

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 703 – BUILDINGS

Environmental Hygiene – Toilets and bathhouses

7NT – Conversion of aqua privies into flushing toilets – phase 2A

Members are invited to recommend to Finance Committee the upgrading of 7NT to Category A at an estimated cost of \$30.1 million in money-of-the-day prices for the conversion of 40 aqua privies into flushing toilets.

PROBLEM

With the rising expectations of the community over the standard of public toilet facilities, aqua privies at popular sightseeing spots or locations of heavy usage in the New Territories can no longer meet the present-day demand.

PROPOSAL

2. The Director of Architectural Services, with the support of the Secretary for Health, Welfare and Food, proposes to upgrade 7NT to Category A at an estimated cost of \$30.1 million in money-of-the-day (MOD) prices for the conversion of 40 aqua privies into flushing toilets.

/PROJECT

PROJECT SCOPE AND NATURE

3. Our objective is to convert 100 aqua privies of relatively higher usage rate or located at popular scenic spots and tourist attractions into flushing toilets. In order to speed up the implementation programme, we intend to implement the conversion works in phases. In July 2004, Members approved the upgrading of 6NT to Category A for the conversion of 30 of these 100 aqua privies as phase 1 of the project. We have commenced the phase 1 works in batches starting from February 2005 and aim to complete the works in the second half of 2006.

4. As mentioned in the submission for the phase 1 works (PWSC(2004-05)33), we aim to convert the remaining 70 aqua privies in two phases. Phase 2A of the project, which we now propose to upgrade to Category A, covers 40 of the remaining 70 aqua privies. A list of the 40 aqua privies covered by phase 2A is at Enclosure 1. Similar to phase 1, the conversion works under phase 2A are classified into the following three types -

(a) **Type 1 – General refurbishment works at 34 locations, including –**

- (i) conversion of existing aqua privies into toilets with flushing system including alterations to cubicles and the provision of pedestal or squatting type water closets;
- (ii) replacement of internal/external wall and floor finishes;
- (iii) improvement of hand-washing facilities;
- (iv) improvement of lighting and ventilation; and
- (v) conversion of the existing septic tank into an underground holding tank.

(b) **Type 2 – Installation of newly introduced bio-toilet system at three locations, including –**

- (i) general refurbishment works under Type 1; and

/(ii)

- (ii) installation of a newly introduced bio-treatment system to treat waste by a biological process and to recirculate the treated effluent for flushing purpose.
- (c) **Type 3 – Connection with public sewerage at three locations, including –**
 - (i) general refurbishment works under Type 1 items (i) to (iv); and
 - (ii) connecting underground drains of the toilets to the public sewer available in the vicinity.

5. The type of works to be implemented at each aqua privy is subject to site constraints and the availability of public sewer nearby. For Type 1 and Type 2 conversion works, we will convert existing septic tanks into holding tanks for waste. For the 34 Type 1 aqua privies without bio-treatment plant, we will arrange more frequent tankering away of waste. For the three Type 2 aqua privies where sufficient space is available within the existing site area, we will install the newly introduced bio-treatment plants for pilot run (as indicated in Enclosure 1). For the three Type 3 aqua privies, as nearby public sewer is available, we will connect their underground drains to the public sewer.

6. The layout plans of a typical aqua privy and a flushing toilet converted from an aqua privy are at Enclosure 2 and Enclosure 3 respectively. An artist impression of the toilet after the implementation of the proposed conversion works is at Enclosure 4. We plan to carry out the proposed conversion works for the 40 aqua privies in batches and to commence works on site in October 2005. During the closure period of the aqua privies when conversion works are underway, we will make available portable toilets on site for use by the public. We aim to complete the works under phase 2A in early 2007.

7. We aim to start the last phase of the project, i.e. phase 2B, covering the remaining 30 aqua privies by end 2005 and complete it by 2007.

/ JUSTIFICATION

JUSTIFICATION

8. At present, aqua privies are not provided with flushing system. Toilet waste passes down the squatting hole of each toilet compartment and is collected in the septic tank underneath the aqua privies. The sewage undergoes an anaerobic decomposition by action of bacteria, reducing the volume of solid waste substantially. The resulting effluent passes through a soakage pit for filtering before it is discharged. The sludge will need to be pumped out and carried away by desludging vehicles/barges normally not less than once every six months depending on the usage rate of an aqua privy. Although the anaerobic process of a septic tank system helps reduce the volume of sludge, the absence of a flushing system may still create hygiene, pest and odour problems inside toilet compartments. Hence, aqua privies are not the desirable public toilet facilities at locations of relatively higher usage rate or popular scenic spots and tourist attractions.

9. Furthermore, the growing popularity of some sightseeing spots in the New Territories and outlying islands strongly calls for the upgrading of the existing aqua privies into flushing toilets with proper hand-washing facilities. The former Team Clean, chaired by the Chief Secretary for Administration, has therefore recommended, among other things, to accelerate the conversion programme for about 100 aqua privies which are close to scenic spots and tourist attractions or in locations with relatively higher usage rates, in order to improve the hygiene conditions, eliminate pest problems arising from the design of aqua privies and upgrade the standard of provision of toilet facilities.

FINANCIAL IMPLICATIONS

10. We estimate the capital cost of 7NT to be \$30.1 million in MOD prices, made up as follows –

	\$ million	
(a) Site preparation	2.4	
(b) Building	8.8	
(c) Building services	5.4	
(d) Drainage	8.2	
(e) External works	1.5	/(e)

	\$ million	
(f) Consultants' fees for contract administration	1.3	
(g) Contingencies	<u>2.8</u>	
Sub-total	30.4	(in September 2004 prices)
(h) Provision for price adjustment	(0.3)	
Total	<u>30.1</u>	(in MOD prices)

We will engage consultants to undertake contract administration of the project. A detailed breakdown of the estimate for consultants' fee by man-months is at Enclosure 5. The construction floor area (CFA) of the 40 aqua privies is about 2 095 square metres (m²). The estimated construction unit cost, represented by the building and the building services costs, is \$6,778 per m² of CFA in September 2004 prices. We consider this unit cost reasonable as compared with similar projects implemented by the Government.

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

Year	\$ million (Sep 2004)	Price adjustment factor	\$ million (MOD)
2005 – 06	4.8	0.99000	4.8
2006 – 07	12.5	0.98753	12.3
2007 – 08	8.0	0.99123	7.9
2008 – 09	4.1	0.99990	4.1
2009 – 10	1.0	1.01515	1.0
	<u>30.4</u>		<u>30.1</u>

/12.

12. We have derived the MOD estimates 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 2005 to 2010. We intend to award the contract on a lump-sum basis because we can clearly define the scope of works in advance. The contract will not provide for price adjustment because the contract period will not exceed 21 months.

13. The annual recurrent expenditure for the 40 aqua privies under phase 2A is \$1.6 million. Upon completion of the project, the annual recurrent expenditure will increase to about \$3.8 million.

PUBLIC CONSULTATION

14. We consulted the Legislative Council Panel on Food Safety and Environmental Hygiene on this project in November 2003. Members generally supported the project. In July 2004, Members approved the upgrading of 6NT to Category A for the conversion of 30 aqua privies into flushing toilets as phase 1 of the project. We also consulted various District Councils on phase 2A of the project in their respective districts in March and April 2004 and January 2005, and they supported the proposed conversion works.

ENVIRONMENTAL IMPLICATIONS

15. The project is not a designated project under the Environmental Impact Assessment Ordinance and will have little potential for giving rise to adverse environmental impacts. During construction, we will control noise, dust and site run-off nuisances to within established standards and guidelines through the implementation of mitigation measures in the relevant contract. These include the use of silencers, mufflers, acoustic lining or shields for noisy construction activities, and frequent cleaning and watering of the site.

16. At the planning and design stages, we will consider measures to reduce the generation of construction and demolition (C&D) materials. We will introduce more prefabricated building elements into the project design to reduce temporary formwork and construction waste. These include dry-wall partitioning and proprietary fittings and fixtures. We will use suitable excavated materials for filling within the project site to minimise off-site disposal. In addition, we will require the contractor to use metal site hoardings and signboards so that these materials can be recycled or reused in other projects.

17. We will require the contractor to submit a waste management plan (WMP) for approval. The WMP will include appropriate mitigation measures to avoid, reduce, reuse and recycle C&D materials. We will ensure that the day-to-day operations on site comply with the approved WMP. We will control the disposal of public fill and C&D waste to designated public filling facilities and landfills respectively through a trip-ticket system. We will require the contractor to separate public fill from C&D waste for disposal at appropriate facilities. We will record the disposal, reuse and recycling of C&D materials for monitoring purposes.

18. We estimate that the project will generate about 250 cubic metres (m³) of C&D materials. Of these, we will reuse about 75 m³ (30%) on site, 142 m³ (57%) as fill in public filling areas¹, and dispose of 33 m³ (13%) at landfills. The notional cost of accommodating C&D waste at landfill sites is estimated to be \$4,125 for this project (based on a notional unit cost² of \$125/m³).

LAND ACQUISITION

19. The project does not require any land acquisition.

BACKGROUND INFORMATION

20. We upgraded 7NT to Category B in February 2005. We will engage consultants to undertake detailed design and tender documentation of the project at a total estimated cost of \$650,000. We will charge this amount to block allocation **Subhead 3100GX** "Project feasibility studies, minor investigations and consultants' fees for items in Category D of the Public Works Programme". We have completed the site investigation using in-house staff resources.

/21.

¹ A public filling area is a designated part of a development project that accepts public fill for reclamation purposes. Disposal of public fill in a public filling area requires a licence issued by the Director of Civil Engineering and Development.

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/m³), nor the cost to provide new landfills (which are likely to be more expensive) when the existing ones are filled. The notional cost estimate is for reference only and does not form part of this project estimate.

21. The proposed aqua privies conversion works will not involve any tree removal or planting proposals.

22. We estimate that the proposed works will create about 50 jobs (43 for labourers and another seven for professional/technical staff) providing a total employment of 740 man-months.

Health, Welfare and Food Bureau
February 2005

7NT – Conversion of aqua privies into flushing toilets – phase 2A

Locations of aqua privies

A. Locations of 34 aqua privies to be converted under Type 1 works

Islands District

1. Lo Wai Village, Lantau Island

North District

1. Tze Tong Tsuen, Fanling
2. Yin Kong Site I, Sheung Shui
3. Ying Pun San Tsuen, Sheung Shui

Sai Kung District

1. Ko Tong Ha Yeung
2. Pak Sha O
3. Po Toi O

Shatin District

1. Shap Yi Watt Village

Tai Po District

1. CARE Village Site II
2. Ng Tung Tsai Village
3. She Shan Village
4. Tai Po Tau Village Site I
5. Tai Hang Village Site II

Tsuen Wan District

1. Chuen Lung Village
2. Wo Yi Hop Village
3. Yuen Tun Village

Yuen Long District

1. Hung Shui Kiu Tan Kwai Tsuen
2. Lau Fau Shan Chung Pak Nai Site II
3. Pat Heung Lo Uk Tsuen
4. Pat Heung Wang Toi Shan
5. Pat Heung Sheung Tsuen
6. Pat Heung Tsang Uk Tsuen
7. Ping Shan Hang Tau Tsuen
8. Ping Shan Lam Hau Pok

9. Ping Shan Sheung Cheung Wai
10. San Tin Mei Po Tsuen
11. San Tin Mei Po Lung
12. Shan Pui Chung Hau Tsuen
13. Shap Pat Heung Tai Wai Tsuen
14. Shap Pat Heung Tin Liu Tsuen
15. Shap Pat Heung Tung Tau Tsuen
16. Shap Pat Heung Small Traders New Village
17. Shap Pat Heung Pak Sha Tsuen
18. Shap Pat Heung Ying Lung Wai

B. Locations of three aqua privies to be converted under Type 2 works

Islands District

1. Shek Mun Kap, Tung Chung

Tai Po District

1. CARE Village Site I

Yuen Long District

1. Lau Fau Shan Sha Kiu Ha Wan

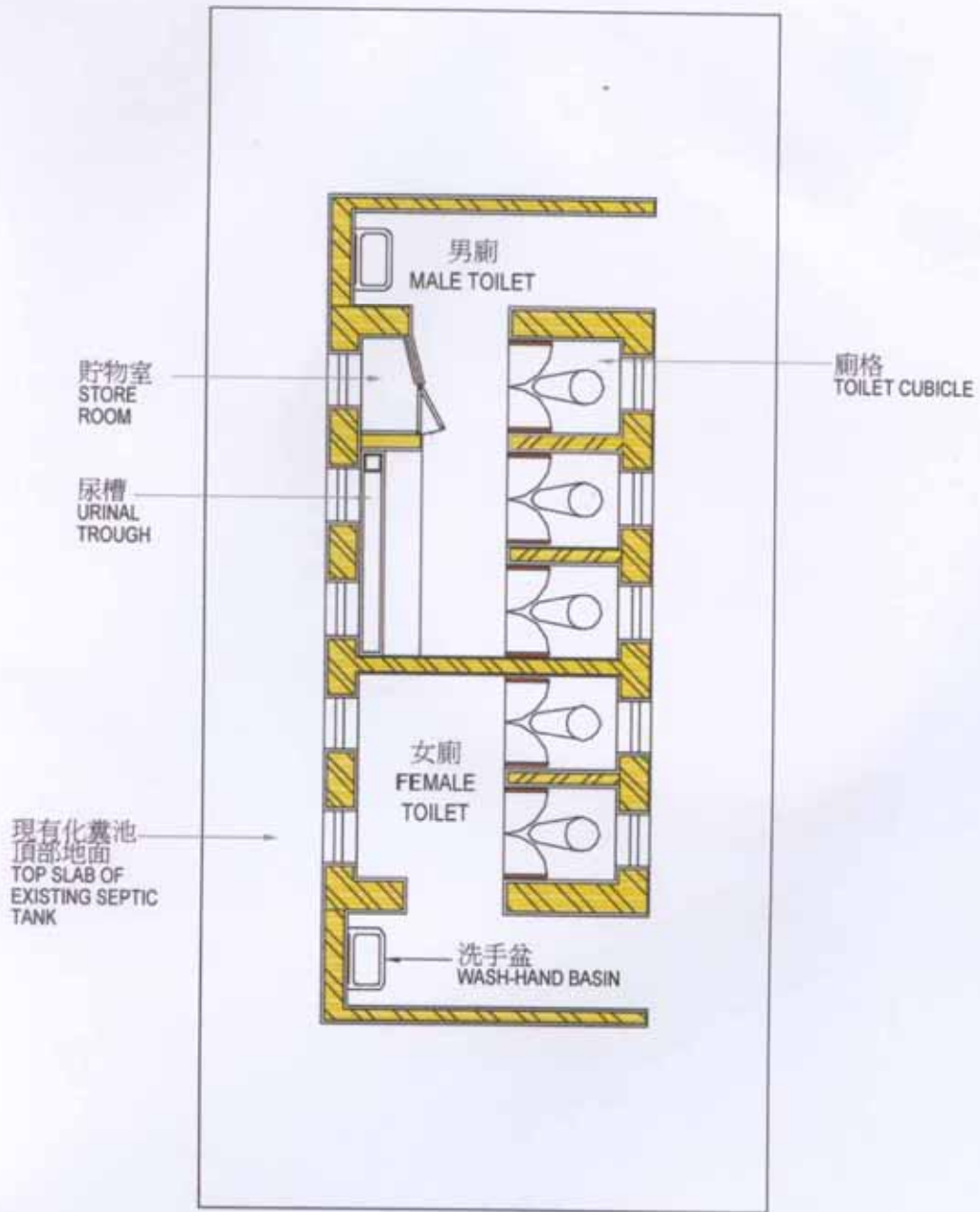
C. Locations of three aqua privies to be converted under Type 3 works

Tai Po District

1. Chung Shun Lane
2. Ha Hang Village

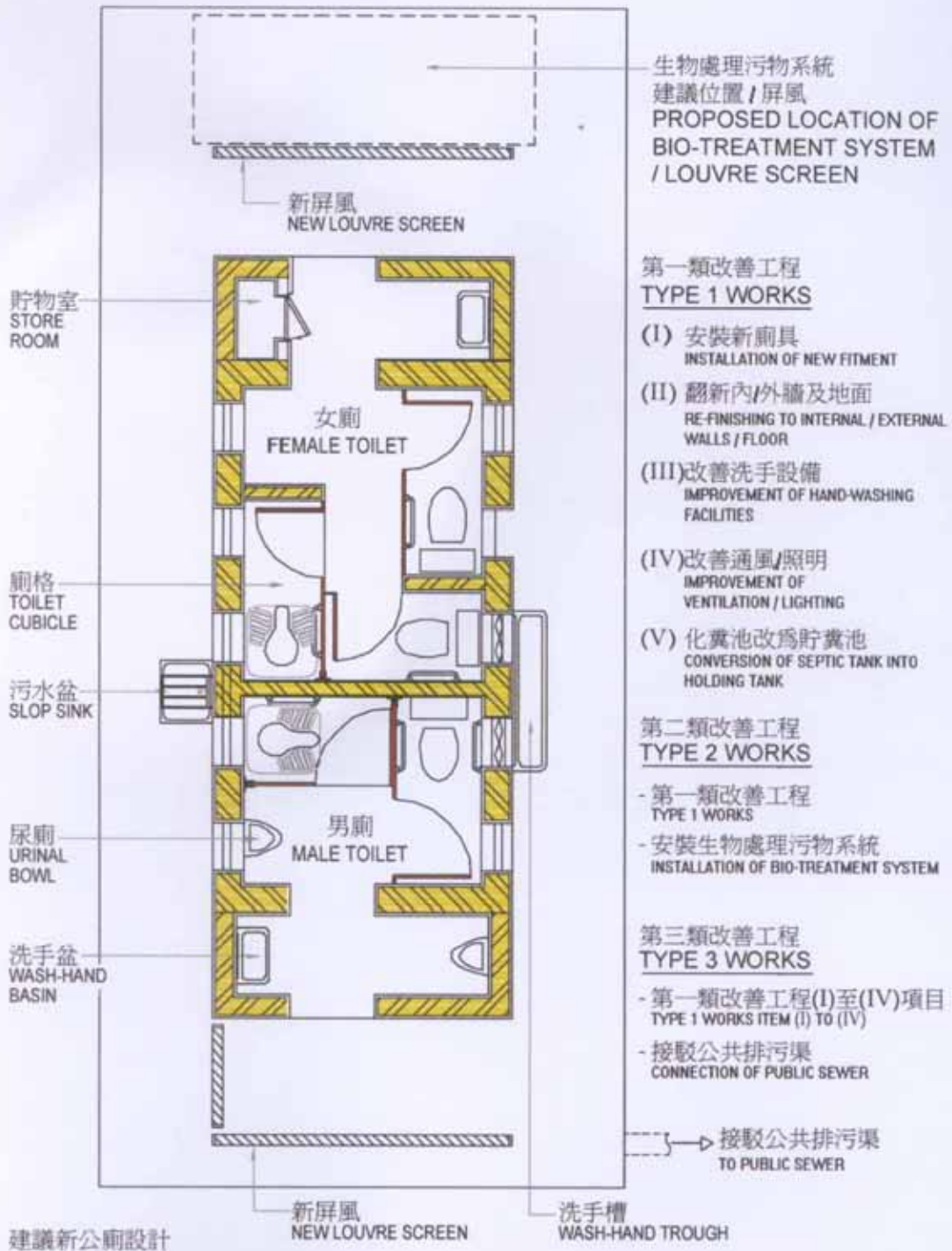
Tsuen Wan District

1. Pai Min Kok Village



現有旱廁佈置圖
EXISTING AQUA PRIVY LAYOUT

title 7NT 把旱廁改為沖水式廁所 - 第2A期 CONVERSION OF AQUA PRIVIES INTO FLUSHING TOILETS - PHASE 2A	drawn by BILLY CHOW	date 14.02.05	drawing no. AB/6901/P2A/XA102	scale 1:50
	approved KEN WONG	date 14.02.05	 ARCHITECTURAL SERVICES DEPARTMENT	
	office ARCHITECTURAL BRANCH			



生物處理污物系統
建議位置 / 屏風
PROPOSED LOCATION OF
BIO-TREATMENT SYSTEM
/ LOUVRE SCREEN

**第一類改善工程
TYPE 1 WORKS**

- (I) 安裝新廁具
INSTALLATION OF NEW FITMENT
- (II) 翻新內/外牆及地面
RE-FINISHING TO INTERNAL / EXTERNAL
WALLS / FLOOR
- (III) 改善洗手設備
IMPROVEMENT OF HAND-WASHING
FACILITIES
- (IV) 改善通風/照明
IMPROVEMENT OF
VENTILATION / LIGHTING
- (V) 化糞池改為貯糞池
CONVERSION OF SEPTIC TANK INTO
HOLDING TANK

**第二類改善工程
TYPE 2 WORKS**

- 第一類改善工程
TYPE 1 WORKS
- 安裝生物處理污物系統
INSTALLATION OF BIO-TREATMENT SYSTEM

**第三類改善工程
TYPE 3 WORKS**

- 第一類改善工程(I)至(IV)項目
TYPE 1 WORKS ITEM (I) TO (IV)
- 接駁公共排污渠
CONNECTION OF PUBLIC SEWER

建議新公廁設計
TYPICAL SCHEMATIC LAYOUT PROPOSAL


title 7NT 把旱廁改為沖水式廁所 - 第2A期 CONVERSION OF AQUA PRIVIES INTO FLUSHING TOILETS - PHASE 2A	drawn by BILLY CHOW	date 14.02.05	drawing no. AB/6901/P2A/XA103	scale 1:50
	approved KEN WONG	date 14.02.05	 ARCHITECTURAL SERVICES DEPARTMENT	
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廁所改善後之內貌
 INTERIOR VIEW OF TOILET AFTER IMPROVEMENT



廁所改善後之外貌
 EXTERIOR VIEW OF TOILET AFTER IMPROVEMENT

title 7NT 把旱廁改為沖水式廁所 - 第2A期 CONVERSION OF AQUA PRIVIES INTO FLUSHING TOILETS - PHASE 2A	drawn by BILLY CHOW	date 14.02.05	drawing no. AB/6901/P2A/XA104	scale NTS
	approved KEN WONG	date 14.02.05	 ARCHITECTURAL SERVICES DEPARTMENT	
	office ARCHITECTURAL BRANCH			

7NT – Conversion of aqua privies into flushing toilets – phase 2A

Breakdown of the estimate for consultants' fees

Consultants' staff costs		Estimated man- months	Average MPS* salary point	Multiplier (Note 1)	Estimated fee (\$ million)
Contract administration (Note 2)	Professional	7.4	38	2.0	0.8
	Technical	13.8	14	2.0	0.5
Total					1.3

*MPS = Master Pay Scale

Notes

1. A multiplier of 2.0 is applied to the average MPS point to estimate the full staff costs including the consultant's overheads and profit, as the staff will be employed in the consultant's office. (As at 1 January 2005, MPS point 38 = \$54,255 per month and MPS point 14 = \$18,010 per month.)
2. We will only know the actual man-months and actual fees after we have selected the consultant through the usual competitive bidding system.