

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 704 – DRAINAGE

Civil Engineering – Drainage and erosion protection

118CD – Drainage improvement in Northern New Territories – package B

Members are invited to recommend to Finance Committee –

- (a) the upgrading of part of **118CD**, entitled “Drainage improvement in Ki Lun Tsuen, Ma Tso Lung, Ying Pun, Shek Tsai Leng and Sha Ling in New Territories”, to Category A at an estimated cost of \$221.7 million in money-of-the-day prices.
- (b) the retention of the remainder of **118CD**, re-titled “Drainage improvement in Northern New Territories – package B (remaining works)” in Category B.

PROBLEM

Some 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

PROPOSAL

2. The Director of Drainage Services, with the support of the Secretary for Development, proposes to upgrade part of **118CD** to Category A at an estimated cost of \$221.7 million in money-of-the-day (MOD) prices for carrying out the drainage improvement works in Ki Lun Tsuen, Ma Tso Lung, Ying Pun, Shek Tsai Leng and Sha Ling in the New Territories.

PROJECT SCOPE AND NATURE

3. The part of **118CD** which we now propose to upgrade to Category A comprises the construction of –

- (a) about 1 kilometre of drainage channels of width ranging from 8 metres (m) to 13 m in Ki Lun Tsuen;
- (b) about 500 m of drainage channels of width ranging from 5 m to 8 m in Ma Tso Lung;
- (c) about 800 m of drainage channels of width ranging from 5 m to 8 m in Ying Pun;
- (d) about 400 m of drainage channels of 4 m wide in Shek Tsai Leng;
- (e) about 400 m of stormwater drains of diameter ranging from 900 millimetres (mm) to 1 500 mm in Sha Ling; and
- (f) provision of ancillary works including greening works, footpaths and maintenance accesses.

Site plans and typical sections of the drainage channels and stormwater drains are at Enclosure 1.

4. We plan to commence construction in August 2008 for completion in October 2010.

/JUSTIFICATION

JUSTIFICATION

5. Owing to developments and changes in land use in the Northern New Territories over the years, large tracts of natural ground have been replaced by impermeable pavings. Rain water can no longer dissipate naturally through ground infiltration as in the past. This has led to increase in surface run-off and overloading of the existing drainage systems and streamcourses. As such, many areas of the northern part of the New Territories are susceptible to flooding during heavy rainstorms.

6. To alleviate the flooding risks in the northern part of the New Territories and to meet the community's rising expectation for better flood protection, we propose to carry out the drainage improvement works as mentioned in paragraph 3 above. Upon completion of the proposed works, the drainage system in Ma Tso Lung will be improved to withstand rainstorms with a return period¹ of one in ten years. The drainage systems in Ki Lun Tsuen, Ying Pun, Shek Tsai Leng and Sha Ling, which are main drainage systems, will be improved to withstand rainstorms with a longer return period of one in 50 years.

FINANCIAL IMPLICATIONS

7. We estimate the cost of the proposed works to be about \$221.7 million in MOD prices (see paragraph 8 below), made up as follows –

	\$ million
(a) Construction works	164.1
(i) drainage channels in Ki Lun Tsuen	67.3
(ii) drainage channels in Ma Tso Lung	25.9
(iii) drainage channels in Ying Pun	43.3
	/(iv)

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	
(iv)	drainage channels in Shek Tsai Leng	12.7	
(v)	stormwater drains in Sha Ling	7.1	
(vi)	ancillary works	7.8	
(b)	Environmental mitigation measures	3.7	
(c)	Consultants' fees	17.9	
(i)	contract administration	1.5	
(ii)	resident site staff cost	16.4	
(d)	Contingencies	18.3	
	Sub-total	204.0	(in September 2007 prices)
(e)	Provision for price adjustment	17.7	
	Total	221.7	(in MOD prices)

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

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

Year	\$ million (Sept 2007)	Price Adjustment Factor	\$ million (MOD)
2008 – 2009	32.7	1.02575	33.5
2009 – 2010	65.0	1.06293	69.1

/2010 – 2011.....

Year	\$ million (Sept 2007)	Price Adjustment Factor	\$ million (MOD)
2010 – 2011	70.0	1.10545	77.4
2011 – 2012	36.3	1.14967	41.7
	204.0		221.7

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 2008 to 2012. We will tender the proposed works under a standard re-measurement contract because of the uncertainties of the existence and alignment of the utilities and the ground condition. The contract will provide for price adjustments as the contract period will exceed 21 months.

10. We estimate the annual recurrent expenditure arising from this project to be about \$0.8 million.

PUBLIC CONSULTATION

Ki Lun Tsuen

11. We consulted Yuen Long District Council Town Planning and Development Committee on 15 September 2004. Members supported the proposed works and requested us to further consult San Tin Rural Committee (STRC).

12. We consulted STRC on 29 July 2004 and 10 January 2005. STRC had no comment on the proposed works subject to the provision of vehicular access along the proposed channel at Ki Lun Tsuen for public use. We explained that in line with current practice we will re-provide the existing vehicular accesses and footpaths affected by the proposed works.

13. We gazetted the proposed works in Ki Lun Tsuen under the Roads (Works, Use and Compensation) Ordinance on 13 May 2005 and received a total of ten objections. Seven objectors with concerns on land resumption agreed to withdraw their objections subject to our amendments to the proposed works to reduce or exclude their lands from resumption. The remaining three objectors with concerns either on land resumption or on possible environmental impact did not withdraw their objections. These objections were considered unresolved. The amended works were subsequently gazetted on 24 March 2006 and we did not receive any further objection. After considering the three unresolved objections, the Chief Executive in Council authorised the proposed works without modifications on 17 October 2006.

Ma Tso Lung, Ying Pun and Shek Tsai Leng

14. We consulted North District Council District Development & Environmental Improvement Committee (NDC DD&EIC) on 20 September 2004 regarding the proposed works in Ma Tso Lung and Ying Pun, and on 26 September 2005 regarding the proposed works in Shek Tsai Leng. Members supported the proposed works.

15. We gazetted the proposed works in Ma Tso Lung, Ying Pun and Shek Tsai Leng under the Roads (Works, Use and Compensation) Ordinance on 11 August 2006 and received a total of nine objections. Three objectors with concerns on possible impacts due to land resumption and clearance withdrew their objections unconditionally upon our explanation of the proposed works. One objector with similar concerns agreed to withdraw his objection subject to our amendment to the proposed works to exclude his land from resumption. Another objector agreed to withdraw his objection subject to re-provisioning of a vehicular access. The remaining four objectors with concerns either on effectiveness of the project or on impact of land resumption and clearance did not withdraw their objections. These four objections were therefore considered unresolved. The amended works were subsequently gazetted on 22 June 2007 and we did not receive any further objection. After considering the four unresolved objections, the Chief Executive in Council authorised the proposed works without modifications on 4 December 2007.

Sha Ling

16. We proposed to improve the drainage system in Sha Ling initially by way of constructing drainage channels along existing streamcourses, and consulted NDC DD&EIC on 20 September 2004. Members supported the proposed drainage improvement works.

17. In February 2006, we amended the design of the proposed works in Sha Ling from drainage channel to drainage pipe while maintaining the same flood protection level in order to obviate the need for extensive land resumption.

18. For the revised proposed works in Sha Ling, we have consulted Ta Kwu Ling Rural Committee and circulated a consultation paper to NDC DD&EIC in March 2007, and members had no comment on the revision.

19. We consulted the Legislative Council Panel on Development on the proposed works in Ki Lun Tsuen, Ma Tso Lung, Ying Pun, Shek Tsai Leng and Sha Ling by circulation of an information paper on 11 April 2008. Members raised no objection to the proposed works.

ENVIRONMENTAL IMPLICATIONS

20. The proposed works is not a designated project under the Environmental Impact Assessment Ordinance. We completed an Environmental Study (ES) which concluded that with implementation of the recommended mitigation measures and environmental monitoring and audit programme, there would not be any long term adverse environmental impacts arising from the proposed works. We would incorporate the ES recommendations into the works contract for implementation. For short-term impacts caused by the works during construction, we will control noise, dust and site run-off to 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 and working in dry environment with barriers to control water pollution during excavation. We will also carry out regular site inspections to ensure that these recommended mitigation measures and good site practices will be properly implemented on site. We have included \$3.7 million (in September 2007 prices) in the project estimates for implementing the environmental mitigation measures.

21. We have considered ways in the planning and design stages to reduce the generation of construction waste where possible. For example, we have determined the 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 timber formwork. In addition, we will require the contractor to reuse inert construction waste (e.g. excavated soil) on site or in other suitable construction sites as far as possible, in order to minimise the disposal of inert

/construction

construction waste to public fill reception facilities². We will encourage the contractor to maximise the use of recycled and recyclable inert construction waste, as well as the use of non-timber formwork to further minimise the generation of construction waste.

22. We will also require the contractor to submit for approval a plan setting out the waste management measures, which will include appropriate mitigation means to avoid, reduce, reuse and recycle inert construction waste. We will ensure that the day-to-day operations on site comply with the approved plan. We will require the contractor to separate the inert portion from non-inert construction waste on site for disposal at appropriate facilities. We will control the disposal of inert construction waste and non-inert construction waste to public fill reception facilities and landfills respectively through a trip-ticket system.

23. We estimate that the project will generate in total about 237 500 tonnes of construction waste. Of these, we will reuse about 150 200 tonnes (63%) of inert construction waste on site and deliver 60 100 tonnes (25%) of inert construction waste to public fill reception facilities for subsequent reuse. In addition, we will dispose of 27 200 tonnes (12%) of non-inert construction waste at landfills. The total cost for accommodating construction waste at public fill reception facilities and landfill sites is estimated to be about \$5.0 million for this project (based on a unit cost of \$27/tonne for disposal at public fill reception facilities and \$125/tonne³ at landfills).

HERITAGE IMPLICATIONS

24. The project will not affect any heritage site, i.e. all declared monuments, proposed monuments, graded historic sites/buildings, sites of archaeological interests and Government historic sites identified by the Antiquities and Monuments Office.

/LAND

² Public fill reception facilities are specified in Schedule 4 of the Waste Disposal (Charges for Disposal of Construction Waste) Regulation. Disposal of inert construction waste in public fill reception facilities 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/m³), nor the cost to provide new landfills (which is likely to be more expensive) when the existing ones are filled.

LAND ACQUISITION

25. We will resume about 38 320 square metres (m²) of private agricultural land and clear 43 880 m² of government land for the proposed works. The land resumption and clearance will affect four households involving 13 persons and seven temporary domestic structures. These families will be offered ex-gratia allowances and, where eligible, accommodation in public housing in accordance with the prevailing rehousing policy. We will charge the cost of land resumption and clearance estimated at \$111.2 million to **Head 701 - Land Acquisition**. A breakdown of the land resumption and clearance costs is at Enclosure 3. We have reviewed the design of the project to minimise the land acquisition cost. The cost is considered justified as flooding risk will be mitigated.

TRAFFIC IMPACT

26. 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

27. In November 2001, we included **118CD** in Category B to cover drainage improvement works in Fu Tei Au, Kwu Tung, Ma Tso Lung and Ki Lun Tsuen.

28. In June 2002, we upgraded part of **118CD** to Category A as **129CD** “Drainage improvement in Northern New Territories – package B – consultants’ fees and investigations” at an estimated cost of \$15.1 million in MOD prices for engaging consultants to undertake site investigations, impact assessments and detailed design for the proposed drainage improvement works under the project. The consultancy commenced in November 2002 for completion in June 2009.

29. The proposed drainage improvement works under **118CD** are implemented in four phases.

30. The phase 1 works involving drainage improvement of a watercourse located to the north of the junction between Fu Tei Au Road and Man Kam To Road in Sheung Shui was completed in January 2007. The works was funded under the block allocation **Subhead 4100DX** “Drainage works, studies and investigations for items in Category D of Public Works Programme” at an approved project cost of \$3.97 million in MOD prices.

31. For phase 2, we upgraded part of **118CD** to Category A as **147CD** “Drainage improvement works in Kwu Tung South and Fu Tei Au, Sheung Shui” in July 2006 at an estimated cost of \$58.3 million in MOD prices for carrying out the drainage improvement works in Kwu Tung South and upstream of the phase 1 works in Fu Tei Au. The construction works commenced in July 2006 for completion in January 2009.

32. The phase 3 works cover the proposed works as set out in paragraph 3 above.

33. The remaining phase of works involves drainage improvement works to be implemented in Tsung Yuen, Kwu Tung. Design of this phase is in progress.

34. Of the 313 trees within the project boundary, 276 trees will be preserved. The proposed works will involve the removal of 37 common trees including 26 trees to be felled and 11 trees to be replanted within the project site. All trees to be removed are not important trees⁴. We will incorporate planting proposals as part of the project, including estimated quantities of about 1 170 trees, 3 700 shrubs and 16 500 m² of grassed area.

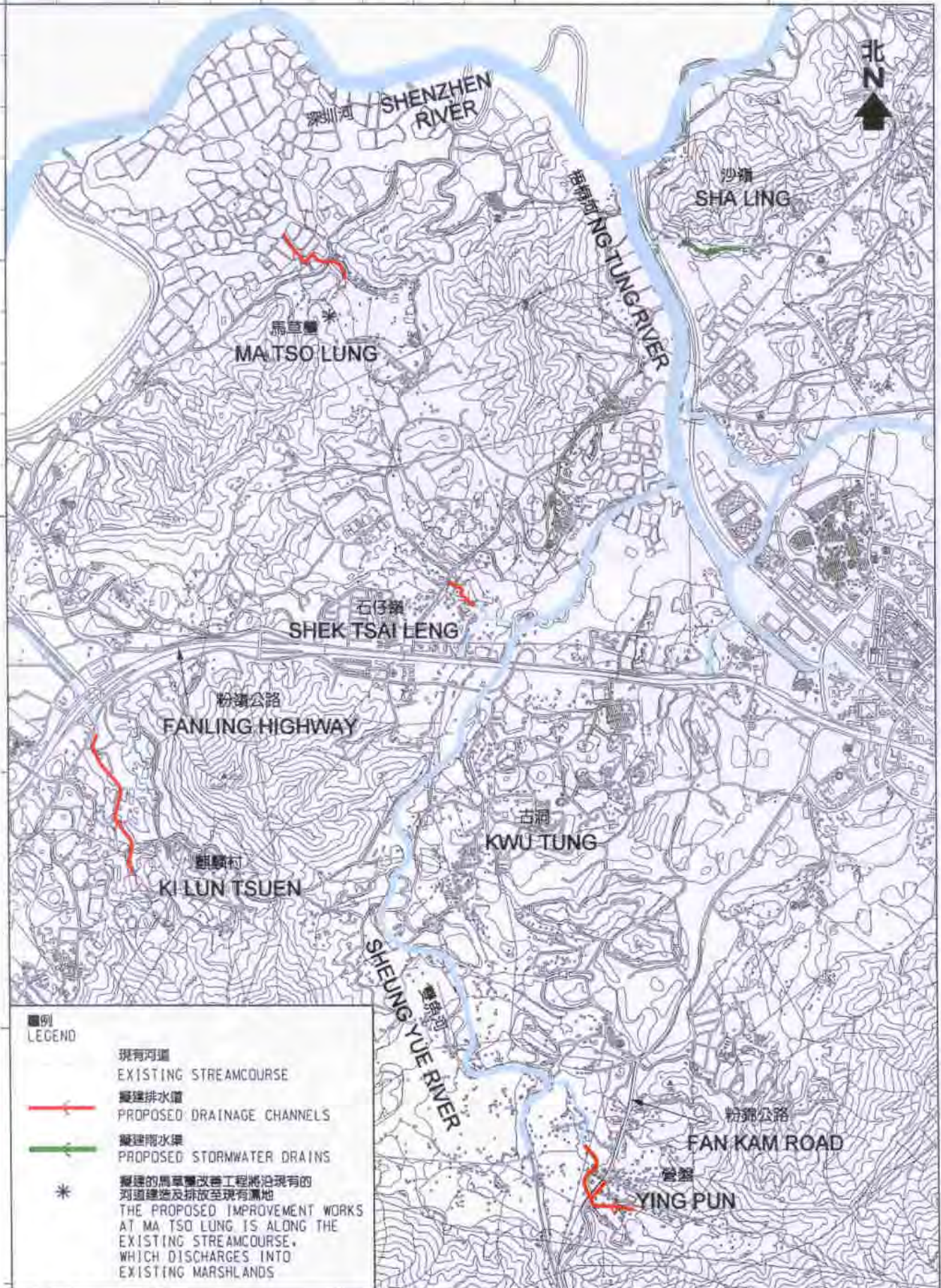
/35.

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 –

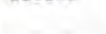



- (a) trees over 100 years old or above;
- (b) trees of cultural, historical or memorable significance e.g. Fung Shui trees, trees as landmark of monastery or heritage monument, and trees in memory of important persons or event;
- (c) trees of precious or rare species;
- (d) trees of outstanding form (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.

35. We estimate that the proposed works will create about 169 jobs (135 for labourers and another 34 for professional/technical staff) providing a total employment of 3 300 man-months.

Development Bureau
April 2008



圖例
LEGEND

-  現有河道
EXISTING STREAMCOURSE
-  擬建排水渠
PROPOSED DRAINAGE CHANNELS
-  擬建雨水渠
PROPOSED STORMWATER DRAINS
-  擬建的馬草壩改善工程將沿現有的河道建造及排放至現有濕地
THE PROPOSED IMPROVEMENT WORKS AT MA TSO LUNG IS ALONG THE EXISTING STREAMCOURSE, WHICH DISCHARGES INTO EXISTING MARSHLANDS

圖則名稱 drawing title

工務工程計劃編號118CD
新界北部雨水排放系統改善計劃—B部分
PWP ITEM No. 118CD - DRAINAGE IMPROVEMENT IN
NORTHERN NEW TERRITORIES - PACKAGE B

繪畫 drawn	S. Y. WONG	日期 date
核對 checked	S. S. POON	日期 date
批核 approved	B. K. KWOK	日期 date

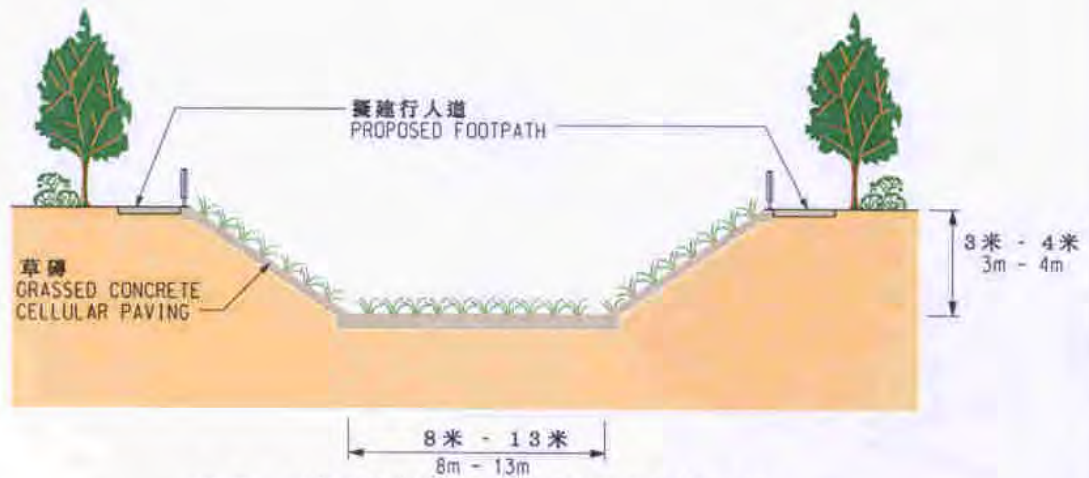
部門 office **排水工程處**
DRAINAGE PROJECTS DIVISION

圖則編號 drawing no. 比例 scale

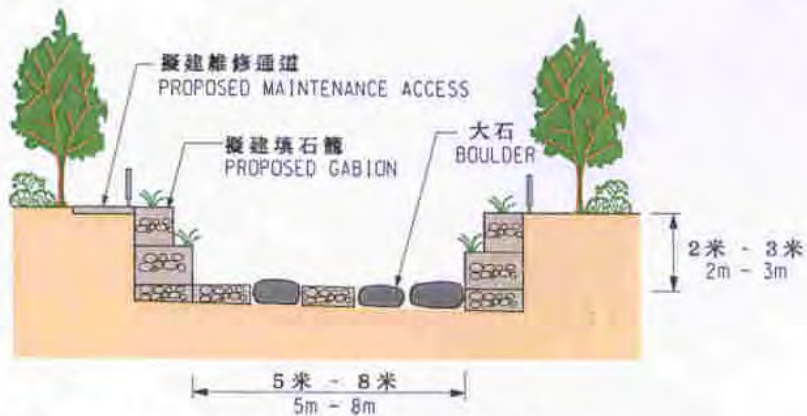
DDN/118CD1/8001 1 : 30000

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DRAINAGE SERVICES DEPARTMENT
GOVERNMENT OF THE
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SPECIAL ADMINISTRATIVE REGION



類型一(擬建麒麟村排水道之典型切面)
 TYPE 1(TYPICAL SECTION OF PROPOSED KI LUN TSUEN CHANNEL)



類型二(擬建馬草壘排水道之典型切面)
 TYPE 2(TYPICAL SECTION OF PROPOSED MA TSO LUNG CHANNEL)

LEGEND 圖例:



擬種植樹木及灌木
 PROPOSED TREE AND SHRUBS PLANTING

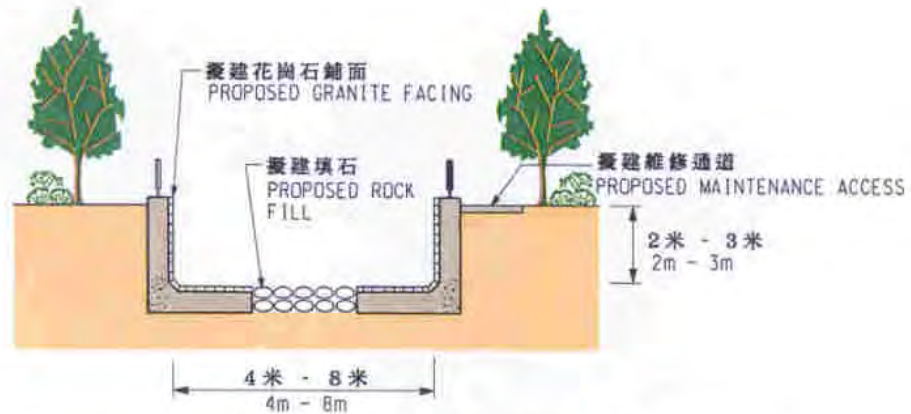


擬建欄杆
 PROPOSED RAILINGS

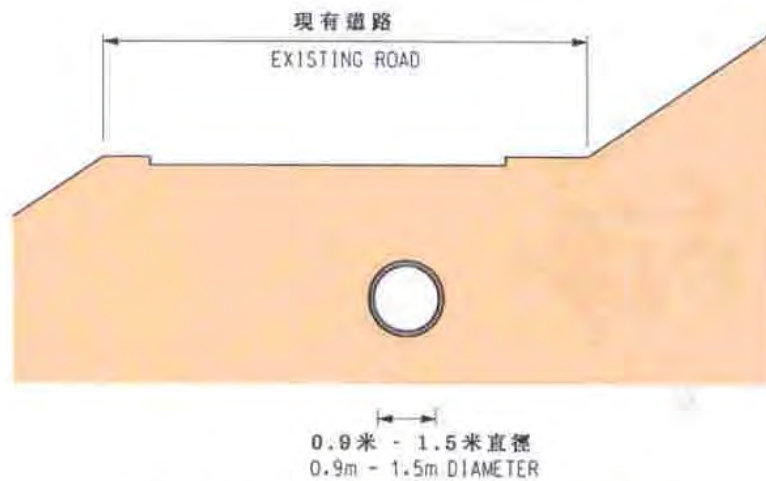
圖則名稱 drawing title
 工務工程計劃編號118CD
 新界北部雨水排放系統改善計劃—B部分
 PWP ITEM No. 118CD - DRAINAGE IMPROVEMENT IN
 NORTHERN NEW TERRITORIES - PACKAGE B
 排水道典型切面圖
 TYPICAL CROSS-SECTION OF
 DRAINAGE CHANNELS

繪畫 drawn	S. C. TAM	日期 date
核對 checked	S. S. POON	日期 date
批核 approved	B. H. KWOK	日期 date
部門 office	排水工程處 DRAINAGE PROJECTS DIVISION	

圖則編號 drawing no.	比例 scale
DDN/118CD1/8002	N.T.S.
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類型三(擬建營盤和石仔嶺排水道之典型切面)
TYPE 3(TYPICAL SECTION OF PROPOSED YING PUN AND SHEK TSAI LENG CHANNEL)



類型四(擬建沙嶺雨水渠之典型切面)
TYPE 4(TYPICAL SECTION OF PROPOSED STORMWATER DRAIN IN SHA LING)

LEGEND 圖例:



擬種植樹木及灌木
PROPOSED TREE AND SHRUBS PLANTING



擬建欄杆
PROPOSED RAILINGS

圖則名稱 drawing title

工務工程計劃編號118CD
新界北部雨水排放系統改善計劃—B部分
PWP ITEM No. 118CD - DRAINAGE IMPROVEMENT IN
NORTHERN NEW TERRITORIES - PACKAGE B

排水道及雨水渠典型切面圖
TYPICAL CROSS-SECTION OF DRAINAGE
CHANNELS AND STORMWATER DRAINS

繪畫 drawn

T. M. LEE

日期 date

核對 checked

S. S. POON

日期 date

批核 approved

B. K. KWOK

日期 date

部門 office

排水工程處

DRAINAGE PROJECTS DIVISION

圖則編號 drawing no.

DDN/118CD1/8014

比例 scale

N.T.S.

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118CD – Drainage improvement in Northern New Territories – package B

Breakdown of the estimates for consultants' fees

Consultants' staff costs			Estimated man-months	Average MPS* salary point	Multiplier (Note 1)	Estimated fee (\$million)
(a)	Contract administration (Note 2)	Professional	-	-	-	0.8
		Technical	-	-	-	0.7
(b)	Site supervision by resident site staff of the consultants (Note 3)	Professional	60	38	1.6	5.5
		Technical	362	14	1.6	10.9
Total consultants' staff costs						17.9

* 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 April 2007, MPS Pt. 38 = \$56,945 per month and MPS Pt.14 = \$18,840 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. The construction phase of the assignment for the proposed works will only be executed upon 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.

118CD – Drainage improvement in Northern New Territories – package B

Breakdown of the land resumption and clearance costs

	\$ million
Estimated land resumption cost	98.4
(a) Zone “B” Agricultural Land Ex-gratia Compensation (including 31 lots of private land) 3 548m ² @ \$3,681.26/ m ² (Notes 1 and 2)	13.1
(b) Zone “C” Agricultural Land Ex-gratia Compensation (including 221 lots of private land) 34 770m ² @ \$2,454.17/ m ² (Notes 1 and 2)	85.3
Estimated clearance cost	5.9
(a) Compensation for crops	2.8
(b) Ex-gratia compensation for miscellaneous permanent improvements to farms	1.5
(c) “Tun Fu” ceremonial fees	0.2
(d) Ex-gratia allowances for non-domestic structures and business undertakings	0.8
(e) Ex-gratia allowances for domestic occupiers	0.3
(f) Ex-gratia compensation for fish pond	0.1
(g) Ex-gratia compensation for farm structures	0.2

	\$ million
Interest payment on various ex-gratia compensations for private land and contingency	6.9
(a) Interest payment on land compensation	0.6
(b) Contingency on land resumption and clearance cost	6.3
Total costs	111.2

Notes

1. The land to be resumed in the project **118CD** is agricultural land within Compensation Zones “B” and “C”. The ex-gratia compensation rate for Zones B and C are 75% and 50% of the Basic Rate for agricultural land respectively. The latest Basic Rate is \$456 per square foot (or \$4,908.34 per m²) with effect from 1 April 2008.
2. There are four ex-gratia compensation zones, namely Zones A, B, C and D, for land resumption in the New Territories as approved by ExCo in 1985 and 1996. The boundaries of these zones are shown on the Zonal Plan for Calculation of Compensation Rates.