For discussion
on 14 June 2011

PWSC(2011-12)19

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 704 – DRAINAGE
Environmental Protection – Sewerage and sewage treatment
332DS – Lam Tsuen Valley sewerage

Members are invited to recommend to Finance Committee –

(a) the upgrading of part of **332DS**, entitled "Lam Tsuen Valley sewerage, stage 1", to Category A at an estimated cost of $274.4 million in money-of-the-day prices; and

(b) the retention of the remainder of **332DS** in Category B.

PROBLEM

Sewage from unsewered areas in Lam Tsuen Valley is a source of water pollution to the streams nearby and the receiving waters of Tolo Harbour.

/PROPOSAL …..

PROPOSAL

2. The Director of Drainage Services, with the support of the Secretary for the Environment, proposes to upgrade part of **332DS** to Category A at an estimated cost of $274.4 million in money-of-the-day (MOD) prices for implementing sewerage works in 14 unsewered areas in Lam Tsuen Valley.

PROJECT SCOPE AND NATURE

3. The part of **332DS** that we propose to upgrade to Category A comprises the construction of –

(a) about 16 kilometres (km) of sewers for the 14 unsewered areas, namely Chuen Shui Tseng, Chung Uk Tsuen, Fong Ma Po, Hang Ha Po, Kau Liu Ha, Ko Tin Hom, Lam Tsuen San Tsuen, Lung A Pai, Pak Tin Kong, San Uk Pai, San Uk Tsai, Tin Liu Ha, Tong Min Tsuen and Wo Tong Pui;

(b) two sewage pumping stations (SPSs), one at Tin Liu Ha and the other at Tong Min Tsuen;

(c) about 550 metres (m) of twin rising mains in association with construction of the two SPSs in (b) above; and

(d) ancillary works.

A site plan showing the proposed works of **332DS** to be part-upgraded is at Enclosure 1.

4. Subject to the funding approval of the Finance Committee, we plan to commence the proposed works in November 2011 for completion in August 2015.

5. We will retain the remainder of **332DS** in Category B, which covers further extension of the sewerage by about 13 km to 13 other unsewered areas in Lam Tsuen Valley area. Planning and design of the relevant works are in progress. Funding for the remainder of **332DS** will be sought at a later stage after completion of the design and preparatory works.

/**JUSTIFICATION** …..

JUSTIFICATION

6. At present, the sewage from the 14 unsewered areas mentioned in paragraph 3(a) above is often treated and disposed of by means of private treatment facilities (such as septic tanks and soakaway systems). These facilities are often ineffective in removing pollutants due to their close proximity to watercourses[1] and inadequate maintenance[2]. This is detrimental to the water quality of the streams nearby and the receiving waters of Tolo Harbour. Environmental hygiene in the vicinity is also adversely affected.

7. Under the Review of North District and Tolo Harbour Sewerage Master Plan in 2002, the Environmental Protection Department has planned to extend the sewerage to these 14 unsewered areas as long-term solutions. The proposed works aim to collect the sewage generated from these 14 unsewered areas and convey it to the Tai Po sewage treatment works for treatment before disposal. The significant reduction in the amount of pollutants discharged into the streams nearby and the receiving waters will bring about sustainable improvements to our water quality.

8. Based on the village properties survey results and the potential house development information within the 14 unsewered areas obtained in December 2008 and February 2011 respectively, the proposed sewerage facilities mentioned in paragraph 3 above will be able to serve some 1 140 village houses comprising about 960 existing houses, 160 planned houses and 20 potential houses[3].

FINANCIAL IMPLICATIONS

9. We estimate the cost of the proposed works to be $274.4 million in MOD prices (please see paragraph 10 below), broken down as follows –

/(a) …..

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[1] Septic tanks and soakaway systems operate by allowing the effluent to percolate through gravels whereby pollutants would be removed in a natural manner. However, if the septic tanks and soakaway systems are located in an area where the underground water table is high, such as an area in proximity to watercourses, they will not be able to function properly due to ineffective percolation.

[2] Inadequate maintenance of septic tanks and soakaway systems would affect their pollutant removal efficiency and might even lead to overflow of effluent.

[3] The 20 potential houses are houses that may be developed on the vacant lands which are adjacent to the proposed sewer alignment. There is currently no development programme for these houses, which is subject to landowners' will and Lands Department's approval. In the event that some of these potential houses are not built, the abortive cost is not expected to be significant because, according to the designed sewer alignment, the proposed sewers will in any case need to pass through the vacant lands to serve the existing and planned houses.

			$ million		
(a)	Construction of sewers			124.1	
(b)	Construction of two sewage pumping stations			42.7	
	(i)	civil works	29.7		
	(ii)	electrical and mechanical works	13.0		
(c)	Construction of rising mains			5.6	
(d)	Ancillary works			2.0	
(e)	Environmental mitigation measures			5.7	
(f)	Consultants' fees for			2.0	
	(i)	contract administration	1.0		
	(ii)	management of resident site staff	1.0		
(g)	Remuneration of resident site staff			26.4	
(h)	Contingencies			20.8	
		Sub-total		229.3	(in September 2010 prices)
(i)	Provision for price adjustment			45.1	
		Total		274.4	(in MOD prices)

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

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

Year	$ million (Sept 2010)	Price adjustment factor	$ million (MOD)
2011 – 2012	6.9	1.04525	7.2
2012 – 2013	50.4	1.10143	55.5
2013 – 2014	59.6	1.16201	69.3
2014– 2015	61.9	1.22592	75.9
2015 – 2016	36.7	1.29335	47.5
2016 – 2017	11.5	1.36448	15.7
2017 – 2018	2.3	1.43953	3.3
	229.3		274.4

11. We have derived the MOD estimate on the basis of the Government's latest set of assumptions on the trend rate of change in the prices of public sector building and construction output for the period from 2011 to 2018. We will deliver the works under two contracts, one for civil engineering works and the other for electrical and mechanical works. We will deliver the civil engineering works under a re-measurement contract because of the uncertain underground conditions that may affect the alignments of the sewers. The contract will provide for price adjustments. We will deliver the electrical and mechanical works under a lump-sum contract as the scope of works can be well defined.

12. We estimate the additional annual recurrent expenditure arising from the proposed works to be $2.5 million. The recurrent expenditure attributable to sewage charges 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) and the recurrent expenditure attributable to trade effluent surcharges will be taken into account in reviewing the trade effluent surcharge rates in future.

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PUBLIC CONSULTATION

13. We consulted the Tai Po Rural Committee and the Environment, Housing and Works Committee of Tai Po District Council on 24 July 2007 and 12 March 2008 respectively. Both committees supported the proposed works.

14. We gazetted the proposed works under the Water Pollution Control (Sewerage) Regulation under three schemes between June and November 2009. A total of 25 objections concerning land resumption issues or service area of the sewerage were received under the three schemes. Having met with the objectors and considered their grounds of objections, we prepared three first amendment schemes for the three original schemes respectively. Subsequent to the gazettal of the three first amendment schemes, all objectors withdrew their objections to the original schemes unconditionally, but one new objection was received under one of the first amendment schemes. We gazetted the second amendment scheme to the scheme concerned on 5 November 2010 and received no objection. The objector also withdrew his objection. Since all the objections have been resolved, the Director of Environmental Protection authorised the proposed works between August 2010 and January 2011.

15. We consulted the Legislative Council Panel on Environmental Affairs on 23 May 2011 on the proposed works. Members raised no objection to the proposed works. As regards Members' enquiries about the progress of village sewerage programmes, the village population involved, as well as the nature and amount of compensation to be offered under the proposed works, the Administration provided the supplementary information to the Panel on 3 June 2011.

ENVIRONMENTAL IMPLICATIONS

16. This is not a designated project under the Environmental Impact Assessment Ordinance (Cap. 499). We have completed a Preliminary Environmental Review in May 2011 which sets out the mitigation measures necessary for the proposed works. With such mitigation measures in place, the proposed works would not have long-term environmental impacts.

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17. For short-term environmental impacts during construction, we will control noise, dust and site run-off to levels within established standards and guidelines through implementation of environmental mitigation measures, such as the use of silenced construction equipment and noise barriers to reduce noise generation, water-spraying to reduce emission of fugitive dust, and proper treatment of site run-off before discharge. We will also carry out regular site inspections to ensure that these recommended mitigation measures and good site practices will be properly implemented. We have included in paragraph 9(e) above a sum of $5.7 million (in September 2010 prices) in the project estimates for implementing the environmental mitigation measures.

18. At the planning and design stages, we have considered ways to reduce the generation of construction waste where possible. For example, in addition to the need for meeting the hydraulic and traffic requirements, we have designed the alignment of the proposed sewerage works in such a manner that excavation and demolition of existing structures will be minimised. 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 minimise the disposal of inert construction waste at public fill reception facilities[4]. We will encourage the contractor to maximise the use of recycled or recyclable inert construction waste, as well as the use of non-timber formwork to further minimise the generation of construction waste.

19. At the construction stage, we will 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 at public fill reception facilities and landfills respectively through a trip-ticket system.

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[4] 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 38 160 tonnes of construction waste. Of these, we will reuse about 18 560 tonnes (49%) of inert construction waste on site and deliver 19 215 tonnes (50%) of inert construction waste to public fill reception facilities for subsequent reuse. We will dispose of the remaining 385 tonnes (1%) of non-inert construction waste at landfills. The total cost for accommodating construction waste at public fill reception facilities and landfill sites is estimated to be about $567,000 for the proposed works (based on a unit cost of $27 per tonne for disposal at public fill reception facilities and $125 per tonne[5] 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. We have reviewed the design of the proposed works to minimise the extent of land acquisition. We will resume a total of 338 private agricultural lots (about 10 971 square metres (m^2)) for carrying out the proposed works. The land resumption and clearance will not affect any households or domestic structures. The cost of land resumption and clearance is about $43.0 million which will be charged to **Head 701 – Land Acquisition**. A breakdown of the land resumption and clearance costs is at Enclosure 3.

BACKGROUND INFORMATION

23. In November 2002, we completed the study "Review of North District and Tolo Harbour Sewerage Master Plan" which assessed the adequacy of the existing sewerage in Tai Po to meet future demands as well as to establish a long-term sewerage improvement plan for the Tai Po area. Based on the recommendation of the study, we upgraded **332DS** to Category B in October 2005.

/24. …..

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[5] This 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 per m^3), nor the cost to provide new landfills (which is likely to be more expensive), when the existing ones are filled.

24. In December 2006, we engaged consultants to carry out detailed design and necessary investigation for **332DS** 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 substantially completed the detailed design of the proposed works mentioned in paragraph 3 above.

25. In November 2008, we upgraded part of **332DS** to Category A as **364DS** "Lam Tsuen Valley sewerage – trunk sewers, pumping station and rising mains" at an approved project estimate of $162.8 million in MOD prices. The construction works commenced in February 2009 for completion in September 2012.

26. The proposed works will involve the felling of four trees. All trees to be felled are not important trees[6]. We will incorporate planting proposals as part of the project, including estimated quantities of 12 trees and 350 shrubs.

27. We estimate that the proposed works will create about 102 jobs (82 for labourers and another 20 for professional/technical staff), providing a total employment of 3 600 man-months.

Environment Bureau
June 2011

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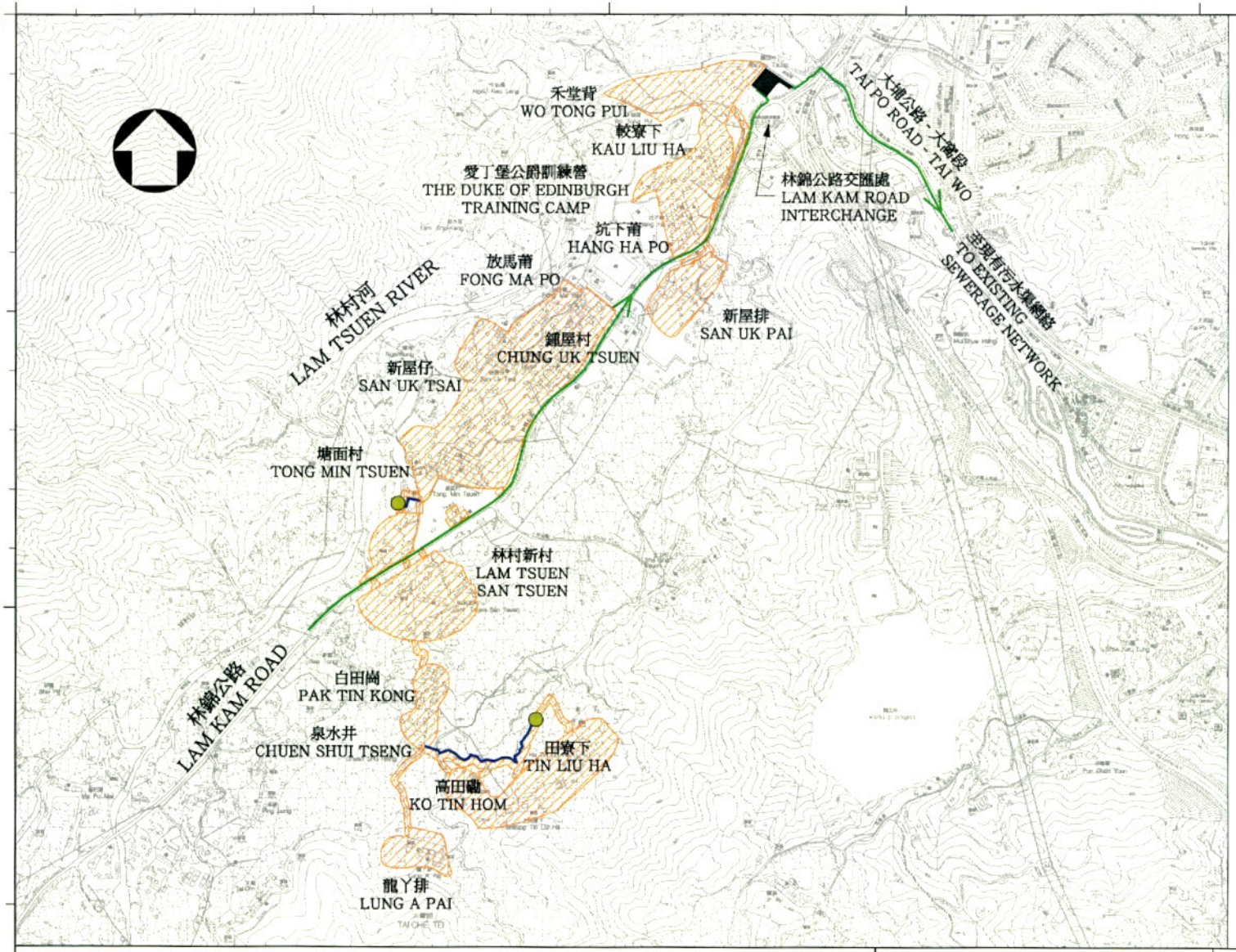
[6] "Important trees" refer to trees in the Register of Old and Valuable Trees, or any other trees that meet one or more of the following criteria –

(a) trees of 100 years old or above;
(b) 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;
(c) trees of precious or rare species;
(d) 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
(e) trees with trunk diameter equal or exceeding 1.0 m (measured at 1.3 m above ground level), or with height/canopy spread equal or exceeding 25 m.



LEGEND:

擬建工程
PROPOSED WORKS

- 擬建的鄉村污水收集系統範圍 *
  PROPOSED VILLAGE SEWERAGE AREA *
- 擬建的污水泵房
  PROPOSED SEWAGE PUMPING STATIONS
- 擬建的加壓污水管
  PROPOSED RISING MAINS

建造中相關工程（項目364DS）
RELATED WORKS
UNDER CONSTRUCTION (ITEM 364DS)

- 無壓污水幹渠
  GRAVITY TRUNK SEWERS
- 林村谷污水泵房
  LAM TSUEN VALLEY
  SEWAGE PUMPING STATION

備註
REMARKS

* 鄉村內的污水渠並不顯示以便清晰展現效果
* DETAILS OF VILLAGE SEWERAGE
NOT SHOWN FOR CLARITY

圖則名稱 drawing title

工務計劃項目第332DS號 — 林村谷污水收集系統
PWP ITEM No.332DS - LAM TSUEN VALLEY SEWERAGE

繪畫 drawn	T.M. SIU	日期 date 03 JUN 2011
核對 checked	W.C. YIP	日期 date 03 JUN 2011
批核 approved	H.S. KAN	日期 date 03 JUN 2011
部門 office	工程管理部 PROJECT MANAGEMENT DIVISION	

圖則編號 drawing no. DPM/332DS0/0008
比例 scale N.T.S.

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DRAINAGE SERVICES DEPARTMENT
GOVERNMENT OF THE
HONG KONG
SPECIAL ADMINISTRATIVE REGION

附件 — ENCLOSURE 1

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332DS – Lam Tsuen Valley sewerage

Breakdown of the estimates for consultants' fees and resident site staff costs (in September 2010 prices)

			Estimated man-months	Average MPS* salary point	Multiplier (Note 1)	Estimated fee ($ million)
(a)	Consultants' fees for contract administration (Note 2)	Professional	-	-	-	0.51
		Technical	-	-	-	0.49
					Sub-total	1.0
(b)	Resident site staff costs (Note 3)	Professional	127	38	1.6	11.8
		Technical	489	14	1.6	15.6
					Sub-total	27.4
	Comprising –					
	(i) Consultants' fees for management of resident site staff				1.0	
	(ii) Remuneration of resident site staff				26.4	
					Total	**28.4**

* MPS = Master Pay Scale

Notes

1. A multiplier of 1.6 is applied to the average MPS salary point to estimate the cost of resident site staff supplied by the consultants. (As at now, MPS salary point 38 = $58,195 per month and MPS salary point 14 = $19,945 per month.)

2. The consultants' staff cost for contract administration is calculated in accordance with the existing consultancy agreement for the design and construction of the project. The construction phase of the assignment will only be executed subject to Finance Committee's approval to upgrade part of **332DS** to Category A.

3. The actual man-months and actual costs will only be known after completion of the construction works.

332DS – Lam Tsuen Valley sewerage

Breakdown of the land resumption and clearance costs

			$ million
(I) Estimated resumption cost			**36.2**
(a)	Agricultural land ex-gratia compensation	36.2	
	338 agricultural lots (with a total area of 10 971 m^2) will be resumed		
	10 971 m^2 x \$3,299/m^2 (see Notes 1 and 2 below)		
(II) Estimated clearance cost			**2.9**
(a)	Ex-gratia allowance of crop compensation	1.6	
(b)	Ex-gratia allowance for farm structures and miscellaneous permanent improvements to farms	1.0	
(c)	Ex-gratia allowance for "Tun Fu"	0.3	
(III) Interest and Contingency Payment			**3.9**
(a)	Interest payment on various ex-gratia compensations for private land	0.0002	
(b)	Contingency on the above costs	3.9	
	Total costs		**43.0**

Notes

1. There are four ex-gratia compensation zones, namely Zones A, B, C and D, for land resumption in the New Territories as approved by the Executive Council in 1985 and 1996. The boundaries of these zones are shown on the Zonal Plan for Calculation of Compensation Rates. Most of the land to be resumed in the project **332DS** is agricultural land currently within Zone C, while the remaining land is currently within Zone D. The land required is for implementing sewerage works, which are for local improvement. We will seek approval from the Committee on Planning and Land Development[i] to upgrade the ex-gratia compensation rate for the land concerned from Zone D to Zone C.

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[i] The Committee on Planning and Land Development is an internal committee chaired by the Secretary for Development and comprising representatives from relevant Bureaux and Departments. One of its functions is to consider and review policies on production, acquisition, use and disposal of land.

2. In accordance with G.N. 1888 dated on 14 March 2011 on the revised ex-gratia compensation rates for resumed land, the ex-gratia compensation rate of agricultural land for Zone C is 50% of the Basic Rate at $613 per square foot (or $6,598 per square metre). Hence the ex-gratia compensation rate used for estimating the resumption cost of the 338 lots affected by **332DS** is $3,299 per square metre.