

The 2020 Annual Report on Drinking Water Quality in Hong Kong

**Development Bureau
Drinking Water Safety Unit
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Foreword

1. This report gives an account of the work of the Development Bureau (“DEVB”) and the Water Supplies Department (“WSD”) in assuring and enhancing drinking water safety in Hong Kong in 2020.

Monitoring of Drinking Water Safety in Hong Kong

2. In Hong Kong, WSD is the sole water supplier supplying quality fresh water to over 99.99% of the territory’s population, while the Food and Environmental Hygiene Department (“FEHD”) with the assistance of other Government Departments¹ monitors regularly the water quality of streams and wells² for potable use to the remaining less than 0.01% of the population living in remote areas where mains water supply is not available.
3. The Government attaches great importance to drinking water safety with the prime objective of supplying clean and wholesome drinking water at all times. To this end, WSD has been supplying drinking water in full compliance with the World Health Organization’s Guidelines for Drinking-water Quality (“WHO Guidelines”). In September 2017, the Government further adopted the guideline values / provisional guideline values of the 92 parameters in the WHO Guidelines as the Hong Kong Drinking Water Standards (“HKDWS”)³.
4. In November 2018, DEVB set up a dedicated team, viz. the Drinking Water Safety Unit (“DWSU”), to oversee the performance of WSD in respect of drinking water safety, amongst other aspects of work.

¹ Three Government Departments, viz. WSD, the Department of Health and Government Laboratory, provide technical advice and support to FEHD in monitoring the water quality of streams and wells.

² Most of stream and well systems are under the maintenance of the Home Affairs Department (“HAD”).

³ HKDWS was revised in April 2021. More details can be found in DEVB’s and WSD’s websites: www.devb.gov.hk/en/issues_in_focus/hkdws and www.wsd.gov.hk/en/core-businesses/water-quality/my-drinking-water-quality/hong-kong-drinking-water-standards.

5. The main duties and responsibilities of DEVB, WSD and FEHD in monitoring drinking water safety in Hong Kong are listed in **Annex 1**.
6. DWSU adopts the following means to monitor the performance of WSD in respect of drinking water safety: –
 - (a) Examining the results of WSD’s water quality monitoring programme;
 - (b) Monitoring the implementation of WSD’s Water Quality Incident Management Plan; and
 - (c) Conducting audits on WSD’s Drinking Water Quality Management System.
7. DWSU’s observations on WSD’s performance in 2020 are summarised in paragraphs 10 to 13, 18 to 29, 33 to 35, and 48 of this report.

Drinking Water Safety Advisory Committee

8. In January 2018, the Government set up a Drinking Water Safety Advisory Committee (“DWSAC”) with members comprising academics and experts of related fields to advise DEVB on various drinking water safety issues on one hand and examine the Government’s efforts in safeguarding drinking water safety in Hong Kong on the other hand. The terms of reference of DWSAC can be found in DEVB’s website⁴.
9. DWSAC commenced its second term in January 2020 and convened two meetings in 2020. At the meetings, members provided useful advice to the Government on ongoing / proposed measures relating to drinking water quality and safety. At the same time, WSD briefed DWSAC on major international water quality incidents and developments on drinking water standards in overseas jurisdictions. In response to DWSAC’s requests, WSD would review the relevance

⁴ www.devb.gov.hk/en/boards_and_committees/drinking_water_safety_advisory_committee/terms_of_reference

of the overseas revisions in drinking water standards in the Hong Kong context for further deliberation in the next meeting in 2021. DWSAC in general acknowledged WSD's effort in ensuring drinking water safety and suggested the Government pay more efforts in public education, so that the public could get updated information about the drinking water quality in Hong Kong and recognise WSD's effort in enhancing drinking water safety.

Monitoring of Drinking Water Quality

10. WSD submits water quality testing reports of its routine monitoring programme to DWSU on a quarterly basis and publishes the drinking water quality monitoring data on its website⁵ half-yearly.
11. In 2020, WSD adopted new monitoring frequencies for some of the parameters in HKDWS which would be implemented in phases according to the planned programme⁶.
12. In 2020, WSD conducted over 25 800 sampling visits to take drinking water samples for chemical, physical, bacteriological, biological, radiological, trace organics and trace inorganics tests. A summary of the number of drinking water samples taken at different locations is given in Table 1 below. WSD conducted over 252 000 tests and all the test results were found in compliance with HKDWS.

⁵ www.wsd.gov.hk/en/core-businesses/water-quality/my-drinking-water-quality

⁶ More details can be found in paragraph 17 of the 2019 Annual Report on Drinking Water Quality in Hong Kong at www.devb.gov.hk/filemanager/en/content_1178/The_2019_Annual_Report_on_Drinking_Water_Quality_in_Hong_Kong.pdf.

Table 1 - Number of Drinking Water Samples taken at different locations in 2020

	Water Treatment Works	Service Reservoirs	Connection Points ⁷	PACTs ⁸	Total
Chemical & Physical	18 371 (64 829)	6 556 (26 322)	935 (4 144)	17 494 (78 488)	43 356 (173 783)
Bacteriological	907 (1 814)	6 544 (13 088)	919 (1 838)	17 473 (34 946)	25 843 (51 686)
Biological	57 (102)	0 (0)	0 (0)	0 (0)	57 (102)
Radiological	788 (2 936)	0 (0)	36 (72)	576 (2 160)	1 400 (5 168)
Trace Organics	1 291 (8 142)	16 (40)	578 (3 345)	577 (3 343)	2 462 (14 870)
Trace Inorganics	279 (5 049)	16 (302)	72 (1 008)	72 (1 008)	439 (7 367)

() Figures in parentheses indicate number of test

13. Other than the sampling visits mentioned in paragraph 12 above, WSD also continued to take drinking water samples at consumers' taps of randomly selected premises under the Enhanced Water Quality Monitoring Programme ("the Enhanced Programme")⁹ to monitor the levels of antimony, cadmium, chromium, copper, lead and nickel, which might exist in inside services. The Enhanced Programme was suspended during the period from 27 January to 29 November 2020 due to the COVID-19 pandemic. As a result, visits to only 100 premises¹⁰ were made in the year. The test results had been announced at WSD's website and a summary of the test results is given in Table 2 below.

⁷ Connection points are strategic water sampling points in the WSD water mains used to represent the drinking water supplied up to the lot boundary of buildings.

⁸ PACTs refers to "publicly accessible consumers' taps" which are consumers' taps used for drinking or food preparation purposes in non-domestic premises such as shopping centres, community facilities, clinics, management offices, government offices, etc. that are accessible for sampling by WSD without the need for obtaining prior written consent.

⁹ Launched in December 2017, the Enhanced Programme adopts a two-tier sampling protocol, involving Tier 1 – unflushed Random Day Time sample and Tier 2 – 30-minute stagnation sample for verification of exceedance(s) found in the Tier 1 sample.

¹⁰ Based on a sampling rate of 8 premises per 5 000 to 100 000 population, water samples were originally planned to be collected from about 670 randomly selected premises in 2020. Similar to overseas practices, the shortfall in sampling due to programme suspension would not be made up.

Table 2 - Statistics of Monitoring Results in 2020 under the Enhanced Programme

	Minimum	Maximum	Average	95 th percentile	Standard Value	Compliance of water quality with HKDWS*
Antimony (µg/L)	<1	<1	<1	<1	20	✓
Cadmium (µg/L)	<1	<1	<1	<1	3	✓
Chromium (µg/L)	<1	<1	<1	<1	50	✓
Copper (µg/L)	<3	110	20	51	2 000	✓
Lead (µg/L)	<1	1	<1	<1	10	✓
Nickel (µg/L)	<1	26	2	4	70	✓

* Compliance with HKDWS based on the Two-Tier Sampling Protocol. In 2020, all Tier 1 Random Day Time samples complied with HKDWS.

Monitoring of *Cryptosporidium* oocyst and *Giardia* cyst (“C&G”)

14. As part of its routine water quality monitoring work, WSD monitors the presence of C&G¹¹ in Hong Kong’s drinking water according to international practices.
15. The monitoring frequency of C&G at water treatment works adopts a risk-based approach and varies from monthly to yearly based on the outcome of risk assessments and treatment capacities of individual water treatment works. In 2020, there was no particular issue requiring the stepping up of monitoring of C&G at water treatment works.

¹¹ *Cryptosporidium* and *Giardia* are common intestinal protozoan parasites. C&G are potentially present in surface waters, ground waters and other media. They can survive for prolonged periods of time in cool and moist environments.

Drinking Water Quality Incidents

Water Quality Incident Management Plan

16. WSD handles water quality incidents¹² according to its Water Quality Incident Management Plan (“WQIMP”) which aims to help WSD: -
- (a) assess expeditiously whether the water affected is still safe for consumption and the possible impact on water supply;
 - (b) decide necessary actions to be taken before resumption of water supply; and
 - (c) disseminate important information to relevant parties and consumers affected.
17. According to WQIMP, WSD should inform DWSU of any water quality incidents classified as notifiable cases¹³ as soon as possible, via instant message (such as WhatsApp) and through email. DWSU will then oversee WSD’s responses to such incidents to ensure that appropriate follow-ups are implemented.

¹² Water quality incidents are events that may affect water quality including aesthetic qualities which may not be related to drinking water safety; cause concerns to persons and/or give rise to impact on health of persons to whom the water is supplied; and/or likely attract media publicity on drinking water quality.

¹³ In deciding whether a water quality incident is a notifiable case or not, the gravity of the incident and the degree of impact on the community should be considered. Generally speaking, a water quality incident is classified as a notifiable case if it leads to occurrence of any one of the following situations: -

- negative impact on health and/or public confidence in the water supply;
- exceedance of drinking water standards;
- affecting localised area (e.g. whole estate or a number of building blocks) or even more extensive areas;
- attracting significant media attention, and/or
- concerns raised by local resident groups or parties.

Notifiable incidents

18. In 2020, there were three notifiable water quality incidents. Two of them were related to aesthetic quality of drinking water and the remainder related to salty taste of fresh water supply, as briefly described in below.

Yellowish Water in Fresh Water Supply in Kwai Chung and Tsuen Wan

19. On the evening of 6 August 2020, owing to an equipment fault at the Tsuen Wan Water Treatment Works (“TWWTW”), sediments¹⁴ entered the downstream fresh water supply network, turning the fresh water supply to consumers yellowish. As the estimated population affected by the incident would be up to 200 000 and following the receipt of a number of complaints, WSD reported the case to DWSU on the next day according to the established mechanism.
20. WSD took immediate action to inspect the inside services of the estates and buildings affected, flush the internal strainer of associated water meters and assist the estate / building management offices concerned in draining away the yellowish water from their water tanks. WSD also flushed the upstream distribution network and took water samples from the water supply system during the course of action. The test results indicated that the yellowish water would not be harmful to human upon consumption. Subsequently, water supply to the affected area was resumed normal.
21. DWSU noted that the incident had been caused by sediments accumulated in the clear water storage facilities of TWWTW for a prolonged period of time, which were difficult for WSD to cleanse due to operational constraints. DWSU also noted that WSD had no clear guidelines on the cleansing frequency of such facilities. After the incident, WSD conducted necessary plant renovation / improvement works to mitigate the operational constraints and then

¹⁴ The sediments included residual calcification of the hydrated lime used in the water treatment process and deposit containing manganese and iron from water pipes, which were not harmful to human upon consumption.

completed the sediment cleanup works. WSD also reviewed the cleansing frequencies of such facilities and provided clear guidelines to the operation staff accordingly.

Salty Taste in Fresh Water Supply at Ko Shing Street in Sheung Wan

22. On 15 September 2020, a WSD contractor, when carrying out alteration works to a fresh water supply network at Ko Shing Street of Sheung Wan, mistakenly connected a newly laid salt water main with the fresh water supply network. This led to infiltration of salt water into the government's fresh water supply network as well as the fresh water service pipes of several nearby buildings. The case was reported to DWSU by WSD on the next day according to the established mechanism.
23. Upon receipt of complaints from the buildings concerned, WSD immediately cut off the salt water supply to the affected areas, attended the buildings and premises concerned, flushed the government's fresh water supply network, and disconnected the misconnection. WSD also assisted the management offices of the buildings concerned in flushing their sump tanks / roof tanks. After completion of the work, water samples were collected for testing and the results were found satisfactory.
24. Upon investigation of the incident by WSD, both the contractor and WSD's supervisory staff were found to have not followed strictly the procedures laid down in WSD's departmental instruction regarding on-site identification of fresh water main and salt water main to prevent cross connection. Such non-adherence to the established procedures by the contractor and WSD's supervisory staff was considered unsatisfactory. After discussion with DWSU, WSD gave warnings to the contractor and the staff concerned. To avoid recurrence of similar incidents in the future, DWSU suggested WSD, amongst other measures, exploring the feasibility of using pipe materials of different colours to help site staff in differentiating fresh water and salt water pipes. WSD agreed to follow up accordingly.

Black Particles Found in Fresh Water Inside Service of Wo Ming Court, Po Lam Estate and Hau Tak Estate in Tseung Kwan O

25. The presence of black particles in the fresh water supply of Wo Ming Court was reported to WSD on 23 November 2020, followed by a number of similar reports received from Po Lam Estate and Hau Tak Estate on 2 and 7 December 2020 respectively. In view of the development of the incident, WSD escalated the incident with reporting to DWSU on 8 December 2020.
26. Upon receipt of the complaints, WSD carried out immediate investigation and found that the incident was caused by detachment of the aged internal bitumen lining of the government's fresh water steel pipes, which entered the inside services of the affected estates. As an immediate remedial measure, WSD flushed the government distribution network followed by installation of strainers at strategic locations, flushed the internal strainer of water meters of the affected premises and provided technical assistance to the management offices of the affected estates on cleansing of their inside services. WSD also took water samples in the affected areas and confirmed that the water was safe for consumption.
27. In fact, WSD had commissioned a consultancy study earlier on to examine in detail whether the presence of bitumen particles (detached from the government's fresh water steel pipes) in drinking water would give rise to any health risk to human. The study concluded that there would be negligible health risk to human due to consumption of drinking water containing bitumen particles. This notwithstanding, noting that the presence of bitumen particles in drinking water would hardly be acceptable to the public, WSD had been mapping out a long-term strategy to replace or rehabilitate those fresh water steel pipes with risk of detachment of internal bitumen lining. At the same time, WSD would continue to install strainers at strategic locations of government water mains as well as carry out regular flushing of the fresh water distribution networks. The above course of actions was agreeable to DWSU.

Non-notifiable incidents

28. Apart from the above three notifiable cases, there were nine non-notifiable incidents of minor nature in 2020. They were mostly complaints about aesthetic quality of drinking water such as discolouration or turbidity that had only affected a single or a few premises, and were mostly related to inside services. The water quality of the premises concerned resumed normal after flushing of the internal strainer of water meters by WSD or before WSD staff arrived at the scene.
29. Overall speaking, DWSU considered WSD's performance in handling the water quality incidents in 2020 acceptable.

Audits of WSD's Drinking Water Quality Management System

30. In July 2017, WSD promulgated its Drinking Water Quality Management System (“DWQMS”)¹⁵, which encompasses all the elements of its Water Safety Plan (“WSP”)¹⁶ as recommended by WHO. DWQMS not only sets out the water quality policy and operational monitoring of the control measures in the drinking water supply, but also lays down a systematic plan for reviewing and auditing relevant procedures of WSD with a view to verifying conformity with the documented requirements of DWQMS and improving the system continually.
31. As mentioned in paragraph 6 above, one of DWSU's duties is to carry out audits on WSD's DWQMS, which consists of both audits by third party and surprise checks. The objectives and details of the third party audits and surprise checks are given in **Annex 2**.

Third party audit

32. Owing to the COVID-19 pandemic, the third party audit¹⁷ originally scheduled in 2020 had been postponed and rescheduled for 2021 once the situation allows. The audit results will be reported in the next “Annual Report on Drinking Water Quality in Hong Kong” (“next Annual Report”).

¹⁵ The DWQMS is a management system based on the Framework for Safe Drinking-water of the WHO Guidelines, which comprises health-based targets, WSP and surveillance to ensure drinking water safety.

¹⁶ WSD has developed and implemented its WSP since 2007.

¹⁷ The third party audit involved an overseas certified WSP auditor, and could only commence after the auditor obtaining approval on travel restriction exemption to leave his home country.

Surprise checks

33. Four surprise checks were conducted in 2020 and the details are summarised in Table 3 below: -

Table 3 – Surprise checks in 2020

Surprise Check No.	Month in 2020	Regions checked	Numbers of findings
1	January	New Territories East Region, Hong Kong and Island (“HK&I”) Region	9
2	April	HK&I Region	10
3	September	Kowloon Region	8
4	November	New Territories East Region	15

34. Key recommendations arising from the four surprise checks were as follows: -

- (a) Measures should be taken to enhance operation and monitoring of the water treatment processes, such as regular re-training of staff, archiving of sufficient on-line water quality data to enable performance and trend monitoring, fixing of malfunctioned on-line water quality analysers in a timely manner, and regular calibration of relevant equipment for more accurate determination of hourly dosage of hydrated lime and fluoride;
- (b) Engineering solutions should be explored to tackle how those fresh water service reservoirs without partition wall can be cleansed without affecting the water supply operations;
- (c) Report forms and records should be kept and checked in a timely manner for more effective follow-up actions and reporting;
- (d) Site records and photos for flushing, sterilisation and commissioning of fresh water mains should be kept in accordance with relevant departmental instruction;
- (e) Internal guidelines on water quality standard should be disseminated to frontline staff to enable them to handle water quality complaint cases more effectively, and a mechanism

should be put in place to ensure that records of water quality complaints are properly kept; and

- (f) Where corrective actions have been taken to adjust the treatment process so as to maintain the control parameters back to within the respective critical limits, such actions should be reported both in the weekly and monthly performance summary reports of water treatment works.

35. In gist, the surprise checks found that the activities, operations and processes of WSD were generally in compliance with the DWQMS requirements. While WSD had accepted all recommendations made by DWSU arising from the surprise checks, DWSU would monitor the progress of WSD's follow-up actions.

Water Safety Plan for Buildings

36. Proper management and maintenance of internal plumbing systems of buildings is one of the key elements to ensure the safety of drinking water. Since 2017, WSD has been promoting the implementation of Water Safety Plan for Buildings (“WSPB”) by property owners or management agents. WSPB sets out a systematic and effective management framework for the internal plumbing systems so that drinking water safety risks in buildings, if any, can be properly addressed and mitigated. At the same time, to recognise effort made by property owners or management agents in enhancing drinking water safety in their premises, WSD issues certificates to them under the “Quality Water Supply Scheme for Buildings – Fresh Water (Management System)”.
37. Currently, the implementation of WSPB is voluntary. To further encourage the implementation of WSPB in private buildings, the Government launched a \$440 million “Water Safety Plan Subsidy Scheme” (“WSPSS”) in July 2020 to provide financial incentive for the needed owners. Details of WSPSS can be found in WSD’s website at www.wsd.gov.hk/en/water-safety/wspss.
38. For Government buildings, DEVB issued in July 2020 a general circular setting out the policy and implementation details of WSP in respect of existing and new Government buildings. The plan was to implement WSPB in all targeted Government buildings¹⁸ in about seven years.
39. The progress of the implementation of WSPB in both private and government buildings will be reported in the next Annual Report.

¹⁸ Government buildings targeted for WSPB implementation are those (i) having drinking water tap(s) serving the public; or (ii) having four or more drinking taps.

Review of Waterworks Ordinance (Cap. 102)

40. WSD was conducting a holistic review of the Waterworks Ordinance (Cap. 102) and its Regulations (Cap. 102A) (“WWO/WWR”) with a view to enhancing drinking water safety and water use efficiency. In respect of drinking water safety, the legislative amendment proposals mainly covered: -
- (a) strengthening the regulation of the construction and maintenance of internal plumbing systems;
 - (b) introduction of HKDWS as a legal basis to define drinking water quality;
 - (c) control of drinking water dispensers and fountains; and
 - (d) extension of the Water Authority’s powers to oversee the drinking water safety of inside service of buildings.
41. A 90-day public consultation on the legislative amendment proposals was carried out during the period from 6 November 2020 to 3 February 2021 and the feedback from the public to the proposals were generally supportive. WSD would finalise the proposals taking into account the public consultation results and proceed with the corresponding law drafting work. The current plan is to complete the law drafting work in September 2022.

Residual Chlorine Level Raised in Light of COVID-19

42. All along, WSD has been using chlorine in the water treatment processes for oxidation of impurities and disinfection. A small amount of residual chlorine is maintained in the treated water to ensure that the water is kept clean and hygienic on its journey to consumers.
43. In response to the outbreak of COVID-19 pandemic, WSD has raised the residual chlorine level in drinking water leaving water treatment works, as a prudent measure, from around 1.0 milligram per litre (mg/L) to 1.2 mg/L to enhance drinking water safety. The raised residual chlorine level is still well below the standard value of 5 mg/L stipulated in HKDWS.
44. WSD will keep in view the development of the COVID-19 pandemic and will return the residual chlorine level in drinking water leaving water treatment works to the normal level of around 1.0 mg/L when appropriate.

Small Water Supply in Remote Areas

45. As mentioned in paragraph 2 above, FEHD regularly monitors the water quality of streams and wells for potable use to the remaining less than 0.01% of the population living in remote areas where no mains water supply is available. Unlike drinking water supplied by WSD, the stream or well water has not undergone thorough treatment processes. Therefore, local villagers are advised by FEHD to boil the stream / well water before drinking, and to disinfect stored stream / well water.
46. If the sampling results are found unsatisfactory against the prescribed quality parameters for stream and well water for potable use, FEHD would conduct investigation and post up notice to advise local villagers, as well as bring the case to the attention of other relevant Government Departments.
47. The procedural guide for monitoring the water quality of streams and wells for potable use was being reviewed by FEHD in consultation with other relevant Government Departments. DWSU will keep communicating with FEHD, and other Government Departments when necessary, in monitoring the quality of small water supply.

Conclusion and Way Forward

48. In conclusion, DWSU was content with WSD's efforts made in 2020 in assuring drinking water safety in Hong Kong as well as the department's positive responses to the findings and recommendations arising from the surprise checks conducted by DWSU in the year.
49. DWSU will continue overseeing WSD's performance in respect of drinking water safety through the established monitoring mechanism. In particular, DWSU will continue to oversee the law drafting work in connection with the legislative amendments to WWO in respect of drinking water safety, as well as the implementation of WSPB in both private and Government buildings.
50. While collaborations with overseas entities in 2020 were somehow deprived by the COVID-19 pandemic, DWSU will continue to look for suitable opportunities to resume such collaboration in particular those with overseas regulatory and supervisory authorities with a view to staying abreast of the latest international practice in relation to drinking water safety.

~ End ~

Monitoring of Drinking Water Safety in Hong Kong

1. The Development Bureau (“DEVB”), the Water Supplies Department (“WSD”) and the Food and Environmental Hygiene Department (“FEHD”) are the key government bureau/departments responsible for monitoring the drinking water safety in Hong Kong in different aspects: -

Development Bureau

- (a) To enhance public confidence on drinking water safety in Hong Kong, DEVB has set up a dedicated team, namely the Drinking Water Safety Unit (“DWSU”) to undertake, among other aspects of work, the duties of overseeing the performance of WSD in respect of drinking water safety. DWSU operates impartially and independently from the Bureau’s housekeeping team for WSD.
- (b) DWSU oversees and coordinates matters relating to revision of the Hong Kong Drinking Water Standards (“HKDWS”), including initiating review on a need basis with WSD’s support and advice/recommendations provided by the Drinking Water Safety Advisory Committee (“DWSAC”). DWSU will seek endorsement by the Secretary for Development (“SDEV”) for any revision to HKDWS.
- (c) DWSU reviews WSD’s water quality reports, which cover Dongjiang water, raw water and treated water to ensure compliance with HKDWS at consumers’ taps, on a quarterly basis. Although the reviews mainly focus on treated water, DWSU also looks into the quality of Dongjiang water and raw water which may have bearing on the quality of treated water.
- (d) DWSU monitors the operations of WSD in respect of drinking water safety from sources to consumer taps through regular surprise checks by in-house staff and third party audits by external auditors. DWSU also keeps track of follow-up actions by WSD on the recommendations from regular surprise checks and audits, if any, including revision of the department’s Drinking Water Quality Management System (“DWQMS”).

- (e) DWSU examines the performance of WSD in handling water quality incidents in accordance with its Water Quality Incident Management Plan (“WQIMP”) as well as the corresponding improvement measures, if any, with a view to avoiding recurrence of incidents. Where necessary, DWSU may seek views from DWSAC on such incidents or engage external party for conducting further investigation.
- (f) DWSU monitors the performance of WSD in carrying out its duties under Waterworks Ordinance (Cap. 102) (“WWO”) in ensuring drinking water safety in inside services. DWSU also oversees WSD’s performance in taking forward administrative measures to enhance drinking water safety at consumers’ taps.
- (g) DWSU also liaises with FEHD in monitoring the quality of small water supply, i.e. water drawn from streams and wells for potable use in remote areas where no mains water supply is available. When necessary, DWSU may examine the water quality data of streams and wells.
- (h) DWSU, with the advice from DWSAC and assistance of WSD, continues to review from time to time on the international development in relation to drinking water safety and steer WSD for making continuous improvement of its DWQMS.

Water Supplies Department

- (a) WSD strives to ensure drinking water safety from sources to taps to ensure compliance with HKDWS at consumers’ taps.
- (b) WSD adopts a risk-based management approach under the DWQMS to conduct monitoring and to implement control measures in the drinking water supply, i.e. from source through treatment, distribution to point of consumption, so as to ensure drinking water safety.
- (c) WSD reviews regularly the latest international development on drinking water standards, studies any drinking water quality incidents both locally and internationally, and makes recommendations to DWSU, when necessary.

- (d) WSD sets out the specifications for the use of materials at government's new waterworks¹ to ensure drinking water quality. Besides, WSD ensures that the government's new waterworks are properly constructed and installed.
- (e) WSD implements control of plumbing materials, and construction and operation of inside services in accordance with WWO and by means of administrative measures to safeguard drinking water safety in inside services.
- (f) WSD will handle water quality incidents in accordance with its WQIMP. When there is a notifiable water quality incident², WSD will report it to DWSU promptly.
- (g) WSD regularly reviews and revises, as necessary, DWQMS and WQIMP. Besides, WSD takes appropriate measures to ensure awareness of the department's staff of the DWQMS and WQIMP.

Food and Environmental Hygiene Department

- (a) FEHD coordinates with other Government Departments³ to monitor the water quality of streams and wells for potable use in remote areas where mains water supply is not available and to take necessary measures when there is any exceedance in accordance with the Public Health and Municipal Services Ordinance (Cap. 132).
2. Head of DWSU shall report directly to SDEV and the Permanent Secretary for Development (Works) in discharging his/her daily duties. Where the case is related to water supply from streams or wells under the purview of FEHD, DWSU will liaise with FEHD for necessary follow up action.

¹ For example, government's new water treatment plant or new water mains.

² As defined in footnote 13 on page 7 of the main report.

³ Three Government Departments, viz. WSD, the Department of Health and Government Laboratory, provide technical advice and support to FEHD in accomplishing the task. When necessary, these Government Departments may provide advice/information to FEHD about the latest international practices in monitoring drinking water quality of streams or wells with a view to facilitating FEHD in devising monitoring regime.

3. To maintain public confidence over drinking water safety, DWSU will publish annually a report on its work as well as its observations over the performance of WSD in relation to drinking water safety.

- End -

Third Party Audit and Surprise Check on WSD's Drinking Water Quality Management System ("DWQMS")

Third Party Audit

1. The objective of the third party audits is to verify the extent of compliance with the requirements of DWQMS across various functions and activities of the Water Supplies Department ("WSD"), and to identify areas requiring improvements.
2. To ensure the impartiality and credibility of the third party audits, external auditors with proven experience in management system and Water Safety Plan ("WSP") audits are engaged to form the audit team¹.
3. The Drinking Water Safety Unit ("DWSU") arranges conducting a third party audit once a year which covers all major functions described in DWQMS. The frequency of the third party audits will be reviewed from time to time.

Surprise Checks

4. The surprise checks provide a more focused auditing of specific critical processes as well as the progress of the follow-up action in respect of the improvement and corrective actions identified via WSD's internal audits, water quality incidents, third party audits, etc.
5. The checks provide further assessment on the safety of drinking water in Hong Kong, which are carried out by DWSU members with chemistry/engineering background as well as auditing knowledge obtained through attending certified ISO 9001 lead auditor training. DWSU members will also participate as observers during WSD's internal DWQMS audits.
6. DWSU performs the surprise checks on a quarterly basis and will review its frequency from time to time.

- End -

¹ The team will comprise ISO 9001 auditors and an overseas certified WSP auditor.