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Panel on Environmental Affairs

Meeting on 24 May 2021

**Background brief on management of coastal water quality of
Victoria Harbour prepared by the Legislative Council Secretariat**

Purpose

This paper provides background information on the Government's work in managing the quality of coastal waters of Victoria Harbour. It also gives a brief account of the views and concerns expressed by Members when related issues were discussed by the relevant committees of the Sixth Legislative Council.

Background

Water control zones and water quality objectives

2. The Water Pollution Control Ordinance (Cap. 358) ("WPCO") provides the main statutory framework for the declaration of water control zones to cover the whole of Hong Kong and the establishment of water quality objectives ("WQOs"). WQOs describe the water quality that should be achieved and maintained in order to promote the conservation and best use of the waters of Hong Kong in the public interest. There are a total of 10 water control zones, including the Victoria Harbour Water Control Zone ("VHWCZ"), and each zone has a set of WQOs.¹

¹ The Administration assesses the rates of annual compliance with the key WQOs (i.e. dissolved oxygen, unionized ammonia, total inorganic nitrogen and Escherichia coli) based on data collected at marine monitoring stations.

Harbour Area Treatment Scheme

3. For the purpose of improving the water quality of Victoria Harbour, the Administration has been implementing the Harbour Area Treatment Scheme ("HATS") in stages. With the commissioning of HATS Stages 1 and 2A in 2001 and 2015 respectively, all sewage generated in the Victoria Harbour catchment is transferred to the Stonecutters Island Sewage Treatment Works ("SCISTW") for chemically-enhanced primary treatment ("CEPT") and disinfection.

4. To review the implementation of HATS Stage 2B (which is to provide an underground biological treatment facility adjacent to the existing SCISTW), the Environmental Protection Department ("EPD") conducted a consultancy study in June 2010. The findings showed that HATS Stage 2A had already provided adequate capacity to handle the projected sewage flow in the Victoria Harbour catchment, and the upgrading of treatment level from CEPT to biological treatment would not result in an observable improvement of the water quality of coastal waters. The review thus concluded that the implementation of HATS Stage 2B was not critical in terms of WQO compliance. The Administration advised in December 2017 that it would keep under review the implementation of HATS Stage 2B taking into account the water quality situation and the latest technological development in biological treatment.

Nearshore water pollution

5. Although the implementation of HATS has improved the water quality of the main water body of Victoria Harbour, there are residual pollution discharges from various activities in densely populated urban areas into the coastal waters. These discharges are not collected by the public sewers network, and cause odour and visual problems along the coastal areas of Victoria Harbour.

6. EPD commenced in 2016 a consultancy study on further enhancing the quality of coastal waters of Victoria Harbour ("the 2016 consultancy study"). The consultants were tasked to conduct field surveys, evidence-based reviews and data analyses to develop targeted pollution control measures and engineering solutions to reduce nearshore water pollution.² The findings of field surveys show that the nearshore pollution problems are mainly caused by pollutants discharged from stormwater outfalls, probably due to misconnection

² The Administration advised in January 2021 that the 2016 consultancy study had been completed and the consultants were working on the final collation and editing of the study report. The study report summary would be published in the second quarter of 2021.

of sewage pipes to stormwater drains and non-point source pollution (e.g. leakage from ageing sewers, street activities, cleaning of public places). Based on the study results and recommendations, the Administration is gradually implementing a series of measures to mitigate the odour problem of stormwater outfalls.³ At the same time, targeted pollution control works projects, including construction and modification of dry weather flow interceptors ("DWFIs") and rehabilitation of ageing sewers are being carried out progressively at various locations.⁴

Ombudsman's direct investigation into handling of sewer misconnections

7. In March 2021, the Ombudsman completed a direct investigation into the Government's handling of misconnection of private building sewers to the stormwater collection system, and made a number of recommendations with regard to the work of EPD and the Buildings Department ("BD") in handling sewer misconnection cases and taking enforcement actions. For example, the Ombudsman recommends that EPD should consult the Department of Justice on the use of circumstantial evidence for warrant application to facilitate in-depth investigation into suspected sewer misconnection cases,⁵ and consider amending WPCO for enhancing enforcement effectiveness; while BD should request allocation of more resources for efficient case handling, and improve its mechanism for monitoring case progress.

Major views and concerns expressed by Members

8. The Panel on Environmental Affairs ("EA Panel") received a briefing on the preliminary findings of the 2016 consultancy study on 19 December 2017, and discussed issues relating to enhancement of coastal water quality of Victoria Harbour at two other meetings in 2017 and 2019. Relevant issues were also brought up during examination of the Estimates of Expenditure in recent

³ Examples of such measures are expediting the rectification of sewer misconnections; carrying out inspection, maintenance and desilting for public sewers and stormwater drainage systems on a regular basis; and expanding the application of odour-control hydrogel.

⁴ DWFIs intercept and divert polluted dry weather flow from stormwater drain/channel into the sewerage system during non-rainy days for treatment.

⁵ According to EPD, it is often impossible to trace pollution sources or locations of sewer misconnection by mere observation of the drainage pipes at a building's external wall without referring to the drainage plans, rendering it impossible to meet the requirements for applying to the court for a warrant to enter the premises. Moreover, experience reveals that it is unlikely possible for officers to gather useful evidence upon entry into the suspected premises for investigation. EPD, therefore, generally does not apply to the court for a warrant of entry for suspected sewer misconnection cases.

years. Members' major views and concerns are summarized in the ensuing paragraphs.

Harbour Area Treatment Scheme

9. Members enquired about the effectiveness of HATS in improving the water quality of Victoria Harbour. The Administration advised that the overall WQO compliance rates for VHWCZ were 83%, 97%, 97% and 90% in 2017, 2018, 2019 and 2020 respectively. Compared with the years from 2000 to 2001 before HATS was commissioned, the average annual levels of dissolved oxygen, geometric mean *Escherichia coli* and unionized ammonia nitrogen of VHWCZ increased by 15%, decreased by 92% and decreased by 52% respectively in the years from 2016 to 2019, indicating HATS's effectiveness in improving water quality.

Tackling nearshore water pollution

10. While Members welcomed the construction of DWFIs at different districts to improve the water quality and alleviate the odour problems in coastal areas, they expressed concern that the benefits of DWFIs might be limited, and considered that the Administration should formulate a comprehensive strategy covering short, medium and long-term measures for improving the water quality of Victoria Harbour. The Administration indicated that it would explore the use of new technologies and methods to combat nearshore water pollution. These might include the interception of polluted water at the upstream and implementation of management plans at black spots, etc.

11. Members asked whether the Administration would consider the application of biological treatment in tackling nearshore water pollution. The Administration advised that based on the preliminary findings of the 2016 consultancy study, the Administration expected that chemical treatment would be more suitable in tackling nearshore water pollution as biological treatment generally took longer time to achieve the desired results and its effectiveness might be affected by seawater circulation.

12. Members expressed concern that public education on proper sewer connection was inadequate, and enquired how enforcement actions would be taken against illegal discharges of wastewater and sewer misconnections. The Administration indicated that it would enhance publicity and education efforts on the prevention of illegal discharge at source. For example, food premises were advised not to discharge wastewater into stormwater drains at rear lanes. As for misconnections of foul sewers, EPD's investigation staff would trace the effluent discharge routing to confirm the pollution source(s). If there was sufficient evidence, EPD would institute prosecution against the suspected illegal discharger(s). When a misconnection was found in public sewers or

internal foul sewers of private buildings during investigation, the case would be referred to the Drainage Services Department and/or BD for follow-up to rectify the misconnection.

Council questions

13. Members raised questions relating to the water quality of Victoria Harbour and its coastal areas at the Council meetings of 26 April 2017, 25 April 2018, 22 May 2019 and 20 January 2021. The questions and the Administration's replies are hyperlinked in the **Appendix**.

Latest development

14. At the meeting on 24 May 2021, the Administration will brief EA Panel on the proposed measures for enhancing the quality of coastal waters of Victoria Harbour and the implementation plan.

Relevant papers

15. A list of relevant papers is set out in the **Appendix**.

Council Business Division 1
Legislative Council Secretariat
17 May 2021

Management of coastal water quality of Victoria Harbour

List of relevant papers

Date	Event	Paper
24 April 2017	Meeting of the Panel on Environmental Affairs ("EA Panel")	Administration's paper on "Construction of dry weather flow interceptors to improve water quality and reduce odour in Victoria Harbour and sewer rehabilitation in Kowloon, Shatin and Sai Kung" (LC Paper No. CB(1)824/16-17(05)) Minutes of meeting (LC Paper No. CB(1)1297/16-17)
19 December 2017	EA Panel meeting	Administration's paper on "Improvement of water quality in Hong Kong" (LC Paper No. CB(1)349/17-18(05)) Minutes of meeting (LC Paper No. CB(1)557/17-18)
25 March 2019	EA Panel meeting	Administration's paper on "Upgrading of Cheung Chau Sewage Treatment and Disposal Facilities, Provision of Village Sewerage in Sai Kung, and Upgrading of West Kowloon and Tsuen Wan Sewerage" (LC Paper No. CB(1)723/18-19(05)) Minutes of meeting (LC Paper No. CB(1)1155/18-19)
9 April 2019	Special meeting of Finance Committee to examine Estimates of Expenditure 2019-2020	Written questions raised by Members and the Administration's replies (Reply serial numbers: ENB097 and 125)
6 April 2020	Special meeting of Finance Committee to examine Estimates of Expenditure 2020-2021	Written questions raised by Members and the Administration's replies (Reply serial numbers: ENB072, 119, 123 and 254)

Date	Event	Paper
13 April 2021	Special meeting of Finance Committee to examine Estimates of Expenditure 2021-2022	Written questions raised by Members and the Administration's replies (Reply serial numbers: ENB119 , 141 and 172)

Hyperlink to relevant document:

Relevant organization	Document
Office of The Ombudsman	" Direct Investigation Report – Government's Handling of Misconnection of Private Building Sewers to Stormwater Collection System" published in March 2021 (Chinese version only)

Hyperlinks to relevant Council Questions:

Date	Council Question
26 April 2017	Press release on Council question (written) on water quality of Victoria Harbour
25 April 2018	Press release on Council question (written) on impact of sewage treatment on quality of water bodies in Hong Kong
22 May 2019	Press release on Council question (written) on quality of coastal waters of Victoria Harbour
20 January 2021	Press release on Council question (written) on quality of coastal waters of Victoria Harbour