For discussion **PWSC(2004-05)51**
on 26 January 2005

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

Head 704 – DRAINAGE
Civil Engineering – Drainage and erosion protection
109CD – Drainage improvement in Sha Tin and Tai Po

Members are invited to recommend to Finance Committee –

(a) the upgrading of part of **109CD**, entitled "Drainage improvement works in Sha Tin", to Category A at an estimated cost of $72.4 million in money-of-the-day prices; and

(b) the retention of the remainder of **109CD**, retitled as "Drainage improvement works in Tai Po" in Category B.

PROBLEM

Existing drains in Sha Tin were built several decades ago and some local areas in Sha Tin are susceptible to flooding during severe rainstorms due to the inadequate capacity of the existing drainage systems.

PROPOSAL

2. The Director of Drainage Services, with the support of the Secretary for the Environment, Transport and Works, proposes to upgrade part of **109CD** to Category A at an estimated cost of $72.4 million in money-of-the-day (MOD) prices for urban drainage improvement works in Sha Tin.

/PROJECT .....

PROJECT SCOPE AND NATURE

3. The part of **109CD** which we now propose to upgrade to Category A comprises –

(a) upgrading of about 2.8 kilometres of existing drains of diameter ranging from 375 millimetres (mm) to 1200 mm by replacing with larger drains of diameter ranging from 450 mm to 1 800 mm around City One Shatin, Sheung Wo Che, Tin Liu, Lek Yuen Estate and Ngau Pei Sha in Sha Tin district; and

(b) construction of other minor drainage facilities.

A location plan illustrating the proposed works is at Enclosure 1.

4. We plan to start the construction works in March 2005 for completion in December 2007.

JUSTIFICATION

5. The drainage catchment of Sha Tin is large in scale and covers the urban areas in Tai Wai, Fo Tan, Sha Tin and Ma On Shan together with the more upstream rural areas. Most of the existing drains were designed and constructed decades ago to meet the flow requirements and standards at that time. Owing to continuing development and changes in land use over the years, some existing drains have become inadequate to cope with the increasing run-offs and some of the above areas are susceptible to flooding during severe rainstorms. We have conducted a comprehensive assessment of the capacity of the existing drainage systems for the whole catchment. To alleviate flooding risks in the district and to meet the community's expectation for better flood protection, we have concluded that the drainage systems need improvement around City One Shatin, Sheung Wo Che, Tin Liu, Lek Yuen Estate and Ngau Pei Sha.

6. Upon completion of the proposed works, the urban drainage systems in Sha Tin will be improved to withstand rainstorms with a return period[1] of one in 50 years.

/FINANCIAL .....

---

[1] "Return period" is the average number of years during which a certain severity of flooding will occur once, statistically. A longer return period means a rarer chance of occurrence of a more severe flooding.

FINANCIAL IMPLICATIONS

7. We estimate the cost of the proposed works to be $72.4 million in MOD prices (see paragraph 8 below), made up as follows –

			$ million	
(a)	Upgrading of existing drains		58.4	
(b)	Construction of other minor drainage facilities		1.8	
(c)	Consultants' fees		6.9	
	(i) contract administration	0.7		
	(ii) site supervision	6.2		
(d)	Environmental mitigation measures		0.4	
(e)	Contingencies		5.4	
	Sub-total		72.9	(in September 2004 prices)
(f)	Provision for price adjustment		(0.5)	
	Total		72.4	(in MOD prices)

A breakdown of the estimates for consultants' fees by man-months is at Enclosure 2.

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

Year	**$ million (Sept 2004)**	**Price adjustment factor**	**$ million (MOD)**
2005 – 2006	13.0	0.99000	12.9
2006 – 2007	21.0	0.98753	20.7
2007 – 2008	24.3	0.99123	24.1
2008 - 2009	10.0	0.99990	10.0
2009 - 2010	4.6	1.01515	4.7
	72.9		72.4

/9. .....

9. We have derived the MOD estimate on the basis of 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 will tender the works under a standard re-measurement contract because of the uncertainties of the existence and location of underground utilities such as electricity cables, telephone cables and water pipes. The contract will provide for price adjustments because the contract period will exceed 21 months.

10. We estimate the annual recurrent expenditure arising from the proposed works to be about $100,000.

PUBLIC CONSULTATION

11. We consulted the Health and Environment Committee of Sha Tin District Council on 17 February 2004. Members supported the proposed project and requested us to mitigate the possible environmental and traffic impacts to the residents. We will closely liaise with and consult the concerned resident organisations to address their concerns throughout the course of implementation of the proposed project.

12. We consulted the Legislative Council Panel on Planning, Lands and Works on the proposed works by circulation of an information paper on 2 December 2004. Members did not raise any objection to the proposal.

ENVIRONMENTAL IMPLICATIONS

13. The part of **109CD** which we now propose to upgrade to Category A is not a designated project under the Environmental Impact Assessment Ordinance. We have completed an Environmental Study which concludes that there would not be any long term adverse environmental impacts arising from the proposed works. For short term impacts caused by the works during construction, we will control noise, dust and site run-off within established standards and guidelines through implementation of mitigation measures, such as the use of temporary noise barriers, silenced construction plant and water-spraying to reduce noise and dust generated by the works. We will also carry out regular site inspections to ensure that these recommended mitigation measures and good site practices would be properly implemented on site. We have included in the project estimate $400,000 in September 2004 prices for implementation of environmental mitigation measures.

14. At the design stage, we have considered ways to optimise the size and shape of the proposed underground drainage works in order to minimise the generation of construction and demolition (C&D) materials. We will require the contractor to submit a waste management plan (WMP) for approval. The WMP will include appropriate mitigation measures to reduce, reuse and recycle C&D materials. We will ensure that the day-to-day operations on site comply with the WMP. To further minimise the generation of C&D materials and the disposal of public fill to public filling facilities, we will encourage the contractor to use non-timber formworks and recycle material for temporary works and require the contractor to reuse the excavated material as filling material on site or on other construction sites as far as possible. We will also control disposal of public fill and C&D waste to designated public filling facility and landfills respectively through a trip-ticket system, and require the contractor to separate public fill from C&D waste for disposal at appropriate facilities. We will record the disposal and reuse of C&D materials for monitoring purposes.

15. We estimate that the project will generate about 9 300 cubic metres (m^3) of C&D materials. Of these, we will reuse 5 580 m^3 (60%) on site, deliver 2 790 m^3 (30%) to public filling areas[2] and dispose of 930 m^3 (10%) at landfills. The notional cost of accommodating C&D waste at landfill sites is estimated to be $116,250 for this project (based on a notional unit cost[3] of $125/m^3$).

TRAFFIC IMPLICATIONS

16. To minimise the traffic impacts caused by construction of the proposed works, we have carefully selected the alignment of the proposed drains so as to avoid the busy areas. We have also completed the traffic impact assessment for the proposed works. The result shows that the impacts on traffic will not be significant. All existing vehicular entry and exit points, pedestrian routes and pedestrian crossing facilities will be maintained, and temporary traffic arrangements will be designed according to prevailing site constraints and up to the required standards. Existing public transport routes will not be affected by the

/works .....

---

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

3 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 are likely to be more expensive) when existing ones are filled. The notional cost estimate is for reference only and does not form part of this project estimate.

works. Therefore, traffic impacts at most locations of the works are expected to be minimal. To expedite works progress without inducing unacceptable nuisance to the public, we will employ a trenchless method[4] to construct drains at critical locations such as the junction between Ngan Shing Street and Siu Lek Yuen Road, the junction between Ngan Shing Street and Pak Tak Street, and at Sheung Wo Che Village across the Kowloon-Canton Railway Corporation railway.

17. We will also establish a Traffic Management Liaison Group (TMLG) under the contract to discuss, scrutinise and agree on the proposed temporary traffic management measures. Representatives from the Transport Department, Hong Kong Police Force, Highways Department, District Offices, various public transport operators, utility undertakings and the concerned resident organisations will be invited to attend the TMLG meetings. Every temporary traffic arrangement has to be agreed by the TMLG before implementation. The TMLG will also take into account all relevant factors such as site restrictions, existing and future traffic conditions, pedestrian safety, access to building/shop fronts and provision of emergency vehicle access in considering the temporary traffic arrangements.

LAND ACQUISITION

18. The project does not require any land acquisition.

BACKGROUND INFORMATION

19. In October 1999, we completed a comprehensive review of the drainage systems in Sha Tin and Tai Po under **79CD** "Stormwater drainage master plan study in Sha Tin and Tai Po" (the Study). The Study identified that some of the existing drainage systems in Sha Tin and Tai Po were inadequate to meet the required flood protection standard and recommended a programme of drainage improvement works to tackle the flooding problems in the areas. Based on the recommendations of the Study, we completed the Preliminary Project Feasibility Study Report on the drainage improvements in Sha Tin and Tai Po in June 2000. We included **109CD** in Category B of the Public Works Programme in September 2000.

/20. .....

---

4 Trenchless method refers to the use of pipe-jacking, micro-tunnelling or boring techniques to construct underground pipes without opening up the road surface along the alignment of the pipes. Although the method is more expensive than the conventional open cut method, the former method, if feasible, is preferred for carrying out works at busy road sections since it will greatly reduce the need for road opening thus minimise disruption to traffic during the construction phase. The trenchless method is also the only practical way to construct underground pipes across railway tracks.

20. In June 2001, we upgraded part of **109CD** to Category A as **115CD** "Drainage improvement in Sha Tin and Tai Po – consultants' fees and investigations" for engaging consultants to undertake site investigations, impact assessments and design for the drainage improvement works for the whole project.

21. We have completed the detailed design of the proposed works in Sha Tin and plan to start the construction works in March 2005 for completion in December 2007. Planning and design for the remaining works under **109CD,** including the construction of drainage channels for Upper Lam Tsuen River, She Shan River and Upper Tai Po River and upgrading of urban drains in Tai Po, is underway.

22. The proposed works will involve removal of 12 trees, which will be transplanted within the project area. All trees to be removed are not important trees[5].

23. We estimate that the proposed works will create about 50 jobs (40 for labourers and another ten for professional/technical staff) providing a total employment of 1 200 man-months.

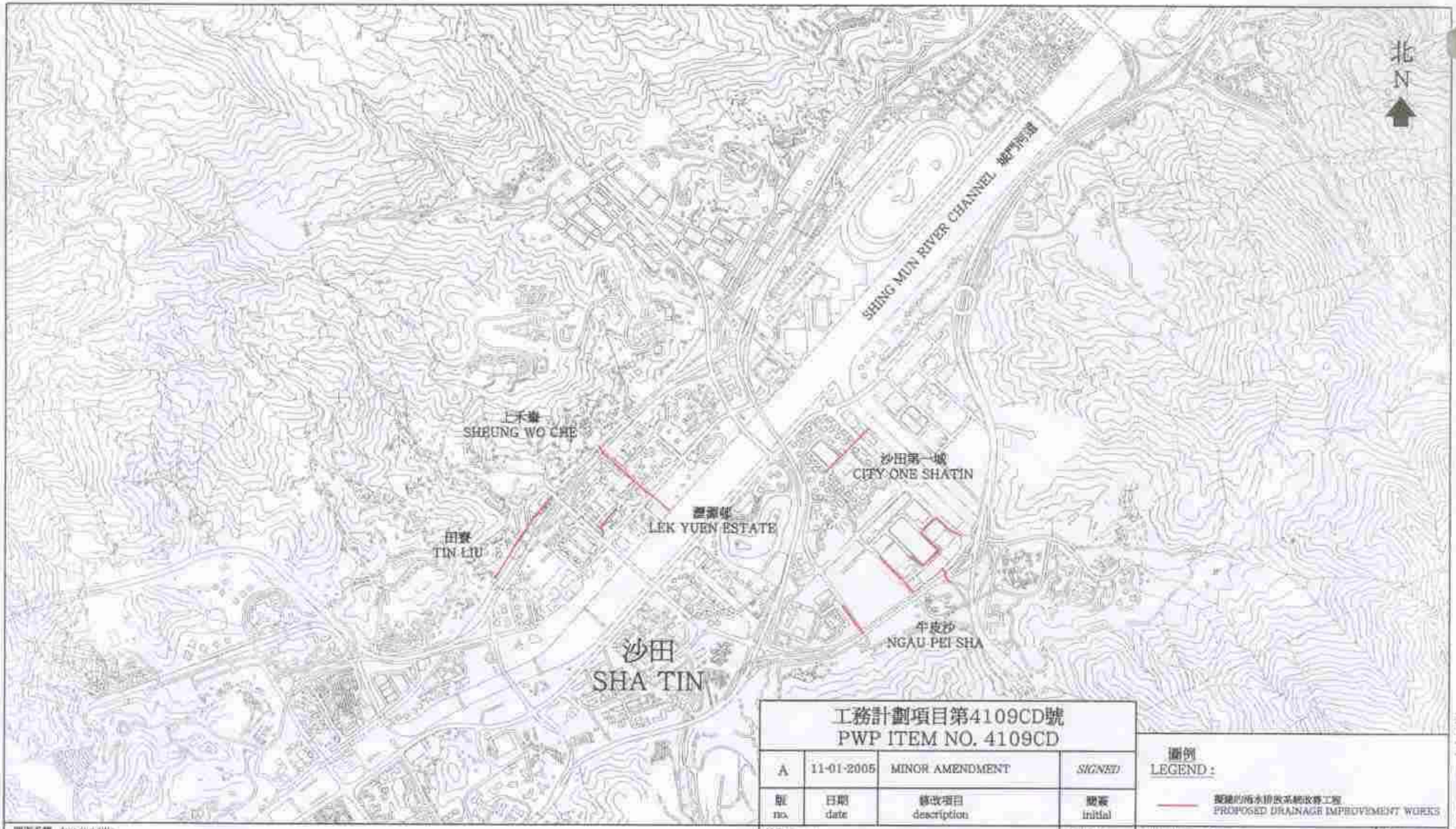
Environment, Transport and Works Bureau

January 2005

---

[5] Important trees include trees on the Register of Old and Valuable Trees, and any other trees which meet one or more of the following criteria –

(a) trees over 100 years old;
(b) trees of cultural, historical or memorable significance;
(c) trees of precious or rare species;
(d) trees of outstanding form; or
(e) trees with trunk diameter exceeding one metre (measured at one metre above ground level).



工務計劃項目第4109CD號
PWP ITEM NO. 4109CD

版 no.	日期 date	修改項目 description	簽署 initial
A	11-01-2005	MINOR AMENDMENT	SIGNED

圖例
LEGEND :

擬建的排水排放系統改善工程
PROPOSED DRAINAGE IMPROVEMENT WORKS

圖則名稱 drawing title

沙田雨水排放系統改善工程
DRAINAGE IMPROVEMENT WORKS IN SHA TIN

繪圖 drawn	ORIGINAL SIGNED C.W. CHAN	日期 date 18-11-2004
核對 checked	ORIGINAL SIGNED C.M. CHAN	日期 date 18-11-2004
批核 approved	ORIGINAL SIGNED W.K. NG	日期 date 18-11-2004
部門 office	顧問工程管理部 CONSULTANTS MANAGEMENT DIVISION	

圖則編號 drawing no. DCM/2004/054A

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

附件1 ENCLOSURE 1

109CD – Drainage improvement in Sha Tin and Tai Po

Breakdown of the estimates for consultant's fees

Consultants' staff costs			**Estimated man-months**	**Average MPS* salary point**	**Multiplier** (Note 1)	**Estimated fee ($ million)**
(a)	Contract administration (Note 2)	Professional	—	—	—	0.5
		Technical	—	—	—	0.2
(b)	Site supervision by resident site staff of the consultants (Note 3)	Professional	33	38	1.6	2.9
		Technical	114	14	1.6	3.3
					Total	6.9

* MPS = Master Pay Scale

Notes

1. A multiplier of 1.6 is applied in the case of site staff supplied by the consultants. (As at 1 January 2005, MPS pt. 38 = $54,255 per month and MPS pt. 14 = $18,010 per month.)

2. The consultants' fees for contract administration are estimated in accordance with the existing consultancy agreement for the design and construction of the project.

3. We will only know the actual man-months and actual costs for site supervision after completion of the works.