

For information

Legislative Council Panel on Environmental Affairs

**Planning Parameters for Commencement of the
Design and Construction of HATS Stage 2B**

Introduction

1. At the Panel meeting on 5 July 2005, members requested the Administration to provide information about the planning parameters governing the commencement of HATS Stage 2B. This paper explains the Administration's thinking on this issue.

Planning Parameters for HATS Stage 2B

2. One of the key planning parameters governing the decision on the start date for HATS Stage 2B is the population growth on both sides of the harbour, which depends on economic growth and how fast developments planned in accordance with the present planning guidelines and planning scenarios materialize. Based on the latest forecast of the Planning Department, the population¹ around the harbour would be on a rising trend which would continue into the next decade as shown in Figure 1.

3. The increase in population would result in more sewage being generated. The volume of this sewage constitutes a second planning parameter. As highlighted in our paper presented to the Panel on 5 July 2005, the sewage flow in 2013/14 is projected to be in the range of 2.22 million m³/day to 2.30 million m³/day. This represents an increase of about 20% to 24.3% over the 2003 sewage flow of 1.85 million m³/day. On a year-on-year basis, the increase is a modest 1.8% to 2.2% per year. Figure 2 shows the likely trend of the future sewage flow increase in the HATS service area.

4. With an increasing amount of sewage being discharged over time, the impact on the receiving marine environment will mount accordingly. The basic chemical constituents of domestic sewage are organic matter and ammonia. In a healthy marine environment, the ammonia² and organic matter discharged would be gradually oxidized to harmless forms, resulting in the consumption of dissolved oxygen at a rate the water body can cope with. But if the pollution load increases a point will be reached where there is rapid depletion of dissolved oxygen and harmful accumulation of toxic ammonia. To prevent the polluting load reaching this damaging point a higher treatment level must be provided, and planned for in advance. Water Quality Objectives (WQOs) for dissolved oxygen and unionized ammonia have been established under the Water Pollution Control Ordinance as a means of protecting our water bodies. They will form the benchmarks which we refer to when projecting forward to the time when water

¹ The population projections include all permanent residents, the mobile population and others that contribute to the total sewage flow in the HATS service area.

² A portion of the ammonia would appear in unionized form in water, and this unionized ammonia is highly toxic to marine life.

quality may become unacceptable as a result of increasing polluting loads. They therefore constitute the third of our planning parameters (in addition to population and sewage flow) that we would rely upon for predicting the time when Stage 2B would need to be in operation, and hence making a decision on the commencement date.

5. To illustrate this point, Figures 3 and 4 show the measured concentrations of ammonia and dissolved oxygen at a reference monitoring station in the immediate vicinity of the HATS discharge point for the last few years, and the relevant WQO values that must be upheld to protect the marine environment. Based on the water quality data in hand, we notice an increasing trend for ammonia since the commissioning of HATS Stage 1. A projection of this trend indicates that a possible breach of the ammonia WQO may occur sometime in the medium-term future, though probably not within this decade or early in the next. For dissolved oxygen, although the data show full WQO compliance and no deteriorating trend at present, a decline in dissolved oxygen levels may still occur in the future with increasing effluent discharges from an increasing population.

Timeliness of a Full Review in 2010/2011

6. The actual population and sewage flow increases at present are rather modest and there is no indication that there would be a sudden acceleration in either, that might result in a sudden deterioration in water quality. Thus, there is no strong evidence at the moment that the upgrading of the treatment level would be needed before the latter half of the next decade. On the other hand there is evidence that the level of toxic ammonia is increasing, albeit slowly from a very low base. Taking these two factors together our judgement is that the appropriate timing for a review, which would include an assessment of the level and trends of the “planning parameters” described above, remains 2010/11.

Way forward

7. As explained above, the decision regarding commencement of Stage 2B would have to take into account, amongst other things, both the current level and the prevailing trends in the “planning parameters” described. Based on the prevailing levels and trends there is no need to take a decision on commencement at Stage 2B now, and it is unlikely that it will be necessary to take such a decision prior to our proposed review date in 2010/11. However it is crucial that the trends be properly tracked so that we can react quickly should there be a sudden change in any of the key planning parameters. We will therefore update our population projections regularly and monitor the actual change in sewage flow in the HATS service area. We will also monitor the water quality in the area around the existing outfall. We will report annually to the Advisory Council on the Environment on the levels and trends of the key parameters and seek the Council’s advice as to whether we need to adjust the date for a possible review.

Figure 1. Projection of total population increase in HATS service area

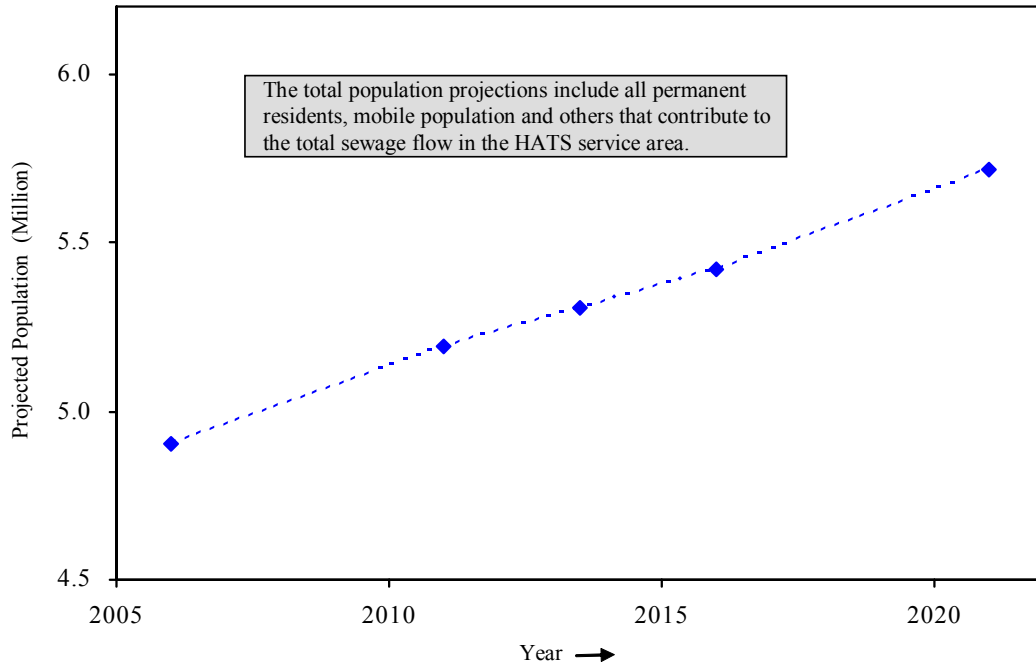


Figure 2. Projection of total sewage flow increase in HATS service area

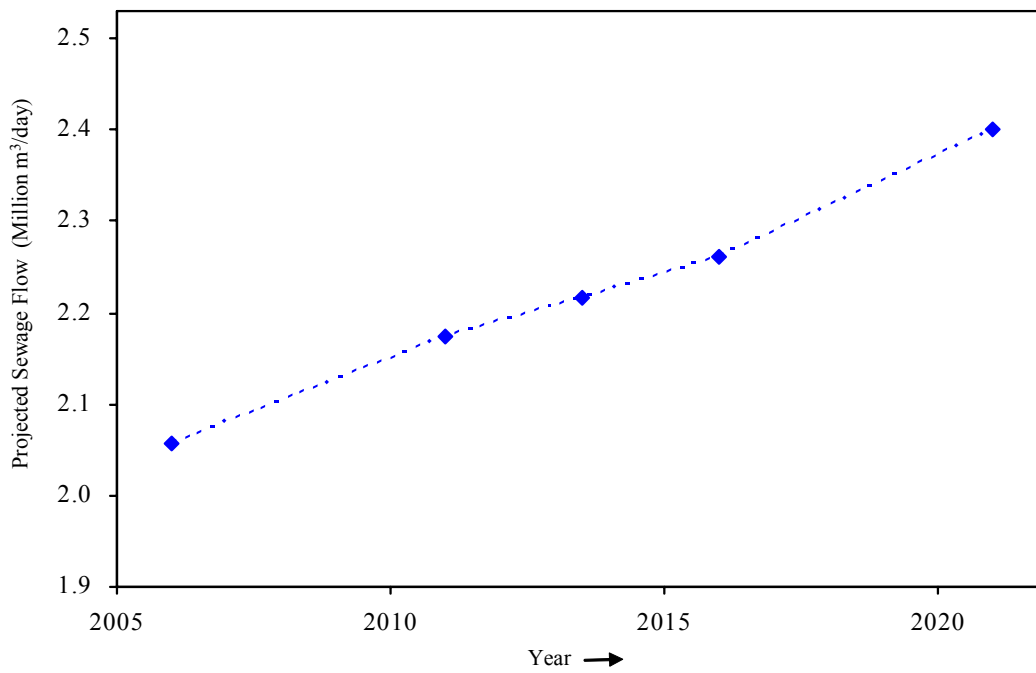


Figure 3. Unionised ammonia (depth average) concentrations at marine monitoring station WM3 (in immediate vicinity of HATS discharge)

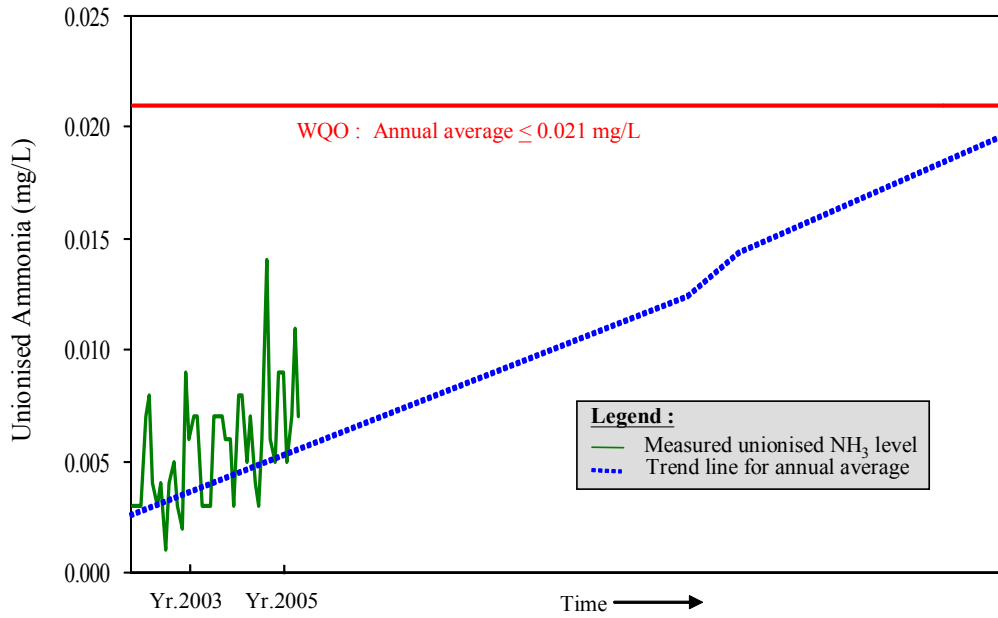


Figure 4. Dissolved oxygen (bottom layer) concentrations at marine monitoring station WM3 (in immediate vicinity of HATS discharge)

