For discussion
on 14 June 2011

PWSC(2011-12)21

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 704 – DRAINAGE
Environmental Protection – Sewerage and sewage treatment
345DS – North District sewerage, stage 2 part 2A

Members are invited to recommend to Finance Committee –

(a) the upgrading of part of **345DS**, entitled "North District sewerage, stage 2 part 2A – Pak Hok Lam trunk sewer and Sha Tau Kok village sewerage", to Category A at an estimated cost of $272.1 million in money-of-the-day prices; and

(b) the retention of the remainder of **345DS** in Category B.

PROBLEM

Sewage from the unsewered areas in Sha Tau Kok is a source of water pollution to the receiving waters of Starling Inlet.

/PROPOSAL …..

PROPOSAL

2. The Director of Drainage Services, with the support of the Secretary for the Environment, proposes to upgrade part of **345DS** to Category A at an estimated cost of $272.1 million in money-of-the-day (MOD) prices for implementing sewerage works in nine unsewered areas in Sha Tau Kok.

PROJECT SCOPE AND NATURE

3. The part of **345DS** that we propose to upgrade to Category A comprises the construction of –

(a) about 2 kilometres (km) of gravity trunk sewers along Sha Tau Kok Road (Shek Chung Au Section);

(b) about 10 km of sewers for the nine unsewered areas, namely Muk Min Tau, Nga Yiu Tau, San Tsuen, Shan Tsui, Sheung Tam Shui Hang, Ha Tam Shui Hang, Tsiu Hang, Wu Shek Kok and Yim Tso Ha;

(c) one sewage pumping station (SPS) at Wu Shek Kok;

(d) about 300 metres (m) of twin rising mains in association with construction of the SPS in (c) above; and

(e) ancillary works.

A site plan showing the proposed works of **345DS** 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 October 2011 for completion in December 2015.

5. We will retain the remainder of **345DS** in Category B, which covers further extension of the sewerage by about 8 km to six other unsewered areas in North District. Planning and design of the relevant works are in progress. Funding for the remainder of **345DS** will be sought at a later stage after completion of the design and preparatory works.

/**JUSTIFICATION** …..

JUSTIFICATION

6. At present, the sewage from the nine unsewered areas mentioned in paragraph 3(b) 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 receiving waters of Starling Inlet. Environmental hygiene in the vicinity is also adversely affected.

7. Under the North District Sewerage Master Plan, the Environmental Protection Department has planned to extend the sewerage to these nine unsewered areas as long-term solutions. The proposed works aim to collect the sewage generated from these nine unsewered areas and convey it to the Sha Tau Kok sewage treatment works for treatment before disposal. The significant reduction in the amount of pollutants discharged into 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 nine unsewered areas obtained in March and April 2011 respectively, the proposed sewerage facilities mentioned in paragraph 3 above will be able to serve some 950 village houses comprising about 550 existing houses, 10 planned houses and 390 potential houses[3].

FINANCIAL IMPLICATIONS

9. We estimate the cost of the proposed works to be $272.1 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 390 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 gravity trunk sewers		68.8	
(b)	Construction of sewers		53.4	
(c)	Construction of a sewage pumping station		37.8	
	(i) civil works	28.3		
	(ii) electrical and mechanical works	9.5		
(d)	Construction of rising mains		5.3	
(e)	Ancillary works		1.5	
(f)	Environmental mitigation measures		4.5	
(g)	Consultants' fees for		2.3	
	(i) contract administration	1.2		
	(ii) management of resident site staff	1.1		
(h)	Remuneration of resident site staff		22.0	
(i)	Contingencies		19.4	
	Sub-total		215.0	(in September 2010 prices)
(j)	Provision for price adjustment		57.1	
	Total		272.1	(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 the expenditure as follows –

Year	$ million (Sept 2010)	Price adjustment factor	$ million (MOD)
2011 – 2012	3.0	1.04525	3.1
2012 – 2013	12.8	1.10143	14.1
2013 – 2014	35.3	1.16201	41.0
2014 – 2015	49.0	1.22592	60.1
2015 – 2016	62.6	1.29335	81.0
2016 – 2017	33.7	1.36448	46.0
2017 – 2018	18.6	1.43953	26.8
	215.0		272.1

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.

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12. We estimate the additional annual recurrent expenditure arising from the proposed works to be $2.6 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.

PUBLIC CONSULTATION

13. We consulted the Sha Tau Kok Rural Committee and the District Minor Works and Environmental Improvement Committee of North District Council on 4 June 2009 and 13 July 2009 respectively. They both had no objection to the proposed works in principle, and requested the Administration to continue engaging the locals to address their views on the scope of the project and the implementation arrangements with respect to house-to-sewerage connection works. We have been engaging village representatives in subsequent stages of finalising the sewer alignments, and will continue to liaise closely with them at the construction stage.

14. We gazetted the proposed works under the Water Pollution Control (Sewerage) Regulation under seven schemes between January and March 2011. No objections were received and they were subsequently authorised between April and June 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 Preliminary Environmental Reviews (PER) in September 2010 and May 2011 for the proposed works, which set 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 the 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(f) above a sum of $4.5 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 57 800 tonnes of construction waste. Of these, we will reuse 38 400 tonnes (66%) of inert construction waste on site and deliver 19 200 tonnes (33%) of inert construction waste to public fill reception facilities for subsequent reuse. We will dispose of the remaining 200 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 $540,000 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 declared monuments, proposed monuments, graded historic sites/buildings and Government historic sites identified by the Antiquities and Monuments Office. The PER identified that several proposed sewers will be located in the vicinity of some village houses currently situated at a site of archaeological interest. Appropriate mitigation measures will be implemented in accordance with the recommendations of the PER.

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 50 private agricultural lots (about 2 143 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 $8.93 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 October 1994, we upgraded **203DS** "North District sewerage" to Category B for implementation of sewerage works recommended under a comprehensive study of the sewerage works in the North District in two stages.

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[4] 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 1998 and February 2002, we upgraded parts of **203DS** to Category A as **219DS** "North District sewerage, stage 1 phase 1A" at an approved project estimate (APE) of $124.7 million and **330DS** "North District sewerage, stage 1 phases 1B and 2A" at an APE of $125.1 million in MOD prices respectively. The construction works of **219DS** and **330DS** were completed in December 2002 and January 2006 respectively.

25. Between 2004 and 2006, we re-packaged the remaining works under **203DS** with due regard to the priority of the works and availability of resources. In October 2004 and October 2005, we split **203DS** into **203DS** "North District sewerage, stage 2 part 2B", **339DS** "North District sewerage, stage 1 phase 2C and stage 2 phase 1" and **345DS** "North District sewerage, stage 2 part 2A".

26. In April 2008, we engaged consultants to carry out investigations and design for **345DS** at an estimated cost of $7.7 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.

27. The proposed works will involve the felling of six trees. All trees to be felled are not important trees[6]. We will incorporate planting proposals as part of the project, including planting of seven trees.

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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 an important person or event;

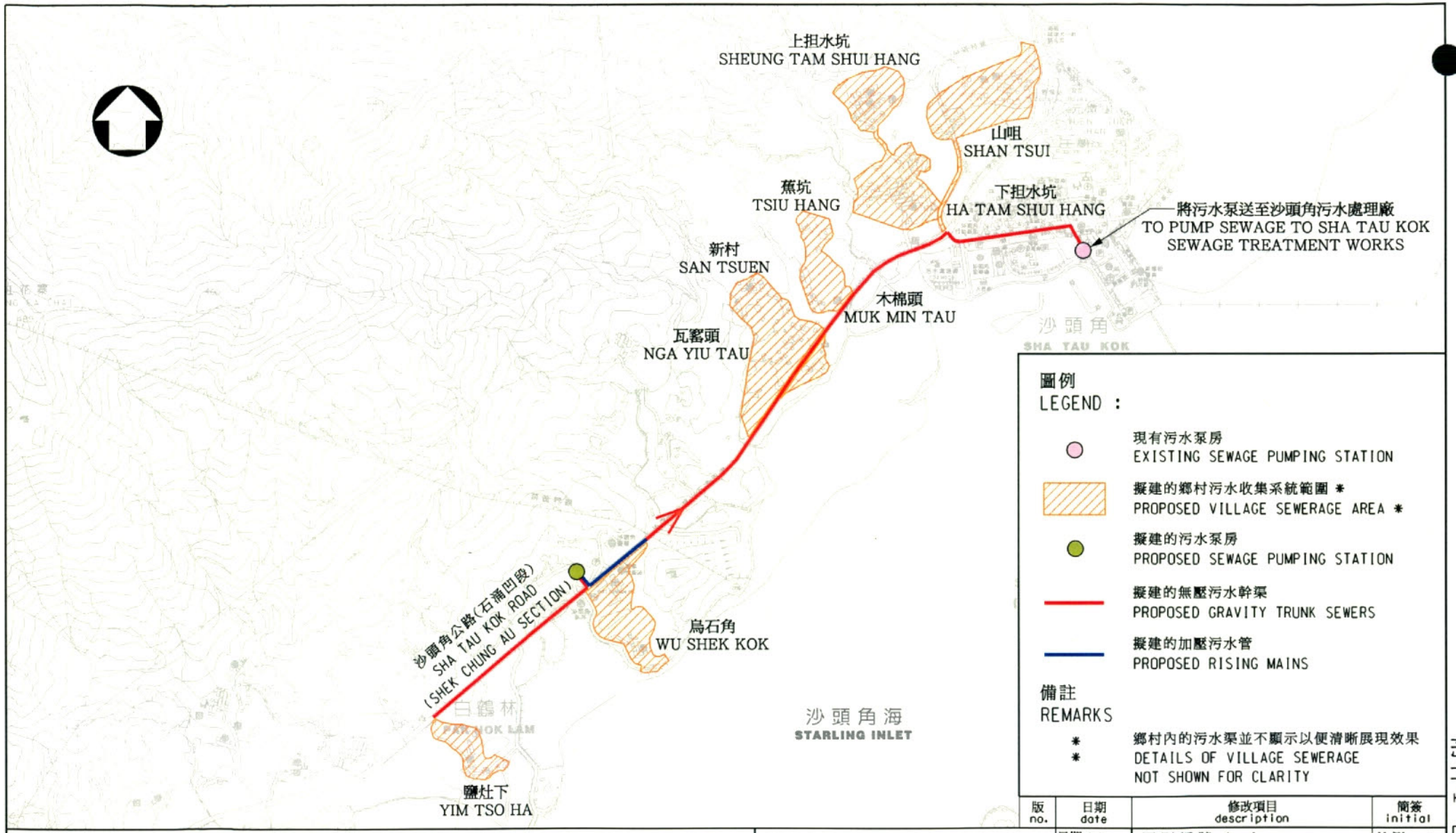
(c) trees of precious or rare species;

(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.

28. We estimate that the proposed works will create about 83 jobs (67 for labourers and another 16 for professional/technical staff), providing a total employment of 3 460 man-months.

Environment Bureau
June 2011



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圖則名稱 drawing title

工務計劃項目第345DS號 - 北區污水系統第2階段第2A期
PWP ITEM No. 345DS - NORTH DISTRICT SEWERAGE, STAGE 2 PART 2A

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核對 checked	S. K. LO	日期 date 07 APR 2011
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部門 office	顧問工程管理部 CONSULTANTS MANAGEMENT DIVISION	

圖則編號 drawing no. DCM/2011/006

比例 scale N.T.S.

香港特別行政區政府渠務署
DRAINAGE SERVICES DEPARTMENT
GOVERNMENT OF THE HONG KONG SPECIAL ADMINISTRATIVE REGION

A4 297x210

附件1 ENCLOSURE 1

345DS – North District sewerage, stage 2 part 2A

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	-	-	-	0.5
		Technical	-	-	-	0.7
					Sub-total	1.2
(b)	Resident site staff costs(Note 3)	Professional	91	38	1.6	8.5
		Technical	458	14	1.6	14.6
					Sub-total	23.1
	Comprising –					
	(i) Consultants' fees for management of resident site staff				1.1	
	(ii) Remuneration of resident site staff				22.0	
					Total	**24.3**

* 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 **345DS** to Category A.

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

345DS – North District sewerage, stage 2 part 2A

Breakdown of the land resumption and clearance costs

			$ million
(I) Estimated resumption cost			**7.07**
(a)	Agricultural land ex-gratia compensation 50 agricultural lots (with a total area of 2 143 m^2) will be resumed 2 143 m^2 x \$3,299/m^2 (see Notes 1 and 2)	7.07	
(II) Estimated clearance cost			**1.05**
(a)	Ex-gratia allowance of crops compensation	0.56	
(b)	Ex-gratia allowance for farm structures and miscellaneous permanent improvements to farms	0.29	
(c)	Ex-gratia allowance for "Tun Fu"	0.20	
(III) Interest and Contingency Payment			**0.81**
(a)	Interest payment on various ex-gratia compensations for private land	0.000041	
(b)	Contingency on the above costs	0.81	
	Total		**8.93**

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. The land to be resumed in the project **345DS** is agricultural land 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 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 50 lots affected by **345DS** is $3,299 per square metre.