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ACE-EIA Paper 4/2007
For Advice

Environmental Impact Assessment Ordinance (Cap. 499)
Environmental Impact Assessment Report
Drainage Improvement in Northern New Territories – Package C

Purpose

This paper presents the key findings and recommendations of the Environmental Impact Assessment (EIA) report for Drainage Improvement in Northern New Territories – Package C (hereafter known as the Project), submitted under section 6(2) of the Environmental Impact Assessment Ordinance (EIAO) with the application no. EIA-128/2007. The Drainage Services Department (the applicant) and their consultants will make a presentation. Comments from the public and the Advisory Council on the Environment will be taken into account by the Director of Environmental Protection when she makes the decision on the approval of the EIA report under the EIAO.

Advice Sought

2. Members' views are sought on the findings and recommendations of the EIA report.

Need for the Project

3. The Project is to alleviate recurring flooding problems in Man Uk Pin and Lin Ma Hang areas by improving the secondary and local stormwater drainage systems in accordance with the recommendation of the Drainage Master Plan Study in the Northern New Territories.

Description of the Project

4. The Project involves the construction of secondary and local drainage channels at Man Uk Pin in the Indus Basin and improvement works to the Lin Ma Hang stream in the Ganges Basin. The location of the Project is shown in **Figure 1** and the general

arrangement of the drainage channels at Man Uk Pin and Lin Ma Hang is shown in **Figures 2, 3 and 4**. Major works of the Project include :

Man Uk Pin Area

(i) a two-stage channel of about 550 m long with existing natural river bed, gabion walls and/or mattress lining (MUP05);
(ii) trapezoidal channels of about 670 m long with gabion walls and mattress lining (MUP03, MUP04A, MUP05);
(iii) 210 m long U-channels, 170 m long underground drainage pipes and 80 m long box culverts (MUP03, MUP04, MUP05); and
(iv) other ancillary works include re-provision of crossings, provision of inlet/outlet pipes, maintenance ramps & accesses and final landscaping works.

Lin Ma Hang Area

(i) construction of about 190 m gabion wall channel and localized river bank improvement works at Lin Ma Hang stream (LMH01); and
(ii) other ancillary works include re-provision of crossings, provision of flood alarm and flood siren, improvement on outlet security grille and final landscaping works.

5. The Project is classified as a designated project under Item I.1(b)(i) and (vii), Part I, Schedule 2 of the EIAO, i.e. “a drainage channel or river training and diversion works which discharges or discharge into area which is less than 300 m from the nearest boundary of an existing or planned site of special scientific interest and conservation area”.

Consideration of Alternative Means, Avoidance of Environmental Impacts and Alternative Drainage Design

6. The following drainage improvement options were considered for relieving flooding in Man Uk Pin and Lin Ma Hang areas, with environmental factors taken into consideration, for recommending the preferred options in the Project :

Option 1 – Distant flood banks
Option 2 – Two-stage channels
Option 3 – Relief or by-pass channels
Option 4 – Flood storage

Option 5 – Bank stabilization
Option 6 – Clearing and removal of obstructions
Option 7 – Enlargement of channel by widening
Option 8 – Enlargement of channel by deepening
Option 9 – Realignment/straightening
Option 10 – Use of artificial non-vegetative smooth lining

7. Having regard to the environmental factors, among other factors, and the comments received during the Continuous Public Involvement (CPI) process (see paragraph 14 below), a combination of the above options is recommended for the Project. The recommended options include the two-stage channel, bank stabilization and improvement of bottlenecks by channel widening and deepening. The options will minimize the ecological impact by reducing the areas of affected habitats.

Specific Environmental Aspects to Highlight

Ecological Impact

8. Lin Ma Hang stream, which is a planned site of special scientific interest, supports a number of freshwater fish species of conservation importance, such as Chinese Rasbora *Rasbora sterineri* and Predaceous Chub *Parazacco spilurus*. In order to avoid potential ecological impact on the stream, the original proposal to construct a 13 m wide and 250 m long flood bypass concrete channel is replaced by a scheme which only involves localized stream bank repairing and improvement works so that the existing stream alignment, natural stream bed and habitat can be retained. To further minimize the potential ecological impacts on the stream, the bank improvement works will be carried out in the dry season (November to March) and existing concrete banks will be replaced by gabions.

9. Environmentally friendly design measures such as the two-stage channel with gabion and mattress lining will be adopted at River Indus for retaining the natural stream bed and river banks. To avoid potential ecological impacts to the upper part of Loi Tung stream which is a semi-natural stream surrounded by abundant agricultural land, the proposed new channel at the Loi Tung stream will be reduced from 340 m to 160 m and works will only be limited to the lower part of the stream that has been highly disturbed by human activities and has low ecological value.

10. With the implementation of mitigation measures, no permanent loss of habitat of conservation importance is expected and hence no compensation is required.

Water Quality Impact

11. The project will not involve large scale of construction activities. With the implementation of mitigation measures such as carrying out of major construction works in the dry season, restricting construction in sections of 100 m to 300 m long and placing of earth bunds or walls along the river channels to provide dry zone for construction, and implementation of good site practices to minimize site runoff and prevent erosion, no adverse water quality impact is anticipated during the construction phase of the Project.

Other Environmental Impacts

12. The EIA report has also assessed the impacts of air quality, construction noise, waste management, cultural heritage, and recommended necessary landscape design to minimize the impacts of landscape and visual quality. The assessments concluded that, with appropriate mitigation measures in place, the anticipated environmental impacts are considered acceptable in meeting relevant requirements under the Technical Memorandum on Environmental Impact Assessment Process.

Environmental Monitoring and Audit

13. The EIA report includes an Environmental Monitoring and Audit (EM&A) Manual which recommends an EM&A programme during both the construction and operation phases of the Project.

Public Consultation

14. The applicant has applied the CPI process and consulted some green groups, the North District Council, Sha Tau Kok Rural Committee, Fanling Rural Committee and village representatives to seek their comments on the Project during the preparation of the EIA report.

15. The applicant has also made the EIA report, EM&A Manual and Executive Summary available for public inspection under the EIAO on 3 May 2007. Members will be briefed on any comments received from the public at the meeting.

May 2007
Environmental Assessment Division
Environmental Protection Department

圖例
LEGEND:

指定工程項目
DESIGNATED PROJECT
(MUP03, MUP04A, MUP04B, MUP05, LMH01)

非指定工程項目
NON-DESIGNATED PROJECT
(MUP01, MUP02)

Revision	Date	Description		Initial
	Designed	Checked	Drawn	Checked
Initial	CMY/JK	DWM	PJL	DWM
Date	01/04	01/04	01/04	01/04

Approved

協議編號
Agreement no. CE 6/2002 (DS)

工程項目名稱
Contract title
新界北部雨水排放系統改善計劃 - C部分
研究;設計及建造
DRAINAGE IMPROVEMENT IN NORTHERN NEW TERRITORIES - PACKAGE C
INVESTIGATION, DESIGN AND CONSTRUCTION

圖則名稱
Figure title
擬建（指定工程項目）雨水渠道位置圖
LOCATION PLAN OF PROPOSED (DESIGNATED PROJECT) DRAINAGE CHANNELS

圖則編號 Figure no.	比例 Scale
1	A3 1:15000

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

BLACK & VEATCH HONG KONG LIMITED
博威工程顧問有限公司

Plot Date = 5/7/2007

CAD Filename = p:\drain-water\drainage\382486-0201\eia\fig_1.dgn

注 NOTES:

1. **除特別說明外，全部丈量長度以米爲單位.**
   ALL CHAINAGES ARE IN METRES UNLESS OTHERWISE INDICATED.
2. **所有水平以米爲單位，並在香港主水平基準上.**
   ALL LEVELS ARE IN METRES ABOVE PRINCIPAL DATUM (mPD).
3. **除特別說明外，全部尺寸以毫米爲單位.**
   ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.
4. **展示的渠寬是沿著渠道的平均寬度.**
   THE CHANNEL WIDTH SHOWN IS THE AVERAGE ALONG THE CHANNEL.

圖例 LEGEND:

- **中心線** CENTER LINE
- **擬建渠道** PROPOSED CHANNEL
- **地盤界線** SITE BOUNDARY
- CH — **丈量長度** CHAINAGE
- I.L. — **擬建河床水平** PROPOSED INVERT LEVEL
- **消防專用閘** CRASH GATE
- FB — **行人纜將會被重建** FOOTBRIDGE TO BE REPROVIDED
- VB — **行車纜將會被重建** VEHICULAR BRIDGE TO BE REPROVIDED
- **石籠河堤/堤坡** GABION BANKS/LANDSCAPED EMBANKMENT SLOPES
- **集水井** CATCHPIT

Revision	Date	Description	Initial
I	10/06	CHANNEL DESIGN REVISED DUE TO OBJECTIONS	FP
H	06/06	INVERT LEVELS REVISED	CHH
G	03/06	CHANNEL AND BOUNDARY REVISED	CHH
F	11/05	CHANNEL AND BOUNDARY REVISED	CHH
E	09/05	CHANNEL UPDATED	CHH
D	08/05	CHANNEL DESIGN AND BOUNDARY REVISED	CHH
C	06/05	CHANNEL AND BOUNDARY UPDATED	CHH
B	09/04	FOOTPATH & VERGE UPDATED	HMC
A	08/04	ISSUE FOR PRELIMINARY REPORT	HMC

	Designed	Checked	Drawn	Checked
Initial	ZL	MC	LHS	PKL
Date	12/06	12/06	12/06	12/06

Approved

協議編號 Agreement no. CE 6/2002 (DS)

工程項目名稱 Contract title

新界北部雨水排放系統改善計劃 - C部分
研究;設計及建造
DRAINAGE IMPROVEMENT IN NORTHERN NEW TERRITORIES - PACKAGE C
INVESTIGATION, DESIGN AND CONSTRUCTION

圖則名稱 Figure title

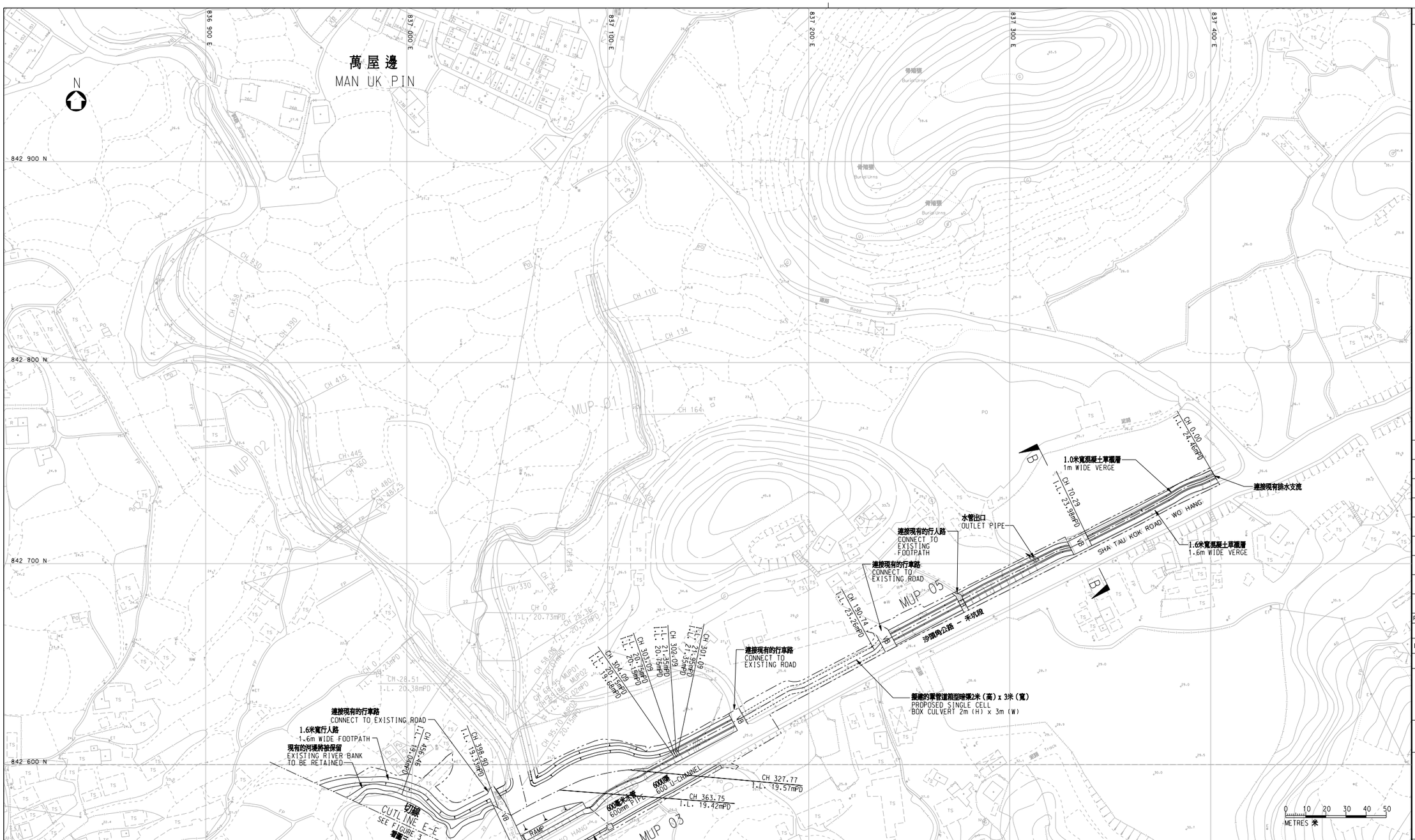
萬屋邊地區擬建渠道的規劃設計圖
(MUP03,04A,04B&05)
(2張之第1張)
GENERAL ARRANGEMENT FOR PROPOSED CHANNEL AT MAN UK PIN REGION
(MUP03,04A,04B&05)
(SHEET 1 OF 2)

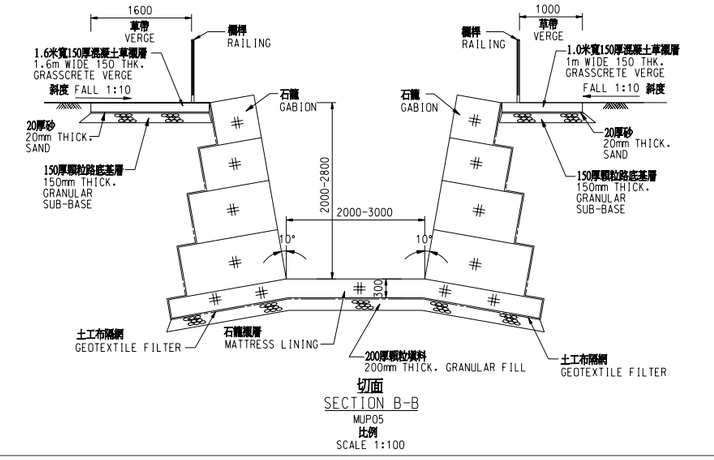
圖則編號 Figure no. 2

比例 Scale 1:2000 (A3)

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

BLACK & VEATCH HONG KONG LIMITED
博威工程顧問有限公司





切面
SECTION B-B
MUP05
比例
SCALE 1:100

Plot Date = 5/7/2007

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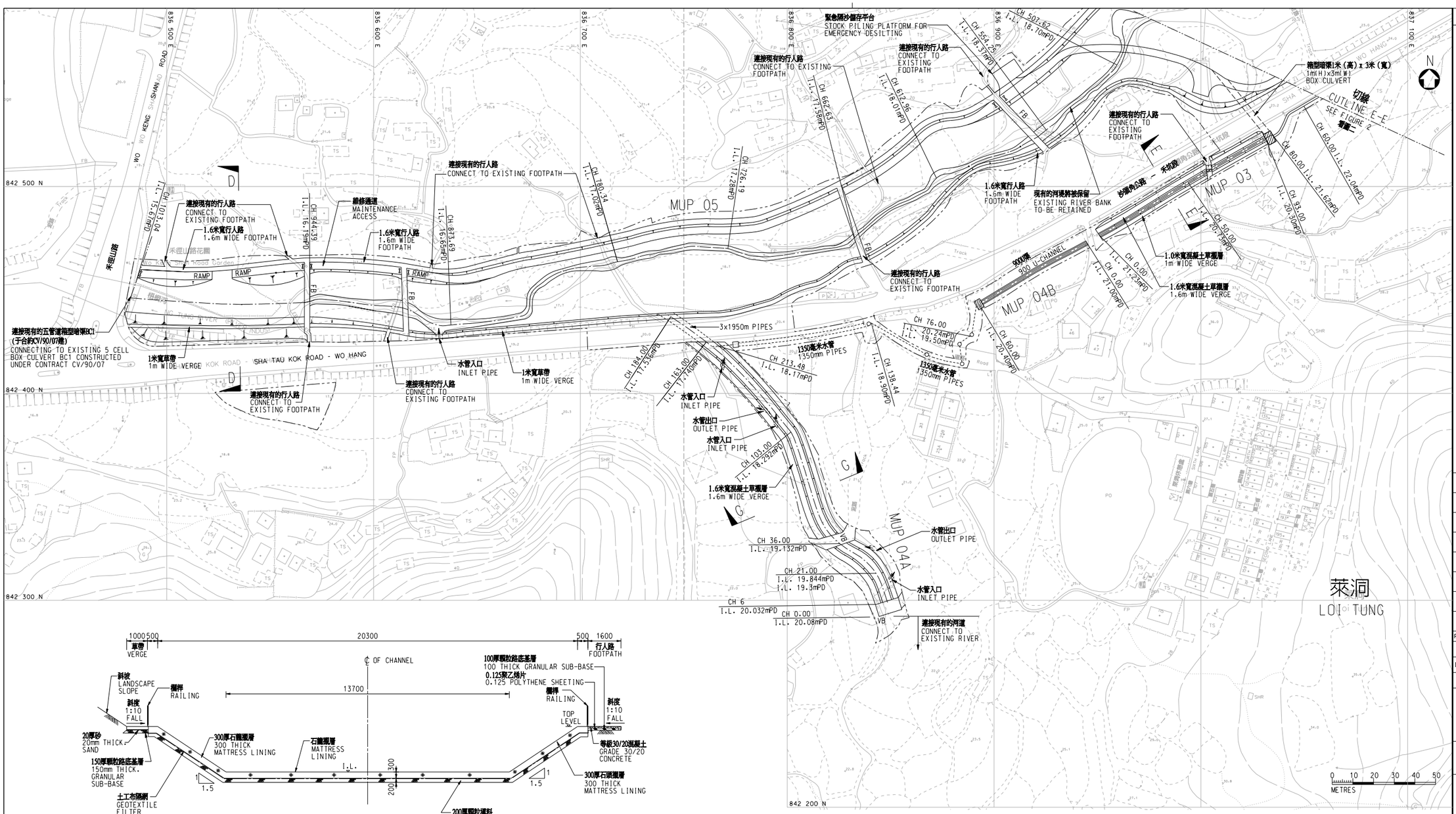
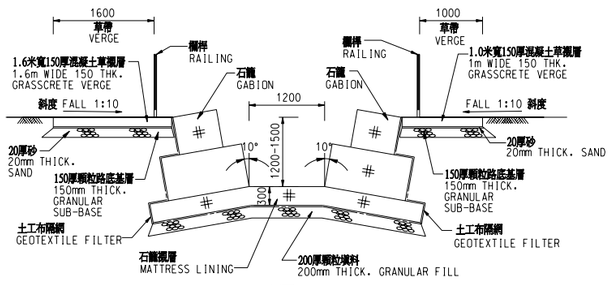
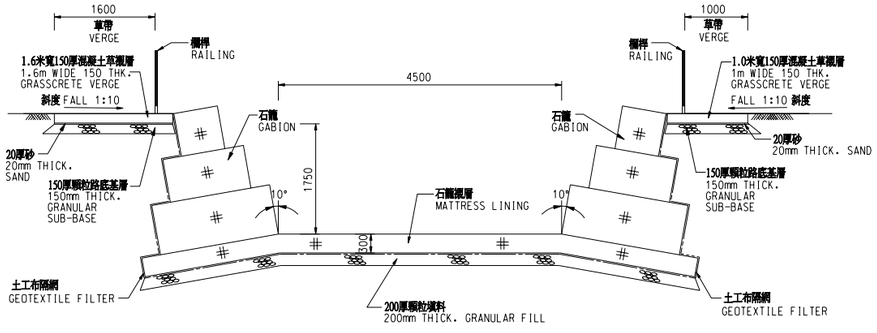


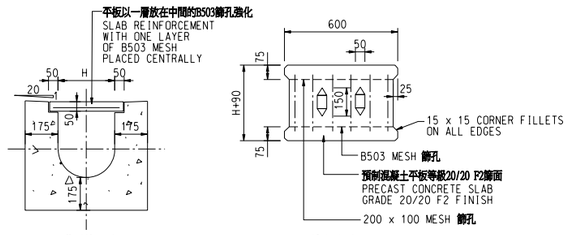
切面
SECTION D-D
MUP05
比例
SCALE 1:200



切面
SECTION E-E
MUP03
比例
SCALE 1:100



切面
SECTION G-G
MUP04A
比例
SCALE 1:100



典型切面
TYPICAL SECTION

平板平面
PLAN OF SLAB

U渠與預制混凝土平板
U-CHANNELS WITH PRECAST CONCRETE SLABS

不按比例
N.T.S.

注 NOTES:

1. 除特別說明外,全部丈量長度以米爲單位.
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2. 所有水平以米爲單位, 並在香港主水平基準上.
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- 中心線 CENTER LINE
- 擬建渠道 PROPOSED CHANNEL
- 地盤界線 SITE BOUNDARY
- CH 丈量長度 CHAINAGE
- I.L. 擬建河床水平 PROPOSED INVERT LEVEL
- 消防專用閘 CRASH GATE
- FB 行人繞過會被重建 FOOTBRIDGE TO BE REPROVIDED
- VB 行車繞過會被重建 VEHICULAR BRIDGE TO BE REPROVIDED
- 石頭河堤/堤坡 GABION BANKS/LANDSCAPED EMBANKMENT SLOPES
- 集水井 CATCHPIT
- 沙井 MANHOLE
- 擬建閘隔 PROPOSED CHAMBER

Revision	Date	Description	Initial
H	06/06	INVERT LEVELS REVISED	CHH
G	03/06	CHANNEL AND BOUNDARY REVISED	CHH
F	11/05	CHANNEL AND BOUNDARY REVISED	CHH
E	09/05	CHANNEL UPDATED	CHH
D	08/05	CHANNEL DESIGN & BOUNDARY REVISED	CHH
C	06/05	CHANNEL & BOUNDARY UPDATED	CHH
B	09/04	FOOTPATH & VERGE UPDATED	HMC
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INVESTIGATION, DESIGN AND CONSTRUCTION

圖則名稱
Figure title
萬屋邊地區擬建渠道的規劃設計圖
(MUP03,04A,04B&05)
(2張之第2張)
GENERAL ARRANGEMENT FOR PROPOSED CHANNEL AT MAN UK PIN REGION
(MUP03,04A,04B&05)
(SHEET 2 OF 2)

圖則編號 Figure no.	比例 Scale
3	1:2000 (A3)

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

BLACK & VEATCH HONG KONG LIMITED
博威工程顧問有限公司

Plot Date = 5/7/2007

CAD Filename = p:\drain-water\drainage\382486-0201\eia\fig 3.dgn

擬建石籠渠道切面代替下游部份的混凝土襯層

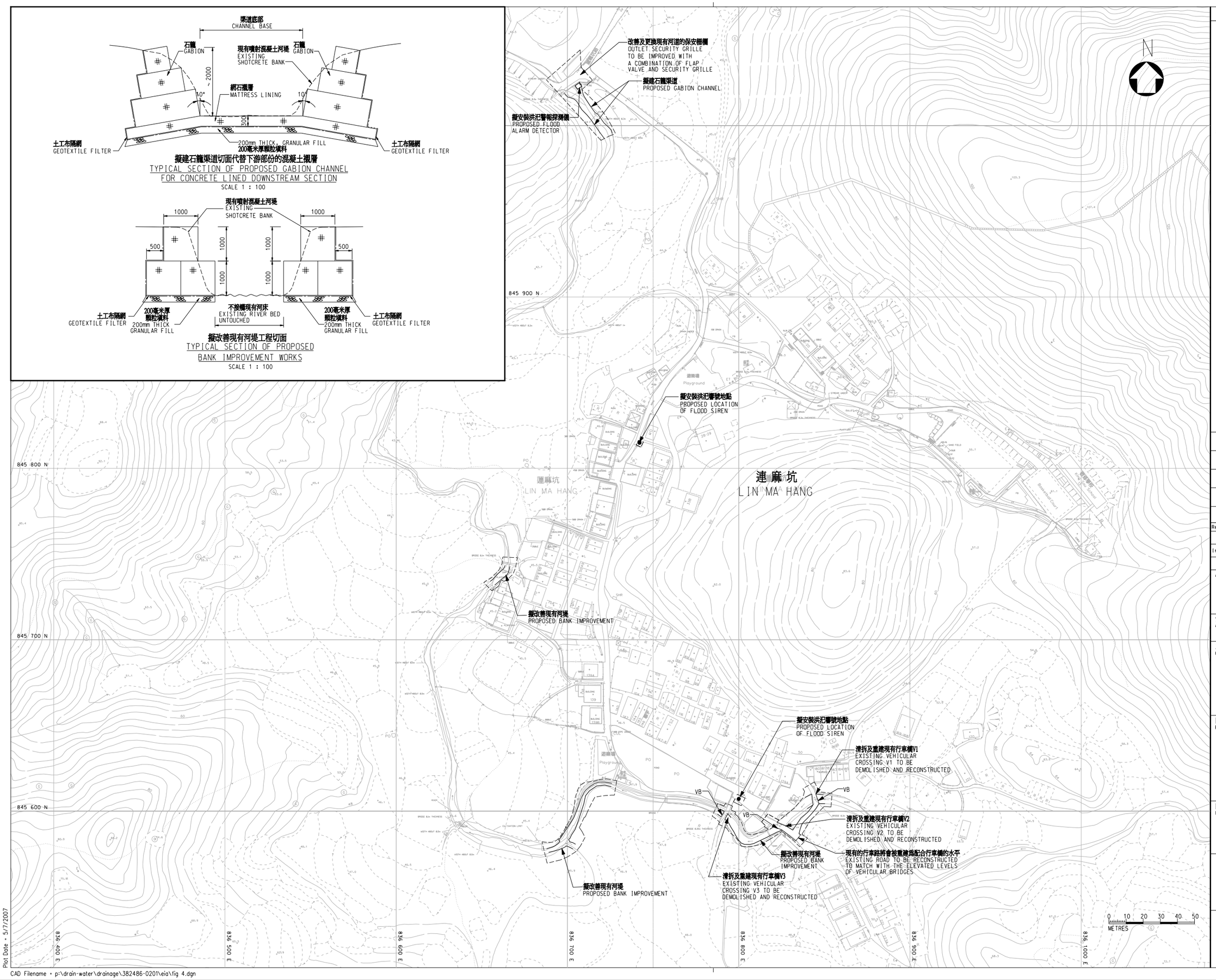
TYPICAL SECTION OF PROPOSED GABION CHANNEL FOR CONCRETE LINED DOWNSTREAM SECTION

SCALE 1 : 100

擬改善現有河堤工程切面

TYPICAL SECTION OF PROPOSED BANK IMPROVEMENT WORKS

SCALE 1 : 100



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1. 所有水平以米爲單位，並在香港主水平基準上.
   ALL LEVELS ARE IN METRES ABOVE PRINCIPAL DATUM (mPD).
2. 除特別說明外，全部尺寸以毫米爲單位.
   ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.
3. 洪水意外將會直接由自動撥號系統向香港警務處,消防處,民政事務總署和村代表報告.
   AUTOMATIC DIALLING SYSTEM IS TO BE PROVIDED TO DIRECTLY REPORT FLOODING INCIDENT TO HKP, FSD, HAD AND VILLAGE REPRESENTATIVES.
4. 擬建的安全上回閥種類將會由香港警務處和渠務署共同決定.
   THE PROPOSED TYPES OF SECURITY FLAP VALVE IS TO BE AGREED WITH HKP AND DSD.

圖例 LEGEND:

- 地盤界線 SITE BOUNDARY
- □ 擬安裝洪泥警報探測儀 PROPOSED FLOOD ALARM DETECTOR
- ● 擬安裝洪泥警號 PROPOSED FLOOD SIREN
- VB 行車橋將會被重建 VEHICULAR BRIDGE TO BE REPROVIDED
- 擬建渠道 PROPOSED CHANNEL

Revision	Date	Description	Initial
E	05/06	BOUNDARY REVISED	CHH
D	11/05	WORKS AND BOUNDARY REVISED	CHH
C	08/05	NOTES AND WORK EXTENT UPDATED	CHH
B	09/04	NOTES & LEGEND ADDED	HMC
A	08/04	ISSUE FOR PRELIMINARY REPORT	HMC

	Designed	Checked	Drawn	Checked
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DRAINAGE IMPROVEMENT IN NORTHERN NEW TERRITORIES - PACKAGE C INVESTIGATION, DESIGN AND CONSTRUCTION

圖則名稱 Figure title

蓮麻坑建議改善工程規劃設計圖
GENERAL ARRANGEMENT FOR PROPOSED IMPROVEMENT WORKS AT LIN MA HANG (LMH01)

圖則編號 Figure no.	比例 Scale
4	1:2000 (A3)

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

BLACK & VEATCH HONG KONG LIMITED
博威工程顧問有限公司

Plot Date = 5/7/2007

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