



40/F, Revenue Tower, 5 Gloucester Road, Wan Chai, Hong Kong
香港灣仔告士打道 5 號稅務大樓 40 樓

ACE Paper 5/2007
For discussion

**Proposal for Applying the Polluter-pays Principle in the Provision of
Sewage Services and Progress Update on
Harbour Area Treatment Scheme Stage 2A**

PURPOSE

This paper invites members' views on Government's proposal for applying the polluter-pays principle in the provision of sewage services and reports progress to date on preparations for proceeding with the Harbour Area Treatment Scheme (HATS) Stage 2A.

PROPOSAL

2. In the Policy Agenda 2005, we pledged to review the existing sewage services charging scheme according to the polluter-pays principle with a view to achieving an equitable sharing within the community of the responsibility for funding sewage services. Subject to further fine-tuning in respect of the Trade Effluent Surcharge (TES) (see paragraph 3 below), we have completed the review and recommend that -

- (a) as a long term goal, the operating cost of sewage services be fully recovered from the whole community, including both the public and the trades, in accordance with the polluter-pays principle;
- (b) as an interim target, the Sewage Charge (SC) be increased gradually so as to raise the cost recovery rate from about 54% at present to about 80% in ten years' time; and the fee levels in the coming ten-year period be set out in a single item of legislation; and
- (c) regarding the TES, to encourage pollution reduction measures and to address the concerns of the affected trades, the validity period of

reassessment should be extended from one year to two years and the sampling requirement for small TES accounts (with daily pollution load less than 50 kg Chemical Oxygen Demand (COD¹)) be reduced from three days to two days.

3. In addition, we aim to complete surveys of the quality of the effluents of all trades subject to the TES within 12 months with a view to adjusting their generic COD values and TES rates with effect from 1 April 2008.

BACKGROUND

Improvements brought about by HATS Stage 1 and other sewerage projects

4. The commissioning of HATS Stage 1 at the end of 2001 has resulted in significant water quality improvements in most parts of Victoria Harbour. Every day about 1.4 million tonnes of sewage generated on both sides of the harbour are collected and treated. As a result, about 600 tonnes of sludge and its associated pollutants are prevented from entering the harbour every day, dissolved oxygen levels in the harbour have increased by about 10% overall, toxic ammonia levels have decreased by about 24% and *E. coli*. (an indicator of disease-causing organisms) levels have reduced by over 50% (**Annex A**).

5. In addition, as a result of our sewerage and enforcement programmes over the last 20 years, there have been significant improvements in our environmental water quality -

- (a) For rivers and streams, the rate of compliance with the Water Quality Objectives (WQOs) has increased from 49% in 1986 to 85% in 2005, while the proportion of monitoring stations with "Excellent" or "Good" grading has climbed from 34% to 81%.
- (b) In terms of bathing beaches, the number of beaches with "Good" grading has more than doubled in the last two decades from 23% to 56%.
- (c) For marine waters, the overall compliance with the WQOs has increased from 76% in 1986 to 85% in 2005. Red tides were a very serious problem in Tolo Harbour in the 1980s with 43 cases recorded

¹ COD – Chemical Oxygen Demand, the measure of pollution load under the existing TES.

in 1988. With the improvement of water quality in Tolo Harbour, red tides have been reduced to around ten cases each year and the associated fish kills are rare nowadays.

Expanding the sewage services to improve water quality

6. Despite the improvements brought about by HATS Stage 1 and other sewerage programmes, sewage from the remainder of the northern and western sides of Hong Kong Island, amounting to 450,000 tonnes per day, continues to be discharged untreated into the Harbour area. We must deal with this situation and therefore propose to proceed with HATS Stage 2A as soon as possible. The project will entail building deep tunnels to transfer the untreated Hong Kong Island sewage to Stonecutters Island where it will receive treatment and disinfection.

7. Apart from HATS Stage 2A, we also have plans for substantial additional spending on sewerage infrastructure over the next decade or so. These include plans to upgrade sewage treatment at the Pillar Point, Shek Wu Hui, Sai Kung, San Wai, and Tai Po sewage treatment works, and to provide new plants on Lamma Island. We have also earmarked funds to connect various villages to the public sewerage system, preventing their sewage from polluting the nearby rivers and sea areas.

The role of the polluter-pays principle

8. It is an internationally recognized principle that all who create waste have a responsibility for helping to pay to clean it up. It is considered to be the only viable option for long-term sustainability of our environment. This fact is widely recognized and appreciated within our community and support for the principle was affirmed in the Motion Debate held in the LegCo on 8 December 2004.

9. In 1995, the Government established the existing arrangements for charging for collection, treatment and disposal of our wastewater through the sewage services charging scheme. Under this scheme each member of the community, including trades and households, whose wastewater is collected and treated by the public sewerage system contributes to the costs. However in the 11 years of the scheme's existence the charges have never been adjusted, such that the SC now covers only about 54% of the costs attributed to it, and the TES only about 83%. The longer this situation continues, the less effective the application of the principle becomes.

10. We estimate that the major projects listed above together with the numerous other planned projects will increase the annual operating expenditure of sewage treatment services from about \$1,150 million in 2005/06 to \$2,450 million by 2016/2017. If the charges are not adjusted, the subsidy from taxpayers will rise from some \$460 million in 2005/06 to about \$1,530 million in 2016/17. This means that the Government would have to increase the annual subsidy by more than \$1 billion, which in turn would mean that rather than moving closer to a sustainable approach based on the polluter-pays principle we would be moving further away from it.

11. Taking into account the operating cost of new sewage projects in future, and the importance of applying the polluter-pays principle, the Administration decided in April 2005 that for HATS Stage 2A to proceed, the whole community would need to be committed to making an appropriate contribution to the costs of collecting and treating our wastewater. The Government would pay the costs of construction of new sewage projects including HATS Stage 2A, amounting to more than \$20 billion, over the coming ten years, while the users of sewage services would need to shoulder the operating costs through the sewage services charging scheme.

Prior Discussion of the Council on HATS

12. The Advisory Council on the Environment was informed of the Government's decision concerning the construction of the next stage of the Harbour Area Treatment Scheme (HATS) at its meeting on 9 May 2005 (ACE Paper 8/2005). After discussion, the Council concluded that it -

- (a) supported the proposed implementation programme of HATS Stage 2;
- (b) urged for early implementation of Stage 2A;
- (c) considered that the need for Stage 2B and its timing should be considered having regard to issues such as the effect of Stage 1 and population build up; and
- (d) hoped that the Government would enhance the transparency of the whole process relating to HATS Stage 2, in particular the cost-benefit analysis of disinfection.

13. During the extensive public consultation on HATS Stage 2 between 21 June 2004 and 20 November 2004, the Council held an open meeting on HATS Stage 2 on 6 September 2004. At its meeting of 8 November 2004, the Council was briefed on the latest position of the public consultation on HATS Stage 2. In response to the queries on chlorination disinfection raised at the open meeting of 6 September 2004, the Government confirmed that it would conduct a comprehensive EIA to ascertain the impact of the chlorination/dechlorination methodology on the environment. An update of progress relating to the implementation of HATS Stage 2A, including the EIA study for advance disinfection facilities, is reported in **Annex B** for members' information.

Review of the SC element of the sewage services charging scheme

14. To strike a balance between the need to fully apply the polluter-pays principle and that to avoid adverse impact on people's livelihood, we propose a modest and gradual adjustment plan that aims at recovering about 80% of the projected operating cost (excluding depreciation) through ten annual increments. The SC rate will increase from about \$1.2/m³ at present to \$2.9/m³ in 2016/17. This means that even after taking inflation into account, the average SC of domestic accounts will increase from about \$11 per month at present to about \$12 per month in 2007/08, to about \$13 per month in 2008/09, and so on until eventually reaching a level of about \$27 per month in 2016/17. Our research indicates that such a charge will remain very much at the lower end of the scale of charges levied in developed economies (see **Annex C**). A table showing the projected fee levels in the coming ten years under this proposal is at **Annex D**.

15. The proposed adjustments to the SC will provide stronger economic incentives for households and businesses to reduce the production of wastewater, as well as provide adequate recurrent resources to support the operation of HATS Stage 2A and other new sewage treatment facilities in the pipeline.

Setting out the future fees in one piece of legislation

16. The SC is set out in the Sewage Services (Sewage Charge) Regulation (Cap. 463 Sub. Leg A). To implement the fee increment proposal, we propose to set out the SC rates in the coming ten years in a single item of subsidiary legislation. Given the long projection period, there could be

deviations in factors affecting the unit cost of the SC as compared with the assumptions now used to assess the operating costs. The Administration will monitor the recovery rate annually and unless the deviations are very substantial and persistent, we do not propose to review and adjust the SC fees in the coming ten years once our proposals for the increases have been endorsed by the Legislature.

Review of the TES element of the sewage services charging scheme

Reducing the cost of reassessment under the TES element

17. We have also reviewed the TES element of the scheme. Each TES trade is allocated a generic value for its effluent COD, upon which the charge rate for the relevant trade is determined. Individual account holders may apply to have their charge rates reduced, based on empirical evidence they supply suggesting that the COD values of their discharge is lower than the respective generic values. However, the TES trades have complained that the reassessment cost is too high to offer a sufficient financial incentive for them to reduce the quantity of pollution discharged.

18. Under the existing legislation, a reassessment is valid for one year. We propose to extend this to two years. By doing so the cost of a reassessment will be effectively halved, without affecting the integrity of the assessment process. With regard to the number of sampling days, at present this varies from three to six depending on the pollution load of a TES establishment. We propose that for small establishments discharging less than 50 kg COD per day, the number of specified sampling days be reduced to two. Given the small amount of pollution discharged from individual establishments in this band, the relaxation will not compromise the integrity of the system. It should however help enhance the incentives and encourage a larger portion of these small establishments to consider applying for reassessment.

Reviewing the generic CODs of the TES trades

19. The target recovery rate for TES is 100% of operating costs. However, given that the TES overall cost recovery is already at the 80% level, we can afford to defer increases to the TES rates and take the opportunity to review the generic CODs of all TES trades by carrying out trade-specific

effluent surveys. We will liaise with the trades individually. We aim to complete the reviews within a year and then make any adjustments required to the generic COD values.

PUBLIC CONSULTATION AND RESPONSE

20. We have invited green groups, academics and members of the Council to attend two briefing sessions on 28 December 2006 when the proposal for applying the polluter-pays principle in the provision of sewage services was publicly announced. The Panel on Environmental Affairs (EA Panel) of the Legislative Council (LegCo) was consulted on the proposal at its meetings on 5 and 22 January 2007 respectively. At the latter meeting, a total of 11 public deputations offered views on the proposal. (A list of the deputations is at **Annex E**.) The Administration will take into account the views expressed by LegCo Members and the public when tabling the subsidiary legislation in LegCo for negative vetting. The key issues raised in the course of the consultation and the Administration's response are summarized below -

- (a) **Adhering to the polluter-pays principle:** LegCo Members and members of the public reaffirmed their support to adhering to the polluter-pays principle in the provision of sewage services, thus providing incentives to reduce sewage discharge and water consumption.
- (b) **Implementing the proposed SC adjustment over a ten-year period:** some LegCo Members, at the meeting of 5 January 2007, expressed concern about the economic, legal and political implications of approving the proposed SC adjustment over a ten-year period. The Administration explained that the proposed ten-year increments were necessary to ensure that increments would be introduced in a modest, gradual and predictable manner, while enabling sewage treatment projects which usually involved long project lead time and major capital investment could be implemented in a timely manner to further improve the water environment of Hong Kong. A number of green groups considered the proposal reasonable in view of the need to implement the polluter-pays principle and the long-term and substantial investments involved in sewage treatment works.

- (c) **Timely implementation of HATS Stage 2A**: there was general support for timely implementation of HATS Stage 2A to bring about further improvements to the water quality in Victoria Harbour. Engineering professionals, in particular, urged that Stage 2A be implemented without delay to provide treatment of the remaining sewage from the HATS catchment.
- (d) **Phased implementation of HATS Stage 2**: deputations from the engineering sector and LegCo Members considered a phased approach reasonable as it would allow the flexibility to review the timing for implementation of HATS Stage 2B in view of the actual requirement. It was also noted that time was needed to resolve the interface issue for the co-use land site for HATS Stage 2B. On the other hand, a number of green groups considered that the Government should show a firm commitment to HATS Stage 2B by declaring a timetable for its construction. There were also views that HATS Stage 2 should not be implemented by phases and Stages 2A and 2B should be built in one go.

The Administration's response: it is the Government's intention to pursue biological treatment under HATS Stage 2. There are however different views in the community on the timing for implementation of Stage 2B. While some would aspire to immediate implementation of Stage 2B, there are also views that we should take into account the substantial treatment cost relating to HATS Stage 2B (and the subsequent consequences for the SC and TES) and the actual environmental need in considering the timing issue. We reiterated the need to continue to move forward with Stage 2A while at the same time monitoring the population and sewage flow build-up, and the water quality trends, in preparation for a review of the timing of the implementation of Stage 2B in 2010/11.

- (e) **Environmental Impact of the Advance Disinfection Facilities**: the LegCo recommended, in the Public Accounts Committee Report No. 42 released in June 2004 that the commissioning of the disinfection facilities of HATS Stage 2A should be advanced. At the EA Panel meeting on 5 January 2007, there was a request for an assurance that the Tsuen Wan beaches, which had to be closed

following the full commissioning of HATS Stage 1, would be reopened as early as possible. On the other hand, a number of green groups reiterated their concern about the possible environmental impact of the use of chlorination with dechlorination for disinfection. Meanwhile, the engineering professional bodies considered that, subject to the results of the EIA study, use of chlorination with dechlorination could be adopted as an interim measure. It was also suggested that the technology should only be applied when necessary, e.g. during the swimming season to minimize possible impact on the environment.

The Administration's response: we have taken the concerns of the green groups seriously and have, in July 2005, commissioned the environmental impact assessment (EIA) study for the provision of disinfection facilities at the Stonecutters Island Sewage Treatment Works (SCISTW). We have so far conducted three rounds of consultations with the green groups and academic/professional bodies in December 2005, March 2006 and October 2006 respectively to collect views from the stakeholders and to present the findings. The issue will be examined in an impartial and scientific manner and the study is expected to complete in the second quarter of 2007. The final report will then be made available for public inspection and comment under the EIA Ordinance, after which all views will be reviewed and taken into account. We will not use chlorination/dechlorination if the on-going EIA study ultimately concludes that this technology will lead to unacceptable environmental consequences under the local conditions. We will consider the alternative of UV-irradiation for disinfection. We estimate that if UV-irradiation is adopted, a few more years will be required to put the disinfection facilities in place since a new power supply sub-station and a supplementary EIA study would be required. This would mean some delay in water quality improvements.

- (f) **Concerns of the restaurant trade:** deputations from the restaurant trade urged early implementation of a revised TES rate for the trade and expressed some concerns about the impact of the proposed SC increment on the trade.

The Administration's response: we aim to complete the effluent

surveys for all the 30 TES trades within a year and then make the required adjustments to the generic COD values. The impact of the proposed SC increment on restaurants will be modest. About 80% of the restaurants pay less than \$500 SC each month. They will pay not more than \$547 per month in 2007/08 and \$1,220 per month ten years later. We will continue to encourage restaurants to adopt measures to reduce sewage discharged and water usage so that they will be able to reduce pollution and cost at the same time.

VIEWS SOUGHT

21. Members are invited to provide views on our proposals outlined in paragraph 2 above.

Environmental Protection Department
February 2007