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ACE Paper 14/2019
For information by circulation

Marine and River Water Quality in Hong Kong in 2018

INTRODUCTION

The Environmental Protection Department (EPD) conducts long-term monitoring of marine and river water quality and publishes the annual reports in the following year. The 2018 marine and river water quality reports are now available for public access at the EPD's website (http://www.epd.gov.hk). This paper summarises the state of marine and river waters in Hong Kong in 2018 for Members' information.

MARINE WATER QUALITY

2. In 2018, the overall Water Quality Objectives (WQOs) compliance rate for marine water continued a short-term rising trend in the recent years and rose from 85% in 2017 to 88% in 2018 (see **Figure 1 in Annex**). Among the four key water quality parameters for compilation of the overall compliance rate, the yearly compliance rates of unionised ammonia nitrogen (NH_3-N) and *E. coli* bacteria maintained at 100%. The yearly compliance rate of total inorganic nitrogen (TIN) rose from 55% in 2017 to 68% in 2018, while that of dissolved oxygen (DO) dropped slightly from 93% to 91%.

3. The water quality of Victoria Harbour continued to show noticeable improvements along with the progressive implementation of the Harbour Area Treatment Scheme (HATS), with Stage 2A commissioned in December 2015 (see **Figure 2 in Annex**). A brief comparison of the situation in 2018 to that before the introduction of HATS (1997-2001) is as follows:

a) *E. coli* bacteria reduced by 90%;
b) NH_3-N reduced by 44%;
c) TIN reduced by 14%; and
d) DO increased by 15%.

4. Among the ten Water Control Zones (WCZ), the WQO compliance rates for the Eastern Buffer WCZ (100%), the Junk Bay WCZ (100%), the Port Shelter WCZ

(100%) and the Tolo Harbour and Channel WCZ (79%) in 2018 remained the same as in the previous year. The Southern WCZ, the Mirs Bay WCZ, the North Western WCZ and the Victoria Harbour WCZ exhibited improved compliance rates at 73%, 100%, 89% and 97% respectively. For the Deep Bay WCZ and the Western Buffer WCZ, their compliance rates in 2018 slightly dropped to 53% and 83% respectively, mainly attributable to natural fluctuations of DO levels.

5. In 2018, the total number of red tide incidents reported in Hong Kong waters was 12, as compared with an average of 13 incidents in the past five years (2013-2017) (see **Figure 3 in Annex**). These 12 red tide incidents were caused by seven red tide species, mostly non-toxic and commonly found in Hong Kong waters. No fish kill was recorded in these incidents.

RIVER WATER QUALITY

6. The overall water quality of Hong Kong's rivers continued to perform well in 2018. In terms of the key WQOs, the overall compliance rate in 2018 was 88%, staying within a steady range of fluctuations over the past ten years while exhibiting significant improvement over 48% in 1987, against the pressure of population having doubled over the 30 years in the New Territories where most of the rivers lie (see **Figure 4 in Annex**).

7. With regard to the Water Quality Index (WQI) which indicates the general ecological health of the watercourses, 83% of the river monitoring stations were graded "Excellent" or "Good" in 2018, as compared with only 26% in 1987. These stations are mainly located in Lantau Island, eastern and southwestern New Territories, and Kowloon.

8. The high WQO compliance rates and WQI gradings were the result of the implementation of pollution control legislation, including the Water Pollution Control Ordinance and the Livestock Waste Control Scheme introduced under the Waste Disposal Ordinance, progressive extension of the sewerage network to more villages in the New Territories under various Sewerage Master Plans and gradual connection of village houses to public sewers.

9. In spite of the overall improvement in river water quality, some rivers in the western part of the New Territories such as Yuen Long Creek and Kam Tin River stayed below 50% in WQO compliance and recorded "High" to "Very High" levels of *E. coli* bacteria, i.e. over 10 000 counts/100mL. The main pollution sources in these areas include runoff from unsewered village houses, expedient connections in the old districts and illegal discharges from livestock farms. To improve the situation, the Government will make further enhancement in the sewerage infrastructure in the districts concerned by upgrading the sewage treatment facilities and expediting the extension of existing sewerage network to unsewered villages in consultation with the local community. Other pollution abatement options including possible installation of dry weather flow interceptors will also be considered, and vigilant enforcement against illegal discharges will continue.

CONCLUSION

10. In 2018, the marine and river water quality in Hong Kong continued to perform well, with the overall marine WQO compliance rate of the territory setting a record high of 88% and that of Victoria Harbour achieving 97%. It was the outcome of sustained implementation of pollution control legislation, extension of the sewerage infrastructure, gradual connection of village houses to public sewers and progressive implementation of HATS in the past two decades. There are still challenges ahead to address the local pollution problems at some rivers in the New Territories through further pollution abatement works and law enforcement efforts, as well as to strive for enhancement of the near-shore water quality of Victoria Harbour through mitigation of storm-water pollution and vigilant monitoring.

Environmental Protection Department
November 2019

Annex

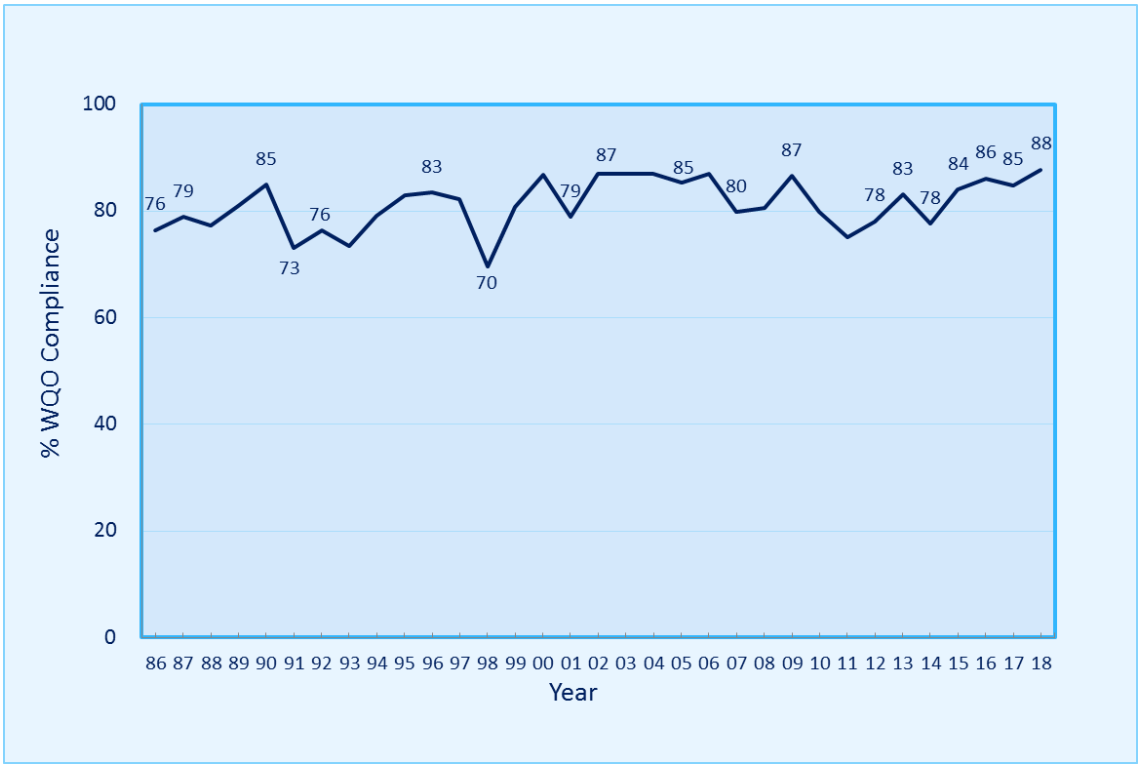

Figure 1 Overall compliance with the marine WQOs in Hong Kong, 1986-2018

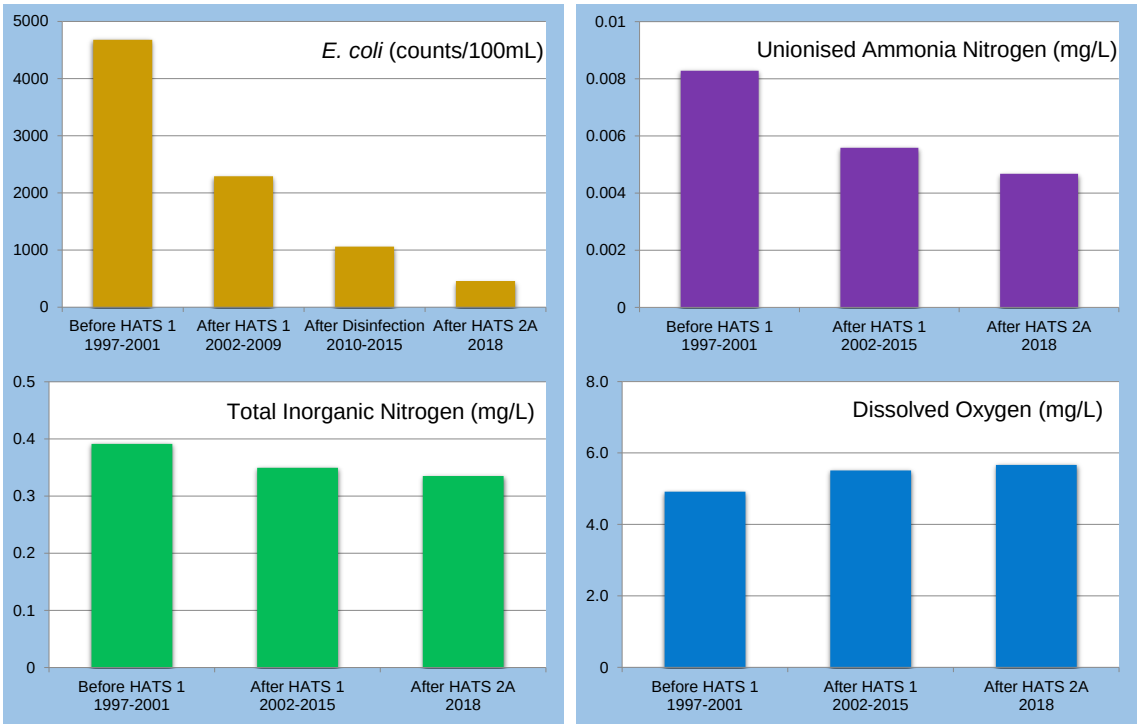

Figure 2 Improvement in water quality since the implementation of Harbour Area Treatment Scheme (HATS)

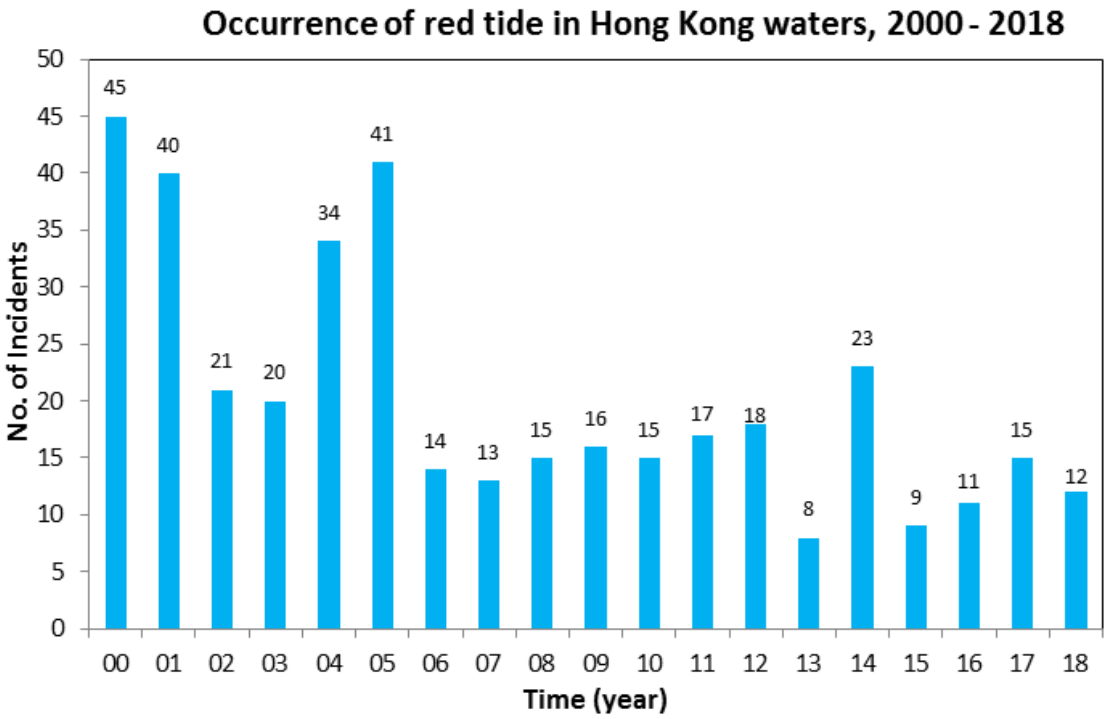

Figure 3 Occurrence of red tides in Hong Kong waters, 2000-2018

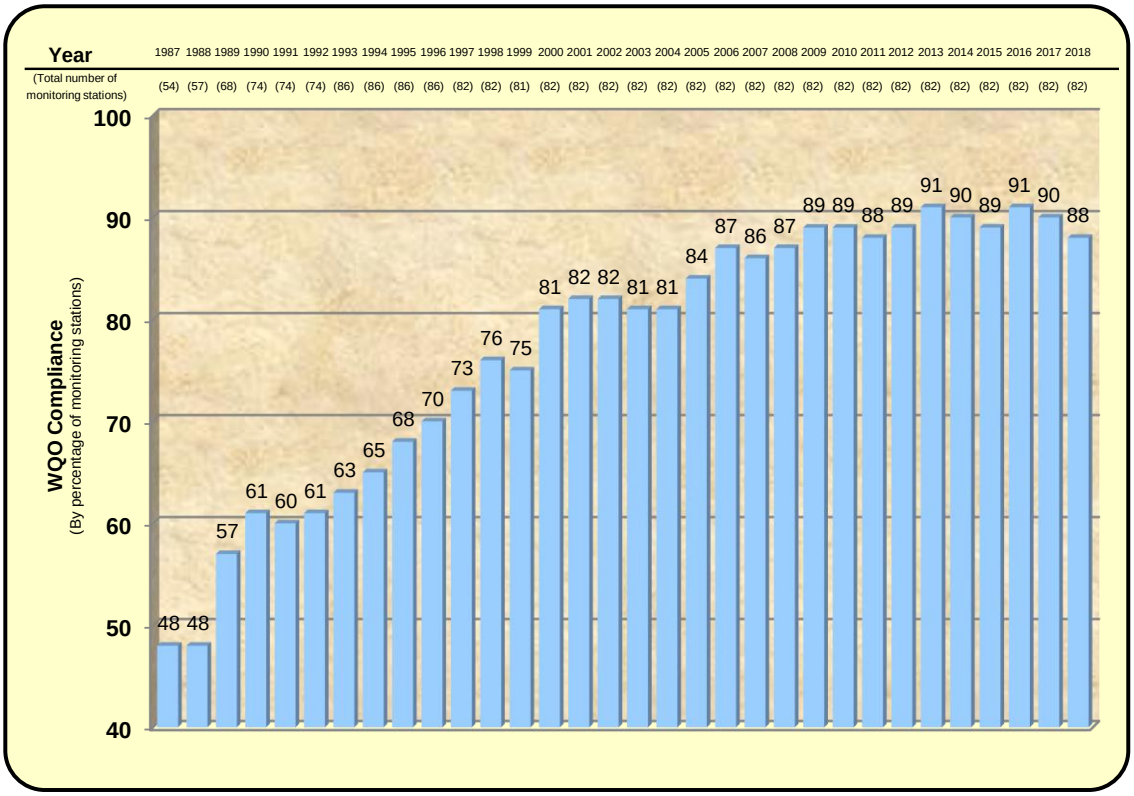

Figure 4 Overall compliance with the river WQOs in Hong Kong, 1987-2018