

## **LEGISLATIVE COUNCIL BRIEF**

### **THE IMPLEMENTATION PROGRAMME FOR THE HARBOUR AREA TREATMENT SCHEME STAGE 2**

#### **INTRODUCTION**

At the meeting of the Executive Council on 19 April 2005, the Council ADVISED and the Acting Chief Executive ORDERED that for the Harbour Area Treatment Scheme (HATS) Stage 2 –

- (a) the preferred configuration option recommended in the public consultation document, i.e. centralizing all treatment facilities on Stonecutters Island, be adopted;
- (b) a two-phase implementation strategy, i.e. dividing HATS Stage 2 into Stage 2A and Stage 2B<sup>1</sup> as set out in the public consultation document, be endorsed;
- (c) for Stage 2A, the Environmental Impact Assessment (EIA), and site investigation and preliminary design of the tunnel system should commence immediately as a first step to deal with the most time-critical elements of the project so that the Administration could be on track to complete the whole of the Stage 2A main works in 2013 as per the undertaking in the Policy Address;
- (d) subject to the support of the community that recurrent costs should be met through sewage charges, part of the disinfection facilities of Stage 2A be brought forward for completion by 2008/09 to bring early improvement to the harbour water quality and to enable re-opening of the Tsuen Wan beaches;
- (e) the land required for the construction and operation of Stage 2A be reserved;

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<sup>1</sup> Stage 2A involves the upgrading of preliminary treatment works around the northern and southwestern shore of Hong Kong Island, the construction of a deep tunnel system to convey the currently untreated sewage from Hong Kong Island to Stonecutters Island, the expansion of the existing chemical treatment facilities at the Stonecutters Island Sewage Treatment Works (SCISTW) and the provision of new disinfection facilities. Stage 2B involves the construction of the biological treatment facilities.

- (f) in response to the public's expectation of a complete Stage 2, an indicative implementation programme for Stage 2B, i.e. to commence Stage 2B upon completion of Stage 2A in 2013/14 subject to a review in 2010/11 and public acceptance of full cost recovery, should be promulgated;
- (g) procedures be commenced in order to ensure that land will be available for the construction and operation of HATS Stage 2B in due course; and
- (h) the existing charging policy for both Sewage Charge and Trade Effluent Surcharge be reviewed in 2005 taking into account the financial implications arising from HATS Stage 2 in accordance with the polluter-pays principle.

## JUSTIFICATIONS

### The need for HATS Stage 2

2. Since the full implementation of HATS Stage 1, Stonecutters Island Sewage Treatment Works (SCISTW) has been treating 75% of the sewage (about 1.4 million cubic metres per day) in the HATS catchment. The SCISTW is one of the most efficient chemical treatment plants in the world, with very high pollutant removal efficiencies. These include removal of 70% of the organic pollutants (in terms of biochemical oxygen demand), 80% of the suspended solids, and 50% of sewage bacteria, *E.coli*. Overall, it is stopping 600 tonnes of sewage sludge and its associated pollutants from entering the harbour every day. This has resulted in a significant improvement of the marine environment. For example, the average dissolved oxygen level has increased by about 10% and the levels of key pollutants have decreased as follows:

- a) ammonia (harmful to marine life) has declined by about 25%;
- b) nutrients in terms of total inorganic nitrogen and phosphorus (which in rich supply can promote excessive algal growth) have dropped by about 16% and 36% respectively; and
- c) the overall *E.coli* level, which is an indicator of disease-causing organisms, has reduced by some 50%, although the *E.coli* level in the western harbour and at the Tsuen Wan beaches has increased.

3. Although HATS Stage 1 has brought about significant improvement in the harbour water quality, the sewage generated from the most densely populated parts of Hong Kong Island, which currently accounts for about 25% (450,000 cubic metres) of the sewage from the planned catchment of HATS, is only subject to preliminary screening before being discharged into the harbour. The dumping of untreated sewage, coupled with the very large volume of effluent discharged from the SCISTW

without disinfection, has been the source of continuing water quality problems in the western parts of the harbour. As a result, we have had to close four more beaches in the Tsuen Wan district since early 2003, resulting in the closure of all seven gazetted beaches along the Tsuen Wan coast.

4. With the anticipated continuous growth in population and economic activity in the harbour area, we expect that the harbour water quality will resume a deteriorating trend in future unless we intercept and treat the sewage from the remaining HATS catchment in good time. Failure to do so will mean that the Tsuen Wan beaches will have to remain closed indefinitely, and high levels of toxic ammonia, together with very low and unhealthy levels of dissolved oxygen, will appear in the West Kowloon harbour area.

### **Public Consultation on HATS Stage 2**

5. We conducted a five-month public consultation exercise on the way forward for HATS Stage 2 between 21 June and 20 November 2004. To enable our key stakeholders to understand the project, we organized a series of in-depth technical briefings, discussion forums and public hearings with a broad spectrum of the community including the Environmental Affairs Panel of the Legislative Council and political parties, advisory committees, District Councils in the harbour area, professional bodies, academia, special interest groups, and various business/trade organizations. Through these outreach activities, we collected comments from 46 key stakeholders. We also received 81 written or electronic submissions made by individual persons or companies from the community at large. A summary of the views received through the public consultation is attached at Annex A. The key results are –

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- (a) the public are positive about the water quality improvements brought about by HATS Stage 1. Most of the comments received (87% of the key stakeholders and 77% of individuals) indicate support for the timely implementation of HATS Stage 2 in order to clean up the harbour more comprehensively. Only nine individual respondents did not support HATS Stage 2; they were mainly concerned about related issues such as harbour reclamation, cost recovery and pollution from the Mainland;
- (b) some 33 key stakeholders and 26 individuals offered views on the selection of options, with the majority (64% of the key stakeholders and 73% of individuals) supporting the centralized option recommended by the Government. Some respondents favoured the semi-decentralized option of building a second sewage treatment plant on Lamma Island (Option B) to reduce system risks, although they also considered the centralized option acceptable;
- (c) out of the 31 key stakeholders and 18 individuals offering views on the proposal to phase the implementation, the majority (68% of the key stakeholders and 50% of individuals) supported the two-phase

implementation strategy. Among these respondents, some requested the Government to develop a timetable for Stage 2B;

- (d) the general public welcomed the incorporation of disinfection within Stage 2A so as to enable the reopening of the closed Tsuen Wan beaches and meet the aspiration for an annual cross-harbour swimming event. However, there are concerns from the academic sector, professional bodies and green groups about the potential environmental impacts of adopting the proposed chlorination/dechlorination disinfection arrangements. They suggested the Government should carry out a detailed EIA to address the environmental concerns before taking the project forward;
- (e) there is general support for the attempt to explore the public-private partnership arrangement, and the use of performance-based specification in the tendering process for the biological treatment system; and
- (f) about 19 key stakeholders and 24 individuals offered views on the polluter-pays principle; of these a significant majority (about 74% and 88% respectively) supported the adjustment of sewage charges to support the HATS. Among these respondents, many of them considered it important for the Government to take into account affordability in adjusting sewage charges and to consult the public extensively beforehand.

6. It is evident from the public views received that the Government is expected to implement HATS Stage 2 as a matter of priority to bring further improvement to our harbour water quality. Moreover, the public is supportive of adhering to the polluter-pays principle in funding the sewage services in the territory.

### **Phased Implementation of HATS Stage 2**

7. As HATS Stage 2 involves the construction of deep tunnels, expansion of the existing chemical treatment facilities, installation of disinfection facilities, and construction of complex biological treatment works, we will take forward Stage 2 in two phases. This will deliver a lower programme risk and allow greater flexibility in catering for future uncertainties with population growth and sewage flow build-up. We will commence the design of Stage 2A shortly. Subject to the community's acceptance of the need to increase the sewage charges in order to fully fund the recurrent costs of our sewage services, we will proceed to the construction phase of Stage 2A aiming at its completion in 2013. We will also consider advancing part of the disinfection facilities of Stage 2A in order to secure early improvement of the water quality in the western harbour and at the Tsuen Wan beaches. To optimize our investment in the new infrastructure we will closely monitor the population growth, sewage flow build-up and changes in water quality. We will review the position in 2010/11, taking into account the monitoring results, the then project readiness and the public acceptance of the required increase in sewage charges to finalize the

implementation programme for Stage 2B.

## FINANCIAL IMPLICATIONS

8. Although HATS Stage 2A can only provide basic protection to the harbour water quality, even this basic level of protection will incur about \$8.1 billion in capital costs and about \$428 million in additional annual recurrent costs at full capacity (see **Table 1**). This will effectively increase our existing recurrent expenditure on sewage services by more than 30%. As supported by the results of the public consultation, we consider it necessary to adjust the sewage charges to meet the increasing expenditure on sewage services. Otherwise, the subsidy would have to come from the general revenue and this would defeat the polluter-pays principle. In fact, the existing policy whereby the Government subsidizes up to 50% of the recurrent cost of providing sewage services has already resulted in the sewage charge for the average Hong Kong household being amongst the lowest of those observed in any developed economy, and is only barely above the level of major cities in the Mainland. This is not conducive to encouraging Hong Kong people to conserve water and minimize pollution. It also sets back our ability to bring in public-private partnership in providing sewage services. Without the support from the community for increasing the sewage charges, we cannot proceed with HATS Stage 2.

**Table 1 Cost<sup>2</sup> Implication for Phased Implementation of HATS Stage 2 Based on the Preferred Option**

HATS Stage 2 Implementation	Capital Cost (HK\$billion)	Recurrent Cost (HK\$billion/year)
Stage 2A	8.1	0.43
Stage 2B	10.8	0.70
Total for HATS Stage 2	18.9	1.13

9. In view of the above, we will carry out a comprehensive review of the existing sewage charging scheme. We need to adhere strictly to the polluter-pays principle by recovering the full recurrent costs for providing such services in the long term. Obviously, this would bring about a considerable impact on the sewage charge and the trade effluent surcharge. At the moment, we are planning to complete the review of the sewage charging scheme in 2005. We will consult the public and the Legislative Council on the way forward later in the year.

**Environmental Protection Department**  
**22 April 2005**

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<sup>2</sup> The costs have been updated to September 2004 price level

## Results of Public Consultation

The Public Consultation for HATS Stage 2 was launched on 21 June 2004. Through various activities such as meetings, and community outreach forums, we tried to give the community adequate opportunities to understand the proposals on HATS and the issues at stake when offering their opinions and suggestions. To raise the public's awareness of the environment and to increase their interest in HATS, we initiated a publicity and education programme and extended the consultation period by a month for completion on 20 November 2004.

2. There were views/feedback from a wide cross-section of the community, including political parties, Government's advisory bodies, District Councils in the harbour area, professional bodies, academia, special interest groups, and various business and trade organizations. Comments from 46 of these key stakeholder organizations/bodies were received and a further 81 written/electronic submissions were made by individual persons/companies. **Table A1** below provides a summary of the submissions received –

**Table A1 : Number of Submissions Received**

Stakeholders	Number of Submissions
Political Parties	2
Government Advisory Bodies, including the Advisory Council on the Environment (ACE), the Capture Fisheries Subcommittee, the Aquaculture Subcommittee, the Harbour Front Enhancement Committee, and the Monitoring Group for HATS	5
Academics	12
Special Interest Groups, e.g. green groups	5
Professional Bodies, e.g. Hong Kong Institution of Engineers	7
Business and Trade Associations, e.g. different chambers of commerce	8
District Councils (DC)	7
Individual persons and companies	81

### Views on key issues

3. Views generally support cleaning up the harbour and restoring this natural asset to an environmentally healthier state. Most of the comments received (87% of the key stakeholders and 77% of the individuals) indicate support for the Government to take action in cleaning up the harbour. Whilst none of the key stakeholders opposed HATS Stage 2, nine individuals expressed views against spending money to clean up the harbour, largely because of the potentially heavy fiscal commitment, and concern about the possible need to reclaim the harbour. Views from the remaining 12% (or 15 submissions) showed no clear preference.

4. To help us implement HATS Stage 2, we specifically asked for the community's views on (i) the preferred option; (ii) the suggestion that HATS Stage 2 be implemented in a phased manner, i.e. as Stages 2A and 2B; and (iii) the potential adjustment of sewage charges in line with the Polluter-pays Principle. The key results of these issues are summarized in **Table A2** below –

**Table A2 : Key Responses from the Public Consultation**

Issues	Number of submissions indicating views on these issues	Key results
What is the preferred option?	33 key stakeholders and 26 individuals	Around 64% of the key stakeholders and 73% of the individuals supported Option A (treating all the HATS flow at the SCISTW). The reasons included the lowest cost and the presence of less sensitive receivers in the facility's proximity. Option B was the next most favoured option. Those who favoured this option suggested 25% of the flow could be diverted to a satellite plant at Lamma Island for treatment, thus lowering the overall system risks, when compared with Option A. Options C and D were generally not favoured due to their potential impact to larger groups of affected populations, and higher costs.
To implement HATS Stage 2 in two phases, i.e. Stage 2A, and 2B?	31 key stakeholders and 18 individuals	While 68% of the key stakeholders and 50% of the individuals supported the phasing idea, the community strongly requested the Government to commit to Stage 2B by setting out a more concrete implementation plan.  Around 31% of the responses including the green groups, academics, some private sector

Issues	Number of submissions indicating views on these issues	Key results
		bodies and the general public, urged the Government to pursue Stage 2 in one go, so that harbour pollution would be reduced as soon as possible. Some proposed the alternative of phasing the implementation based on capacity instead of the treatment level.
Adjustment of sewage charges in line with the Polluter-pays Principle with a view to cleaning up the harbour?	19 key stakeholders and 24 individuals	Around 74% of the key stakeholders and 88% of the individuals supported the proposal, but many commented that the adjustment of charges should be fair, commensurate with the benefits to be brought about by the scheme, and affordable to the community, with adequate consultation beforehand.

5. Other comments mostly focused on issues such as “Is Disinfection Needed?” and “Concerns on Chlorination”. While the general public who wanted to see the Tsuen Wan beaches reopened as soon as possible supported disinfection, some professional bodies and academics considered that, as attendance rates at the Tsuen Wan Beaches were relatively low, it would not be justified to spend large sums of money on any disinfection facility. Other stakeholders, mainly the green groups, and marine biologists, were concerned that with the large volume of the HATS sewage (up to 2.8 million m<sup>3</sup>/d ultimately), if chlorination/dechlorination were to be adopted there would be by-products which might have undesirable chronic effects on the marine environment. Some thus suggested the Government adopt ultra-violet (UV) disinfection, although others commented that the use of UV would have its own drawbacks in dealing with CEPT effluent. The ACE and some marine biologists suggested conducting a detailed EIA to ascertain the environmental implications before making any decision on the choice of the disinfection technology.

**Other issues of concern**

6. Other issues of concern, and key views from stakeholders, are summarized in **Table A3** –



**Table A3 : Other Concerns Raised During Public Consultation**

Issues of concern	Key views from stakeholders
Choice of Biological Treatment Technology	The community generally had no specific preference for any biological treatment technology. What they would like to see was a commitment to the implementation of Stage 2B.
Need for biological treatment, and nutrient removal	Some urged reconsideration of the cost implications and practicality relating to provision of biological treatment and nutrient removal in Stage 2B. They considered that pollution loads from the Pearl River made the background pollution levels of the HKSAR waters high. Thus, they believed that to invest heavily in local biological treatment facilities in order to reduce organic and nutrient loads was not a cost-effective way to improve local water quality. They further suggested channeling the resources (i.e. the savings that could be achieved through dropping Stage 2B), to subsidize the pollution abatement work in the Pearl River Delta. To clean up the pollution due to local discharges, these stakeholders proposed to resurrect the old SSDS long outfall scheme.
Private Public Partnership (PPP)	Views generally supported this approach, provided that the public's interest was adequately safeguarded in the PPP arrangement.
Resurrection of the old SSDS long outfall scheme	<p>Some suggested pursuing this scheme arguing that it would mean a much lighter fiscal commitment, while at the same time would bring about reasonably good water quality improvement, given the relatively good dilution available at the proposed discharge point southeast of Lamma Island. Stakeholders holding this view also suggested the Government should use the money for funding Stage 2B to subsidize the pollution abatement work in the Pearl River Delta, as they believed that pollution loads from the Pearl River influence local water quality, and it would be more cost-effective to spend money to tackle pollution problems at source.</p> <p>Some academics also suggested resurrecting the old scheme from the perspective of cost and the assimilative capacity of the natural environment.</p>

Sludge Handling	Since HATS will produce significant amounts of sludge, some stakeholders wanted to know the Government's long term plan for handling the sludge. In this regard, they requested detailed information on the future sludge handling arrangement and its related cost for further consideration.
Proposal to extend the existing outfall of the Stonecutters Island Sewage Treatment Works (SCISTW)	To achieve better dilution, thus dispensing with the need to disinfect the treated effluent, some proposed to extend the existing SCISTW outfall to deeper waters within or outside the harbour area.
Effluent reuse, conservation and minimization	Some considered that these issues will be the more fundamental way to help tackle the water pollution problem and the Government should educate the public more in these areas.
Proposal to use artificial reef for nutrient and bacteria removal	Some proposed to use artificial reefs for further polishing the effluent discharged by the HATS system, although this is normally used for enhancement of marine resources.