

For discussion  
on 7 October 1998

PWSC(98-99)25

## ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

### HEAD 704 - DRAINAGE

Environmental Protection - Sewerage and sewage treatment

126DS - Sham Tseng sewerage and sewage treatment and disposal facilities

Members are invited to recommend to Finance  
Committee -

- (a) the upgrading of part of **126DS** entitled "Sham Tseng sewerage, stage 2 phase 1" to Category A at an estimated cost of \$158.2 million in money-of-the-day prices; and
- (b) the retention of the remainder of **126DS** in Category B.

### PROBLEM

There are no proper sewerage facilities in Sham Tseng and Tsing Lung Tau. Sewage from these areas is discharged to the nearby coastal waters without proper treatment, causing water pollution.

### PROPOSAL

2. The Director of Drainage Services, with the support of the Secretary for Planning, Environment and Lands, proposes to upgrade part of **126DS** to

/Category .....

Category A at an estimated cost of \$158.2 million in money-of-the-day (MOD) prices for the Sham Tseng sewerage stage 2 phase 1 works.

## PROJECT SCOPE AND NATURE

3. Project **126DS** aims to provide a sewerage system to collect, treat and dispose of sewage from Sham Tseng and Tsing Lung Tau. The part of the project we now propose to upgrade to Category A as stage 2 phase 1 works comprises the construction of -

- (a) trunk sewers, about 1.2 kilometres in length and 525 to 900 millimetres in diameter, along Castle Peak Road from Sea Crest Villa to Sham Tseng Tsuen and from Rhine Garden to reclaimed land south of the Garden Company Limited;
- (b) branch sewers, about 3 kilometres in length and 150 to 500 millimetres in diameter, for housing developments and a number of villages in Sham Tseng; and
- (c) twin rising mains, each about 0.3 kilometres in length and 400 millimetres in diameter, from Sham Tseng Tsuen to Rhine Garden.

4. The remainder of **126DS** for retention in Category B comprises the construction of a sewage treatment plant and submarine outfall in Sham Tseng and the completion of the remaining sewerage system which includes pumping stations, rising mains and sewers in Sham Tseng and Tsing Lung Tau.

## JUSTIFICATION

5. Sham Tseng and Tsing Lung Tau, formerly rural in character, are unsewered areas. As a result of recent major housing developments, these areas now house a population of about 21 000, and this is expected to rise to 45 000 by 2011.

6. In the absence of proper sewerage facilities, about 5 700 cubic metres of sewage per day generated from these areas are discharged direct to the

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sea without proper treatment, causing pollution to the nearby coastal waters. To abate this water pollution, we propose to construct sewers and rising mains in Sham Tseng to collect the sewage generated. We plan to convey the sewage to a proposed sewage treatment plant on reclaimed land south of the Garden Company Limited for proper treatment before disposal. We will construct the proposed sewage treatment plant and submarine outfall under the stage 2 phase 2 works. Upon completion of the whole project, Sham Tseng and Tsing Lung Tau will have a sewerage system with sufficient capacity to meet the sewage treatment demand up to the year 2011.

7. If we do not implement the proposed project, sewage generated from these areas will remain a source of water pollution. The situation will become worse as the population continues to grow as a result of planned development at Sham Tseng and Tsing Lung Tau up to the year 2011.

#### FINANCIAL IMPLICATIONS

8. We estimate the capital cost of the proposed works to be \$158.2 million in MOD prices (see paragraph 9 below), made up as follows -

|     |                               | <b>\$ million</b> |                           |
|-----|-------------------------------|-------------------|---------------------------|
| (a) | Trunk sewers                  | 55.5              |                           |
| (b) | Branch sewers                 | 17.4              |                           |
| (c) | Rising main                   | 24.5              |                           |
| (d) | Consultants' fees             | 16.8              |                           |
|     | (i) construction stage        | 1.8               |                           |
|     | (ii) resident site staff cost | 15.0              |                           |
| (e) | Contingencies                 | 11.4              |                           |
|     |                               | <hr/>             |                           |
|     | Sub-total                     | 125.6             | (at December 1997 prices) |

/(f) .....

|                         |       |                 |
|-------------------------|-------|-----------------|
| (f) Inflation allowance | 32.6  |                 |
|                         | ----- |                 |
| Total                   | 158.2 | (in MOD prices) |
|                         | ----- |                 |

A breakdown by man months of the estimates for consultants fees is at the Enclosure.

9. Subject to approval, we will phase expenditure as follows -

| Year        | \$ million<br>(Dec 1997) | Price<br>adjustment<br>factor | \$ million<br>(MOD) |
|-------------|--------------------------|-------------------------------|---------------------|
| 1998 - 99   | 1.0                      | 1.06000                       | 1.1                 |
| 1999 - 2000 | 35.0                     | 1.14878                       | 40.2                |
| 2000 - 01   | 52.0                     | 1.24642                       | 64.8                |
| 2001 - 02   | 26.2                     | 1.35237                       | 35.4                |
| 2002 - 03   | 11.4                     | 1.46732                       | 16.7                |
|             | -----                    |                               | -----               |
|             | 125.6                    |                               | 158.2               |
|             | -----                    |                               | -----               |

10. We have derived the MOD estimate on the basis of the Government's forecast of trend labour and construction prices over the period 1998 to 2003. We will tender the proposed works under a standard remeasurement contract because we are uncertain about the existence and the exact location of various underground utilities such as electric cables, telephone lines and water mains. We will allow for adjustment to the tender price due to inflation as the contract period will exceed 21 months.

11. We estimate the annual recurrent expenditure for maintenance works to be \$2.2 million.

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12. Based on the current level of expenditure on operation and maintenance of sewerage facilities, the proposed works will lead to an increase in the recurrent cost of providing sewage services of about 0.3 % which will need to be taken into account in determining sewage charges<sup>1</sup>.

## **PUBLIC CONSULTATION**

13. In September 1995, we first presented the environmental assessment of project **126DS** to the Environmental Affairs Committee of the Tsuen Wan District Board. Members of the Committee supported the implementation of the project. In September 1996, we consulted the local residents on the project. Some of the latter had reservations on the proposed location of the sewage pumping station near Sham Tseng Tsuen. Subsequently, we held a series of meetings with various groups of the local residents, addressing their concerns on the construction and operation of the pumping station. The residents then endorsed the proposed project. We again presented the project to the Environmental Affairs Committee of the Provisional Tsuen Wan District Board in May 1998 and obtained the support of the Committee.

## **ENVIRONMENTAL IMPLICATIONS**

14. In August 1995, we completed an environmental impact assessment study to examine the environmental impacts during the construction and operation of the project. The study concluded that, after completion, the project will reduce the water pollution problem currently caused by the discharge of untreated sewage into the coastal waters of Ting Kau, Sham Tseng and Tsing Lung Tau.

15. For short term impacts during construction, we shall incorporate mitigation measures in the contract to control dust, noise and the impact on the environment within established guidelines and standards.

**/LAND .....**

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<sup>1</sup> Sewage charges are determined by the recurrent cost of providing sewage services to the community as a whole and the level of subsidy from the General Revenue. The Administration is currently considering various options on the level of subsidy, and the relevant LegCo Panels will be consulted before any decision is made.

## LAND ACQUISITION

16. The proposed stage 2 phase 1 works do not require any land acquisition.

## BACKGROUND INFORMATION

17. We upgraded **126DS** to Category B in November 1991. In July 1994, we completed the site investigations and environmental impact assessment study for the project under block allocation **Subhead 4003DX** which was for minor drainage work and studies/investigation.

18. In May 1995, we engaged consultants to undertake design and investigations for the Sham Tseng sewerage improvement works under block allocation **Subhead 4006DX** "Consultants' design fees and charges and major in-house investigations for drainage projects".

19. On 2 February 1996, Finance Committee approved the upgrading of part of **126DS** to Category A as **279DS** entitled "Sham Tseng sewerage stage 1 - Sham Tseng reclamation" at an approved project estimate of \$176 million in MOD prices. The works, which involved the reclamation of about 3.5 hectares of land, were started in February 1996 and were completed in June 1997. The reclaimed land will accommodate a proposed sewage treatment plant under **126DS** and will also provide for other land uses.

20. We have completed the design and preparation of drawings and tender documents for the construction of the proposed stage 2 phase 1 works. We plan to start the works in March 1999 for completion in April 2001. Upon completion of the works, the Director of Environmental Protection will notify the owners of the developments and the villagers concerned of their obligation to link existing facilities to the new sewerage system. We anticipate that the owners will take one year to complete the necessary final connection works.

21. The detailed design of the remaining works under **126DS** is in progress. To tie in with the programme of the final connection works, we plan to complete the concerned pumping station, sewage treatment works and submarine

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outfall by April 2002. We also plan to complete the remaining sewerage system in Sham Tseng and Tsing Lung Tau by December 2003.

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Planning, Environment and Lands Bureau  
September 1998

(PWSC0011/WIN1)

**126DS - Sham Tseng sewerage and sewage treatment and disposal facilities**

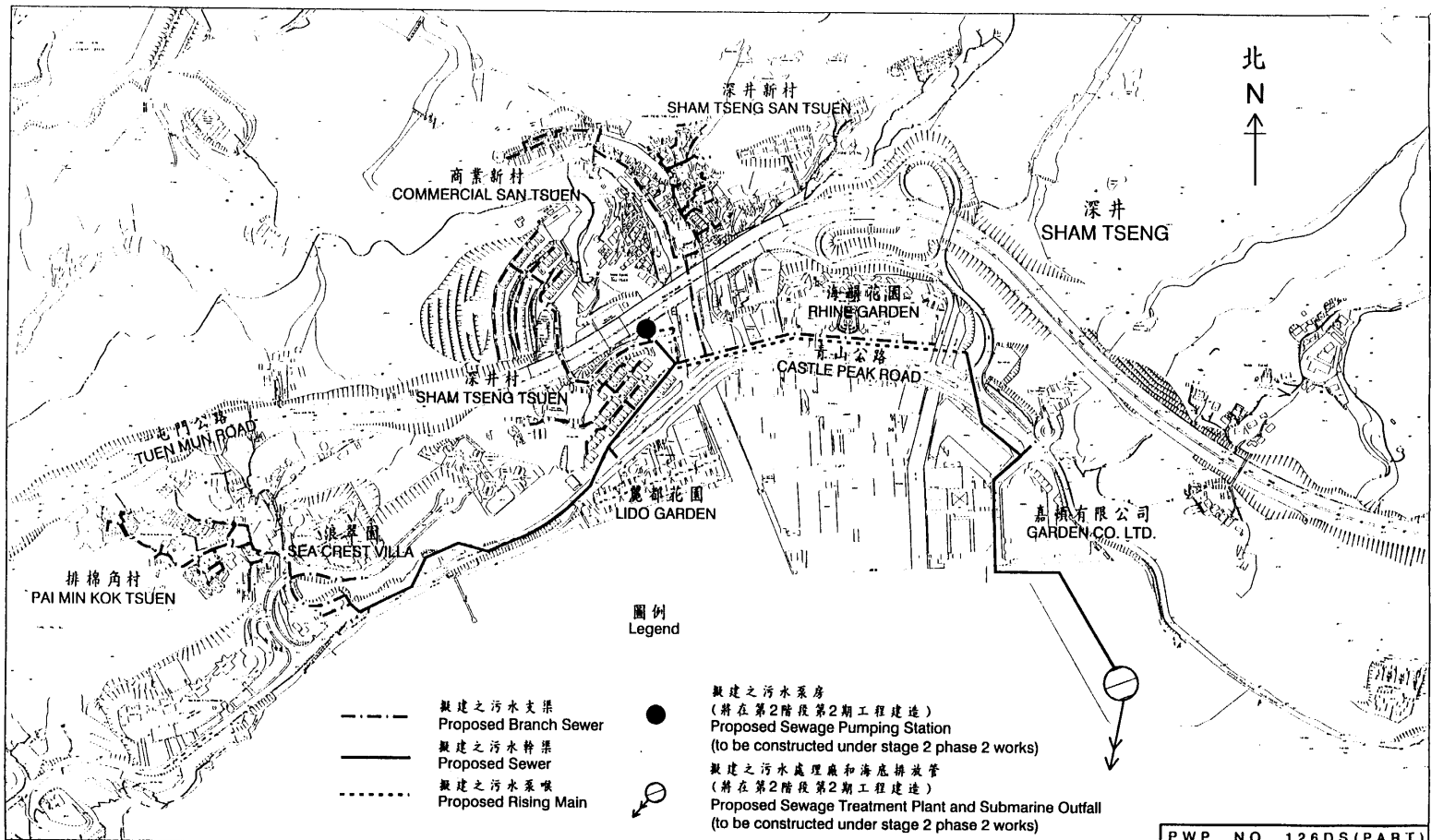
**Breakdown of estimates for consultants' fee**

| Consultants' staff costs     |   |              | Estimated man-months | Average MPS salary point | Multiplier factor | Estimated fee (\$ million) |
|------------------------------|---|--------------|----------------------|--------------------------|-------------------|----------------------------|
| (a)                          | Consultants' fees for construction stage                            | Professional | 7                    | 40                       | 3.0               | 1.24                       |
|                              |   | Technical    | 9                    | 16                       | 3.0               | 0.54                       |
| (b)                          | Site supervision by resident site staff employed by the consultants | Professional | 50                   | 40                       | 2.1               | 6.22                       |
|                              |   | Technical    | 210                  | 16                       | 2.1               | 8.76                       |
| Total consultants' fees cost |   |              |                      |                          |                   | 16.76                      |

**Notes**

1. A multiplier factor of 3 is applied to the average MPS point to arrive at the full staff cost including the consultants' overheads and profit, as the staff will be employed in the consultants' offices. A multiplier factor of 2.1 is applied in the case of site staff supplied by the consultants. (At 1.4.1997, MPS pt. 40 = \$59,210 p.m. and MPS pt. 16 = \$19,860 p.m).
2. The consultants' fees for construction stage are based on the lump sum fees calculated in accordance with the consultancy agreement the Director of Drainage Services has with the consultants undertaking the design and construction of the project. The costs of resident site staff are based on estimates prepared by the Director of Drainage Services. We will only know the actual man months and actual costs when the construction works have completed.





圖例  
Legend

- - - - - 擬建之污水支渠  
Proposed Branch Sewer
- 擬建之污水幹渠  
Proposed Sewer
- - - - - 擬建之污水渠  
Proposed Rising Main



● 擬建之污水泵房  
(將在第2階段第2期工程建造)  
Proposed Sewage Pumping Station  
(to be constructed under stage 2 phase 2 works)



○ 擬建之污水處理廠和海底排放管  
(將在第2階段第2期工程建造)  
Proposed Sewage Treatment Plant and Submarine Outfall  
(to be constructed under stage 2 phase 2 works)

深井污水收集系統第2階段第1期工程  
SHAM TSENG SEWERAGE, STAGE 2 PHASE 1 WORKS

|          |                                 |      |          |
|----------|---------------------------------|------|----------|
| drawn by | C.W. CHAN                       | date | 20-07-98 |
| approved | C.T. LAM                        | date | 20-07-98 |
| office   | CONSULTANTS MANAGEMENT DIVISION |      |          |

|   |        |
|---|--------|
| PWP NO. 126DS (PART)  |        |
| drawing no.   | scale  |
| DCM 1148  | 1:6000 |
|  DRAINAGE SERVICES<br>DEPARTMENT<br>HONG KONG |        |