Motion on
"Comprehensively improving the water quality
of the Victoria Harbour"
at the Legislative Council meeting on 16 November 2011

Progress Report

At the Legislative Council (LegCo) meeting of 16 November 2011, the motion on "Comprehensively improving the water quality of the Victoria Harbour" moved by Dr Hon Priscilla LEUNG, as amended by Dr Hon PAN Pey-chyou, was carried. This report briefs Members on the follow-up actions taken by the Administration in respect of the aforesaid motion.

Enforcement actions

2. Through the Water Pollution Control Ordinance (WPCO) (Cap. 358), the Environmental Protection Department (EPD) exercises control over the discharge of wastewater within the Victoria Harbour Water Control Zone (WCZ) with a view to maintaining the water quality in compliance with the Water Quality Objectives (WQOs) specified for the zone. The work in this regard includes conducting inspection at premises with wastewater discharges, processing applications for effluent discharge licences, handling complaints as well as instituting enforcement action (including prosecution) in cases of violation.

3. In respect of enforcement, the WPCO provides that any person who discharges polluting water or matters into the waters of Hong Kong commits an offence and is liable to a maximum penalty of imprisonment for six months and a fine of $200,000 for the first offence. The maximum fine will increase to $400,000 for a second or subsequent offence. If the offence involves the discharge of poisonous or noxious matters, the offender is liable to a maximum penalty of imprisonment for one year and a fine of $400,000 for the first offence. The legislation allows for imposition of a more severe maximum penalty of imprisonment for two years and a fine of $1 million for a second and subsequent offence that involves poisonous or noxious matters. Between 2006 and 2011, EPD carried out 18 600 inspections within the Victoria Harbour WCZ which resulted in 47 convictions involving total fines of $491,000 within the same period.

4. Apart from instigating prosecution against offences under the

WPCO, if foul water pipes are found to be misconnected to the public stormwater drainage system during inspections, EPD will contact the relevant parties involved for rectification and may refer the cases to the Drainage Services Department (DSD), Buildings Department and/or Home Affairs Department for follow-up actions where appropriate. Between 2006 and 2011, 385 cases of expedient connection within the Victoria Harbour WCZ were rectified, many of which were found around Tsuen Wan, New Yau Ma Tei Typhoon Shelter (NYMTTS), Kai Tak, Sham Shui Po and Kennedy Town. The overall result is equivalent to preventing the pollution load of a population more than 42 000 from being discharged into Victoria Harbour without proper treatment.

5. With our continual efforts, the number of complaints relating to water pollution within the Victoria Harbour WCZ has dropped from around 650 cases in 2006 to 440 in 2011. Our past enforcement experience indicates that the implementation of statutory control under the WPCO is effective in tackling the illegal discharge of wastewater from stationary pollution sources. Moreover, as the statistics have not indicated an aggravating situation in respect of illegal discharge of wastewater, we believe that the existing penalty levels as stipulated in the WPCO provide sufficient deterrent effects. EPD will continue to launch enforcement actions against illegal wastewater discharge in accordance with the WPCO and collaborate with relevant departments to take actions on expedient connection cases accordingly.

Sewerage infrastructure within the Victoria Harbour catchment area

6. In order to improve the water quality of Victoria Harbour, the Government is implementing the Harbour Area Treatment Scheme (HATS) in phases to collect and treat the wastewater from both sides of Victoria Harbour in an efficient and environmentally sustainable manner. Commissioned in 2001, Stage 1 of HATS now collects 1.4 million cubic metres (m^3) of wastewater daily from the Kowloon Peninsula, Tseung Kwan O, Kwai Tsing, Tsuen Wan, Shau Kei Wan and Chai Wan for centralised treatment at the Stonecutters Island Sewage Treatment Works (SCISTW), thereby greatly reducing the amount of pollutants released into Victoria Harbour.

7. Further investment in sewerage infrastructure is required to collect and treat the remaining 0.45 million m^3 of wastewater from the northern and southwestern parts of Hong Kong Island. In this regard, the Government is taking forward Stage 2A of HATS which comprises construction of 21 kilometres (km) of deep sewage tunnels and expansion

of the existing SCISTW. With LegCo's approval of around $17 billion (in money-of-the-day (MOD) prices) for the capital works of the project between 2009 and 2010, DSD has commenced all the major construction works of Stage 2A of HATS for completion in 2014. The progress has been satisfactory so far. It is anticipated that the water quality of Victoria Harbour will be further improved with the following benefits once Stage 2A is in full operation –

- most wastewater to be collected by Stage 2A of HATS now receives only preliminary treatment. In comparison, the SCISTW adopts chemically enhanced primary treatment to remove 70% of organic pollutants, 80% of suspended solids and 99.9% of *E.coli* in the wastewater;
- a further 190 tonnes of sewage sludge will be prevented from flowing into the harbour daily;
- the level of ammonia will be reduced by 10% on average;
- the level of inorganic nitrogen and phosphorous will be reduced by 5% and 8% respectively; and
- the level of dissolved oxygen will be increased by 5%.

8. On the other hand, DSD has implemented a number of works projects that aim to ensure that local sewerage networks possess the adequate capacity in anticipation of growth in population and commercial activities. On Hong Kong Island, the sewerage upgrading works in Central, Western and Wan Chai West were completed in June 2008 whereas those in Wan Chai East and North Point were also completed in March 2011. As for Kowloon, LegCo approved a total of $807.7 million (in MOD prices) for implementing the first two packages of sewerage improvements works in Central and East Kowloon in January 2009 and June 2011. These include upgrading and construction of 13.3 km of sewers and upgrading of 13 existing dry weather flow interceptors (DWFIs) which cover the areas in To Kwa Wan, Kowloon City, San Po Kong, Kowloon Bay and Kwun Tong. The two works packages are in progress for completion by July 2012 and December 2015 respectively. The remaining works in Central and East Kowloon are under detailed design and funding will be sought once the necessary preparations are completed. Meanwhile, EPD has also completed a review of the West Kowloon and Tsuen Wan Sewerage Master Plan in April 2010. We are carrying out the preliminary planning of sewerage improvement works as identified in the review together with DSD.

9. We are also actively pursuing infrastructural solutions in response to public aspiration for better nearshore water quality. In December 2010, we obtained LegCo's approval to allocate $588.0 million (in MOD prices) for construction of a DWFI at Jordan Valley box culvert to attain better water quality at the Kai Tak Approach Channel. The DWFI is planned to commence operation in mid 2013 while ancillary works (including landscaping works) are expected to be completed by June 2014. Preparation for the design and construction of a DWFI at the Cherry Street box culvert is also being pursued as one of our initiatives for improving the water quality at NYMTTS.

10. Meanwhile, DSD runs an extensive inspection programme and replaces/rehabilitates any aged sewer sections wherever necessary. In 2011, DSD inspected 1 186 km of sewers out of a total of 1 646 km that it manages. A total of 724 km of sewers were also cleansed within the same period. DSD will continue to carry out routine inspection and cleansing programmes to ensure proper functioning of the existing sewerage networks.

11. The water quality of Victoria Harbour has seen comprehensive improvement as a result of the above measures. According to EPD's monitoring data, the overall *E. coli* level in Victoria Harbour has decreased by over 70% with commissioning of Stage 1 of HATS in 2001 and the Advance Disinfection Facilities in 2010. The reduction in *E. coli* level was as high as 95% in the eastern part of the harbour. In addition, the overall level of dissolved oxygen in Victoria Harbour as a whole increased by 10% while the ammonia nitrogen level decreased by 27% and nutrient levels in terms of total inorganic nitrogen and ortho-phosphate phosphorus were also reduced by 13% and 23% respectively between 2001 and 2010.

Stage 2B of the Harbour Area Treatment Scheme

12. In June 2010, the Government commenced a comprehensive review of the timing for implementation of Stage 2B of HATS for completion of the relevant technical assessments by early 2012. The review takes into account all relevant planning parameters including trends in water quality, population growth and sewage flow build-up. It also covers the preparation of schematic designs for the underground biological treatment plant under Stage 2B and provides preliminary estimates of the capital and operating costs of the plant. Apart from the review study, we have also completed the rezoning procedures in accordance with the Town Planning Ordinance (Cap. 131) to amend the

Stonecutters Island Outline Zoning Plan in September 2011. A site for development of the biological treatment plant under Stage 2B of HATS has been secured as a result of the aforesaid amendment.

Reuse of treated effluent

13. The Government has been implementing the Total Water Management Strategy since 2008, under which one of the key supply-side initiatives is to actively consider water reclamation which includes the reuse of treated effluent. On this front, two pilot schemes were conducted at the Shek Wu Hui Sewage Treatment Works (STW) and the Ngong Ping STW. At the Shek Wu Hui STW, reclaimed water was supplied to selected users in North District for toilet flushing, water features and irrigation; whereas at the Ngong Ping STW, the tertiary treated effluent was chlorinated to produce reclaimed water for non-potable uses in the area. Based on the experience gathered, WSD is collaborating with EPD, DSD and the Civil Engineering and Development Department to investigate into the use of reclaimed water from the Shek Wu Hui STW for toilet flushing and other non-potable uses in Sheung Shui, Fanling and New Development Areas in the north-eastern part of the New Territories. The investigation aims to devise the relevant standards for reclaimed water quality based on the available national and international standards as well as to ascertain the financial viability of providing reclaimed water for non-potable applications.

Co-ordination on water quality matters

14. EPD has all along strived to protect our water quality together with relevant bureaux and departments that possess expertises in different fields. Over the past years, we have developed close working relationship with various parties on a spectrum of water quality-related issues and counted on their professional contribution to achieve fruitful outcome. Where necessary, we have also convened *ad hoc* inter-departmental working groups or meetings to co-ordinate joint actions on local or specific issues. The existing regime has proven to be efficient in dealing with a vast variety of matters as evidenced in the significant improvement in our water quality over the past two decades. We will maintain collaboration with relevant bureaux and departments on multiple fronts with a view to continue achieving prompt and teamwork-based responses to water quality issues.

Publication of water quality monitoring data

15. EPD currently publishes an annual report on our marine water quality in different WCZs, including the Victoria Harbour WCZ. Detailed information on the status of compliance with each WQO is also provided in the report. Given our geographical location, the marine water quality of Hong Kong is susceptive to seasonal fluctuations in weather and flow patterns, the volume of discharges from the nearby Pearl River as well as oceanic current effects of the South China Sea. We have thus adopted 12 monthly-collected samples in assessing the long-term water quality trends to ensure the representativeness of the monitoring outcome from the scientific and statistical angles. The current practice of publishing marine water quality data annually, which is aligned with the aforesaid assessment methodology, should satisfy the purpose of keeping the public informed of the water quality of Victoria Harbour.

Marine and environmental facilities in the vicinity of Victoria Harbour

16. Regarding typhoon shelters and Public Cargo Working Areas (PCWAs) located in the vicinity of Victoria Harbour, the Transport and Housing Bureau has advised that these facilities are being used by the relevant trades/vessels for meeting specific requirements and for satisfying regional transportation needs in respect of various types of cargoes. The demand for these facilities remains high given their proximity to ports and shipping activities. In view of the foregoing, the Administration has no plan to relocate or close typhoon shelters or PCWAs in the vicinity of Victoria Harbour.

17. As regards sewage treatment facilities, DSD has already installed chemical deodorising spray systems and deodourising units at the SCISTW for controlling odour emission. As a long-term solution to enhance odour control and reduce potential odour nuisances, DSD is proceeding with the installation of covers for all exposed sedimentation tanks at the SCISTW. Air extraction systems and deodorising units will also be provided to extract and purify the air from the covered tanks before discharge. By mid-January 2012, DSD has covered up 34 sedimentation tanks at the SCISTW, while the remaining installation works for 12 sedimentation tanks are in progress for completion by the third quarter of 2012. To attain even higher deodorising performance at the SCISTW, new pump rooms and sludge treatment facilities will be fitted with deodorising facilities while existing ones will also be enhanced as we carry out the works under Stage 2A of HATS.

Cross-harbour swimming events

18. As various works (e.g. Stage 2A of HATS) for improving water quality of Victoria Harbour are still undergoing, parties interested in organising one-off cross-harbour swimming events are therefore advised to consider all relevant factors including the nature of the proposed event, the health and fitness of prospective participants, the location and alignment of the preferred swim course, the estimated time required to complete the swim course, seasonal and spatial variations of water quality in Victoria Harbour, the latest weather condition, and other related marine traffic and safety issues. It would also be prudent to seek expert advice from medical professionals and adopt precautionary measures (such as the provision of fresh water for cleaning after the race) should the event proceed as planned. Nevertheless, with Stage 2A of HATS targeted for commissioning by end 2014, the water quality of Victoria Harbour is anticipated to further improve.

Environment Bureau
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