

# **Task Force on Harbourfront Developments in Kowloon, Tsuen Wan and Kwai Tsing**

---

For discussion  
on 10 September 2014

TFK/09/2014

## **Water Quality along the Tsuen Wan Waterfront**

### **PURPOSE**

In response to a request by the Harbourfront Commission's Task Force (HCTF) on Harbourfront Developments in Kowloon, Tsuen Wan and Kwai Tsing at the meeting held on 26 May 2014, this paper outlines the measures taken by the Government to address the water quality along the Tsuen Wan waterfront.

### **Water quality along Tsuen Wan waterfront**

2. The water quality problem of the Tsuen Wan Bay waterfront area has been the subject of concern of the Tsuen Wan District Council (TWDC) for a number of years because it was considered to adversely affect the enjoyment of the general public, and the seabed sediment was once implicated as the source of the odour problem at the waterfront.

3. To address the water pollution problems in Tsuen Wan, the Administration has provided public sewer for connection in phases, maintained and upgraded the local sewerage network, implemented the Water Pollution Control Ordinance (WPCO) and taken enforcement actions against offenders. Since 2004, various government departments have been working closely together to implement a series of remedial measures in order to rectify the pollution problem and to alleviate the malodour issue in the Tsuen Wan Bay waterfront area. During the "Team Clean Campaign" from 2003 to 2005, the Administration stepped up its efforts to identify and remove major building expedient connections (ECs) which caused polluted discharge into the storm culverts in the Tsuen Wan area (the location of the culverts is illustrated in **Annex 1**). An inter-departmental working group was then organized to meet regularly to exchange information and to deal with the ECs, misconnections found in public and private sewers, and the defects of public sewers and related problems. From 2006 to 2008, 21 building ECs in the area were found and rectified. A set of photographs of Tsuen Wan Bay before and after the public sewer rectification in 2005

## **Task Force on Harbourfront Developments in Kowloon, Tsuen Wan and Kwai Tsing**

---

TFK/09/2014

meanwhile is attached at **Annex 2** for reference.

4. As a result, the pollution load into Tsuen Wan Bay has decreased substantially and the water quality of the Bay also improved steadily. For example, from 2001 to 2013, the level of annual average unionized ammoniacal nitrogen (NH<sub>3</sub>-N) decreased by 39%, and the annual water-column average dissolved oxygen level increased by 5%. The Government further commissioned the Advance Disinfection Facilities at the Stonecutters Island Sewage Treatment Works in March 2010, resulting in a reduction of *E. coli* level by over 90% around Tsuen Wan Bay in 2011 as compared with the level recorded in 2009.

5. To deal with the odour problem, the Administration conducted investigation and observed that the odour problem was most likely due to the continuous discharge of polluted effluent through the storm culverts into Tsuen Wan Bay. Such polluted effluent, either due to ECs, misconnections, defects of public sewers or non-point sources, might also result in debris, foul sediments and stagnant waters being accumulated inside the major box culverts. As a result, malodour was generated by the decaying organic materials that deposited as sediments inside the culverts or attached onto the culvert wall, and released through outfall openings and manholes when some of the sediments and/or portions of the soiled culvert wall were exposed, especially under low tide conditions, and/or when the sea water is in a stagnant state that does not favour the quick dispersion of the polluted effluent at the outfall outlets. As a result of joint departmental efforts tackling the discharge of polluted effluent, the number of related odour complaints was reduced from 71 in 2005 to 8 in 2013.

### **Enhanced Measures to address water quality and odour problem at Tsuen Wan waterfront**

6. To enhance the coordination of efforts to deal with the discharge of polluted water and the related odour problem at the Tsuen Wan waterfront, an Inter-departmental Task Force chaired by a Deputy Director of the Environmental Protection Department (EPD) was formed in 2009, comprising members from the Drainage Services Department (DSD), Buildings Department (BD), Food and Environmental Hygiene Department (FEHD),

## **Task Force on Harbourfront Developments in Kowloon, Tsuen Wan and Kwai Tsing**

---

TFK/09/2014

Highways Department (HyD), Civil Engineering and Development Department (CEDD), Marine Department (MD), Home Affairs Department (HAD) and EPD. The Task Force aims to map out an integrated action plan to abate the pollution loads to the storm water drain systems discharging to Tsuen Wan Bay, and to monitor, coordinate and expedite the implementation of the action plan. A multi-pronged strategy was designed to tackle the problem, including:

- EPD to enforce the WPCO and the Water Pollution Control (Sewerage) Regulation through serving advisory/warning letters to urge owners to rectify the misconnections and taking prosecution actions if necessary;
- BD to rectify wrongfully connected drainage pipes in violation of the Buildings Ordinance for private buildings;
- DSD to rectify defects in the sewerage/drainage systems so as to reduce pollution loads in the storm drains, and to organize more regular desilting works to remove the sediments inside the culverts;
- FEHD to take enforcement actions against rear lane food washing and cooking, and equipment and utensil washing activities that will generate polluted water which may finally enter into the storm drains through surface channels;
- EPD to identify necessary works packages to expand and extend the public sewers to ensure availability of public sewers and facilitate connections by owners; and
- HAD to assist in urging house owners to rectify the misconnections and to encourage the formation of Owners Corporations (OCs) wherever possible.

### **Progress made**

7. Based on a review study of the West Kowloon and Tsuen Wan Sewerage Master Plans (the SMP Study) completed by EPD in 2010, there are three major sources of pollution discharge through the box culverts into Tsuen Wan Bay, namely, (i) public sewer cross connections, (ii) building-related ECs and (iii) non-point sources (including rear lane activities, street cleansing, inflow and infiltration, etc.).

8. EPD conducts pre-licensing inspections for all cases of WPCO

## **Task Force on Harbourfront Developments in Kowloon, Tsuen Wan and Kwai Tsing**

---

TFK/09/2014

licence applications (both new and renewal) in Tsuen Wan. Dye-tracing tests were conducted to ascertain whether there was proper sewer connection for some 955 shops in Tsuen Wan, on top of the SMP Study. Only seven cases of shop ECs were identified, which contributed less than 10 kg/day of BOD totally, and they were promptly rectified. As summarized in the table below, less than 1% of the inspected shops were identified with ECs, reflecting that the shop EC problem is minimal and has been well covered under the WPCO enforcement in Tsuen Wan. EPD would continue to make efforts in tackling illegal discharges and ECs under the WPCO, and stepping up inspections at rear lanes to complement FEHD's enforcement action against illegal rear lane washing activities.

Year	Number of shops under dye-tracing tests	Number of shops identified with ECs
2009	145	1
2010	128	1
2011	113	0
2012	173	3
2013	328	2
2014 (up to June)	68	0
<b>Total</b>	<b>955</b>	<b>7</b>

Remarks: About 450 dye-tracing tests have been done over the past five years. Each dye-tracing test covered 1 to 20 premises

9. In addition to the rectification of shop ECs by EPD, BD had resolved 12 cases of ECs within buildings, with 21 cases remaining to be resolved (involving about 406 families in mainly low-rise old buildings, estimated to contribute 89 kg/day of BOD). These buildings with ECs are scattered in the old areas of urban Tsuen Wan, with effluent being discharged into the box culverts at Ma Tau Pa Road, Tai Ho Road and Tai Chung Road. Such building-related EC cases require BD's enforcement action under the Buildings Ordinance.

10. The SMP Study indicated that cross connections between public sewers and the storm drains had been a major pollution source because public sewers carry a high loading. DSD had so far rectified all cases of public sewer cross connections and 16 cases of ECs leading from building terminal manholes to public storm drains as identified in the SMP Study. DSD would continue to regularly check and maintain the integrity of the public sewerage and drainage systems, and would rectify any defects and

## **Task Force on Harbourfront Developments in Kowloon, Tsuen Wan and Kwai Tsing**

---

TFK/09/2014

cross connections. Special attention would also be placed on the aging sewerage and drainage systems in the Tsuen Wan areas.

11. Tsuen Wan District Office (TWDO) has continued to render assistance for outstanding cases referred by EPD and BD to help OCs obtain funding either through Operation Building Bright (OBB) and the Integrated Building Maintenance Assistance Scheme (IBMAS), or conduct the works at their own expenses. For the nine buildings without OCs, TWDO has successfully put them into the Building Management Professional Advisory Service Scheme. Under the Scheme, property management companies have been engaged to provide owners with tailor-made professional advisory service to facilitate their OC formation and subsequent coordination of drainage rectification works since November 2011 onwards. TWDO will continue providing assistance by serving advisory letters appealing to the owners for forming OC in order to facilitate the subsequent coordination of drainage rectification work.

12. To further reduce polluted discharge into the storm drains in the long term, the SMP Study has recommended to install four dry weather flow interceptors (DWFIs) for intercepting polluted water, mainly from non-point sources, from entering the box culverts, and to increase the capacity of the sewerage network in Tsuen Wan, which should help lower the incentive to make ECs. DSD has engaged consultants<sup>1</sup> to carry out investigation and design of the above mentioned sewerage works in Tsuen Wan. Currently, DSD aims at commencing construction of the four DWFIs at the end of 2016 for completion by 2020, subject to approval of the necessary funds by the Finance Committee of the Legislative Council.

13. Based on the concerted efforts made by the Government departments, the major remaining pollution sources are the yet-to-be-rectified building-related ECs and non-point sources. However, similar to other heavily urbanised areas in Hong Kong, upon completion of all the planned sewerage works, there would still be about 33% of pollution that cannot be intercepted, mostly due to non-point sources and during wet seasons when the DWFIs would not be in operation (to avoid flooding).

---

<sup>1</sup> The consultancy study commenced in July 2014.

## **Task Force on Harbourfront Developments in Kowloon, Tsuen Wan and Kwai Tsing**

---

TFK/09/2014

### **Recent concerns on odour problem**

14. In light of local concern on the odour problem, EPD has been conducting subjective odour assessment along Tsuen Wan waterfront every week. Since 2012, 1750 times of odour assessment were made. The odour assessment results were:

- 85% of the time, no odour detected
- 12% with faint odour detected
- 2% with mild odour detected
- <1% with strong odour detected

The odour mainly emanated from the outfall of the box culverts at Ma Tau Pa Road, Tai Ho Road and Tai Chung Road. Based on the odour assessment results, the odour situation along the Tsuen Wan Waterfront has shown gradual improvement following the efforts made by various government departments, including rectification of the ECs and public sewer cross connections, and actions against illegal rear lane washing activities. The complaint figures remained in single-digit in the past four years and there was no increasing trend.

Year	2009	2010	2011	2012	2013	2014 (up to June)
Number of complaints against odour at Tsuen Wan waterfront	36*	2	9	9	8	4

\* 31 cases from a Tsuen Wan District Council member's fax campaign

15. However, despite there being no increasing trend of odour complaints, we observe higher expectations of TWDC members, residents in the area and other promenade users since the gradual beautification of the Tsuen Wan waterfront in the past few years. Any odour at the waterfront is no longer acceptable, no matter whether it is faint, mild or strong. Following the gradual occupation of new residential developments along the Tsuen Wan waterfront, more odour complaints may be received. Apart from concerns raised by TWDC members, the Green Lantau Association also raised concern on the odour along the Tsuen Wan waterfront affecting the users of Tsuen

## **Task Force on Harbourfront Developments in Kowloon, Tsuen Wan and Kwai Tsing**

---

TFK/09/2014

Wan Park.

16. During the recent site visit to the Tsuen Wan waterfront on 21 May 2014 led by the HCTF Chair, together with TWDC Chairman and several DC members responsible for the areas along Tsuen Wan Bay, all participants considered that further measures were required to reduce the odour. While they were aware of the Administration's efforts, they considered that the Administration should provide more short-term measures at the box culverts to alleviate the odour problem, such as providing covers to the culvert openings. Starting from 2014, as a short-term measure, DSD will provide culvert cleansing with high pressure water jet twice a year, and carries out desilting for flooding prevention, if necessary, to minimize the accumulation of sediments inside box culverts. If suspected shop ECs are spotted during routine inspections, DSD would also refer the cases to EPD for follow up action.

17. Upon the request of the Environmental and Health Affairs Committee of TWDC at a further site visit held on 28 July 2014, DSD undertakes to conduct a trial on odour control using a PVC curtain at the Tsuen Wan Ma Tau Pa Road Culvert after the rainy season in November/December 2014.

### **Concluding Remarks**

18. In conclusion, the Administration has taken a series of measures to tackle the problems at source near the Tsuen Wan waterfront to reduce the discharge of polluted water into the storm drains and the related malodour, and will continue to step up the efforts to address the environmental issues through regular inspections and enforcement, maintenance of the drainage and sewerage systems, and sewerage improvement works, with a view to improving the environment at the Tsuen Wan waterfront.

19. Pollution discharges from a number of activities in densely populated urban areas into the coastal waters are probably the cause of the odour and high *E.coli* counts. To tackle the diverse sources of near shore pollution and to identify the root causes of the odour problem, EPD is planning to commission a consultancy study on "Further Enhancing Coastal

## **Task Force on Harbourfront Developments in Kowloon, Tsuen Wan and Kwai Tsing**

---

TFK/09/2014

Water Quality of Victoria Harbour”. Subject to the approval of funds in the 2014/15 Legislative Council session, inspection audits (e.g. field inspections, odour patrols, expedient connection survey, etc.) will be carried out under the consultancy study to investigate areas with serious near shore water pollution problems.

**Environmental Protection Department  
August 2014**




# Task Force on Harbourfront Developments in Kowloon, Tsuen Wan and Kwai Tsing

TFK/09/2014

## Annex 1



Legend:  Outfall of major stormwater box culvert

Locations of the four major storm water box culvert outfalls at Tsuen Wan waterfront

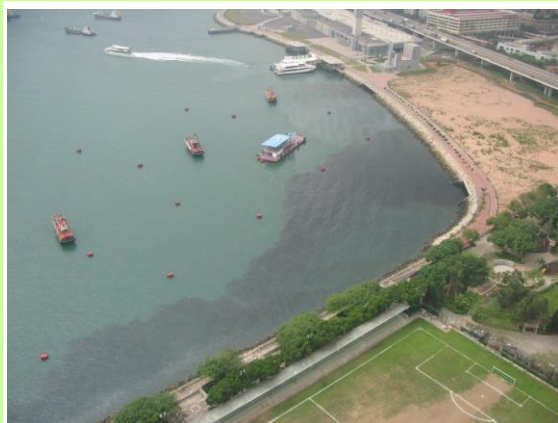
# Task Force on Harbourfront Developments in Kowloon, Tsuen Wan and Kwai Tsing

---

TFK/09/2014

## Annex 2

Before rectification in April 2005



After rectification in July 2006



Photos of Tsuen Wan Bay before (left) and after (right) the public sewer rectification