

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 704 – DRAINAGE

Civil Engineering – Drainage and erosion protection

112CD – Drainage improvement in Northern New Territories – package A

Members are invited to recommend to Finance Committee –

- (a) the upgrading of part of **112CD**, entitled “Drainage improvement works in Ping Kong, Kau Lung Hang, Yuen Leng, Nam Wa Po and Tai Hang areas”, to Category A at an estimated cost of \$260.5 million in money-of-the-day prices; and
- (b) the retention of the remainder of **112CD** in Category B.

PROBLEM

Many areas in the Northern New Territories are susceptible to flooding during heavy rainstorms due to inadequate capacity of the existing drainage systems and natural streamcourses.

PROPOSAL

2. The Director of Drainage Services, with the support of the Secretary for the Environment, Transport and Works, proposes to upgrade part of **112CD** to

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Category A at an estimated cost of \$260.5 million in money-of-the-day (MOD) prices for carrying out improvement works to the existing drainage systems in Ping Kong, Kau Lung Hang, Yuen Leng, Nam Wa Po and Tai Hang areas.

PROJECT SCOPE AND NATURE

3. The part of **112CD** which we now propose to upgrade to Category A comprises –

- (a) construction of about 3.6 kilometres (km) of drainage channels with width ranging from 1.3 metres (m) to 30 m and about 0.5 km of box culverts with width ranging from 1.3 m to 20 m in Kau Lung Hang, Yuen Leng, Nam Wa Po and Tai Hang areas;
- (b) construction of about 0.84 km of drainage channels with width ranging from about 3 m to 17 m and about 0.21 km of box culverts of 4 m width in Ping Kong areas;
- (c) construction and reprovisioning of vehicular/pedestrian access; and
- (d) ancillary works including reprovisioning of a public toilet and diversion of watermains.

_____ A site plan and typical cross sections showing the proposed works are at Enclosure 1.

4. We plan to start the proposed works in January 2007 for completion by November 2010.

JUSTIFICATION

5. Owing to the low-lying topography and inadequate capacity of existing stream courses, Kau Lung Hang, Yuen Leng, Nam Wa Po, Tai Hang in Tai Po North and Ping Kong in Sheung Shui are susceptible to flooding during heavy rainstorms. Moreover, changes in land use in the areas over the years have resulted in paving of tracts of natural ground, thus causing them impermeable. Rainwater can no longer dissipate naturally through ground infiltration as in the past. This has led to an increase in surface run-off and aggravated the extent of flooding in the areas.

6. To tackle the flooding problem in Northern New Territories and meet the community's increasing expectation for better flood protection level, we have implemented a comprehensive drainage improvement programme in phases starting at the downstream end. We have commenced the construction of drainage channel for the downstream section of Ma Wat River from Jockey Club Road Interchange at Wo Hop Shek to Kau Lung Hang for completion in end 2008. Recently, we have substantially completed the design of the drainage improvement works in Kau Lung Hang, Yuen Leng, Nam Wa Po and Tai Hang at the upstream section of Ma Wat River and the drainage system at Ping Kong as set out in paragraph 3 above. We also need to divert watermains and construct vehicular and pedestrian access affected by the proposed works.

7. Upon completion of the proposed works, the risk of flooding during heavy rainstorms in the low-lying areas concerned will be reduced. The main drainage system at Ping Kong, Kau Lung Hang, Yuen Leng, Nam Wa Po and Tai Hang areas will be improved to withstand rainstorms with a return period¹ of one in 50 years.

FINANCIAL IMPLICATIONS

8. We estimate the cost of the proposed works to be \$260.5 million in MOD prices (see paragraph 9 below), made up as follows –

	\$ million
(a) Construction of drainage channels and box culverts in Kau Lung Hang, Yuen Leng, Nam Wa Po and Tai Hang areas	136.6
(b) Construction of drainage channels and box culverts in Ping Kong area	40.2
(c) Construction and reprovisioning of vehicular/pedestrian access	33.1
(d) Ancillary works	9.2
(e) Environmental mitigation measures	10.5

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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.

		\$ million	
(f)	Contingencies	23.0	
	Sub-total	252.6	(in September 2006 prices)
(g)	Provision for price adjustment	7.9	
	Total	260.5	(in MOD prices)

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

Year	\$ million (Sept 2006)	Price Adjustment Factor	\$ million (MOD)
2006 – 2007	10.5	1.00000	10.5
2007 – 2008	59.8	1.01250	60.5
2008 – 2009	74.7	1.02769	76.8
2009 – 2010	74.8	1.04310	78.0
2010 – 2011	32.8	1.05875	34.7
	252.6		260.5

10. 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 2006 to 2011. We will tender the proposed works under a standard re-measurement contract because of the uncertainties of the sub-soil conditions and locations of existing underground utilities such as electricity cables, telephones cables and water pipes. The contract will provide for price adjustments as the contract period will exceed 21 months.

11. We estimate the annual recurrent expenditure arising from this project to be about \$1.6 million.

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PUBLIC CONSULTATION

12. We consulted the Tai Po District Council on 16 May 2003 for the proposed drainage works at Kau Lung Hang, Yuen Leng, Nam Wa Po and Tai Hang areas. Members supported the implementation of the proposed works. We gazetted the proposed works under the Roads (Works, Use and Compensation) Ordinance on 10 December 2004. Of the 40 objections received, two objections were withdrawn unconditionally after our clarification of the proposed works, 26 were withdrawn with acceptable conditions and 12 remained unresolved. To minimise the adverse impacts of the works and to address the objections, we amended the Scheme and subsequently gazetted the Amendment Plans and the Amendment Scheme on 9 September 2005, to which no further objection was received. After considering the objections, the Chief Executive in Council authorised the proposed works under the Roads (Works, Use and Compensation) Ordinance on 9 May 2006.

13. We consulted the North District Council on 15 September 2003 for the proposed drainage improvement works at Ping Kong in Sheung Shui. Members supported the implementation of the proposed works. We gazetted the proposed works under the Roads (Works, Use and Compensation) Ordinance on 25 February 2005. Of the three objections received, two were lodged against certain works under the project and the other one was against the extent of the land resumption of the objector's land lot. All these three objections were unresolved although one of them accepted our proposed modifications of land resumption. After considering the objections, the Chief Executive in Council authorised the proposed works with modifications under the Roads (Works, Use and Compensation) Ordinance on 7 February 2006.

14. We circulated to the Legislative Council Panel on Planning, Lands and Works an information paper on the proposed works on 18 July 2006. We also reported to the Panel on how the Administration handled the unresolved objections against the proposed works at Kau Lung Hang, Yuen Leng, Nam Wa Po and Tai Hang areas via a supplementary information note on 14 August 2006. Members raised no objection to the proposed works.

ENVIRONMENTAL IMPLICATIONS

15. The project is not a designated project under the Environmental Impact Assessment Ordinance. We completed an Environmental Study (ES) in 2003 and subsequently completed a Preliminary Environmental Review (PER) for the slightly extended drainage improvement works at the upstream of the existing

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channels in Tai Hang in 2006. The ES and the PER concluded that with full implementation of the recommended mitigation measures and environmental monitoring and audit programme, the proposed works would not have significant residual environmental impacts. We would incorporate the ES and PER recommendations into the works contract. 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 to reduce noise generation, water-spraying to reduce emission of dust, working in dry environment with appropriate water diversion with bunds and barriers to control water pollution during excavation. The base of drainage channels will all be lined with rocks and gravels to foster ecological habitats development.

16. We have considered ways in the planning and design stages to reduce the generation of construction and demolition (C&D) materials where possible. For example, we have adopted alignments of the proposed drainage channels such that excavation and demolition of existing structures would be minimised, and adopted standardised sections of reinforced concrete structures to minimise the use of formwork. We will encourage the contractor to use non-timber formwork and recyclable materials for temporary works. We will also require the contractor to carry out on-site sorting to recover reusable/recyclable materials from the C&D materials and to reuse inert C&D materials (e.g. the excavated material as filling material) 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 facilities². We will encourage the contractor to maximise the use of recycled and recyclable C&D materials to further minimise the generation of construction waste.

17. 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.

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² 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.

18. We estimate that the project will generate about 397 600 tonnes of C&D materials. Of these, we will reuse about 102 000 tonnes (26%) on site, deliver 222 600 tonnes (56%) to public fill reception facilities for subsequent reuse and dispose of 73 000 tonnes (18%) at landfills. The total cost for accommodating C&D materials at public fill reception facilities and landfill sites is estimated to be about \$15.1 million for this project (based on a unit cost of \$27/tonne for disposal at public fill reception facilities and \$125/tonne³ at landfills.)

LAND ACQUISITION

19. We will resume about 60 412 square metres (m²) of private agricultural land and clear 82 236 m² of government land for the proposed works. The land resumption will affect 22 households involving 63 persons. The Director of Housing will offer eligible families with public housing under the prevailing Government policy. We will charge the land resumption and clearance cost for the project, estimated to be about \$150.1 million, to **Head 701 – Land Acquisition**.

TRAFFIC IMPLICATIONS

20. We have carried out a traffic impact assessment for the proposed works, which concluded that the proposed works would not cause unacceptable traffic impact.

BACKGROUND INFORMATION

21. In September 2000, we included **112CD** “Drainage improvement in Northern New Territories – package A” in Category B of the Public Works Programme for the drainage improvement works in San Tin North, Fanling, Sheung Shui and Tai Po North.

22. In June 2001, we upgraded part of **112CD** to Category A as **116CD** “Drainage Improvement in Northern New Territories - package A – consultants’ fees and investigations” for employing consultants to carry out preliminary design, environmental and traffic impact assessment and investigation works.

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³ 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/m³), nor the cost to provide new landfills (which is likely to be more expensive) when the existing ones are filled.

23. In March 2005, we upgraded part of **112CD** to Category A as **137CD** “Drainage Improvement for Ma Wat River at Kau Lung Hang” for improving the capacity of the drainage system in the areas concerned. The construction commenced in June 2005 for completion in late 2008.

24. In February 2006, we upgraded part of **112CD** to Category A as **145CD** “Upgrading of stormwater drains in Sheung Shui and Fanling” for improving the capacity of the drainage system in the areas concerned. The construction commenced in March 2006 for completion in mid 2009.

25. On 25 October 2006, we submitted a funding application to PWSC for part-upgrading of **112CD** to carry out the improvement works in Ping Kong, Kau Lung Hang, Yuen Leng, Nam Wa Po and Tai Hang areas. In view of a question raised by a Member that the concern from the Tai Hang Rural Committee (THRC) about the village access had not been addressed, we withdrew the funding application and agreed to clarify the issue before re-submission. Subsequent to the PWSC meeting, we have reviewed all the objections received and confirmed that after authorisation of the road scheme on 9 May 2006, we received two letters from the THRC on 7 and 25 July 2006 requesting for improvement of a village access. We responded to the letters on 1 and 15 August 2006.

26. As regards the last package of channel works in San Tin North under **112CD**, we are consulting the locals and parties likely to be affected by the proposed works. We plan to start the proposed works in late 2008 for completion in late 2011.

27. Of the 1 061 trees within the project boundary, 328 trees will be preserved. The proposed drainage improvement works will involve the removal of 733 trees including about 690 trees to be felled and 43 trees to be transplanted within the project site. All trees to be removed are not important trees⁴. We will incorporate planting proposal as part of the project, including estimated quantities of 1 992 trees and 46 500 m² of grassed area. In response to a Member’s request at the PWSC meeting on 25 October 2006, the supplementary information on the species of trees and shrubs that would be planted under the project is at Enclosure 2.

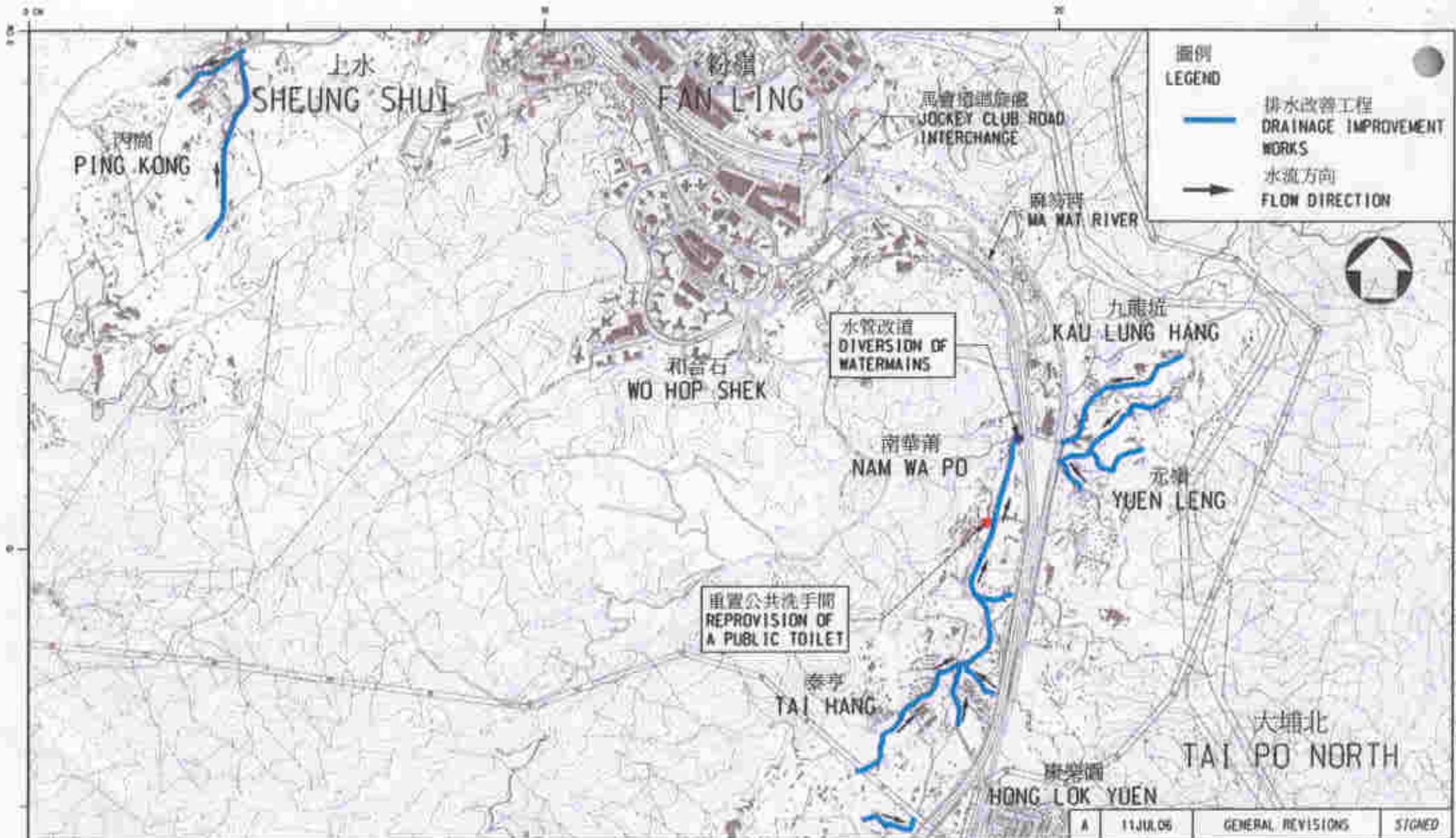
/28.

⁴ “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 m (measured at 1.3 m above ground level), or with height/canopy spread equal or exceeding 25 m.

28. We estimate that the proposed works will create about 120 jobs (104 for labourers and another 16 for professional/technical staff) providing a total employment of about 4 700 man-months.

Environment, Transport and Works Bureau
November 2006



圖例
LEGEND

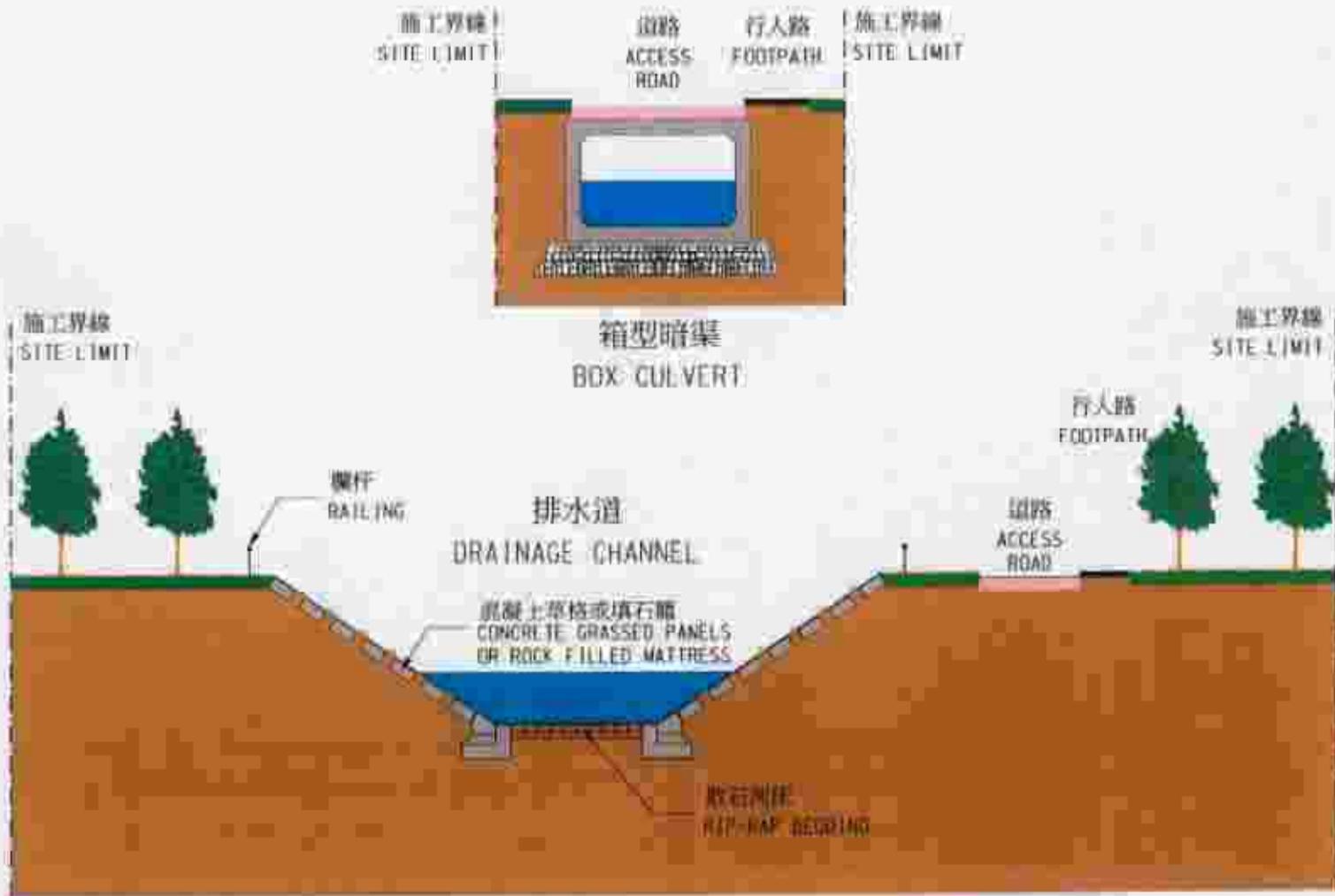
— 排水改善工程
DRAINAGE IMPROVEMENT WORKS

→ 水流方向
FLOW DIRECTION

圖則名稱 drawing title
 丙崗、九龍坑、元嶺、南華莆及泰亨地區排水改善工程
 - 分布圖
**DRAINAGE IMPROVEMENT IN PING KONG, KAU LUNG HANG,
 YUEN LENG, NAM WA PO AND TAI HANG AREAS
 - LAYOUT PLAN**

繪圖 drawn	SIGNED C.K. LAM	日期 date	25MAY06
校核 checked	SIGNED W.C. SIU	日期 date	07JUN06
批准 approved	SIGNED C.M. CHING	日期 date	07JUN06
部門 office	工程管理部 PROJECT MANAGEMENT DIVISION		

A	11JUL06	GENERAL REVISIONS	SIGNED
圖則編號 drawing no.		DPM/112CD/0098A	
比例 scale		1:20 000	
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圖則名稱 drawing title
 西貢、九龍坑、元嶺、南華莆及泰亨地區排水改善工程
 河道及箱型暗渠典型切面圖
 DRAINAGE IMPROVEMENT IN PING KONG, KAU LUNG HANG,
 YUEN LENG, NAM WA PO AND TAI HANG AREAS - TYPICAL
 CROSS-SECTIONS OF DRAINAGE CHANNEL AND BOX CULVERT

繪圖者 drawn: SIGNED C. S. LAM
 校核者 checked: SIGNED W. C. SIU
 批准者 approved: SIGNED C. W. CHUNG
 工程處 office: 工程管理部 PROJECT MANAGEMENT DIVISION

A	27JUN06	GENERAL REVISIONS	SIGNED
繪圖日期 drawing date 26MAY05		圖則編號 drawing no. BPM/112CD/0099A	
校核日期 checked date 07JUN05		批准日期 approved date 07JUN05	
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附件一(圖二,共二頁) ENCLOSURE 1 (SHEET 2 OF 2)

**Species of trees and shrubs to be planted
under 112CD – Drainage improvement in Northern New Territories – package A**

The major species of trees to be planted in this project are Incense Tree 牙香樹 (*Aquilaria sinensis*)¹, Hong Kong Orchid Tree 洋紫荊 (*Bauhinia blakeana*), Chinese Hackberry 朴樹 (*Celtis sinensis*), Camphor Tree 樟樹 (*Cinnamomum camphora*), Mountain Fig 高山榕 (*Ficus altissima*) and Mountain Tallow 山烏柏 (*Sapium discolor*).

2. Furthermore, shrubs will be planted and the species include Bougainvillea 簕杜鵑 (*Bougainvillea glabra*), Parado Spride 洋金鳳 (*Caesalpinia pulcherrima*), Chinese Hibiscus 大紅花 (*Hibiscus rosa-sinensis*), Hong Kong Hawthorn 車輪梅 (*Raphiolepis indica*) and Red Azalea 紅杜鵑 (*Rhododendron simsii*).

¹ Botanical names in brackets.