

**Legislative Council Panel
on Environmental Affairs**

The Recurrent Cost of Sewage Treatment

This paper sets out for members information the present recurrent costs of treating sewage in Hong Kong, and how these are being met. It also sets out for members guidance the expected future costs of sewage treatment and illustrates the implications of the different ways of meeting these costs.

General Points

The present cost of treating sewage in Hong Kong, together with a projection of the way in which these costs will change over the coming decade is attached as Table 1. This is the table that was given to members at the last meeting of the Environmental Affairs Panel on 5 October 1998. Please note that all the figures are given in constant 1998 prices.

Members will see from the table that the additional costs associated with Stage II of the SSDS will not arise until towards the end of the next decade. Before then, costs will increase as new non-SSDS works are completed, as SSDS Stage I is fully commissioned, and if Stages III & IV are funded.

At present, non-SSDS costs make up 83% of the total sewage collection and treatment costs of \$840 million per year.

Assuming that funding is approved for all anticipated sewerage works (both SSDS and non-SSDS), by the end of the next decade non-SSDS costs will comprise about 60% of the total costs of \$2916 to \$2956 million if we proceed with SSDS Stages III & IV and Option 1 or 2 of Stage II.

If we proceed with Option 3 or 4 for Stage II, non-SSDS costs will comprise about 40% of total costs of \$4026 to \$4306 million.

How the present costs are met

Of the \$840 million cost for treating sewage in 1997/98, \$740 million has been paid for by direct charges and \$100 million has been met by the taxpayer.

There are now 1,742,000 domestic and 220,000 non-domestic customers paying sewage charges and 13,000 paying the Trade Effluent Surcharge.

The average domestic account sewage charge is \$131 per year. The average TES account charge is \$1,500 per month.

13% of households are not connected to the public sewerage system, so do not pay any sewage charge. Of the households that are connected:-

14.5% pay nothing because they consume less than 36 cubic metres of water a year (12 cubic metres in each 4 month billing period are 'free flow allowance');

38.8% pay between \$1 and \$112 a year

21.3% pay between \$113 and \$180 a year

22.5% pay between \$181 and \$389 a year

2.9% pay over \$390 a year.

Future arrangements

With the improvements to the sewage collection system expected over the next decade 95% of all households should be connected to the sewerage system, compared with 87% today. Given the rate at which new households are being formed, due both to population growth and the trend towards smaller family size, it is expected that by the end of the next decade there will be 2,683,000 domestic sewage charge accounts, an increase of 54% over the present number. The number of non-domestic customers is also expected to increase to over 300,000 accounts.

This means that although the costs of treating sewage will increase, those costs will be shared among a much larger number of accounts than at present.

Table 2 illustrates the effects of different ways of meeting the future operating and maintenance costs.

The first example shows what would happen if there is no change in sewage charges. No individual account payer would experience any change, but an extra \$1.7 to \$3.1 billion a year would have to be set aside from public funds to cover the costs. That is equivalent to between 22 and 41 % of expenditure on subventions under the code of aid to primary schools this year. It is 20% to 120% higher than recurrent expenditure on family and child welfare.

The second example shows what would happen if charges are increased in proportion to the overall increase in costs. If option 1 for Stage II of the SSDS is chosen, the anticipated increase for each account would be 2.2 times the present level. If Option 4 is chosen, the increase would be 3.4 times the present level. The amount that would have to be set aside from public funds would range from \$0.3 to \$0.5 billion. That is equal to between 30 and 50% of this year's

provision for programmes for young people, or enough to buy between 3,000 and 5,100 places for the elderly in care and attention homes.

The third example shows what would happen if the charges are increased to recover the total recurrent costs. This would have no implications for taxation or public expenditure. The charges to individual account holders would increase to 2.6 times if option 1 is chosen, and to 3.8 times if option 4 is chosen.

Please note that all these examples have not attempted to calculate the effects of inflation between now and the end of the next decade, nor do they consider the effect of any possible increase in productivity or efficiency. Their use is as a comparative guide to the effects of the different choices we have both for our sewage treatment system and for methods of meeting the recurrent costs.

Capital cost and depreciation

It should be noted that all the figures given in this paper relate to expenditure on the operation and maintenance of the sewerage system. They do not reflect the capital cost or depreciation of the system, which it is assumed will be met through the publicly funded capital works programme. For members reference, the actual and estimated capital expenditure on the SSDS and related sewerage programmes is as follows:

	<u>Estimate</u>	<u>Expenditure to date</u>	<u>Committed but not yet spent</u>
SSDS Stage 1	\$8.2b	\$4.9b	\$3.3b
Other components of HPP	\$3.5b	\$1.9b	\$1.6b
Other Sewerage Works	\$13.8b	\$4.4b	\$9.4b
SSDS III & IV	\$6.7b	-	-
SSDS II (1)	\$12.0b	-	-
(2)	\$13.0b	-	-
(3)	\$23.0b	-	-
(4)	\$26.0b	-	-

Planning, Environment and Lands Bureau
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Table 1 : Expected Recurrent Costs

	1997/98 (\$ Million)	2000/01 (\$ Million)	mid 2000-2010 (\$ Million)	late 2000-2010 (\$ Million)	end 2010 (\$ Million)
SSDS Stage I	90	340	529	529	529
<i>Preliminary Treatment works</i>	50	50	50	50	50
<i>Tunnels & pumping stations</i>	0	4	4	4	4
<i>Treatment</i>	40	286	475	475	475
SSDS Stages III/IV	47	47	102	102	102
<i>Preliminary Treatment works</i>	47	47	77	77	77
<i>Tunnels & pumping stations</i>			25	25	25
SSDS Stage II					
Option 1	0	0	0	515	515
Option 2	0	0	0	0	555
Option 3	0	0	0	1625	1625
Option 4	0	0	0	0	1905
TOTALS					
SSDS Only - option 1	137	387	631	1146	1146
- option 2	137	387	631	631	1186
- option 3	137	387	631	2256	2256
- option 4	137	387	631	631	2536
Other Sewerage	703	950	1200	1550	1770
SSDS and Other systems					
- option 1	840	1337	1831	2696	2916
- option 2	840	1337	1831	1837	2956
- option 3	840	1337	1831	3806	4026
- option 4	840	1337	1831	1831	4306

Assumes 6.35% per annum growth in Non-SSDS Sewage facilities - in line with 1998 5-year projection

All figures are in 1998 prices. Depreciation is not included

Figures are best available in advance of preparation of PWSC submission

Table 2 : Illustration of Effects of Different Approaches to meeting Sewage Costs

Example 1 : If no increase is made in Sewage Charges

	1997/98	2009/10			
		Option 1	Option 2	Option 3	Option 4
Cost (\$ million)	840	2916	2956	4026	4306
Amount paid by charges (\$ million)	740	1132	1132	1132	1132*
Amount paid by Taxpayer (\$ million)	100	1784	1824	2894	3174
Total number of Accounts	1,962,000	3,000,000	3,000,000	3,000,000	3,000,000
Nominal Cost per Account (\$)	377	377	377	377	377

Note :* this increase in cost recovered through charges is because of the increasing number of accounts

Example 2 : If Sewage Charges are raised in line with the increase in costs

	1997/98	2009/10			
		Option 1	Option 2	Option 3	Option 4
Cost (\$ million)	840	2916	2956	4026	4306
Amount paid by charges (\$ million)	740	2569	2604	3538	3793
Amount paid by Taxpayer (\$ million)	100	347	352	488	513
Total number of Accounts	1,962,000	3,000,000	3,000,000	3,000,000	3,000,000
Nominal Cost per Account (\$)	377	856	868	1179	1264
Nominal increase (97/98 to 09/10)		2.3 times	2.3 times	3.13 times	3.4 times

Example 3 : If Sewage Charges are raised to cover all recurrent costs

	1997/98	Option 1	Option 2	Option 3	Option 4
Cost (\$ million)	840	2916	2956	4026	4306
Amount paid by charges (\$ million)	740	2916	2956	4026	4306
Amount paid by Taxpayer (\$ million)	100	0	0	0	0
Total number of Accounts	1,962,000	3,000,000	3,000,000	3,000,000	3,000,000
Nominal Cost per Account (\$)	377	972	985	1342	1435
Nominal increase (97/98 to 09/10)		2.6 times	2.6 times	3.6 times	3.8 times