

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

Head 704 – DRAINAGE

Civil Engineering – Drainage and erosion protection

110CD – Drainage improvement in Tsuen Wan, Kwai Chung and Tsing Yi – urban drainage improvement works

Members are invited to recommend to Finance Committee the upgrading of **110CD**, retitled “Drainage improvement in Tsuen Wan and Kwai Chung”, to Category A at an estimated cost of \$69.0 million in money-of-the-day prices.

PROBLEM

Tsuen Wan and Kwai Chung are susceptible to flooding during severe rainstorms due to the inadequate capacity of the existing drainage systems in the areas.

PROPOSAL

2. The Director of Drainage Services, with the support of the Secretary for the Environment, Transport and Works, proposes to upgrade **110CD** to Category A at an estimated cost of \$69.0 million in money-of-the-day (MOD) prices for the drainage improvement works in Tsuen Wan and Kwai Chung.

PROJECT SCOPE AND NATURE

3. The scope of works under **110CD** comprises–

/(a)

- (a) rehabilitation of about 250 metres (m) stormwater drains with 1 800 millimetres (mm) in diameter around Kwok Shui Road;
- (b) rehabilitation of about 200 m box culvert with size ranging from 4.0 m x 1.5 m to 3.7 m x 2.7 m around Ping Fu Path; and
- (c) upgrading of about 1 200 m stormwater drains by replacement of existing drains with larger drains or by addition of new drains ranging from 600 mm to 2 100 mm in diameter around Tai Ha Street, Tsuen Wing Street, Sha Tsui Road and Lei Pui Street.

_____ The location plan illustrating the proposed works is at Enclosure 1.

4. We plan to start the proposed works in November 2004 for completion in September 2006.

JUSTIFICATION

5. Most of the existing stormwater drains in Tsuen Wan and Kwai Chung were designed and constructed decades ago to meet the flow requirements and standards at that time. Rapid urbanisation and changes in land use over the past decades have turned the natural ground and slopes into paved areas. Rainwater which could previously dissipate naturally through ground infiltration can no longer do so. This has led to significant increase in surface runoff and overloading of the existing drainage system. Although we have been making local improvements to the system to cater for developments from time to time, the overall drainage system as a whole is still inadequate to meet the required flood protection standard. Flooding occurs during severe rainstorms, especially at the trunk roads namely Castle Peak Road, Sha Tsui Road, Texaco Road and Kwai Chung Road.

6. To address the flooding problem for the whole drainage catchment of Tsuen Wan and Kwai Chung areas, we have carried out a comprehensive review of the drainage systems in 1999. The review reveals that due to the topography and extensive coverage of the upland catchments, large quantity of stormwater flows from the uplands can accumulate in short period during heavy rainstorms, resulting in overloading of the drainage systems at the lower urbanised areas. We need to

/improve

improve the existing drainage systems in Tsuen Wan and Kwai Chung in order to alleviate flooding in the districts and to meet the community's increased expectation for higher flood protection standards. The whole drainage improvement scheme comprises the proposed rehabilitation and upgrading of stormwater drains and box culverts in Tsuen Wan and Kwai Chung, as well as a drainage tunnel to intercept and convey the upland flows directly to the sea, which is under another drainage project¹. We propose to carry out the drainage improvement works as described in paragraph 3 above so that the areas along Tai Yuen Street and Kwok Shui Road, Ta Chuen Ping Street (near Ping Fu Path), Lei Pui Street, Tai Ha Street and Tai Wo Hau Road will be protected to the required standard. These drainage improvement works are independent of the proposed drainage tunnel, and would remove the capacity bottlenecks in the drainage system.

FINANCIAL IMPLICATIONS

7. We estimate the capital cost of the proposed works to be \$69.0 million in MOD prices (see paragraph 8 below), made up as follows–

	\$ million
(a) Drainage works	56.6
(i) rehabilitation works	24.7
(ii) upgrading works	31.9
(b) Consultants' fees for	7.1
(i) contract administration	0.9
(ii) site supervision	6.2
(c) Environmental mitigation measures	1.8
(d) Contingencies	6.5
	/Sub-total

¹ The proposed drainage tunnel is under **111CD** "Drainage improvement in Tsuen Wan, Kwai Chung and Tsing Yi – Tsuen Wan drainage tunnel". In March 2002, we upgraded part of **111CD** to Category A as **121CD** "Drainage improvement in Tsuen Wan, Kwai Chung and Tsing Yi – Tsuen Wan drainage tunnel – Investigation" for engaging consultants to investigate the tunnel alignment and to conduct an Environmental Impact Assessment study, ground investigation and physical model for the proposed tunnel. The consultancy commenced in October 2002 for completion in 2005-06.

		\$ million
	Sub-total	72.0 (in September 2003 prices)
(e)	Provision for price adjustment	(3.0)
	Total	<u>69.0</u> (in MOD prices)

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

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

Year	\$ million (Sept 2003)	Price adjustment factor	\$ million (MOD)
2004–05	3.1	0.97150	3.0
2005–06	30.4	0.95450	29.0
2006–07	24.1	0.95450	23.0
2007–08	10.0	0.96643	9.7
2008–09	4.4	0.98455	4.3
	<u>72.0</u>		<u>69.0</u>

9. We have derived the MOD estimate 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 2004 to 2009. We will tender the works under a standard re-measurement contract because of the uncertainties of the existence and exact locations of underground utilities such as electricity cables, telephone cables and water pipes. We will not allow for price adjustments in the contract as the contract period will not exceed 21 months.

10. The proposed works will not give rise to additional recurrent expenditure.

/PUBLIC

PUBLIC CONSULTATION

11. We consulted the Legislative Council (LegCo) Panel on Planning, Lands and Works in March 2001 on the overall drainage improvement scheme for Tsuen Wan and Kwai Tsing Districts. On 4 January 2002, we consulted the LegCo Panel again on our findings on the interception approach. Experts in hydraulics and representatives from various professional bodies also participated at the meeting, and discussed the causes of major flooding in recent years, the technical feasibility of the proposed drainage tunnel projects, the cost-effectiveness as well as cost and benefit of the interception approach.

12. We consulted the Kwai Tsing District Council (K&TDC) and Tsuen Wan District Council (TWDC) on 11 and 30 March 2004 respectively on the proposed drainage improvement works. Both the TWDC and K&TDC supported the implementation of the proposed works.

13. We consulted the LegCo Panel on Planning, Lands and Works on 27 April 2004. The Panel supported the implementation of the proposed drainage improvement works in Tsuen Wan and Kwai Chung. To address some Members' concern about possible traffic impacts arising from the proposed works at Tai Wo Hau Road, Texaco Road and Tai Ha Street, we provided supplementary information on the traffic and works arrangements vide an information note on 19 May 2004. A copy of the information note is attached at Enclosure 3.

ENVIRONMENTAL IMPLICATIONS

14. **110CD** is not a designated project under the Environmental Impact Assessment Ordinance. We completed a Preliminary Environmental Review (PER) for the project in March 2000 and concluded that the project would not result in long term adverse environmental impact. We will implement appropriate environmental mitigation measures to minimise nuisances arising from the works during construction. We have included about \$1.8 million (in September 2003 prices) in the project estimate for implementing the environmental mitigation measures.

15. At the planning and design stages, we have considered ways to minimise the generation of construction and demolition (C&D) materials. We have optimised the size and shape of the proposed underground drainage works. We will encourage the contractor to use steel instead of timber in formwork and temporary works to reduce the generation of waste. We will require the contractor to implement necessary measures to minimise the generation of C&D waste and to reuse and recycle C&D materials.

16. 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 require the contractor to reuse the excavated material as filling material on site or on other construction sites as far as possible and encourage the contractor to use non-timber formwork and recyclable material for temporary works. 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.

17. We estimate that the project will generate about 12 000 cubic metres (m³) of C&D materials. Of these, we will reuse 7 200 m³ (60%) on site, deliver 2 400 m³ (20%) to public filling areas² and dispose of 2 400 m³ (20%) at landfills. The notional cost of accommodating C&D waste at landfill sites is estimated to be \$300,000 for this project (based on a notional unit cost³ of \$125/m³).

LAND ACQUISITION

18. The project does not require land acquisition.

BACKGROUND INFORMATION

19. In July 1999, we completed a comprehensive review of the drainage systems in Tsuen Wan, Kwai Chung and Tsing Yi under **76CD** “Stormwater Drainage Master Plan Study in Tsuen Wan, Kwai Chung and Tsing Yi” (the Study). According to the Study, the drainage system in Tsing Yi meets the current flood protection standards. As regards Tsuen Wan and Kwai Chung, the Study identified that the drainage systems are inadequate to meet the required flood protection standards and recommended the implementation of a package of drainage

/improvement

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.

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 m³), 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.

improvement works to alleviate the flooding problem in Tsuen Wan and Kwai Chung.

20. We included **110CD** in Category B in September 2000. In July 2002, we engaged consultants to undertake investigation, traffic impact assessment and detailed design for the project at an estimated cost of \$3.5 million in MOD prices. We have 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 in April 2004 and plan to start the proposed works in November 2004 for completion in September 2006.

21. The proposed drainage improvement works in Tsuen Wan and Kwai Chung will not involve any tree removal or planting proposal.

22. We estimate that the proposed works will create about 75 jobs (60 for labourers and another 15 for professional/technical staff) providing a total employment of 1 50 man-months.

Environment, Transport and Works Bureau
June 2004



圖例
LEGEND:

- 改善排水
UPGRADING OF DRAINS
- 維修排水渠/箱中暗渠
REHABILITATION OF DRAINS / BOX CULVERT

圖則編號 drawing no. **DCM/2004/016** 比例 scale **N.T.S.**

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

圖則名稱 drawing title			
荃灣、葵涌及青衣雨水排放系統改善計劃 市區雨水排放系統改善工程 DRAINAGE IMPROVEMENT IN TSUEN WAN, KWAI CHUNG AND TSING YI URBAN DRAINAGE IMPROVEMENT WORKS			
繪圖 drawn	Original Signed	C.W. CHAN	日期 date 17-05-2004
核對 checked	Original Signed	K.L. LI	日期 date 17-05-2004
批准 approved	Original Signed	S.S. LAM	日期 date 17-05-2004
部門 office	顧問工程管理部 CONSULTANTS MANAGEMENT DIVISION		

Enclosure 1 附件

**110CD – Drainage improvement in Tsuen Wan, Kwai Chung and Tsing Yi –
urban drainage improvement works**

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	—	—	—	0.4
		Technical	—	—	—	0.5
(b)	Site supervision by resident site staff of the consultants (Note 3)	Professional	34	38	1.6	3.0
		Technical	108	14	1.6	3.2
Total consultants’ staff costs						<hr/> 7.1 <hr/>

* 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 2004, MPS pt. 38 = \$55,993 per month and MPS pt. 14 = \$18,603 per month).
2. The consultants’ fees for contract administration are based on the lump sum fees calculated in accordance with the consultancy agreement which the Director of Drainage Services has agreed with the consultants undertaking the design and construction of the project.
3. The consultants’ fees for site supervision are based on estimates prepared by the Director of Drainage Services. We will only know the actual man months and actual costs after the completion of the construction works.

Legislative Council Panel on Planning, Lands and Works

**110CD – Drainage improvement in Tsuen Wan, Kwai Chung and
Tsing Yi – urban drainage improvement works**

Supplementary Information Note

PURPOSE

This paper provides supplementary information on the proposed measures to minimise possible disruption to traffic due to the construction works and on the proposed traffic arrangements at Texaco Road, Tai Wo Hau Road and Tai Ha Street during implementation of project **110CD** “Drainage improvement in Tsuen Wan, Kwai Chung and Tsing Yi – urban drainage improvement works”, in response to members’ concern at the Panel meeting held on 27 April 2004.

TRAFFIC MANAGEMENT LIAISON GROUP

2. A Traffic Management Liaison Group (TMLG) will be established specifically for the project to scrutinise and agree on the proposed temporary traffic management measures. Representatives from Transport Department, Hong Kong Police Force, Highways Department, District Offices and various public transport operators will be invited to attend the TMLG meetings and every temporary traffic arrangement has to be agreed by the TMLG before implementation. The TMLG will take into account all relevant factors such as site restrictions, traffic conditions, pedestrian safety, access to buildings/shopfronts and provision of emergency access while considering the temporary traffic arrangements with top priority given to road safety. We will strictly comply with the Code of Practice for the Lighting, Signing and Guarding of Road Works and requirements imposed by traffic authorities in implementing the project. We will ensure that the contractor will occupy the minimum road space required for the works and ensure that such works will be completed in the shortest period of time.

TEMPORARY TRAFFIC ARRANGEMENT FOR CARRYING OUT THE WORKS

3. We have completed the traffic impact assessment (TIA) for the project and formulated proposed temporary traffic schemes during construction. During construction, we will close only one traffic lane at each location at any one time, maintain existing traffic movements and keep the width of footpath to at least 1.5 metres (m) wide. If necessary, the closed lane will be decked over and re-opened to the traffic during peak hours. To minimise traffic disruption, we will make use of a vacant government land and

part of the existing footpaths for accommodating the new drain and diverting the traffic. Furthermore, to ensure safe traffic movements, we will arrange trial runs for long vehicles for the proposed temporary traffic arrangement prior to commencement of works. The TIA concluded that the proposed temporary traffic arrangements should not create major traffic problem.

4. We have already consulted the Tsuen Wan and Kwai Tsing District Councils (DCs) on the preliminary temporary traffic arrangement proposals in March 2004 and have fully addressed DC members' concerns on the proposed traffic arrangements. Prior to the commencement of works, we will brief the affected shop operators and building management companies/committees on the proposed works, expected duration and mitigation measures to be taken. We will modify the arrangements to accommodate their suggestions as far as practicable.

5. We will erect publicity boards in each section of the works indicating the expected completion dates and a 24-hour complaint hotline for public enquiry. In case there is any deferral or temporary suspension of works, we will give the causes and revise the expected completion date accordingly.

Arrangement at Texaco Road

6. We propose to lay a stormwater drain of 1800 millimetres (mm) in diameter across Texaco Road. We have designed the drain alignment to run through a parcel of vacant government land situated next to the junction at Texaco Road/Tai Wo Hau Road and cross Texaco Road perpendicularly so as to avoid the busy junction and minimise disruption to both pedestrian and vehicular traffic. At that location, Texaco Road has five traffic lanes, three northbound and two southbound. In laying the proposed drain across the southbound lane, an existing bus-stop will be temporarily relocated southward by about 25 m to facilitate the temporary traffic arrangement. One of the northbound lanes is a right-turn lane leading to Tai Wo Hau Road. We will carry out the works crossing Texaco Road in five stages, closing only one traffic lane at any one time.

Arrangement at Tai Wo Hau Road

7. We propose to lay a stormwater drain of 1800 mm in diameter across Tai Wo Hau Road. We have designed the drain alignment to cross the road at a location far away from its two junctions with Tai Ha Street so as to minimise potential traffic impacts. There are three traffic lanes at this section of Tai Wo Hau Road. We will carry out the construction works crossing Tai Wo Hau Road in three stages, closing only one traffic lane at any one time and maintaining two-way traffic. During the construction of the proposed drain along the southern footpath of Tai Wo Hau Road outside Fu Keung House of Tai Wo Hau Estate, the said footpath will be temporarily closed and pedestrians will be guided to use the adjacent open space within Tai Wo Hau Estate.

Arrangement at Tai Ha Street

8. We propose to replace an existing stormwater drain of length 250 m along Tai Ha Street by a larger drain. Tai Ha Street is a two-lane one-way road. We will need to occupy one lane to implement the proposed works. To minimise traffic impacts and maintain all vehicular and pedestrian entry/exit points for adjoining buildings during construction, the proposed works will be carried out in short sections depending on actual site conditions, with each section being about 30 m to 50 m long. Loading and unloading activities would be temporarily prohibited for the affected section of Tai Ha Street. The rest of it would not be affected.

9. A sketch showing the illustrative examples of the proposed temporary traffic arrangements is at Enclosure.



建議之臨時交通管理措施示意例子
ILLUSTRATIVE EXAMPLES OF PROPOSED TEMPORARY TRAFFIC ARRANGEMENTS

圖例 Legend

圖則號碼 Drawing No.

工地 WORKS SITE
 現有雨水渠 EXISTING DRAIN
 擬建雨水渠 PROPOSED DRAIN

4110CD - 荃灣、葵涌及青衣雨水排放系統改善計劃
市區雨水排放系統改善工程
4110CD - DRAINAGE IMPROVEMENT IN TSUEN WAN, KWAI CHUNG AND TSING YI
URBAN DRAINAGE IMPROVEMENT WORKS

圖則編號 Drawing No. DCM/2004/012

比例尺 Scale N.T.S.

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