

## **ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE**

### **Head 704 – DRAINAGE**

#### **Civil Engineering – Drainage and erosion protection**

#### **109CD – Drainage improvement works in Tai Po**

Members are invited to recommend to the Finance Committee –

- (a) the upgrading of part of **109CD**, entitled “Drainage improvement works in Tai Po town area”, to Category A at an estimated cost of \$82.5 million in money-of-the-day prices; and
- (b) the retention of the remainder of **109CD** in Category B.

### **PROBLEM**

Some local areas in Tai Po are susceptible to flooding during severe rainstorms due to 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 \$82.5 million in money-of-the-day (MOD) prices for drainage improvement works to some areas in Tai Po.

**/PROJECT .....**

## PROJECT SCOPE AND NATURE

3. The part of **109CD** which we now propose to upgrade to Category A comprises –
- (a) upgrading of about 2.9 kilometres of existing drains of diameters ranging from 225 millimetres (mm) to 900 mm by replacing them with larger drains of diameters ranging from 300 mm to 1800 mm around Yuen Chau Tsai, Tai Po Market, Yue Kok, Tai Po Old Market, Po Sam Pai and CARE Village in Tai Po; and
  - (b) construction of a floodwater pumping station in Tai Po Market and other minor drainage facilities.

———— A location plan showing the proposed works is at Enclosure 1.

4. We plan to start the construction works in December 2005 for completion in August 2008.

## JUSTIFICATION

5. The drainage catchment of Tai Po covers a large area including Tai Po Market, Tai Po Old Market, Yuen Chau Tsai, areas along Ting Kok Road and the rural areas behind. Most of the existing drains were designed and constructed many years ago to meet the flow requirements and standards at that time. Owing to continuing development and changes in land use, some existing drains have become inadequate to cope with the increasing run-off and some 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. The study has concluded that the existing drainage systems need improvement at locations around Yuen Chau Tsai, Tai Po Market, Yue Kok, Tai Po Old Market, Po Sam Pai and CARE Village in Tai Po to alleviate flooding risks and to meet the community's increased expectation for better flood protection. To alleviate the flooding problem in the low-lying area of Tai Po Market during heavy rainstorms, we also propose to construct a floodwater pumping station to help discharging the surface run-off into Lam Tsuen River.

6. Upon completion of the proposed works, these drainage systems in Tai Po will be improved to withstand rainstorms with a return period<sup>1</sup> of one in 50 years.

## FINANCIAL IMPLICATIONS

7. We estimate the capital cost of the proposed works to be \$82.5 million in MOD prices (see paragraph 8 below), made up as follows –

|  | <b>\$ million</b> |                                 |
|--|-------------------|---------------------------------|
| (a) Upgrading of existing drains   | 54.5              |                                 |
| (b) Construction of floodwater pumping station and other minor drainage facilities | 12.5              |                                 |
| (c) Consultants' fees  | 8.3               |                                 |
| (i) contract administration  | 0.8               |                                 |
| (ii) site supervision  | 7.5               |                                 |
| (d) Environmental mitigation measures  | 0.5               |                                 |
| (e) Contingencies  | 6.6               |                                 |
|  | Sub-total         | 82.4 (in September 2005 prices) |
| (f) Provision for price adjustment   | 0.1               |                                 |
|  | Total             | 82.5 (in MOD prices)            |

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

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<sup>1</sup> "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.

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

| Year        | \$ million<br>(Sept 2005) | Price<br>adjustment<br>factor | \$ million<br>(MOD) |
|-------------|---------------------------|-------------------------------|---------------------|
| 2005 – 2006 | 2.7                       | 1.00000                       | 2.7                 |
| 2006 – 2007 | 17.9                      | 1.00125                       | 17.9                |
| 2007 – 2008 | 24.7                      | 1.00125                       | 24.7                |
| 2008 – 2009 | 24.7                      | 1.00125                       | 24.7                |
| 2009 – 2010 | 8.9                       | 1.00125                       | 8.9                 |
| 2010 – 2011 | 3.5                       | 1.01627                       | 3.6                 |
|             | 82.4                      |                               | 82.5                |

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 2011. We will tender the works under a standard re-measurement contract because of the uncertainties of the underground utilities such as electricity cables, telephone cables and water pipes. The contract will provide for price adjustments as the contract period will exceed 21 months.

10. We estimate that the annual recurrent expenditure arising from the proposed works to be about \$600,000.

## **PUBLIC CONSULTATION**

11. We consulted the Environment, Housing and Works Committee under the Tai Po District Council on 23 July 2004 on the drainage improvement works in Tai Po. Members expressed their support for the proposed works.

12. We consulted the Legislative Council Panel on Planning, Lands and Works on the proposed works by circulation of an information paper on 17 June 2005. Members did not raise any objection.

**/ENVIRONMENTAL .....**

## 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 and silenced construction equipment and frequent watering of the site. We will also carry out regular site inspections to ensure that these mitigation measures and good site practices would be properly implemented on site. We have included in the project estimate \$500,000 in September 2005 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 approved WMP. To further minimise the C&D materials, we will encourage the contractor to use non-timber formworks and recyclable 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 facilities 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, reuse and recycling of C&D materials for monitoring purposes.

15. We estimate that the project will generate about 15 000 cubic metres (m<sup>3</sup>) of C&D materials. Of these, we will reuse about 9 000 m<sup>3</sup> (60%) on site and about 4 500 m<sup>3</sup> (30%) as fill in public filling areas<sup>2</sup>, and dispose of about 1 500 m<sup>3</sup> (10%) at landfills. The notional cost of accommodating C&D waste at

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<sup>2</sup> 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.

landfill sites is estimated to be \$187,500 for this project (based on a notional unit cost<sup>3</sup> of \$125/m<sup>3</sup>).

## TRAFFIC IMPLICATIONS

16. To minimise the traffic impacts caused by the proposed works, we have carefully selected the alignment of the proposed drains so as to avoid the busy areas. The proposed drainage works along Ting Kok Road and in the vicinity of Yuen Chau Tsai will mainly be carried out along existing roadside verge, footpath and cycle tracks. We have completed a traffic impact assessment for the proposed works to ascertain possible disruption to traffic during construction and will devise mitigation measures. 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 standards. Existing public transport routes will not be affected by the works. To expedite works progress without inducing unacceptable nuisance to the public, we will employ the trenchless method to construct drains at critical locations such as Pak Shing Street near Kwong Fuk Bridge Garden and at CARE 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 arrangements. Representatives from the Transport Department, Hong Kong Police Force, Highways Department, District Offices, various public transport operators and utility undertakings 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 vehicular access in considering the temporary traffic arrangements.

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<sup>3</sup> 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<sup>3</sup>), 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.

## 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 identified that the capacity of some existing drainage systems in Sha Tin and Tai Po was 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. 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. In February 2005, we upgraded part of **109CD** to Category A as **136CD** entitled “Drainage improvement works in Sha Tin” for carrying out the drainage improvement works in Sha Tin. The construction works commenced in March 2005 for completion in December 2007.

22. We have substantially completed the detailed design for the drainage improvement works to the town area in Tai Po and plan to start the construction of the proposed works in December 2005 for completion in August 2008. The planning and design of the remaining works under **109CD**, involved mainly river improvement works for Upper Lam Tsuen River, She Shan River and Upper Tai Po River, are underway.

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23. The proposed works will involve removal of 50 trees including 27 trees to be felled and 23 trees to be transplanted within the project area. All trees to be removed are not important trees<sup>4</sup>. We will incorporate planting of about 40 trees as part of the project.

24. We estimate that the proposed works will create about 45 jobs (36 for labourers and another nine for professional/technical staff) providing a total employment of 1 200 man-months.

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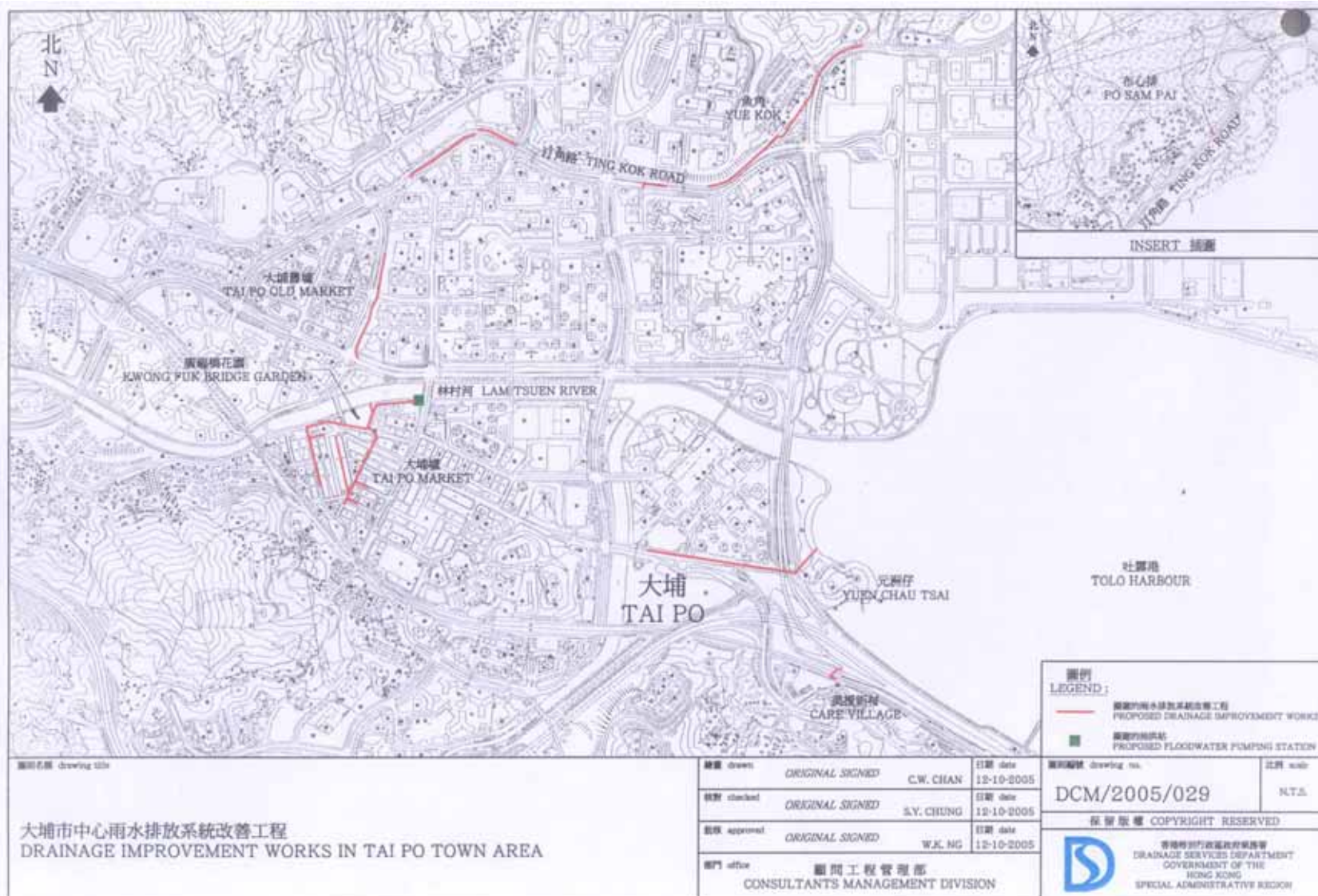
Environment, Transport and Works Bureau  
October 2005

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<sup>4</sup> 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).





圖則名稱 drawing title

大埔市中心雨水排放系統改善工程  
DRAINAGE IMPROVEMENT WORKS IN TAI PO TOWN AREA

|             |  |            |         |            |
|-------------|--|------------|---------|------------|
| 繪圖 drawn    | ORIGINAL SIGNED                            | C.W. CHAN  | 日期 date | 12-10-2005 |
| 核對 checked  | ORIGINAL SIGNED                            | S.Y. CHUNG | 日期 date | 12-10-2005 |
| 審核 approved | ORIGINAL SIGNED                            | W.K. NG    | 日期 date | 12-10-2005 |
| 部門 office   | 顧問工程管理部<br>CONSULTANTS MANAGEMENT DIVISION |            |         |            |

圖例 LEGEND:

- 擬議的雨水排放系統改善工程  
PROPOSED DRAINAGE IMPROVEMENT WORKS
- 擬議的抽洪站  
PROPOSED FLOODWATER PUMPING STATION

圖則編號 drawing no. DCM/2005/029 比例 scale N.T.S.

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DRAINAGE SERVICES DEPARTMENT  
GOVERNMENT OF THE  
HONG KONG  
SPECIAL ADMINISTRATIVE REGION

附件 1 ENCLOSURE 1

**109CD – Drainage improvement works in Tai Po****Breakdown of the estimates for consultant's fees**

| <b>Consultants' staff costs</b> |  |              | <b>Estimated<br/>man-<br/>months</b> | <b>Average<br/>MPS*<br/>salary<br/>point</b> | <b>Multiplier<br/>(Note 1)</b> | <b>Estimated<br/>fee<br/>(\$ million)</b> |
|---------------------------------|--|--------------|--------------------------------------|--|--------------------------------|---|
| (a)                             | Contract<br>administration<br>(Note 2)                                       | Professional | —                                    | —  | —                              | 0.6                                       |
|                                 |  | Technical    | —                                    | —  | —                              | 0.2                                       |
| (b)                             | Site supervision by<br>resident site staff of<br>the consultants<br>(Note 3) | Professional | 40                                   | 38   | 1.6                            | 3.5                                       |
|                                 |  | Technical    | 139                                  | 14   | 1.6                            | 4.0                                       |
|                                 |  |              |                                      |  | <b>Total</b>                   | <b>8.3</b>                                |

\* MPS = Master Pay Scale

**Notes**

1. A multiplier of 1.6 is applied to the average MPS point to estimate the cost of resident 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' staff cost for contract administration is calculated in accordance with the existing consultancy agreement for the investigation, design and construction of **109CD**. The construction phase of the assignment for the proposed works will only be executed subject to Finance Committee's approval to upgrade the proposed works to Category A.
3. We will only know the actual man-months and actual costs for site supervision after completion of the works.