Drainage Improvements in Sai Kung

PROJECT PROFILE

November 2001

CONTENTS

1. BASIC INFORMATION

1.1 Project Title

Drainage Improvements in Sai Kung

1.2 Purpose of the Project

Over the last 10 years, rapid development in Sai Kung has resulted in a higher surface runoff, and the existing drainage systems that have been designed with lower flood protection level are no longer adequate to provide the flood protection standards required for developed areas. Recently DSD has completed a Drainage Master Plan (DMP) Study and the Study identified sections of three rural rivers (at Sha Ha, Pak Kong and Ho Chung) which require upgrading to increase the flood protection level, and to remove the risk of flooding in known trouble spots. These watercourses are largely natural with irregular cross-sections along most of their lengths. Although some minor engineering works have been locally implemented, flooding persists due to inadequate flow capacities of these rivers exacerbated by the development within the Sai Kung district. The Study Area for the drainage improvements includes the rural Sai Kung catchment, and works are planned for construction in the period 2005-8.

1.3 Nature of the Project

The Project includes the following major items of works:

(i) *Sai Kung River & Sha Ha Diversion culvert*: construction of approximately 140m of channel with natural bed and grasscrete and masonry lined bank in Sai Kung River; and, construction of approximately 300m of 3-cell box culvert for Sha Ha flood diversion (to join with works under CED project PWP Item 0304CL).

(ii) *Pak Kong River*: construction of approximately 620m of channel in Pak Kong River using masonry and grasscrete lined banks and natural bed; and bank raising.

(iii) *Ho Chung River*: reconstructing the three pumping station weirs; realigning the confluence of the two channels at the upstream end of the Site; construction of approximately 700m of channel using masonry and grasscrete lined banks and natural bed from the pumping station access ford to Hiram's Highway roadbridge; bank raising along the right (southern) bank; and, improvements to the cross-road drains beneath Ho Chung Road.

1.4 Name of Project Proponent

Drainage Services Department

1.5 Location and Scale of Project (Including Plans)

Sai Kung, South East New Territories:

(i) Maps Series 1:1000 scale sheet numbers: 8-SW-6C; 8-SW-6D; 7-SW-15B; 8-SW-11A; 8-SW-11B; 8-SW-11D; 7-SE-19B; 7-SE-19D; 7-SE-20A; 7-SE-20B; 7-SE-20C; 7-SE-20D; 7-SE-18D; 7-SE-23B; 7-SE-24A; 7-SE-24C; 7-SE-24D; 11-NE-4A; 11-NE-4B; 7-SE-25C; and, 11-NE-5A.

(ii) Site Plan Figures 2.1 to 2.3

1.6 History of Site

(i) *Sai Kung River & Sha Ha Diversion culvert*: Sai Kung River is an existing natural river in a rural setting. The proposed Sha Ha flood diversion culvert will be (cut and cover) beneath agricultural land and Tai Mong Tsai Road.

(ii) *Pak Kong River*: Pak Kong River is an existing river channel, flowing between Hiram's Highway and agricultural land mostly used as garden nurseries – the upstream portion of which has been heavily modified (the downstream part being predominately natural).

(iii) *Ho Chung River*: The Ho Chung River currently flows parallel with Ho Chung Road separating the village from former agricultural land (under development) on the opposite bank. The riverbanks have already been subject to modification.

1.7 Number and Types of Designated Projects to be Covered by the Project Profile

The Project covers two designated projects (at Pak Kong River and Ho Chung River) and one non-designated project (at Sai Kung River / Sha Ha Diversion). The rivers at Pak Kong and Ho Chung discharge to "Coastal Protection Areas".

1.8 **Name and Telephone Number of Contact Person**

Contact Particulars

2. OUTLINE OF PLANNING AND IMPLEMENTATION PROGRAMME

2.1 **Project Implementation**

The project implementation will include investigations, design and construction of the proposed works. Construction is scheduled to commence in December 2005, for completion in November 2008.

2.2 **Interactions with Other Projects**

The proposed Sha Ha flood diversion culvert will interface with works under Civil Engineering Department (CED) project PWP Item 0304CL east (i.e. downstream) of Tai Mong Tsai Road which will commence in June 2002, and complete in December 2004 (in advance of this Project). The proposed box culvert downstream (i.e. to the east of) Tai Mong Tsai Road, will be entrusted to the CED Project.

3. POSSIBLE IMPACT ON THE ENVIRONMENT

3.1 Processes involved (including process flow diagrams, site plans, storage requirements, and information on emissions and discharges)

See site plans

3.2 Environmental impacts or issues (during construction or operation of the project)

Impact	Sai Kung River	Pak Kong River	Ho Chung River
Gaseous emissions	c) construction vehicle exhausts o) NA	c) construction vehicle exhausts o) NA	c) construction vehicle exhausts o) NA
Dust	c) excavation, spoil stock-piles, movement of excess unsuitable waste off-site o) NA	c) excavation, spoil stock-piles, movement of excess unsuitable waste off-site o) NA	c) excavation, spoil stock-piles, movement of excess unsuitable waste off-site o) NA
Odour	c) NA o) NA	c) NA o) NA	c) NA o) NA
Noisy operations	c) construction noise, haulage traffic noise o) NA	c) construction noise, haulage traffic noise o) NA	c) construction noise, haulage traffic noise o) NA
Liquid effluents, discharges, or contaminated run-off	c) site run-off (including that potentially contaminated by plant or vehicles) o) NA	c) site run-off (including that potentially contaminated by plant or vehicles) o) NA	c) site run-off (including that potentially contaminated by plant or vehicles) o) NA
Generation of waste or by-products	c) c&d material o) NA	c) c&d material o) NA	c) c&d material o) NA
Disposal of spoil material, including potentially contaminated material	c) all material to be re-used in landscaping on-site o) NA	c) all material to be re-used in landscaping on-site o) NA	c) material from river-bed to be tested for contamination prior to re-use in landscaping on-site – material found to be contaminated to be disposed at landfill. o) NA
Disruption of water movement or bottom sediment	c) timing works to the dry season will minimise water movement disruption. Bottom sediments will be disturbed during the works o) the purpose of the works is to prevent flooding – therefore water movement will be enhanced	c) timing works to the dry season will minimise water movement disruption. Bottom sediments will be disturbed during the works o) the purpose of the works is to prevent flooding – therefore water movement will be enhanced	c) timing works to the dry season will minimise water movement disruption. Bottom sediments will be disturbed during the works o) the purpose of the works is to prevent flooding – therefore water movement will be enhanced

Impact	Sai Kung River	Pak Kong River	Ho Chung River
Unsightly visual appearance	c) the banks will be disturbed for the duration of the works o) the designs seek to enhance the channels appearance during the operational period	c) the banks will be disturbed for the duration of the works o) the designs seek to enhance the channels appearance during the operational period	c) the banks will be disturbed for the duration of the works o) the designs seek to enhance the channels appearance during the operational period
Ecological impacts	c) channelisation of natural river and riparian habitat o) maturation of the landscaping should restore the habitat	c) channelisation of natural river and riparian habitat. Egretry identified during PER at lower end of the river. Mouth of river interfaces with CPA. o) maturation of the landscaping should restore the habitat	c) channelisation of largely manmade river and riparian habitat. Mouth of river interfaces with CPA (mangrove). o) maturation of the landscaping should enhance the habitat

c) construction
o) operation
NA Not Applicable

4. MAJOR ELEMENTS OF THE SURROUNDING ENVIRONMENT

4.1 Existing and planned sensitive receivers and sensitive parts of the natural environment which might be affected by the proposed project include:

Sensitive Receiver	Sai Kung River	Pak Kong River	Ho Chung River
Residential developments	Existing Isolated village houses of Sha Kok Mei village, Muk Min Shan village and also Hunlicar Garden (approximate separation 10m, 15m and 25m respectively). Planned Land abutting the entire right bank of the Sai Kung River works area is zoned "V".	Existing Tai Chung Hau (approximate separation 20m) Planned NA	Existing Ho Chung village, Ho Chung New Village and Berkeley Bay Villa (approximate separation 15m, 30m and 60m respectively) Planned Land abutting the left bank is zoned "V" and "R(E)" – land abutting the right bank is "V", and "CDA".
Temporary housing areas	NA	NA	NA
Educational institutions	NA	NA	NA
Health care facilities	NA	NA	NA
Places of worship	NA	Fet Kong Temple at the downstream end of the Pak Kong River.	Che Kung Temple overlooking the downstream end of the Ho Chung River.

Sensitive Receiver	Sai Kung River	Pak Kong River	Ho Chung River
Agricultural areas	The Sha Ha Diversion culvert will cut through agricultural land. This will be restored on completion of the works.	The right bank of the Pak Kong River is cultivated for garden nurseries.	Part of the upstream right bank of the Ho Chung River abuts agricultural land.
Waterbodies (lentic and lotic)	Works on river channel	Works on river channel	Works on river channel
Beaches	NA	NA	NA
Water catchments and gathering grounds	NA	NA	NA
Groundwater resources	NA	NA	NA
Marine water resources (industrial and mariculture)	There are no commercially exploited marine water resources at the mouth of the river	There are no commercially exploited marine water resources at the mouth of the river	There are no commercially exploited marine water resources at the mouth of the river
Sensitive industries	NA	NA	NA
Confined airsheds	NA	NA	NA
Areas of conservation value	Direct/indirect impacts to more than 100m of natural stream course.	Direct/indirect impacts to more than 100m of natural stream course. The left bank of the mouth of the Pak Kong River is designated "CPA".	Marine area to which the Project directly discharges is designated "CPA".
Places of high visual value	Within Hong Kong SAR, Sai Kung is generally considered to have high scenic value.	Within Hong Kong SAR, Sai Kung is generally considered to have high scenic value.	Within Hong Kong SAR, Sai Kung is generally considered to have high scenic value.
Sites of cultural heritage	The northern edge of an Archaeological Site downstream of Tai Mong Tsai Road (at Sha Ha) will be disturbed by the works.	NA	Che Kung Temple (Grade II listed building) and several old traditional village houses in Ho Chung. Archaeological Site abuts the right bank of the river.

4.2 **The following outline the major elements of the surrounding environment and existing and relevant past land use(s) on site which might affect the area in which the project is proposed to be located:**

Land Use	Sai Kung River	Pak Kong River	Ho Chung River
Roads	Tai Mong Tsai Road – run-off and traffic noise.	Hiram's Highway – run-off and traffic noise	Hiram's Highway and local distributor roads – run-off and traffic noise
Village	Expedient waste water and refuse disposal from local villages	Expedient waste water and refuse disposal from local villages	Expedient waste water and refuse disposal from local villages
Agricultural	Pesticide/herbicide run-off	Pesticide/herbicide run-off	Pesticide/herbicide run-off
Industrial	NA	NA	Previous industrial activity (dyeing factory – now ATV studio) in Ho Chung. Lee Kum Kee sauce factory appears inactive.

5. ENVIRONMENTAL PROTECTION MEASURES TO BE INCORPORATED IN THE DESIGN AND ANY FURTHER ENVIRONMENTAL IMPLICATIONS

5.1 **Measures identified to minimise environmental impacts or enhance the environment include:**

Project Phase	Potential Impact	Proposed Mitigation Measures
Construction	*Noise*	The works contractor will have to comply with the provisions of the Noise Control Ordinance. Use of silenced plant and noise barriers near sensitive receivers; careful scheduling of activities; use of temporary acoustic barriers and acoustic machinery enclosures. Construction traffic should be scheduled to avoid night time, public holidays and Sundays. Where possible, traffic shall be directed away from NSRs.
	Dust	The contractor will be required to follow the good construction practices for dust minimisation to reduce nuisance to a minimum. Any haul roads and stockpiles will be regularly watered. Vehicles leaving the construction site will pass through a wheel wash. Stockpiles will be shielded. Relevant clauses will be included into the contract documents.

Project Phase	Potential Impact	Proposed Mitigation Measures
Construction	*Water quality*	Excavated material should be sampled for contamination prior to disposal to ensure that there is no potential for pollution from spoil tips. Provision of silt traps to contain contaminated sediments carried by runoff from exposed soil; if fuel is stored on site, a bunded storage area should be provided; sewage generated on-site should be disposed of using portable or other facilities. With regard site run-off, good practices (as given in ProPECC PN 1/94 Construction Site Drainage) should be followed as far as practicable, in order to minimise erosion, and to retain and reduce suspended solids in the run-off before discharge. Silt curtains will be deployed to prevent suspended solids from impacting downstream sensitive receivers. Requirements will be included in the contract documents.
	Ecology	Where possible, healthy trees shall not be felled if they can be avoided. Retention of natural riverbed; grasscrete banks; and, tree planting along bank-tops will mitigate and restore the ecological function of the rivers. Works will be scheduled to avoid disturbing the breeding season and roosting of egrets at Pak Kong River Water quality impact mitigation (see above) will prevent pollution of the Coastal Protection Areas downstream from Pak Kong and Ho Chung Rivers.
	Construction waste	Construction and demolition (c&d) material will be generated from demolition of existing manmade banks and facilities. The c&d material should be separated on-site into three categories: i) public fill, the inert portion of the c&d material (e.g. concrete and rubble) should be re-used on-site or disposed at public filling areas; c&d waste for re-use and/or recycling, the non-inert portion of the c&d material (e.g. steel and other metals); ii) c&d waste which cannot be re-used and/or recycled (e.g. wood, glass and plastic). iii) Unsuitable excavated material should be re-used for landscaping areas. The contractor will be required to follow good site practices for the construction waste arising, including provision of sufficient waste disposal points and regular collection for disposal and separation of chemical wastes for special handling and appropriate treatment at the Chemical Waste Treatment Facility.
	Cultural Heritage	The AMO of LCSD should review the detailed designs and a rescue excavation is recommended prior to the commencement of works at Sha Ha and Ho Chung.
	Landscape & Visual Impact	Appropriate design and landscaping; conservation of topsoil for landscape mitigation works; tree preservation (where practicable) prior to construction.

Operation	*Landscape & Visual Impact*	Monitor planting and landscape establishment
	Ecology	Monitoring effectiveness of mitigation.

5.2 **The possible severity, distribution and duration of environmental effects are commented on the basis of the following effects:**

The Preliminary Environmental Review concluded that based on the largely qualitative assessment, no insurmountable environmental impacts were identified for construction and operation of the Project. Mitigation measures were formulated to reduce the environmental impacts to acceptable levels.

Flood prevention is a medium and long-term benefit to domestic premises and associated business in the Sai Kung district.

Ecological and landscape and visual impacts will be mitigated when executing the detailed designs, benefiting nearby sensitive receivers in both the medium and long-term.

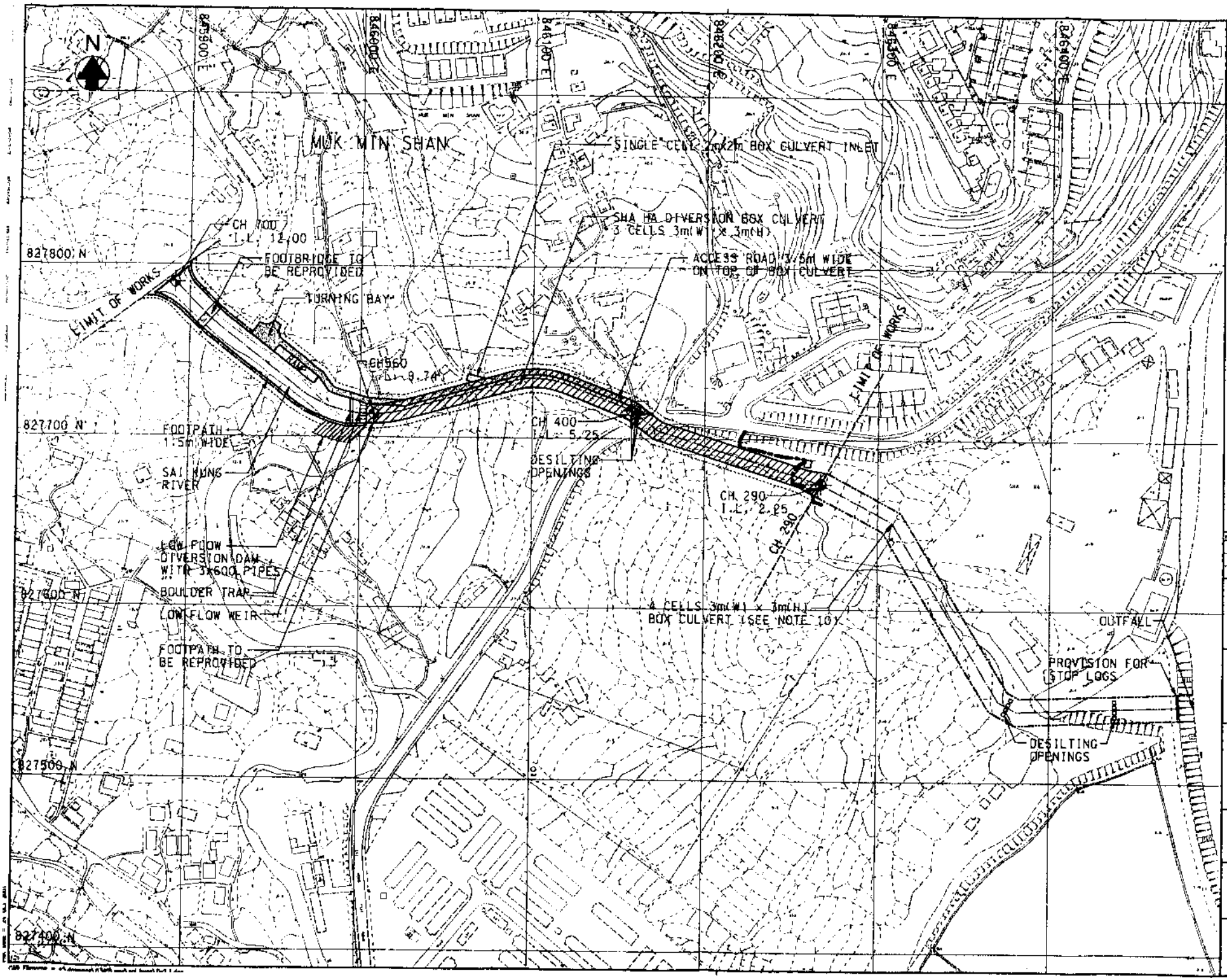
5.3 **Comment on any further implications**

The Preliminary Environmental Review concluded that an EIA was required for the drainage improvements at Pak Kong and Ho Chung Rivers, and an Environmental Study for the drainage improvements at Sai Kung River and Sha Ha diversion culvert.

6. USE OF PREVIOUSLY APPROVED EIA REPORTS

No previously approved EIA has been conducted on the proposed project.

END OF TEXT



NOTES

1. ALL CHAINAGES ARE IN KILOMETRES UNLESS OTHERWISE INDICATED.
2. ALL LEVELS ARE IN METERS ABOVE PRINCIPAL DATUM (HPD).
3. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.
4. TYPE 2 RAILING WITH DEBRIS TRAP AND GENERAL VIEW FILL SHALL BE PROVIDED ON BOTH SIDES OF THE CHANNEL.
5. THE CHANNEL SIDES SHALL BE LINED WITH MASONRY & GRASSCRETE. IN UPPER REACHES WITH HIGH VELOCITIES, GRASSCRETE IS NOT USED, REPLACED WITH MASONRY.
6. THE CHANNEL BED SHALL BE NATURAL MATERIAL.
7. PROPOSED CHANNEL SECTIONS REFER TO DRAWING NO. D346/PPFS/SH/002.
8. THE CHANNEL WIDTH SHOWN IS THE AVERAGE ALONG THE CHANNEL.
9. BOULDERS TO PREVENT VEHICLE ACCESS TO BE INSTALLED ACROSS ACCESS ROAD ENTRANCE.
10. A SINGLE CELL BOX CULVERT IS PROPOSED UNDER CED PROJECT. ADDITIONAL THREE CELLS BOX CULVERT IS PROPOSED UNDER THIS PROJECT WHICH WOULD BE ENSTRUSTED TO CED PROJECT.

LEGEND

- PROPOSED CHANNEL
- CHAINAGE
- I.L. PROPOSED INVERT LEVEL
- WORKS BOUNDARY
- PROPOSED ACCESS ROAD
- EDGE OF FOOTPATH
- OTHER PROJECT WORKS LIMIT
- EXTENT OF WORKS AS DESCRIBED IN NOTE 10 ABOVE

revision	date	description			initial
	designed	checked	drawn	checked
initial	KWY	CH	MK	ECH
date	07/01	07/01	07/01	07/01

approved

project

AGREEMENT NO. CE 32/98
STORMWATER DRAINAGE
MASTER PLAN STUDY
IN SAI KUNG, EAST KOWLOON
& SOUTHERN LANTAU

drawing title

DRAINAGE IMPROVEMENT
IN SAI KUNG RIVER
(SHEET 1 OF 1)

drawing no.

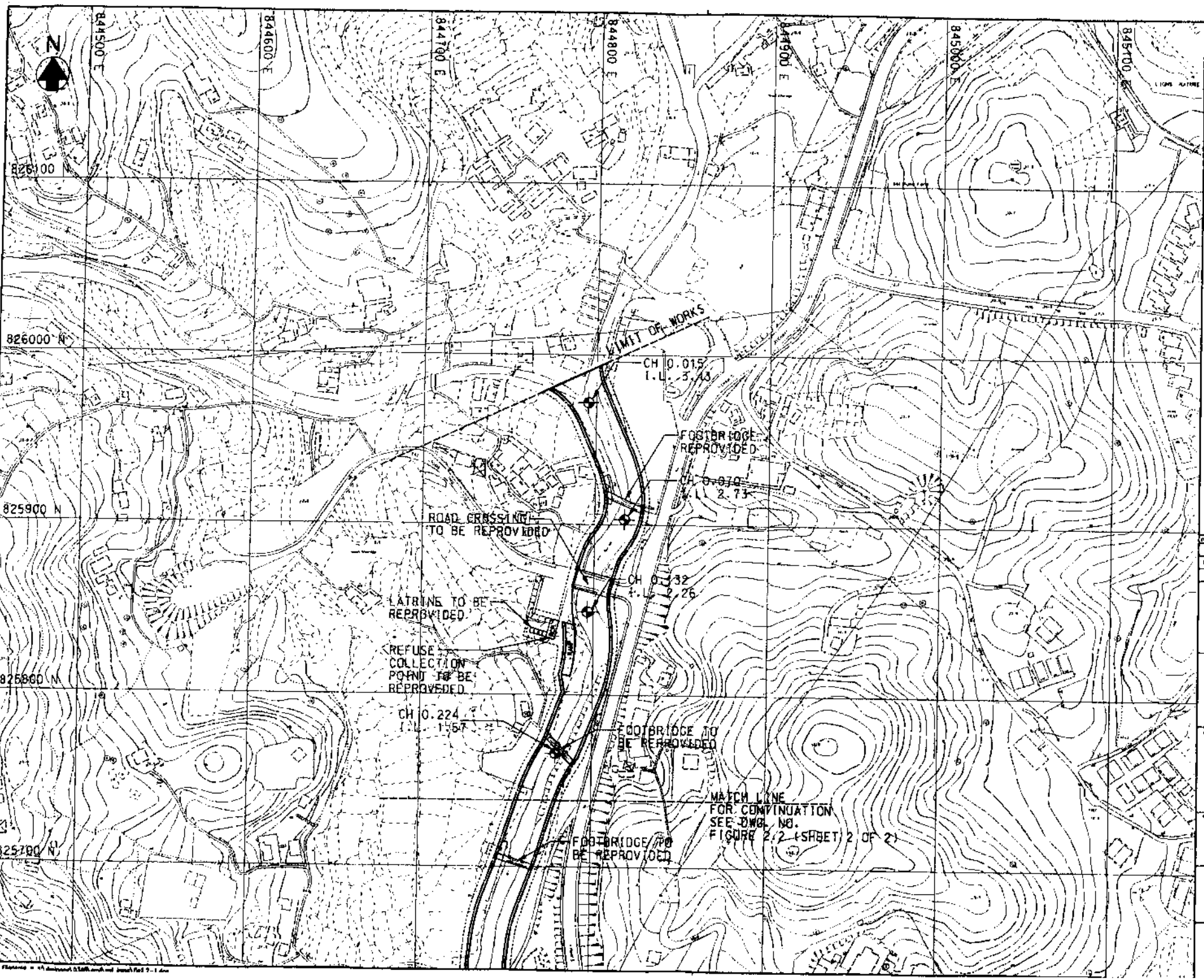
FIGURE 2.1

scale

1:1000 A1
1:2000 A3

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

Binnie Black & Veatch Hong Kong Limited
貝諾工程顧問有限公司
Engineers and Scientists



NOTES

1. ALL CHAINAGES ARE IN KILOMETRES UNLESS OTHERWISE INDICATED.
2. ALL LEVELS ARE IN METERS ABOVE PRINCIPAL DATUM (HPD).
3. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.
4. TYPE 2 RAILING WITH DEBRIS TRAP AND GENERAL MESH FILL SHALL BE PROVIDED ON BOTH SIDES OF THE CHANNEL.
5. THE CHANNEL SIDES SHALL BE LINED WITH MASONRY & GRASSCRETE. IN UPPER REACHES WITH HIGH VELOCITIES, GRASSCRETE IS NOT USED, REPLACED WITH MASONRY.
6. THE CHANNEL BED SHALL BE NATURAL MATERIAL.
7. PROPOSED CHANNEL SECTIONS REFER TO DRAWING NO. D345/PPFS/PR/0003.
8. THE CHANNEL WIDTH SHOWN IS THE AVERAGE ALONG THE CHANNEL.

LEGEND

———	PROPOSED CHANNEL
⊕	CHAINAGE
I.L.	PROPOSED INVERT LEVEL
———	EDGE OF FOOTPATH
- - - -	WORKS BOUNDARY
LAT	LATRINE
RCP	REFUSE COLLECTION POINT

revisions	date	description			initial
	designed	checked	drawn	checked	
initial	KWY	GH	ML	ECD	
date	07/00	07/00	07/00	07/00	

approved

project

AGREEMENT NO. CE 32 /98
STORMWATER DRAINAGE
MASTER PLAN STUDY
- IN SAI KUNG, EAST KOWLOON
& SOUTHERN LANTAU

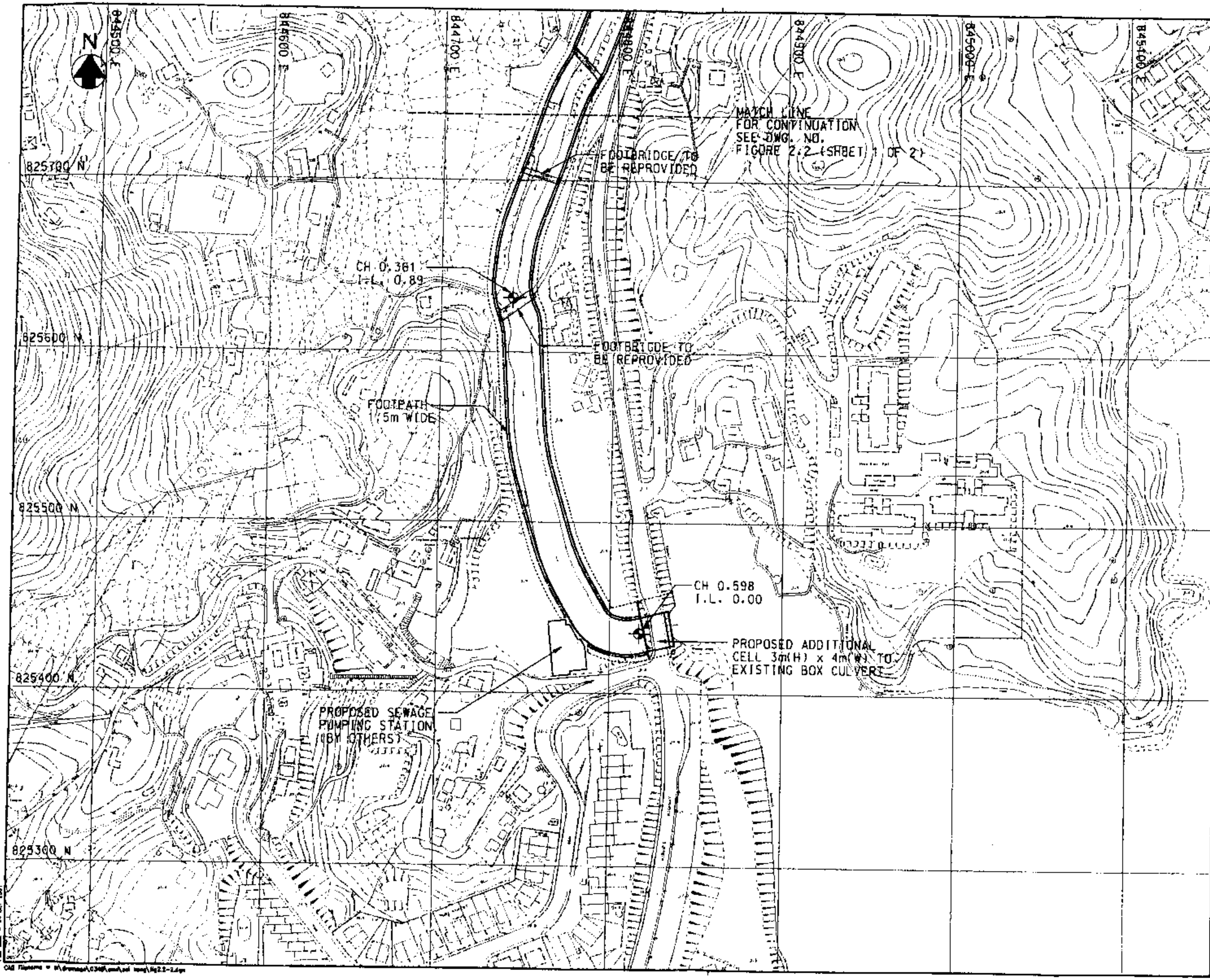
drawing title

DRAINAGE IMPROVEMENT
IN PAK KONG RIVER
(SHEET 1 OF 2)

drawing no.	scale
FIGURE 2.2	1:1000 A1 1:2000 A3

DRAINAGE SERVICES DEPARTMENT
GOVERNMENT OF THE
HONG KONG
SPECIAL ADMINISTRATION REGION

Binnie Black & Veatch Hong Kong Limited
Engineers and Scientists



NOTES

1. ALL CHAINAGES ARE IN KILOMETRES UNLESS OTHERWISE INDICATED.
2. ALL LEVELS ARE IN METERS ABOVE PRINCIPAL DATUM (mPD).
3. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.
4. TYPE 2 RAILING WITH DEBRIS TRAP AND GENERAL MESH FILL SHALL BE PROVIDED ON BOTH SIDES OF THE CHANNEL.
5. THE CHANNEL SIDES SHALL BE LINED WITH MASONRY & GRASSCRETE. IN UPPER REACHES WITH HIGH VELOCITIES, GRASSCRETE IS NOT USED, REPLACED WITH MASONRY.
6. THE CHANNEL BED SHALL BE NATURAL MATERIAL.
7. PROPOSED CHANNEL SECTIONS REFER TO DRAWING NO. 0345/PPFS/PK/003.
8. THE CHANNEL WIDTH SHOWN IS THE AVERAGE ALONG THE CHANNEL.

LEGEND

(line)	PROPOSED CHANNEL
(symbol)	CHAINAGE
I.L.	PROPOSED INVERT LEVEL
B.L.	PROPOSED BANK LEVEL
(line)	EDGE OF FOOTPATH
(dashed line)	WORKS BOUNDARY

revision	date	description		initial
	designed	checked	drawn	checked
initial	KWY	CN	JK	ECO
date	07/00	07/00	07/00	07/00

approved

project

AGREEMENT NO. CE 32 /98
STORMWATER DRAINAGE
MASTER PLAN STUDY
IN SAI KUNG, EAST KOWLOON
& SOUTHERN LANTAU

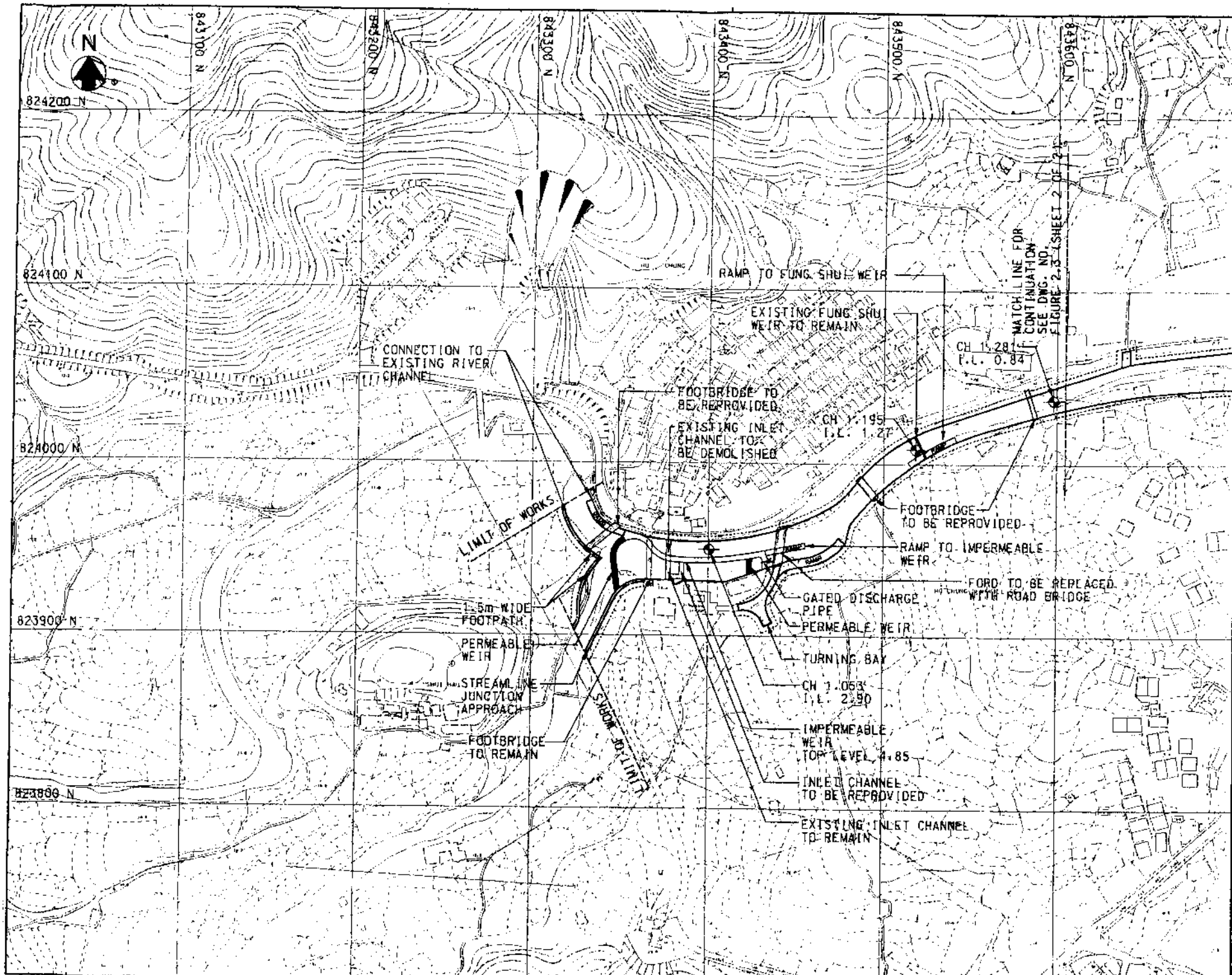
drawing title

DRAINAGE IMPROVEMENT
IN PAK KONG RIVER
(SHEET 2 OF 2)

drawing no.	scale
FIGURE 2.2	1:1000 A1 1:2000 A3

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

Binnie
Binnie Black & Veatch Hong Kong Limited
Engineers and Scientists



NOTES

1. ALL CHAINAGES ARE IN KILOMETRES UNLESS OTHERWISE INDICATED.
2. ALL LEVELS ARE IN METERS ABOVE PRINCIPAL DATUM (mPD).
3. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.
4. TYPE 2 RAILING WITH DEBRIS TRAP AND GENERAL MESH FILL SHALL BE PROVIDED ON BOTH SIDES OF THE CHANNEL.
5. THE CHANNEL SIDES SHALL BE LINED WITH MASONRY & GRASSCRETE. IN UPPER REACHES WITH HIGH VELOCITIES, GRASSCRETE IS NOT USED, REPLACED WITH MASONRY.
6. THE CHANNEL BED SHALL BE NATURAL MATERIAL.
7. PROPOSED CHANNEL SECTIONS REFER TO DRAWING NO. 0348/PPFS/HC/004.
8. THE CHANNEL WIDTH SHOWN IS THE AVERAGE ALONG THE CHANNEL.
9. LEFT BANK OF EXISTING HO CHUNG RIVER IS REMAINED UNTOUCHED ALONG THE HO CHUNG ROAD.

LEGEND

- PROPOSED CHANNEL
- CHAINAGE
- I.L. PROPOSED INVERT LEVEL
- WORKS BOUNDARY
- EDGE OF FOOTPATH

revision	date	description			initial
	designed	checked	drawn		checked
initial	KWY	CW	MK		ECD
date	07/00	07/00	07/00		07/00

approved

project

AGREEMENT NO. CE 32/98
STORMWATER DRAINAGE MASTER PLAN STUDY
IN SAI KUNG, EAST KOWLOON & SOUTHERN LANTAU

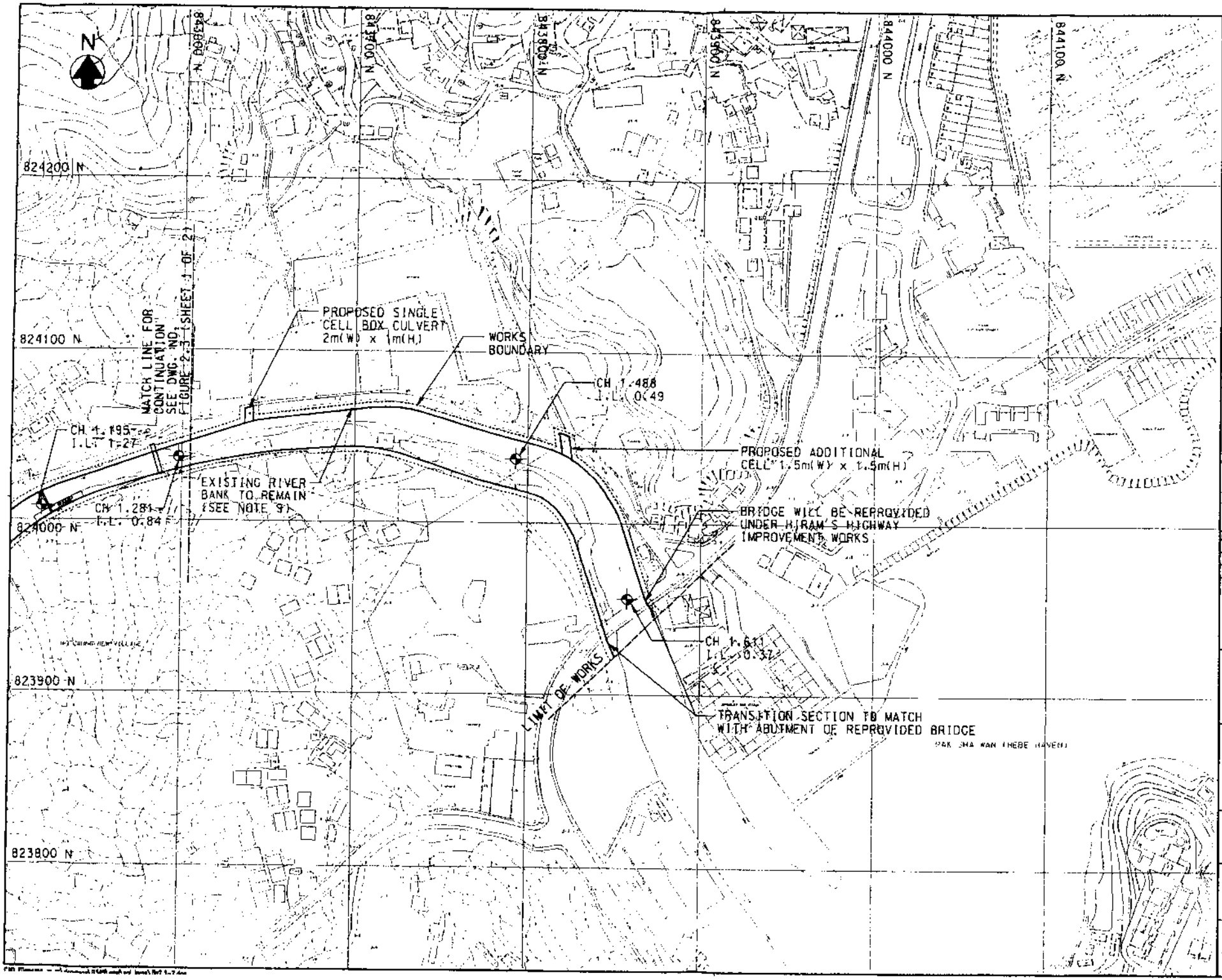
drawing title

DRAINAGE IMPROVEMENT IN HO CHUNG CHANNELS (SHEET 1 OF 2)

drawing no.	scale
FIGURE 2.3	1:1000 A1 1:2000 A3

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

Binnie Black & Veatch Hong Kong Limited
柏誠工程顧問有限公司
Engineers and Scientists



NOTES

1. ALL CHAINAGES ARE IN KILOMETRES UNLESS OTHERWISE INDICATED.
2. ALL LEVELS ARE IN METERS ABOVE PRINCIPAL DATUM (mPD).
3. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.
4. TYPE 2 RAILING WITH DEBRIS TRAP AND GENERAL MESH FILL SHALL BE PROVIDED ON BOTH SIDES OF THE CHANNEL.
5. THE CHANNEL SIDES SHALL BE LINED WITH MASONRY & GRASSCRETE. IN UPPER REACHES WITH HIGH VELOCITIES, GRASSCRETE IS NOT USED. REPLACED WITH MASONRY.
6. THE CHANNEL BED SHALL BE NATURAL MATERIAL.
7. PROPOSED CHANNEL SECTIONS REFER TO DRAWING NO. D345/PPFS/HC/004.
8. THE CHANNEL WIDTH SHOWN IS THE AVERAGE ALONG THE CHANNEL.
9. LEFT BANK OF EXISTING HO CHUNG RIVER IS REMAINED UNTOUCHED ALONG THE HO CHUNG ROAD.

LEGEND

- PROPOSED CHANNEL
- CHAINAGE
- I.L. PROPOSED INVERT LEVEL
- WORKS BOUNDARY

revision	date	description			initial
	designed	checked	drawn	checked
initial	KBY	CW	MK	ECO
date	07/00	07/00	07/00	07/00

approved

project

AGREEMENT NO. CE 32 /98
STORMWATER DRAINAGE MASTER PLAN STUDY IN SAI KUNG, EAST KOWLOON & SOUTHERN LANTAU

drawing title

DRAINAGE IMPROVEMENT IN HO CHUNG CHANNELS (SHEET 2 OF 2)

drawing no.

FIGURE 2.3

scale

1:1000 A1
1:2000 A3

DRAINAGE SERVICES DEPARTMENT GOVERNMENT OF THE HONG KONG SPECIAL ADMINISTRATIVE REGION

Binnie Black & Veatch Hong Kong Limited
Engineers and Scientists