

**For information**

## **Legislative Council Panel on Planning, Lands and Works**

### **128CD – Drainage Improvement in Southern Lantau**

#### **PURPOSE**

This paper briefs Members on the Administration's proposal to upgrade **128CD** "Drainage Improvement in Southern Lantau" to Category A, at an estimated cost of about \$89 million in money-of-the-day (MOD) prices, for the drainage improvement works in Southern Lantau.

#### **PROJECT SCOPE**

2. The scope of the proposed works in Southern Lantau comprises –
  - (a) construction of about 800 metres (m) long drainage channels with width ranging from 8 to 18 m and about 200 m long box culverts of about 11 m in width at Pak Ngan Heung and Luk Tei Tong in Mui Wo;
  - (b) construction of about 800 m long drains with diameter ranging from 750 millimetres (mm) to 1500mm at Ling Tsui Tau in Mui Wo, Cheung Sha Sheung Tsuen and Lo Uk Tsuen;
  - (c) widening of three river bottlenecks at Tai Tei Tong in Mui Wo and construction of about 100 m of flood protection walls at Pui O Ham Tin San Tsuen; and
  - (d) ancillary works including reprovisioning of footpath and emergency vehicular access, and landscaping work.

We plan to commence construction in mid 2007 for completion in mid 2010. A site plan and typical sections showing the locations of the proposed works are at **Enclosure 1**.

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## **JUSTIFICATION**

3. Owing to the low-lying nature and the inadequate capacity of the existing streamcourses, Pak Ngan Heung, Luk Tei Tong, Tai Tei Tong and Ling Tsui Tau in Mui Wo, and some local areas at Cheung Sha Sheung Tsuen, Lo Uk Tsuen and Pui O Ham Tin San Tsuen in Southern Lantau are susceptible to flooding during heavy rainstorms. To alleviate the flooding risks in the areas concerned and to meet the community's increasing expectation for better flood protection, we propose to construct drainage channels and box culverts at Pak Ngan Heung, Luk Tei Tong, and Ling Tsui Tau in Mui Wo and drains at Cheung Sha Sheung Tsuen and Lo Uk Tsuen. Upon completion of the proposed works, the standard of flood protection in the above local areas would be raised generally to withstand flood events with a return period <sup>1</sup> of one in 50 years.

4. To abate the problem at Tai Tei Tong, we originally planned to carry out full-scale training of Tai Tei Tong River. However, during consultations, we received strong objections from villagers and green groups. In order to address their concerns, we propose to widen three river bottlenecks only thereby minimising land resumption and disruption of the existing natural streamcourses. The proposed design, however, would protect the Tai Tei Tong area from rainstorms with a return period of one in five years. The flood protection level was highlighted in our consultation paper discussed at the meeting of the Mui Wo Rural Committee on 26 November 2004 (paragraph 8 below refers). Members of the Mui Wo Rural Committee had no objection to the design.

5. To alleviate the flooding problem at Pui O Ham Tin San Tsuen, we propose to construct a flood protection wall along Pui O River. However, as demanded by the villagers, the height of the flood protection wall has to be reduced to 0.6 m to minimise visual impacts. The flood protection level is accordingly reduced to a return period of one in 10 years, which was highlighted at the meeting and accepted by the Chairman of South Lantau Rural Committee on 30 March 2006.

## **FINANCIAL IMPLICATIONS**

6. We estimate the cost of the proposed works to be \$89 million (in MOD prices), made up as follows –

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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.

	<b>\$ million</b>
(a) Drainage improvement works and ancillary works at-	76
(i) Pak Ngan Heung and Luk Tei Tong	63
(ii) Ling Tsui Tau , Cheung Sha Sheung Tsuen and Lo Uk Tsuen	6
(iii) Tai Tei Tong and Pui O Ham Tin San Tsuen	7
(b) Environmental mitigation measures	5
(c) Contingencies	8
Total :	<hr/> 89 (in MOD prices)

7. We estimate the annual recurrent expenditure arising from this proposed works to be \$300,000.

## **PUBLIC CONSULTATION**

8. We consulted the Islands District Council, South Lantau Rural Committee and Mui Wo Rural Committee on 18 October, 11 September and 25 August 2004 respectively. We provided further detailed information on the proposed improvement works at Tai Tei Tong including the flood protection level for discussion at the Mui Wo Rural Committee meeting of 26 November 2004. They all supported implementation of the proposed works.

9. We gazetted the proposed works under the Roads (Works, Use and Compensation) Ordinance and the Foreshore and Sea-bed (Reclamations) Ordinance on 9 and 30 September 2005 respectively. We did not receive any objection under the Foreshore and Sea-bed (Reclamations) Ordinance. However, we received three objections under the Roads (Works, Use and Compensation) Ordinance. One objector had concerns on the potential visual impact and effectiveness of the proposed works. The other two objectors only concerned about the necessary clearance of the Government land granted to them under Government Lands Licenses. After our explanations, all objectors withdrew

their objections under the Roads (Works, Use and Compensation) Ordinance unconditionally by February 2006.

## **ENVIRONMENTAL IMPLICATIONS**

10. The proposed drainage improvement works at Pak Ngan Heung, Luk Tei Tong, Tai Tei Tong and Ling Tsui Tau in Mui Wo are designated projects under the Environmental Impact Assessment (EIA) Ordinance (Cap 499), and an environmental permit is required for the construction and operation of the works. In December 2005, the EIA report for the works was approved under the EIA Ordinance. The EIA report concluded that the environmental impact of the works could be controlled to comply with the criteria under the EIA Ordinance and the Technical Memorandum on EIA Process. Some of the controlling measures include proper programming of the works, for example, no works within Luk Tei Tong Marsh and the confluence of Pak Ngan Heung River, Tai Tei Tong River and Luk Tei Tong River shall be carried out in the wet season between April to October, so as to avoid impacts on breeding of wildlife. We subsequently obtained the environmental permit for construction of the works under the EIA Ordinance in January 2006.

11. We shall implement the measures recommended in the approved EIA report and the requirements imposed in the environmental permit. For short term impacts caused by excavation works during construction, we will control noise, dust, and site run-off within the standards and guidelines through implementation of mitigation measures, such as the use of temporary noise barriers and silenced construction plant to reduce noise generation, water-spraying to reduce emission of fugitive dust and strict control on diversion of stream flows in the works contract. We also adopt environmental friendly designs such as gabion walls, natural substrates on riverbed, fish ladder and ecological planting.

12. We have considered ways in the planning and design stages to reduce the generation of construction and demolition (C&D) materials where possible. In addition, we will require the contractor to reuse inert C&D materials including excavated soil for backfilling on site or in other suitable construction sites as far as possible, in order to minimise the disposal of C&D materials to public fill reception facilities<sup>2</sup>. We will encourage the contractors to maximise the use of recycled or recyclable C&D materials, as well as the use of non-timber formwork to further minimise the generation of construction waste.

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<sup>2</sup> Public fill reception facilities are specified in Schedule 4 of the Waste Disposal (Charges for Disposal of Construction Waste) Regulation. Disposal of public fill in public fill reception facilities requires a licence issued by the Director of Civil Engineering and Development.

13. We will also 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 public fill reception 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.

14. We estimate that the project will generate about 121 900 tonnes of C&D materials. Of these, we will reuse about 11 200 tonnes (9%) on site, deliver 83 000 tonnes (68%) to public fill reception facilities for subsequent reuse. In addition, we will dispose of 27 700 tonnes (23%) at landfills. The total cost for accommodating C&D materials at public fill reception facilities and landfill sites is estimated to be \$5.7 million for this project (based on an unit cost of \$27/tonne for disposal at public fill reception facilities and \$125/tonne<sup>3</sup> at landfills).

## **TRAFFIC IMPLICATIONS**

15. We have carried out traffic impact assessment (TIA) for the proposed works. The TIA concludes that the proposed works would not cause unacceptable traffic impact.

## **BACKGROUND INFORMATION**

16. We included **128CD** “Drainage Improvement in Southern Lantau” in Category B of the Public Works Programme in April 2002 for alleviating the flooding problems in Southern Lantau.

17. In July 2002, we engaged consultants to undertake environmental impact assessment, traffic impact assessment, site investigations, surveys and preliminary design for the drainage improvement works under the project at a cost of \$4.87 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”. The consultancy commenced in May 2003 and was substantially completed in October 2004.

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<sup>3</sup> The 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/m<sup>3</sup>), nor the cost to provide new landfills (which is likely to be more expensive) when the existing ones are filled.

18. Of the 379 trees within the project boundary, 226 trees will be preserved. The proposed works will involve the removal of 153 common trees including 124 trees to be felled, 29 trees to be transplanted elsewhere. All trees to be removed are not important trees<sup>4</sup>. We will incorporate planting proposal as part of the project, including estimated quantities of 407 trees, 13 200 shrubs and 20 000 m<sup>2</sup> of grassed area.

19. We estimate that the proposed works will create about 52 jobs (45 for labourers and another seven for professional/technical staff) providing a total employment of 1 600 man-months.

## **WAY FORWARD**

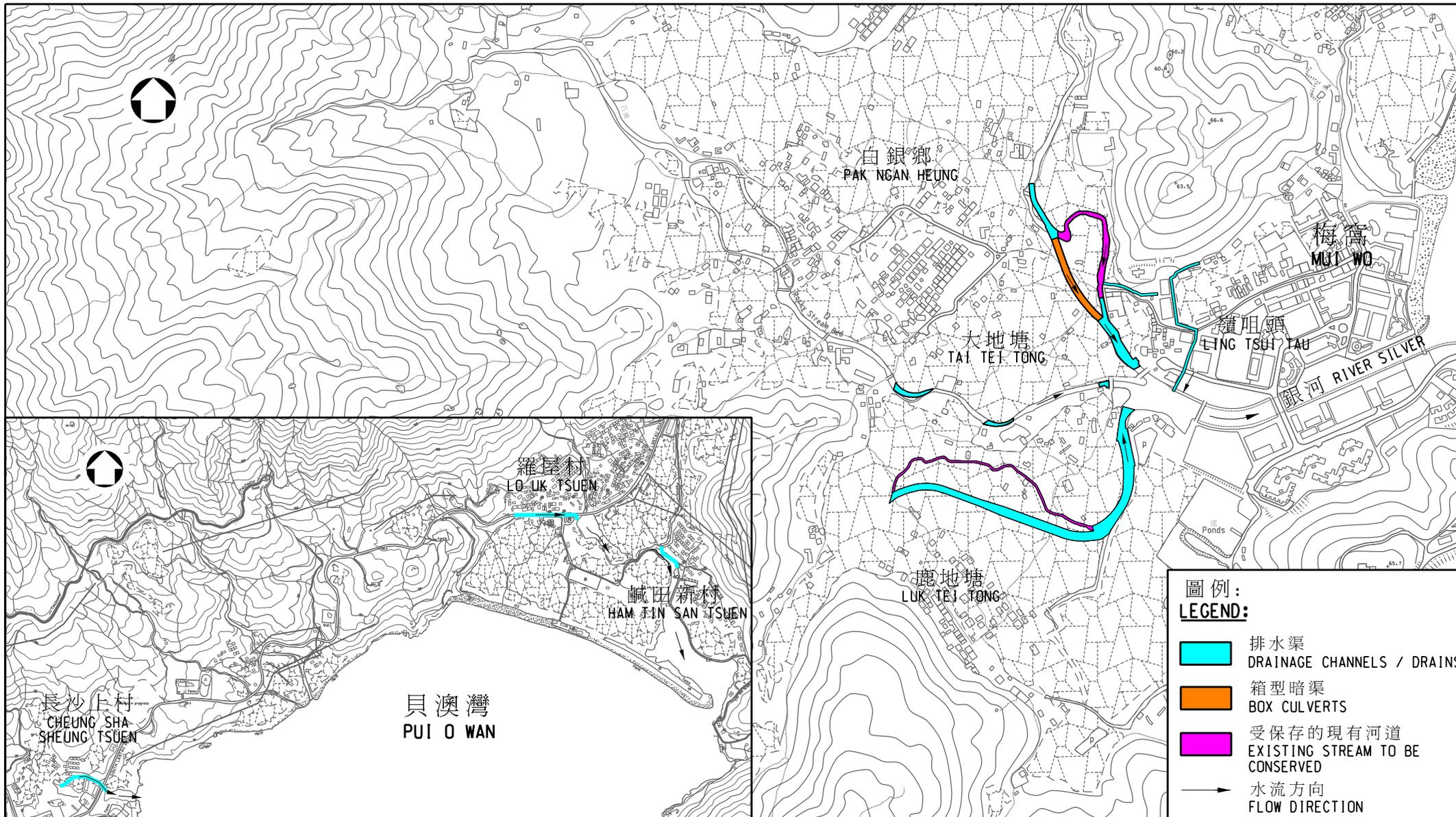
20. Members are invited to support our proposal for upgrading of **128CD** for consideration by the Public Works Subcommittee and for funding approval by the Finance Committee in mid 2007.

**Environment, Transport and Works Bureau**  
**January 2007**

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<sup>4</sup> “Important trees” refer to trees in the Register of Old and Valuable Trees, or any other trees that meet one or more of the following criteria –

- (a) trees over 100 years old or above;
- (b) trees of cultural, historical or memorable significance e.g. Fung Shui trees, trees as landmark of monastery or heritage monument, and trees in memory of important persons or event;
- (c) trees of precious or rare species;
- (d) trees of outstanding form (taking account of overall tree sizes, shape and any special features) e.g. trees with curtain like aerial roots, trees growing in unusual habitat; or
- (e) trees with trunk diameter equal or exceeding 1.0 metre (measured at 1.3 metre above ground level), or with height/canopy spread equal or exceeding 25m.



圖則名稱 drawing title

工程編號第 4128CD - 南大嶼山雨水排放系統改善工程  
工程位置圖

PROJECT No. 4128CD - DRAINAGE IMPROVEMENT IN SOUTHERN LANTAU  
LOCATION PLAN

繪畫 drawn

W. H. KO

日期 date

26 JUL 06

核對 checked

W. L. CHUI

日期 date

XX JUL 06

批核 approved

Y. Y. CHAN

日期 date

XX JUL 06

部門 office

排水工程處  
DRAINAGE PROJECTS DIVISION

圖則編號 drawing no.

DDN/128CD/01014

比例 scale

無比例  
AS SHOWN

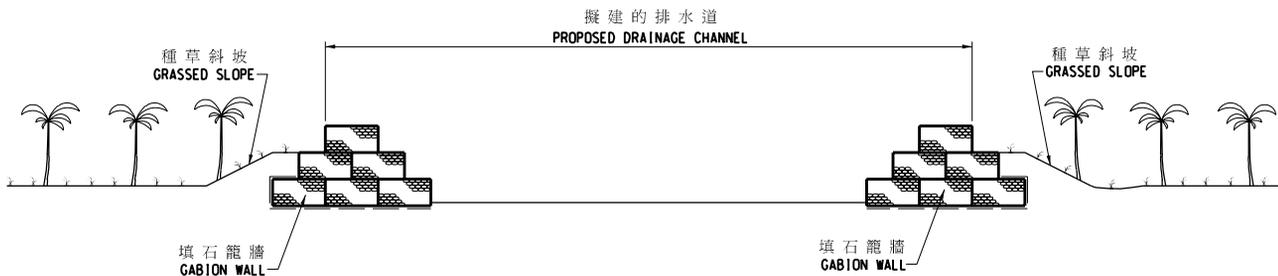
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香港特別行政區政府渠務署  
DRAINAGE SERVICES DEPARTMENT  
GOVERNMENT OF THE  
HONG KONG  
SPECIAL ADMINISTRATIVE REGION

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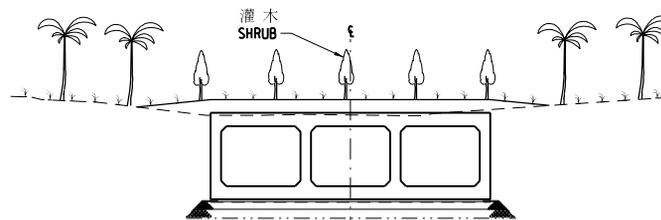
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排水道典型橫切面  
**TYPICAL SECTION OF GABION WALL CHANNEL**

不依比例 NOT TO SCALE



箱型暗渠典型橫切面  
**TYPICAL SECTION OF BOX CULVERT**

不依比例 NOT TO SCALE

圖則名稱 drawing title

工程編號第4128CD - 南大嶼山雨水排放系統改善工程  
 橫切面圖

PROJECT No. 4128CD - DRAINAGE IMPROVEMENT IN SOUTHERN LANTAU  
 SECTIONAL PLAN

繪畫 drawn

W. H. KO

日期 date

27 JUL 06

核對 checked

W. L. CHUI

日期 date

XX JUL 06

批核 approved

Y. Y. CHAN

日期 date

XX JUL 06

部門 office

排水工程處  
 DRAINAGE PROJECTS DIVISION

圖則編號 drawing no.

DDN/128CD/01015

比例 scale

無比例  
 AS SHOWN

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