

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 707 – NEW TOWNS AND URBAN AREA DEVELOPMENT

New Territories North Development

Civil Engineering – Drainage and erosion protection

74CD – Village flood protection for Yuen Long, Kam Tin and Ngau Tam Mei, North West New Territories – stage II

Members are invited to recommend to Finance Committee –

- (a) the upgrading of part of **74CD**, entitled "Village flood protection for Mai Po Lo Wai, Mai Po San Tsuen, Ma Tin Tsuen and Shui Pin Wai, North West New Territories", to Category A at an estimated cost of \$174.8 million in money-of-the-day prices; and
- (b) the retention of the remainder of **74CD** in Category B.

PROBLEM

The villages in Mai Po Lo Wai, Mai Po San Tsuen, Ma Tin Tsuen and Shui Pin Wai in the North West New Territories are in low-lying areas and are prone to frequent flooding during typhoons or heavy rainstorms.

/PROPOSAL

PROPOSAL

2. The Director of Territory Development, with the support of the Secretary for Works, proposes to upgrade part of **74CD** to Category A at an estimated cost of \$174.8 million in money-of-the-day (MOD) prices for village flood protection works at Mai Po Lo Wai and Mai Po San Tsuen in Ngau Tam Mei, and Ma Tin Tsuen and Shui Pin Wai in Yuen Long.

PROJECT SCOPE AND NATURE

3. The scope of **74CD** comprises the construction of flood protection works at six villages, namely Mai Po Lo Wai, Mai Po San Tsuen, Ma Tin Tsuen, Shui Pin Wai, Shui Pin Tsuen and Tai Kiu (see paragraph 29 below). A site plan showing the locations of these villages is at Enclosure 1.

4. The part of **74CD** we now propose to upgrade to Category A comprises flood protection works in the following four villages and associated measures on minimising impacts on the environment -

- (a) Mai Po Lo Wai and Mai Po San Tsuen
 - (i) a floodwater storage pond and a floodwater pumping station;
 - (ii) a flood protection embankment and associated maintenance access;
 - (iii) a flood protection wall; and
 - (iv) a twin cell box culvert with associated drain pipes and channels;
- (b) Ma Tin Tsuen
 - (i) a floodwater storage pond and associated retaining wall;
 - (ii) a floodwater pumping station and associated drain pipe; and
 - (iii) associated internal access and drainage works;

/(c)

- (c) Shui Pin Wai
 - (i) a floodwater storage pond;
 - (ii) a floodwater pumping station and associated drain pipe; and
 - (iii) associated internal access and drainage works;
- (d) environmental mitigation measures including landscaping works for each site; and
- (e) an environmental monitoring and audit (EM&A) programme for works mentioned in items (a) to (d) above.

Details of the proposed works at Mai Po Lo Wai and Mai Po San Tsuen, Ma Tin Tsuen and Shui Pin Wai are shown at Enclosures 2, 3 and 4 respectively. We plan to start construction in stages from November 2001 for completion in stages from October 2003 to March 2005.

5. The remainder of **74CD** comprises the construction of flood protection works at Tai Kiu and Shui Pin Tsuen in Yuen Long. We plan to implement the remaining works in 2003 for completion in 2005.

JUSTIFICATION

6. Several flooding incidents in the past have adversely affected the properties of local residents, and have caused economic losses and disruption to transport and social activities in the villages in Mai Po Lo Wai, Mai Po San Tsuen, Ma Tin Tsuen and Shui Pin Wai, which are situated in the low-lying flood plains of Ngau Tam Mei and Yuen Long. The proposed flood protection works form part of the Government's overall flood control programme for the North West New Territories and will alleviate flooding problems in the said villages.

7. The proposed works will protect the villages in Mai Po Lo Wai, Mai Po San Tsuen, Ma Tin Tsuen and Shui Pin Wai during typhoons or heavy rainstorms from being flooded in the following ways -

/(a)

Mai Po Lo Wai and Mai Po San Tsuen

- (a) the proposed floodwater storage pond, together with the surface channels, will collect the rainwater within the village boundaries. Before the water in the pond starts to overflow, the proposed pumping system will be activated to pump the water into the adjacent drainage channel;
- (b) the proposed flood protection wall and flood protection embankment will prevent any external floodwater from entering the village proper of Mai Po Lo Wai and Mai Po San Tsuen; and
- (c) the proposed twin cell box culvert will intercept the existing stream course in Mai Po Lung Tsuen and convey the water to the existing channel west of Mai Po Lo Wai.

Ma Tin Tsuen and Shui Pin Wai

- (d) the proposed floodwater storage pond, together with the surface channels, will collect the rainwater within the village boundaries. Before the pond starts to overflow, the proposed pumping system will be activated to pump the water into the existing Yuen Long Nullah.

The proposed floodwater storage ponds and pumping stations are capable of accommodating a 50-year return period rainstorm. The 50-year return period is the desired standard adopted by the Government for new drainage facilities in rural areas. It is derived to achieve cost effectiveness based on land requirement considerations as well as social and economic impacts of flooding.

FINANCIAL IMPLICATIONS

8. We estimate the capital cost of the project to be \$174.8 million in MOD prices (see paragraph 9 below), made up as follows –

/(a)

	\$ million	
(a) Drainage pipes, channels and box culverts	26.0	
(b) Floodwater storage ponds and floodwater pumping stations	95.5	
(i) civil works	62.2	
(ii) electrical and mechanical (E&M) works	33.3	
(c) Flood protection wall, flood protection embankment and associated road works	30.0	
(d) Environmental mitigation measures including landscaping works	5.0	
(e) EM&A programme	3.5	
(f) Contingencies	16.7	
	<hr/>	
Sub-total	176.7	(in September 2000 prices)
(g) Provision for price adjustment	(1.9)	
	<hr/>	
Total	174.8	(in MOD prices)
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9. Subject to approval, we will phase the expenditure as follows –

Year	\$ million (Sept 2000)	Price Adjustment Factor	\$ million (MOD)
2001 - 2002	3.7	0.98000	3.6
2002 - 2003	47.9	0.97976	46.9

/2003 - 2004

2003 - 2004	61.8	0.98759	61.0
2004 - 2005	39.1	0.99549	38.9
2005 - 2006	19.1	1.00346	19.2
2006 - 2007	5.1	1.01149	5.2
	<hr/>		<hr/>
	176.7		174.8
	<hr/>		<hr/>

10. We have derived the MOD estimate on the basis of the Government's latest forecast of trend labour and construction prices for the period from 2001 to 2007. We will tender the proposed civil engineering works under standard remeasurement contracts because the works involve extensive earthworks, the quantities of which may vary according to the actual ground conditions. The contracts will provide for price adjustments as the construction period will exceed 21 months. We will tender the proposed E&M works on fixed-price lump-sum basis because we can clearly define the scope of works in advance.

11. We estimate the annually recurrent expenditure arising from this project to be \$2.4 million.

PUBLIC CONSULTATION

Mai Po Lo Wai and Mai Po San Tsuen

12. For the Mai Po Lo Wai and Mai Po San Tsuen flood protection scheme, we consulted the San Tin Rural Committee on 15 January 1997 and 19 May 1997. We also consulted the Environmental Improvement Committee of the then Yuen Long District Board on 22 May 1997. Members of both Committees supported the project.

13. We gazetted the road works associated with the flood protection works of Mai Po Lo Wai and Mai Po San Tsuen under the Roads (Works, Use and Compensation) Ordinance (RO) on 8 January 1999 and received three objections in relation to the scope of land resumption. After a series of

/discussions

discussions with the objectors, we amended the works limit by shifting the proposed flood protection embankment westward and gazetted the amendment of the works limit under Section 7 of the RO on 3 December 1999. As land resumption has been minimised, no objection has been received on the amended scheme. On 24 March 2000, the Secretary for Transport authorized the proposed road works.

14. As the proposed works would involve filling below high tide level, we gazetted the proposed reclamation works under the Foreshore and Sea-bed (Reclamations) Ordinance on 12 March 1999 and did not receive any objection. On 28 April 2000, the Director of Lands authorized the proposed reclamation works.

Ma Tin Tsuen

15. For the Ma Tin Tsuen flood protection scheme, we consulted the Shap Pat Heung Rural Committee on 5 September 1997 and 9 October 1998. The Committee supported the scheme. We also consulted the Environmental Improvement Committee of the then Yuen Long Provisional District Board on 14 November 1998. Members supported the project.

Shui Pin Wai

16. For the Shui Pin Wai flood protection scheme, we consulted the Ping Shan Rural Committee and the Environmental Improvement Committee of the then Yuen Long Provisional District Board on 4 November 1997 and 24 September 1998 respectively. Members of both Committees supported the project.

The Project

17. We briefed the Legislative Council Panel on Planning, Lands and Works on the overall flood protection strategy on 18 May 2000. Members supported the early implementation of all flood protection schemes in the North West New Territories, including this project. We further presented the Tin Shui Wai/Yuen Long Development Programme (2000/2001 Edition), including this project, to the Yuen Long District Council on 14 December 2000. Members did not raise any objection to the proposed works.

/ENVIRONMENTAL

ENVIRONMENTAL IMPLICATIONS

Mai Po Lo Wai and Mai Po San Tsuen

18. Under Schedule 2 of the Environmental Impact Assessment (EIA) Ordinance, the flood protection works at Mai Po Lo Wai and Mai Po San Tsuen are classified as a designated project and an environmental permit (EP) is required for the construction and operation of the project. The Environmental Protection Department (EPD) issued the environmental permit on 23 March 2001 for the works at Mai Po Lo Wai and Mai Po San Tsuen.

19. In May 1994, we employed consultants to carry out an EIA study to assess the environmental impacts due to the construction and operation of a series of flood control projects in Yuen Long, Kam Tin and Ngau Tam Mei including the proposed works at Mai Po Lo Wai and Mai Po San Tsuen.

20. The EIA report was completed in May 1996. It concluded that the environmental impact of the proposed works at Mai Po Lo Wai and Mai Po San Tsuen could be controlled to within established standards and guidelines through the implementation of the mitigation measures as recommended in the EIA. We will implement the recommended mitigation measures by incorporating them into the works contracts. These measures include landscaping works (hydroseeding and planting trees) on the embankment slopes and open space, and installation of acoustic louvers for the floodwater pumping stations. No less than 150 trees will be planted along the access road to compensate for the 21 trees felled as a result of the project. In addition, approximately 10 000 native tree seedlings and shrubs will be planted on the embankment slopes, and wetland plant species will be planted in the flood pond to provide ecological mitigation as required in the EIA Report. To avoid potential impacts of construction noise and human disturbance on herons and egrets arriving to nest at Mai Po Lo Wai egrettry, we will prohibit any construction works at Mai Po Lo Wai and Mai Po San Tsuen during the months from April to July.

21. We consulted the Advisory Council on the Environment (ACE) on the EIA report in July 1996. ACE endorsed the report on condition that –

- (a) the old river channels would be considered for restoration into wildlife habitats;

/(b)

- (b) the disposal of contaminated mud should be to the satisfaction of the Fill Management Committee (FMC), now replaced by the Marine Fill Committee (MFC), and such disposal would have no adverse effects on the environment; and
- (c) the proponents should review the conceptual off-site wetland compensation measures in light of Government's latest policy on off-site wetland compensation and report back to the EIA Sub-committee of the ACE their specific proposals for this project.

22. The MFC has approved the arrangements for the disposal of contaminated mud (see paragraph 26 below). As regards the conditions set by ACE, the Agriculture, Fisheries and Conservation Department (AFCD) is currently carrying out a study to address the restoration of the old river channels and off-site wetland compensation and will report the findings to the EIA Sub-committee in end 2002 once AFCD has completed the study.

Ma Tin Tsuen and Shui Pin Wai

23. For the flood protection works at Ma Tin Tsuen and Shui Pin Wai, we completed a separate Environmental Study (the Study) in November 1999. We consulted the ACE which endorsed the Study in January 2000. The Study concluded that the environmental impact of the proposed works at Ma Tin Tsuen and Shui Pin Wai could be controlled to within established standards and guidelines through the implementation of the mitigation measures as recommended in the Study. We will implement the recommended mitigation measures by incorporating them into the works contract. These measures include landscaping works (hydroseeding and planting trees) along the access roads and open space. No less than 150 trees will be planted along the access road to compensate for the 41 trees felled as a result of the project. In addition, approximately 1 500 native tree seedlings and shrubs will be planted on embankment slopes, and wetland plant species will be planted in the flood pond to provide ecological mitigation as required in the Study Report.

/The Project

The Project

24. We will incorporate into the works contracts standard measures to control pollution arising during construction. These measures include frequent watering of the site and provision of wheel-washing facilities to reduce emission of fugitive dust, the use of silenced construction plant to reduce noise generation and other procedures as recommended in EPD's Recommended Pollution Control Clauses. We have included the costs of implementing the environmental mitigation measures including landscaping works (\$5 million) and an EM&A programme (\$3.5 million) in the overall project estimate.

25. We have considered in the planning and design stages ways of minimizing the generation of construction and demolition (C&D) materials by giving due consideration to designing the level and layout of the proposed works. We estimate that the project will generate about 32 100 cubic metres (m³) of C&D materials. Of these, about 4 140m³ (13%) will be reused on site, 25 700m³ (80%) will be reused as fill in public filling areas and 2 260m³ (7%) will be disposed of at landfills.

26. About 3 700m³ of marine mud will be delivered to the marine dumping sites at South Cheung Chau/East Ninepin, and 36 000m³ of contaminated mud will be delivered to the contaminated mud disposal facility at East Sha Chau. The key measures in respect of dredging works include the proper disposal of dredged material, the use of a closed mechanical grab, no stockpiling of contaminated mud on site, and use of watertight trucks and barges for transportation to the relevant barging points and designated dumping areas to avoid pollution.

27. We will require the contractor under the contract to submit a waste management plan for approval with appropriate mitigation measures, including the allocation of an area for waste segregation. We will ensure that day-to-day operations on site will comply with the approved waste management plan. We will require the contractor to reuse the excavated materials on site or on other construction sites as filling materials as far as possible to minimize the disposal of public fill. To further minimize the generation of C&D materials, we will encourage the contractor to use non-timber materials for hoarding, formwork and other temporary works. We will require the contractor to implement necessary

/measures

measures set out in the Recommended Pollution Control Clauses for Construction Contracts issued by EPD to minimize generation of C&D materials and to reuse and recycle C&D materials. We will control the disposal of public fill and C&D waste to the designated public filling areas and landfills respectively through a trip-ticket system. We will record the disposal, reuse and recycling of C&D materials for monitoring purposes.

LAND ACQUISITION

28. We will resume about 3.6 hectares of agricultural land for the proposed works. The land acquisition and clearance will not affect any households. We will charge the costs of land acquisition and clearance, estimated at \$87.2 million, to Head 701 - Land Acquisition.

BACKGROUND INFORMATION

29. In December 1995, we upgraded **74CD** to Category B for the construction of flood protection works for 19 villages in the North West New Territories. In April 2000, D of DS completed a technical review on the project scope of **74CD**. The review concluded that apart from the flood protection schemes at six villages, the schemes for the other 13 villages were very minor in nature and could be implemented under minor rural improvement works of the Rural Planning and Improvement Strategy managed by Drainage Services Department and Home Affairs Department.

30. Other than **74CD**, the following flood protection projects have either started or been completed in the Yuen Long, Kam Tin and Ngau Tam Mei areas -

Upgrade to Cat. A	Project title (Approved/proposed project estimate)	Start date	Completion date
June 1995	71CD – "Village flood protection for Sha Po Tsuen, Kam Tin, New Territories" (\$96.6 million)	Sept 1996	June 1999
June 1999	98CD – "Phase 1 village flood protection for Pok Wai and Wang Chau, North West New Territories" (\$106.8 million)	Oct 1999	Aug 2002

/June 2000

June 2000 **107CD** – "Village flood protection for Chuk Yuen Tsuen and Ha San Wai, North West New Territories" (\$152.1 million) Nov 2000 Mar 2003

31. We will upgrade the last part of **30CD** "Village flood protection for Yuen Long, Kam Tin and Ngau Tam Mei, North West New Territories, stage 1 – remainder" to Category A in June 2001 for the construction of flood protection works at Pok Wai and Wang Chau for commencement in December 2001 and completion in October 2004.

32. D of DS has completed the detailed design and drawings using in-house resources.

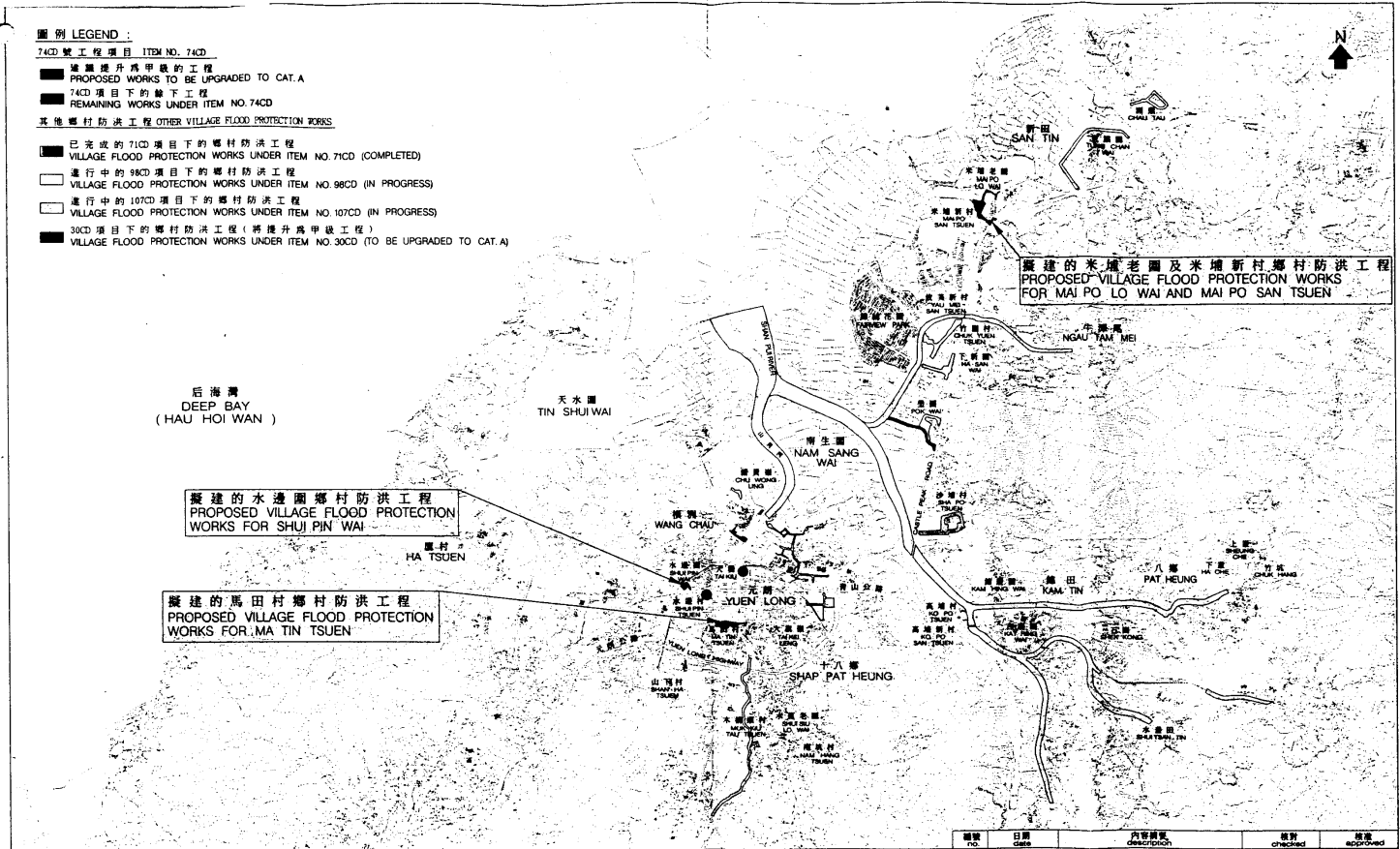
Job Opportunities

33. We estimate that the project will create some 75 new jobs, comprising ten professional/technical staff and 65 labourers, totalling 2 470 man-months.

Works Bureau
May 2001

圖例 LEGEND :

- 74CD 被工程項目 ITEM NO. 74CD**
- 建議提升為甲級的工程
PROPOSED WORKS TO BE UPGRADED TO CAT. A
 - 74CD 項目下的餘下工程
REMAINING WORKS UNDER ITEM NO. 74CD
- 其他鄉村防洪工程 OTHER VILLAGE FLOOD PROTECTION WORKS**
- 已完成的 71CD 項目下的鄉村防洪工程
VILLAGE FLOOD PROTECTION WORKS UNDER ITEM NO. 71CD (COMPLETED)
 - 進行中的 88CD 項目下的鄉村防洪工程
VILLAGE FLOOD PROTECTION WORKS UNDER ITEM NO. 88CD (IN PROGRESS)
 - 進行中的 107CD 項目下的鄉村防洪工程
VILLAGE FLOOD PROTECTION WORKS UNDER ITEM NO. 107CD (IN PROGRESS)
 - 30CD 項目下的鄉村防洪工程 (將提升為甲級工程)
VILLAGE FLOOD PROTECTION WORKS UNDER ITEM NO. 30CD (TO BE UPGRADED TO CAT. A)



二〇〇一至二〇〇二年度工務小組委員會文件 P.W.S.C. SUBMISSION 2001/2002








圖則名稱 drawing title

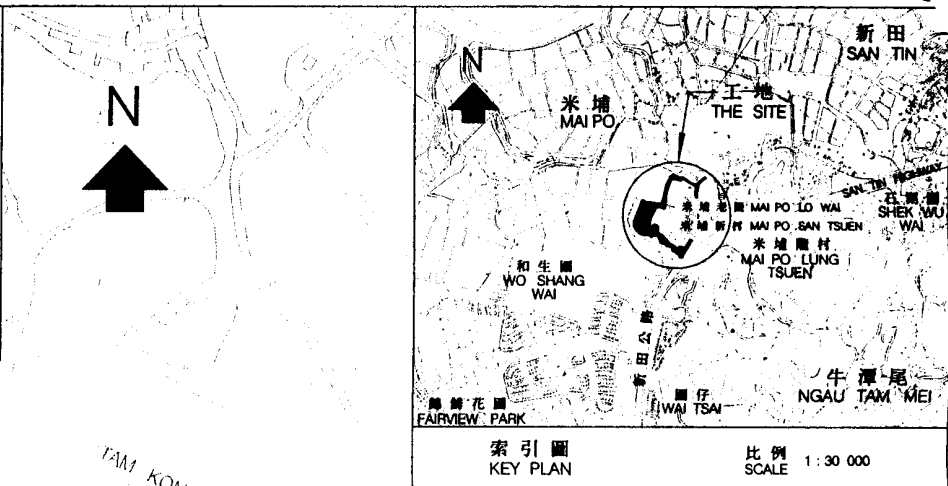
新界西北部元朗、錦田及牛潭尾的鄉村防洪計劃
VILLAGE FLOOD PROTECTION FOR YUEN LONG,
KAM TIN AND NGAU TAM MEI, NORTH WEST NEW TERRITORIES

編號 No.	日期 Date	內容摘要 Description	核對 Checked	核准 Approved
修訂 REVISION				
繪圖 drawn	簽署 initial	日期 date	項目編號 item no.	辦事處 office
C CHUN	SIGNED	29.01.01	74CD	新界北拓發展處 NEW TERRITORIES NORTH DEVELOPMENT OFFICE
核對 checked	簽署 initial	日期 date	比例 scale	
K S HO	SIGNED	31.01.01	1 : 50 000	
核准 approved	簽署 initial	日期 date	圖則編號 drawing no.	拓 展 署 TERRITORY DEVELOPMENT DEPARTMENT
TSUI Wai	SIGNED	30.03.01	NTN 2096	

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圖例 LEGEND :

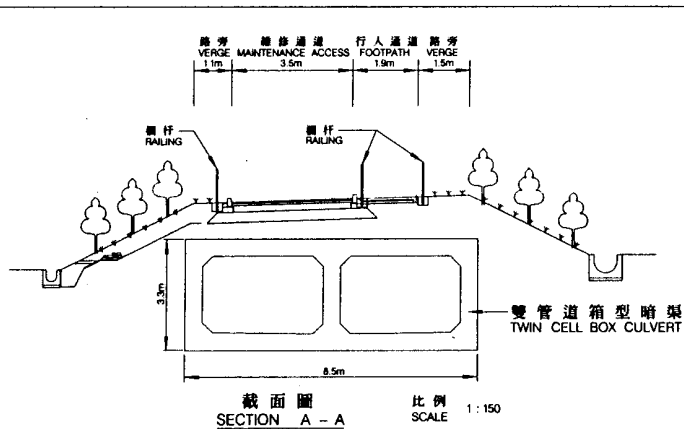
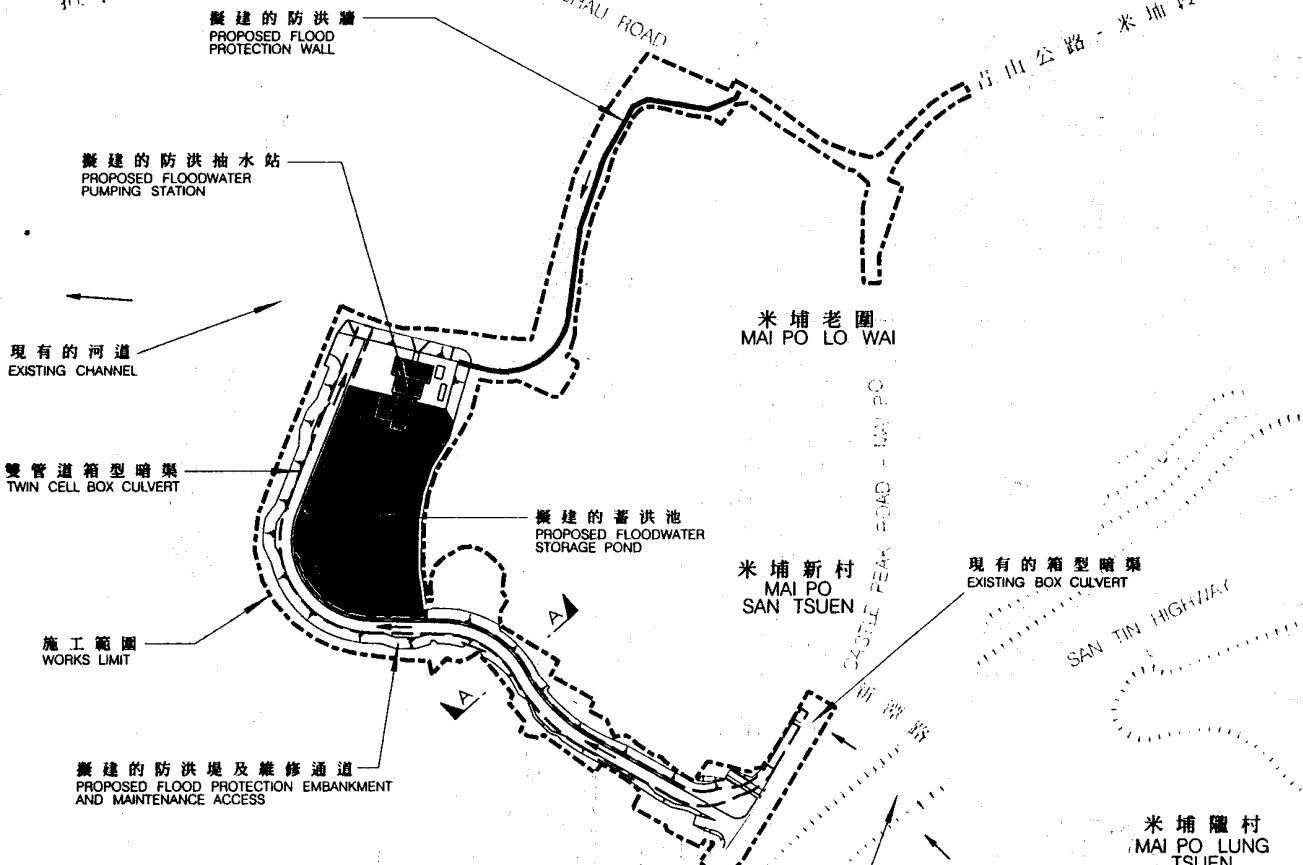
-  擬建的防洪堤及維修通道
PROPOSED FLOOD PROTECTION EMBANKMENT AND MAINTENANCE ACCESS
-  擬建的蓄洪池
PROPOSED FLOODWATER STORAGE POND
-  擬建的防洪抽水站
PROPOSED FLOODWATER PUMPING STATION
-  擬建的雙管道箱型暗渠
PROPOSED TWIN CELL BOX CULVERT
-  擬建的防洪牆
PROPOSED FLOOD PROTECTION WALL
-  水流流向
FLOW DIRECTION
-  魚塘
POND



批字湖路

TAM KON CHAU ROAD

青山公路 - 米埔段









編號 no.	日期 date	內容摘要 description	核對 checked	核准 approved
修訂 REVISION				

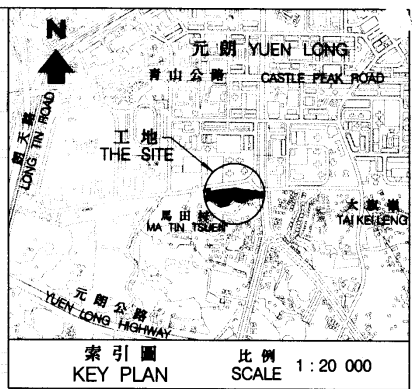
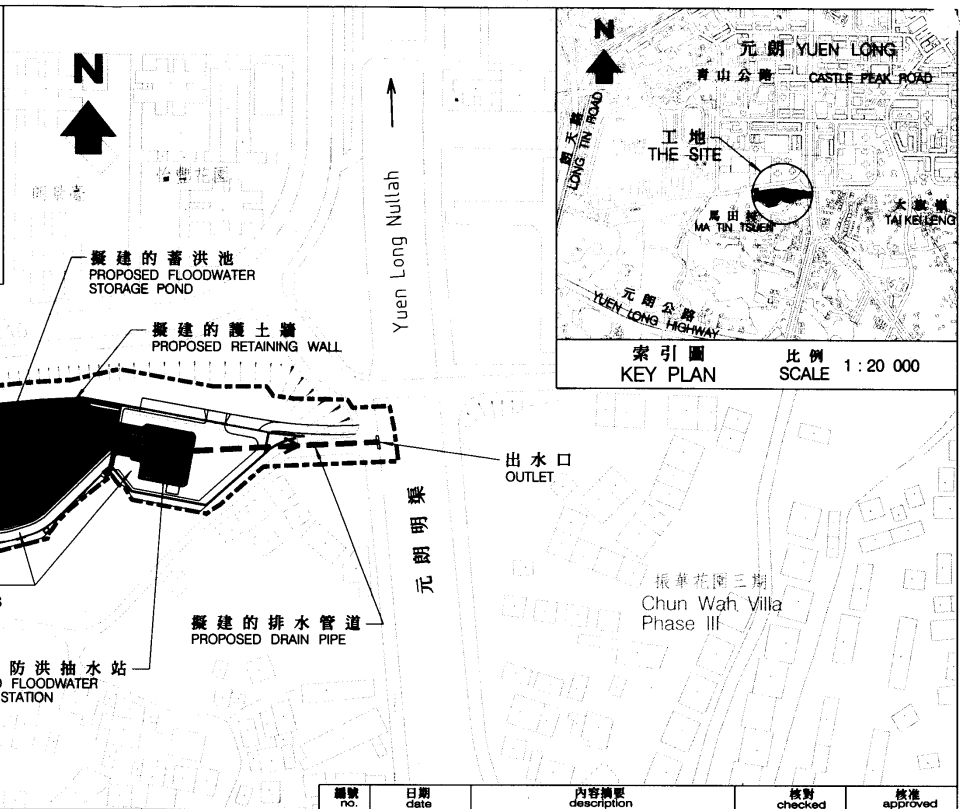
二〇〇一至二〇〇二年度工務小組委員會文件 P.W.S.C. SUBMISSION 2001/2002


圖則名稱 drawing title
擬建的米埔老圍 / 米埔新村鄉村防洪工程
PROPOSED VILLAGE FLOOD PROTECTION WORKS FOR MAI PO LO WAI / MAI PO SAN TSUEN

繪圖 drawn	簽署 initial	日期 date	項目編號 item no.	辦事處 office 新界北拓展處 NEW TERRITORIES NORTH DEVELOPMENT OFFICE
K.H.CHAN	SIGNED	31.1.2001	74CD	
核對 checked	簽署 initial	日期 date	比例 scale	
K.S. HO	SIGNED	1.2.2001	1:3 000	 拓展署 TERRITORY DEVELOPMENT DEPARTMENT
核准 approved	簽署 initial	日期 date	圖則編號 drawing no.	
TSUI Wai	SIGNED	30.03.01	NTN 2093	







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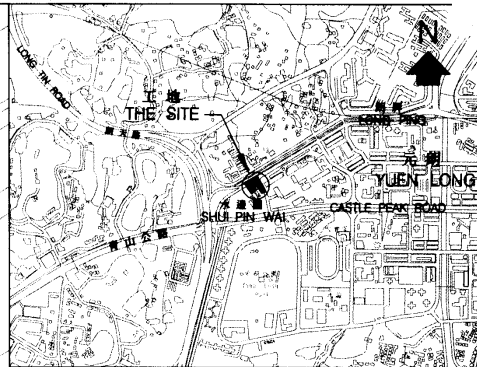
-  擬建的蓄洪池
PROPOSED FLOODWATER STORAGE POND
-  擬建的防洪抽水站
PROPOSED FLOODWATER PUMPING STATION
-  擬建的護土牆
PROPOSED RETAINING WALL
-  擬建的排水管道
PROPOSED DRAIN PIPE
-  內部通道
INTERNAL ACCESS
-  現有河道流向
FLOW DIRECTION OF EXISTING CHANNEL



二〇〇一至二〇〇二年度工務小組委員會文件 P.W.S.C. SUBMISSION 2001/2002		修訂 REVISION		核對 checked	核准 approved	
圖則名稱 drawing title 擬建的馬田村鄉村防洪工程 PROPOSED VILLAGE FLOOD PROTECTION WORKS FOR MA TIN TSUEN		繪圖 drawn	簽署 initial	日期 date	項目編號 item no. 74CD	
		核對 checked	簽署 initial	日期 date		比例 scale 1:2 000
		核准 approved	簽署 initial	日期 date	圖則編號 drawing no. NTN 2094	
		 辦事處 office 新界北拓展處 NEW TERRITORIES NORTH DEVELOPMENT OFFICE 拓展署 TERRITORY DEVELOPMENT DEPARTMENT				

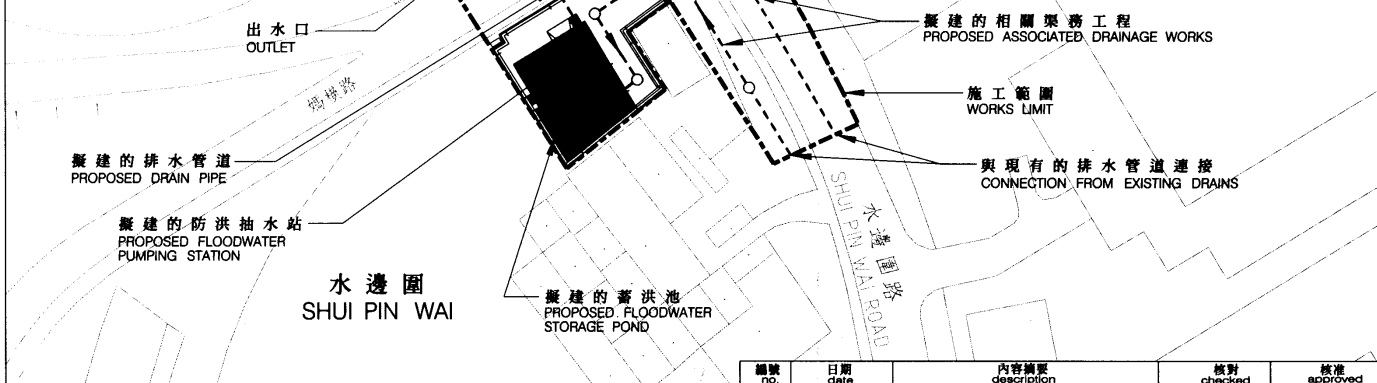
圖例 LEGEND :

-  擬建的蓄洪池
PROPOSED FLOODWATER STORAGE POND
-  擬建的防洪抽水站
PROPOSED FLOODWATER PUMPING STATION
-  擬建的排水管道
PROPOSED DRAIN PIPE
-  內部通道
INTERNAL ACCESS
-  現有河道流向
FLOW DIRECTION OF EXISTING CHANNEL
-  擬建的沙井
PROPOSED MANHOLE




索引圖
KEY PLAN

比例
SCALE 1 : 20 000



編號 no.	日期 date	內容摘要 description	核對 checked	核准 approved
修訂 REVISION				
二〇〇一至二〇〇二年度工務小組委員會文件 P.W.S.C. SUBMISSION 2001/2002				

圖則名稱 drawing title 擬建的水邊圍鄉村防洪工程 PROPOSED VILLAGE FLOOD PROTECTION WORKS FOR SHUI PIN WAI	繪圖 drawn	簽署 initial	日期 date	項目編號 item no.	辦事處 office 新界北拓展處 NEW TERRITORIES NORTH DEVELOPMENT OFFICE
	核對 checked	簽署 initial	日期 date	比例 scale	
	核准 approved	簽署 initial	日期 date	圖則編號 drawing no.	 拓展署 TERRITORY DEVELOPMENT DEPARTMENT
K.H.CHAN	SIGNED	29.1.2001	74CD	1 : 1 000	

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附件 4
ENCLOSURE 4