

Complaint against Water Supplies Department
An incident of anomaly in
drinking water quality in a housing estate
Investigation Report

Background

On 27 August 2019, the Water Supplies Department (“WSD”) carried out urgent repairs on a section of the fresh water main in Tseung Kwan O (“TKO”) and made plans for rearrangement of the water distribution network. That night, the residents of a housing estate in the district (“Estate A”) found the fresh water discoloured, with black particles in it. The next day, water supply to Estate A was suspended. WSD deployed water wagons to provide temporary water supply. On 1 September, water supply to Estate A resumed when temporary waterpipes were used instead to supply water to the Estate. Thereafter, those temporary waterpipes continued to supply water, and the original water supply from the Po Yap Road Government water main to the internal plumbing system (“IPS”) of Estate A (“the original supply route”) never resumed.

The Complaint

2. This Office received similar complaints against WSD from a number of complainants (“the Complainants”). Their complaints are summarised as follows:

- (1) WSD failed to make adequate preparations for rearrangement of the water distribution network, supervise the rearrangement process throughout, maintain communication and make immediate response. As a result, the fresh water of Estate A was discoloured and contaminated with black sediment.
- (2) On 28 August 2019, WSD, in response to enquiries, indicated that water contamination was caused by problems of the pipes of the IPS of Estate A. This had affected the handling of the water suspension incident by the management company (“MC”) of Estate A.
- (3) WSD claimed that the quality of Government water supply had resumed normal on 28 August 2019. Nevertheless, when WSD flushed the waterpipes of Estate A on that day and the next, bitumen particles

continued to enter the water tanks of Estate A from the Government water main.

- (4) Residents of Estate A already noticed on 28 August 2019 that the Government water supply contaminated with bitumen kept flowing into the sump tanks of Estate A, and requested on the night of 29 August that WSD replace the water supply with a new and clean source. However, WSD started to connect the system with temporary water source only on 30 August, causing delay in resumption of water supply.
- (5) WSD only conducted tests on the outlook, colour and turbidity of drinking water and failed to carry out appropriate drinking water tests to address the concerns of the residents of Estate A over whether it was safe to use the water with bitumen for cooking.
- (6) Despite the fresh water having been contaminated, WSD did not suspend water supply to the shops in the mall of Estate A (“the Mall”). Restaurants in the Mall used the contaminated fresh water to cook, putting the health of their customers at risk.
- (7) Bitumen may be hazardous to health. Yet, WSD failed to replace those aged water mains with internal bitumen lining in the water distribution network.
- (8) On 11 September 2019, WSD and Estate A discussed resumption of the original supply route. On 17 September, the Department carried out the related works, but bitumen contamination in the water supply source remained after rearrangements for feeding water to the first sump tank was completed. The works thus came to a halt. It was improper of WSD to have suggested and started the works without careful prior examination of the original water supply system.
- (9) Between 28 and 31 August 2019, WSD made several announcements on the expected time of water supply resumption on its website (including 11:59 pm on 28 August, 12 noon on 30 August, 12 midnight on 31 August, and 4 pm on 31 August). Such information was incorrect because water supply eventually resumed on 1 September.

- (10) WSD wrongly stated in its water suspension notice that water supply was suspended because residents needed to repair the waterpipes and asked WSD to close the water valve.
- (11) WSD took a very long time to resume the original supply route to Estate A.
- (12) WSD failed to respond to the claims for damages filed by Estate A with respect to the water suspension.

Our Findings

WSD Mechanism for Handling Reports on Anomaly in Drinking Water Quality

3. WSD indicated that upon receipt of a report on anomaly in drinking water quality by individual consumers, its staff would conduct a site visit, inspect the quality of Government water supply and flush the water meter of the consumer concerned. In cases where anomaly in drinking water quality involve a number of consumers in a housing estate, WSD would flush the Government water main and contact the MC (if there is one) of the estate to inspect the IPS. Where necessary, WSD would provide technical support and assistance to the consumers and the MC concerned.

Water Meters and Water Supply Facilities

4. WSD information showed that the typical domestic water meters installed by WSD are small meters (diameter of 40 mm or less) with an incorporated strainer. WSD's "Technical Requirements for Plumbing Works in Buildings" stipulates that for all newly constructed housing estates, a strainer shall be installed upstream of all master meters. In addition, water pumps of IPSs are usually fitted with a strainer in front to protect the pumps.

5. Bitumen or sediment entering the IPS would normally build up in pipes located at lower levels and on the bottom of sump tanks, then reach different floors of a building through the water pumps of the IPS. Such particles may also block the strainer in front of the water meter, thus affecting the water supply to the consumers concerned (for instance, the water pressure would be weakened or water supply suspended). Smaller pieces of bitumen or sediment may also pass through the strainer in front of the water meter, then enter the water-using apparatuses inside individual flats.

Maintenance and Repair Responsibility for IPS

6. WSD pointed out that the maintenance and repair responsibility of the inside service of a flat rests with individual consumers, while the management office or registered agent should take up the maintenance and repair responsibility of the waterpipes in the streets and common areas within the housing estate, as well as other related water supply facilities, including all land mains within the land boundary of the estate.

The IPS of Estate A

7. WSD explained that fresh water for consumers in multi-storey buildings is supplied by Government fresh water mains through the IPS of the buildings. Shops in the Mall are located on the lower floors of Estate A's building blocks. Water pressure is strong enough for the fresh water from the Government water main to reach the shops directly through the pipes of the IPS of the buildings (direct water supply) without going through the water tanks of Estate A first.

8. On the contrary, fresh water from the Government water main for use by domestic consumers in Estate A must first go through the land mains in the Estate, then enter the sump tanks of the buildings. Water pumps will use pressure to convey the water to transit tanks, followed by roof tanks. Fresh water then reaches consumers in different floors through the IPS of the buildings. This is indirect water supply. There are all together 20 water tanks in the eight building blocks of Estate A, namely four sump tanks, eight transit tanks and eight roof tanks.

Summary of WSD's Follow-up Actions on the Fresh Water Incident in Estate A

9. WSD provided the records on how it had rearranged the water distribution network and followed up on the fresh water incident involving the domestic consumers in Estate A. A summary of the course of events is at **Annex**.

WSD's Response

Hong Kong's water quality

10. Sediment is common in the water supply system. It would not affect water safety because it is mainly calcium compound in the slaked lime used in the fresh water treatment process, and iron oxide in the material used in waterpipes. The bitumen among the sediment comes from the detached internal bitumen lining of steel fresh water mains. In the last century, bitumen was a material commonly used as the internal lining of steel fresh water mains¹, and the bitumen used must comply with the British Standard BS4147, not contain hazardous materials and pose no threat to water safety. Bitumen may release benzo(a)pyrene. WSD has all along been taking fresh water samples regularly for testing and analysing the benzo(a)pyrene level. Tests results confirmed that the benzo(a)pyrene level in all the fresh water samples was far below 0.7 microgram per litre, Hong Kong's limit for fresh water².

11. WSD chemists had conducted tests in 2016, in which bitumen was added into fresh water, which was then heated up. The tests did not find a significant increase in the level of benzo(a)pyrene released by the bitumen. In early 2019, WSD appointed a consultant to conduct a study and formulate a comprehensive strategy for handling those steel fresh water mains with detached internal bitumen lining, and to examine the impact of detachment of internal bitumen lining in water mains on water safety. The consultant's report indicated that the bitumen entering the human body via fresh water would not threaten our health. The initial results also concluded that the benzo(a)pyrene level would not significantly increase when the water was heated up. The study is still in progress.

Anomaly in water quality in Estate A

12. Rearrangement of the water distribution network may cause a reverse in the flow direction of some Government water mains, and sediment on the bottom of the water mains may be stirred up, thus affecting the quality of the water supply. In May 2018, WSD had conducted similar rearrangement of the water distribution network in the TKO district, and water quality was not affected in the process. In view of that experience, the Department did likewise this time to flush the Government water main while rearranging the water distribution network so that as much sediment as possible would be flushed away until the water coming out from the pipe was observed to have become clear again (see **Item 1** in **Annex**). WSD was still looking into the reasons why sediment could still enter the IPS of Estate A.

¹ Ceramic epoxy coating has been used by WSD as the internal lining of steel fresh water mains since 2005.

² The corresponding guideline values or provisional guideline values in the World Health Organisation's Guidelines for Drinking-water Quality (4th edition), published in 2011, are currently being adopted in the Hong Kong Drinking Water Standards.

13. WSD rearranged the water distribution network on 27 August 2019. On 15 October 2019, the Tiu Keng Leng Fresh Water Service Reservoir recorded a rather low water level. In these two incidents, WSD received copious reports about anomaly in water quality only from Estate A (see **Items 1, 2, and 17-20** in **Annex**), but not from those housing estates which were also served by the Government water main along Po Yap Road and Tong Tak Street. The sporadic reports received from the other housing estates were more or less the same as WSD might receive on any given day.

14. WSD pointed out that the detached internal bitumen lining in steel water mains would not affect water safety, but understood that the presence of black particles in fresh water would affect people's confidence in water safety. The Department had installed additional strainers at the temporary supply point on Tong Tak Street and the original supply point on Po Yap Road. Besides, strainers were installed at strategic points of the Government's water distribution network in the district and at the water supply point of the Estate (see **Items 8, 13, and 22** in **Annex**). The filter mesh of the strainers, ranged from 0.5 to 2 mm in diameter, can separate most of the bitumen or sediment in the water. Nevertheless, some extremely minute particles may still escape the sieve.

15. WSD had collected fresh water samples for laboratory testing from the water mains at the original supply point to Estate A on Po Yap Road, the new supply point on Tong Tak Street, as well as from the various water tanks of Estate A. Test results showed that all the samples did not contain materials hazardous to health, and were suitable for drinking.

16. WSD would flush the Government water mains in the district periodically to prevent sediment from building up, step up training for its staff on the operation of the water mains, and issue guidelines on urgent rearrangement of water distribution networks.

Water supply to the shops in the Mall

17. Shops in the Mall receive water supply directly from the Government water main (see **para. 7**). When WSD completed flushing the Government water main near Estate A on the night of 28 August 2019, the quality of water supplied through the Government water main resumed normal. WSD had collected fresh water samples from the water main near Estate A for laboratory testing. Test results showed that the

water was safe and suitable for drinking (see **Item 5** in **Annex**). On the two days that followed, WSD did not receive any complaints about anomaly in water quality from the shops.

18. Following its action to clear the residual sediment from the water meters of the shops in the Mall on 31 August 2019, WSD did not receive any more reports about anomaly in water quality from the shops, save from one shop (not a restaurant) which complained about mild anomaly. Quality of the water supplied to that shop resumed normal after its water meter had been flushed. This indicated that quality of the water supplied to the shops in the Mall had in general resumed normal that day when WSD had completed flushing the Government water main.

Resumption of water supply to domestic consumers in Estate A

19. Generally, water quality would resume normal within a short time by flushing the Government water mains and the IPS. If another Government water main is to be used as an alternative water supply point for a housing estate, a suitable new supply point (such as one that would not affect water supply to the housing estates nearby) must first be identified. Temporary waterpipes must be installed and their alignment agreed upon by all stakeholders to minimise the impact of the installation works on various parties. This is usually not the preferred option as the process would take a longer time.

20. WSD started to flush the IPS of Estate A on the afternoon of 28 August 2019. That night, quality of water supplied by the Government water main resumed normal after WSD had completed flushing the Government main in the vicinity of the Estate (see **Item 5** in **Annex**). However, black particles were still found when WSD re-fed water into the sump tanks of Estate A. The Department believed the cause to be the relatively wide land mains of the IPS, resulting in a slower water flow which in turn affected the effectiveness of the flushing. WSD then at once continued to assist the MC to clean the IPS of Estate A. Cleaning was completed and water re-fed into the sump tanks on the evening of 29 August. Yet, there were still black particles in the water fed into the tanks (see **Item 7** in **Annex**). This might point to the presence of bitumen or sediment in the hidden parts of the land mains of the IPS of Estate A. It would be difficult to flush them away completely, and the sediment might sometimes be stirred up by the water flow and enter the sump tanks.

21. Expecting no immediate solutions to the problem, WSD discussed with the MC and decided that another water supply point be provided for Estate A at once. The supply point must circumvent the land mains of the IPS of the Estate and feed water into the sump tanks directly (see **Item 7** in **Annex**). Related works was completed in late night of 30 August 2019 (see **Item 8** in **Annex**).

22. Water supply from the new supply point was available to Estate A upon completion of the works aforementioned. Nevertheless, the IPS of Estate A was rather complicated (see **para. 8**) such that cleaning must be carried out bottom-up, meaning that sump tanks must first be cleaned, then water pumps be turned on to pump water to the transit tanks for cleaning. Cleaning of 20 water tanks would therefore take very long to complete. Besides, the drain outlets of some tanks were clogged, while the flood prevention facilities at the drain outlets of some water tanks were inadequate. To prevent building facilities from flooding during cleaning, the speed of cleaning must be slowed down. Furthermore, some check valves of the IPS of Estate A were not functioning properly, resulting in air-lock in the pipes when water pumps were turned on to deliver water to the tanks on the upper floors. As water could not flow freely, the flow speed was significantly slowed down. Considerable time was therefore needed to deliver sufficient volume of water to the tanks on the upper floors. Resumption of water supply was greatly delayed. Eventually, water supply resumed gradually for the various residential blocks of Estate A between the evening of 31 August and the morning of 1 September 2019 (see **Item 9** in **Annex**).

Resumption of the original water supply route

23. On 11 September 2019, WSD met with the Owners' Committee ("OC") and the MC of Estate A to discuss ways to clean thoroughly the land mains of the IPS of the Estate. They agreed to try to flush the land mains again in mid-September. If successful, arrangement could be made to resume the original water supply route to Estate A (see **Item 14** in **Annex**).

24. On 17 and 18 September, WSD, in accordance with the above proposal as agreed, assisted the MC to flush the land mains, only to fail to clean them thoroughly. As such, the Department used the temporary water supply point on Tong Tak Street again to supply water to the domestic consumers in Estate A (see **Items 15 and 16** in **Annex**).

25. WSD reckoned that there might be detachment of the internal bitumen lining along the 600-mm wide steel fresh water main along Po Yap Road. The Department is currently arranging a detailed examination for the water main and drawing up a repair proposal. Once installation of a temporary water main along Po Hong Road was completed, repair works for the steel fresh water main along Po Yap Road would commence. WSD had also installed strainers at strategic points in the district and discussed with Estate A the arrangement for resuming the original water supply route (see **Items 22 - 28** in **Annex**).

Issuing and verifying Water Suspension Notices

26. Generally speaking, upon receipt of reports about water supply problems, WSD frontline staff would conduct a site visit as soon as possible and arrange urgent repairs as necessary. Interruption in water supply is an emergency. Frontline staff would contact the WSD Enquiry Hotline so that latest information about water suspension can be disseminated to the public via the Department website. Where warranted, frontline staff may also notify the Customer Enquiry Centres, which would then disseminate the information about water suspension to the public.

27. Regarding the incident of Estate A, after discussing the situation with the MC on 28 August 2019, WSD decided to turn off the water pumps of the sump tanks of the various residential blocks, resulting in suspension of fresh water supply to the domestic consumers in the Estate. Miscommunication probably occurred when the WSD frontline staff notified the Customer Enquiry Centres of the water suspension, such that the latter misunderstood that the suspension was arranged upon the MC's request. As a result, there was discrepancy between the information shown on the WSD website and the facts. When it was found that the information was inaccurate, WSD at once corrected the information and apologised to the MC and residents.

28. WSD had reminded its staff to strengthen communication in disseminating information, and be cautious in checking information even in emergencies to avoid mistakes.

Claims for damages

29. Anyone who wishes to claim damages from WSD can provide relevant information (such as repair receipts, photos etc.) and contact details to the Department. Upon receipt of a claim, WSD would seek legal advice on the case and take suitable

follow-up action. The Department had already written to Estate A on 5 September and 9 December 2019, providing details of its procedures for handling claims for damages. Upon receipt of claims, the Department would follow up according to established procedures.

Our Comments

Allegation (1): Rearrangement of Water Distribution Network Resulting in Sediment Entering the IPS of Estate A

30. WSD already explained that sediment is common in water supply systems (see **para. 10**). Since sediment might be stirred up upon rearrangement of the water distribution network, WSD had taken reference from experience and flush the Government water main until the water became visibly clear again during rearrangement of the network (see **para. 12**). From an administrative perspective, we consider that WSD had taken measures to flush away the visible sediment. In fact, there were no similar problems in the housing estates nearby which used the same source of water supply. WSD is investigating the reasons why sediment was still able to enter the IPS of Estate A. The Ombudsman, therefore, considers that at this stage there is no evidence of impropriety in WSD's rearrangement of the water distribution network that day. Allegation (1) was **unsubstantiated**.

31. What measures should be taken to prevent sediment from entering the IPS of a building involves professional judgement about waterworks installations and repairs. It is not an administrative matter for this Office to comment.

32. In any event, WSD has learned from this incident. It would arrange periodic flushing of the Government water main in the district, step up staff training and issue guidelines on urgent rearrangement of water distribution networks (see **para. 16**).

Allegations (2) and (3): Incorrectly Indicating that Contamination in Water Supply Was Caused by Problems of the Pipes of the IPS of Estate A, and that the Quality of Government Water Supply Had Resumed Normal on 28 August 2019

33. If a large number of black particles were present in the fresh water supplied to Estate A and it was solely a result of problems in the Government water supply, it followed that those housing estates nearby also served by the Government water mains along Po Yap Road or Tong Tak Street should experience anomaly in water quality on

a massive scale as well. Nevertheless, we learned from news reports that only individual domestic consumers in the housing estates near Estate A had reported that there were black particles in their fresh water as a result of WSD's rearrangement of water distribution network. WSD records also showed that those housing estates did not experience similar problems as Estate A (see **para. 13**). Besides, the shops in the Mall which got direct water supply from the Government water main did not find any problems in water quality after 28 August 2019 (see **para. 17**). In this light, WSD considered that the presence of black particles even after the water tanks of Estate A had been cleaned was due to the problems of the IPS of the Estate (see **para. 20**). This Office found such inference not unreasonable. Regarding the reasons why a huge number of black particles were still present after the water tanks had been cleaned, again, it is not an administrative matter we can comment on.

34. On the quality of Government water supply, WSD had pointed out that the detached internal bitumen lining in steel water mains would not affect water safety (see **para. 14**). It had taken fresh water samples from the Government water main on 28 August 2019 for laboratory testing, and the results showed that the water was safe and suitable for drinking (see **para. 17**).

35. In light of the above, The Ombudsman considers allegations (2) and (3) **unsubstantiated**.

Allegation (4): Delay in Resuming Water Supply

36. WSD had explained the factors for consideration in providing another water supply point (see **para. 19**). We are of the view that it was not unreasonable of WSD to consider resuming the original supply route as the preferred solution. As can be seen from the sequence of events, WSD first assisted Estate A in cleaning the water tanks in order to resume water supply via the original supply route. Another supply point was considered only after repeated attempts to clean the tanks had failed to solve the problem at once (see **para. 21**). In the interim, water wagons and water tanks were deployed to maintain water supply to the residents (see **Item 4 in Annex**). When it decided on 29 August 2019 to provide another water supply point, the related works was carried out and completed on the following day. Nevertheless, resumption of water supply met tremendous difficulties and resumption of water supply was delayed (see **para. 22**). Having considered WSD's explanation and its efforts in resuming water supply, The Ombudsman considers allegation (4) **unsubstantiated**.

Allegation (5): Failing to Conduct Appropriate Drinking Water Tests

37. Bitumen material may release benzo(a)pyrene (see **para. 10**). According to WSD's laboratory tests and the consultant's study, the level of benzo(a)pyrene released by bitumen would not significantly increase when the water is heated up (see **para. 11**). In view of the concern of Estate A's residents, WSD had taken water samples for conducting laboratory tests of the benzo(a)pyrene level. Results showed that the benzo(a)pyrene level in the water samples was lower than 0.002 microgram per litre, which was far lower than Hong Kong's standard for drinking water at 0.7 microgram per litre (see **para. 10** and **Item 11** in **Annex**). Since WSD had conducted laboratory tests for the water to address the concerns of Estate A's residents, and explained in detail the test standard and results, The Ombudsman considers allegation (5) **unsubstantiated**.

38. Nevertheless, having scrutinised the relevant records, this Office opines that if WSD had included the information on drinking water standard mentioned in **paragraph 10** in its written notification to the OC of Estate A on 5 September 2019 about the results of the laboratory tests, and mentioned that the amount of benzo(a)pyrene released by bitumen would not significantly increase when the water was heated up (see **para. 11**), the residents of Estate A would understand better how WSD's tests could prove that the water was safe and suitable for drinking. We hereby urge WSD to remind its staff to provide detailed information about drinking water safety standards in similar situations to address the concerns of the parties involved.

Allegation (6): Failing to Suspend Water Supply to the Shops in the Mall Despite the Fresh Water Having Been Contaminated

39. WSD had elaborated on how water was supplied to the shops in the Mall (see **paras. 17 and 18**). Since the water supply systems used by the shops and the domestic units were different, and the shops did not experience the same problem as the residents, it was not unreasonable that WSD had not discussed water suspension with the shops. In this light, The Ombudsman considers allegation (6) **unsubstantiated**.

Allegation (7): Failing to Replace Those Aged Water Mains in the Water Distribution Network with Internal Bitumen Lining

40. WSD stated that it had appointed a consultant in early 2019 to conduct a study for formulating a comprehensive strategy to tackle the steel fresh water mains with

detachment of internal bitumen lining. The study was still in progress (see **para. 11**). In other words, the proposals on tackling the water mains with detachment of internal bitumen lining were still under examination. WSD had no definite arrangements at the moment.

41. This Office considers it not unreasonable for WSD to await the formulation of a comprehensive strategy before taking actions to tackle the steel fresh water mains with detachment of internal bitumen lining. In addition, WSD already decided on a proposal to repair the Government water main along Po Yap Road in order to resolve the case of Estate A. Relevant works had already commenced (see **para. 25**). As such, The Ombudsman considers allegation (7) **unsubstantiated**.

Allegation (8): Impropriety in Proposing and Carrying out the Works to Resume the Original Supply Route

42. WSD pointed out that on 11 September 2019, it had met with the OC and MC of Estate A and agreed that if the land mains of the IPS of the Estate could be thoroughly flushed, the original supply route could be resumed (see **para. 23**). We do not see any impropriety in the arrangement. That the cleaning efforts did not yield satisfactory results was not foreseeable during initial planning (see **para. 24**). Besides, the unsatisfactory results should have nothing to do with the source of water supply, as expounded in **paragraph 33**.

43. In this light, The Ombudsman considers allegation (8) **unsubstantiated**.

Allegation (9): Disseminating Wrong Information about Resumption of Water Supply

44. WSD started to help Estate A to clean its IPS and flush the Government water main on the afternoon of 28 August 2019. That night, it completed flushing the Government water main and confirmed that water quality resumed normal. Nevertheless, when water was re-fed into the sump tanks of Estate A, the result was unsatisfactory. The problem remained despite repeated attempts (see **paras. 20 and 21**). When the works at another water supply point was completed, water supply resumption again met unexpected hurdles (see **para. 22**). We consider it not unreasonable of WSD to announce the estimated time of water supply resumption in response to works progress at that time, and to revise the time in view of the difficulties encountered. As such, The Ombudsman considers allegation (9) **unsubstantiated**.

Allegation (10): Incorrectly Stating that Water Was Suspended in Estate A Because the Residents Needed to Repair the Waterpipes

45. WSD had admitted that miscommunication between its staff might have caused the discrepancy between information on its website and the facts (see **para. 27**). The Ombudsman, therefore, considers allegation (10) **substantiated**.

46. We are pleased to learn that WSD had reminded its staff to strengthen communication and be careful in vetting information to avoid mistakes (see **para. 28**).

Allegation (11): Serious Delay in Resuming the Original Supply Route

47. We understand that residents of Estate A hoped that the original supply route could be resumed as soon as possible. As can be seen from **Annex**, upon receipt of reports about anomaly in drinking water quality on 27 August 2019, WSD had repeatedly assisted Estate A to clean the IPS with a view to resuming the original supply route, but to no avail. It then decided to supply water to Estate A via a temporary water main. WSD subsequently carried out a series of works, checked relevant information, conducted site visits, kept in touch and discussed with the OC and MC of Estate A in order to formulate a proposal to resume the original supply route. According to WSD's updated information, the discussion is still ongoing. From an administrative perspective, The Ombudsman considers that WSD has already tried to resolve the problem through various means and there is no evidence of unreasonable delay. In this light, allegation (11) is **unsubstantiated**.

Allegation (12): Failing to Respond to Claims for Damages Regarding Water Suspension in Estate A

48. WSD has already pointed out that anyone who wishes to claim damages should provide relevant information to the Department. It had notified Estate A of the arrangement (see **para. 29**). The Ombudsman, therefore, considers allegation (12) **unsubstantiated**.

Conclusion

49. On the whole, The Ombudsman considers the Complainants' complaint against WSD **partially substantiated**.

Recommendations

50. We have found no significant maladministration on the part of WSD in this case. Nevertheless, water suspension has immense impact on residents. In this case, a large number of people were involved and the problem had persisted for a long time. WSD should discuss with the OC and MC of Estate A to prevent recurrence. In this connection, this Office has the following recommendations:

- (1) WSD should complete quickly its investigation into the reasons why sediment entered the IPS of Estate A (see **para. 12**).
- (2) **Paragraphs 20 and 22** revealed that the IPS of Estate A seemed rather problematic. If WSD considers that the system needs replacement/repair/maintenance/cleaning, it could give appropriate advice and make suitable suggestions to the OC and MC.

Office of The Ombudsman

May 2020

**Summary of WSD's Handling of the Tseung Kwan O Water Distribution Network and
Follow-up Actions on the Fresh Water Problem in Estate A**

	Date	Works/follow-up action by WSD	Fresh water incident in domestic units of Estate A
	2019		
1.	27 August	<ul style="list-style-type: none"> ● For carrying out urgent repairs on the fresh water main at the intersection of Po Hong Road and Ling Hong Road in Tseung Kwan O (“TKO”) in the morning, WSD closed the water trunk main that delivered water to the Tiu Keng Leng Service Reservoir, while the Reservoir continued to supply water to the Tiu Keng Leng district. ● As repairs took time, protracted suspension of water inflow to the Service Reservoir led to a continuous decrease in the Reservoir’s water storage, affecting water supply to tens of thousands of residents in the district. WSD, therefore, rearranged the water distribution network (i.e. using the Tseung Kwan O West Low Level Service Reservoir to supply water instead) in order to maintain fresh water supply to the district. ● During rearrangement of water distribution network, WSD flushed the Government water main in order to 	

	Date	Works/follow-up action by WSD	Fresh water incident in domestic units of Estate A
		<p>flush way sediment that might have been stirred up, until water coming out from the pipes became visibly clear again.</p> <ul style="list-style-type: none"> ● Rearrangement of water distribution network completed at around 8 pm. 	
2.			<ul style="list-style-type: none"> ● WSD received two reports from consumers in Estate A about discolouration of water at 10 pm. WSD staff then arrived at the Estate at 11 pm to clean the fresh waterpipes and water meters of the consumers concerned. Flushing was completed around 1 am in the following morning and the consumers were satisfied with the result.
3.	28 August	<ul style="list-style-type: none"> ● Around mid-night, urgent repairs of the fresh water main at the intersection of Po Hong Road and Ling Hong Road was completed. ● WSD arranged for the trunk main to be opened again to resume delivering water to the Tiu Keng Leng Service Reservoir. 	
4.			<ul style="list-style-type: none"> ● At 10:20 am, WSD received notification from the management company (“MC”) of Estate A that a number of residents had found the fresh water discoloured, with

	Date	Works/follow-up action by WSD	Fresh water incident in domestic units of Estate A
			<p>black particles in it. WSD staff at once conducted a site inspection of the internal plumbing system (“IPS”) of the Estate, and flushed the Government water main in the vicinity of the Estate.</p> <ul style="list-style-type: none"> ● WSD’s inspection found quite a number of black sediment in the sump tanks of the various building blocks of Estate A. To prevent the sediment from being flushed to the waterpipes of different floors, the water meters of consumers and water-using apparatuses (for example, water heater) inside individual flats, thereby expanding the area being affected, WSD discussed with MC and decided to turn off the pumps of all sump tanks of the residential blocks. Fresh water supply to the domestic consumers of Estate A was, therefore, suspended. ● WSD at once arranged three water wagons and four water tanks to provide temporary water supply to the residents. It also assisted MC to clean the IPS in order to resume water supply to the domestic consumers.
5.		<ul style="list-style-type: none"> ● WSD completed flushing the Government water mains in the vicinity of Estate A that night. Quality of 	<ul style="list-style-type: none"> ● Quality of water supplied directly by the Government water main to the shops in the mall of Estate A resumed

	Date	Works/follow-up action by WSD	Fresh water incident in domestic units of Estate A
		<p>Government water supply resumed normal at once.</p> <ul style="list-style-type: none"> ● WSD took fresh water samples from the Government water main in the vicinity for laboratory testing. Results showed that the water was safe and suitable for drinking. 	<p>normal in general.</p> <ul style="list-style-type: none"> ● WSD, together with dozens of workers of its contractors, continued to assist MC to clean the IPS of Estate A.
6.	29 August	<ul style="list-style-type: none"> ● In early hours, the original water distribution network was restored. 	
7.			<ul style="list-style-type: none"> ● Cleaning of the land mains of the IPS of Estate A went on between 28 August night and 29 August afternoon. Progress was satisfactory. Black particles in the water being flushed out significantly decreased and became negligible. ● That evening, water was re-fed into the sump tanks. There were still black particles in the water. ● After discussion with MC of Estate A, WSD decided in late hours that another water supply point be provided for Estate A, and water would be delivered directly into the four sump tanks.
8.	30 August	<ul style="list-style-type: none"> ● In the morning, WSD commenced works to lay two 80-mm wide and 190-meter long water mains along Tong Tak Street to supply water directly to the four sump tanks 	

	Date	Works/follow-up action by WSD	Fresh water incident in domestic units of Estate A
		of Estate A. Strainers were fitted into those water mains. The works was completed after mid-night.	
9.	31 August		<ul style="list-style-type: none"> ● WSD and its contractors continued to assist MC of Estate A to clean the IPS. ● In the afternoon, WSD helped MC to resume water supply to the residents. Water supply to the lower floors in blocks 3, 7 and 8 resumed around 7 pm. As for the other blocks, water supply resumed gradually from that night to early next morning.
10.	1 September		<ul style="list-style-type: none"> ● WSD set up two telephone hotlines for the residents to raise enquiries and seek help. In addition, a task force was deployed to the site to help residents to flush their water meters, the inside service of their flats and their water-using apparatuses.
11.	2 September	<ul style="list-style-type: none"> ● WSD conducted rapid toxicity tests for the fresh water samples taken from the Government water mains along Po Yap Road and Tong Tak Street near Estate A, and examine their benzo(a)pyrene level. Results showed that the water was non-toxic and suitable for drinking; the benzo(a)pyrene level was lower than 0.002 microgram per litre. 	
12.	3 September		<ul style="list-style-type: none"> ● Upon invitation by the members of the local District

	Date	Works/follow-up action by WSD	Fresh water incident in domestic units of Estate A
			Council, WSD's representative attended a residents' conference of Estate A to explain the causes for the incident, and report the latest situation and its follow-up actions.
13.	5 September	<ul style="list-style-type: none"> To nip the problem in the bud, WSD installed strainers around early morning at the original water supply point for Estate A on Po Yap Road, so as to separate the sediment inside the water main that might be flushed up and prevent it from entering the IPS of Estate A. 	<ul style="list-style-type: none"> Upon invitation by the Owners' Committee ("OC") of Estate A, WSD's representative attended a residents' conference to explain again the causes for the incident, report the latest situation and its follow-up actions.
14.	11 September		<ul style="list-style-type: none"> WSD continued to follow up with MC and OC about resuming water supply to Estate A from the Government water main along Po Yap Road via the land mains of the Estate, and explore with them ways to effectively clean the land mains of the Estate.
15.	17 September	<ul style="list-style-type: none"> In accordance with the proposals agreed upon in the conference of 11 September, WSD assisted the MC to flush the land mains, and resumed the use of those mains for water supply to Blocks 1 and 2 (i.e. resumed water supply from the Po Yap Road Government water main). The process was smooth. 	
16.	18 September	<ul style="list-style-type: none"> WSD continued to assist MC to flush the land mains that supply water to Blocks 3 and 3A, but failed to clean them 	

	Date	Works/follow-up action by WSD	Fresh water incident in domestic units of Estate A
		thoroughly. Consequently, the temporary water supply point was used again to supply water to the residents of Estate A.	
17.	15 October	<ul style="list-style-type: none"> ● During the night, the “inlet” of the Tiu Keng Leng Service Reservoir broke down, affecting the speed of water inflow and resulted in a rather low water level in the Reservoir. WSD believed that some sediment inside the Reservoir might be stirred up, leading to a higher-than-usual turbidity in water supply. 	
18.	16 October	<ul style="list-style-type: none"> ● Urgent repairs to the “inlet” of the Tiu Keng Leng Service Reservoir was completed around early morning. 	
19.			<ul style="list-style-type: none"> ● At 8:30 am, WSD received reports from MC that the fresh water was turbid. ● WSD’s inspection found that: <ul style="list-style-type: none"> - water in the sump tanks of Estate A was relatively turbid. WSD reckoned that the more turbid water supply had entered the IPS of the Estate earlier. - MC turned off water pumps of the sump tanks. Water supply to residents was suspended.

	Date	Works/follow-up action by WSD	Fresh water incident in domestic units of Estate A
			<ul style="list-style-type: none"> ● WSD provided immediate support and assisted MC to clean the sump tanks.
20.		<ul style="list-style-type: none"> ● At 9 am, WSD deployed staff to flush the Government water main, then confirmed that Government water supply resumed normal. 	
21.			<ul style="list-style-type: none"> ● Water supply to Estate A resumed normal in the afternoon (impact on water quality this time was milder with satisfactory cleaning results. Fewer tanks needed to be cleaned).
22.	29 October to 27 December	<ul style="list-style-type: none"> ● WSD installed strainers at a number of locations along the Government water main networks in the district. 	
23.	Late November to mid-December	<ul style="list-style-type: none"> ● WSD examined in detail the plans of the IPS of Estate A and went to the carpark to inspect those land mains of the IPS that could not be thoroughly cleaned with a view to drawing up a cleaning proposal for discussion with MC. 	
24.	18 December		<ul style="list-style-type: none"> ● WSD conducted joint inspection of the IPS and the master meter room with MC. It also provided technical support regarding installation of strainers.
25.	23 December		<ul style="list-style-type: none"> ● WSD met with MC, OC and members of the local District Council to give an account of progress in handling the incident, report the latest situation and follow-up measures. They also discussed in detail how to flush the IPS of the Estate effectively. Different parties put

	Date	Works/follow-up action by WSD	Fresh water incident in domestic units of Estate A
			forward different proposals for enhancing the discharge capacity of the basement to increase the speed of water flow so that the IPS could be thoroughly cleaned.
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26.	7 January		<ul style="list-style-type: none"> ● WSD and MC conducted a joint inspection of the basement of Estate A. WSD provided technical support to the MC with regard to removing the remaining black particles in the IPS and related works. WSD also discussed with the contractor and MC details about cleaning the waterpipes. The works involved installation of drainage pipes and the proposed re-location of the car parking spaces near the sump tanks in order to make room for installing temporary drainage tanks to increase discharge capacities.
27.	15 January		<ul style="list-style-type: none"> ● WSD indicated to MC that the contractor had made ready the materials needed for the enhanced proposal. Temporary drainage pipes could be installed the following morning. Various concerns and technical details were discussed.
28.	24 January		<ul style="list-style-type: none"> ● WSD wrote to MC, indicating that related works should commence as soon as possible so that it could assist in cleaning and re-instating the IPS, and demolish the temporary water mains laid between the water inlet point

	Date	Works/follow-up action by WSD	Fresh water incident in domestic units of Estate A
			on Tong Tak Street and the various sump tanks.