducted in the source catchment areas of Dongjiang, so that water quality of the reservoirs in catchment areas (i.e. Xinfengjiang and Fengshuba Reservoirs) can always maintain the National Standards set out for Type I waters in the "Environmental Quality Standards for Surface Water GB3838-2002".

(b) By building Taiyuan Pumping Station in 1998, the intake point of DJ water supplied to Hong Kong has been relocated

upstream for better water quality, so as to prevent DJ water supplied to Hong Kong from being contaminated by the water of Shima River.

(c) A 59 km-long dedicated aqueduct was laid in 2003, including a water tunnel of 22 km and a dedicated aqueduct of about 37 km, forming a closed water supply system with pumping stations, closed aqueducts, tunnels, reservoirs and dedicated aqueducts, so that DJ raw water is conveyed directly from the intake point at Taiyuan Pumping Station in Dongguan to Shenzhen Reservoir, thus eliminating the opportunity that DJ water may be contaminated in the course of conveyance.

(d) The Bio-nitrification Plant at Shenzhen Reservoir built in 1999 receives DJ water imported from dedicated aqueduct and makes use of the biological contact oxidation process to degrade the contaminants in the water, so as to improve the quality of DJ water.

(e) The Shawan River Sewage Interception Works were completed in 2003 to intercept contaminated water flowing into the Shawan River in Shenzhen by the Shawan River Gate Dam at the tail of Shenzhen Reservoir. The contaminated water then flows into Luofang Sewage Treatment Plant in Liantang through underground tunnel for treatment before discharging into the Liantang River.

(f) A notification mechanism in respect of floodwater discharge at the Shawan Interception Point has been put in place by the GD and Hong Kong sides to ensure that WSD in Hong Kong will receive early alert from the GD side when there is a need to discharge floodwater of the Shawan River into Shenzhen Reservoir during rainstorms, so that WSD can make prompt and appropriate arrangements and take measures accordingly, including stepping up the monitoring and control of the quality of DJ water at the Muk Wu Pumping Station and suspending the import of DJ water when necessary.

(g) The Comprehensive Remediation Project for the Water Environment of the Shawan River Basin was launched by the Shenzhen authorities in December 2016. The major works include desilting the river channel, flood prevention and remediation, laying sewage pipes along the River for interception and expanding sewage treatment plant, so as to deal with the pollution problem of the Shawan River, further protect the water quality and safety at Shenzhen Reservoir and improve the environment in the Shawan River Basin and its vicinity. The Project is expected to be completed in 2019.

4.10 Members of the Delegation generally consider that the quality of DJ water is satisfactory, but WSD must continue to monitor, in the most rigorous manner, the quality of DJ water supplied to Hong Kong and improve the notification mechanism put in place between GD and Hong Kong concerning water quality incidents. Some members have requested WSD to arrange a site visit for the Panel to the Muk Wu Pumping Station and nearby water treatment works in Hong Kong to understand how inspection and purification of DJ water supplied to Hong Kong are conducted by WSD. The visit took place on 22 May 2017.

4.11 Some members have pointed out that it is a blemish on an otherwise perfect visit that members did not have a chance to visit and learn about the inspection and testing of DJ water quality conducted by the GD Provincial authorities and Guangdong Yuegang Water Supply Co. Ltd (including inspection and testing process and indicators, etc.), and that members have not been given the opportunity to visit wastewater interception and treatment facilities in the DJ River Basin (especially the section from Xinfengjiang Reservoir to Dongguan). They hope that in future they would have the opportunity to gain an on-site understanding of how the authorities concerned carry out the aforesaid work.

Other observations

4.12 Some members of the Delegation have considered that although the visit programme was substantial and the Delegation had an opportunity to have a seminar with senior officials in charge of water resources, environmental protection and agricultural development in GD Province, since it was a very rare opportunity to discuss issues relating to water supply face to face with Mainland officials, the time for discussion was not enough, even though the duration of the seminar had been extended from 20 minutes to 60 minutes. Many Delegation members had not fully expressed their views and hoped that they would have more time to discuss with the Mainland officials when such opportunity arose in the future.

4.13 Some Delegation members also pointed out that although the Delegation Leader had expressed earlier his wish to invite the Hong Kong media to accompany the Delegation throughout the visit, the GD Provincial authorities finally advised that it was difficult to make the necessary arrangements. As a result, members of the public in Hong Kong were not given information on the duty visit, thoughts of Delegation members on the visit and the operation of the Dongshen Water Supply System at the first opportunity. In addition, during the visit, some Hong Kong media representatives were stopped by the Public Security as they interviewed members of the Delegation on the street without permission. Such arrangement was unsatisfactory. The Delegation was told that the GD Provincial authorities made the decision after taking into account numerous factors, such as the tight schedule of the visit programme and the limited space at each visit location where not all Hong Kong media representatives could be accommodated. The Delegation hoped that the receiving organizations of the Mainland side would welcome media representatives accompanying delegations of the Legislative Council or its committees during their future visits to the Mainland.

ACKNOWLEDGEMENTS

The Delegation would like to express its heartfelt gratitude for the tremendous support rendered by various departments of GD Province, inter alia, the Water Resources Department, the Department of Environmental Protection, the Department of Housing and Urban-rural Development, the Department of Agriculture and the Bureau of Dongjiang River Basin Administration, which was vital to the success of the duty visit. The Delegation is also grateful to the departments concerned for assigning key officials in charge to attend the seminar held on 14 April 2017 to exchange views with members of the Delegation on issues relating to DJ water supplied to Hong Kong, which proved to be extremely useful to the Delegation.

The Delegation visited four cities of GD Province in two days and had the opportunity to better understand the operation of a number of DJ water resources facilities and the Dongshen Water Supply System. The Delegation is deeply grateful to the municipal authorities concerned for their generous hospitality and detailed explanations concerning water resources management of Dongjiang.

The Delegation would like to express its profound gratitude to Mr Eric MA Siu-cheung, Secretary for Development, and Mr Enoch LAM Tin-sing, Director of Water Supplies, for accompanying the Delegation throughout the visit to various water resources facilities to have a good grasp of the condition of DJ water supplied to Hong Kong before importing to Hong Kong, as well as assigning a number of officials from DEVD and WSD to assist in putting together the visit programme and providing logistical support. Last but not least, the Delegation also wishes to thank the Legislative Council Secretariat for providing comprehensive support for the duty visit.

EXPENDITURE OF THE VISIT

The expenditure of the duty visit is as follows:

Item	Expenditure chargeable to participating Members' Overseas Duty Visit Accounts (18 Members joined the duty visit) (HK$)	Expenditure chargeable to the Secretariat's expenditure account (six Secretariat staff members joined the duty visit) (HK$)
1. Transportation (coach service)	17,700 (983 per person)	5,900 (983 per person)
2. Hotel accommodation (1 night)	8,707 (484 per person)	2,902 (484 per person)
3. Meals and sundry allowance	11,941 (663 per person)	3,980 (663 per person)
4. Miscellaneous (travel insurance, souvenirs, telecommunications expenses, etc.)	1,720(Note 1)	3,376(Note 2)
5. Expenditure on a recce conducted in March 2017	—	3,011(Note 3) (two Secretariat staff members joined the recce)
Sub-total	40,068	19,169
TOTAL	**59,237**	

Note:

1. This included travel insurance expenses of $1,400 for 14 Members (the other four Members arranged travel insurance by themselves) and the fee for application for an Entry and Exit Permit by one Member ($320).
2. This included travel insurance expenses of $2,000 for six staff members (for each duty visit conducted by each staff member, the travel insurance expense per trip is calculated as $333.3, regardless of the number of days and distance), souvenir expenses of $600 and telecommunications expenses of $776.
3. This included subsistence allowance of $2,344 for two staff members and travel insurance expense of $667.

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