LCQ14: Improving the water quality of the Tsuen Wan waterfront

Following is a question by the Hon Joephy Chan and a written reply by the Secretary for Environment and Ecology, Mr Tse Chin-wan, in the Legislative Council today (October 30):

Question:

In his 2022 Policy Address, the Chief Executive set a target of reducing the pollution load at identified outfalls emanating stench in specific districts (including Tsuen Wan) by half before the end of this year. It has been reported that the Government department concerned has indicated recently that the aforesaid target has been achieved ahead of the schedule, and the pollution load of the Tsuen Wan waterfront has been reduced by about 80 per cent. In this connection, will the Government inform this Council:

(1) as it has been reported that the Environmental Protection Department (EPD) indicated last month that 70 cases of misconnection of drains had been found in Tsuen Wan and, among them, 36 cases had been rehabilitated or were under acceptance inspection, of the specific locations of such cases of drain misconnections and the specific rehabilitation measures taken; as for the remaining cases of drain misconnections pending rehabilitation, of the Government's rehabilitation works plan and timetable;

(2) as the EPD has indicated that following the rehabilitation of misconnected drains, the next task is to continue to identify other sources of pollutants, of the progress and targets of such task and the plans in place to monitor the water quality situation of the Tsuen Wan waterfront, for example, whether prosecution will be instituted against property owners involved in the misconnections of drains to prevent recurrence of similar problems; if so, of the details; if not, the reasons for that;

(3) upon the completion of the drain rehabilitation works mentioned in (1), of the specific measures put in place by the Government to ensure that the drains can be effectively maintained and managed on a long-term basis, and whether such measures cover preventive maintenance and contingency rehabilitation plans; whether the Government will introduce new technologies to enhance the durability and operation efficiency of drains;

(4) whether the Government has plans to extend across the territory the successful experience and fruitful outcomes of rehabilitating drains at the Tsuen Wan waterfront as well as the techniques applied, so as to improve the overall pollution load and odour intensity of the waterfront of Hong Kong; whether the Government will collaborate with environmental groups and experts to jointly take forward the work of ameliorating pollution at the waterfront;

(5) as it has been reported that the Government has installed monitoring

systems at the Tsuen Wan Sports Centre to monitor on an ongoing basis the odour changes of the Tsuen Wan waterfront, of the details of the data collected by such monitoring systems (including ways to ensure the accuracy and reliability of the data); of the water and air quality data of the Tsuen Wan waterfront collected by the Government over the past two years, and whether such data shows a trend of progressive improvement; and

(6) whether the Government has short-term and long-term plans to continuously improve the water quality and odour of the Tsuen Wan waterfront; if so, of the details; if not, the reasons for that?

Reply:

President,

The Government has all along been attached great importance to improving the water quality of Victoria Harbour. Since the launch of the Harbour Area Treatment Scheme by the Government, all sewage generated from both sides of Victoria Harbour, including Tsuen Wan District, has been intercepted and diverted to the Stonecutters Island Sewage Treatment Works for centralised treatment. As a result, the overall water quality of Victoria Harbour has improved significantly. The Cross Harbour Race, which was suspended for years due to poor water quality, has resumed since 2011 and has returned to its traditional route in the central area of Victoria Harbour since 2017. To further ameliorate the remaining near-shore water quality and odour problems of Victoria Harbour, the Chief Executive set out the target in the 2022 Policy Address to reduce the pollution load by half before end-2024 at stormwater outfalls with serious pollution problems along both sides of Victoria Harbour, in particular in Tsuen Wan, Sham Shui Po and Kowloon City districts. Since then, the Environmental Protection Department (EPD) has conducted large-scale pollution source investigations mainly in the three priority areas mentioned above. More than 8 000 stormwater and sewage manholes have been inspected, with nearly 2 000 water samples collected for chemical and Escherichia coli (E. coli) level analyses. We have also identified pollution sources by way of dye-tracing tests, detection robot, ground penetrating radar (GPR), sonar inspection boat and other advanced equipment, while working closely with the Drainage Services Department (DSD) and the Buildings Department (BD) to rehabilitate defective sewers. With the progressive completion of rehabilitation works, the overall pollution load at the relevant outfalls in the above three priority areas has been reduced by about 80 per cent and the odour problem has also been ameliorated significantly, which is widely welcomed by residents in the vicinity.

My reply to the question raised by the Hon Joephy Chan is as follows:

(1) Most of the cases found in Tsuen Wan District are concentrated in areas of earlier development, such as Chung On Street (Tai Pei Square, Yi Pei Square, Sam Pei Square and Sze Pei Square), Lo Tak Court and the area around Heung Wo Street, etc. To trace the pollution sources in Tsuen Wan District, the EPD made the best endeavour and inspected over 1 000 stormwater and sewage manholes, collected over 400 water samples for chemical and E. coli

level analyses, and successfully identified a total of 70 locations of sewer misconnection in the district. With instant follow-ups and rectifications made in collaboration with the DSD and the BD, we have so far completed rehabilitation for 36 cases involving a higher pollution load, thereby reducing the overall pollution load by about 90 per cent. The distribution of sewer misconnection cases in the district is listed in Table 1. The remaining 34 sewer misconnection cases pending rectification are mainly confronted with a more complex construction environment or technical issues. For example, works are required to be carried out beneath busy vehicular accesses and in narrow back lanes with congested underground utilities, which significantly limit the available space for the works. Our target is to complete these remaining misconnection cases within this year to further improve the water quality and odour problem of the harbourfront in the district.

(2) In terms of progress and target for continuous identification of pollution sources, the EPD has implemented a continuous monitoring programme in Tsuen Wan District and adopted innovative tracking methods, including installing surveillance camera systems inside stormwater manholes at certain strategic locations to perform around-the-clock flow monitoring inside the manholes. When abnormal discharge is detected, the intelligence function will immediately issue an alert message for taking prompt follow-up actions. Compared with the traditional method of deploying staff to open manholes for inspection every time, this new method can monitor the flow of sewage from upstream into the stormwater systems continuously and identify the pollution sources, thus saving manpower. Besides, the EPD has applied other innovative technologies to monitor the conditions of drains, including deploying a sonar inspection boat and using a GPR to scan underground drains and sewers, which enable the generation of instant images to show the connections of underground stormwater drains and nearby sewers without digging up the roads. In order to continuously monitor the water quality of the Tsuen Wan harbourfront, the EPD has also set up three regular near-shore water quality monitoring stations at the near-shore locations of Tsuen Wan Bay near the outfalls of Tai Chung Road, Ma Tau Pa Road and Tai Ho Road box culverts. Monthly sampling is conducted to monitor the water quality, with indicators including dissolved oxygen and organic pollutant levels (5-day biochemical oxygen demand), etc.

To rectify misconnection cases, the DSD carries out regular inspections of the conditions and structures of public sewerage and stormwater drainage systems. When defective sewers or manholes are found, rehabilitation works will be promptly arranged. As for misconnection cases in buildings, the BD will issue statutory repair/removal orders pursuant to the Buildings Ordinance (Cap. 123) to urge or order the property owners concerned to discharge their responsibilities to rectify the problems of sewer misconnection. For cases which remain non-compliant after receipt of such orders, the BD will take appropriate enforcement actions according to the circumstances. Among the 30 ongoing misconnection cases in buildings in Tsuen Wan District, 22 cases are undergoing rectification, while the BD will continue to follow up the remaining eight cases, for which statutory orders have been issued.

(3) Upon completion of the pipe rehabilitation works, the DSD will conduct regular inspections and clearances of sediment from the drainage pipe system to ensure its proper functioning. Furthermore, the DSD will inspect and assess the operational and structural conditions of the existing underground channels according to their plans. Following a risk-based principle, appropriate replacement and rehabilitation plans are formulated in an orderly manner, including deploying different methods to install fibreglass or polyester fibre linings in the existing pipes through trenchless excavation, thereby enhancing the maintenance of the drainage system. These advanced technologies for pipe replacement and rehabilitation can maintain the reliability of the drainage system and at the same time reduce the impact on the public during the construction period. The contractors of the DSD have also reserved materials for rehabilitating drainage pipes and manpower for emergency deployment to carry out urgent pipe rehabilitation works. Meanwhile, the DSD is committed to the development and application of various innovative technologies and machinery to assist in drainage service operations, including remote-controlled desilting robots and pipeline inspection robots, the use of drones for pipeline closed-circuit television surveys, and smart water level sensors. These devices can not only enhance the efficiency of drainage service operations, but can also reduce the risks of works and protect the safety of workers.

(4) Based on the success case in rehabilitating sewer misconnections in Tsuen Wan District, the EPD has extended the techniques applied therein to other priority areas and has been in close communication with various organisations and university research teams to pool our wisdom and work together for improving the harbourfront environment. In particular, the EPD has since 2022 engaged a team from the Hong Kong University of Science and Technology (HKUST) to install monitoring instruments at the Tsuen Wan Sports Centre, specifically monitoring the concentration of hydrogen sulphide (H2S), which is an air pollutant associated with odours at the Tsuen Wan harbourfront. The DSD also worked with another HKUST team to jointly develop new technologies. By deploying large curtains and Malodour Control Hydrogel at the outlets of box drains along the coast, the emission of malodour is inhibited. Looking ahead, the Government will continue to collaborate with experts from various fields to adopt innovation and practicable solutions to further consolidate the achievements in ameliorating the water quality and odour problems of Victoria Harbour.

(5) To objectively assess the actual effectiveness of rectification of misconnections in improving the odour levels in harbourfront areas, the Government has installed odour monitoring instruments at the Tsuen Wan Sports Centre and other locations along Victoria Harbour shorelines to continuously monitor odour changes in harbourfront areas. A team from the HKUST will conduct regular maintenance and calibration for the monitoring instruments, and verify the collected data to ensure the accuracy and reliability of the monitoring data. The monitoring data collected from the Tsuen Wan harbourfront revealed that the concentration of H2S, which is the key cause of odour, showed a significant downward trend. The H2S concentration recorded in August 2024 was 80 per cent lower when compared to that in early 2022. The records of monthly average concentration data are shown in Figure 1 and Table

2.

As for water quality, the monitoring data recorded in the waters near three stormwater drain outlets at the Tsuen Wan West harbourfront showed that the near-shore water quality in the area has undergone significant improvement. The overall average dissolved oxygen level in seawater has increased by about 30 per cent, while the content of organic pollutants has decreased by about 40 per cent. The annual average water quality data recorded at the near-shore water quality monitoring stations are shown in Table 3.

The EPD interviewed members of the public at the Tsuen Wan harbourfront in August this year. Seventy-five per cent of the respondents agreed that the odour problem at the harbourfront had improved, with half of them considering the improvement to be significant.

(6) In order to continuously improve the water quality and odour problems at the Tsuen Wan harbourfront, apart from the short-term measures including investigating and rectifying misconnections as mentioned in (2) to (4), the Government will continue to implement the following medium-to-long-term improvement measures:

(i) Desilting Works: Regular desilting works will be carried out for the three main box culverts (stormwater drains in Tai Chung Road, Tai Ho Road and Ma Tau Pa Road) in Tsuen Wan District to reduce the discharge of pollutants or sediments from the stormwater drains into the near-shore waters;

(ii) Sewer Replacement and Rehabilitation Works: To prevent leakeage of sewers from affecting the water quality along the Tsuen Wan harbourfront, the Government will undertake public works projects to rehabilitate some of the aged underground sewers in Tsuen Wan District. As at December 2023, approximately 11 kilometres of sewers in Tsuen Wan District were undergoing replacement and rehabilitation, and the works are expected to be completed in phases by end-2026; and

(iii) Village Sewerage Sytems: Village sewerage works for Chuen Lung and Lo Wai are expected to be completed by end-2025. Moreover, village sewerage works are also underway in rural areas in Tsuen Wan District, namely San Tsuen, Wo Yi Hop and Sheung Kwai Chung. The works projects will commence upon completion of land acquisition procedures and funding approval by the Legislative Council, and the works are expected to be completed in three to five years.

All in all, the Government will continue to take forward various improvement and monitoring measures to strive for turning the Tsuen Wan harbourfront into a new landmark of water-friendly culture.