

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 – design and site investigation”, to Category A at an estimated cost of \$43.4 million in money-of-the-day prices for engaging consultants to carry out design and site investigation for the works; and
- (b) the retention of the remainder of **334WF** in Category B.

PROBLEM

The plant and equipment installed at Sha Tin Water Treatment Works (WTW) are approaching the end of their service life and require major renovation or replacement. During in-situ reprovisioning of Sha Tin WTW, there is a risk that the supply of treated water will be interrupted by the reprovisioning work.

/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 \$43.4 million in money-of-the-day (MOD) prices for engaging consultants to carry out design and site investigation for the expansion of Tai Po WTW and the ancillary raw water and fresh water transfer facilities under **334WF**.

PROJECT SCOPE AND NATURE

3. The scope of works under **334WF** comprises –
- (a) upgrading the existing facilities and constructing additional water treatment components at Tai Po WTW to increase its capacity from 250 000 cubic metres per day (m^3/day) to 800 000 m^3/day ;
 - (b) increasing the capacities of two existing pumping stations at Tai Po to match the increased output of Tai Po WTW;
 - (c) increasing the storage capacity of the existing Butterfly Valley service reservoir in Kwai Tsing from 40 000 m^3 to 120 000 m^3 ; and
 - (d) laying about 900 metres fresh water mains with diameters ranging from 1 200 millimetres (mm) to 1 800 mm in Sham Shui Po and Kowloon City.

— The locations of the proposed works are shown on the plan at Enclosure 1. The proposed mainlaying works and the general layout of Tai Po WTW are at
 — Enclosures 2 and 3 respectively.

4. We plan to commence construction of the proposed works under separate contracts. The first construction contract, which is planned to commence in February 2010, is for the supply and installation of electrical and mechanical plant and equipment in Tai Po WTW. To meet this programme, we propose to engage consultants in June 2009 to carry out design for the project for completion by March 2011 to tie in with the commencement of the first and the subsequent construction contracts. The scope of the proposed consultancy includes –

/(a)

- (a) review of the study findings of the investigation stage of the project;
- (b) impact assessments on environment, traffic and other aspects necessary for completion of the design;
- (c) design of the works described in paragraph 3 above; and
- (d) supervision of site investigation and construction works.

JUSTIFICATION

5. Sha Tin WTW is the largest water treatment works in Hong Kong. It has reached a stage of requiring substantial reprovisioning as its plant and equipment are approaching the end of their service life. A major constraint in the in-situ reprovisioning of Sha Tin WTW is the difficulties to maintain the plant in operation during the reprovisioning process. In order to reduce the risk that the supply of treated water would be interrupted by the reprovisioning work, we have formulated a strategy by making use of Tai Po WTW, which can be readily expanded as its existing site has included formed land for expansion in capacity to meet the future demand.

6. At present, Sha Tin WTW and Tai Po WTW supply about 1 060 000 m³/day and 250 000 m³/day of treated water respectively. Under the strategy, we will upgrade Tai Po WTW and the associated transfer facilities in phases to increase its capacity from 250 000 m³/day to 800 000 m³/day. This will enable Tai Po WTW to extend its supply zone to cover part of urban Kowloon, and the entire Central and Western districts of Hong Kong Island, which are currently supplied by Sha Tin WTW. The arrangement can effectively reduce the risk of interruption of treated water supply to the public during reprovisioning of Sha Tin WTW.

7. We will seek funding for the in-situ reprovisioning of Sha Tin WTW under a separate item. It is tentatively planned to reprovision Sha Tin WTW to a capacity of about 550 000 m³/day to cope with forecast demand. This will result in a more balanced configuration of the treatment and distribution network between Sha Tin WTW and Tai Po WTW, and will greatly enhance the overall reliability of water supply in Hong Kong in the long term.

8. As for the proposed mainlaying works in Sham Shui Po and Kowloon City, they are required to facilitate transfer of treated water between the supply zones of Sha Tin WTW and Tai Po WTW.

9. Owing to the insufficient in-house resources and expertise to undertake the works described in paragraphs 4(a) – (d) above, we propose to engage consultants to carry out the work.

FINANCIAL IMPLICATIONS

10. We estimate the cost of the proposed consultancy and site investigation works to be \$43.4 million in MOD prices (see paragraph 11 below), made up as follows -

		\$ million
(a)	Consultants' fees	34.8
	(i) Review of the findings of the investigation study	1.0
	(ii) Environmental and traffic impact assessments	1.0
	(iii) Design	22.1
	(iv) Tender documentation and assessment	10.4
	(v) Supervision of site investigation works	0.3
(b)	Site investigation works	2.9
(c)	Contingencies	3.6
	Sub-total	41.3 (in September 2008 prices)
(d)	Provision for price adjustment	2.1
	Total	43.4 (in MOD prices)

A breakdown of the estimates for consultants' fees by man-months is at Enclosure 4.

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

Year	\$ million (Sept 2008)	Price Adjustment Factor	\$ million (MOD)
2009 – 2010	14.4	1.03500	14.9
2010 – 2011	22.5	1.05570	23.8
2011 – 2012	4.4	1.07681	4.7
	<hr/> 41.3 <hr/>		<hr/> 43.4 <hr/>

12. 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 2009 to 2012. We will tender the proposed consultancy on a lump sum basis. The site investigation works are subject to remeasurement as there is uncertainty over the underground features. We will provide for price adjustments in the consultancy agreement as the consultancy period will exceed 12 months.

13. The proposed part-upgrading of **334WF** to Category A will not give rise to any recurrent consequence.

PUBLIC CONSULTATION

14. We consulted the Tai Po Rural Committee and the Environment, Housing and Works Committee of the Tai Po District Council on 11 and 12 November 2008 respectively in respect of the proposed works at Tai Po WTW and at the two existing pumping stations. They supported the proposed works.

15. We consulted the Community Affairs Committee of the Kwai Tsing District Council on 9 December 2008 in respect of the proposed works at the Butterfly Valley service reservoir. It supported the proposed works.

16. We consulted the Environment and Hygiene Committee of the Sham Shui Po District Council and the Housing and Infrastructure Committee of the Kowloon City District Council on 27 November 2008 and 11 December 2008 respectively in respect of the proposed mainlaying works in Sham Shui Po and Kowloon City. They supported the proposed works.

17. We circulated to the Legislative Council Panel on Development an information paper on the proposed works on 24 March 2009. Members raised no objection to the proposal.

ENVIRONMENTAL IMPLICATIONS

18. The proposed design consultancy and site investigation works are not designated project under the Environmental Impact Assessment Ordinance (Cap. 499). The proposed design works will not cause any adverse environmental impacts. We shall implement suitable mitigation measures to control short-term environmental impacts from the site investigation works.

19. The proposed design consultancy and site investigation works will only generate very little construction waste. We will require the consultants to fully consider measures to minimise the generation of construction waste and to reuse/recycle construction waste as much as possible in the future implementation of the construction projects.

TRAFFIC IMPLICATIONS

20. The proposed design consultancy and site investigation works will not have significant impact on traffic.

HERITAGE IMPLICATIONS

21. The proposed design consultancy and site investigation 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 Antiquities and Monuments Office.

LAND ACQUISITION

22. The proposed design consultancy and site investigation works do not require any land acquisition.

BACKGROUND INFORMATION

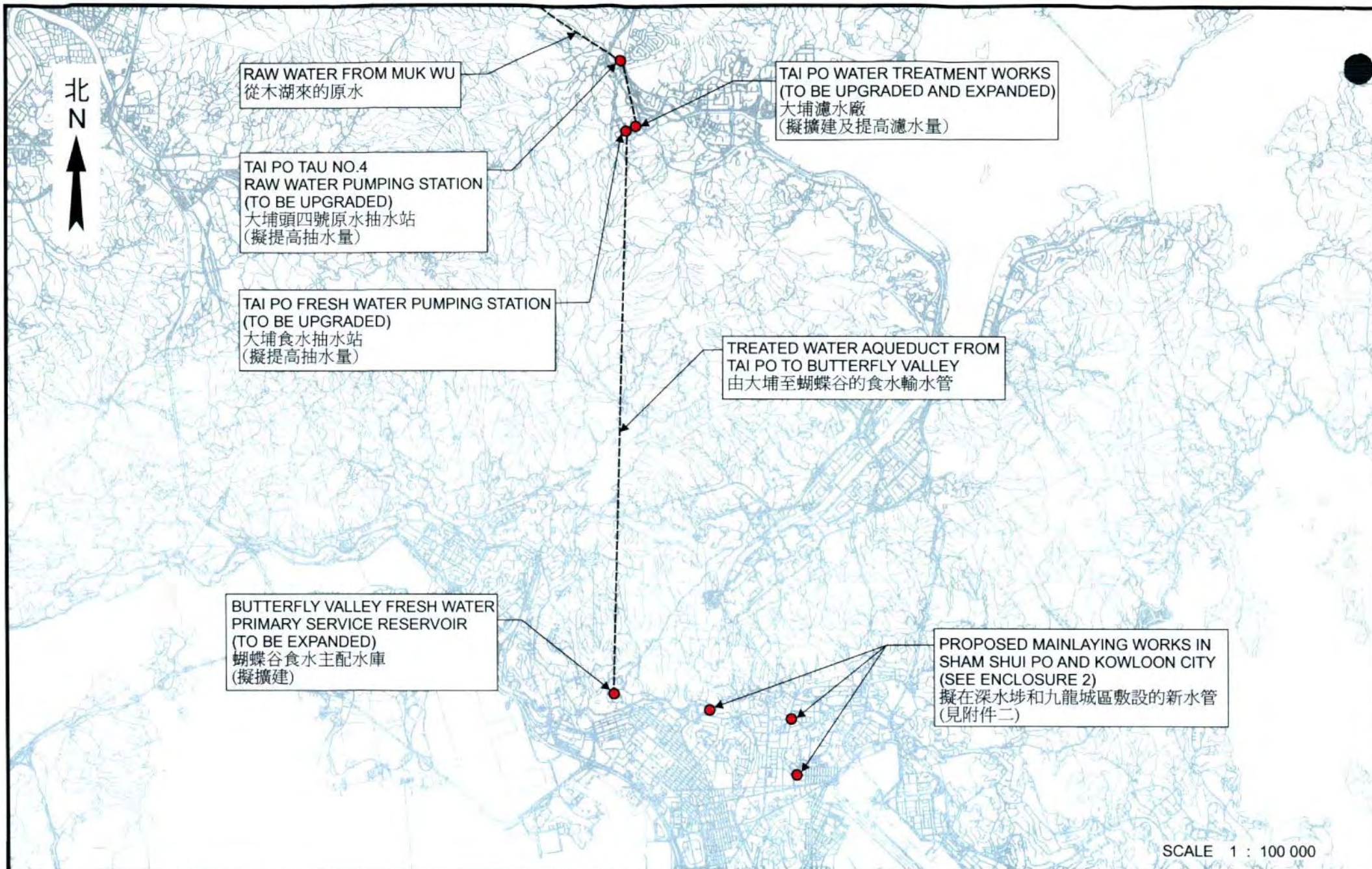
23. We upgraded **334WF** to Category B in November 2007. In June 2008, we engaged consultants to carry out the investigation study for the proposed works under **334WF** at a cost of \$10.5 million. We have charged the amount under block allocation **Subhead 9100WX** “Waterworks, studies and investigations for items in Category D of the Public Works Programme”.

24. The investigation study was substantially completed in March 2009. It has recommended an outline design scheme for Tai Po WTW and the associated transfer facilities for taking forward the design of the proposed works.

25. The proposed design consultancy and site investigation works will not involve any tree removal or planting proposals.

26. We estimate that the proposed design consultancy and associated site investigation works will create about 45 jobs (3 for labourers and another 42 for professional/technical staff) providing a total employment of 810 man-months.

Development Bureau
April 2009



核准 APPROVED

 總工程師/顧問工程管理 C.E./CM

19 / 3 / 2009

(甲級工程)
 (CAT 'A' Submission)

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 - 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 - LOCATION PLAN

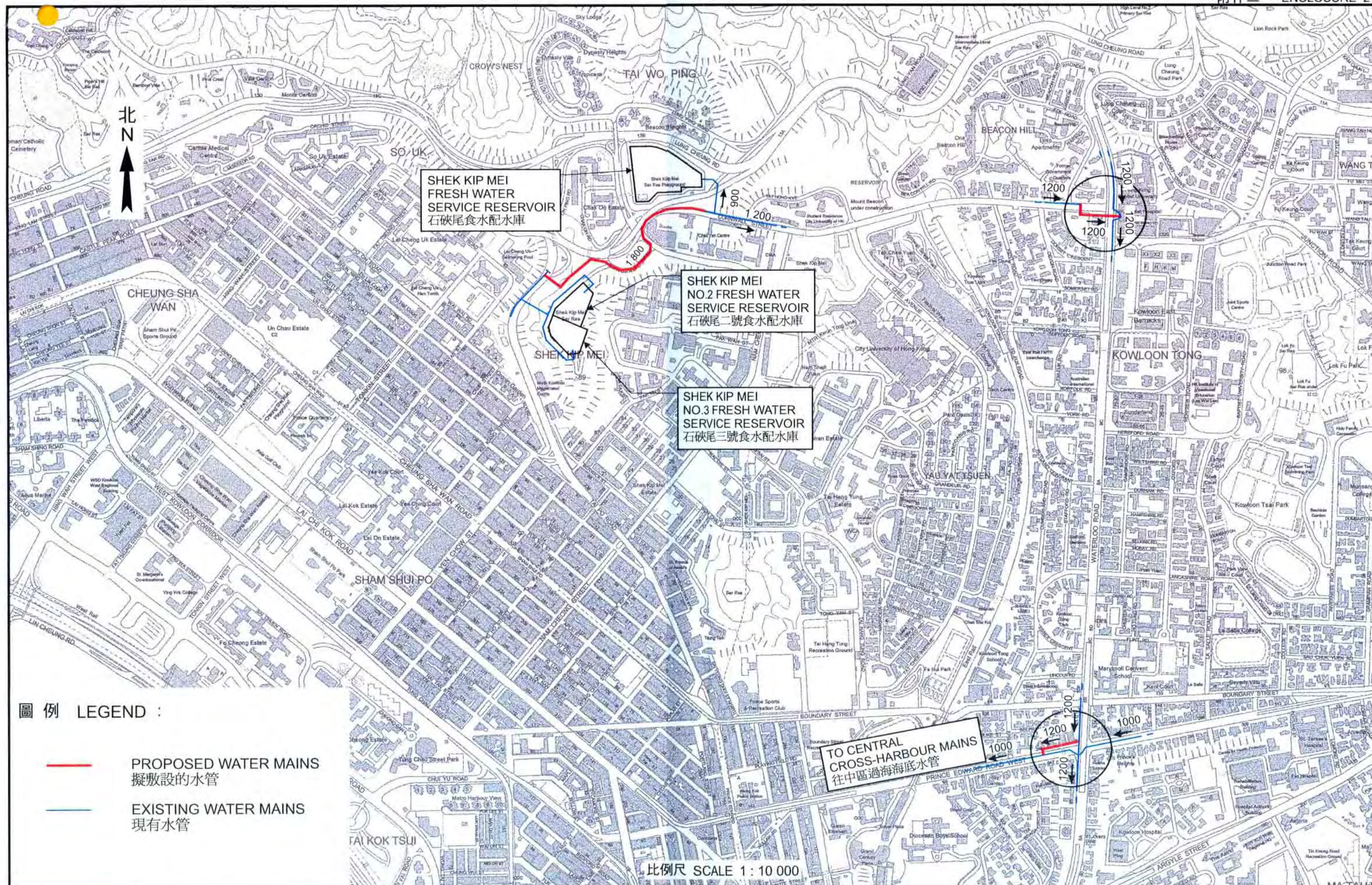


水務署
 WATER SUPPLIES DEPARTMENT

草圖編號
 SKETCH NO.

SK62008/503

REF. SK62008_503.CDR

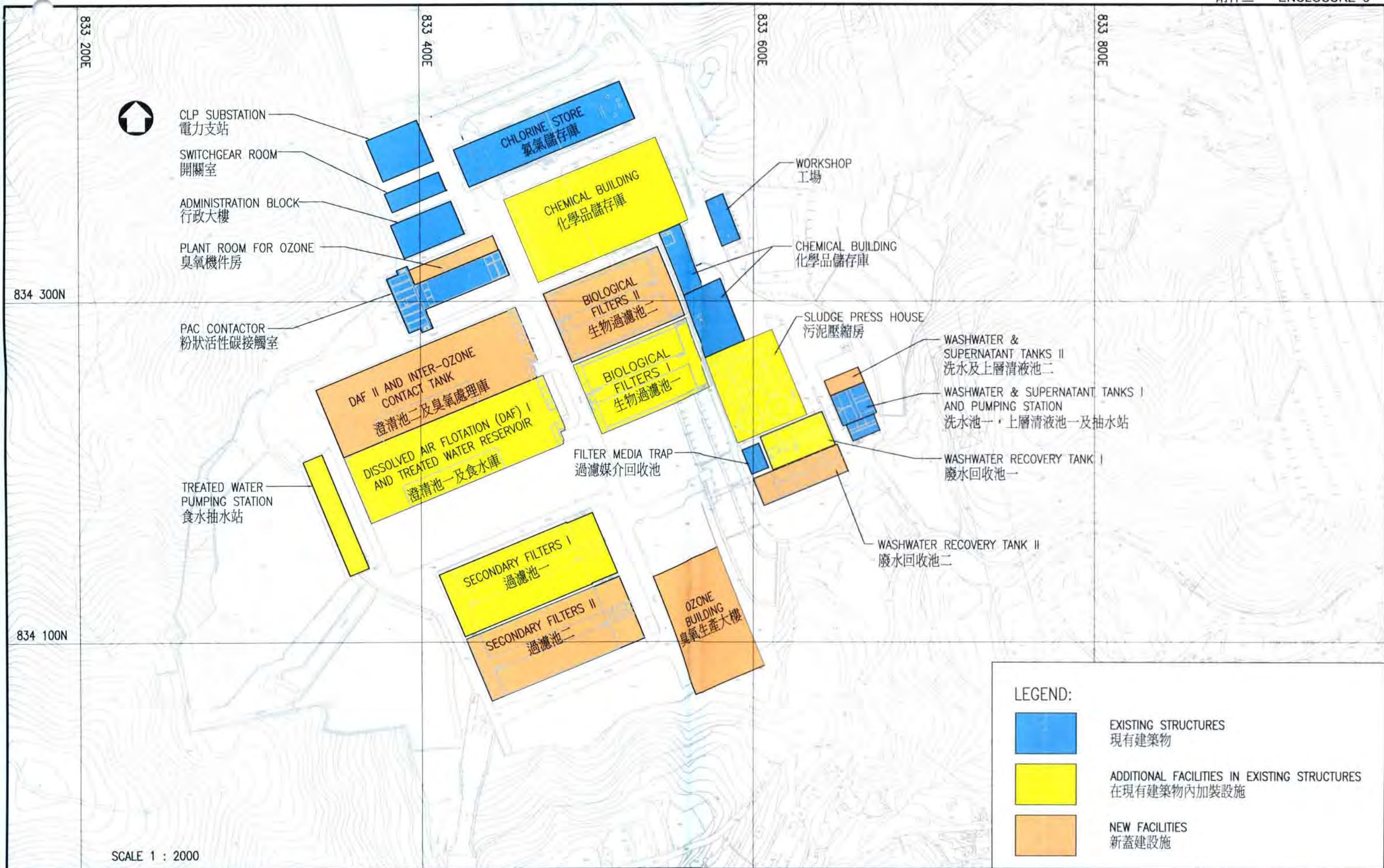


APPROVED
19/3/2009

(甲級工程)
(CAT 'A' Submission)

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 - 擬在深水埗和九龍城區敷設的新水管
P.W.P. ITEM NO. 334WF - EXPANSION OF TAI PO WATER TREATMENT WORKS AND
ANCILLARY RAW WATER AND FRESH WATER TRANSFER FACILITIES - PROPOSED MAINLAYING WORKS IN SHAM SHUI PO AND KOWLOON CITY

水務署
WATER SUPPLIES DEPARTMENT
草圖編號
SK62008/504



核准 APPROVED
K. King
總工程師/顧問工程管理
19/3/2009

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 - 平面圖
P.W.P. ITEM NO. 334WF - EXPANSION OF TAI PO WATER TREATMENT WORKS AND
ANCILLARY RAW WATER AND FRESH WATER TRANSFER FACILITIES - LAYOUT PLAN

水務署
Water Supplies Department
草圖編號 SK62008/505
SKETCH NO.
RFF. SK62008_505.dwg

Enclosure 4 to PWSC(2009-10)13

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

Breakdown of the estimate for consultants' fees (in September 2008 prices)

Consultants' staff costs ^(Note 2)			Estimated man-months	Average MPS* salary point	Multiplier ^(Note 1)	Estimated fee (\$ million)
(i) Review of the findings of the previous investigation study	Professional		5	38	2.0	0.6
	Technical		10	14	2.0	0.4
(ii) Impact assessments (environmental, traffic, heritage, etc.)	Professional		5	38	2.0	0.6
	Technical		10	14	2.0	0.4
(iii) Design	Professional		129	38	2.0	15.6
	Technical		163	14	2.0	6.5
(iv) Tender documentation and assessment	Professional		61	38	2.0	7.4
	Technical		76	14	2.0	3.0
(v) Supervision of site investigation	Professional		2	38	2.0	0.2
	Technical		2	14	2.0	0.1
Total						34.8

*MPS = Master Pay Scale

Notes

1. A multiplier of 2.0 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' office. MPS points 38 and 14 are used as the average MPS salary points for professionals and technical staff respectively. (As at 1 April 2008, MPS point 38 = \$60,535 per month and MPS point 14 = \$19,835 per month).
2. The figures given above are only estimates prepared by the Director of Water Supplies. We will know the actual man-months and actual fees only after we have selected the consultants through the usual competitive lump sum fee bidding system.