

**The Views of the Association of Engineers in Society on  
The Harbour Area Treatment Scheme Stage 2**

The Association and its members are in support of the Project. We have the following comments for the consideration of the Administration.

1. We are pleased to know that, after the commissioning of the Stage 1 of the Harbour Area Treatment Scheme (HATS) to treat the 75% sewage generated in the HATS catchment since late 2001, water quality in the Victoria Harbour has been substantially improved. We welcome the present Government initiatives to propose HATS Stage 2 to treat the remaining 25% of sewage generated in the HATS catchment, i.e. the northern and western sides of Hong Kong Island.
2. Whilst we appreciate that the Government is proposing biological treatment as a sustainable solution to our sewage problem in the metro area, there is no vision or clear commitment from the Government as to when this sustainable level is to be achieved.
3. Centralisation and decentralisation have their merits and shortcomings in terms of engineering, economic, risk, environmental, social and political factors. Some Green groups are still expressing strong preference to decentralisation mainly on the ground of risk consideration. We, however, keep an open mind on this issue, but we would like to stress the need to strike the balance amongst all the considerations and look for a scheme with the best performance in overall terms.
4. One of the arguments against decentralisation is the unavailability of land for the construction of the regional sewage treatment works (STW) in the metro area of the Hong Kong Island. Depending on the degree of decentralisation, the volume of sewage to be treated in the regional STW, and the strategic selection of sites with composite development design, there could still be some parcels of land available for underground STWs, such as the Victoria Park, Wanchai Sportsground, Western Reclamation and a number of district open areas. Decentralisation can substantially reduce the need for the expensive and difficult-to-construct deep tunnel sewage collection system. If these regional STWs are close to the existing screening plants, there is no need to even build new deep tunnel sewers which only create very limited employment opportunities anyway. In view of the limited information, we are not sure if the above is a viable option on the grounds of economic and engineering. If the above option was not considered before, we opine that a review is warranted in order to demonstrate to the public that every possible option has been considered.
5. As deep tunnels and deep STW have been proposed in the Government's HATS Stage 2 preferred option, we are concerned that very high power consumption may be needed to move the sewage against the high differential gravitational head. This may have a direct bearing on the operating cost and on greenhouse gas effect. We request more information of this aspect from the Government regarding the performance of the HATS Stage 1 and disclose any assessment already made if available.
6. Given the complexity of HATS Stage 2 project and the huge amount of capital investment for both Stages 2A and 2B, we agree with the Government of the present proposed phasing. It, at least, shows Government's commitment to improve the harbour water quality and yet allows flexibility for a decision to be made on how Stage 2B is to be proceeded with and adjusted in the later years, with the benefit of the performance results of Stage 2A and the prevailing economic situation.

7. HATS Stage 2A comprises mainly the construction of an extensive deep (150m below ground level) tunnel system to transfer sewage from the northern and western parts of the Hong Kong Island to Stonecutter Island. Based on the experience from the HATS Stage I and many other local tunnelling projects, the major hazards associated with deep tunnelling are groundwater ingress and risk of ground settlement. Whilst the risks are still large, we consider that the risk mitigation or precautionary measures (e.g. detailed site investigations prior to works commencing, close monitoring during construction, mandatory forward probing and grouting in advance of tunnel face, use of gasketed segmental linings, etc.) recommended by the Government's consultants are viable and acceptable.
8. We notice that the proposed deep tunnel alignment of HATS Stage 2A is still open. We reckon that by slight shifting of the tunnel alignment southward will reduce the influence of the tunnel construction in the reclaimed areas, and thus significantly lower the risks and cost. Advance intensive deep ground investigation and further hydrogeological studies, covering both alignments are needed to allow an early decision on the preferred tunnel alignment be made as soon as possible.
9. HATS Stage 2 is a mega project in terms of the works volume and the resources to be spent. A large number of construction contracts will be put on the market and it will create many construction related employment opportunities. We urge the authorities to consider the difficulties faced by the local construction community and to carefully derive a procurement strategy and a work package that are not unfavourable to the local contractors and the construction workforce.
10. The "Polluter Pays Principle" should be viewed with caution and be examined together with the present taxation system, with particular reference to fairness to the Middle Class. We understand that the Middle Class, composed mainly of professionals, is sandwiched between the Wealthy, who pays at more or less the same tax rate as the Middle Class, and the Poor, who basically pays no tax. Under the new principle, the Wealthy will not be affected, because the sewage charge in absolute money terms is comparatively small with respect to their income. The Poor will likely be further subsidised. However, the Middle Class will be most hard hit, because they will be forced to pay tax for providing the services, as well as the charges for sewage treatment.
11. There are various forms of Public Private Partnership (PPP) and many past successful and unsuccessful applications, which were highly situational and dependent very much on the unique special environment of the individual cases. In the HATS case, additional to the short-term economic gain and performance of PPP, we should also consider its long-term effect, public interest and social impacts, such as concern of the reliability and sustainability of the service, job security, unaffordable pollution charge, etc. Whilst PPP arrangement could be further explored, the Government must also set up an institutional mechanism to ensure transparency, public consultation and participation.