

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

Head 704 – DRAINAGE

Environmental Protection - Sewerage and sewage treatment 346DS – Upgrading of Tuen Mun sewerage, phase 1

Members are invited to recommend to Finance Committee –

- (a) the upgrading of part of **346DS**, entitled “Sewerage in western Tuen Mun”, to Category A at an estimated cost of \$ 1,340.0 million in money-of-the-day prices; and
- (b) the retention of the remainder of **346DS** in Category B.

PROBLEM

Sewage from unsewered villages or areas in Tuen Mun is a source of water pollution to nearby water courses and Tuen Mun River Channel, and the existing sewerage in Tuen Mun does not have adequate capacity to cope with the sewage from the unsewered villages and the forecast sewage flow generated in the area.

PROPOSAL

2. The Director of Drainage Services, with the support of the Secretary for the Environment, proposes to upgrade part of **346DS** to Category A at an estimated cost of \$1,340.0 million in money-of-the-day (MOD) prices for expanding the sewerage in western Tuen Mun area.

/PROJECT

PROJECT SCOPE AND NATURE

3. The scope of the part of **346DS** which we propose to upgrade to Category A comprises the construction of -

- (a) about 7.0 kilometres (km) of trunk sewers along Ming Kum Road, Tsing Wun Road, Lung Mun Road and Tsing Lun Road;
- (b) a new sewage pumping station at the junction of Wong Chu Road and Tsing Wun Road;
- (c) about 7.0 km of village sewers at Tseng Tau Sheung Tsuen and a part of Tsing Shan Tsuen; and
- (d) ancillary works.

— A location plan showing the proposed works is at Enclosure 1.

4. We plan to start construction in December 2009 for completion in June 2014. The proposed works will be completed in phases.

JUSTIFICATION

5. The Environmental Protection Department (EPD) completed a study, entitled “Review of Tuen Mun and Tsing Yi Sewerage Master Plans” (the Review) in January 2003, to assess whether the existing sewerage in Tuen Mun catchment has enough capacity to cater for the planned developments and forecast population change. The Review recommended, amongst others, construction of village sewerage for 21 unsewered villages or areas, trunk and branch sewers, and sewage pumping stations in Tuen Mun.

6. The Drainage Services Department employed consultants in January 2007 to carry out investigation, design and construction supervision of the above sewerage works recommended in the Review. The consultants have conducted an overall review on the sewerage in Tuen Mun and confirmed an imminent need of the proposed works to tie in with the population growth and future developments in the areas. We consider that the works should be implemented as soon as possible to address the pollution problem and to improve the flow capacity of the sewerage in Tuen Mun. The village sewerage at Tseng Tau Sheung Tsuen and a part of Tsing Shan Tsuen, together with the trunk sewerage mentioned in

paragraph 3 above do not require land acquisition and can be implemented ahead of the others. We therefore propose to proceed with the proposed sewerage works mentioned in paragraph 3 above to improve the flow capacity of the sewerage in Tuen Mun and to implement village sewerage for improving the aquatic environment.

7. The downstream end of the proposed trunk sewer will be connected to the Pillar Point sewage treatment works (STW). The Pillar Point STW, which currently receives sewage flow of about 170 000 m³ per day, will be upgraded, under **329DS** "Upgrading of Pillar Point sewage treatment works", from an existing treatment capacity of 215 000 cubic metres (m³) per day to 241 000 m³ per day. The upgraded Pillar Point STW, which will be commissioned by February 2013, will have adequate capacity to treat the additional sewage flow arising from **346DS** and from other Tuen Mun village sewerage projects to be implemented.

FINANCIAL IMPLICATIONS

8. We estimate the cost of the proposed works to be \$1,340.0 million in MOD prices (see paragraph 9 below), made up as follows –

| | \$ million |
|---|-------------------|
| (a) Trunk sewers | 780.9 |
| (b) Sewage pumping station | 119.0 |
| (i) civil works | 82.7 |
| (ii) electrical and mechanical (E&M) works | 36.3 |
| (c) Village sewers | 65.8 |
| (d) Environmental mitigation measures | 31.0 |
| (e) Ancillary works | 1.2 |
| (f) Consultants' fees | 11.6 |
| (i) contract administration | 3.3 |
| (ii) management of resident site staff | 8.3 |

/(g)

| | | \$ million |
|-----|-------------------------------------|---------------------------------------|
| (g) | Remuneration of resident site staff | 89.0 |
| (h) | Contingencies | <u>110.7</u> |
| | Sub-total | 1,209.2 (in September 2008 prices) |
| (i) | Provision for price adjustment | 130.8 |
| | Total | <u>1,340.0</u> (in MOD prices) |

— A detailed breakdown of the estimates for the consultant's fees and resident site staff costs by man-months is at Enclosure 2.

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

| Year | \$ million (September 2008) | Price adjustment factor | \$ million (MOD) |
|-------------|--|--|-----------------------------|
| 2009 – 2010 | 15.0 | 1.03500 | 15.5 |
| 2010 – 2011 | 162.0 | 1.05570 | 171.0 |
| 2011 – 2012 | 270.0 | 1.07681 | 290.7 |
| 2012 – 2013 | 235.0 | 1.09835 | 258.1 |
| 2013 – 2014 | 220.0 | 1.12032 | 246.5 |
| 2014 – 2015 | 177.0 | 1.15113 | 203.8 |
| 2015 – 2016 | 130.2 | 1.18566 | 154.4 |
| | <u>1,209.2</u> | | <u>1,340.0</u> |

10. We have derived the MOD estimate on the basis of the Government's latest forecast of trend rate of change in the prices of public sector building and construction output for the period from 2009 to 2016. We will tender the civil engineering works under re-measurement contracts because of the uncertain underground conditions that may affect the alignments of the sewers as well as the depth of the foundations of the pumping station. The contracts will provide for price adjustment. We will tender the E&M works under a lump-sum contract because of its well defined scope of works.

11. We estimate the annual recurrent expenditure arising from the proposed works to be \$5.6 million. This has been taken into account in determining the sewage charges for the years 2008-09 to 2017-18 stipulated in the Sewage Services (Sewage Charge) Regulation (Cap. 463A).

PUBLIC CONSULTATION

12. We consulted Heung Yee Kuk on the overall village sewerage programme on 27 April 2009. Heung Yee Kuk supported the village sewerage programme, including this project. We further consulted the Tuen Mun District Council on **346DS** on 5 May 2009. The Tuen Mun District Council supported the implementation of the project.

13. We consulted the Legislative Council Panel on Environmental Affairs on 25 May 2009. Members raised no objection to our plan to submit the funding proposal to the Public Works Subcommittee. Nevertheless, some Members requested the Administration to provide information on the programme and costs of the remaining sewerage works under **346DS** together with its respective site plan. We submitted a reply to the Panel on 2 June 2009.

ENVIRONMENTAL IMPLICATIONS

14. The proposed sewage pumping station at the junction of Wong Chu Road and Tsing Wun Road is a designated project under the Environmental Impact Assessment (EIA) Ordinance. Having regard to the project profile, the Director of Environmental Protection is satisfied that the environmental impact of the proposed pumping station can meet the requirements of the Technical Memorandum on EIA Process. With the consent of the Secretary for the Environment, permission to apply directly for an environmental permit for the project was granted in January 2009. We obtained an environmental permit in February 2009 for the construction and operation of the sewage pumping station. We shall implement the mitigation measures set out in the environmental permit.

15. Apart from the proposed sewage pumping station, the other proposed works mentioned in paragraph 3 above are not designated projects under EIA Ordinance. We have completed a Preliminary Environmental Review for the works and concluded that the works would not cause any long term adverse environmental impacts.

16. We have included in paragraph 8(d) above a sum of \$31.0 million (in September 2008 prices) in the project estimate for implementation of the environmental mitigation measures.

17. For short term impacts during construction of the proposed works, we will control noise, dust and site run-off to levels within the established standards and guidelines through implementation of mitigation measures, such as the use of silenced construction plant to reduce noise generation, water-spraying to reduce dust emission, and proper treatment of site run-off before discharge. We will also carry out close site inspections to ensure that these recommended mitigation measures and good site practices are properly implemented on site.

18. We have considered in the planning and design stages ways to reduce the generation of construction waste where possible, including optimization of the sewerage design to minimize the extent of excavation and to avoid as far as practicable demolition of existing structures. In addition, we will require the contractor to reuse inert construction waste (e.g. excavated soil) on site or in other suitable construction sites as far as possible, in order to minimize the disposal of inert construction waste to public fill reception facilities¹. We will encourage the contractor to maximize the use of recycled or recyclable inert construction waste, as well as the use of non-timber formwork to further minimize the generation of construction waste.

19. We will also require the contractor to submit for approval a plan setting out the waste management measures, which will include appropriate mitigation means to avoid, reduce, reuse and recycle inert construction waste. We will ensure that the day-to-day operations on site comply with the approved plan. We will require the contractor to separate the inert portion from non-inert construction waste on site for disposal at appropriate facilities. We will control the disposal of inert construction waste and non-inert construction waste to public fill reception facilities and landfills respectively through a trip-ticket system.

/20.

¹ Public fill reception facilities are specified in Schedule 4 of the Waste Disposal (Charges for Disposal of Construction Waste) Regulation. Disposal of inert construction waste in public fill reception facilities requires a licence issued by the Director of Civil Engineering and Development.

20. We estimate that the proposed works will generate in total about 349 300 tonnes of construction waste. Of these, we will reuse about 201 900 tonnes (58%) on site and deliver 144 600 tonnes (41%) of inert construction waste to public fill reception facilities for subsequent reuse. In addition, we will dispose of 2 800 tonnes (1%) of non-inert construction waste at landfills. The total cost for accommodating the construction waste at public fill reception facilities and landfill sites is estimated to be about \$4.3 million for this project (based on a unit cost of \$27/tonne for disposal at public fill reception facilities and \$125/tonne² at landfills).

HERITAGE IMPLICATIONS

21. The proposed works will not affect any heritage site, i.e. all declared monuments, proposed monuments, graded historic sites/buildings, sites of archaeological interest and Government historic sites identified by the Antiquities and Monuments Office.

LAND ACQUISITION

22. The proposed works do not require any land acquisition.

BACKGROUND INFORMATION

23. In January 2003, the EPD completed the Review which assessed the adequacy of the existing sewerage system in Tuen Mun and Tsing Yi for meeting future demands. It recommended, amongst others, implementation of the sewerage works mentioned in paragraphs 3. Based on the result of the Review, we upgraded **346DS** “Upgrading of Tuen Mun sewerage, phase 1” to Category B in October 2005.

24. In January 2007, we engaged consultants to carry out investigations and design for **346DS** at an estimated cost of \$14.3 million in MOD prices. We charged this amount to block allocation **Subhead 4100DX** “Drainage works, studies and investigations for items in Category D of the Public Works Programme”. We have completed the detailed design of the proposed works mentioned in paragraph 3 above.

/25.

² The estimate has taken into account the cost for developing, operating and restoring the landfills after they are filled and the aftercare required. It does not include the land opportunity cost for existing landfill sites (which is estimated at \$90/m³), nor the cost to provide new landfills (which is likely to be more expensive) when the existing ones are filled.

25. In October 2007, we upgraded part of **346DS** to Category A as **360DS** “Sewerage at Tseng Tau Chung Tsuen, Tuen Mun” at an estimated cost of \$33.0 million in MOD prices. The construction works commenced in December 2007 for completion in October 2010.

26. The remainder of **346DS** proposed for retention in Category B involves the construction of sewerage and local sewage pumping stations to collect sewage from 19 unsewered villages or areas. Design is in progress.

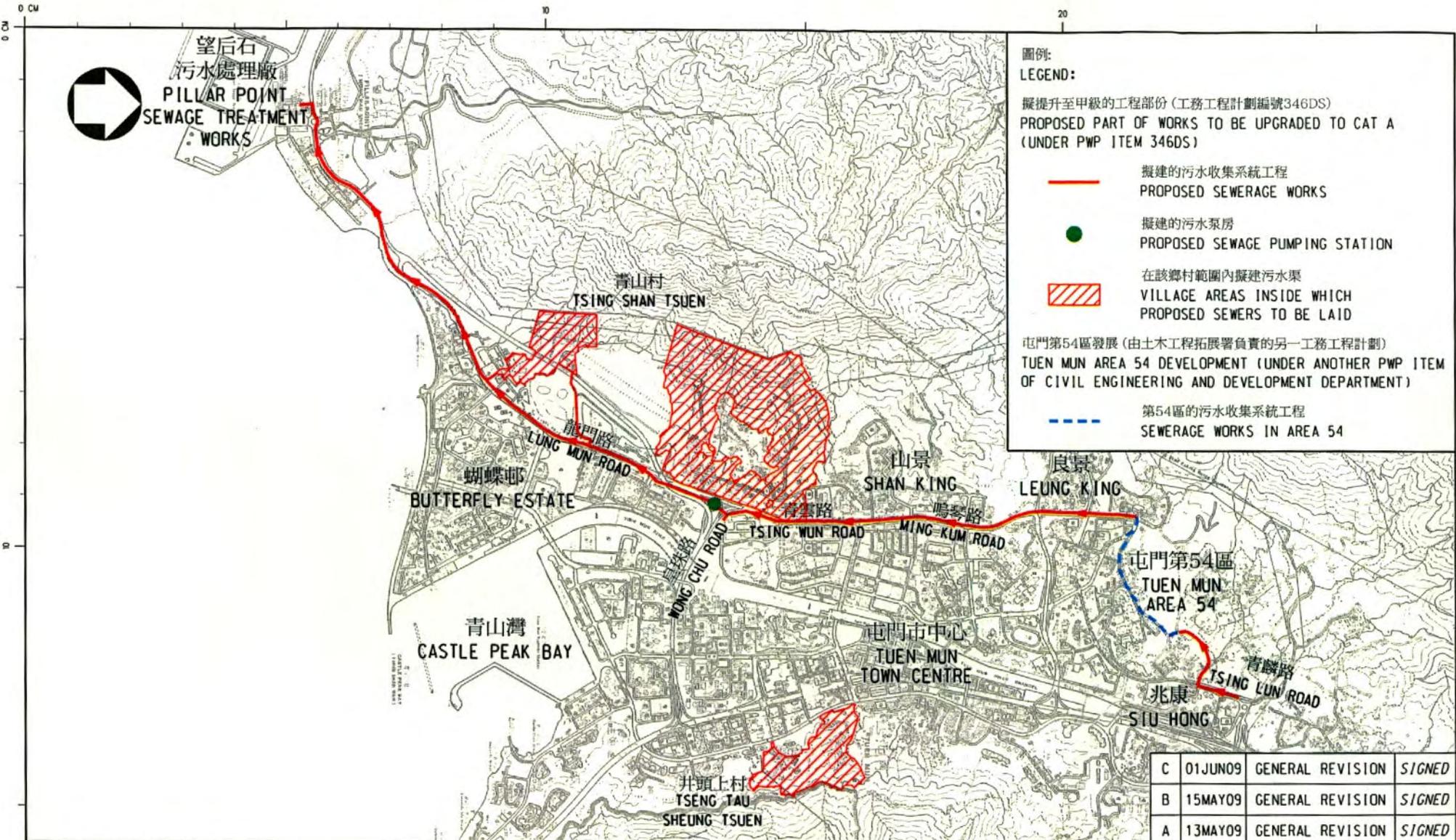
27. The proposed works will involve removal of 64 trees, including one tree to be felled and 63 trees to be replanted within the project site. All trees to be removed are not important trees³. We will incorporate planting proposals as part of the project, including estimated quantities of 63 trees and 1 000 square metres of grassed area.

28. We estimate that the proposed works will create about 380 jobs (304 for labourers and another 76 for professional/technical staff), providing a total employment of 18 400 man-months.

Environment Bureau
June 2009

³ “Important trees” refer to trees in the Register of Old and Valuable Trees, or any other trees that which meet one or more of the following criteria –

- trees of 100 years old or above;
- trees of cultural, historical or memorable significance e.g. Fung Shui trees, trees as landmark of monastery or heritage monument, and trees in memory of important persons or event;
- trees of precious or rare species;
- trees of outstanding form (taking account of overall tree sizes, shape and any special features) e.g. trees with curtain like aerial roots, trees growing in unusual habitat; or
- trees with trunk diameter equal or exceeding 1.0 metre (measured at 1.3 m above ground level), or with height/canopy spread equal or exceeding 25 m.



圖例:
LEGEND:
 擬提升至甲級的工程部份 (工務工程計劃編號346DS)
 PROPOSED PART OF WORKS TO BE UPGRADED TO CAT A (UNDER PWP ITEM 346DS)

— PROPOSED SEWERAGE WORKS
 ● PROPOSED SEWAGE PUMPING STATION
 ▨ 在該鄉村範圍內擬建污水渠
 VILLAGE AREAS INSIDE WHICH PROPOSED SEWERS TO BE LAID

屯門第54區發展 (由土木工程拓展署負責的另一工務工程計劃)
 TUEN MUN AREA 54 DEVELOPMENT (UNDER ANOTHER PWP ITEM OF CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT)

--- 第54區的污水收集系統工程
 SEWERAGE WORKS IN AREA 54

| | | | |
|---|---------|------------------|--------|
| C | 01JUN09 | GENERAL REVISION | SIGNED |
| B | 15MAY09 | GENERAL REVISION | SIGNED |
| A | 13MAY09 | GENERAL REVISION | SIGNED |

圖則名稱 drawing title
 工務工程計劃編號346DS
 屯門污水收集系統改善計劃第1期
 PWP ITEM No.346DS
 UPGRADING OF TUEN MUN SEWERAGE, PHASE 1

| | | | | |
|-------------|--------------------------------------|---------|---------|---------|
| 繪畫 drawn | SIGNED | C.K.LAM | 日期 date | 06MAY09 |
| 核對 checked | SIGNED | W.H.CHO | 日期 date | 08MAY09 |
| 批核 approved | SIGNED | K.C.LO | 日期 date | 08MAY09 |
| 部門 office | 工程管理部 PROJECT MANAGEMENT DIVISION | | | |

圖則編號 drawing no. 比例 scale
 DPM/346DS/0012C N.T.S.

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 DRAINAGE SERVICES DEPARTMENT
 GOVERNMENT OF THE HONG KONG
 SPECIAL ADMINISTRATIVE REGION

ENCLOSURE 1 附件一

Enclosure 2 to PWSC(2009-10)60

346DS – Upgrading of Tuen Mun sewerage, phase 1

**Breakdown of the estimates for consultants' fees and resident site staff costs
(in September 2008 prices)**

| | | Estimated man- months | Average MPS* salary point | Multiplier (Note 1) | Estimated fees (\$ million) |
|--------------|---|-----------------------------|------------------------------------|------------------------|-----------------------------------|
| (a) | Consultants' fees for contract administration ^(Note 2) | | | | |
| | Professional | - | - | - | 2.5 |
| | Technical | - | - | - | 0.8 |
| | | | | | 3.3 |
| (b) | Resident site staff costs ^(Note 3) | | | | |
| | Professional | 500 | 38 | 1.6 | 48.4 |
| | Technical | 1 540 | 14 | 1.6 | 48.9 |
| | | | | | 97.3 |
| Comprising – | | | | | |
| (i) | Consultants' fees for management of resident site staff | | | | 8.3 |
| (ii) | Remuneration of resident site staff | | | | 89.0 |
| | | | | | Total 100.6 |

* MPS = Master Pay Scale

Notes

1. A multiplier of 1.6 is applied to the average MPS point to estimate the cost of resident site staff supplied by the consultants. (As at 1 April 2008, MPS pt. 38 = \$60,535 per month and MPS pt. 14 = \$19,835 per month.)
2. The consultants' fees for contract administration is calculated in accordance with the existing consultancy agreement. The construction phase of the assignment will only be executed subject to Finance Committee's approval to upgrade part of **346DS** to Category A.
3. We will only know the actual man-months and actual costs after completion of the construction works.