Advisory Committee on Water Supplies (2022-2024)
Minutes of Third Meeting

Date: 30 March 2023 (Thursday)

Time: 2:30 p.m.

Venue: Room 4819, Water Supplies Department, 48/F, Immigration Tower, 7 Gloucester Road, Wan Chai, Hong Kong

Present

Prof KWAN Kai Cho, Joseph	Chairman
Mr CHEUNG Hau Wai	Working Group Chairman
Ir NG Chun Keung	Working Group Chairman
Mr LAU Che Feng, Edwin	Working Group Chairman
Mr LAM Yat Fung, James	Working Group Vice-Chairman
Prof CHE Chi Ming	Member
Ms CHOW Ka Wing, Rachel	Member
Ms CHUNG Lai Kam, Kathy	Member
Dr DUAN Huan Feng	Member
Mr LI Kam Wong, Arthur	Member
Prof SHIH Kaimin	Member
Prof TSE Lap Ah, Shelly	Member
Sr WONG Kwok Leung, Paul	Member
Mr WONG Kwun Kit, William	Member
Mr YAU Kam Wing, Kelvin	Member
Mr YIU Ming, Jeff	Member
Dr YU Yuen Ping, William	Member
Ms YUEN Yan Ling, Elaine	Member
Mr YAU Kwok Ting, Tony	Member (Water Supplies Department)
Mr WONG Kwok Fai, Alfred	Member (Development Bureau)
Ms HO Kit Yee, Kitty	Member (Architectural Services Department)
Dr YANG Rong, Ron	Member (Environmental Protection Department)
Dr AU Wing Yee, Winnie	Member (Department of Health)
Mr YEUNG Wong Pan, Antony	Member's Representative (Housing Department)
Mr FUNG Cheuk Pong, Ronald	Secretary (Water Supplies Department)

Water Supplies Department Representatives in Attendance

Mr MA Hon Wing, Wilson	Assistant Director
Mr CHOY Tak Yip	Chief Chemist
Mr LEUNG Chi Hung, Simon	Chief Engineer
Mr LOK Chi Chung, Andy	Chief Engineer
Mr YIP Ka Chun, Gary	Chief Engineer

Mr CHIU Man Fat	Senior Engineer
Mr KAN Ka Man, Raymond	Senior Engineer
Mr LEUNG Kai Chiu, Boris	Senior Mechanical Engineer
Ms TSO Yuk Kei, Ruth	Senior Engineer
Mr LEE Hong Nin, Kevin	Senior Engineer
Mr YUEN Tik Hong	Senior Engineer
Mr LAO Yin	Electrical Engineer
Mr LAU Chun Yuen, Anthony	Engineer
Mr LEUNG Wai Hung	Mechanical Engineer
Ms FUNG Bo Yin, Anthea	Engineer (Note-Taker)

Absent with Apologies

Dr CHENG Kam Wah, Edmond	Working Group Vice-Chairman
Ir TANG Ming Sum, Michelle	Working Group Vice-Chairman
Prof SHANG Chii	Member
Dr WANG Peng	Member
Mr LAU Shing Cheong, Edwin	Member (Drainage Services Department)

Item

1. Opening Remarks

1.1 The Chairman welcomed all Members and representatives of Water Supplies Department (WSD) to the meeting.

1.2 The Chairman informed the meeting that Dr CHENG Kam Wah, Edmond, Ir TANG Ming Sum, Michelle, Prof SHANG Chii, Dr WANG Peng and Mr LAU Shing Cheong, Edwin were unable to attend the meeting and had sent in their apologies.

Agenda Items

2. Confirmation of Minutes of Last Meeting

2.1 The Chairman advised that the draft minutes for last meeting had been circulated to the Members on 9 March 2023 with no comments received. There being no further amendments proposed at the meeting, the draft minutes were confirmed.

3. Report of Working Group on Operational Matters

3.1 The Chairman invited Mr CHEUNG Hau Wai, Chairman of the Working Group (WG) on Operational Matters, to report the key issues discussed at the 2nd WG meeting held on 17 January 2023.

Monitoring of Quality of Raw Water in Hong Kong

3.2 Mr CHEUNG Hau Wai reported the following:

- WSD presented the risk-based approach for monitoring Dongjiang water and local raw water quality.
- WG Members appreciated WSD's effort to monitor water quality and measures, including enforcements actions when necessary, to safeguard resources especially when handling land development applications.

Update on Floating Photovoltaic projects at Impounding Reservoirs in Hong Kong

3.3 Mr CHEUNG Hau Wai reported the following:

- WSD presented an update on the Floating Photovoltaic (FPV) projects at designated impounding reservoirs in Hong Kong.
- WG Members appreciated WSD's work to develop FPV projects at impounding reservoirs and looked forward to application of FPV at other impounding reservoirs.

3.4 Mr LAU Che Feng, Edwin reminded WSD to liaise with the power companies for arrangements to best utilize the output of the FPV panels. Dr YU Yuen Ping, William suggested the FPV panels should cater for adverse weather events and the use of non-chemical coatings to be applied on FPV panels for dust repellent and heat dissipation purposes. Furthermore, storage of generated electricity before connection to electricity grid should be explored. Mr CHEUNG Hau Wai agreed that the suggestions for FPV panels to cater for adverse weather conditions and the use of latest coating technology worth further investigation. Mr YAU Kwok Ting, Tony of WSD advised that the installation of FPV panels at impounding reservoirs helped the heat dissipation of the panels, and reduced water evaporation and suppressed algae growth at impounding reservoirs. As the impounding reservoirs were usually remote and far away from existing electricity grids, WSD targeted to have large-scale FPV panels to be located near WSD facilities with relatively large electricity consumption such that the electricity generated could be used there.

4. Report of Working Group on Government Network and Inside Service

4.1 The Chairman invited Ir NG Chun Keung, Chairman of the WG on Government Network and Inside Service, to report the key issues discussed at the 2nd WG meeting held on 10 January 2023.

Overview for Application of Smart Technology in Pipe Inspection

4.2 Ir NG Chun Keung reported the following:

- WSD gave a presentation on the "Robotic In-line Inspection of Water Mains".
- Internal inspection of water mains had been challenging with a complicated configuration difficult to be accessed by inspection personnel and confined space inside the water mains posing health and safety challenges. In this connection, WSD collaborated with PolyU for the development of an in-line robot to inspect the internal conditions of large diameter water mains which leveraged the use of a cluster of technologies including robotics, sensors, scanning and imaging as well as artificial intelligence.
- The In-line Inspection Robot ("the Robot") developed by PolyU was able to navigate in the complicated water supply networks, and conduct inspection and access the structural integrity of pipes of 600 mm diameter, including visual inspection of internal pipe lining, measurement of pipe thickness using ultrasonic probes as well as identification of small defects. The technology helped improve the quality of in-line inspection, enhance operational efficiency and performance in asset management, as well as minimize the impact on traffic and the public due to its non-destructive feature. Labour intensive works in the confined space environment could also be minimized and thus enhancing site safety.
- WG Members in general appreciated WSD's effort in steering research and development of advanced technology for pipe inspection, and exchanged views with WSD and PolyU regarding the technical details and potential future development of the Robot.

4.3 Mr Tony YAU of WSD supplemented that the Robot being fully automated could reduce safety risks faced by workers during underground water mains inspection. Together with further developments on machine learning, the Robot would equip us with insights and skills to better prepare for the smart water future. WSD would continue to liaise with PolyU for the possible enhancement of in-line inspection robotic technology.

5. Report of Working Group on Water Conservation and Education

5.1 The Chairman invited Mr LAU Che Feng, Edwin, Chairman of the WG on Water Conservation and Education, to report the key issues discussed at the 2nd WG meeting held on 3 February 2023.

Murals at WSD Facilities

5.2 Mr Edwin LAU reported the following:

- WSD presented two murals and some footbridge pillar wrap promotions to WG Members. The first mural located at Severn Road Service Reservoir and Pumping Station was completed in Jan 2023, while the second mural would be located at Tong Shui Road Fresh Water Pumping Station. A footbridge pillar wrap promotion between Wan Chai MTR Station and Immigration Tower from November to December 2022 was completed and there would be two upcoming footbridge pillar wrap promotions; one between Shun Tak Centre and Exchange Square in April, May and August 2023, and the remaining one between Admiralty Centre and Central Government Offices from June to July 2023.
- WG Members appreciated the efforts of WSD and suggested different ways to implement the mural/pillar wrap design and recommended approaches for promotion and public engagement.

Engagement of Non-domestic Sector on Water Conservation

5.3 Mr Edwin LAU reported the following:

- Green Council reported the progress of the ECH2O - Enterprises Cherish Water Campaign that over 600 venues including hotels, eateries, shopping malls, commercial/industrial buildings had joined the campaign. Workshops were held to share water conservation knowledge with the ECH2O Managers, while exhibitions and booths were held at shopping malls and commercial/industrial buildings to spread the message of water conservation. The Water Efficiency Index was developed to serve as the performance indicator for water efficiency for different trades and the ECH2O Award Ceremony had been held on 22 March 2023 (World Water Day) to present awards to the participating venues and ECH2O managers.
- WG Members appreciated the efforts of WSD and Green Council for the engagement campaign and series of activities to encourage different trades to cherish water and supported WSD to continue the campaign.

Cherish Water Ambassador Scheme 2021/22

5.4 Mr Edwin LAU reported the following:

- WSD briefed the members that the Cherish Water Ambassador 2021/22 programme was launched by WSD in November 2021 and recruited over 300 students from secondary schools, who were invited to propose a social media publicity plan to promote the importance of water conservation via social media platforms. Ambassadors with exceptionally excellent performance would be awarded with trophies, certificates and cash coupons. The results would be announced through online platform in April 2023.
- WG Members supported the programme which could enhance student's understanding on the importance of water conservation.

5.5 Prof SHIH Kaimin suggested using different parameters such as the number/type of installed water saving devices instead of water usage for evaluating the performance in water conservation to give the public different perspectives to cherish water, especially after the pandemic with increasing water usage for hygiene purposes.

6. Improvement to Dongjiang P4 at Sheung Shui and Fanling

6.1 Ms TSO Yuk Kei, Ruth of WSD gave a presentation on the "Improvement to Dongjiang water mains P4 at Sheung Shui and Fanling".

6.2 The Chairman enquired whether there were other water mains apart from water mains P4 that were used to transfer Dongjiang (DJ) water and their expected service life. Ms Ruth TSO of WSD advised that there were four other water mains that deliver DJ water to different parts of Hong Kong. With those water mains being made of steel, they were expected to have longer service life of about 50 to 60 years. Ms HO Kit Yee, Kitty enquired the considerations for using different materials in the improvement works and their expected life span. Mr LOK Chi Chung, Andy of WSD advised that mild steel pipes were used for pipe jacking with tunnel boring machine while polyethylene pipes were used for slip lining. The expected life span of polyethylene pipes with grouting was similar to mild steel pipes.

6.3 Mr LAM Yat Fung, James enquired if the improvement works have catered for the Northern Metropolis. Mr Andy LOK of WSD advised that WSD had been working closely with the Civil Engineering and Development Department to

study the need for water supply at the Northern Metropolis for advance planning so as to ensure there is reliable and adequate water supply to meet the anticipated increase in water demand as a result of the developments in the Northern Metropolis.

7. Maintenance services by M&E Workshop

7.1 Mr LEUNG Kai Chu, Boris of WSD gave a presentation on "Maintenance services by M&E Workshop".

7.2 Mr Edwin LAU enquired whether ceramic coating could be applied on mechanical equipment for salt water supply system to prevent corrosion. Mr Boris LEUNG of WSD replied that ceramic coating had been put on trial on non-stainless steel pump casings. The results indicated that the effectiveness of the ceramic coating varied and might depend on the workmanship of the coating works carried out by contractors. Stainless steel pipework, valves and pumps were widely used by WSD in salt water pumping stations to prevent sea water corrosion. Mr Edwin LAU also enquired whether the use of brushless motors instead of traditional brush motors would have better energy efficiency. Mr Boris LEUNG of WSD expressed that he had no information on hand and would supplement relevant information after the meeting.

[Post-meeting note: Mr Boris LEUNG of WSD reported that all motors used in WSD for pumping were AC Squirrel Cage Induction Motors, which were asynchronous motors and without brush. The energy efficiency of the motors was usually up to 93% to 96 % for motors above 40kW.]

7.3 Mr James LAM enquired whether WSD was able to attract new generations to join the Technician Training Programme and build up technical skills for succession. Mr Boris LEUNG of WSD advised that it was quite challenging for the M&E Workshop to employ new Technician Trainees. WSD had joined the promotion activities held by EMSD to promote the training programme and also shorten the training period from 3 years to 2 years in order to attract more young people. Mr LI Kam Wong, Arthur opined that the shortage of new recruits was widely faced by the industry and new generations might prefer tertiary education due to family expectations. Mr James LAM suggested that students with special educational needs might be suitable for the posts with appropriate safety precautions and supervision. Mr Tony YAU of WSD advised that the Technician Training Programme could provide a stable

environment for young people to acquire skills. With the use of new technology and equipment, WSD looked forward to attracting more young people to join the programme and hoped members could share the programme through their networks.

8. World Bank Group's Business Ready

8.1 Ms YUEN Nga Yee, Doris of Efficiency Office gave a presentation on the "World Bank Group's Business Ready" project.

8.2 The Chairman enquired that one of the pillars for utility connections was the regulatory framework, however the provision of water supply services was carried out not only according to legal requirements. Ms Doris YUEN of Efficiency Office advised that the aim of the Business Ready project was to benchmark the business environment of the economies and to provide insights for reforms to enhance private sector developments. Private sector's participation in the survey would help reflect the provision of quality water supply services in Hong Kong. Mr Tony YAU of WSD advised that with the data collection process involving desk research of laws and agencies' website, the webpages of WSD would be reviewed to reflect the latest information and development. Mr KAN Ka Man, Raymond of WSD supplemented that the performance targets and achievements, as well as detailed information on other key topics, major projects and water supply related services, were published on WSD's webpage to promote transparency and enhance continuous improvement. Ms LEONG Yeuk Wah, Winnie of Efficiency Office supplemented that the new Business Ready Report would adopt a balanced assessment of de jure and de facto aspects of regulatory framework and public service. Moreover, de facto data would be collected through a combination of expert consultations and firm-level surveys. The firm-level surveys would be an opportunity to obtain direct feedback from different business sectors.

8.3 Mr Edwin LAU suggested setting a target for the use of recycled water to improve the performance. Apart from treated grey water and harvested rainwater for non-potable purposes, reclaimed water converted from treated sewage effluent might be used for cooling of commercial buildings and help conserve fresh water resources. Mr YIP Ka Chun, Gary of WSD advised that a feasibility study on the use of recycled water in district cooling systems was in progress to investigate the feasibility for applications in the Northern Metropolis. On the other hand, while other places in the world are using

recycled water for conservation of fresh water, Hong Kong is the few places in the world extensively using seawater for the same purpose. Thus, it would be fairer to Hong Kong if the extensive adoption of seawater for flushing could be featured in the survey. Ms Winnie LEONG of Efficiency Office advised that suggestions on additional assessment areas could be made to the World Bank Group for consideration.

9. Any Other Business

9.1 The Secretary advised that the annual visit to the Dongjiang Water Supply System this year would be scheduled in Q4 of 2023 and would inform Members once there are further details.

9.2 There being no other business, the Chairman adjourned the meeting at 4:55 p.m.