

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 709 – WATERWORKS

Water Supplies – Fresh water supplies

334WF – Expansion of Tai Po water treatment works and ancillary raw water and fresh water transfer facilities

Members are invited to recommend to Finance Committee –

- (a) the upgrading of part of **334WF**, entitled “Expansion of Tai Po water treatment works and ancillary raw water and fresh water transfer facilities – part 1 works”, to Category A at an estimated cost of \$259.9 million in money-of-the-day prices; and
- (b) the retention of the remainder of **334WF** in Category B.

PROBLEM

There is a need to expand the capacity of Tai Po Water Treatment Works (WTW) to improve the reliability of WTW in Hong Kong.

/PROPOSAL

PROPOSAL

2. The Director of Water Supplies, with the support of the Secretary for Development, proposes to upgrade part of **334WF** to Category A at an estimated cost of \$259.9 million in money-of-the-day (MOD) prices for upgrading the existing facilities at Tai Po WTW and two existing pumping stations serving Tai Po WTW.

PROJECT SCOPE AND NATURE

3. The part of **334WF** which we propose to upgrade to Category A comprises –

- (a) upgrading the existing water treatment facilities at Tai Po WTW to increase its output capacity from 250 million litres per day (Mld) to 400 Mld;
- (b) upgrading the pumping capacity of the existing Tai Po fresh water pumping station (FWPS) to match the increased output of Tai Po WTW; and
- (c) upgrading the pumping capacity of the existing Tai Po Tau No. 4 raw water pumping station (RWPS) to match the increased intake of Tai Po WTW.

— The locations of the proposed works are shown on the plan at Enclosure 1.

4. We plan to start the construction works in February 2010 for completion by September 2011. Tenders have already been invited to enable works to commence as soon as possible after funds are approved.

JUSTIFICATION

5. The proposed expansion of Tai Po WTW represents the first crucial step of an overall strategy to enhance the reliability of water treatment works in Hong Kong. It will pave the way for the planned re-provisioning of Sha Tin WTW which is the largest WTW in Hong Kong supplying water to the northern part of Hong Kong Island and a substantial part of Kowloon. In order to maintain a continuous supply of treated water to the supply zones during the re-provisioning of Sha Tin WTW, it is necessary to uprate the capacity of Tai Po

/WTW

WTW from 250 Mld to 800 Mld in phases to make up for the reduction in treatment capacity as a result of the reprovisioning works. As such, we plan to commence the first phase of Tai Po WTW uprating works in February 2010 so that its output capacity will first be increased from 250 Mld to 400 Mld by September 2011. Early commencement of the proposed works in Tai Po WTW is vital for the reprovisioning of Sha Tin WTW and hence the reliability of fresh water supply to urban Kowloon and Hong Kong Island.

6. The design for the first phase of uprating works of Tai Po WTW has been completed. Subject to approval of the Finance Committee, we are ready to proceed with the works described in paragraph 3 above.

FINANCIAL IMPLICATIONS

7. We estimate the capital cost of the proposed works to be \$259.9 million in MOD prices (please see paragraph 8 below), broken down as follows –

	\$ million	
(a) Electrical and mechanical works	175.3	
(b) Civil works	15.8	
(c) Environmental mitigation measures	3.0	
(d) Consultants' fee	9.4	
(i) contract administration	7.0	
(ii) management of resident site staff	2.4	
(e) Remuneration of resident site staff	24.9	
(f) Contingencies	22.8	
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Sub-total	251.2	(in September 2009 prices)
(g) Provision for price adjustment	8.7	
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Total	259.9	(in MOD prices)

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

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

Year	\$ million (Sept 2009)	Price adjustment factor	\$ million (MOD)
2010 – 2011	104.0	1.02000	106.1
2011 – 2012	116.5	1.04040	121.2
2012 – 2013	30.7	1.06121	32.6
	251.2		259.9

9. We have derived the MOD estimates on the basis of the Government's latest forecast of the trend rate of change in the prices of public sector building and construction output for the period from 2010 to 2013. We will deliver the works through a fixed-price lump-sum contract because we can clearly define the scope of works in advance.

10. The proposed part-upgrading of **334WF** to Category A will not give rise to any net increase in recurrent consequence. The capital cost of the proposed works would be taken into account in the review on water charges in future.

PUBLIC CONSULTATION

11. We consulted the Tai Po Rural Committee on 11 November 2008. Water Supplies Department (WSD) subsequently arranged a joint site inspection to Tai Po WTW for the local village representatives on 4 March 2009, during which WSD addressed the following concerns raised by the village representatives –

- (a) in response to the concern on the possible hazard due to the increase in the use of chlorine in Tai Po WTW, WSD has assured that the current limit of chlorine storage would not be exceeded;

/(b)

- (b) in order not to affect the traffic of Shek Lin Road, all the vehicles would be required to enter Tai Po WTW via Tai Po Road – Tai Wo and not to use Shek Lin Road except in cases of emergency; and
- (c) the height of new buildings would be the same as that of existing buildings and would not infringe aesthetics of the surroundings.

12. We consulted the Tai Po Rural Committee and the Environment, Housing and Works Committee of the Tai Po District Council on 14 and 15 July 2009 respectively in respect of the proposed works at Tai Po WTW and the two pumping stations. WSD undertook to maintain communication with relevant members of the Committees and Lam Tsuen village representatives before and during construction of the proposed works. Both Committees supported the proposed works.

13. We circulated to the Legislative Council Panel on Development an information paper on the proposed works on 9 December 2009. Members raised no objection to the proposal.

ENVIRONMENTAL IMPLICATIONS

14. The proposed expansion of Tai Po WTW is a designated project under the Environmental Impact Assessment (EIA) Ordinance, Cap. 499 (“the Ordinance”). We had completed an EIA study in 1996 to address the environmental impacts of Tai Po WTW and Tai Po FWPS. We also completed an Environmental Review (ER) in February 2009. The EIA report and ER concluded that, with the implementation of mitigation measures, the environmental impacts of the proposed project could be controlled to within the established standards and criteria.

15. The proposed uprating of Tai Po Tau No. 4 RWPS is not a designated project under the Ordinance. We carried out a Preliminary Environmental Review (PER) in May 2009. The PER concluded that, with the implementation of mitigation measures, the environmental impacts of the proposed project could be controlled to within the established standards and criteria.

16. During construction, we will control noise, dust and site run-off nuisances to within established standards and guidelines through the implementation of appropriate mitigation measures in the relevant contracts. These include the use of silencers, mufflers, acoustic lining or shields for noisy construction activities, frequent cleaning and watering of the site, and the provision of wheel-washing facilities. We will implement an Environmental Monitoring and Audit programme during the course of construction to ensure that potential impacts are adequately addressed. We have included a sum of \$3.0 million (in September 2009 prices) in the project estimate for the implementation of the environmental mitigation measures.

17. We have optimized the size of the sludge thickening tanks in the planning and design stages to reduce the generation of construction waste where possible. In addition, we will require the contractor to reuse inert construction waste (e.g. demolished concrete and excavated soil and rock) 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 facilities¹. We will require 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.

18. 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 at public fill reception facilities and landfills respectively through a trip-ticket system.

19. We estimate that the project will generate in total about 1 005 tonnes of construction waste. Of these, we will reuse 50 tonnes (5%) of inert construction waste on site and deliver 880 tonnes (88%) of inert construction waste to public fill reception facilities for subsequent reuse. We will dispose of the remaining 75 tonnes (7%) of non-inert construction waste at landfills. The total cost for accommodating construction waste at public fill reception facilities

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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.

and landfill sites is estimated to be \$33,135 for this project (based on a unit cost of \$27 per tonne for disposal at public fill reception facilities and \$125 per tonne² at landfills).

HERITAGE IMPLICATIONS

20. 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

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

TRAFFIC IMPLICATIONS

22. To minimise possible disruption to traffic during construction, we have completed a traffic impact assessment (TIA) for the proposed works. The TIA has concluded that the proposed works would not cause significant impact to the local traffic network.

BACKGROUND INFORMATION

23. On 23 October 2007, we submitted an information paper to the LegCo Panel on Development with regard to the strategy on reprovisioning of Sha Tin WTW.

24. We upgraded **334WF** to Category B in November 2007. In June 2008, we engaged consultants to carry out the investigation study for the proposed works under **334WF** at a cost of \$10 million under the block allocation of **Subhead 9100WX** "Waterworks, studies and investigations for items in Category D of the Public Works Programme". The investigation study was substantially completed in March 2009 as scheduled.

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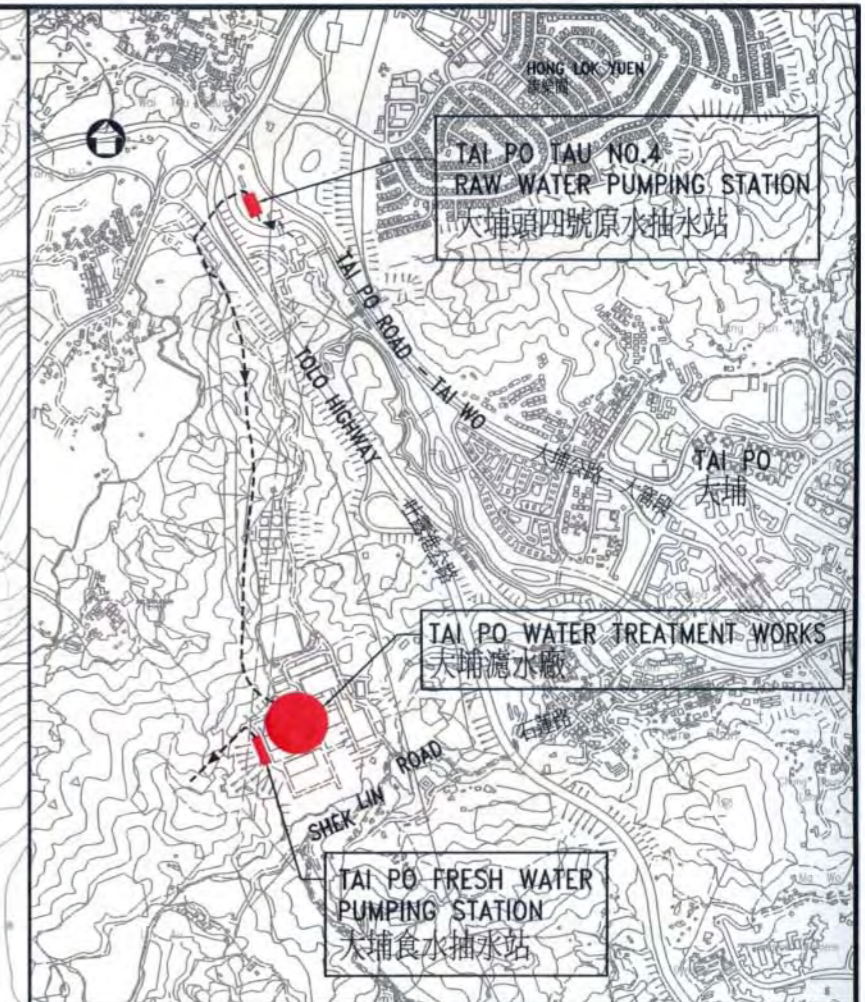
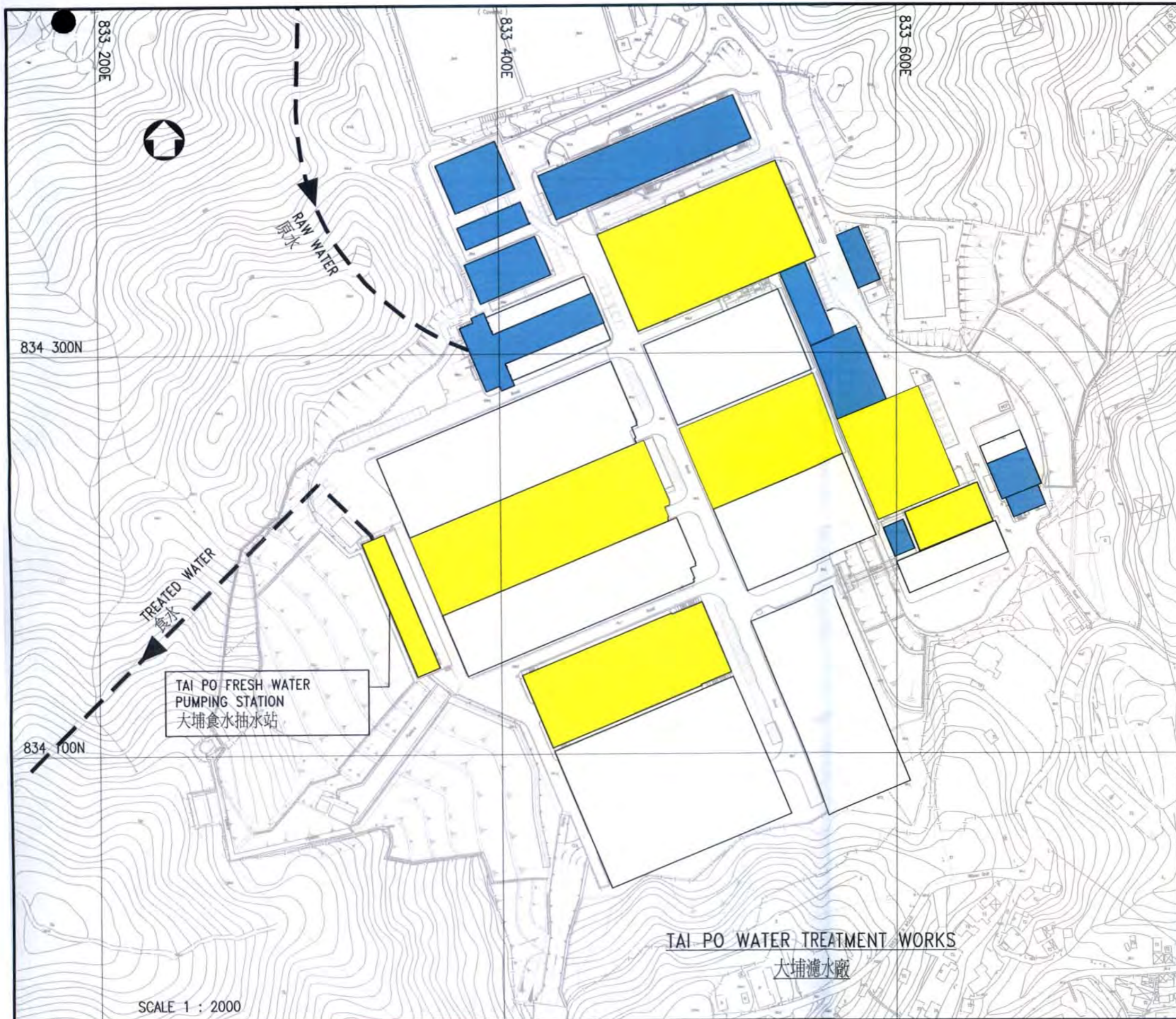
² This estimate has taken into account the cost for developing, operating and restoring the landfills after they are filled and the aftercare required. It does not include the land opportunity cost for existing landfill sites (which is estimated at \$90 per m³), nor the cost to provide new landfills,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

25. On 8 May 2009, we upgraded part of **334WF** to Category A as **339WF** “Expansion of Tai Po water treatment works and ancillary raw water and fresh water transfer facilities – design and site investigation” at an approved project estimate of \$43.4 million in MOD prices. We engaged consultants in June 2009 to undertake the design and site investigation works.

26. The proposed works will not involve any tree removal or planting proposals.

27. We estimate that the proposed works will create about 133 jobs (100 for labourers and another 33 for professional/technical staff) providing a total employment of 2 250 man-months.

Development Bureau
January 2010



LEGEND:

	EXISTING STRUCTURES IN WHICH FACILITIES ARE TO BE UPGRADATED 將會提升的設施所在的現有建築物
	OTHER EXISTING STRUCTURES 其他現有建築物
	RESERVE FOR FUTURE FACILITIES 擴展工程預留地

核准 APPROVED
K. S. Tang
總工程師/顧問工程管理 (CE/CM)
7/12/2009

工務計劃項目第334WF號 - 大埔濾水廠及附屬原水和食水輸送設施的擴展工程 - 第一期工程 - 位置圖
P.W.P. ITEM NO. 334WF - EXPANSION OF TAI PO WATER TREATMENT WORKS AND ANCILLARY RAW WATER AND FRESH WATER TRANSFER FACILITIES - PART 1 WORKS - LOCATION PLAN
(甲級工程)
(CAT 'A' Submission)

水務署
Water Supplies Department
草圖編號 SK62009/508
SKETCH NO. SK62009/508
REF. SK62009 508.dwg

Enclosure 2 to PWSC(2009-10)88

334WF – Expansion of Tai Po water treatment works and ancillary raw water and fresh water transfer facilities

Breakdown of the estimates for consultants' fees and resident site staff costs (in September 2009 prices)

		Estimated man-months	Average MPS* salary point	Multiplier (Note 1)	Estimated fees (\$ million)
(a)	Consultants' fees for contract administration (Note 2)				
	Professional	--	--	--	6.3
	Technical	--	--	--	0.7
				Sub-total	7.0
(b)	Resident site staff costs (Note 3)				
	Professional	86	38	1.6	7.9
	Technical	610	14	1.6	19.4
				Sub-total	27.3
Comprising –					
(i) Consultants' fees for management of resident site staff					2.4
(ii) Remuneration of resident site staff					24.9
				Total	34.3

*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 point 38 = \$57,280 per month and MPS point 14 = \$19,835 per month.)
2. The consultants' staff cost for contract administration is calculated in accordance with the existing consultancy agreement for the design and site investigation for part of **334WF**. The construction phase of the assignment will only be executed subject to Finance Committee's approval to upgrade part of **334WF** to Category A.
3. The actual man-months and actual costs will only be known after completion of the construction works.