

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

Head 704 - DRAINAGE

Environmental Protection - Sewerage and sewage treatment

143DS – Central, Western and Wan Chai West sewerage, stage 2 works

Members are invited to recommend to Finance Committee -

- (a) the upgrading of part of **143DS**, entitled “Central, Western and Wan Chai West sewerage, stage 2 phase 1 works” to Category A, at an estimated cost of \$202.0 million in money-of-the-day prices; and
- (b) the retention of the remainder of **143DS**, retitled “Central, Western and Wan Chai West sewerage, stage 2 phase 2 works” in Category B.

PROBLEM

Existing sewers in Central, Western and Wan Chai West do not have adequate capacity to cope with the increasing sewage flow being generated in these areas.

/PROPOSAL

PROPOSAL

2. The Director of Drainage Services, with the support of the Secretary for the Environment and Food, proposes to upgrade part of **143DS** to Category A at an estimated cost of \$202.0 million in money-of-the-day (MOD) prices for the construction of the Central, Western and Wan Chai West sewerage, stage 2 phase 1 works.

PROJECT SCOPE AND NATURE

3. The part of **143DS** which we propose for upgrading to Category A is phase 1 of the stage 2 works which comprises the construction of about 5.4 kilometres of sewers (with diameters ranging from 225mm to 1 350mm) in Central, Western and Wan Chai West. We intend to start these works in August 2001 for completion in January 2005. A location plan showing the proposed works is at Enclosure 1.

4. The remainder of **143DS** for retention in Category B is phase 2 of the stage 2 works which comprises the less urgent sewerage works in Central, Western and Wan Chai West, including the decommissioning of the Wan Chai West sewage screening plant. The works will be implemented in 2002 for completion in 2006.

JUSTIFICATION

5. The majority of the sewers in Central, Western and Wan Chai West were built 30 years ago and need replacement. We also need to upgrade some of the sewers in the districts to cope with the additional sewage flows from new developments. These developments include the Land Development Corporation sites near Queen Street and Wan Chai Road (by 2003), the Central Reclamation Phase 3 site (by 2006), the residential development site near Lung Wah Street (by 2007) and the Wan Chai Development Phase 2 site (by 2009) with an estimated total residential population of 27 000 and an estimated non-residential population of 60 000. The existing dense development in the area, coupled with heavily used and narrow roads, preclude construction of all new sewerage systems at the same time. Phased construction is needed to avoid creating severe disruption to residents and traffic.

/6.

6. The comprehensive sewerage improvement scheme in Central, Western and Wan Chai West is being carried out in two stages as follows -

(a) Stage 1

- (i) construction of 5.9 kilometres of trunk sewers along the coastal areas;
- (ii) construction of two pumping stations at the existing Central and Wan Chai East sewage screening plants; and
- (iii) upgrading and improvement of 19.0 kilometres of branch sewers on the hillside in the upper catchment, e.g. the Mid-levels.

(b) Stage 2

- (i) construction of about 20.4 kilometres of branch sewers along the coastal areas in the lower catchment; and
- (ii) decommissioning of the Wan Chai West sewage screening plant.

Stage 1 works

7. We started the stage 1 works under **282DS** "Central, Western and Wan Chai West sewerage, stage 1 works" in September 1996 for completion in 2003. As at December 2000, we have substantially completed the construction works relating to the trunk sewers. We have also completed the upgrading and improvement of about 13.0 kilometres of branch sewers.

Stage 2 works

8. With the progressive completion of stage 1 works, it is important to proceed with the stage 2 works to meet future demands arising from all existing and planned developments in the districts. To minimize possible disruption to traffic, we plan to construct stage 2 works in two phases as follows -

/(a)

(a) Stage 2, phase 1

These include the following more urgent sewerage works -

- (i) new sewers for connecting the existing sewers to the trunk system;
- (ii) upgrading and rehabilitating some of the older sewers with critical capacity and ageing problems; and
- (iii) rectifying the associated expedient connections¹ in the old sewers.

(b) Stage 2, phase 2

These cover the less urgent sewerage works, including the decommissioning of the Wan Chai West sewage screening plant.

9. We have completed the traffic impact assessment for the stage 2 phase 1 project and formulated proposed temporary traffic schemes during construction of the sewers. We will maintain road access as far as possible. Construction works in busy road sections will be carried out only in non-peak hours. We will also use the more expensive trenchless method² to construct sewers on busy roads such as Des Voeux Road West, Queen's Road West and Connaught Road West.

10. To minimise possible delays to the project due to unforeseen underground utilities, we will reconfirm, at the beginning of the contract, the exact locations of the utilities with the utilities undertakers, deploy non-destructive detection techniques and if necessary, excavate trial pits or trenches. We will also control the sequence of the sewerage works to cater for interface issues with underground utilities.

/FINANCIAL

¹ Expedient connections are improper connections which divert foul sewage flows into storm drains and storm-water flows into foul sewers. Through these connections, foul sewage can flow into the storm-water drainage system and pollute environmental waters. Storm-water will also enter the sewerage system through these connections and reduce the capacity of the sewage collection and treatment system for collecting and treating sewage.

² Trenchless method refers to the use of micro-tunnelling or boring techniques to construct underground sewers and drain pipes without opening up the road surface. Although the trenchless method is about four times more expensive than the conventional open cut method, the former method, if feasible, is preferred to for carrying out works at busy road sections since it will greatly reduce the need for road opening and thus minimize disruption to traffic during the construction phase.

FINANCIAL IMPLICATIONS

11. We estimate the capital cost of the proposed stage 2 phase 1 works to be \$202.0 million in MOD prices (see paragraph 12 below), made up as follows -

	\$million	
(a) Construction of sewers	146.1	
(i) by trenchless method (about 0.2km)	23.6	
(ii) by open cut method (about 5.2km)	122.5	
(b) Consultants' fees for construction stage	1.4	
(c) Resident site staff cost	22.7	
(d) Environmental mitigation measures	1.6	
(e) Contingencies	12.3	
	<hr/>	
Sub-total	184.1	(in September 2000 prices)
(f) Provision for price adjustment	17.9	
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Total	202.0	(in MOD prices)
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A breakdown of the estimate for consultants' fees and resident site staff cost is at Enclosure 2.

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

/2001

Year	\$ million (Sept 2000)	Price adjustment factor	\$ million (MOD)
2001 – 2002	10.2	1.02550	10.5
2002 – 2003	50.7	1.05627	53.6
2003 – 2004	48.5	1.08795	52.8
2004 – 2005	47.1	1.12059	52.8
2005 – 2006	15.6	1.15421	18.0
2006 – 2007	12.0	1.18884	14.3
	<hr/> 184.1 <hr/>		<hr/> 202.0 <hr/>

13. We have derived the MOD estimate on the basis of Government's latest forecast of trend labour and construction prices for the period 2001 to 2007. We will tender the works under a re-measurement contract taking into account that the amount of works involved may vary with the actual ground conditions and underground utilities affected. As the contract period will exceed 21 months, we will allow provision for price adjustment to the tender price.

14. The proposed work will not give rise to additional recurrent expenditure.

PUBLIC CONSULTATION

15. We consulted the then Central and Western District Board and Wan Chai District Board on the project **143DS** (i.e. both stage 1 and stage 2 works) in May 1993 and August 1993 respectively. The then Central and Western District Board requested Government to carry out the project immediately while the then Wan Chai District Board had no objection to the proposed works. With regard to the implementation of stage 2 works of **143DS**, we consulted the Central and Western District Council and the Wan Chai District Council on 16 November 2000 and 28 November 2000 respectively. Both Councils had no objection to the implementation of the proposed works. /16.

16. We consulted the Legislative Council Panel on Environmental Affairs on the proposed works on 2 January 2001. Some Members asked Government to improve its existing procedure so that those who would be affected by the sewerage works could be better informed of the works programme and make necessary arrangements accordingly. Having taking into account Members' views, the Drainage Services Department (DSD) undertakes to consult the relevant District Councils again on substantial temporary traffic diversion schemes for the proposed works prior to their commencement. DSD will also instruct the contractor to inform the affected shop operators and the management authorities of adjacent buildings of the details of the sewerage works and the road closures either verbally or by notification leaflets prior to the commencement of the works. During the execution of works, notice boards will be displayed on site to explain the reason of road closures and the proposed completion date of the concerned section of works. In case there is substantial slippage of works, DSD will instruct the contractor to inform the affected parties and to explain to them the reason. In addition, 24-hour hotlines will be set up for the public to make enquiries or lodge complaints.

17. Some Members also suggested that the Government should consider recovering from the utility companies any prolongation cost which may be incurred by the project due to inaccurate utility records. Utility companies have difficulties in ensuring the accuracy of most utility records which were prepared a long time ago when the utilities were first laid. They issue the record drawings with a general disclaimer, i.e. the utility locations shown on the drawings provided are indicative only and must be confirmed on site by actual excavation. We also sought legal advice which confirmed that since the utility records supplied were not meant to be taken as accurate locations of utility services, it is not possible for Government to recover its loss against the utility companies for not giving accurate information to Government. As a long-term solution to the problem of inaccurate utility records, the Government will establish a computerized extranet system for the expeditious circulation of utility records amongst five utility companies, the DSD, the Water Supplies Department and the Highways Department. The accuracy of utility records is expected to improve over time as more and more aged buried utilities are replaced and more accurately documented.

18. Members also noted that we would submit the proposal to the Public Works Subcommittee for discussion in February 2001.

/ENVIRONMENTAL

ENVIRONMENTAL IMPLICATIONS

19. We completed an Environmental Impact Assessment (EIA) study in May 1996, which concluded that there would be no long-term environmental impacts exceeding established criteria. For short term impacts during the construction phase, we will avoid night works and control noise, dust and site run-off nuisance to comply with the established standards and guidelines through the implementation of appropriate mitigation measures, such as the use of noise barriers and silenced construction plants to reduce noise generation, water-spraying to reduce emission of fugitive dust and strict control on diversion of sewage flows in the works contracts. An environmental monitoring and audit programme would be implemented to ensure compliance with the EIA recommendations.

20. We estimate the cost of implementing the environmental mitigation measures to be \$1.6 million in September 2000 prices. We have included this in the overall project estimate.

21. We estimate that about 27 000 cubic metres (m³) of construction and demolition (C&D) materials will be generated by the project. Of these, about 22 000 m³ (81.5%) will be reused on site, 3 500 m³ (13.0 %) will be reused as fill in public filling areas and 1 500 m³ (5.5%) will be disposed of at landfills. We have considered in the planning and design stages ways of reducing the generation of C&D materials as far as possible. We will require the contractor to implement necessary measures to minimize the generation of C&D materials and to reuse C&D materials as fill material as far as possible. We will control disposal of public fill and C&D waste to designated public filling facility and landfills respectively through a trip-ticket system. We will record the disposal and reuse of C&D materials for monitoring purposes.

LAND ACQUISITION

22. The proposed works do not require land acquisition.

/BACKGROUND

BACKGROUND INFORMATION

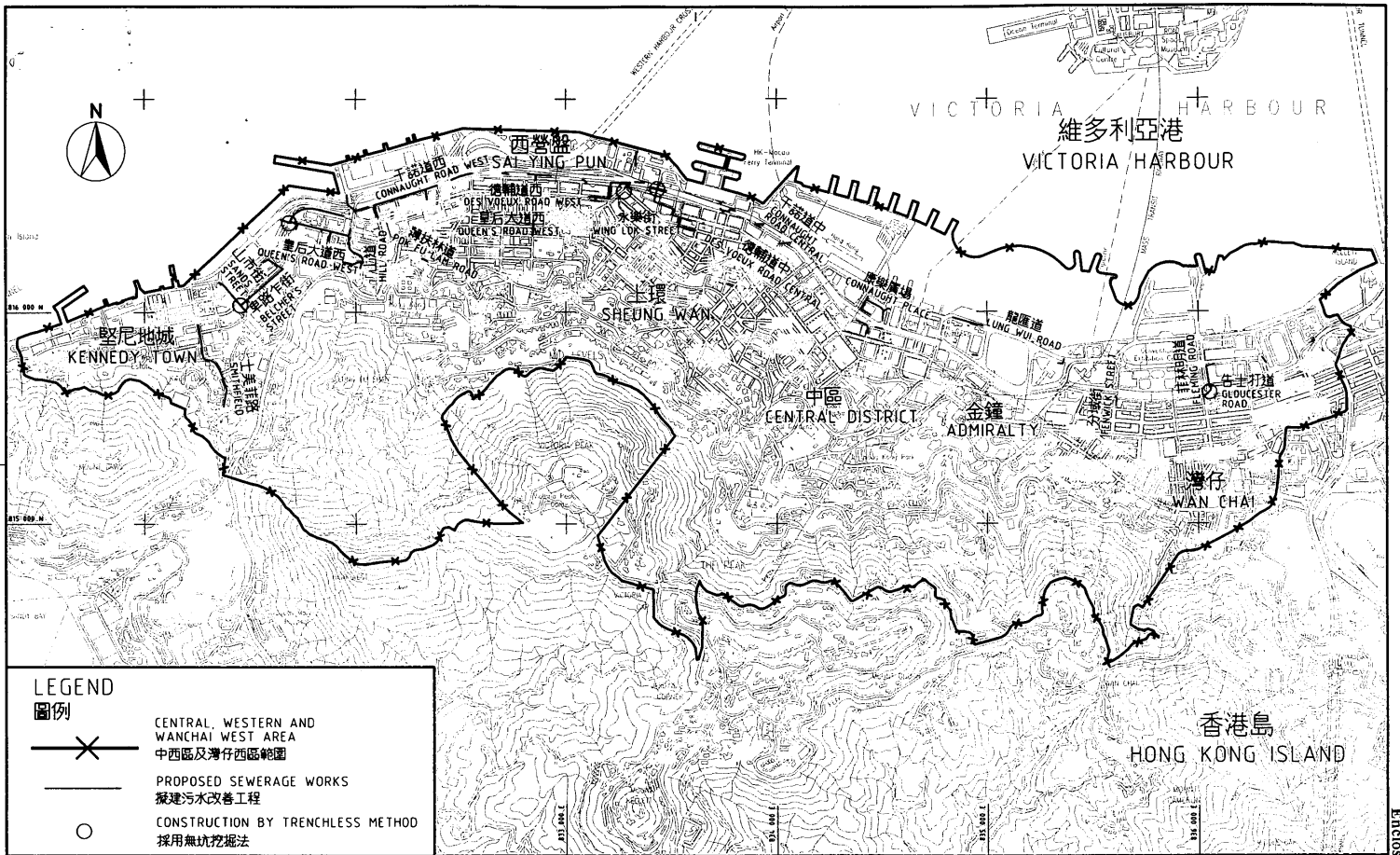
23. We completed a comprehensive study of the sewerage systems in Central, Western and Wan Chai West under **111DS** “Central, Western and Wan Chai West sewerage master plan study – consultants’ fees and investigation” in August 1993.

24. We upgraded **143DS** to Category B in March 1994 to implement the sewerage works recommended under the study. In April 1994, we upgraded part of **143DS** to Category A as **176DS** “Central, Western and Wan Chai West sewerage, consultants’ fees and investigations” for engaging consultants to carry out detailed design, investigation, environmental and traffic impact assessments for the whole project.

25. In July 1996, we upgraded part of **143DS** to Category A as **282DS** “Central, Western and Wan Chai West sewerage, stage 1 works” to construct the trunk sewers, two new sewage pumping stations and the critical sewers in the upper catchment of Central, Western and Wan Chai West.

26. We estimate that the project will create some 105 new jobs during the construction stage. These will comprise 25 professional/technical staff and 80 labourers, totalling 4 400 man-months.

Environment and Food Bureau
February 2001



DRAINAGE SERVICES 渠務署 DEPARTMENT	PROJECT 項目名稱	中西區及灣仔西污水收集系統改善工程第二階段第一期 CENTRAL, WESTERN & WANCHAI WEST SEWERAGE STAGE 2, PHASE 1		SCALE 比例	NTS	DATE 日期	DEC 00	
	PROJECT MANAGEMENT 工程管理部 DIVISION	TITLE 圖表名稱	4143DS 項目之整體工程 PROJECT WORKS UNDER 4143DS		CHECKED BY 繪畫	TNC	DRAWN BY 繪畫	TSG
				PROJECT 項目號	91194	DRG NO 圖號	111	REV A

Enclosure 1 附件 1

143DS – Central, Western and Wan Chai West sewerage, stage 2 works

Breakdown of estimates for consultants' fee

Consultants' staff cost		Estimated man-month	Average MPS salary point	Multiplier factor	Estimated fee (\$million)	
(a)	Consultants' fees for construction stage	Professional	8	38	2.4	1.1
		Technical	7	14	2.4	0.3
(b)	Site supervision by resident site staff employed by the consultants	Professional	93	38	1.7	9.1
		Technical	420	14	1.7	13.6
					24.1	

Notes

1. A multiplier factor of 2.4 is applied to the average MPS point to arrive at the full staff costs including the consultants' overheads and profit as the staff will be employed in the consultants' offices. A multiplier factor of 1.7 is applied in the case of site staff supplied by the consultants. (At 1.4.2000, MPS pt. 38 = \$57,525 per month and MPS pt. 14 = \$19,055 per month.)
2. The estimated consultants' fees for construction stage are based on the lump sum fees calculated in accordance with the consultancy agreement which the Director of Drainage Services has agreed 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 after the completion of the construction works.

