

## ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

### HEAD 704 - DRAINAGE

Environmental Protection - Sewerage and sewage treatment  
205DS - Aberdeen, Ap Lei Chau and Pok Fu Lam sewerage

Members are invited to recommend to Finance  
Committee -

- (a) the upgrading of part of **205DS** entitled Aberdeen, Ap Lei Chau and Pok Fu Lam sewerage, stage 1B works” to Category A at an estimated cost of \$530 million in money-of-the-day prices; and
- (b) the retention of the remainder of **205DS** in Category B.

### PROBLEM

The existing sewerage systems in Aberdeen, Ap Lei Chau and Pok Fu Lam do not have adequate capacity to serve these areas.

### PROPOSAL

2. The Director of Drainage Services, with the support of the Secretary

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for Planning, Environment and Lands, proposes to upgrade part of **205DS** to Category A at an estimated cost of \$530 million in money-of-the-day (MOD)

prices for the construction of the Aberdeen, Ap Lei Chau and Pok Fu Lam stage 1B sewerage works.

## PROJECT SCOPE AND NATURE

3. Project **205DS** Aberdeen, Ap Lei Chau and Pok Fu Lam sewerage”, comprising two stages of works, aims at improving the existing sewerage systems in the Aberdeen, Ap Lei Chau and Pok Fu Lam areas. The part of the project we now propose to upgrade to Category A is stage 1B works which comprises -

- (a) the construction of 2.7-kilometre long trunk sewers (525 to 1 500 millimetres in diameter) from Wong Chuk Hang to the Aberdeen preliminary sewage treatment works and 2-kilometre long associated branch sewers (150 to 1 050 millimetres in diameter);
- (b) the demolition and reprovisioning of a sewage pumping station and modification works at the Aberdeen preliminary sewage treatment works;
- (c) the construction of 500-metre long sewers (150 to 525 millimetres in diameter) in Ap Lei Chau; and
- (d) the rectification of expedient connections during the sewers upgrading works.

4. The remainder of **205DS**, comprising the surveys, site investigations, detailed design and construction for the remaining stage 1 works and the stage 2 works, will be retained in Category B. Details of the works are as follows -

- (a) stage 1 works (remainder) -
  - (i) the refurbishment and reprovisioning of sewerage in the Aberdeen Reservoir water gathering ground; and

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- (ii) the upgrading of the Wah Fu and Ap Lei Chau sewage screening plants.
- (b) stage 2 works -
- (i) the upgrading of sewers and the construction of a pumping facility in Shum Wan Road; and
  - (ii) the survey and rectification of expedient connections in Aberdeen, Ap Lei Chau and Pok Fu Lam as well as minor sewerage improvement works in these areas.

## JUSTIFICATION

5. In June 1995, we completed the sewerage master plan study for Aberdeen, Ap Lei Chau and Pok Fu Lam under **149DS** Aberdeen, Ap Lei Chau and Pok Fu Lam sewerage - consultants' fees and investigation". The study identified deficiencies in the existing sewerage systems and recommended improvement measures to the systems in order to provide sufficient capacity to meet the sewage flow demand of a population of about 290 000 by 2011 in these areas.

6. The trunk sewers from Wong Chuk Hang (along Wong Chuk Hang Road, Aberdeen Praya Road and Tin Wan Praya Road) to the Aberdeen preliminary sewage treatment works and the associated branch sewers (in Heung Yip Road, Nam Long Shan Road, Yip Kan Street and Shek Pai Wan Road), which were built many years ago, do not have sufficient capacity to deal with the current sewage flow which has increased in line with the development in the areas over the years. Furthermore, since the gradient of these sewers is not steep, solid particles may settle in the sewers, causing siltation and further reducing their capacity. More seriously, spillage of sewage through manholes may occur and cause flooding, environmental nuisance and inconvenience to road users. We need to reconstruct these sewers at a steeper gradient to facilitate self-cleansing of the sewers and to provide sufficient capacity to cater for the sewage flow demand up to 2011.

7. To handle the sewage coming from steeper sewers and to cope with the increasing sewage flow demand up to 2011, we need to reconstruct the sewage

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pumping station and to upgrade the facilities in the Aberdeen preliminary sewage treatment works.

8. With regard to the sewers in Ap Lei Chau, we have identified that the existing sewers around Ap Lei Chau Main Street and two sections of sewers at Lei Tung Estate Road and Lei Nam Road are susceptible to siltation. We have also observed that the sewers around Ap Lei Chau Main Street are, at some locations, connected to the stormwater drains, allowing via the drains direct discharge of sewage to the sea, without treatment. To rectify the situation, we plan to reconstruct these sewers at a steeper gradient and cut off the connections between the sewers and the stormwater drains.

### FINANCIAL IMPLICATIONS

9. We estimate the capital cost of the proposed works to be \$530 million in MOD prices (see paragraph 10 below), with details as follows -

	<b>\$ million</b>
(a) Trunk sewers from Wong Chuk Hang to the Aberdeen preliminary sewage treatment works and associated branch sewers	176.7
(b) Sewage pumping station and modification works in the Aberdeen preliminary sewage treatment works	131.3
(i) civil engineering works	89.2
(ii) electrical and mechanical works	42.1
(c) Sewers in Ap Lei Chau and rectification of expedient connections	6.4
(d) Consultants' fees	50.2

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(i)	construction stage	2.2	
(ii)	resident site staff cost	48.0	
(e)	Contingencies	33.6	
	Sub-total	398.2	(at December 1997 prices)
(f)	Inflation allowance	131.8	
	Total	530.0	(in MOD prices)

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

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

Year	\$ million (Dec 1997)	Price Adjustment Factor	\$ million (MOD)
1999 - 2000	60.0	1.14878	68.9
2000 - 2001	110.0	1.24642	137.1
2001 - 2002	160.6	1.35237	217.2
2002 - 2003	41.1	1.46732	60.3
2003 - 2004	29.2	1.59204	46.5
	400.9		530.0

11. We have derived the MOD estimate on the basis of the Government's forecasts of trend labour and construction prices for the period 1999 to 2004. We will tender the electrical and mechanical works under a lump sum contract because we can clearly define the scope of major part of the works. The contract will allow for adjustments to the tender price due to inflation as the contract period will exceed 21 months.

12. We will tender the civil engineering works under a standard remeasurement contract because we are uncertain about the existence and the exact locations of underground utilities such as electric cables, telephone lines and water mains. The contract will also allow for adjustments to the tender price due to inflation as the contract period will exceed 21 months.

13. We estimate the additional annually recurrent expenditure arising from the proposed works to be \$1.14 million.

14. Based on the current level of expenditure on operation and maintenance of sewerage facilities, the proposed works by itself would lead to an increase in the recurrent cost of providing sewage services of about 0.2 % which will need to be taken into account in determining sewage charges.<sup>1</sup>

## **PUBLIC CONSULTATION**

15. We consulted the Works Projects Committee of the Provisional Southern District Board on 15 September 1997 on the whole stage 1 works, including the proposal for temporary traffic arrangements and environmental mitigation measures to be adopted during construction. Members of the Provisional District Board supported the implementation of the proposed works.

## **ENVIRONMENTAL IMPLICATIONS**

16. The Director of Environmental Protection completed an environmental review in 1995 and concluded that the project would have no major  
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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 will consult the relevant LegCo Panels before any decision is made.

long term environmental impact. No environmental impact assessment is therefore necessary. We will control noise, dust and site run-off during construction to within established standards and guidelines through the implementation of mitigation measures in the relevant contracts.

## LAND ACQUISITION

17. This project does not require any land acquisition.

## BACKGROUND INFORMATION

18. In September 1995, we upgraded **205DS** to Category B for the sewerage improvement works for Aberdeen, Ap Lei Chau and Pok Fu Lam. We plan to carry out the works in two stages.

19. To facilitate the implementation of **205DS** in conjunction with the road works, we have packaged the stage 1 works into sub-stages. In February 1998, Finance Committee approved the upgrading of part of **205DS** to Category A, as **322DS** Aberdeen, Ap Lei Chau and Pok Fu Lam sewerage, stage 1A works” with an approved project estimate of \$71.8 million in MOD prices for the stage 1A works. We started these works in July 1998 for completion in September 2001.

20. We have completed the detailed design and tender documents for the stage 1B works. We plan to start the works in March 1999 for completion in December 2001.

21. We plan to start the remaining stage 1 works in late 2000 for completion in mid 2002. We also plan to start the stage 2 works in 2001 for completion in 2004.

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(PWSC0012/WIN1)



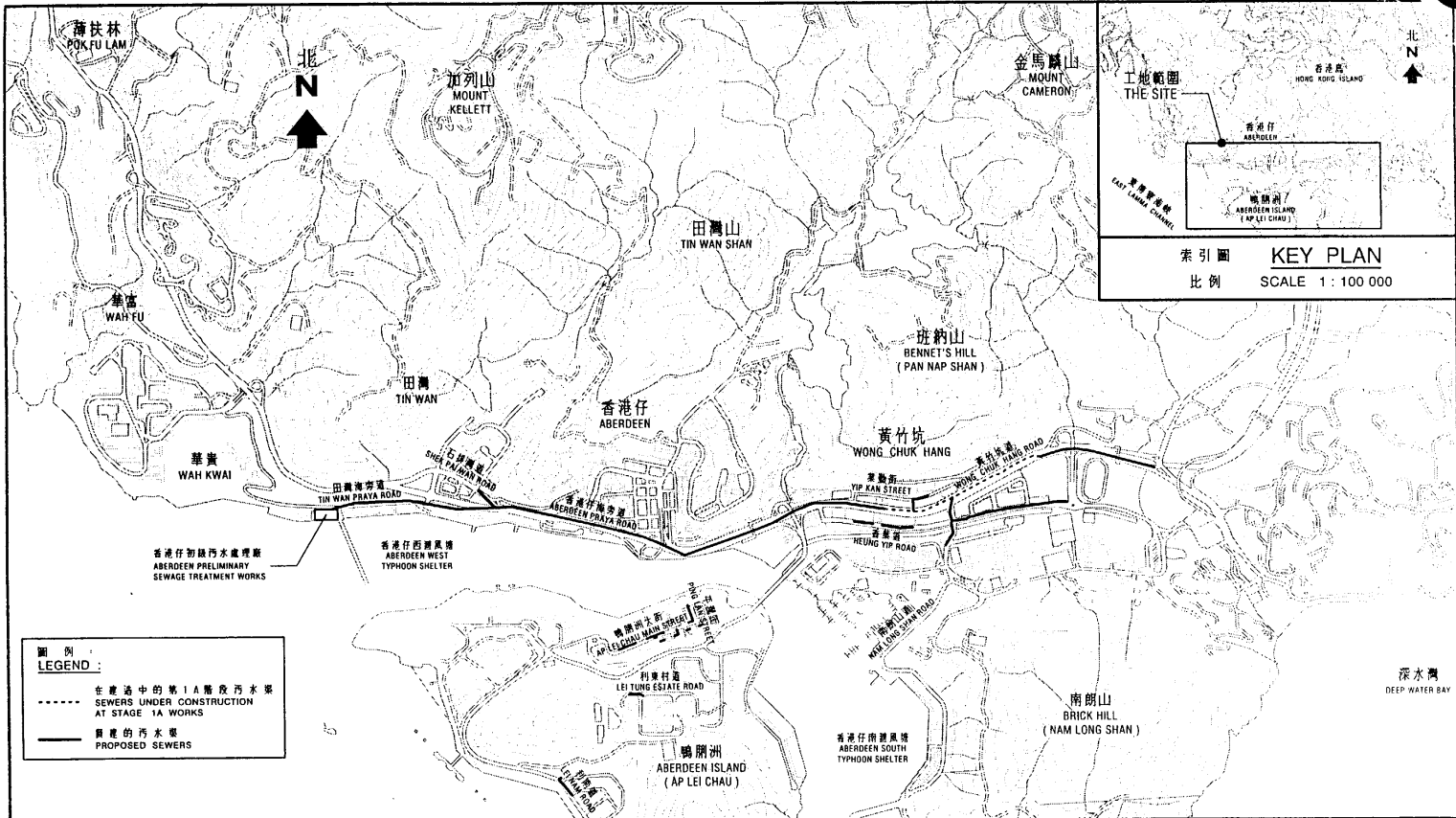
205DS - Aberdeen, Ap Lei Chau and Pok Fu Lam sewerage

**Breakdown of estimates for consultants' fees**

Consultants' staff costs			Estimated man- months	Average MPS salary point	Multiplier factor	Estimated fee (\$ million)
(a)	Consultants' fees for construction stage	Professional	7.5	40	3.0	1.33
		Technical	14.5	16	3.0	0.86
(b)	Site supervision by resident site staff employed by the consultants	Professional	167.5	40	2.1	20.83
		Technical	651.0	16	2.1	27.15
Total consultants' staff costs						50.17

**Notes**




- (1) A multiplier factor of 3 is applied to the average MPS point to arrive at the full staff costs including the consultants' overhead 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 1.4.97, MPS pt. 40 = \$59,210 p.m. and MPS pt. 16 = \$19,860 p.m.)
- (2) The figures given above are based on actual fee proposal from the consultants undertaking the investigations, design and construction supervision.



**圖例**  
**LEGEND:**

----- 在建造中的第1A階段污水渠  
SEWERS UNDER CONSTRUCTION  
AT STAGE 1A WORKS

———— 擬議的污水渠  
PROPOSED SEWERS

<b>TITLE</b> ABERDEEN, AP LEI CHAU, POK FU LAM SEWERAGE -- STAGE 1B 香港仔, 鴨脷洲及薄扶林污水收集系統第1B階段工程	<b>DRAWN BY</b>  M. F. LING	<b>DATE</b> 14. 8. 98	<b>DRAWING NO.</b> DPM/205DS/0002	<b>SCALE</b> 1 : 20 000 OR AS SHOWN	
	<b>APPROVED</b>  W. C. LAM	<b>DATE</b> 14. 8. 98	 香港特別行政區政府渠務署 DRAINAGE SERVICES DEPARTMENT GOVERNMENT OF THE HONG KONG SPECIAL ADMINISTRATIVE REGION		
	<b>OFFICE</b> 工程管理部 Project Management Division				