By Hand

MEMO

From	CE/DP, DSD	To	DEP
Ref.	( ) in DP 8/5018GB/DC1106/88	Attn:	EIAO Register Office
Tel. No.	2594 7450	Email	
Fax. No.	2827 8700	Your Ref.	in
Email	winghongpoon@dsd.gov.hk	Dated	Fax. No. 2591 0558
Date	21 May 2012	Total Pages	1 + Encl.

Contract No. DC/2011/06
Reprovisioning of Boundary Patrol Road and Associated Security Facilities between Ping Yuen River and Pak Fu Shan and Drainage Works in North District

Notification of Commencement of Construction

Pursuant to Condition 1.12 of the Environmental Permit No. EP-430/2011 (the EP) for the captioned contract, I shall hereby notify the Director of Environmental Protection that Sang Hing Civil Contractors Co., Ltd. (Sang Hing) is engaged by Drainage Services Department (DSD) to carry out construction work under the EP. The construction work is scheduled to commence on 21 August 2012. Enclosed please find the management organization plan of Sang Hing for your perusal as per Condition 2.6 of the EP.

2. An Environmental Team (ET) headed by the ET Leader (ETL) has been established by Sang Hing in accordance with Condition 2.1 of the EP. The CV of ETL, Mr. TAM Tak-wing, is enclosed for your perusal.

3. Please also be advised that Mr. Roger LEUNG, Technical Director of ENVIRON Hong Kong Ltd., is appointed by DSD as the Independent Environmental Checker (IEC) for the captioned contract in accordance with Condition 2.3 of the EP. The CV of Mr. Tony CHENG is enclosed for your perusal.

4. Furthermore, I shall hereby submit an updated Environmental Monitoring and Audit (EM&A) Manual certified by the ETL and verified by the IEC in accordance with Condition 2.10 of the EP for your approval. Please be advised that the updated EM&A manual is subjected to revision certified by ETL and verified by IEC to be submitted for your approval from time to time.

(W H POON)
for Chief Engineer/Drainage Projects
Drainage Services Department

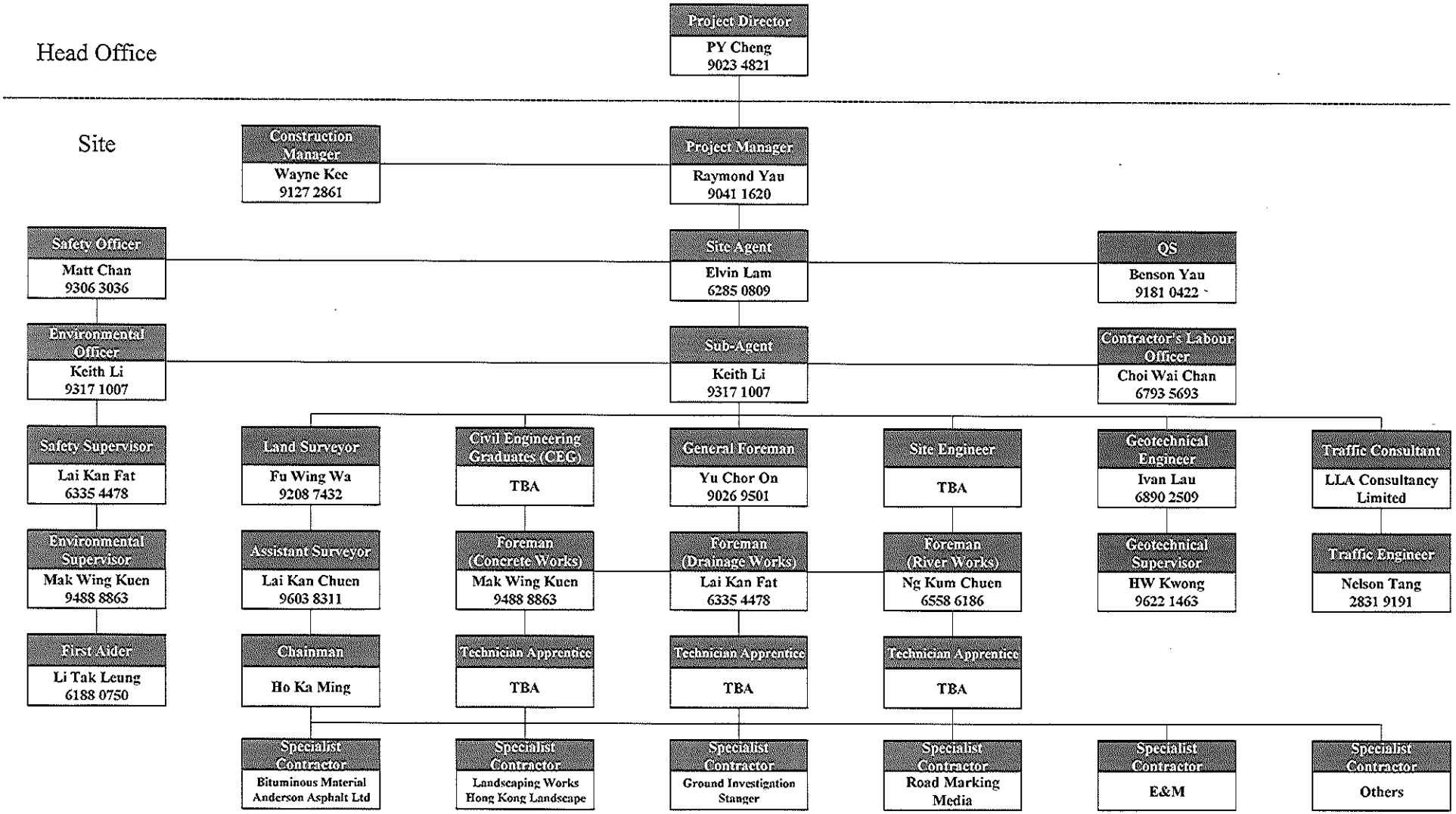
c.c. (w/o)
Site Office
Sang Hing Civil Contractors Co., Ltd (Attn: Mr. Raymond YAU) – by fax (2403 1162)
ENVIRON Hong Kong Limited (Attn: Mr. Roger LEUNG) – by fax (3548 6988)
Internal: CEG/D14 – Note in file

SANG HING CIVIL CONTRACTORS CO., LTD.

CONTRACT NO. DC/2011/06

Reprovisioning of Boundary Patrol Road and Associated Security Facilities between Ping Yuen River and Pak Fu Shan and Drainage Works in North District

PROJECT ORGANIZATION CHART



Name:	Tam Tak Wing
Current Position:	Managing Director
Years of Experience:	33
Project Position:	Environmental Team Leader

Academic Qualification:

- 2000 Certificate of Competence in Ionising Radiation Protection ? Occupational Safety & Health Council
- 1999 Certificate in Construction Safety Supervisor Course ? Construction Industry Training Authority
- 1994 Quality System Audit Course ? The National Association of Testing Authorities, Australia
- 1983 Certificate in Soil and Rock Identification ? Hong Kong Polytechnic (Civil and Structural Engineering Department)
- 1978 School Certificate ? Lee Kau Yan Memorial Secondary School

Professional Registration and Affiliations:

- MHKIEIA, Member of Hong Kong Institute of Environmental Impact Assessment, 2009

Career History:

ACTION-UNITED ENVIRONMENTAL SERVICES & CONSULTING Managing Director	2000 – Present
GREEN VALLEY LANDFILL LIMIT (SENT LANDFILL) QA/QC Manager	1999 ? 2000
WOODWARD-CLYDE INTERNATIONAL (HK) LTD Land Contamination Specialist / Senior Project Supervisor	1993 – 1999
GAMMON CONSTRUCTION LIMITED Laboratory Manager	1978 – 1993

Synopsis:

Mr. Tam has over 33 years of hands-on experiences in site remediation, civil engineering, land contamination assessments, environmental management, environmental monitoring and audit (EM&A), construction QA/QC and laboratory management. He has been involved in many land contamination assessments and site remediation projects in US and SE Asia including Mainland China, Hong Kong, Korea, Malaysia and Taiwan.

Mr. Tam has more than 6 years experience working in SENT Landfill. He was on a secondment for several years and joined Green Valley Ltd as the Construction QA/QC Manager. Mr. Tam is therefore very well familiar with the landfill construction and operation issues.

Mr. Tam is specialized and has extensive experiences in the areas of land contamination assessment, site remediation and decontamination, and other related issues. He was the contaminated assessment team leader for the Penny Bay Site Investigation Work in which over 300 of boreholes were investigated and 35 groundwater monitoring wells were installed within 6 months.

In addition, Mr. Tam served as the Land Contamination Specialist for the KCRC East Rail Extension Projects and managed the site remediation at Wing On Plaza and further contamination assessment at Middle Road Children Playground. He oversaw the entire implementation of the site remediation program and liased with the government authority.

- *DSD Contract No. DC/2002/12 ? Rural Drainage Rehabilitation Scheme, Stage 1, Ph. 2 Rehabilitation Works at Ping Yuen River (2003 - 2005)*
- *CED Contract No. CV/2000/09 Infrastructure for Penny's Bay Development Contract 1 (2001 ? 2005);*
- *Contract No. CV/2004/07 - Drainage Rehabilitation Works at Sha Po Tsuen Stream, Yuen Long (2004 ? 2007)*
- *Contract DC/2004/08 Peng Chau Sewage Treatment Works Upgrade (2005 ? 2008)*
- *CV/2004/17 ? Village Flood Protection Works For Sheung Cheung Wai, Phase 2 (2005 ? 2008)*
- *DE/2002/12 Siu Ho Wan STP Upgrade ? construction phase and operational phase (2005 ? Present)*
- *CE16/2001 Drainage Improvement in Tuen Mun (2005 ? 2007)*
- *DC/2005/02 Construction of Sewers, Rising Mains and Sewage Pumping Station at Kam Tin, Nam Sang Wai and Au Tau in Yuen Long (2006 ? Present)*
- *Contract No. DEMP 06/09 Miscellaneous Enhancement Works for Shatin Sewage Treatment Works ? Stage III Extension (2006 ? 2007)*
- *CEDD Contract No. CV/2005/13 ? Greening Works in Tsim Sha Tsui and Central (2006 ? 2007)*
- *Contract No. TP/2006/01 ? Remaining Engineering Infrastructure Works of Pak Shek Kok Development Package 2C (2006 ? Present)*
- *DSD Contract DC/2006/02 ? Yuen Long, Kam Tin, Ngau Tam Mei and Tin Shui Wai Drainage Improvement Works Stage 1, Phase 2B ? Cheung Chun San Tsuen and Kam Tsin Wai (2007 ? Present)*
- *DSD Contract DC/2007/02 - Drainage Improvement Works in Lung Yeuk Tau, Kwan Tei South and Leng Tsai Fanling (2007 ? Present)*
- *CEDD Contract No. TP/2007/01 ? Remaining Engineering Infrastructure Works of Pak Shek Kok Development Package 2B (2007 ? Present)*
- *CEDD Contract No. CV/2006/01 ? Ping Ha Road Improvement Works (Ha Tsuen Section) (2008 ? Present)*
- *CEDD Contract No. TP/2007/02 ? Tai Po Development Formation and Engineering Infrastructure Works for Cheung Shue Tan, Tai Po Mei and Adjacent Areas (2008 ? Present)*
- *DSD Contract No. DC/2007/17 - Drainage Improvement in Cheung Po,Ma On Kong, Yuen Kong San Tsuen and Tin Sam Tsuen of Yuen Long District and Sewerage at Tsang Tan Chung Tsuen, Tuen Mun (2008 ? Present)*
- *DSD Contract DC/2007/08 ? Urban Drainage Improvement Works at Tai Po Tin, Ping Che, Man Uk Pin and Lin Ma Hang (2008 ? Present)*
- *Contract No. DC/2007/22 Decking of Jordan Valley Nullah in Kwun Tong, Flower Market Road Nullah in Mong Kok and Tonkin Street Nullah in Sham Shui Po (2008 ? Present)*
- *Contract No. DC/2007/21 Construction of Sha Tin Sewage Treatment Works Stage III Extension Final Phase (2008 ? Present)*

- *DSD Contract No.: DC/2009/14 - North District and Tolo Harbour Regional Sewerage ? Upgrading of Sewage Pumping Stations and Trunk Sewers*
- *DSD Contract DC/2010/02 - Drainage Improvement in Shuen Wan and Shek Wu Wai*
- *DSD Contract No. DC/2010/06 - Upgrading of Central and East Kowloon Sewerage ? Phase 2*
- *Contract No. DC/2010/10 - Sewerage in Ping Kong, Fu Tei Pai and Tai Wo*
- *CEDD Contract No. TP/2011/03 - Remaining Engineering Infrastructure Works for Pak Shek Kok Development ? Stage I Improvement Works to Public Transport Interchange*
- *DSD Contract No. DC/2011/04 ? Reconstruction, Improvement and Rehabilitation of Kai Tak River from Wong Tai Sin Police Station to Tung Tau II Estate*

Roger Leung

Education

MSc (Civil & Structural Engineering), University of Hong Kong, 1995

BEng (Mechanical Engineering), Birmingham University, UK, 1990

Registrations and Memberships

Registered Energy Assessor – Buildings Energy Efficiency (Registered Energy Assessors) Regulation (Cap. 610B), 2011

Accredited Monitoring Professional (AMP) – HK Institute of Environmental Impact Assessment, 2011

BEAM Pro – HK Green Building Council, 2011

Certified Carbon Auditor - Institute of Energy, HK Branch, 2010

RPE - Registered Professional Engineer (Mechanical) - Registration Board, HK, 2000

CEng - Chartered Engineer, Engineering Council, UK, 1999

MHKIE - Hong Kong Institution of Engineers, (Mechanical), 2005

MIMechE - Institution of Mechanical Engineers, UK, 1999

MHKIOA - Hong Kong Institute of Acoustics, 1998

MHKIEIA - Hong Kong Institute of Environmental Impact Assessment, 1996

Professional Training

- IRCA certified "QMS Internal Auditor Training Course" (IRCA/2180), Sep 2005
- Qualifying Training for Practitioners in Environmental Impact Assessment for PRC Construction Projects, Apr 2002 (中國第88期建設項目環評持證上崗人員培訓)

Experience

Roger Leung is a Technical Director in ENVIRON Hong Kong Ltd. leading environmental & planning studies. Roger is a professional engineer and project manager with 20 years of consulting experience in various strategic environmental & planning studies, and infrastructure development projects. Prior to his employment with ENVIRON, Roger has worked in ERM, Hyder, Mott Macdonald, Atkins, BMT and CH2M Hill.

Roger specialises in EIA, QRA, air & noise impact modelling, site remediation, EM&A etc. Roger has extensive experience working with major property developers, Government departments, and consultants of various disciplines and specialists.

Roger is a skilled project manager for multi-disciplinary engineering and environmental studies. He also has experience in public consultation and meeting with the ACABUS, Town Planning Board, Country and Marine Parks Board, District Councils as well as dealing with green groups. Roger is a government recognised carbon auditor, BEAM Pro and a Registered Energy Assessor under the Buildings Energy Efficiency (Registered Energy Assessors) Regulation (Cap. 610B).

Saudi Arabia, Kingdom of Bahrain, State of Qatar, UAE and the Sultanate of Oman, 2010

- **Consultancy Agreement No. C1002 - Environmental Review for Detailed Design of Whampoa Station and Overrun Tunnel for the Kwun Tong Line Extension (KTE) for MTRCL** – As team leader for EIA review and interfaced with Detailed Design Team to facilitate consistent and workable solutions that meet the statutory requirements and good design initiatives in all key environmental issues from tracks, stations and overrun tunnel, 2010
- **Agreement No. CE 58/2006 (HY) – Central Kowloon Route and Widening of Gascoigne Road Flyover (Investigation) (EIA)** – EIA Manager for these 2 major EIAs involving bored and cut & covered tunnels, flyovers and underwater tunnel. The EIA has to address key issues of air and noise impact, construction interfacing problems, staging and high noise impact to sensitive uses in close proximity to the construction sites at the heart of urban area. Findings of EIA also indicate the need for extensive use of noise barrier/ enclosure to address construction and traffic noise in the operational phase, 2009
- **Consultancy Agreement No. NEX/2301 - Environmental Impact Assessment for South Island Line (East) for MTRCL** – As EIA leader for the EIA and interfaced with the Preliminary Design and Property Design Team in all key environmental issues relating to railway and fixed plant noise arising from tracks, depot and stations. This has led to holistic solutions to enable a feasible preliminary engineering design while still respecting the environment through various assessments of the EIA, 2008
- **Agreement No. CE 55/2006 (EP) – Inter-reservoirs Transfer Scheme (IRTS), Water Tunnel between Kowloon Byewash Reservoir and Lower Shing Mun reservoir for WSD** – As EIA Leader for this water tunnel linking the reservoirs on either ends and with a section falling within the Kam Shan Country Park. The study also involves presentation to the Country and Marine Parks Board for approval, 2008
- **Proposed Comprehensive Development at Wo Shang Wai, Yuen Long for Henderson Land** – As EIA Manager (air & noise) for this big residential development within the Deep Bay Buffer Zone 2. Key issues include ecological impacts on fauna, esp. birds. and stakeholder management, 2008
- **Installation of Submarine Gas Pipelines from Ma Tau Kok to North Point and Associated Gas Stations for Town Gas** – EIA leader to manage water quality issues due to dredging and hazards due to town gas at landing points near North Point and Ma Tau Kok, 2008
- **VEP application for Proposed 132kV Submarine Cable Route for Airport "A" to Castle Peak Power Station Cable Circuit** for Hong Kong Marine Contractors Ltd., 2008
- **Agreement No. NTN 5/06 – Cycle Tracks Connecting North West New Territories with North East New Territories – Environmental Impact Assessment for CEDD** – As EIA Manager for this cross-district cycle tracks involving mainly ecological issues as a part of it will encroach into the Deep Bay Buffer Zone 2. The EIA has also address the key issue of large scale tree felling

and proposed alternative alignments to minimise such loss, 2007

- **Hilltop Transposer Station Expansion at Castle Peak, Kowloon Peak, Cloudy Hill and Lamma Island** for TVB and ATV, 2007
- **EIA Study for a Proposed Helipad on Rooftop of the Proposed North Lantau Hospital at Tung Chung for ArchSD** – As EIA Manager to study the helicopter noise impact and provide solutions by adjusting the flight path, both vertical and horizontal profile. As of today, the project is on hold pending government's commitment in building hospital in the area, 2006
- **Development of Former Marine Police Headquarters at Tsim Sha Tsui into Heritage Hotel and Commercial Facilities** for Flying Snow Ltd. [Cheung Kong (Holdings) Ltd.], 2004
- **EIA for Residential Development at Fung Lok Wai** for Mutual Luck Ltd. [Cheung Kong (Holdings) Ltd.], 2003
- **Agreement No. CE 81/98 - Feasibility Study for Development at Cha Kwo Ling Kaolin Mine Site for Civil Engineering Department (CEDD) - Road A** – As EIA Manager for an EIA which focussed in the interfacing issues of a planned housing development site and a planned district distributor road (Road A), 2002
- **Agreement No. CE12/90 – West Kowloon Reclamation, Road D1, D1A(S), D1A(N) and D12 for CEDD** – As EIA Manager engaged in the EIA to address mainly the road traffic noise that would arise from these roads and how it is to be mitigated by direct noise mitigation measures. The project triggers the need to review nature of planned uses on either sides of the roads and high-level department liaison to address noise impact and constraints on planned uses including the planned West Kowloon Cultural District site, 2007

生 興 土 木 有 限 公 司
SANG HING CIVIL CONTRACTORS CO., LTD.

Our ref. : SHCCCL/W45/SO/X8.2/1205/0130
Your ref. :

Date : 21 May 2012

ENVIRON Hong Kong Limited **BY HAND**
Room 2310, China Resources Building,
26 Harbour Road,
Wan Chai, Hong Kong

Attention : Mr. Roger W.K. Leung

Dear Sir,

Contract No. DC/2011/06
Reprovisioning of Boundary Patrol Road and Associated Security Facilities between Ping Yuen River and Pak Fu Shan and Drainage Works in North District
Updated Environmental Monitoring & Audit (EM&A) Manual

Thank you for providing us your comments on 15 May 2012.

We submit herewith an updated Environmental Monitoring and Audit (EM&A) manual for your verification, in which all your comments have been duly incorporated.

Yours faithfully
For and on behalf of
SANG HING CIVIL CONTRACTORS CO., LTD.

Raymond YAU
Project Manager

Encl.

PY/RY/WK/KL/cm

c.c. DSD – Mr. WH Poon
DSD site office
Head Office

Room 215A-B, 2/F., Central Services Building, Nan Fung Industrial City,
No. 18 Tin Hau Road, Tuen Mun, N.T., Hong Kong.
Tel: (852) 2403 1118 Fax: (852) 2403 1162 E-mail: shcivil@netvigator.com

CONTRACT NO. DC/2011/06

REPROVISIONING OF BOUNDARY PATROL ROAD AND ASSOCIATED SECURITY FACILITIES BETWEEN PING YUEN RIVER AND PAK FU SHAN AND DRAINAGE WORKS IN NORTH DISTRICT

CONTRACT SPECIFIC ENVIRONMENTAL MONITORING & AUDIT MANUAL

PREPARED FOR
SANG HING CIVIL CONSTRUCTORS CO., LTD.

Quality Index

Date	Reference No.	Prepared By	Approval By
9 May 2012	TCS00599/12/600/R0009v1a	 F. N. Wong Environmental Consultant	 T. W. Tam Environmental Team Leader

Version	Date	Description
1	9 May 2012	First submission
1a	21 May 2012	Amended against IEC's comments

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1. BACKGROUND INFORMATION

REGULATION OF SHENZHEN RIVER STAGE 4

1.1 Changjiang Water Resources Protection Institute (長江水資源保護科學研究所) in association with ERM-Hong Kong Ltd was jointly commissioned by Shenzhen River Regulation Office of Shenzhen Municipal Government (深圳市治理深圳河辦公室) and Drainage Services Department of the HKSAR Government (hereinafter "DSD") to undertake an environmental impact assessment study (hereinafter "the EIA") for a construction project Regulation of Shenzhen River Stage 4 (hereinafter "the Project").

1.2 In order to provide information, guidance and instruction for personnel charged with environmental duties and those responsible for undertaking environmental monitoring and audit (hereinafter the "EM&A") work during construction and operation of the Works, as well as systematic procedures for monitoring and auditing the environmental performance of the Works, Environmental Monitoring and Audit Manual (Hong Kong Side) (Reference 0101759) (hereinafter "the EM&A Manual for the Project") has been prepared as a stand-alone supplementary document and enclosed in the EIA report in accordance with the *EIA Study Brief* (No. ESB - 200/2008) and the *Technical Memorandum of the Environmental Impact Assessment Process*.

1.3 The construction under the Project comprises two separate contracts: Advanced Works within the HKSAR and River Modification Works within both the HKSAR and the Shenzhen Municipality, the scopes of which comprise:

1) Improvement of an approximately 4.5km long section of Shenzhen River;
2) Re-provision of the boundary patrol road and about 4.5km of boundary fence affected by the Project;
3) Dry weather flow interception of the sewage discharging from Shenzhen side into the Project area; and
4) The associated landscaping works.

1.4 The works under the Project within the HKSAR is to be undertaken under Environmental Permit No. EP-430/2011 (hereinafter "EP-430/2011").

CONCURRENT PROJECTS

1.5 It is noted that the following projects will be carried out concurrently in the vicinity of the Project Site:

1) LT/HYW BCP and the associated works. It is anticipated that the construction of the LT/HYW BCP and connecting roads will commence at the end of 2013 and be completed in end 2018. The planned construction period for the resite of Chuk Yuen Village is from late 2010 to early 2012 for population intake by early 2013.
2) Construction of a Secondary Boundary Fence and New Sections of Primary Boundary fence and Patrol Road. Based on the advice from ArchSD, the latest tentative construction programme shall be from end 2011 to early 2013 (section from Ng Tung River to Ping Yuen River) and from end 2011 to end 2013 (section from Pak Fu Shan to Lin Ma Hang Road).
3) Drainage Improvement in Northern New Territories, Package C (Remaining Works). The construction work is scheduled to commence in late 2012 and completed by 2016.

CUMULATIVE ENVIRONMENTAL IMPACT FROM CONCURRENT PROJECT

1.6 As the above two concurrent projects (LT/HYW BCP and the Associated Works and Construction of a Secondary Boundary Fence and New Sections of Primary Boundary Fence and Patrol Road) will have construction works undertaken concurrently in close proximity to Project Site, there is a potential for cumulative construction phase impacts, including dust, noise, water quality, waste, ecology and landscape and visual.

1.7 The Drainage Improvement in Northern New Territories, Package C (Remaining Works) project is subject to another future detailed EIA Study and detailed construction programme is not available at this stage. The cumulative impact cannot be assessed at this stage. However, since the drainage improvement works is located at about 500m from the Site and given its nature and scale of works, adverse cumulative impact is not anticipated.

DSD CONTRACT NO. DC/2011/06

1.8 Sang Hing Civil Contractors Company Limited (hereafter "SHCCC") has been awarded by DSD Contract No. DC/2011/06 – Reprovisioning of Boundary Patrol Road and Associated Security Facilities between Ping Yuen River and Pak Fu Shan and Drainage Works in North District (hereafter "the Contract") since April 2012.

1.9 The works under the Contract mainly comprises:

A. ***Designated Project Under EP-430/2011***
- Reprovisioning of approximately 4.3 kilometres (km) long and 3.5 metres (m) wide boundary patrol road between ***Ping Yuen River*** and ***Pak Fu Shan***;
- Reprovisioning of approximately 4.3 km long primary boundary fence with associated lighting and Fence Protection System between ***Ping Yuen River*** and ***Pak Fu Shan***;
- Reprovisioning of the Hong Kong Police Force ***Lo Fong Bridge Post***;
- Construction of about 3.3 km long secondary boundary fence;

B. ***Designated Project Under EP-277/2007/A***
- Construction of about 400m of drainage channel at ***Man Uk Pin*** under Environmental Permit No. ***EP-277/2007/A*** (hereinafter "***EP-277/2007/A***");
- The associated ancillary works including drainage and landscaping works.

C. ***Non-Designated Project***
- construction of about 110m of drainage channel at ***Ma Wat Wai***;

1.10 The EM&A for the designated works under EP-277/2007/A is presented in Environmental Monitoring Plan and Methodology for Designated Works which has been prepared according to the EM&A Manual enclosed in EP-277/2007/A and agreed by the IEC prior to implementation.

1.11 The EM&A for the Non-Designated Project construction at Ma Wat Wai is presented in the EM&A Manual enclosed in the Environmental Study under Agreement No. CE 62002 (DS) Drainage Improvement in Northern New Territories – Package C: Investigation, Design and Construction.

THE CONTRACT SPECIFIC EM&A MANUAL

1.12 Pursuant to Clause 2.10 of EP-430/2011, an updated Environmental Monitoring and Audit Manual for the Project, i.e. a contract specific environmental monitoring and audit manual (hereinafter "the Contract Specific EM&A Manual" or "this Manual"), is required to be submitted to the Director of Environmental Protection of the HKSAR Government (hereinafter "DEP") upon certification by the Environmental Team (hereinafter ("the ET") Leader and verification by the Independent Environmental Checker (hereinafter "the IEC") as confirming to the information and recommendations contained in the EIA report.

1.13 This Manual has been compiled in close accordance with the EM&A Manual for the Project enclosed in the EP and the Particular Specification under the Contract (hereinafter "the PS") to include a monitoring and response mechanism for handling exceedances of environmental standards during the construction phase in collaboration with relevant parties of other concurrent projects in the vicinity.

1.14 For full understanding of the significance of the Contract, this Manual should be read in conjunction with the EIA report and the associated EM&A Manual for the Project enclosed in EP-430/2011.

PURPOSES OF THIS MANUAL

1.15 This Manual contains the following information:

1) Responsibilities of the main contractor who has been commissioned to implement the Contract (hereinafter "the Contractor", ET, and IEC with respect to the EM&A requirements during the implementation of the Contract;
2) Environmental management organization under the Contract;
3) Requirements with respect to the construction and operational programme schedule and the associated EM&A programme to track the varying environmental impacts;
4) Details of the methodology to be adopted, including field, laboratory and analytical procedures, and details on quality assurance and quality control programme;
5) Preliminary definition of Action and Limit levels (hereinafter "the A/L Levels");
6) Establishment of Event and Action Plans (hereinafter "the EAP");
7) Requirements for reviewing pollution sources and working procedures required in the event of exceedances of the A/L Levels, and/or receipt of environmental complaints;
8) Requirements for presentation of EM&A data and appropriate reporting procedures; and
9) Requirements for reviewing EIA predictions and the effectiveness of the mitigation measures and the EM&A programme.

1.16 The ET shall be appointed to conduct the monitoring works and to provide specialist advice on the undertaking and implementation of environmental responsibilities. Sufficient and suitably qualified staff should be included in the ET, and ET should not be in any way an associated body of the Contractor.

1.17 The ET shall be led and managed by the ET Leader who is the person delegated the role of executing the EM&A requirements for the Works. The ET Leader shall have relevant education, training, knowledge, experience and professional qualifications and the appointment shall be subject to the approval of the DEP.

1.18 To maintain strict control of the EM&A process, the IEC shall be engaged to verify and validate/ audit the environmental performance of the Contractor.

1.19 Sufficient and suitably qualified professional and technical staff should be employed by the IEC, as required under the EM&A programme throughout the whole construction of the Project.

CONSTRUCTION UNDER THE CONTRACT

1.20 The location and alignment of the Contract components are shown in Annex A.

1.21 The works to be executed under the Contract includes:

1) Approximately 4,300 m of 3.5 m wide Boundary Patrol Road on filled embankment along the Shenzhen River from Ping Yuen River estuary and Pak Fu Shan, Ta Kwu Ling;
2) Approximately 4,300 m of Primary Boundary Fence with XPM mesh;
3) Approximately 3,300 m of Secondary Boundary Fence with XPM mesh;
4) Approximately 4,300 m of border security lighting system including the associated electrical and mechanical works;
5) 4 box culverts and 12 drainage pipes under the proposed Boundary Patrol Road, and the associated inlets and outlets;
6) Reconstruction of Lo Fong Bridge Post for Hong Kong Police Force;
7) Peripheral drainage system associated with the above items;
8) Irrigation systems including associated electrical and mechanical works;
9) Landscaping works and environmental mitigation works;
10) Other ancillary works associated with the above items;

1.22 The Contract is divided into the following three working areas:

1) Portion A – Area between CH_R 0+000 and 2+050 for reprovisioning of Boundary Patrol Road and the associated security facilities;
2) Portion B – Area between CH_R 2+050 and 2+840 for reprovisioning of Boundary Patrol Road and the associated security facilities;
3) Portion C – Area between CH_R 2+840 and 4+300 approximately for reprovisioning of Boundary Patrol Road and the associated security facilities;

1.23 The works under the Contract is predicted to undertake in between the period of April 2012 and August 2014 about 29 months.

OBJECTIVE OF THIS MANUAL

1.24 The objective of this Manual is to define the procedures for the EM&A programme or monitoring the environmental performance of the Project during the implementation of the construction phase.

1.25 The construction and operational impacts arising from the implementation of the Project have been detailed in the EIA report, where environmental mitigation measures and good construction practices that will be needed to comply with the environmental criteria or further minimize the potential impacts have also been specified.

1.26 The environmental mitigation measures and the associated implementation requirements are presented in the Implementation Schedule of Mitigation Measures enclosed in Annex B, whereas the Event and Action Plan to be triggered in cases of non-compliance of the environmental quality criteria, i.e. Action / Limit Levels (hereinafter A/L Levels) is enclosed in Annex C.

1.27 The main objectives of the EM&A programme are to:

a. provide a database of environmental parameters, against which any short term or long term adverse environmental impacts are determined;
b. provide an early indication should any of the environmental control measures or practices fail to achieve the acceptable standards;
c. confirm that the environmental mitigation measures recommended in the EIA Report are properly incorporated into the implementation of the Contract;
d. confirm that the implementation of the Contract complies with the recommendations of EIA Report and the conditions of the EP;
e. clarify and identify potential sources of pollution, impact and nuisance arising from the works under the Contract;
f. confirm compliance with relevant environmental regulations, PS requirements and EIA study recommendations;
g. monitor performance of the environmental mitigation measures and to assess the associated effectiveness;
h. take remedial actions in cases of unexpected issues or unacceptable impacts;
i. verify the environmental impacts predicted in the EIA; and
j. audit environmental performance of the Contractor.

1.28 The EIA Study indicates that EM&A will only be required for the construction and post-construction phases of this Project.

1.29 EM&A for the operation phase is not considered necessary as unacceptable environmental impacts are not predicted to occur during the operation phase.

SCOPES OF THE EM&A PROGRAMME

1.30 The scopes of the EM&A programme are summarized as follows:

(a.) establish baseline dust and noise levels at specified locations and implement monitoring requirements for dust and noise monitoring programme during construction;

(b.) implement inspection and audit requirements for water quality, waste management and landscape and visual impacts;

(c.) liaise with and provide environmental advices, as requested or when otherwise necessary, to construction site staff on the significance and implications of the environmental monitoring data;

(d.) identify and resolve environmental issues and other functions as they may arise from the works;

(e.) check and assess the Contractor's overall environmental performance, implementation of the EAP and remedial actions taken to mitigate adverse environmental effects as they may arise from the works;

(f.) conduct monthly reviews of monitored impact data as the basis for assessing compliance with the defined criteria and to verify that necessary mitigation measures are implemented, and to undertake additional *ad hoc* monitoring and auditing as required by special circumstances;

(g.) evaluate and interpret environmental monitoring data to provide an early indication should any of the environmental control measures or practices fail to achieve the acceptable standards, and to verify the environmental impacts predicted in the EIA;

(h.) manage and liaise with other individuals or parties concerning other environmental issues deemed to be relevant to the construction process;

(i.) conduct regular site inspections and audits of a formal or informal nature to assess:

i. the level of the Contractor's general environmental awareness;
ii. the Contractor's implementation of the recommendations in the EIA and their contractual obligations;
iii. the Contractor's performance as measured in the EM&A;
iv. the need for specific mitigation measures to be implemented or the continued usage of those previously agreed; and
v. to advise the site staff of any identified potential environmental issues;

(j.) produce monthly EM&A reports which summarize EM&A data, with full interpretation illustrating the acceptability or otherwise of any environmental impacts and identification or assessment of the implementation status of agreed mitigation measures.

ORGANIZATION AND STRUCTURE OF THE ENVIRONMENTAL MANAGEMENT

1.31 Involvement of DSD, the ET, IEC and Contractor is crucial during the implementation of the EM&A.

1.32 Organization and structure of the environmental management and the key contact information under the Contract is shown in Annex D.

Roles and Responsibilities of Related parties

Roles

1.33 The roles and responsibilities of the various parties involved in the EM&A process are summarized as follows.

1.34 DSD will ensure appointment of an ET to conduct the site inspection and monitoring and, to provide specialist advice on implementation of environmental responsibilities.

1.35 The ET should have relevant experience in managing EM&A programmes of similar size, and the ET Leader should be a recognized environmental professional, with a minimum of seven years relevant experience in impact assessments and EM&A programmes.

1.36 The ET Leader is responsible for, and in charge of the ET and is the person responsible for executing the EM&A requirements, and to provide advice (if required) on environmental clauses for the PS.

1.37 To maintain strict control of the EM&A process, DSD will appoint an IEC to verify and validate/ audit the environmental performance of the Contractor and works of the ET. The IEC should have relevant experience in checking and auditing EM&A programmes of similar size; and the IEC should be a recognized environmental professional, with a minimum of seven years relevant experience in impact assessments and EM&A programmes.

Responsibilities

1.38 DSD will:

a. ensure that the ET is employed to undertake monitoring, laboratory analysis and reporting of environmental monitoring data, and site inspection of construction works;
b. employ the IEC to audit and verify the overall environmental performance of the works and to assess the effectiveness of the ET in their duties;
c. supervise the Contractor activities and confirm that the requirements in this Manual and relevant environmental regulations are fully complied with;
d. develop appropriate contract clauses to confirm that the Contractor will have qualified professionals to interface with the DSD/ ET /IEC to fulfill the EIA/EP requirements;
e. inform the Contractor when actions are required to reduce impacts in accordance with the EAP as shown in Annex C;
f. adhere to the procedures for carrying out complaint investigation; and
g. participate in joint site inspections undertaken by the ET and IEC.

1.39 The Contractor will:

h. work within the scopes of the Contract and relevant regulatory requirements;
i. provide assistance to the ET in carrying out environmental monitoring and site inspections;
j. submit proposals on mitigation measures in case of exceedances of the A/L levels in accordance with the EAP as shown in Annex C;
k. implement mitigation measures to reduce impact where A/L levels are exceeded;
l. implement the corrective actions instructed by DSD/ET/IEC;
m. participate in regular site inspections undertaken by the ET and IEC, as required, and undertake any corrective actions instructed by DSD/ETL/IEC; and
a. adhere to the procedures for carrying out complaint investigation.

1.40 The Environmental Team (ET) will:

a. monitor various environmental parameters as required in this Manual;
b. assess the EM&A data and review the success of the EM&A programme determining the adequacy of the mitigation measures implemented and the validity of the EIA predictions as well as identify any adverse environmental impacts before they arise;
c. carry out monthly site inspection to investigate the Contractor's site practice, equipment and work methodologies with respect to pollution control, environmental mitigation and effect of the proactive actions to preempt issues;
d. review the Contractor's working programme and methodology, and comment as necessary;
e. review and prepare reports on the environmental monitoring data and site environmental conditions;
f. report on the environmental monitoring results and conditions to the IEC, Contractor, DSD and Environmental Protection Department (hereinafter "EPD");
g. recommend suitable mitigation measures to the Contractor in the case of exceedance of A/L levels in accordance with the EAP as shown in ***Annex C***; and
h. adhere to the procedures for carrying out complaint investigation.

1.41 The Independent Environmental Checker (IEC) will:

1) review and audit the implementation of the EM&A programme and the overall environmental performance of the EM&A;
2) arrange and conduct monthly independent site audits of the works;
3) validate and confirm the accuracy of monitoring results, monitoring equipment, monitoring stations, monitoring procedures and locations of sensitive receivers;
4) audit the EIA recommendations and requirements against the status of implementation of environmental protection measures on site;
5) on an as needed basis, audit the Contractor's construction methodology and agree the alternatives of mitigation measures, as appropriate, in consultation with DSD, the ET and the Contractor;
6) adhere to the procedures for carrying out complaint investigation;
7) review the effectiveness of environmental mitigation measures and environmental performance of the Contract including the proposed corrective measures;
8) review EM&A report submitted by the ET leader and feedback audit results to the ET by signing off relevant EM&A proformas; and
9) report the findings of site audits and other environmental performance reviews to DSD, EPD, the ET and Contractor.

2. GENERAL REQUIREMENTS OF EM&A

CONSTRUCTION PHASE

2.1 Potential environmental impacts, which were identified during the EIA process and are associated with the construction phase of the Contract, will be addressed through the monitoring and controls specified in this Manual and in the construction contracts.

2.2 During the construction phases of the Contract, air quality, noise, water quality, ecology, landscape and visual and waste will be subject to EM&A, with environmental monitoring being undertaken for construction dust and noise as determined in the EIA. Monitoring of the effectiveness of the mitigation measures will be achieved through the environmental monitoring programme as well as through site inspections.

2.3 The inspections will include within their scope, mechanisms to review and assess the Contractor's environmental performance, ensuring that the recommended mitigation measures have been properly implemented, and that the timely resolution of received complaints are managed and controlled in a manner consistent with the recommendations of the EIA report.

Environmental Monitoring

2.4 The environmental monitoring work throughout the Contract period will be carried out in accordance with this Manual and reported by the ET. Monitoring works will cover construction dust and noise and will form an important part of the whole EM&A programme.

Action and Limit Levels (A/L Levels)

2.5 The A/L Levels to be adopted in the EM&A under the Contract will be established based on the baseline levels acquired in the baseline monitoring period as stipulated in this Manual. They are described in principle below:

Action Levels: beyond which there is a clear indication of a deteriorating environmental conditions for which appropriate remedial actions are likely to be necessary to prevent environmental quality from falling outside the Limit Levels, which would be unacceptable; and

Limit Levels: statutory and/or agreed contract limits stipulated in the relevant pollution control ordinances, Hong Kong Planning Standards and Guidelines (HKPSG) or Environmental Quality Objectives established by EPD. If these are exceeded, works will not proceed without appropriate remedial action, including a critical review of plant and working methods.

Event and Action Plan (EAP)

2.6 The A/L Levels to be adopted in the EM&A under the Contract will be established based on the baseline levels acquired in the baseline monitoring period as stipulated in this Manual. They are described in principle below:

2.7 The purpose of the EAPs is to provide, in association with the monitoring and audit activities, procedures for ensuring that if any significant environmental incident occurs, the causes related to the works under the Contract will be quickly identified and remediated. The EAP as enclosed in ***Annex C*** will be triggered in cases of the exceedances of A/L Levels during the implementation of the EM&A programme.

Site Inspections & Audits

2.8 In addition to construction dust and noise monitoring as a means of assessing the ongoing performance of the Contractor, the ET will undertake monthly site inspections and audit.

2.9 The primary objective of the site inspection is to assess the effectiveness of the environmental controls established by the Contractor and the implementation of the environmental mitigation measures recommended in the EIA Report.

2.10 The IEC will undertake monthly site audits to assess the performance of the Contractor and the effectiveness of the ET.

2.11 Whilst the site inspection and audit provides complement of the monitoring activity, the criteria against which the site inspection and audit is undertaken, will be derived from the PS to enforce the recommendations of the EIA report and this Manual.

2.12 The findings of site inspections and audits will be made known to the Contractor at the time of the inspection to enable rapid resolutions of identified defects or non-conformities, which together with the corrective actions undertaken, will also be reported in the monthly EM&A reports.

2.13 *Section 10* of this Manual presents details of the scope and frequency of on-site inspections and defines the range of issues that the audit protocols will be designed to address.

Enquiries, Complaint and Requests for Information

2.14 Enquiries, complaints and requests for information may be raised from a wide range of individuals and organizations including members of the public, Government departments, the press and television media and community groups.

2.15 The enquiries, complaints and requests for information concerning the environmental effects of the construction works, irrespective of how they are received, should be reported to DSD and directed to the ET, who will set up procedures for the handling, investigation and storage of such information.

2.16 The following steps should be followed up:

a. The ET Leader will notify DSD of the nature of the enquiry;
b. An investigation will be initiated to determine the validity of the complaint and to identify the source(s) of the issue;
c. The Contractor should undertake the following steps, as appropriate:
   i. investigate and identify the source(s) of the issue;
   ii. undertake additional monitoring to verify the existence and severity of the alleged complaint, if considered necessary by DSD in consultation with the IEC;
   iii. liaise with EPD to identify remedial measures;
   iv. liaise with the IEC to identify remedial measures;
   v. implement the agreed mitigation measures;
   vi. repeat the monitoring to verify effectiveness of mitigation measures; and
   vii. repeat review procedures to identify further practical areas of improvement if the repeat monitoring results continue to substantiate the complaint.
d. The outcome of the investigation and the action taken should be documented on a complaint log, an example of which is enclosed in ***Annex E***. A formal response to each complaint received will be prepared by the Contractor within five working days and submitted to DSD, in order to notify the concerned persons the actions taken.
e. Enquires which trigger this process will be reported in the monthly EM&A reports, including results of inspections undertaken by the Contractor, details of the measures taken, and additional monitoring results as appropriate. It should be noted that the receipt of complaints or enquiries will not be, in itself, a sufficient reason to introduce additional mitigation measures.
f. The complainant will be notified of the findings, and audit procedures will be put in place to verify that the issue does not recur.

Reporting

2.17 Baseline and impact monitoring, monthly, quarterly and final reports will be prepared by the ET on behalf of DSD upon certification by the ET Leader and verification by the IEC. The reports will be submitted to the Contractor, DSD and EPD. The monthly EM&A Reports will be prepared and submitted within two weeks of the end of each calendar month**.**

Cessation of EM&A

2.18 The cessation of EM&A programme is subject to the satisfactory completion of the Final EM&A Report, agreement with the IEC and approval from EPD.

OPERATIONAL PHASE

2.19 As no unacceptable impacts were identified during the operation phase of the Project, no EM&A programme is considered necessary for the operation phase. However, should other operational licenses that require specific monitoring or audit conditions or practices be required, plans under the respective ordinances/ guidelines will need to be put in place.

3. AIR QUALITY

INTRODUCTION

3.1 Environmental site audit is required for ensuring implementation of recommended dust control measures and monitoring of dust is required during the construction phase of the River modification Works. Since no adverse air quality and odour impacts are anticipated during the operation phase, no EM&A programme is required.

3.2 The general requirements, methodology, equipment, and mitigation measures for the monitoring and audit of potential construction phase air quality impact are described in the following sections. The mitigation measures recommended as control air quality impacts are summarised in ***Annex B***.

MONITORING PARAMETERS

3.3 Monitoring of the Total Suspended Particulates levels (hereinafter "the TSP") will be carried out by the ET to ensure that construction works will not cause adverse dust impacts to identified air sensitive receivers (ASRs). Timely action shall be taken to rectify the situation if an exceedance is detected. All relevant data including temperature, pressure, weather conditions, elapsed-time meter reading for the start and stop of the sampler, identification and weight of the filter paper, any other special phenomena and work progress of the concerned site shall be recorded. Samples of data record sheets are shown in ***Annex F***.

MONITORING LOCATIONS UNDER THE PROJECT

3.4 Two locations are proposed for construction dust monitoring as listed in ***Table 3.1*** and illustrated in ***Annex G***.

Table 3-1 Construction Dust Monitoring Stations

Monitoring Station	Description	Remarks
AM1	Ta Kwu Ling Village	During construction works at works areas III or IV
AM2	Tsung Yuen Ha	During construction works at works areas I or II

3.5 Layout plan showing the works areas I, II, III and IV is shown in ***Annex G***. The status and locations of the ASR may change after issuing this Manual and the location of the proposed construction dust monitoring station may need to be adjusted accordingly. If such changes occur, the ET shall propose an updated monitoring location for agreement by the Engineer Representative of DSD (hereinafter "the ER"), Contractor, IEC and the EPD.

3.6 When alternative monitoring location is proposed, the following criteria shall be followed as far as practicable:

1) At the site boundary or such locations close to the major dust emission source;
2) Close to the sensitive receptors;
3) Take into account the prevailing meteorological conditions; and
4) For monitoring location located in the vicinity of the ASR, care shall be taken to cause minimal disturbance to the occupants during monitoring. When positioning the high volume air sampler (hereinafter "the HVAS"), the following points shall be noted:
   a) a horizontal platform with appropriate support to secure the samples against gusty wind shall be provided;
   b) no two samplers shall be placed less than 2m apart;
   c) the distance between the HVAS and an obstacle, such as buildings, must be at least twice the height that the obstacle protrudes above the HVAS;
   d) a minimum of 2 m separation from walls, parapets and penthouses is required for HVAS at the rooftop;
   e) a minimum of 2 m separation from any supporting structure, measures horizontally is

required;
f) no furnace or incinerator flue is nearby;
g) airflow around the sampler is unrestricted;
h) the HVAS is more than 20 m from the dripline;
i) any wire fence and gate to protect the HVAS, shall not cause any obstruction during monitoring;
j) permission must be obtained to set up the HVAS and to obtain access to the monitoring stations; and
k) a secured supply of electricity is needed to operate the HVAS.

MONITORING EQUIPMENT

3.7 The equipment required for TSP measurement during the construction phase is summarized in ***Table 3-2*** and details as follows:

Table 3-2 Air Quality Monitoring Equipment

Equipment	Model
24-Hr TSP	
High Volume Air Sampler (HVS)	Grasby Anderson GMWS 2310 HVS
Calibration Kit	TISCH Model TE-5028A
1-Hr TSP	
Portable Dust Meter	TSI DustTrak Model 8520

1-Hour TSP

3.8 A portable direct-reading dust meter capable of reading TSP within the range 0.1 – 100 mg/m3 is used in construction dust monitoring of 1-Hour TSP.

24-Hour TSP

3.9 A HVAS approved by USEPA is used in construction dust monitoring of 24-Hour TSP.

3.10 The models of equipment used under the Project are detailed in below.

3.11 The HVAS complies with the USEPA Standards Title 40, Code of Federal Regulations Chapter 1 (Part 50) specifications as follows:

a. 0.6-1.7 m^3/min (20-60 SCFM) adjustable flow range;
b. equipped with a timing /control device with ± 5 minutes accuracy for 24 hours operation;
c. installed with elapsed-time meter with ± 2 minutes accuracy for 24 hours operation;
d. capable of providing a minimum exposed area of 406 cm^2 (63 in^2);
e. flow control accuracy: ±2.5 % deviation over 24-hr sampling period;
f. equipped with a shelter to protect the filter and sampler;
g. incorporated with an electronic mass flow rate controller or other equivalent devices;
h. equipped with a flow recorder for continuous monitoring;
i. provided with a peaked roof inlet;
j. incorporated with a manometer;
k. able to hold and seal the filter paper to the sampler housing at horizontal position;
l. easy to change the filter; and
m. capable of operating continuously for 24-hr period.

3.12 The ET shall provide the monitoring equipment, and ensure that sufficient number of HVS with appropriate calibration kit is available for carrying out the baseline, regular impact monitoring and ad-hoc monitoring. The HVAS shall be equipped with an electronic mass flow controller and be calibrated against a traceable standard at regular intervals, in accordance with requirements stated in the manufacturers operating manual. All the equipment, calibration kit, filter papers, etc,

shall be clearly labeled.

3.13 The flow rate of each HVS with mass flow controller shall be calibrated using an orifice calibrator. Initial calibration of the dust monitoring equipment shall be conducted upon installation and prior to commissioning. Five-point calibration shall be carried out every two months. The transfer standard shall be traceable to the internationally recognised primary standard and be calibrated annually.

3.14 The concern parties such as IEC shall properly document the calibration data for future reference. All the data shall be converted into standard temperature and pressure condition.

3.15 The flow-rate of the HVS before and after the sampling exercise with the filter in position shall be verified to be constant and be recorded on the data sheet.

3.16 If the ET proposes to use a direct reading dust meter to measure 1-hour TSP levels, he shall submit sufficient information to the ER and IEC to prove that the instrument is capable of achieving a comparable result to the HVS. The instrument shall also be calibrated regularly, and the 1-hour sampling shall be determined periodically by the HVS to check the validity and accuracy of the results measured by direct reading method.

LABORATORY MEASUREMENT/ ANALYSIS

3.17 A clean laboratory with constant temperature and humidity control, and equipped with the necessary measuring and conditioning instruments to handle the dust samples, shall be available for sample analysis and equipment calibration and maintenance. The laboratory shall be either a HOKLAS accredited or an internationally accredited laboratory.

3.18 If a site laboratory is set up or a non-HOKLAS accredited laboratory is hired for carrying out the laboratory analysis, the laboratory equipment shall be approved by the ER and the measurement procedures shall be witnessed by the IEC. Any measurement performed by the laboratory shall be demonstrated to the satisfaction of the ER and IEC. IEC shall regularly audit the measurement performed by the laboratory to ensure the accuracy of measurement results. The ET Leader shall provide the ER with one copy of the *Title 40 of the Code of Federal Regulations, Chapter 1 (Part 50) Appendix B* for his reference.

3.19 Filter paper of size 8”x10” shall be labelled before sampling. It shall be a clean filter paper with no pin holes, and shall be conditioned in a humidity controlled chamber for over 24-hr and be pre-weighed before use for the sampling.

3.20 After sampling, the filter paper loaded with dust shall be kept in a clean and tightly sealed plastic bag. The filter paper is then returned to the laboratory for reconditioning in the humidity controlled chamber followed by accurate weighing by an electronic balance with readout down to 0.1 mg. The balance shall be regularly calibrated against a traceable standard.

3.21 All the collected samples shall be kept in a good condition for 6 months before disposal.

MONITORING FREQUENCY

Baseline Monitoring

3.22 Baseline monitoring shall be carried out to determine the ambient 24-hour and 1-hr TSP levels at the designated monitoring stations prior to the commencement of the construction works. Continuous 24-hour TSP monitoring and 3 sets of 1-hour TSP monitoring shall be carried out daily for a period of at least two weeks. General meteorological conditions and notes regarding any significant adjacent dust producing sources shall also be recorded throughout the baseline monitoring period.

3.23 Before commencing the baseline monitoring, the ET shall inform the Contractor, ER, IEC and EPD of the baseline monitoring schedule such that relevant parties may conduct on-site audit of the baseline monitoring.

3.24 In case the baseline monitoring could not be carried out at the designated monitoring location during the baseline monitoring period, the ET shall carry out the monitoring at alternative location which could effectively represent the baseline conditions at the impact monitoring locations. The alternative baseline monitoring location shall be agreed with the ER, IEC and EPD.

3.25 In exceptional cases, when insufficient baseline monitoring data or questionable results are obtained, the ET shall liaise with the ER, IEC and EPD to agree on an appropriate set of data to be used as a baseline reference.

3.26 The baseline monitoring shall provide data for the determination of the appropriate A/L Levels set against statutory or otherwise agreed limits.

Impact Monitoring

3.27 The ET shall carry out impact monitoring throughout the construction works. 24-hour TSP monitoring shall be conducted at least once in every six days at all the designated monitoring stations. For 1-hour TSP monitoring, the sampling frequency of at least three times in every six-days shall be undertaken when the highest dust impact occurs.

3.28 Before commencing the monitoring, the ET shall inform the IEC of the monitoring schedule such that the IEC can conduct on-site audit to ensure accuracy of the monitoring results.

3.29 The specific time to start and stop the 24-hour TSP monitoring shall be clearly defined for each location and be strictly followed by the operator.

3.30 In case of non-compliance with the air quality criteria, more frequent monitoring, as specified in the EAP shall be conducted. This additional monitoring shall be continued until the excessive dust emission or the deterioration in air quality is rectified.

ENVIRONMENTAL COMPLIANCE AND EAP

3.31 The baseline monitoring results form the basis for determining the A/L Levels for the impact monitoring. The ET shall compare the impact monitoring results of 24-hour TSP and 1-hour TSP against the agreed A/L Levels as listed in ***Table 3-3***

Table 3-3 Action and Limit Levels for Construction Dust Monitoring

Parameter	**Action Level,** μg m^{-3}	**Limit Level,** μg m^{-3}
24-hour TSP	For baseline Level <= 200μg m-3, the Action Level = (Baseline level *1.3 + Limit Level) / 2	260
	For baseline Level >200μg m-3, the Action Level = Limit Level	
1-hour TSP	For baseline Level <= 384μg m-3, the Action Level = (Baseline level *1.3 + Limit Level) / 2	500
	For baseline Level >384μg m-3, the Action Level = Limit Level	

3.32 Should non-compliance or exceedance of the A/L Levels occur, actions in accordance with the EAP as enclosed in ***Annex C***, shall be carried out.

METEOROLOGICAL INFORMATION

3.33 The meteorological information will be referred to the closest station from Hong Kong Observatory. The data includes wind direction, wind speed, humidity, rainfall, air pressure and temperature etc.

4. CONSTRUCTION NOISE

INTRODUCTION

4.1 Noise monitoring is required during the construction phase of the River Modification Works. The mitigation measures recommended to control noise impacts are summarized in ***Annex B***.

METHODOLOGY AND CRITERIA

4.2 Noise measurements should be carried out in accordance with the guidelines given in *Annex – General Calibration and Measurement Procedures* of *Technical Memorandum on Noise from Construction Work other than Percussive Piling* (*GWTM*).

4.3 Whilst the *Noise Control Ordinance* (*NCO*) does not provide for the statutory control of construction activities occurring on weekdays during normal working hours (ie Monday to Saturday inclusive 0700-1900 hours), a daytime standard of Leq(30min) 75dB(A) as stipulated in Annex 5 of the *Technical Memorandum on Environmental Impact Assessment Process* (*EIAO-TM*) will be adopted as the noise criterion for all residential dwellings; while a daytime standard of Leq(30min) 70dB(A) will be adopted for all educational institutions during normal school days and Leq(30min) 65dB(A) during examination periods.

4.4 The construction noise levels will be measured in terms of A-weighted equivalent continuous sound pressure level (Leq) measured in decibels dB(A).

4.5 $L_{eq(30min)}$ should be used as the monitoring parameter for the time period between 0700-1900 hours on normal weekdays.

4.6 Supplementary information for data auditing, two statistical sound levels L_{10} and L_{90}; the levels exceeded for 10 and 90 percent of the time respectively, should also be recorded during the monitoring for reference. A sample data record sheet is shown in ***Annex F*** for reference.

4.7 Noise measurements should generally not be made in the presence of fog, rain, wind with a steady speed exceeding 5m s^{-1} or wind with gusts exceeding 10m s^{-1}. The wind speed should be checked with a portable wind speed meter capable of measuring the wind speed in ms^{-1}.

MONITORING EQUIPMENT

4.8 As referred to the *GW-TM*, sound level meters in compliance with the *International Electrotechnical Commission Publications 651:1979 (Type 1) and 804:1985 (Type 1) Specifications* should be used for carrying out the noise monitoring. Immediately prior to and following each noise measurement the accuracy of the sound level meter should be checked using an acoustic calibrator generating a known sound pressure level at a known frequency.

4.9 Measurements may be accepted as valid only if the calibration levels from before and after the noise measurement agree to within 1.0 dB.

4.10 The ET should ensure that the equipment is maintained in a good working order in accordance with the manufacturer's recommendations with sufficient spare equipment available in the event of breakdown to maintain the planned monitoring programme. In addition, the sound level meter and the acoustic calibrator should be calibrated annually.

4.11 The ET is responsible for the provision of the monitoring equipment and will ensure that sufficient noise measuring equipment and associated instrumentation are available for carrying out the baseline monitoring and impact monitoring.

4.12 All the equipment and associated instrumentation will be clearly labeled.

MONITORING LOCATIONS

4.13 Representative locations were selected to monitor the noise levels from the construction of the Project. The noise monitoring stations are listed in ***Table 4.1*** and presented in ***Annex F.***

Table 4-1 Construction Noise Monitoring Stations

Monitoring Station	Description
NM1	Ta Kwu Ling Village
NM2	Kaw Liu Village

4.14 The status and locations of noise sensitive receivers (NSRs) may change after issuing this Manual and the location of the noise monitoring station may need to be adjusted accordingly. If such changes occur, the ET should propose an updated monitoring location for the agreement from the ER, IEC and EPD.

4.15 When alternative monitoring location is proposed, the following criteria, as far as practicable, should be followed:

a. At locations close to the major site activities which are likely to have noise impacts;
b. Close to the NSRs; and
c. For monitoring locations located in the vicinity of the NSRs, care should be taken to minimise disturbance to the occupants during monitoring.

4.16 The monitoring station will normally be at a point 1m from the exterior of the NSR building façade and at a height of approximately 1.2m above ground or at the height that has the least obstructed view of the construction activities in relation to the NSR. If access to the normal monitoring position cannot be obtained, an alternative position will be chosen, and a correction to the measurements should be made, if appropriate. For instance, a correction of +3 dB(A) should be made to free-field measurements. The ET should agree with the ER, IEC, EPD and the owners/occupants of the premises on the monitoring position. Once the positions for the monitoring stations are chosen, the baseline monitoring and the impact monitoring should be carried out at the same positions.

BASELINE MONITORING

4.17 The ET should carry out baseline noise monitoring prior to the commencement of any construction works. The baseline monitoring shall be measured for a continuous period of at least 14 consecutive days at a minimum logging interval of 30 minutes for day-time and 15 minutes (as three consecutive $L_{eq(5min)}$ readings) for evening, holidays and night-time.

4.18 Before commencing the baseline monitoring, ET shall inform the Contractor, IEC, ER and the EPD of the baseline monitoring schedule programme such that relevant parties could conduct on-site audit to ensure accuracy of the baseline monitoring results.

4.19 During the baseline monitoring, there should not be any construction activities in the vicinity of the monitoring stations. Any non-Project related construction activities in the vicinity of the stations during the baseline monitoring should be noted and the source(s) and location(s) be recorded.

4.20 In case the baseline monitoring could not be carried out at any of the designated monitoring locations during the baseline monitoring period, the ET shall carry out the monitoring at alternative location which could effectively represent the baseline conditions at the impact monitoring locations. The alternative baseline monitoring locations shall be agreed with the ER, Contractor(s) and IEC and approved by EPD.

4.21 In exceptional cases, when insufficient baseline monitoring data or questionable results are obtained, the ET shall liaise with the ER, IEC and EPD to agree on an appropriate set of data to be used as a baseline reference.

IMPACT MONITORING

4.22 Noise monitoring shall be carried out at all the designated monitoring stations. An initial guide on the monitoring is to obtain one set of 30-minute measurement at each station between 0700 and 1900 hours on normal weekdays at a frequency of once a week when construction activities are underway.

4.23 If construction works are extended to include works during the hours between 1900 and 0700 hours of the following day, or on general holidays and Sundays, applicable Construction Noise Permits (CNPs) will be obtained by the Contractor(s) under the NCO requirements, and the frequency and scope of monitoring will be determined by EPD in the capacity of the Noise Control Authority (NCA).

ENVIRONMENTAL QUALITY PERFORMANCE LIMITS

4.24 A/L Levels provide an appropriate framework for the interpretation of monitoring results. Interpretation of monitoring results is undertaken through checking them against the A/L Levels defined in ***Table 4.2***.

Table 4-2 Action and Limit Levels for Construction Noise

Monitoring Location	Action Level	Limit Level in dB(A)
	Time Period: 0700-1900 hours on normal weekdays	
NM1	When one or more documented complaints are received	75 dB(A)[Note 1]
NM2		

Note 1: *Acceptable Noise Levels for Area Sensitivity Rating of A/B/C. Limit Level is reduced to 70 dB(A) for schools and 65dB(A) during school examination periods.*

Note 2: *If works are to be carried out during restricted hours, the conditions stipulated in the construction noise permit issued by the NCA have to be followed.*

4.25 To account for cases where ambient noise levels, as identified by baseline monitoring, approach or exceed the stipulated Limit Level prior to commencement of construction, a Maximum Acceptable Impact Level, which incorporates the baseline noise level and the identified construction noise Limit Level, might be defined upon agreement with the EPD. This amended level will, therefore, be greater than 75 dB(A) and will represent the maximum acceptable noise level at a specific monitoring station.

4.26 For compliance checking, after taking into account any adjustments agreed with EPD, comparison with either the Limit or the Maximum Acceptable Impact Level will represent the governing criteria for noise impact assessment during impact monitoring.

EVENT AND ACTION PLAN

4.27 The ET should compare the impact monitoring results with the noise criteria as defined in *Table 4.2*. In cases where exceedance of these criteria occurs, actions should be carried out in accordance with the EAP as shown in ***Annex C***.

AUDIT REQUIREMENTS

4.28 It is necessary to undertake regular environmental audits and site inspections to ensure those recommended mitigation measures were properly implemented. The requirements of the environmental audit programme were set out in *Section 10* of this Manual.

4.29 The audit programme will verify the implementation status and evaluate the effectiveness and stability of the mitigation measures.

5. WATER QUALITY

INTRODUCTION

5.1 This section presents details of the water quality monitoring to be undertaken during the construction and operation of the Project. Water quality assessment carried out for the EIA indicates that the potential water quality impacts associated with the construction and operation of the Project will be within acceptable levels and no adverse water quality impacts are expected. However, the monitoring programme is designed to verify the predictions of the EIA and ensure compliance with the assessment criteria.

5.2 In accordance with the recommendations of the EIA, mitigation measures have been proposed during the construction and operation phases of the Project. Details of the mitigation measures are presented in ***Annex B***.

Construction Phase

5.3 Based on the construction methodology, the sediment will be excavated in dry within cofferdam. Water quality monitoring is thus recommended during the foundation pit drainage and cofferdam demolition activities where there is a potential for the release of suspended solids (SS).

5.4 Water quality assessment for the construction phase of the Project indicates that the above construction activities may potentially lead to dispersion of suspended sediments to area downstream of the Contract Site and hence causing elevated concentration of SS in river water.

5.5 However, the level of SS is predicted to be within acceptable levels (SS concentrations caused by construction activity at 500 m upstream and 1,000 m downstream of the work area would be less than 130% of baseline SS concentrations) and will not lead to any adverse water quality impacts to the identified water sensitive receivers (WSRs). The water quality impact monitoring which will be undertaken during construction of the Project will be designed to verify these predictions.

5.6 In addition, baseline water quality monitoring will also be undertaken to determine the A/L Levels for the EM&A under the Project.

WATER QUALITY MONITORING LOCATION

5.7 During construction phase of the Project, water quality impact monitoring will be undertaken at the following locations as follows:

A. During foundation pit drainage and cofferdam demolition at Work Area I and Work Area II
   i. 500 m upstream of Work Area I; and
   ii. 1,000 m downstream of Work Area II.

B. During foundation pit drainage and cofferdam demolition at Work Area III and Work Area IV
   i. 500 m upstream of Work Area III; and
   ii. 1,000 m downstream of Work Area IV.

WATER QUALITY IMPACT MONITORING

5.8 Layout plan showing the works areas I, II, III and IV is shown in ***Annex G***. Monitoring will be conducted for three times per week during the construction period. The interval between two sampling surveys will not be less than 36 hours. During each sampling survey, water samples for laboratory analysis and *in situ* measurements will be taken at all monitoring stations for the following water quality parameters:

- Dissolved Oxygen (mg L-1) (*in situ*);
- pH *(in situ*);
- Turbidity (NTU) (*in situ*); and
- Suspended Solids (mg L-1) (laboratory analysis).

5.9 Duplicate water samples and *in situ* measurements of the above parameters will be taken at mid-depth of each station during a sampling survey. In addition to the above water quality parameters, other relevant data will also be measured and recorded in the Water Quality Impact Monitoring Logs, including the location of the sampling stations, water depth, time, weather conditions, special phenomena and work activities undertaken around the monitoring and works area that may influence the monitoring results.

5.10 Upon completion of all construction activities, a post-project water quality monitoring will be carried out for four weeks in the same manner as water quality impact monitoring.

BASELINE WATER QUALITY MONITORING

5.11 In order to gather representative water quality data for the EM&A programme, Baseline Water Quality Monitoring will be conducted immediately prior to the commencement of construction works mentioned in *Section 5.6* above.

5.12 Location and number of baseline monitoring stations will be the same as the Water Quality Impact Monitoring.

5.13 The parameters and the associated methodology for the Baseline Water Quality Monitoring are also identical to those for the impact monitoring except the frequency and duration which are:

- Three days per week at all stations for a period of four weeks;
- The interval between two sampling surveys will not be less than 36 hours.

MONITORING EQUIPMENT

5.14 The following equipment will be supplied and used by the contractor for the water quality monitoring:

Positioning Device

5.15 A hand-held digital Global Positioning System (GPS) with way point bearing indication or other equivalent instrument of similar accuracy will be provided and used during monitoring to ensure the monitoring team is at the correct location before taking measurements.

Dissolved Oxygen and Temperature Measuring Equipment

5.16 The instrument will be a portable, weatherproof dissolved oxygen measuring instrument complete with cable, sensor, comprehensive operation manuals, and will be operable from a DC power source. It will be capable of measuring: dissolved oxygen levels in the range of 0 - 20 mg L-1 and 0 - 200% saturation; and a temperature of 0 - 45 degrees Celsius. It will have a membrane electrode with automatic temperature compensation complete with a cable. Sufficient stocks of spare electrodes and cables will be available for replacement where necessary (for example, YSI model 59 metre, YSI 5739 probe, YSI 5795A submersible stirrer with reel and cable or an approved similar instrument).

Turbidity Measurement Equipment

5.17 The instrument will be a portable, weatherproof turbidity-measuring unit complete with cable, sensor and comprehensive operation manuals. The equipment will be operated from a DC power source, it will have a photoelectric sensor capable of measuring turbidity between 0 - 1000 NTU (Hach 2100P or an approved similar instrument).

pH meter

5.18 A portable pH meter capable of measuring a range between 0.0 and 14.0 will be provided to measure pH in marine waters.

Water Sampler

5.19 A water sampler (eg Kahlsico Water Sampler), which is a transparent PVC cylinder (capacity not less than 2 litres) and can be effectively sealed with latex cups at both ends, will be used for sampling. The sampler will have a positive latching system to keep it open and prevent premature closure until released by a messenger when the sampler is at the selected water depth. Water samples for suspended solids measurement will be collected in high density polythene bottles, packed in ice (cooled to 4 ºC without being frozen), and delivered to the laboratory in the same day as the samples were collected.

Water Depth Gauge

5.20 A portable, battery-operated echo sounder will be used for the determination of water depth at each designated monitoring station.

SAMPLING / TESTING PROTOCOLS

5.21 All in-situ monitoring instruments will be checked, calibrated and certified by a laboratory accredited under HOKLAS or any other international accreditation scheme before use, and subsequently re-calibrated at three month intervals throughout the stages of the water quality monitoring.

5.22 Responses of sensors and electrodes will be checked with certified standard solutions before each use.

5.23 On-site calibration of field equipment will follow the "*Guide to Field and On-Site Test Methods for the Analysis of Waters*", BS 1427: 1993. Sufficient stocks of spare parts will be maintained for replacements when necessary. Backup monitoring equipment will also be made available so that monitoring can proceed uninterrupted even when equipment is under maintenance, calibration etc.

5.24 Water samples for SS measurements will be collected in high density polythene bottles, packed in ice (cooled to 4° C without being frozen), and delivered to a HOKLAS laboratory as soon as possible after collection.

LABORATORY PROCEDURES

5.25 The analytical techniques to be adopted for this Project must conform to HOKLAS (or similar overseas) accreditation. Using chain of custody forms, collected water samples will be transferred directly to laboratory for immediate processing. Laboratory analysis for SS will started within 24 hours after collection of water samples.

WATER QUALITY COMPLIANCE AND EVENT & ACTION PLAN

5.26 In the event that the levels as stated in ***Section 5.5*** are exceeded, appropriate actions in the Event and Action Plan as shown in ***Annex C*** should be undertaken.

QA/QC

Field Logs

5.27 Field logs will be maintained for all survey work, noting the date of the survey, equipment used, survey manager and a record of all activities and observations. Field logs will be retained for the duration of the Project and archived on completion.

5.28 *In situ* measured data will be digitally recorded from the instruments and converted into Microsoft Excel format, or manually noted. Both disc copy and hard copy will be retained for the file records. Any deviation from the standard procedure will be noted in the log and the reason for the deviation recorded. In addition, field logs will contain notes of events or activities in the vicinity of the monitoring location which might give rise to anomalous data being recorded.

Sampling

5.29 The Contractor will record all data from *in situ* testing and from any analysis carried out in a Field Log. All samples will be identified with a unique date/time/location/depth/sample-type code which will be attached to the sample container or written in indelible ink directly on the container. In order to avoid contamination of the samples, all containers will be new and unused and of analytical grade quality. Sources of contamination will be isolated from the working area and any sample contaminated by local material will be discarded and the sampling repeated.

Measurement Procedures

5.30 All *in situ* monitoring instruments will be checked, calibrated and certified and subsequently re-calibrated at three monthly intervals throughout all stages of the water quality monitoring, or as required by the manufactures specification. Certificate(s) of Calibration specifying the instrument will be attached to the monitoring reports.

Transport of Samples

5.31 All samples transferred from one sub-contractor to another will be accompanied by Chain of Custody (COC) forms. Any missing or damaged samples require notification to ET Leader following logging in the laboratory QA system. The number of samples, the parameters to be tested and the time of delivery should be clearly stated on the COC forms to ensure that samples are analysed for the correct parameters and suitable time is provided to the analytical laboratory for provision of resources required in the analyses.

OPERATION PHASE

5.32 Adverse water quality impact is not expected during operation phase and hence monitoring is not considered necessary. In fact the water quality will be monitored through the existing monitoring programme along Shenzhen River.

6. ECOLOGY

INTRODUCTION

6.1 In accordance with the recommendations of the EIA, good construction practices have been proposed during the construction of the Contract. Details of the good practices are presented in ***Annex B.*** Regular site inspections during the construction phase will confirm the implementation of these practices and the adaptation of ecological design in the landscape work after the completion of construction..

CONSTRUCTION PHASE

6.2 No ecological mitigation measures apart from the adoption of good construction practice are required to be checked as part of the EM&A procedures during the construction phase.

OPERATION PHASE

6.3 The completed landscape works adopting ecological design on the Hong Kong side will be monitored during the one year establishment period. Although no adverse residual impacts are envisaged based on the results of impact assessment, wetland dependent bird monitoring for one year is recommended after the establishment of the landscape plantings of the Contract.

6.4 The purpose of the operation monitoring is to review the performance of the reprovisioned / reinstated habitats. Particular focus will be made on bird species of conservation interest (especially ardeid species including Chinese Pond Heron, Black-crowned Night Heron, Grey Heron, Great Egret, Intermediate Egret and Little Egret, and two wetland dependant species Common Teal and White-breasted Waterhen).

6.5 Standard, quantitative point count surveys will be undertaken at designated sampling locations at once per month after the establishment of the landscape plantings of the Contract.

6.6 The necessity for further ecological monitoring would be reviewed after the first year ecological monitoring programme.

6.7 Locations of sampling transects shall include reprovisioned/reinstated habitats including riverbank landscape areas, floodplains and watercourse, and other reference locations within Hong Kong boundary. Details of the monitoring programme will be formulated and further submitted under the Project.

7. WASTE MANAGEMENT

INTRODUCTION

7.1 The Project is expected to generate the following types of waste during the construction phase:

1) Dredged river sediment;
2) Construction and demolition (C&D) materials;
3) Chemical waste;
4) Sewage; and
5) General refuse.

7.2 Dredged river sediment will be generated from maintenance dredging during the operation phase. Mitigation measures, where appropriate, have been recommended in the EIA Report to avoid or reduce potential adverse environmental impacts associated with handling, collection and disposal of waste arising from the construction and operation of the Contract.

7.3 Waste management will be the Contractor's responsibility and wastes produced during the construction phase will be managed in accordance with appropriate waste management practices and EPD's regulations and requirements.

7.4 Auditing of waste management practices during regular site inspections will confirm that these solid and liquid wastes generated during construction are not disposed of into the surrounding storm-water drains/river.

7.5 The Contractor will be responsible for the implementation of any mitigation measures to reduce waste or redress issues arising from the waste materials.

WASTE MANAGEMENT PRACTICE

7.6 The Contractor shall incorporate the recommended mitigation measures into a Waste Management Plan (hereinafter "the WMP") for managing the different types of wastes on site. The Contractor shall submit the WMP to DSD and the Engineer for approval prior to the commencement of the construction works.

7.7 The WMP will be prepared and implemented in accordance with ETWB TC(W) No. 19/2005 and shall be certified by the ET Leader and verified by the IEC as conforming to the information and recommendations contained in the Waste Management Impact Assessment and this Manual.

7.8 The WMP shall describe the arrangements for avoidance, re-use, recover and recycling, storage, collection, treatment and disposal of different categories of waste to be generated from construction activities and shall include the recommended mitigation measures on waste management detailed in ***Annex B*** of this Manual. The WMP shall indicate the disposal location(s) of all surplus excavated spoil and other wastes.

7.9 Prior to the commencement of dredging activities, the disposal strategy for the dredged sediment shall be determined in accordance with the *ETWB TC(W) No. 34/2002: Management of Dredged/Excavated Sediment*.

7.10 A Trip Ticket system shall be included in the WMP. Surplus excavated spoil and other wastes shall not be disposed of at any other designated disposal locations unless otherwise approved in writing by EPD, Secretary of Public Fill Committee and/or other authorities, as appropriate.

7.11 The Implementation Schedule enclosed in ***Annex B*** provides details on the appropriate mitigation measures for avoiding and preventing adverse environmental impacts associated with dredged river sediment, C&D materials, chemical wastes, general refuse and sewage from the workforce.

7.12 The WMP shall be refined and updated as more detailed information is generated on the volume of dredged river sediment and the agreed disposal arrangements.

7.13 Similarly, it should be regularly reviewed, and updated as appropriate, throughout the course of the construction works to confirm that it remains current with the latest detailed information and works practices.

7.14 The WMP shall also outline the requirements for a waste audit programme to verify that the measures outlined in the plan are effectively implemented and adhered too.

WASTE MANAGEMENT EM&A

Waste Inspection and Audit

7.15 To facilitate monitoring and control over the contractors' performance on waste management, a waste inspection and audit programme will be implemented throughout the construction phase.

7.16 The programme shall look at the aspects of waste management including waste generation, storage, recycling, transport and disposal. An appropriate audit programme shall be undertaken with the first audit conducted at the commencement of the construction works. The aims of the waste inspection and audit programme are:

1) To review the Contractor's WMP including the quantities and types of C&D materials generated, reused on-site and disposed of off-site; the amount of fill materials exported from/imported to the site and the quantity of timber used in temporary works construction for each process/activity;
2) To confirm that the wastes arising from works are handled, stored, collected, transferred and disposed of in an environmentally acceptable manner and comply with the relevant requirements under the *Waste Disposal Ordinance (WDO)* and its regulations;
3) To confirm that the Contractor(s) properly implements the appropriate environmental protection and waste pollution control mitigation measures, as outlined in the Implementation Schedule (see ***Annex B***), to reduce and control the potential for waste impacts.
4) To monitor the implementation and achievement of the WMP on-site to assess its effectiveness; and
5) To monitor the follow-up action(s) on deficiencies identified.

7.17 Joint site inspections and audits by the ET, IEC and Contractor shall be undertaken each month. Particular attention will be given to the Contractor's provision of sufficient spaces, adequacy of resources and facilities for on-site sorting and temporary storage of C&D materials.

7.18 The C&D materials to be disposed of from the site shall be visually inspected. The public fill for delivery to the government public fill reception facilities shall contain no observable non-inert materials (e.g. general refuse, timber, etc).

7.19 As a good practice, the waste to be disposed of at landfills should minimize any inert or reusable/recyclable C&D materials (e.g. soil, broken rock, metal, and paper/cardboard packaging, etc.).

7.20 Any irregularities observed during the site audits will be raised promptly to the Contractor for rectification. The findings of the waste audits will be reported in the Monthly EM&A reports.

Methodology and Criteria

7.21 The Contractor must confirm that the necessary disposal permits or licences are obtained from appropriate authorities in accordance with the various ordinances.

7.22 In addition to the monthly joint inspections/ audits, the Contractor shall designate a member of staff as being responsible for routine inspections and audits of on-site waste management practices, with reference to the relevant legislation and guidelines as well as the recommendations given in the Implementation Schedule contained in ***Annex B*** of this Manual, and defined below:

General Legislation

1) *Waste Disposal Ordinance (Cap 354);*
2) *Waste Disposal (Chemical Waste) (General) Regulation (Cap 354);*
3) *Waste Disposal (Charges for Disposal of Construction Waste) Regulation;*
4) *Land (Miscellaneous Provisions) Ordinance (Cap 28);*
5) *Public Health and Municipal Services Ordinance (Cap 132) – Public Cleansing and Prevention of Nuisances Regulations;*
6) *Dumping at Sea Ordinance (1995); and*
7) *The storage, handling and disposal of chemical waste should be audited with reference to the requirements of the Code of Practice on the Package,Labelling and Storage of Chemical Wastes published by the EPD.*

Other Relevant Guidelines

8) *Waste Disposal Plan for Hong Kong (December 1989), Planning, Environment and Lands Branch Government* Secretariat, Hong Kong Government;
9) *Chapter 9 – Environment (1999)*, Hong Kong Planning and Standards Guidelines, Hong Kong Government;
10) *New Disposal Arrangements for Construction Waste* (1992), Environmental Protection Department & Civil Engineering Department, Hong Kong Government;
11) *Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes* (1992), Environmental Protection Department, Hong Kong Government;
12) *Works Branch Technical Circular (WBTC) No. 32/92, The Use of Tropical Hard Wood on Construction Site;* Works Branch, Hong Kong Government;
13) *WBTC No. 2/93, Public Dumps*, Works Branch, Hong Kong Government;
14) *WBTC No. 2/93B, Public Filling Facilities*, Works Branch, Hong Kong Government
15) *WBTC No. 16/96, Wet Soil in Public Dumps*; Works Branch, Hong Kong Government;
16) *WBTC Nos. 4/98 and 4/98A, Use of Public Fill in Reclamation and Earth Filling Projects*; Works Bureau, Hong Kong SAR Government;
17) *Waste Reduction Framework Plan*, 1998 to 2007, Planning, Environment and Lands Bureau, Government Secretariat, 5 November 1998;
18) *WBTC Nos. 25/99, 25/99A and 25/99C, Incorporation of Information on Construction and Demolition Material Management in Public Works Subcommittee Papers; Works Bureau, Hong Kong SAR Government;*
19) *WBTC No. 12/2000, Fill Management; Works Bureau,* Hong Kong Government;
20) *WBTC No. 19/2001, Metallic Site Hoardings and Signboards, Works Bureau,* Hong Kong SAR Government*;*
21) *WBTC Nos. 6/2002 and 6/2002A, Enhanced Specification for Site Cleanliness and Tidiness,* Works Bureau, Hong Kong SAR Government;
22) *WBTC No. 11/2002, Control of Site Crusher,* Works Bureau, Hong Kong SAR Government;
23) *WBTC No. 12/2002, Specification Facilitating the Use of Recycled Aggregates.* Works Bureau, Hong Kong SAR Government;
24) *ETWB TC(W) No. 33/2002, Management of Construction and Demolition Material Including Rock;* Environment, Transport and Works Bureau, Hong Kong SAR Government;
25) *ETWB TC(W) No. 34/2002, Management of Dredged/Excavated Sediment;* Environment, Transport and Works Bureau, Hong Kong SAR Government;

26) ETWB TC(W) No. 31/2004, Trip Ticket System for Disposal of Construction &Demolition Materials, Environment, Transport and Works Bureau, Hong Kong SAR Government;

27) ETWB TC(W) No. 19/2005, Environmental Management of Construction Site, Environment, Transport and Works Bureau, Hong Kong SAR Government; and

28) WBTC No. 25/99A and 25/99C, Incorporation of Information on Construction and Demolition Material Management in Public Works Sub-committee Papers; Works Bureau, Hong Kong SAR Government.

7.23 The Contractor(s)'s waste management practices shall be audited with reference to a checklist in detail.

MITIGATION MEASURES

7.24 Details of the required mitigation measures are included within the Implementation Schedule of ***Annex B*** of this Manual.

8. CULTURAL HERITAGE

INTRODUCTION

8.1 In accordance with the recommendations of the EIA, mitigation measure has been proposed during the construction phase of the Project where applicable.

ARCHAEOLOGY

8.2 The archaeological survey identified only the secondary archaeological deposits at Chuk Yuen and Pak Fu Shan Sections (i.e. Sections 2 and 4) of the Contract. The chance of finding in situ archaeological deposits is very low. Thus no impact on significant archaeological resources is anticipated and no archaeological monitoring is required.

8.3 Other sections (i.e. Sections 1, 3 and 5) have been identified with no archaeological potential where no impact is anticipated. Thus no archaeological monitoring is required. Pursuant to the Antiquities and Monuments Ordinance, the project proponent should inform the AMO immediately in case of discovery of antiquities or supposed antiquities in the course of soil excavation works in construction stage.

8.4 However, it should be noted that the archaeological impact assessment covered only the works area assigned as at the date of this report. If the works boundary changes in later stage to cover additional area not covered in the EIA, the need for further archaeological survey and subsequent impact assessment should be reviewed and AMO should be consulted.

BUILT HERITAGE

8.5 As no direct or indirect impacts on the identified built heritage sites are anticipated due to their large separation distance from the Project Site, no mitigation measures are considered necessary. As such, no built heritage monitoring and audit is required.

9. LANDSCAPE & VISUAL

INTRODUCTION

9.1 The EIA has recommended that checking of implementation of the mitigation measures for landscape and visual resources shall be undertaken as part of the site inspections.

9.2 The implementation and maintenance of mitigation measures (see ***Annex B***) shall be checked to confirm that they are fully realized and that potential conflicts between the proposed landscape measures and any other project works and operational requirements are resolved at the earliest practical date and without compromise to the intention of the mitigation measures.

CONSTRUCTION PHASE

9.3 In accordance with the recommendations of the EIA, landscape and visual mitigation measures have been proposed during the construction phase of the Contract. Details of the mitigation measures are presented in ***Annex B*** - Implementation Schedule which shall be checked as part of the EM&A procedures during the construction phase.

OPERATION PHASE

9.4 The completed landscape works adopting ecological design on the Hong Kong side will be monitored during the one year establishment period. No specific monitoring and audit programme is required for the ecological friendly design of the flood retardation pond within the Shenzhen boundary.

10. ENVIRONMENTAL SITE INSPECTION

SITE INSPECTION

10.1 Site inspections provide a direct means to assess and confirm that the Contractor's environmental protection and pollution control measures are in compliance with the contract specifications.

10.2 The site inspection shall be undertaken routinely by the ET to verify that appropriate environmental protection and pollution control mitigation measures are properly implemented in accordance with the EIA. In addition, the ET shall be responsible for defining the scope of the inspections, detailing any deficiencies that are identified, and reporting any necessary action or additional mitigation measures that were implemented as a result of the inspection.

10.3 Regular site inspections shall be carried out by the ET each month. The IEC shall also undertake monthly site audit to assess the performance of the Contractor(s). The areas of inspection shall not be limited to the site area and shall also include the environmental conditions outside the site which are likely to be affected, directly or indirectly, by the site activities. The ET shall make reference to the following information while conducting the inspections:

- the EIA and EM&A recommendations on environmental protection and
- pollution control mitigation measures;
- ongoing results of the EM&A programme;
- work progress and programme;
- individual works methodology proposals;
- the contract specifications on environmental protection;
- the relevant environmental protection and pollution control laws; and
- previous site inspection results.

10.4 The Contractor(s) shall update the ET with relevant information on the construction works prior to carrying out the site inspections. The site inspection results shall be submitted to the IEC, DSD and the Contractor within 24 hours.

10.5 Should actions be necessary, the ET shall follow up with recommendations on improvements to the environmental protection and pollution control works and shall submit these recommendations in a timely manner to the IEC, DSD and the Contractor.

10.6 They shall also be presented, along with the remedial actions taken, in the monthly EM&A Report. The Contractor shall follow the procedures and time frame stipulated in the environmental site inspection for the implementation of mitigation proposal and the resolution of deficiencies in the Contractor's EMS.

10.7 An action reporting system shall be formulated and implemented to report on any remedial measures implemented subsequent to the site inspections. Ad hoc site inspections shall also be carried out by the ET and site audits by the IEC if significant environmental issues are identified. Inspections and audits may also be required subsequent to receipt of an environmental complaint or as part of the investigation work as specified in the EAPs for EM&A programme.

COMPLIANCE WITH LEGAL & CONTRACTUAL REQUIREMENTS

10.8 There are contractual environmental protection and pollution control requirements as well as environmental protection and pollution control laws in Hong Kong with which the construction activities will comply. In order that the works are in compliance with the contractual requirements, the works method statements submitted by the Contractor to DSD for approval will be sent to the ET for review.

10.9 The ET shall also review the progress and programme of the works to check the regulatory compliance. The Contractor shall regularly copy relevant documents to the ET so that the checking and auditing work can be carried out.

10.10 The relevant documents are expected to include at a minimum the updated Work Progress Reports, the updated Works Programme, the application letters for different licence/permits under the environmental protection laws and all valid licences/permits. The site diary shall also be available for the ET inspection upon request.

10.11 After reviewing the document, the ET shall advise the IEC, DSD and the Contractor of any non-compliance from the contractual and legislative requirements on environmental protection and pollution control for follow-up actions.

10.12 The ET shall also advise the IEC, the Contractor and DSD on the current status on licence/permit applications and any environmental protection and pollution control preparation works that may not be suitable for the works programme or may result in potential nonconformity of environmental protection and pollution control requirements.

10.13 Upon receipt of the advice, the Contractor shall undertake immediate action to remedy the situation. The ET, IEC and DSD shall follow up to confirm that appropriate action(s) shall be taken by the Contractor in order that the environmental protection and pollution control requirements are fulfilled.

ENVIRONMENTAL COMPLAINTS

10.14 The ET shall undertake the following procedures upon receipt of a complaint:

i. log complaint and date of receipt into the complaint database and inform the IEC immediately;
ii. investigate the complaint and discuss with the Contractor(s) and DSD to determine its validity and to assess whether the source of the issue is due to works activities;
iii. if a complaint is considered valid due to the works , the ET will identify mitigation measures in consultation with the Contractor, DSD and IEC;
iv. if mitigation measures are required, the ET shall advise the Contractor(s) accordingly;
v. review the Contractor(s)'s response on the identified mitigation measures and the updated situation;
vi. if the complaint is transferred from EPD, an interim report shall be submitted to EPD on the status of the complaint investigation and follow-up action within the time frame assigned by EPD;
vii. undertake additional monitoring and audit to verify the situation if necessary and confirm that any valid reason for complaint does not recur;
viii. report the investigation results and the subsequent actions on the source of the complaint for responding to complainant. If the source of complaint is EPD, the results shall be reported within the time frame assigned by EPD; and
ix. record the complaint, investigation, the subsequent actions and the results in the monthly EM&A Reports.

10.15 During the complaint investigation work, the ET, Contractor(s) and DSD shall cooperate with the IEC in providing the necessary information and assistance for completion of the investigation. If mitigation measures are identified in the investigation, the Contractor(s) shall promptly carry out the mitigation measures. DSD will approve the proposed mitigation measures and the ET and IEC shall check that the measures have been carried out by the Contractor.

LOG-BOOK

10.16 The ET Leader shall keep a contemporaneous log-book of each and every instance or circumstance or change of circumstances which may affect the environmental impact assessment and non-compliance of each from the recommendations of the EIA report or the conditions of the EP.

10.17 The ET Leader shall notify the IEC within one working day of the occurrence of any such instance or circumstance or change of circumstance. The ET Leader's log-book shall be kept readily available for inspection by persons assisting in supervision of the implementation of the EIA Report recommendations such as DSD, IEC and Contractor and the EP or by EPD or his authorized officers.

11. REPORTING

GENERAL

11.1 Reports can be provided in an electronic medium upon agreement on the format with DSD and EPD.

11.2 The monitoring data (baseline and impact) shall also be made available through a dedicated internet website that shall be agreed with relevant authority.

11.3 Types of reports that the ET Leader shall prepare and submit include Baseline Monitoring Report, Monthly EM&A Reports, Quarterly EM&A Summary Reports and Annual EM&A Report and Final EM&A Review Report.

11.4 In accordance with *Annex 21* of the *EIAO-TM*, a copy of the monthly, quarterly summary and final review EM&A reports shall be made available to the DEP.

BASELINE MONITORING REPORT

11.5 In respect of the construction phase EM&A works, the ET shall prepare and submit a Baseline Monitoring Report no less than 2 weeks before commencement of the works for the Project for agreement on the A/L Levels.

11.6 Copies of the Baseline Monitoring Report shall be submitted to the following: the Contractor(s), the IEC, DSD and the EPD as appropriate. The ET shall liaise with the relevant parties on the exact number of copies required.

11.7 The Baseline Monitoring Report for the construction phase shall cover the baseline dust and noise levels. It will include at least the following:

1) Up to half a page executive summary.
2) Brief project background information.
3) Drawings showing locations of the baseline monitoring stations.
4) Monitoring results (in both hard and diskette copies) together with the following information:
   a) monitoring methodology;
   b) name of laboratory and types of equipment used and calibration details;
   c) parameters monitored;
   d) monitoring locations (and depth if applicable);
   e) monitoring date, time, frequency and duration; and
   f) QA/QC results and detection limits.
5) Details on influencing factors, including:
   a) major activities, if any, being carried out on the site during the period;
   b) weather conditions during the period; and
   c) other factors which might affect the results.
6) Determination of the A/L Levels for each monitoring parameter and statistical analysis of the baseline data, the analysis shall conclude if there is any significant difference between control and impact stations for the parameters monitored;
7) Revisions for inclusion in the Manual; and
8) Comments, recommendations and conclusions.

MONTHLY EM&A REPORT

11.8 The results and findings of the construction phase EM&A work required in this Manual will be recorded in the Monthly EM&A Reports prepared by the ET Leader.

11.9 The EM&A report shall be prepared and submitted within 2 weeks of the end of each reporting month, with the first report due the month after construction commences.

11.10 Each Monthly EM&A Report shall be submitted to the following parties: the Contractor, the IEC, DSD and the EPD, as well as to other relevant departments as required. Before submission of the first Monthly EM&A Report, the ET shall liaise with the parties on the exact number of copies and format of the reports in both hard copy and electronic medium.

11.11 The ET Leader shall review the number and location of monitoring stations and parameters every six months, or on as needed basis, in order to cater for any changes in the surrounding environment and the nature of works in progress.

CONTENTS OF FIRST MONTHLY EM&A REPORT

11.12 The first EM&A Monthly Report should comprise

1) 1-2 pages executive summary, comprising:
   a) breaches of AL levels;
   b) complaint Log;
   c) notifications of any summons and successful prosecutions;
   d) reporting changes; and
   e) forecast of impact predictions.
2) Basic project information including a synopsis of the project organisation, programme and management structure, and a drawing of the Project area showing the environmentally sensitive receivers and the locations of monitoring and control stations, programme, management structure and the work undertaken during the month.
3) Environmental Status, comprising:
   a) works undertaken during the month with illustrations (such as location of works, daily dredging/filling rates, percentage fines in the fill material used); and
   b) drawing showing the project area, any environmental sensitive receivers and the locations of the monitoring and control stations.
4) A brief summary of EM&A requirements including:
   a) monitoring parameters;
   b) environmental quality performance limits (A/L levels);
   c) EAP;
   d) environmental mitigation measures, as recommended in the EIA Report; and
   e) environmental requirements in contract documents.
5) Advice on the implementation of environmental protection, mitigation and pollution control measures as recommended in the EIA Report and summarised in the updated implementation schedule.
6) Monitoring results (in both hard and diskette copies) together with the following information:
   a) monitoring methodology;
   b) name of laboratory and equipment used and calibration details;
   c) parameters monitored;
   d) monitoring locations (and depth); and
   e) monitoring date, time, frequency, and duration;
7) Graphical plots of trends of monitored parameters for representative monitoring stations annotated against the following:
   a) major activities being carried out on site during the period;

b) weather conditions during the period; and
c) any other factors which might affect the monitoring results;

8) Advice on the solid and liquid wastes management.

9) A summary of non-compliance (exceedances) of the environmental quality performance limits (A/L levels).

10) A review of the reasons for and the implications of non-compliance including a review of pollution sources and working procedures.

11) A description of the actions taken in the event of non-compliance and deficiency reporting and any follow-up procedures related to earlier non-compliance.

12) A summary record of complaints received (written or verbal) for each media, including locations and nature of complaints, liaison and consultation undertaken, actions and follow-up procedures taken and summary of complaints.

13) A summary record of notifications of summons, successful prosecutions for breaches of environmental protection/pollution control legislation and actions to rectify such breaches.

14) A forecast of the works programme, impact predictions and monitoring schedule for the next one month; and

15) Comments, recommendations and conclusions for the monitoring period.

CONTENTS OF THE SUBSEQUENT MONTHLY EM&A REPORTS

11.13 The subsequent EM&A Monthly Report should comprise

1) Title page. Executive summary (1-2 pages), including:
   a) breaches of Action and Limit levels;
   b) complaint log;
   c) notifications of any summons and successful prosecutions;
   d) reporting changes; and
   e) forecast of impact predictions.
2) Title page. Executive summary (1-2 pages), including:

11.14 Environmental status, comprising:

1) drawing showing the Project area, any environmental sensitive receivers and the locations of the monitoring and control stations;
   a) summary of non-compliance with the environmental quality performance limits; and
   b) summary of complaints.
2) Environmental issues and actions, comprising:
   a) review issues carried forward and any follow-up procedures related to earlier non-compliance (complaints and deficiencies);
   b) description of the actions taken in the event of non-compliance and deficiency reporting;
   c) recommendations (should be specific and target the appropriate party for action); and
   d) implementation status of the mitigation measures and the corresponding effectiveness of the measures.
3) Appendices, including:
   a) A/L levels;
   b) graphical plots of trends of monitored parameters at key stations over the past reporting month for representative monitoring stations
   c) annotated against the following: major activities being carried out on site during the period; weather conditions during the period; and any other factors which might affect the monitoring results;
   d) - monitoring schedule for the present and next reporting period;
   e) - cumulative complaints statistics; and
   f) - details of complaints, outstanding issues and deficiencies.

QUARTERLY EM&A SUMMARY REPORTS

11.15 The ET Leader shall submit Quarterly EM&A Summary Reports for the construction phase EM&A works only. These reports shall contain at least the following information:

1) Up to half a page executive summary.
2) Basic project information including a synopsis of the Project organization, programme, contacts of key management, compliance with EP condition (status of submission) and a synopsis of work undertaken during the quarter.
3) A brief summary of EM&A requirements including:
   a) monitoring parameters;
   b) environmental quality performance limits (A/L levels); and
   c) environmental mitigation measures, as recommended in the EIA Report.
4) Advice on the implementation of environmental protection and pollution control/mitigation measures as recommended in the EIA Report and summarised in the updated Implementation Schedule.
5) Drawings showing the Project area, any environmental sensitive receivers and the locations of the monitoring and control stations.
6) Graphical plots of the trends of monitored parameters over the past four months (the last month of the previous quarter and the present quarter) for representative monitoring stations annotated against:
   a) the major activities being carried out on site during the period;
   b) weather conditions during the period; and
   c) any other factors which might affect the monitoring results.
7) Advice on the solid and liquid wastes management.
8) A summary of non-compliance (exceedances) of the environmental quality performance limits (A/L levels).
9) An Impact Prediction Review will be prepared to compare project predictions with actual impacts for the purpose of assessing the accuracy of predictions on the EIA study. The review will focus on the comparison between the EIA study predictions with the EM&A monitoring results. If any excessive variation was found, a summary of investigation and follow up procedure taken shall be addressed accordingly.
10) A brief review of the reasons for and the implications of non-compliance including review of pollution sources and working procedures.
11) A summary description of the actions taken in the event of noncompliance and any follow-up procedures related to earlier noncompliance.
12) A summarised record of complaints received (written or verbal) for each media, liaison and consultation undertaken, actions and follow-up procedures taken.
13) Comments (e.g. effectiveness and efficiency of the mitigation measures), recommendations (e.g. any improvement in the EM&A programme) and conclusions for the quarter.
14) Proponents' contacts for the public to make enquiries.

ANNUAL/ FINAL EM&A REVIEW REPORTS

11.16 An Annual EM&A Report shall be prepared by the ET at the end of each construction year during the course of the Project. A Final EM&A Review Report shall be prepared by the ET at the end of the construction phase.

11.17 An Annual/final EM&A Review Reports shall contain at least the following information:

1) Executive Summary (1-2 pages).
2) Drawings showing the project area any environmental sensitive receivers and the locations of the monitoring and control stations.
3) Basic project information including a synopsis of the project organization, contacts for key management staff and a synopsis of work undertaken during the course of the Contract..
4) A brief summary of EM&A requirements including:
   a) environmental mitigation measures as recommended in the EIA Report;

b) environmental impact hypotheses tested;
c) environmental quality performance limits (A/L Levels);
d) monitoring parameters; and
e) EAP.

5) A summary of the implementation status of environmental protection and pollution control/mitigation measures as recommended in the EIA Report and summarised in the updated Implementation Schedule.
6) Graphical plots and the statistical analysis of the trends of monitored parameters over the course of the project including the post-project
7) Monitoring for monitoring stations annotated against the following:
   a) the major activities being carried out on site during the period;
   b) weather conditions during the period; and
   c) any other factors which might affect the monitoring results;
8) A summary of non-compliance (exceedances) of the environmental quality performance limits (A/L levels). A review of the reasons for and the implications of non-compliance including review of pollution sources and working procedures as appropriate.
9) A description of the actions taken in the event of non-compliance.
10) A summary record of complaints received (written or verbal) for each media, liaison and consultation undertaken, actions and follow-up procedures taken.
11) A summary record of notifications of summonses and successful prosecutions for breaches of the current environmental protection/pollution control legislations, locations and nature of the breaches investigation, follow-up actions taken and results.
12) A comparison of the EM&A data with the EIA predictions with annotations and explanations for any discrepancies, including a review of the validity of EIA predictions and identification of shortcomings in the EIA recommendations.
13) A review of the monitoring methodology adopted and with the benefit of hindsight, comment on its effectiveness, including cost effectiveness;
14) A review of the success of the EM&A programmes, including a review of the effectiveness and efficiency of the mitigation measures, and recommendations for any improvements in the EM&A programme.
15) A clear cut statement on the environmental acceptability of the project with reference to specific impact hypotheses and a conclusion to state the return to ambient and/or the predicted scenario as the EIA findings.

DATA KEEPING

11.18 The site documents such as the monitoring field records, laboratory analysis records, site inspection forms, etc. are not required to be included in the EM&A Reports for submission. However, the documents shall be kept by the ET Leader and be ready for inspection upon request.

11.19 Relevant information shall be clearly and systematically recorded in the documents. The monitoring data shall also be recorded in magnetic media, and the software copy shall be available upon request. The documents and data shall be kept for at least one year after the completion of the Project work.

ELECTRONIC REPORTING OF EM&A INFORMATION

11.20 To enable the public inspection of the Baseline Monitoring Report and Monthly EM&A Reports via the EIAO Internet Website and at the EIAO Register Office, electronic copies of Monthly EM&A Reports shall be prepared in Hyper Text Markup Language (HTML) (version 4.0 or later) and in Portable Document Format (PDF, version 4.0 or later), unless otherwise agreed by EPD and shall be submitted at the same time as the hard copies.

11.21 For the HTML version, a content page capable of providing hyperlink to each section and sub-section of the EM&A Reports shall be included in the beginning of the document. Hyperlinks to figures, drawings and tables in the EM&A Reports shall be provided in the main text where the respective references are made.

11.22 Graphics in the reports shall be in interlaced GIF format unless otherwise agreed by EPD. The content of the electronic copies of the Monthly EM&A Reports must be the same as the hard copies. The internet address and the environmental monitoring data shall be made available to the public via the EIAO Internet Website and the EIAO Register Office. The internet website as described above will enable user friendly public access to the monitoring data and with features capable of:

1) providing access to environmental monitoring data collected since the commencement of works;
2) searching by data;
3) searching by types of monitoring data;
4) hyperlinks to relevant monitoring data after searching; and
5) or otherwise as agreed by EPD.

INTERIM NOTIFICATION OF ENVIRONMENTAL QUALITY LIMIT EXCEEDANCES

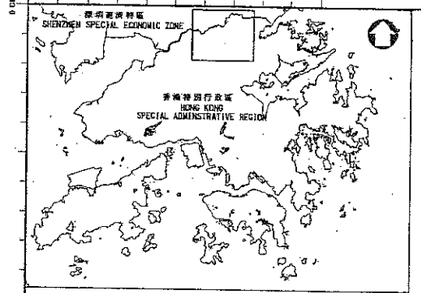
11.23 With reference to EAPs, when the environmental quality limits are exceeded, the ET shall notify the IEC, Contractor(s), DSD and EPD as appropriate within 24 hours of the identification of the exceedance. The notification shall be followed up with each party on the results of the investigation, proposed action and success of the action taken, with any necessary follow-up proposals.

ANNEX A

LOCATION AND ALIGNMENT

OF THE CONTRACT COMPONENTS

<Gen. Info.>



KEY PLAN
SCALE 1 : 500000

PORTION A, B AND C OF THE SITE
(FOR DETAILS AND GENERAL LAYOUTS
REFER TO DRAWING NO.
DDP/DC1106/11011-11012 AND 11021-11026)

WORKS AREA
(REFER TO DRAWING NO. DDP/DC1106/01021)

PORTION E OF THE SITE
(FOR GENERAL LAYOUT REFER TO
DRAWING NO. DDP/DC1106/11011)

PORTION D OF THE SITE
(FOR GENERAL LAYOUT REFER TO
DRAWING NO. DDP/DC1106/31011)

NOTES :

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.
2. ALL LEVELS REFER TO P.D.H.K. AND ARE IN METRES.
3. ALL GRIDS REFER TO HONG KONG 1980 GRID.

FOR TENDER PURPOSES ONLY

no.	date	description	initial
REVISION			

	name	date
designed	K. W. LI	28 NOV 2011
drawn	H. K. LAI	28 NOV 2011
checked	W. H. POON	28 NOV 2011
vetted	T. C. LAU	28 NOV 2011
approved	K. L. TSANG Ag. Chief Engineer	28 NOV 2011 Date

contract no. DC/2011/06

file no. DP/8/5018GB

project no. 5018GB

contract

REPROVISIONING OF BOUNDARY PATROL ROAD AND ASSOCIATED SECURITY FACILITIES BETWEEN PING YUEN RIVER AND PAK FU SHAN AND DRAINAGE WORKS IN NORTH DISTRICT

drawing title

PORTION OF THE SITE

drawing no. DDP/DC1106/01011

scale 1 : 15 000 OR AS SHOWN

office

DRAINAGE PROJECTS DIVISION

DRAINAGE SERVICES DEPARTMENT
GOVERNMENT OF THE
HONG KONG
SPECIAL ADMINISTRATIVE REGION

TR_Grey_Oce300_cawp.pit PLOTPEN.TBL

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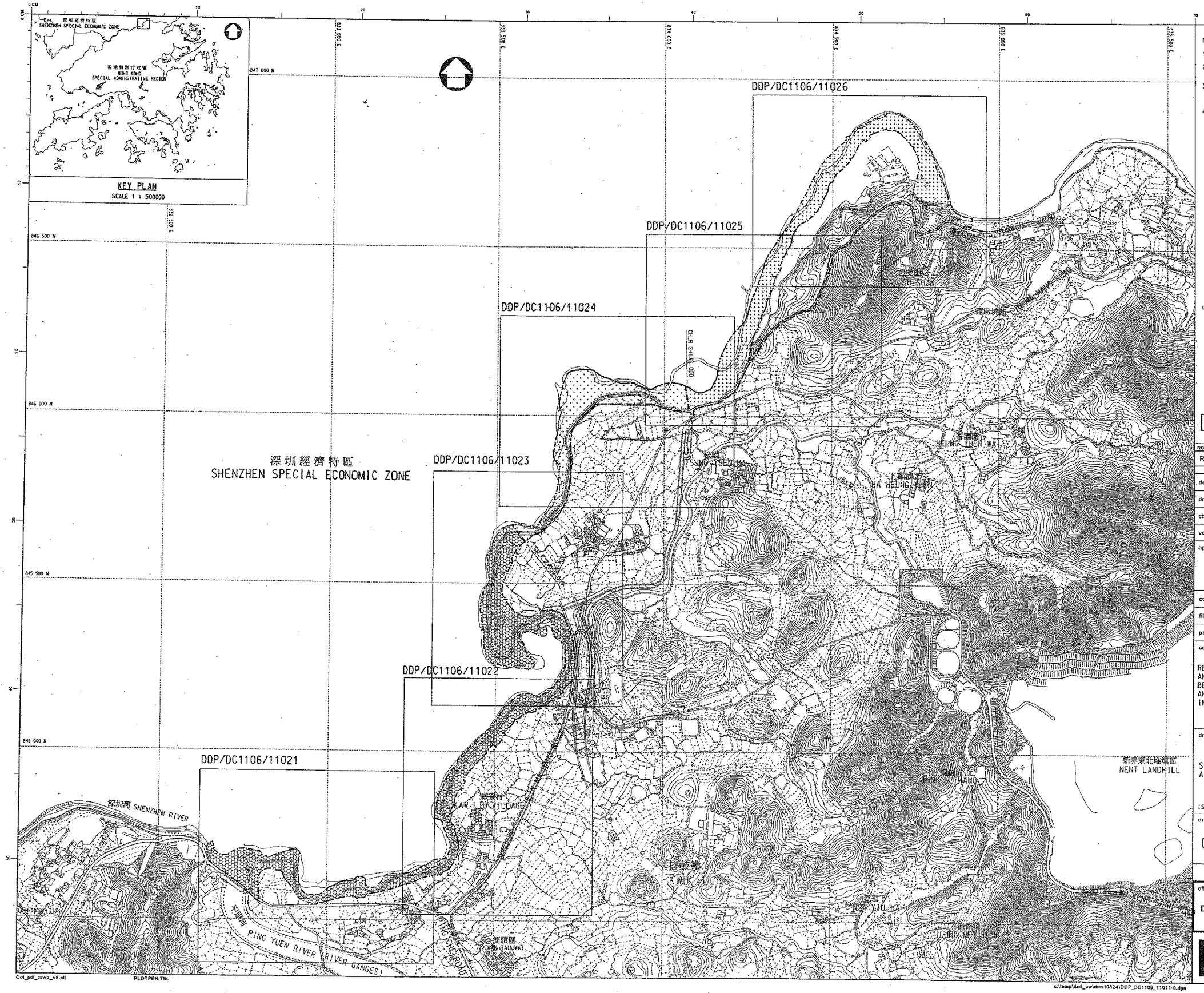

NOTES :

1. GRID LINES ARE HONG KONG GRID 1980.
2. ALL LEVELS ARE IN METRES AND REFERRED TO H.K.P.D.
3. FOR SETTING OUT DETAILS OF SITE LIMIT, REFER TO DRAWING NO. DDP/DC1106/11141 TO DDP/DC1106/11157.
4. FOR DETAILS OF AREAS B1, B2 B3 & B4 REFERR TO DRAWING NO. DDP/DC1106/11012.

LEGEND :

- LIMIT OF THE SITE
- PROTION A
- PROTION B
- AREA B1
- AREA B2
- AREA B3
- AREA B4
- PROTION C

CH.R 24050.000 CHAINAGE FOR BORDER ROAD

FOR TENDER PURPOSES ONLY

no.	date	description	initial
REVISION			

	name	date
designed	K. W. LI	28 NOV 2011
drawn	H. K. LAI	28 NOV 2011
checked	W. H. POON	28 NOV 2011
vetted	T. C. LAU	28 NOV 2011

approved

K. L. TSANG 28 NOV 2011
Ag. Chief Engineer Date

contract no. DC/2011/06

file no. DP/8/5018GB

project no. 5018GB

contract

REPROVISIONING OF BOUNDARY PATROL ROAD AND ASSOCIATED SECURITY FACILITIES BETWEEN PING YUEN RIVER AND PAK FU SHAN AND DRAINAGE WORKS IN NORTH DISTRICT

drawing title

SCOPE OF WORKS AT PORTION A, B AND C OF THE SITE

(SHEET 1 OF 2)

drawing no. DDP/DC1106/11011

scale 1 : 5 000

office

DRAINAGE PROJECTS DIVISION

DRAINAGE SERVICES DEPARTMENT
GOVERNMENT OF THE
HONG KONG
SPECIAL ADMINISTRATIVE REGION

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A1 841x594

深圳市
SHENZHEN SHI

深圳河 SHENZHEN RIVER

AREA B4

AREA B3

AREA B2

AREA B1

846089.717 N
834061.685 E

846011.365 N
834075.904 E

CH.R 2+838.000

CH.R 2+050.000

845674.632 N
833546.198 E

845625.234 N
833585.491 E

打鼓嶺
TA KWU LING

LIN MA HANG ROAD 麻坑路

NOTES :

1. GRID LINES ARE HONG KONG GRID 1980.
2. ALL LEVELS ARE IN METRES AND REFERRED TO H.K.P.D.
3. FOR SETTING OUT DETAILS OF SITE LIMIT, REFER TO DRAWING NO. DDP/DC1106/11141 TO DDP/DC1106/11157.

LEGEND :

- LIMIT OF THE SITE
- PROPOSED BOUNDARY PATROL ROAD
- EXISTING BOUNDARY PATROL ROAD
- PROTION A
- PROTION B
- AREA B1
- AREA B2
- AREA B3
- AREA B4
- PROTION C

CH.R 2+050.000 CHAINAGE FOR BORDER ROAD

FOR TENDER PURPOSES ONLY

no.	date	description	initial
REVISION			

	name	date
designed	K. W. LI	28 NOV 2011
drawn	H. K. LAI	28 NOV 2011
checked	W. H. POON	28 NOV 2011
vetted	T. C. LAU	28 NOV 2011

approved

K. L. TSANG — Ag. Chief Engineer — 28 NOV 2011 Date

contract no. DC/2011/06

file no. DP/8/5018GB

project no. 5018GB

contract

REPROVISIONING OF BOUNDARY PATROL ROAD AND ASSOCIATED SECURITY FACILITIES BETWEEN PING YUEN RIVER AND PAK FU SHAN AND DRAINAGE WORKS IN NORTH DISTRICT

drawing title

SCOPE OF WORKS AT PORTION A, B AND C OF THE SITE

(SHEET 2 OF 2)

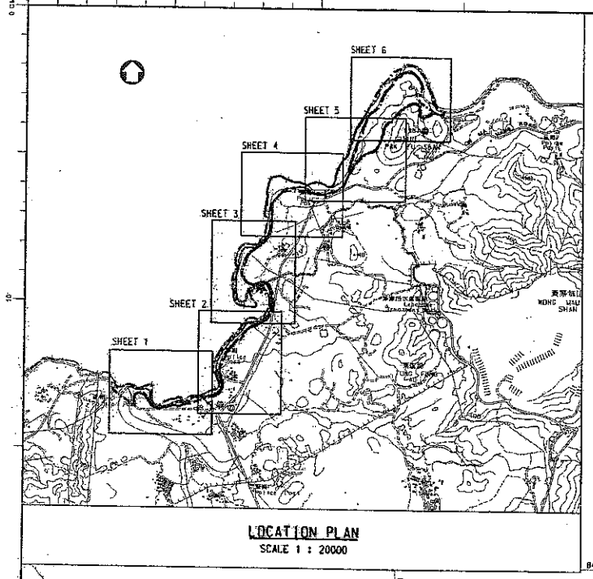
drawing no. DDP/DC1106/11012

scale 1 : 1 000

office

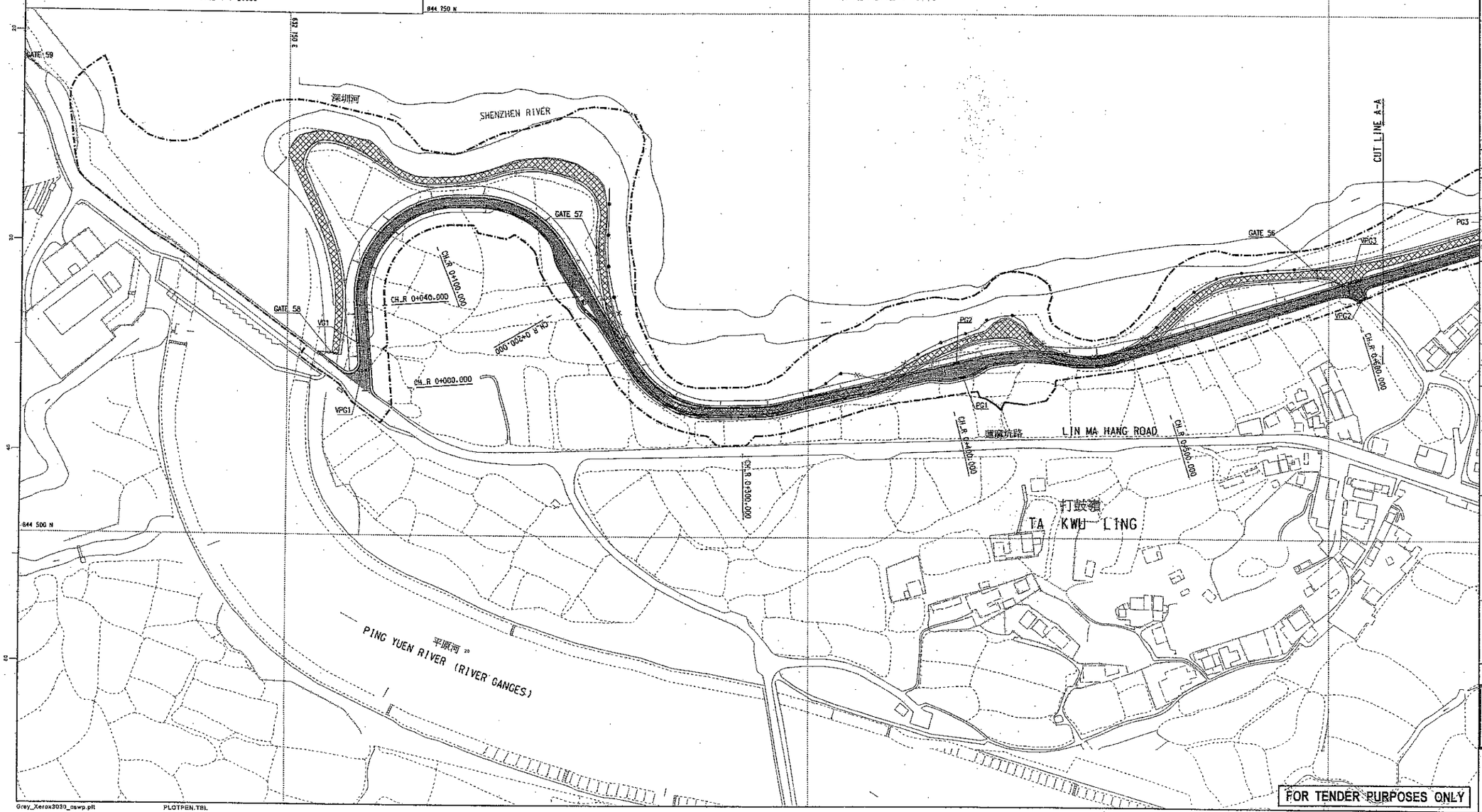
DRAINAGE PROJECTS DIVISION

DRAINAGE SERVICES DEPARTMENT
GOVERNMENT OF THE
HONG KONG
SPECIAL ADMINISTRATIVE REGION



LOCATION PLAN
SCALE 1 : 20000

深圳市
SHENZHEN SHI



NOTES :

1. GRID LINES ARE HONG KONG GRID 1980.
2. ALL LEVELS ARE IN METRES AND REFERRED TO H.K.P.D.

LEGEND :

- LIMIT OF THE SITE
- EXISTING BOUNDARY PATROL ROAD
- EXISTING BOUNDARY PATROL ROAD TO BE RECONSTRUCTED
- PROPOSED BOUNDARY PATROL ROAD
- PROPOSED XPM MESH PRIMARY BOUNDARY FENCE
- PROPOSED XPM MESH SECONDARY BOUNDARY FENCE
- EXISTING BOUNDARY FENCE AND ASSOCIATED LAMP POST AND PILLAR BOX
- EXISTING BOUNDARY FENCE AND ASSOCIATED LAMP POST AND PILLAR BOX TO BE DEMOLISHED UPON SATISFACTORY COMPLETION OF PROPOSED PRIMARY FENCE AND/ OR WITH INSTRUCTIONS FROM THE ENGINEER
- EXISTING XPM MESH PRIMARY BOUNDARY FENCE TO BE MODIFIED
- EXISTING CHAIN LINK FENCE
- EXISTING CHAIN LINK FENCE TO BE DEMOLISHED
- PROPOSED CUT SLOPE
- PROPOSED FILL SLOPE
- CH_R 0+400.000 CHAINAGE FOR BOUNDARY ROAD
- PROPOSED VEHICULAR AND PEDESTRIAN GATE (VPG)
- PROPOSED VEHICULAR GATE (VG)
- PROPOSED PEDESTRIAN GATE (PG)
- EXISTING GATE
- EXISTING GATE TO BE DEMOLISHED
- PILLAR BOX
- SWITCH ROOM

no.	date	description	initial

REVISION

	name	date
designed	C. F. CHAN	28 NOV 2011
drawn	T. M. LEE	28 NOV 2011
checked	W. H. POON	28 NOV 2011
vetted	T. C. LAU	28 NOV 2011

approved

K. L. TSANG — Ag. Chief Engineer — 28 NOV 2011 — Date

contract no. DC/2011/06

file no. DP/8/5018GB

project no. 5018GB

contract

REPROVISIONING OF BOUNDARY PATROL ROAD AND ASSOCIATED SECURITY FACILITIES BETWEEN PING YUEN RIVER AND PAK FU SHAN AND DRAINAGE WORKS IN NORTH DISTRICT

drawing title

GENERAL LAYOUT

(SHEET 1 OF 6)

drawing no. DDP/DC1106/11021

scale 1 : 1 000

office

DRAINAGE PROJECTS DIVISION

DRAINAGE SERVICES DEPARTMENT
GOVERNMENT OF THE
HONG KONG
SPECIAL ADMINISTRATIVE REGION

FOR TENDER PURPOSES ONLY

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A1 841x594

CUT LINE A-A

EXISTING HKPF LO FONG BRIDGE POST TO BE MAINTAINED

REPROVISION OF HKPF LO FONG BRIDGE POST

深圳市
SHENZHEN SHI

打鼓嶺
TA KWU LING

LIN MA HANG ROAD

CUT LINE B-B

833 250 E

833 500 E

NOTES :

1. FOR GENERAL NOTES & LEGEND, REFER TO DRG. No. DDP/DC1106/11021.

FOR TENDER PURPOSES ONLY

no.	date	description	initial
REVISION			

	name	date
designed	C. F. CHAN	28 NOV 2011
drawn	T. M. LEE	28 NOV 2011
checked	W. H. POON	28 NOV 2011
vetted	T. C. LAU	28 NOV 2011

approved

K. L. TSANG
Ag. Chief Engineer — Date: 28 NOV 2011

contract no. DC/2011/06

file no. DP/8/5018GB

project no. 5018GB

contract

REPROVISIONING OF BOUNDARY PATROL ROAD AND ASSOCIATED SECURITY FACILITIES BETWEEN PING YUEN RIVER AND PAK FU SHAN AND DRAINAGE WORKS IN NORTH DISTRICT

drawing title

GENERAL LAYOUT

(SHEET 2 OF 6)

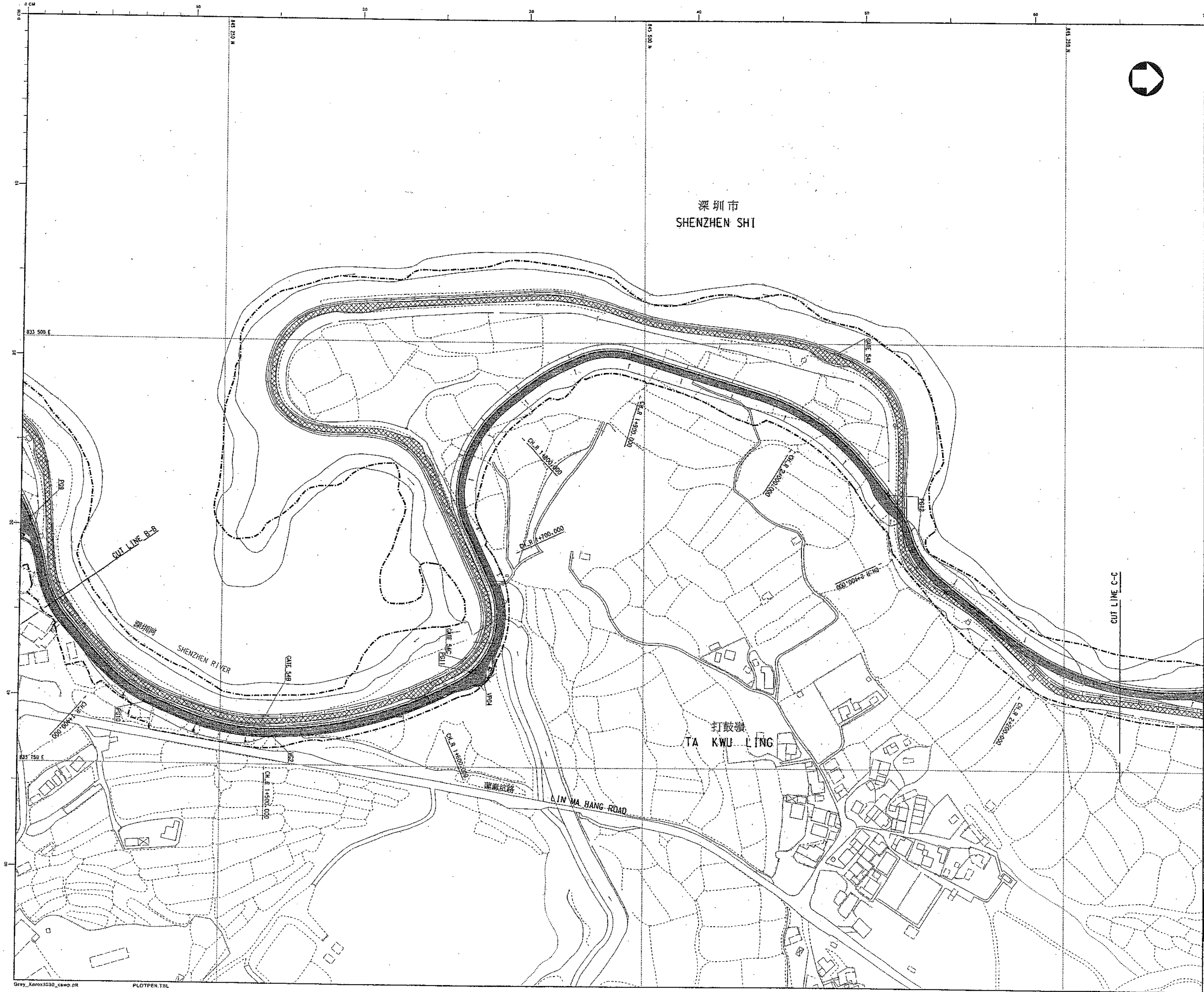
drawing no. DDP/DC1106/11022

scale 1 : 1 000

office

DRAINAGE PROJECTS DIVISION

DRAINAGE SERVICES DEPARTMENT
GOVERNMENT OF THE
HONG KONG
SPECIAL ADMINISTRATIVE REGION



NOTES:

1. FOR GENERAL NOTES & LEGEND. REFER TO DRG. No. DDP/DC1106/11021.

FOR TENDER PURPOSES ONLY

no.	date	description	initial
REVISION			

	name	date
designed	C. F. CHAN	28 NOV 2011
drawn	T. M. LEE	28 NOV 2011
checked	W. H. POON	28 NOV 2011
vetted	T. C. LAU	28 NOV 2011
approved	K. L. TSANG Ag. Chief Engineer	28 NOV 2011 Date

contract no. DC/2011/06

file no. DP/8/5018GB

project no. 5018GB

contract

REPROVISIONING OF BOUNDARY PATROL ROAD AND ASSOCIATED SECURITY FACILITIES BETWEEN PING YUEN RIVER AND PAK FU SHAN AND DRAINAGE WORKS IN NORTH DISTRICT

drawing title

GENERAL LAYOUT

(SHEET 3 OF 6)

drawing no. DDP/DC1106/11023

scale 1 : 1 000

office

DRAINAGE PROJECTS DIVISION

DRAINAGE SERVICES DEPARTMENT
GOVERNMENT OF THE
HONG KONG
SPECIAL ADMINISTRATIVE REGION

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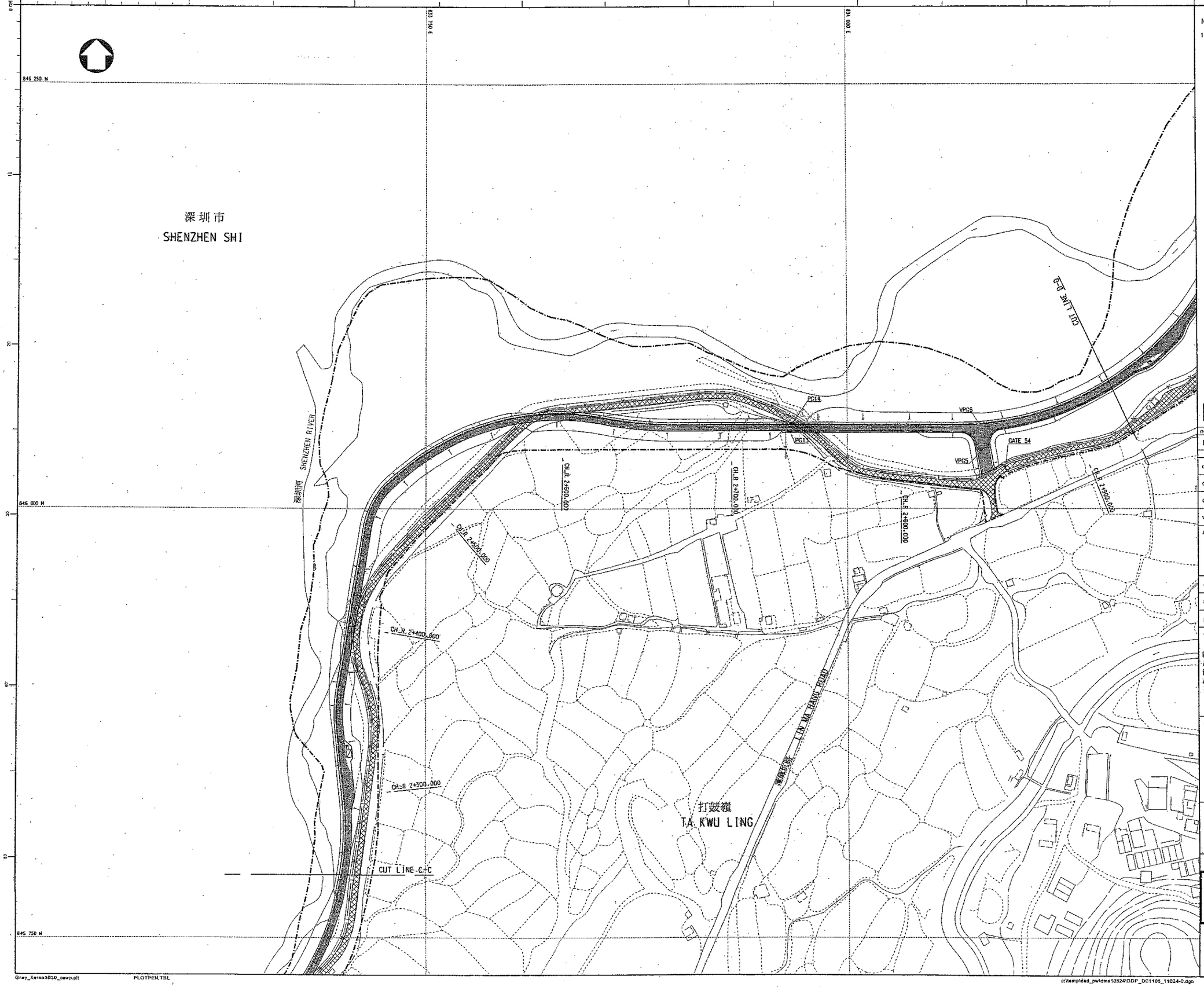


NOTES :

1. FOR GENERAL NOTES & LEGEND, REFER TO DRG. No. DDP/DC1106/11021.

FOR TENDER PURPOSES ONLY

no.	date	description	initial
REVISION			

	name	date
designed	C. F. CHAN	28 NOV 2011
drawn	T. N. LEE	28 NOV 2011
checked	W. H. POON	28 NOV 2011
vetted	T. C. LAU	28 NOV 2011

approved

K. L. TSANG — Ag. Chief Engineer — 28 NOV 2011 Date

contract no.	DC/2011/06
file no.	DP/8/5018GB
project no.	5018GB

contract

REPROVISIONING OF BOUNDARY PATROL ROAD AND ASSOCIATED SECURITY FACILITIES BETWEEN PING YUEN RIVER AND PAK FU SHAN AND DRAINAGE WORKS IN NORTH DISTRICT

drawing title

GENERAL LAYOUT

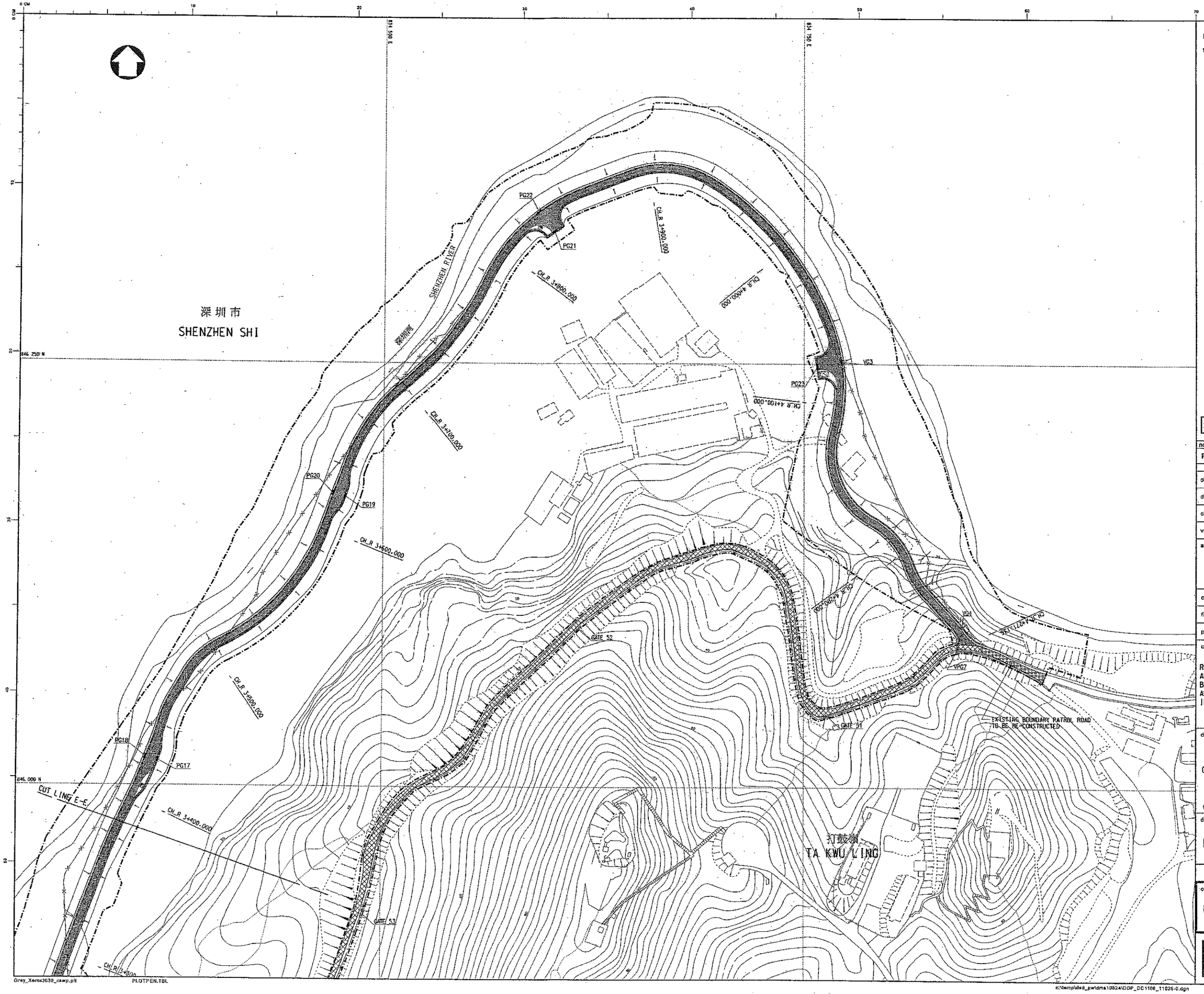
(SHEET 4 OF 6)

drawing no.	scale
DDP/DC1106/11024	1 : 1 000

office

DRAINAGE PROJECTS DIVISION

DRAINAGE SERVICES DEPARTMENT
GOVERNMENT OF THE
HONG KONG
SPECIAL ADMINISTRATIVE REGION



NOTES :

1. FOR GENERAL NOTES & LEGEND, REFER TO DRG. No. DDP/DC1106/11021.

FOR TENDER PURPOSES ONLY

no.	date	description	initial

REVISION

	name	date
designed	C. F. CHAN	28 NOV 2011
drawn	T. M. LEE	28 NOV 2011
checked	W. H. POON	28 NOV 2011
vetted	T. C. LAU	28 NOV 2011

approved

K. L. TSANG, Ag. Chief Engineer — 28 NOV 2011 Date

contract no. DC/2011/06

file no. DP/8/5018GB

project no. 5018GB

contract

REPROVISIONING OF BOUNDARY PATROL ROAD AND ASSOCIATED SECURITY FACILITIES BETWEEN PING YUEN RIVER AND PAK FU SHAN AND DRAINAGE WORKS IN NORTH DISTRICT

drawing title

GENERAL LAYOUT

(SHEET 6 OF 6)

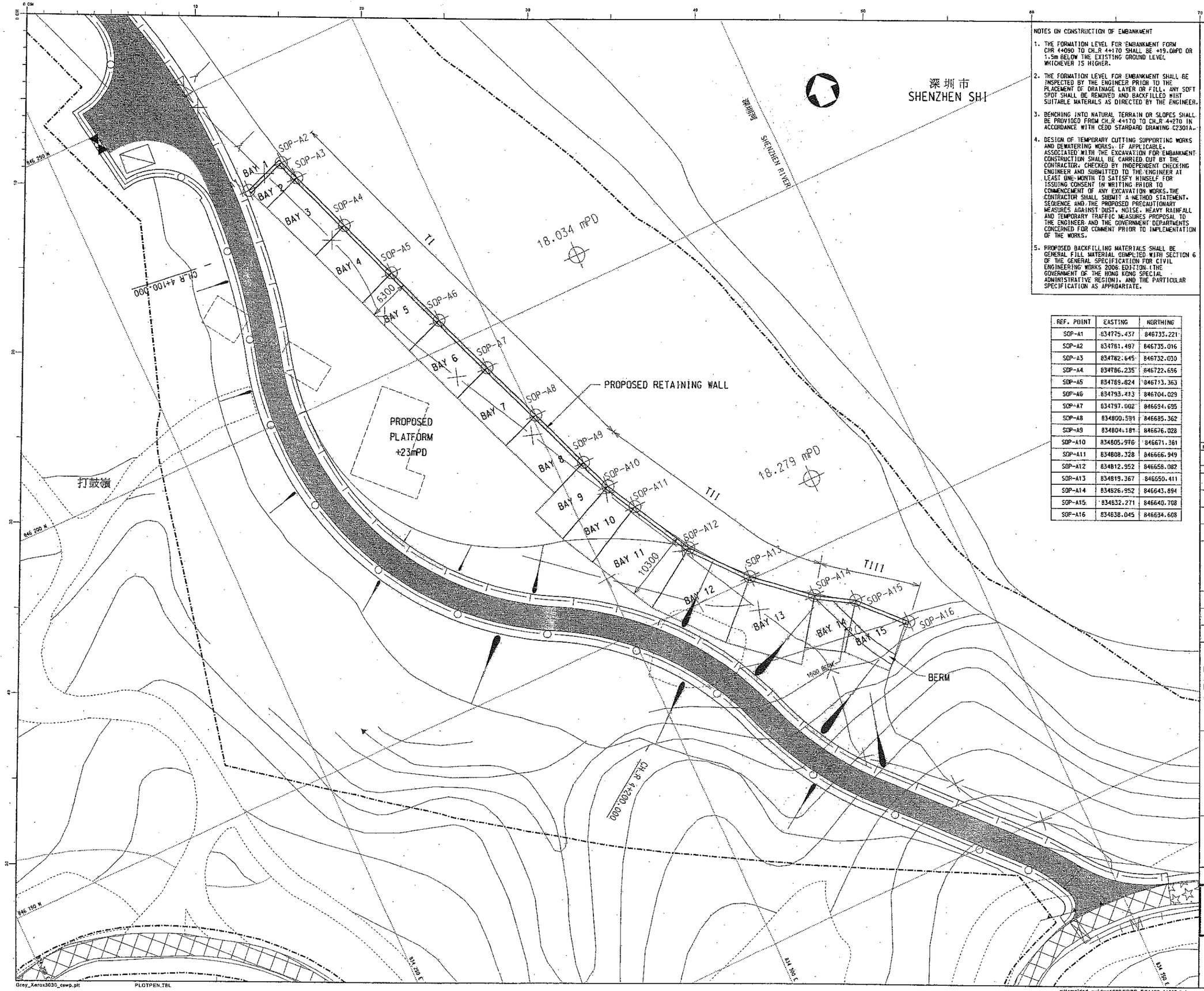
drawing no. DDP/DC1106/11026

scale 1 : 1 000

office

DRAINAGE PROJECTS DIVISION

DRAINAGE SERVICES DEPARTMENT
GOVERNMENT OF THE
HONG KONG
SPECIAL ADMINISTRATIVE REGION



NOTES ON CONSTRUCTION OF EMBANKMENT

1. THE FORMATION LEVEL FOR EMBANKMENT FORM CHR 4+090 TO CH_R 4+170 SHALL BE +19.0mPD OR 1.5m BELOW THE EXISTING GROUND LEVEL WHICHEVER IS HIGHER.
2. THE FORMATION LEVEL FOR EMBANKMENT SHALL BE INSPECTED BY THE ENGINEER PRIOR TO THE PLACEMENT OF DRAINAGE LAYER OR FILL. ANY SOFT SPOT SHALL BE REMOVED AND BACKFILLED WITH SUITABLE MATERALS AS DIRECTED BY THE ENGINEER.
3. BENCHING INTO NATURAL TERRAIN OR SLOPES SHALL BE PROVIDED FROM CH_R 4+170 TO CH_R 4+270 IN ACCORDANCE WITH CEDD STARDARD DRAWING C2301A.
4. DESIGN OF TEMPORARY CUTTING SUPPORTING WORKS AND DEWATERING WORKS, IF APPLICABLE, ASSOCIATED WITH THE EXCAVATION FOR EMBANKMENT CONSTRUCTION SHALL BE CARRIED OUT BY THE CONTRACTOR, CHECKED BY INDEPENDENT CHECKING ENGINEER AND SUBMITTED TO THE ENGINEER AT LEAST ONE MONTH TO SATISFY HIMSELF FOR ISSUING CONSENT IN WRITING PRIOR TO COMMENCEMENT OF ANY EXCAVATION WORKS. THE CONTRACTOR SHALL SUBMIT A METHOD STATEMENT, SEQUENCE AND THE PROPOSED PRECAUTIONARY MEASURES AGAINST DUST, NOISE, HEAVY RAINFALL AND TEMPORARY TRAFFIC MEASURES PROPOSAL TO THE ENGINEER AND THE GOVERNMENT DEPARTMENTS CONCERNED FOR COMMENT PRIOR TO IMPLEMENTATION OF THE WORKS.
5. PROPOSED BACKFILLING MATERIALS SHALL BE GENERAL FILL MATERIAL COMPLIED WITH SECTION 6 OF THE GENERAL SPECIFICATION FOR CIVIL ENGINEERING WORKS 2006 EDITION (THE GOVERNMENT OF THE HONG KONG SPECIAL ADMINISTRATIVE REGION), AND THE PARTICULAR SPECIFICATION AS APPROPRIATE.

REF. POINT	EASTING	NORTHING
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SOP-A2	834781.497	846735.016
SOP-A3	834782.645	846732.030
SOP-A4	834786.235	846722.696
SOP-A5	834789.824	846713.363
SOP-A6	834793.413	846704.029
SOP-A7	834797.002	846694.695
SOP-A8	834800.591	846685.362
SOP-A9	834804.181	846676.028
SOP-A10	834805.976	846671.361
SOP-A11	834808.328	846666.949
SOP-A12	834812.952	846658.082
SOP-A13	834819.367	846650.411
SOP-A14	834826.952	846643.894
SOP-A15	834832.271	846640.708
SOP-A16	834838.045	846634.608

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.
2. ALL LEVELS REFER TO P.D.H.K. AND ARE IN METRES.
3. ALL GRIDS REFER TO HONG KONG 1980 GRID.
4. FOR DRAINAGE DETAILS REFER TO DDP/DC1106/11316
5. THE ENGINEER SHALL REVIEW THE STABILITY OF EXISTING NATURAL TERRAIN NEAR THE PROPOSED EMBANKMENT DURING CONSTRUCTION. WHERE INSTRUCTED BY THE ENGINEER, THE CONTRACTOR SHALL CARRY OUT SLOPE IMPROVEMENT WORKS WITHIN SITE LIMIT INCLUDING SOIL NAILING AND CONCRETE SPRAYING WORKS. TYPICAL DETAILS OF SOIL NAIL, TYPICAL SOIL NAIL HEAD AND SOIL NAIL HEAD WITH SPRAY CONCRETE SHALL REFER CEDD STANDARD DRAWING NOS. C2106/1I, C2106/2F, C2106/3F, C2106/4A AND C2106/5A.

LEGEND :

- PROPOSED BOUNDARY PATROL ROAD
- PROPOSED 1 IN 2 FILL SLOPE
- SOP-A10 PROPOSED SETTING OUT POINT
- BAY 8 PROPOSED RETAINING WALL

FOR TENDER PURPOSES ONLY

no.	date	description	initial
REVISION			

	name	date
designed	C. F. CHAN	28 NOV 2011
drawn	T. M. LEE	28 NOV 2011
checked	M. H. POON	28 NOV 2011
vetted	T. C. LAU	28 NOV 2011

approved

K. L. TSANG
Ag. Chief Engineer — 28 NOV 2011 Date

contract no.	DC/2011/06
file no.	DP/8/5018GB
project no.	5018GB

contract

REPROVISIONING OF BOUNDARY PATROL ROAD AND ASSOCIATED SECURITY FACILITIES BETWEEN PING YUEN RIVER AND PAK FU SHAN AND DRAINAGE WORKS IN NORTH DISTRICT

drawing title

GENERAL LAYOUT OF EMBANKMENT BETWEEN CH_R 4+090 TO CH_R 4+270

drawing no.	scale
DDP/DC1106/11027	1 : 250

office

DRAINAGE PROJECTS DIVISION

DRAINAGE SERVICES DEPARTMENT
GOVERNMENT OF THE
HONG KONG
SPECIAL ADMINISTRATIVE REGION

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ANNEX B

ENVIRONMENTAL MITIGATION IMPLEMENTATION SCHEDULE

Annex A Implementation Schedule for Environmental Protection Measures for the Regulation of Shenzhen River Stage 4 EIA Study

EIA Ref.	Environmental Protection Measures	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	Implementation Stage				Relevant Legislation & Guidelines
				Des	C	Post-C	O	
1. Air Quality Measures								
S4.8	Dust control measures stipulated in the *Air Pollution Control (Construction Dust) Regulation* will be implemented during the construction phase to control the potential fugitive dust emissions. In particular: • Water spaying on haul roads and dusty areas for every hour during construction, • Covering the stockpile areas of at least 70% area with tarpaulin sheet or impervious sheet; • Covering of dusty materials/spoils on trucks by impervious sheets; • Controlling the dropping height of fill materials; • Covering or storing all debris and materials in a sheltered debris collection area; • Storing dredged sediment in a separate enclosed tank; and • Providing wheel washing facility at each exit of the works site.	Whole Site / During Construction	Contractor(s)		✓			Air Pollution Control (Construction Dust) Regulation
S4.8	Site practices such as regular maintenance and checking of the diesel powered mechanical equipment will be adopted to avoid any black smoke emissions and to minimize gaseous emissions.	Whole Site / During Construction	Contractor(s)		✓			-
S4.8	Dredged sediment placed on truck or marine vessel for disposal should be properly covered during transportation to minimize the potential odour. In the event that dredging material are found to be odorous, the odorous dredged sediment should be placed as far away from the identified ASRs as practically possible and should be removed off-site as soon as practicable to avoid any potential odour nuisance arising.	Whole Site / During Construction and Maintenance Dredging	Contractor(s)		✓		✓	-
S4.10	Construction Dust Monitoring at two monitoring stations and site inspection and audit of dust generating activities. Monitoring of 24-hour and 1-hour TSP levels will be conducted once every six days throughout the construction period.	Whole Site / During Construction	Environmental Team (ET) & Independent Environmental Checker (IEC)		✓			Environmental Impact Assessment Ordinance

EIA Ref.	Environmental Protection Measures	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	Implementation Stage				Relevant Legislation & Guidelines
				Des	C	Post-C	O	
2. Noise								
S5.8	The following site practices should be followed during the construction of the Project: • Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction phase; • Silencers or mufflers on construction equipment should be utilized and should be properly maintained during the construction phase; • Mobile plant, if any, should be sited as far from NSRs as possible; • Machines and plant (such as trucks) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum; • Plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs; and • Material stockpiles and other structures should be effectively utilised, wherever practicable, in screening noise from on-site construction activities.	Whole Site / During Construction	Contractor(s)		✓			-
S5.8	Use quiet PME as far as practicable to mitigate the construction noise impact.	Whole Site / During Construction	Contractor(s)		✓			-
S5.8	Use temporary nosie barriers to mitigate the noise impact arising from the construction works, particularly for low-rise NSRs. Movable noise barriers of 3 m in height with skid footing should be used and located within a few metres of stationary plant and mobile plant such that the line of sight to the NSR is blocked by the barriers. The length of the barrier should be at least five times greater than its height. With reference *to A Practical Guide for the Reduction of Noise from Construction Works,* the noise barrier material should have a superficial surface density of at least 7 kg m^{-2} and have no openings or gaps.	Works Area III and IV/ During Construction	Contractor(s)		✓			A Practical Guide for the Reduction of Noise from Construction Works
S5.8	Scheduling of construction activities with identified grouping of PMEs.	Works Area III/ During Construction	Contractor(s)		✓			-

EIA Ref.	Environmental Protection Measures	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	Implementation Stage				Relevant Legislation & Guidelines
				Des	C	Post-C	O	
S5.10	Weekly noise monitoring at two monitoring stations and monthly site inspection and audit of construction activities.	Whole Site / During Construction	ET & IEC		✓			Environmental Impact Assessment Ordinance
3. Water Quality								
S6.8	Maximum loss rate during the wet excavation should be kept at or below the limits specified in the EIA Report.	Excavation area / During Construction	Contractor(s)		✓			
S6.8	*Cofferdam Demolition* During excavation, the following measures shall apply at all times: • Dry excavation will be used, as far as practicable, for cofferdam excavation. • Attention will be paid to the lifting speed of the grab to minimise the loss of sediment. • Excavated sediment will be disposed of in a gazetted marine disposal area in accordance with the Dumping at Sea Ordinance (DASO) permit conditions. • The marine vessels for transport of sediment to the marine dumping ground will be fitted with tight bottom seals in order to prevent leakage of material during transport. The barges will be filled to a level that adequate freeboard is maintained to ensure that the decks are not washed by wave action. • The contractor(s) will confirm that the works cause no visible foam, oil, grease, litter or other objectionable matter to be present in the water within and adjacent to the excavation site. • For concurrent excavation works at adjacent work areas (ie Work Areas I and II, and Work Areas III and IV), construction will be carried out along the same flow direction (ie from upstream to downstream / downstream to upstream) to minimise the overall impacts to SS concentrations from adjacent work areas.	Cofferdam excavation area / During Construction	Contractor(s)		✓			-
S6.8	*Construction Site Runoff and Drainage*	Land Site / During Construction	Contractor(s)		✓			ProPECC PN 1/94 TM standard under the

EIA Ref.	Environmental Protection Measures	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	Implementation Stage				Relevant Legislation & Guidelines
				Des	C	Post-C	O	
	Channels, earth bunds or sand bag barriers will be provided on site to direct stormwater to silt removal facilities. The design of silt removal facilities will make reference to the guidelines in *Appendix A1* of *ProPECC PN 1/94*. All drainage facilities and erosion and sediment control structures will be inspected on a regular basis and maintained to confirm proper and efficient operation at all times and particularly during rainstorms. Deposited silt and grit will be removed regularly.							WPCO
S6.8	Excavation within cofferdam will be maintained in dry condition as far as possible. Water within the cofferdam will be discharged to the river before excavation commence and at times when needed, e.g. after heavy rain. Adequate time (48 hours) will be allowed for suspended solid to settle (potentially overnight) before foundation pit drainage are being discharged outside the works area	Within cofferdam / During Construction	Contractor(s)		✓			-
S6.8	Non-active area along the river bank will be covered by impermeable sheets or hydroseeding completed sections immediately whenever possible to minimise erosion of soil by runoff particularly during heavy rainstorms	River bank / During Construction	Contractor(s)		✓			-
S6.8	Earthworks to form the final surfaces will be followed up with surface protection and drainage works to prevent erosion caused by rainstorms.	Land Site / During Construction	Contractor(s)		✓			-
S6.8	Appropriate surface drainage will be designed and provided where necessary. In particular, surface runoff will be collected along the river bank and be diverted to sedimentation tank/pond before being discharged into the river.	Land Site / During Construction	Contractor(s)		✓			-
S6.8	The precautions to be taken at any time of year when rainstorms are likely together with the actions to be taken when a rainstorm is imminent or forecasted and actions to be taken during or after rainstorms are summarised in *Appendix A2* of *ProPECC PN 1/94*.	Land Site / During Construction	Contractor(s)		✓			ProPECC PN 1/94
S6.8	Oil interceptors will be provided in the drainage system where necessary and regularly emptied to prevent the release of oil and grease into the storm water drainage system after accidental spillages.	Land Site / During Construction	Contractor(s)		✓			-
S6.8	Temporary and permanent drainage pipes and culverts provided to facilitate runoff discharge will be adequately designed for the controlled	Land Site / During Construction	Contractor(s)		✓			-

EIA Ref.	Environmental Protection Measures	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	Implementation Stage				Relevant Legislation & Guidelines
				Des	C	Post-C	O	
	release of storm flows.							
S6.8	The temporary diverted drainage will be reinstated to the original condition when the construction work has finished or when the temporary diversion is no longer required.	Land Site / During Construction	Contractor(s)		✓			-
S6.8	The dredged sediment will be temporary stored in the stockpile areas for dewatering by natural ventilation. Runoff from these stockpile areas will be collected for treatment by sedimentation with the addition of coagulant. The treated water will be reuse on site for water spraying.	Whole Site / During Construction	Contractor(s)		✓			-
S6.8	An adequate number of portable toilets will be provided for the on-site construction workforce. Wastewater/sewage will be handled by registered collector in Hong Kong (for advanced works) and by registered collector in Shenzhen (for river modification and associated works).	Whole Site / During Construction	Contractor(s)		✓			-
S6.8	Debris and refuse generated on-site will be collected, handled and disposed of properly to avoid entering the nearby WSRs. Stockpiles of cement and other construction materials will be covered when not being used.	Whole Site / During Construction	Contractor(s)		✓			-
S6.8	Oil leakage or spillage will be contained and clean up immediately. Waste oil will be collected and stored for recycling or disposal, in accordance with the *Waste Disposal Ordinance*.	Whole Site / During Construction	Contractor(s)		✓			Waste Disposal Ordinance
S6.11	Water quality monitoring will be undertaken during the foundation pit drainage and cofferdam demolition activities at the following locations: *During foundation pit drainage and cofferdam demolition activities at Work Area I and Work Area II* • 500 m upstream of Work Area I; and • 1,000 m downstream of Work Area II. *During foundation pit drainage and cofferdam demolition activities at Work Area III and Work Area IV* • 500 m upstream of Work Area III; and • 1,000 m downstream of Work Area IV.	500m upstream of Work Area and 1000m downstream of work area/During foundation pit drainage and cofferdam demolition	Contractor(s)		✓			-

EIA Ref.	Environmental Protection Measures	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	Implementation Stage				Relevant Legislation & Guidelines
				Des	C	Post-C	O	
4. Terrestrial Ecology								
S7.11	Avoid potential impacts on the trees whenever possible during the detailed design stage. The retained trees will be fenced off as protection from the construction works. If the trees cannot be avoided due to the engineering constraint, the affected individual(s) will be transplanted to compensatory woodland planting site near Pak Fu Shan or a similar habitat in the vicinity of the Project Site if considered suitable (subject to the detailed assessment of the feasibility of transplantation).	Whole Site / During Construction	Contractor(s)	✓	✓			-
S7.11	A detailed vegetation survey on the trees within the impacted area would be conducted by a suitably qualified botanist/ ecologist to identify and record the affected individuals prior to the commencement of site clearance works. Feasibility and suitability of transplanting the affected plant species of conservation interest would be carefully studied and suitable receptor sites would be identified during Tree Felling Application.	Whole Site / During Construction	Contractor(s)	✓	✓			-
S7.11	Avoid any damage and disturbance, particularly those caused by filling and illegal dumping, to the surrounding habitats through proper management of waste disposal.	Whole Site / During Construction	Contractor(s)		✓			-
S7.11	Arrange river excavation works to be conducted in dry season (November to March) in order to minimise the potential water quality impacts on downstream areas of high ecological value. Impacts due to the excavation works on the habitat and associated wildlife during dry season can be minimised through phase implementation of works and adoption of good site practices.	Whole Site / During Construction	Contractor(s)		✓			-
S7.11	Regularly check the Site boundaries to ensure that they are not breached and that no damage occurs to surrounding areas	Whole Site / During Construction	Contractor(s)		✓			-
S7.11	Regularly check the performance and/ or effectiveness of the cofferdam and "diversion dyke" in order to minimise surface runoff and the chance of soil erosion;	Whole Site / During Construction	Contractor(s)		✓			-
S7.11	Prohibit and prevent open burning within the site boundary during construction and provide temporary fire fighting equipment in the work	Whole Site / During Construction	Contractor(s)		✓			-

EIA Ref.	Environmental Protection Measures	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	Implementation Stage				Relevant Legislation & Guidelines
				Des	C	Post-C	O	
	areas							
S7.11	Reinstate temporary work sites/disturbed areas (including approximately 1.6 ha of the Shenzhen River, approximately 0.4 ha secondary woodland and approximately 1.9 ha of the low-lying grassland), immediately after completion of the construction works	Whole Site / During Construction	Contractor(s)		✓			-
S7.11	Provided approximately 0.5 ha of compensatory woodland planting (in addition to the reinstatement of the 0.4 ha secondary woodland) within the Project Site near Pak Fu Shan.	Whole Site / During Construction	Contractor(s)		✓			-
S7.11	Provide additional stream/river habitat with natural bottom (~2.1 ha) after the advanced works and river modification works.	Whole Site / During Construction	Contractor(s)		✓			-
S7.11	Adopt proper ecological design for the landscape works along the river banks, including the floodplain (the 1.9ha marshy low-lying grassland will be reinstated in the floodplains at Hong Kong side; which is in addition to the small potion of approximately 0.4 ha at Shenzhen side))	Along river bank and water retardation pond / During Design Stage	Designer(s)	✓				-
S7.14	The implementation of landscape works (including compensatory planting) adopting ecological design at Hong Kong side shall be monitored.	Whole site / During Post-Construction Stage	Designer(s)			✓		-
S7.14	One-year bird monitoring programme shall be conducted to monitor the effectiveness of the reprovisioned/reinstated habitats	Operation	Project Proponent/ Contractor(s)				✓	-
5 Waste Management								
S9.6	*General* The Contractor shall apply for and obtain the appropriate licenses for the disposal of public fill, chemical waste and effluent discharges.	Contract mobilisation / During construction	Contractor(s)		✓			Waste Disposal (Chemical Waste) (General) Regulation Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes WBTC No 5/99, Trip-

EIA Ref.	Environmental Protection Measures	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	Implementation Stage				Relevant Legislation & Guidelines
				Des	C	Post-C	O	
								ticket System for Disposal of Construction and Demolition Material Water Pollution Control Ordinance
S9.6	Nomination of approved personnel to be responsible for standard site practices, arrangements for collection and effective disposal to an appropriate facility of all wastes generated at the Project Site	Contract mobilisation / During construction	Contractor(s)		✓			-
S9.6	Training shall be provided to site personnel in proper waste management and chemical handling procedures, the concepts of site cleanliness and appropriate waste management procedures, including waste reduction, reuse and recycling.	Contract mobilisation / During Construction	Contractor(s)		✓			-
S9.6	Provision of sufficient waste disposal points and regular collection for disposal.	Whole Site / During Construction	Contractor(s)		✓			WBTC Nos. 6/2002 and 6/2002A, Enhanced Specification for Site Cleanliness and Tidiness. Works Bureau, Hong Kong SAR Government
S9.6	Appropriate measures to reduce windblown litter and dust transportation of waste by either covering trucks or by transporting wastes in enclosed containers.	Whole Site / During Construction	Contractor(s)		✓			-
S9.6	Separation of chemical wastes for special handling and appropriate treatment at the licensed hazardous waste treatment facility in Shenzhen (during the river modification and associated works) or the Chemical Waste Treatment Centre at Tsing Yi (during the advanced works).	Whole Site / During Construction	Contractor(s)		✓			Waste Disposal (Chemical Waste) (General) Regulation
S9.6	Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors.	Whole Site / During Construction	Contractor(s)		✓			-
S9.6	A recording system for the amount of wastes generated/recycled and	Whole Site / During	Contractor(s)		✓			-

EIA Ref.	Environmental Protection Measures	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	Implementation Stage				Relevant Legislation & Guidelines
				Des	C	Post-C	O	
	disposal sites.	Construction						
S9.6	*Waste Reduction Measures* • Segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of material and their proper disposal.	Whole Site / During Construction	Contractor(s)		✓			WBTC Nos. 6/2002 and 6/2002A, Enhanced Specification for Site Cleanliness and Tidiness.
S9.6	• Encourage collection of aluminium cans and waste paper by individual collectors during construction with separate labelled bins provided to segregate these wastes from other general refuse by the workforce	Whole Site / During Construction	Contractor(s)		✓			
S9.6	• Any unused chemicals and those with remaining functional capacity will be recycled as far as possible	Land Site / During Construction	Contractor(s)		✓			-
S9.6	• Use of reusable non-timber formwork to reduce the amount of C&D materials	Whole Site / During Construction	Contractor(s)		✓			Works Branch Technical Circular (WBTC) No. 32/92, The Use of Tropical Hard Wood on Construction Site
S9.6	• Prior to disposal of construction waste, wood, steel and other metals will be separated to the extent practical, for re-use and/or recycling to reduce the quantity of waste to be disposed of to landfill	Whole Site / During Construction	Contractor(s)		✓			-
S9.6	• Proper storage and site practices shall be adopted to reduce the potential for damage or contamination of construction materials.	Whole Site / During Construction	Contractor(s)		✓			-
S9.6	• Plan and stock construction materials carefully to reduce amount of waste generated and avoid unnecessary generation of waste	Whole Site / During Construction	Contractor(s)		✓			-
S9.6	*Dredged Sediments* The dredged sediment shall be stored in enclosed container and will be delivered to Shekou Pier by enclosed trucks	Whole Site / During Construction	Contractor(s)		✓			-

EIA Ref.	Environmental Protection Measures	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	Implementation Stage				Relevant Legislation & Guidelines
				Des	C	Post-C	O	
S9.6	The disposal of dredged river sediment will follow the requirements stipulated in the *ETWB TC(W) No. 34/2002*. Detailed sampling and chemical testing will be carried out prior to the commencement of the dredging activities to confirm the sediment disposal method.	Contract mobilisation / During construction and maintenance dredging	Contractor(s)	✓	✓		✓	Dumping at Sea Ordinance ETWB TC(W) No. 34/2002
S9.6	<u>*Excavated Materials*</u> The contractor of the advanced work should open a billing account with EPD for the payment of disposal charges. A trip-ticket system will be established in accordance with *ETWB TC(W) No. 31/2004* to monitor the reuse of surplus excavated materials off-site and disposal of construction waste and general refuse at landfills, and to control fly-tipping	Contract mobilisation / During construction	Contractor(s)	✓	✓			Waste Disposal (Charges for Disposal of Construction Waste) Regulation ETWB TC(W) No. 31/2004
S9.6	Ways to minimise generation of C&D materials include: (i) The Contractor is required to submit the Waste Management Plan (WMP) for approval by the Engineer with appropriate mitigation measures to deal with and allow space for waste segregation. Different C&D materials should be sorted into different categories for re-use/recycle. Day-to-day site operations of the Contractor should be closely monitored to ensure compliance with the approved WMP. (ii) The designer shall ensure that the design of levels and dimensions are reasonably accurate to avoid unnecessary demolition, excavation and fill. (iii) The Contractor shall be encouraged to use long lasting materials such as steel and poly-fibre for formwork on site. (iv) The RSS shall control the disposal of public fill and C&D waste to the designated public filling facilities and landfills respectively through the implementation of a trip-ticket system according to ETWB TC(W) No. 31/2004.	Whole site / During construction	Contractor(s)		✓			-
	Ways to maximize the use of inert C&D material include:	Whole Site / During	Contractor(s)		✓			-

EIA Ref.	Environmental Protection Measures	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	Implementation Stage				Relevant Legislation & Guidelines
				Des	C	Post-C	O	
	(i) The Contractor shall review the WMP quarterly to improve the site practice and maximise the use of inert C&D material. (ii) Different sections of works shall be programmed to ensure the C&D materials generated could be re-used by the other sections of works or works contracts. (iii) Temporary storage areas should be identified to resolve programming mismatch between excavation and filling works. (iv) The excavated soft inert C&D materials should be reused for backfilling the boundary patrol road, channel embankment, etc. whenever practicable. (v) Good quality top soil should be reused for landscaping.	Construction						
	Ways to maximise the re-use/recycle of C&D material and/or rock on site include: (i) Recyclable materials such as wood and metal should be salvaged for reuse and inert materials utilized as public fill. (ii) Segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of material and their proper disposal. Prior to disposal of C&D waste, it is recommended that wood, steel and other metals be separated for re-use and/or recycling and inert waste utilized as fill material to minimize the quantity of waste to be disposed of at landfills.	Whole Site / During Construction	Contractor(s)		✓			-
S9.6	Ways to maximise the use of recycled C&D materials include: (i) Relevant clauses would be incorporated in the Particular Specifications to facilitate the use of recycled aggregates as far as practicable, such as, temporary works, general fills and road sub-base.	Whole Site / During Construction	Contractor(s)		✓			-
S9.6	To reduce the potential dust impacts of the excavation works, the C&D materials will be wetted as quickly as possible to the extent practice after filling.	Whole Site / During Construction	Contractor(s)		✓			-
S9.6	*Chemical Waste* Containers used for storage of chemical waste shall be:	All facilities / During construction	Contractor(s)		✓			Waste Disposal

EIA Ref.	Environmental Protection Measures	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	Implementation Stage				Relevant Legislation & Guidelines
				Des	C	Post-C	O	
	• Maintained in good condition and clearly labelled in both English and Chinese; • Suitable for the substance they are holding, resistant to corrosion, and securely closed; and • Capacity of less than 450 L unless the specifications have been approved by the EPD.							(Chemical Waste) (General) Regulation Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes
S9.6	Storage areas for chemical waste shall: • Be clearly labelled and used solely for the storage of chemical waste; • Be enclosed on at least 3 sides; • Have adequate ventilation; • Be arranged so that incompatible materials are appropriately separated • Have an impermeable floor and bunding, of capacity to accommodate 110% of the volume of the largest container or 20% by volume of the chemical waste stored in that area, whichever is the greatest; and • Be covered to prevent rainfall from entering	All facilities / During construction	Contractor(s)		✓			Waste Disposal (Chemical Waste) (General) Regulation Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes
S9.6	Any unused chemicals and those with remaining functional capacity shall be recycled to the extent practical.	Land site / During construction	Contractor(s)		✓			-
S9.6	A licensed contractor shall be employed to collect chemical waste for delivery to a licensed treatment facility.	Chemical Waste Treatment Centre at Tsing Yi/ During construction	Contractor(s)		✓			Waste Disposal (Chemical Waste) (General) Regulation Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes
S9.6	*General Refuse* General refuse shall be timely cleared and shall be disposed of to the nearest licensed facility by reputable waste collector on regular basis to reduce odour, pest and litter impacts.	All areas / During construction	Contractor(s)		✓			WBTC Nos. 6/2002 and 6/2002A, Enhanced Specification for Site Cleanliness and Tidiness.

EIA Ref.	Environmental Protection Measures	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	Implementation Stage				Relevant Legislation & Guidelines
				Des	C	Post-C	O	
S9.6	No waste shall be burnt on site. Wastes shall be collected by licensed waste haulier and be disposed of at licence sites.	Land site/ During construction	Contractor(s)		✓			Air Pollution Control Ordinance
S9.6	Recycling bins will be provided at strategic locations to facilitate recovery of aluminium can and waste paper from the site.	All areas / During construction	Contractor(s)		✓			-
S9.6	Training will be provided to workers on the concepts of site cleanliness and appropriate waste management procedures, including waste reduction, reuse and recycling at the beginning of the construction works.	All areas / During construction	Contractor(s)		✓			-
S9.8	EM&A of waste handling, storage, transportation, disposal procedures and documentation through the site inspection and audit programme shall be undertaken.	All facilities / During construction	ET and IEC		✓			-
S9.8	Waste Management Plan (WMP) will be prepared and implemented in accordance with *ETWB TC(W) No. 19/2005*.	All facilities / During construction	Contractor(s)		✓			ETWB TC(W) No. 19/2005
6 Cultural Heritage								
S11.8.1	Pursuant to the Antiquities and Monuments Ordinance, the project proponent should inform the AMO immediately in case of discovery of antiquities or supposed antiquities in the course of soil excavation works in construction stage.	Whole site / During construction	Project Proponent		✓			Antiquities and Monuments Ordinance
S11.8.1	In case the works boundary of the Project changes during the detailed design stage to cover additional area not being assessed, the need for further archaeological survey and subsequent impact assessment should be reviewed and AMO should be consulted.	Additional works boundary not covered in EIA / During design stage	Design Team and the Project Proponent (i.e. DSD)	✓				EIAO TM, Guidelines for CHIA, Antiquities and Monuments Ordinance
7. Landscape & Visual								
S12.6.10	MM1: Tree Protection and Preservation - Trees/ woodland within the Project Site will be protected and preserved as far as possible in accordance with	Land site / During Construction	Contractor(s)		✓			-

EIA Ref.	Environmental Protection Measures	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	Implementation Stage				Relevant Legislation & Guidelines
				Des	C	Post-C	O	
	ETWB TCW No. 29/2004 and *3/2006*..							
S12.6.10	MM2: Tree Transplantation – Should removal of trees be unavoidable due to construction impacts, trees will be transplanted or felled according to the Detailed Tree Survey and Tree Felling Application. Established trees of value are to be re-located where practically feasible.	Land site / During Construction	Contractor(s)	✓	✓			-
S12.6.10	MM3: Minimize Disturbance – temporary structures and construction works should be planned with care to minimize disturbance to existing built structures as well as vegetation including riparian vegetation along the river.	Land site / During Construction	Contractor(s)		✓			-
S12.6.10	MM4: Compensatory Tree Planting - Where loss of existing trees is unavoidable, compensatory planting of trees should be provided in accordance with ETWB TCW No. 03/2006 to compensate for those trees felled. Space is to be allowed within the Project Site (mainly planting in riverbank landscape areas of ~4.1 ha) for such planting. Plants will have 12 months to establish. Approximately 0.5 ha of compensatory woodland planting (in addition to the reinstatement of the woodland (LR4) if unavoidably affected) will be provided within the Project Site near Pak Fu Shan. The proposed compensatory woodland planting site will locate adjoining to the reinstated and existing (undisturbed by the Project) woodland on hillside. The selection of planting species shall be made with reference to the species identified in the Tree Survey and be native to Hong Kong or the South China region. The compensatory woodland planting should also adopt ecological design, ie provision of rare butterfly species larval food plant (*Trema* sp.), and further details refer to *Section 7.11.3* of the EIA Report. The arrangement of the on-site compensatory planting, ie tree/ shrub mix and *Trema* sp., will be subject to detailed landscape design and planting plan, and recommended to be implemented prior to the construction activities as far as practical.	Compensatory planting area / During Construction	Contractor(s)		✓			-

EIA Ref.	Environmental Protection Measures	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	Implementation Stage				Relevant Legislation & Guidelines
				Des	C	Post-C	O	
S12.6.10	MM5: Screening – Stockpiles of materials should be covered or hoarding erected where possible to reduce undesirable views of the construction site (such as stockpile areas), having consideration of safety and security. It is proposed that screening be compatible with the surrounding environment and where possible, non-reflective, recessive colours be used. Hoarding should be taken down at the end of the construction period.	Land site / During Construction	Contractor(s)		✓			-
S12.6.10	MM6: Light Control – Control of night time lighting glare shall be implemented to minimize glare impact to adjacent VSRs.	Whole site / During Construction	Contractor(s)		✓			-
S12.6.10	MM7: Reinstatement – Terrestrial areas temporarily disturbed by the Project during construction, should be re-vegetated with shrubs, ground cover or grass in order to restore the green ambiance or LR as existed before the commencement of the Project to blend with the new environment, eg the earth embankment underneath the boundary patrol road near Pak Fu Shan should be planted to ensure the embankment structure blends in with the new environment.	Whole site / During Construction	Contractor(s)		✓			-
S12.6.10	MM8: Buffer Planting – Tree and Shrub planting shall be provided for screening the natural watercourse, woodland and shrubby grassland on lowland, proposed boundary control road and fencing, where needed and taking into account security and boundary control limitations.	Appropriate location / During Construction	Contractor(s)		✓			-
S12.6.10	MM9: River Area Enhancement Landscaping – The river bed should be non-concreted as far as practical. The River bank and margins of approximately 4.1 ha should be enhanced with vegetation to compensate for the loss of existing vegetation and to enhance the visual and landscape value of the river where slope gradient allows. The typical design of riverbank landscaping areas for the Project is presented in *Section 7.11.3* and *Figure 7.11* of the EIA Report. The overall objectives for the	Whole site / During Construction	Contractor(s)	✓	✓			-

EIA Ref.	Environmental Protection Measures	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	Implementation Stage				Relevant Legislation & Guidelines
				Des	C	Post-C	O	
	landscaping works will be mainly concerned with ecological enhancement but also include landscape enhancement. For the sloping banks of the river, in order to guarantee safety of flood prevention, ecologically and environmentally friendly materials will be used as far as possible. The preliminary proposed landscape treatment along the sloping river banks can be classified into three types: natural vegetation, semi-natural and artificial. Further details of the river area enhancement plans can be found in *Section* 3 of the EIA Report, including protection of river bed with armour rock only where necessary and provision of grassed, cellular, reinforced concrete eco-friendly slope protection. Eco-bags are made of UV-resistant Polyethylene gas filled with fiber soil. Final details of the landscaping will be prepared during the detailed design stage of the Project..							
S12.6.10	MM10: Flood Retardation Pond - The flood retardation pond lies within the Shenzhen side of this Project. It should be planted with suitable flora (both aquatic and, riparian) to enhance its landscape value. Subject to the details design and planting plan, provision of wetland planting at the base of flood retardation pond will be provided as far as practical and technical feasible. Final details of the landscaping will be prepared during the detailed design stage of the Project.	Flood Retardation Pond / During Construction	Contractor(s)	✓	✓			-
S12.6.10	MM11: Floodplain Areas - The areas bound by sharp turns in the natural meander of the river should be made into floodplain areas to retain some of the riparian landscape at the river margins. The overall objectives for the landscaping works will be mainly concerned with ecological enhancement but also include landscape enhancement (also refer to *Section 7.11.3* of the EIA Report). Further details will be developed during Detailed Design Stage.	Floodplain areas / During Construction	Contractor(s)	✓	✓			-
S12.6.10	MM12: Colours of Structures - Colours for the structures eg fences should be chosen to complement the surrounding area. Lighter colours such as	Whole site / During Construction	Contractor(s)		✓			-

EIA Ref.	Environmental Protection Measures	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	Implementation Stage				Relevant Legislation & Guidelines
				Des	C	Post-C	O	
	shades of light grey, off-white and light brown may be utilised where technically feasible to reduce the visibility of the structures.							
S12.6.10	MM13: Topsoil Reuse - Excavated topsoil should be conserved for re-use by the Project or other projects.	Whole site / During Construction	Contractor(s)		✓			-
S12.9	The completed landscape works adopting ecological design on the Hong Kong side will be monitored during the one year establishment period.	Whole site / During 1 year Establishment period	Landscape Contractor			✓		-

ANNEX C

EVENT AND ACTION PLAN

Event and Action Plan for Construction Dust Monitoring

Event	Action			
	ET	**IEC**	**ER**	**Contractor(s)**
Action Level being exceeded by one sampling day	1. Repeat *in-situ* measurement to confirm findings; 2. Identify source(s) of impact; 3. Inform the Contractor(s), the ER, IEC and EPD within 24 hours; 4. Check monitoring data, plant, equipment and the Contractor(s)'s working methods; 5. Repeat measurement to confirm finding; 6. Discuss mitigation measures with the Contractor(s);	1. Check monitoring data submitted by ET; 2. Check Contractor's working method.	1. Discuss with the Contractor on the proposed mitigation measures; 2. Make agreement on the mitigation measures to be implemented.	1. Rectify unacceptable practice; 2. Check working methods, plant and equipment; 3. Consider changes of working methods; 4. Discuss with the ET and propose mitigation measures to the ER; 5. Implement the agreed mitigation measures.
Action Level being exceeded by more than one consecutive sampling days	1. Repeat *in-situ* measurement to confirm findings; 2. Identify source(s) of impact; 3. Inform the Contractor(s), the ER, IEC and EPD; 4. Check monitoring data, plant, equipment and Contractor(s)'s working methods; 5. Repeat measurement to confirm finding; 6. Discuss mitigation measures with the Contractor(s); 7. Confirm mitigation measures are implemented; 8. If exceedance continues, arrange meeting with IEC and RE.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ET on the effectiveness of the proposed remedial measures; 5. Supervise implementation of remedial measures.	1. Discuss with the ET on the proposed mitigation measures; 2. Make agreement on the mitigation measures to be implemented; 3. Assess effectiveness of the implemented mitigation measures	1. Rectify unacceptable practice; 2. Check working methods, plant and equipment; 3. Consider changes of working methods; 4. Discuss with the ET and propose mitigation measures to the ER within 3 working days; 5. Implement the agreed mitigation measures.

Event	Action			
	ET	**IEC**	**ER**	**Contractor(s)**
Limit Level being exceeded by one consecutive sampling day	1. Repeat *in-situ* measurement to confirm findings; 2. Identify source(s) of impact; 3. Inform the Contractor(s), the ER, IEC and EPD; 4. Check monitoring data, plant, equipment and the Contractor(s)'s working methods; 5. Repeat measurement to confirm finding; 6. Discuss mitigation measures with the ER and the Contractor(s); 7. Confirm mitigation measures are implemented;	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ET on the effectiveness of the proposed remedial measures; 5. Supervise implementation of remedial measures.	1. Discuss with the ET and the Contractor(s) on the proposed mitigation measures; 2. Request the Contractor(s) to critically review the working methods; 3. Make agreement on the mitigation measures to be implemented; 4. Assess the effectiveness of the implemented mitigation measures.	1. Immediate stoppage of works; 2. Confirm notification of the exceedance in writing; 3. Rectify unacceptable practice; 4. Check plant and equipment; 5. Consider changes of working methods; 6. Discuss with the ET, the ER and propose mitigation measures to the ER within 3 working days; 7. Implement the agreed mitigation measures.
Limit Level being exceeded by more than one consecutive sampling days	1. Repeat *in-situ* measurement to confirm findings; 2. Identify source(s) of impact; 3. Inform the Contractor(s), the ER, IEC and EPD; 4. Check monitoring data, plant, equipment and Contractor(s)'s working methods; 5. Repeat measurement to confirm finding; 6. Discuss mitigation measures with the ER and the Contractor(s); 7. Confirm mitigation measures are implemented;	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss amongst the ER, ET and Contractor on possible remedial measures; 4. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; 5. Supervise implementation of remedial measures.	1. Discuss with the ET and the Contractor(s) on the proposed mitigation measures; 2. Request Contractor(s) to critically review working methods; 3. Make agreement on the mitigation measures to be implemented; 4. Assess effectiveness of the implemented mitigation measures; 5. Consider and instruct, if necessary, the Contractor(s) to slow down or to stop all or part of the marine work until no exceedance of Limit Level.	1. Immediate stoppage of works; 2. Confirm notification of the exceedance in writing; 3. Rectify unacceptable practice; 4. Check plant and equipment; 5. Consider changes of working methods; 6. Discuss with the ET and the ER and propose mitigation measures to the ER within 3 working days; 7. Implement the agreed mitigation measures; 8. As directed by the ER, slow down or stop all or part of the construction activities.

Event and Action Plan for Construction Noise

Event	Action			
	ET	**IEC**	**ER**	**Contractor**
Action Level	1. Notify IEC and Contractor; 2. Carry out investigation; 3. Report the results of investigation to the IEC, ER and Contractor; 4. Discuss with the Contractor and formulate remedial measures; 5. Increase monitoring frequency to check mitigation effectiveness.	1. Review the analysed results submitted by the ET; 2. Review the proposed remedial measures by the Contractor and advise the ER accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; 4. Ensure remedial measures are properly implemented.	1. Submit noise mitigation proposals to IEC; 2. Implement noise mitigation proposals.
Limit Level	1. Identify source; 2. Inform IEC and ER: 3. Repeat measurements to confirm findings; 4. Increase monitoring frequency; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Inform IEC, ER and EPD the causes and actions taken for the exceedances; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring.	1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractors remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; 4. Ensure remedial measures properly implemented; 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.

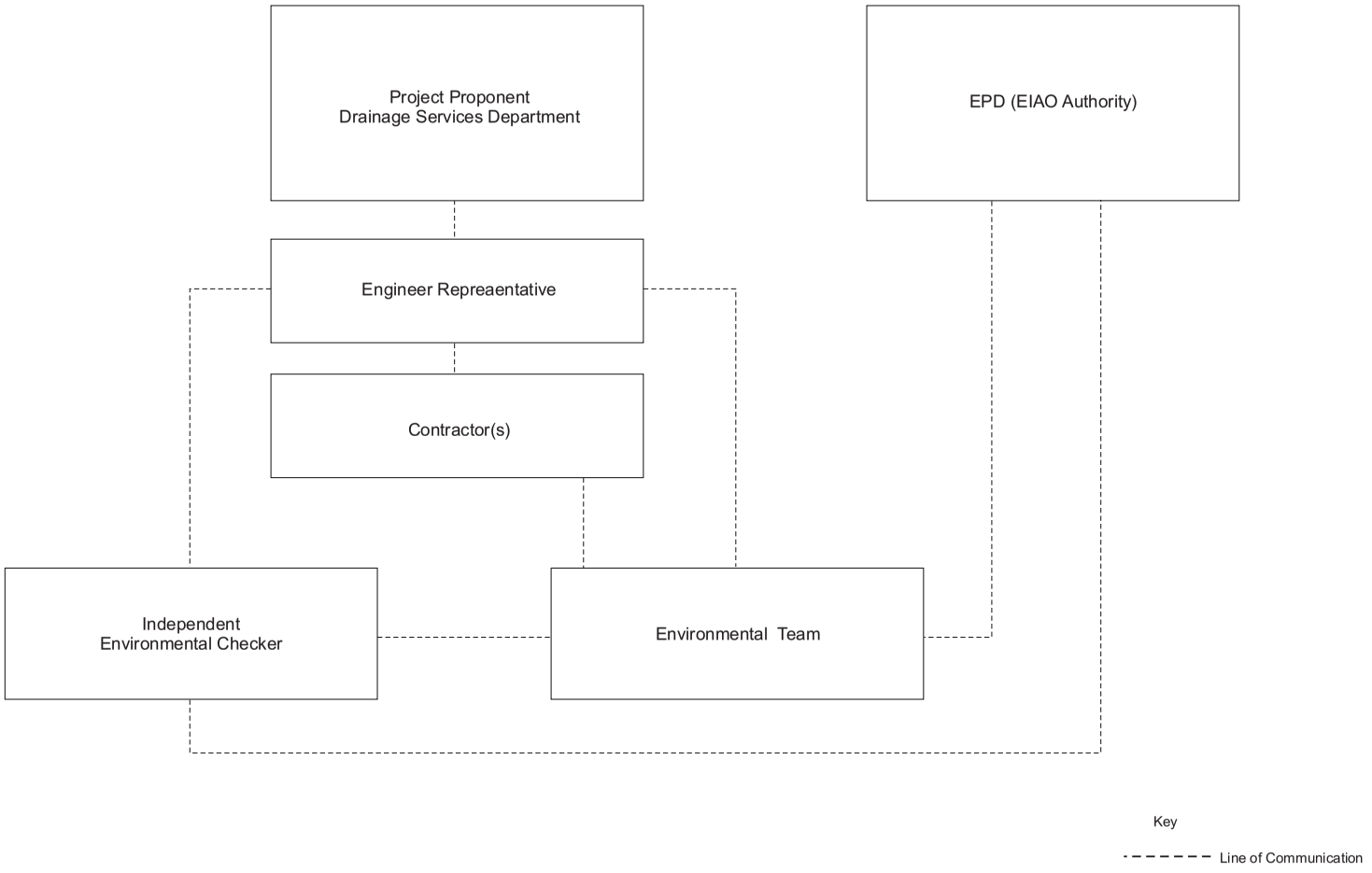
Water Quality Event and Action Plan

Event	ET Leader	IEC	ER	Contractor
Action level being exceeded by one sampling day	• Repeat *in-situ* measurement to confirm findings; • Identify source(s) of impact; • Inform IEC and Contractor; • Check monitoring data, all plant, equipment and Contractor's working methods; • Discuss mitigation measures with IEC and Contractor; • Repeat measurement on next day of exceedance.	• Discuss with ET and Contractor on the mitigation measures; • Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; • Assess the effectiveness of the implemented mitigation measures.	• Discuss with IEC on the proposed mitigation measures; • Make agreement on the mitigation measures to be implemented.	• Inform the ER and confirm notification of the non-compliance in writing; • Rectify unacceptable practice; • Check all plant and equipment • Consider changes of working methods; • Discuss with ET and IEC and propose mitigation measures to IEC and ER; • Implement the agreed mitigation measures.
Action level being exceeded by more than one consecutive sampling days	• Repeat in-situ measurement to confirm findings; • Identify source(s) of impact; • Inform IEC and Contractor; • Check monitoring data, all plant, equipment and Contractor's working methods; • Discuss mitigation measures with IEC and Contractor; • Ensure mitigation measures are implemented; • Prepare to increase the monitoring frequency to daily; • Repeat measurement on next day of exceedance.	• Discuss with ET and Contractor on the mitigation measures • Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly • Assess the effectiveness of the implemented mitigation measures.	• Discuss with IEC on the proposed mitigation measures; • Make agreement on the mitigation measures to be implemented; • Assess the effectiveness of the implemented mitigation measures.	• Inform the Engineer and confirm notification of the non-compliance in writing; • Rectify unacceptable practice; • Check all plant and equipment; • Consider changes of working methods; • Discuss with ET and IEC and propose mitigation measures to IEC and ER within 3 working days; • Implement the agreed mitigation measures.
Limit level being exceeded by one sampling day	• Repeat in-situ measurement to confirm findings; • Identify source(s) of impact; • Inform IEC, contractor and EPD; • Check monitoring data, all plant,	• Discuss with ET and Contractor on the mitigation measures; • Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly;	• Discuss with IEC, ET and Contractor on the proposed mitigation measures; • Request Contractor to critically review the working methods;	• Inform the Engineer and confirm notification of the non-compliance in writing; • Rectify unacceptable practice; • Check all plant and equipment;

Event	ET Leader	IEC	ER	Contractor
	equipment and Contractor's working methods; • Discuss mitigation measures with IEC, ER and Contractor; • Ensure mitigation measures are implemented; • Increase the monitoring frequency to daily until no exceedance of Limit level.	• Assess the effectiveness of the implemented mitigation measures.	• Make agreement on the mitigation measures to be implemented; • Assess the effectiveness of the implemented mitigation measures.	• Consider changes of working methods; • Discuss with ET , IEC and ER and propose mitigation measures to IEC and ER within 3 working days; • Implement the agreed mitigation measures.
Limit level being exceeded by more than one consecutive sampling days	• Repeat in-situ measurement to confirm findings; • Identify source(s) of impact; • Inform IEC, contractor and EPD; • Check monitoring data, all plant, equipment and Contractor's working methods; • Discuss mitigation measures with IEC, ER and Contractor; • Ensure mitigation measures are implemented; • Increase the monitoring frequency to daily until no exceedance of Limit level for two consecutive days.	• Discuss with ET and Contractor on the mitigation measures; • Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; • Assess the effectiveness of the implemented mitigation measures.	• Discuss with IEC, ET and Contractor on the proposed mitigation measures; • Request Contractor to critically review the working methods; • Make agreement on the mitigation measures to be implemented; • Assess the effectiveness of the implemented mitigation measures; • Consider and instruct, if necessary, the Contractor to slow down or to stop all or part of the works until no exceedance of Limit level.	• Inform the ER and confirm notification of the non-compliance in writing; • Rectify unacceptable practice; • Check all plant and equipment; • Consider changes of working methods; • Discuss with ET , IEC and ER and propose mitigation measures to IEC and ER within 3 working days; • Implement the agreed mitigation measures; • As directed by the Engineer, to slow down or to stop all or part of the works or construction activities..

ANNEX D

ENVIRONMENTAL MANAGEMENT ORGANIZATION AND COMMUNICATION LINES



深圳市治理深圳河办公室

香港渠务署

Figure 1.7

EM&A Organisation Chart

FILE: 0101759z1
DATE: 21/09/2010

长江水资源保护科学研究所
CHANGJIANG WATER RESOURCES PROTECTION INSTITUTE

ERM

ANNEX E

COMPLIANT LOG

Complaint Log

Ref:

Log Ref	Date	Location	Complainant/ Date of Contact	Details of Complaint	Investigation / Mitigation Action	File Closed

Filed by Environmental Team Leader:

Date:

ANNEX F

SAMPLE DATA RECORD SHEETS FOR ENVIRONMENTAL MONITORING

B1 *DATA RECORD SHEET FOR TSP MONITORING*

Monitoring Location		
Details of Location		
Sampler Identification		
Date & Time of Sampling		
Elapsed-time Meter Reading	Start (min.)	
	Stop (min.)	
Total Sampling Time (min.)		
Weather Conditions		Sunny/ Fine / Cloudy / Rainy
Site Conditions		
Initial Flow Rate, Qsi	Pi (mmHg)	
	Ti (°C)	
	Hi (in.)	
	Qsi (Std.m^3)	
Final Flow Rate, Qsf	Pf (mmHg)	
	Tf (°C)	
	Hf (in.)	
	Qsf (Std.m^3)	
Average Flow Rate (Std.m^3)		
Total Volume (Std.m^3)		
Filter Paper Identification No.		
Initial Wt. of Filter Paper (g)		
Final Wt. of Filter Paper (g)		
Measured TSP Level (µg/m^3)		
Other Dust Emission Source(s) Observed		
Remarks/ Other Observations		

Noise Monitoring Field Record Sheet

Monitoring Location		
Description of Location		
Date of Monitoring		
Measurement Start Time (hh:mm)		
Measurement Time Length (min.)		
Noise Meter Model/Identification		
Calibrator Model/Identification		
Measurement Results	L_{90} (dB(A))	
	L_{10} (dB(A))	
	L_{EQ} (dB(A))	
Major Construction Noise Source(s) During Monitoring		
Other Noise Source(s) During Monitoring		
Remarks		

	Name & Designation	Signature	Date
Recorded By :			
Checked By :			

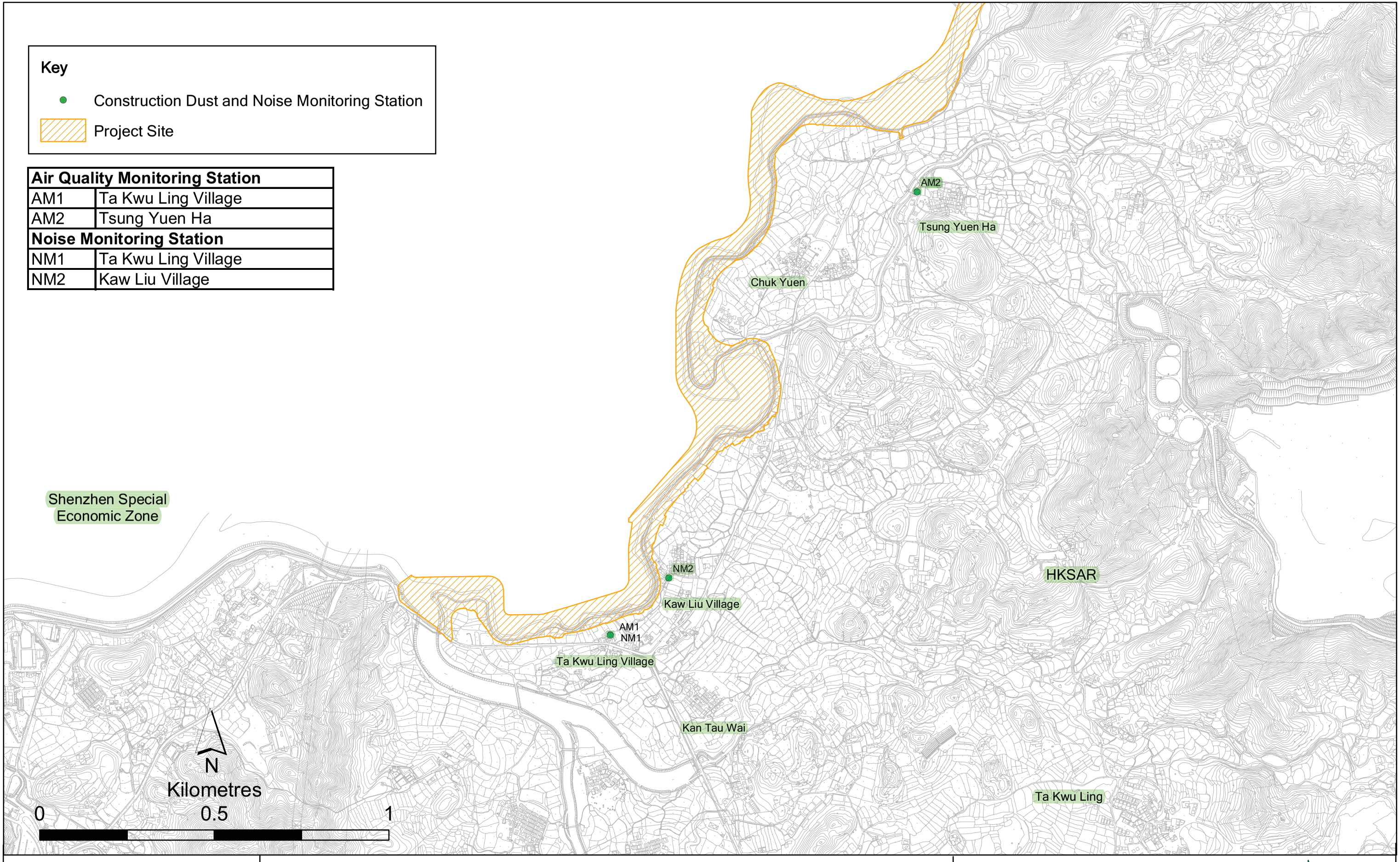
ANNEX G

ENVIRONMENTAL MONITORING LOCATIONS

Key

- Construction Dust and Noise Monitoring Station
- Project Site

Air Quality Monitoring Station	
AM1	Ta Kwu Ling Village
AM2	Tsung Yuen Ha
Noise Monitoring Station	
NM1	Ta Kwu Ling Village
NM2	Kaw Liu Village



深圳市治理深圳河办公室

香港渠务署

Figure 3.1

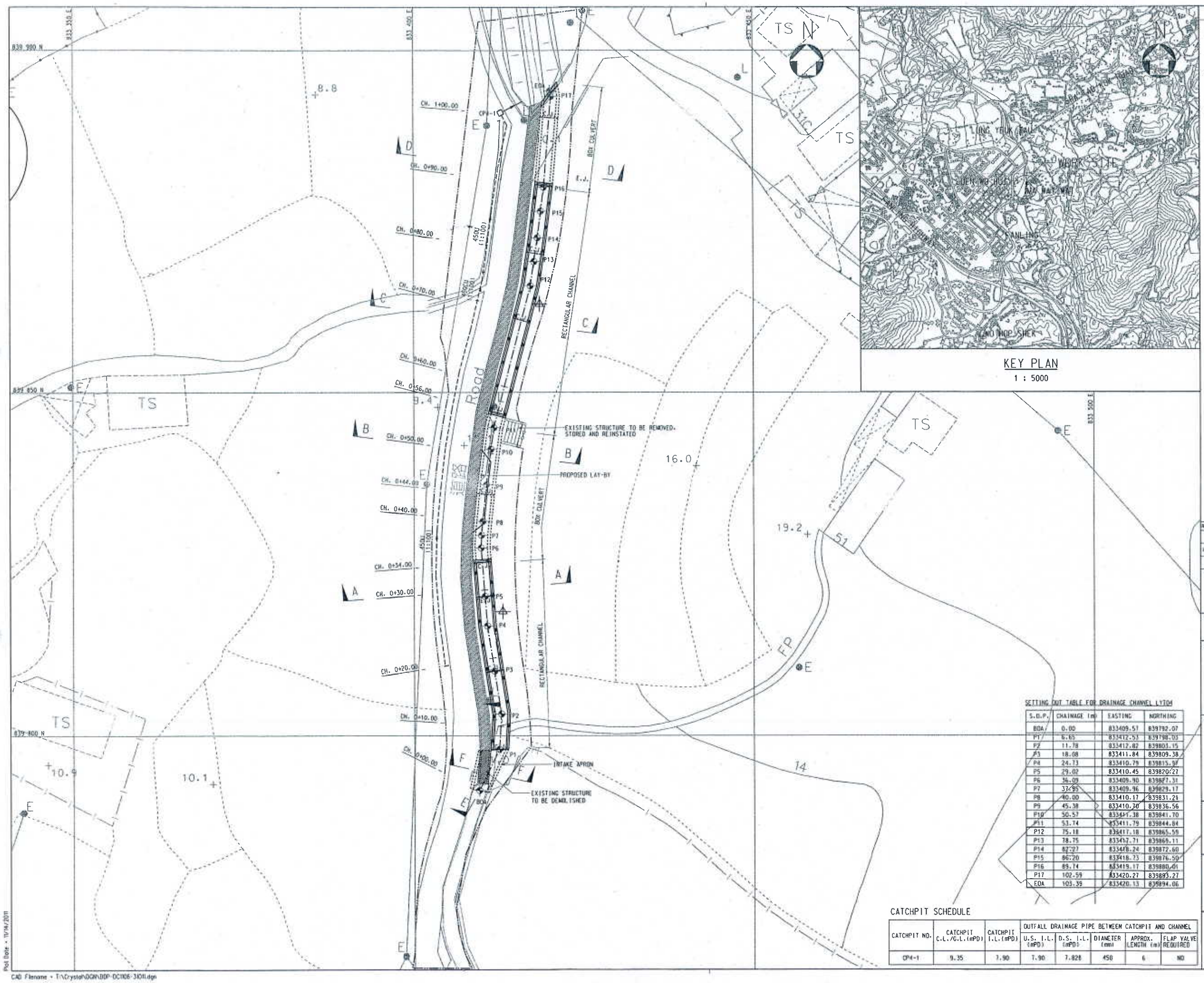
Locations of Construction Dust and Noise Monitoring Stations

File: Final\0101759_construction dust and noise monitoring station.mxd
Date: 03/08/2010

长江水资源保护科学研究所
CHANGJIANG WATER RESOURCES PROTECTION INSTITUTE

ERM

LAYOUT PLAN SHOWING WORKS SECTION I TO V



KEY PLAN
1 : 5000

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.
2. ALL LEVELS ARE IN METRES AND REFERRED TO H.K.P.D.
3. GRID LINES ARE HONG KONG GRID 1980.
4. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH DRAWING NoS. DDP/DC1106/31010 & 32011 & 32012.
5. FLOOD WARNING SIGN REFER TO DSD STANDARD DRAWING NO. DS1072.
6. EXACT LOCATIONS OF FLOOD WARNING SIGN SHALL BE AGREED WITH THE ENGINEER ON SITE.

LEGEND :

	SITE BOUNDARY
	EXISTING DECKED CHANNEL
	CATCHPIT
450U (1:100)	U-CHANNEL IN THE DIRECTION OF FLOW AND SIZE SPECIFIED (GRADIENT OF FALL SPECIFIED)
450CU (1:100)	U-CHANNEL WITH CONCRETE COVER IN THE DIRECTION OF FLOW AND SIZE SPECIFIED (GRADIENT OF FALL SPECIFIED)
	DAINAGE PIPE WITH DIRECTION OF FLOW
G.L.	GROUND LEVEL
I.L.	INVERT LEVEL
C.L.	COVER LEVEL
U.S.	UPSTREAM
D.S.	DOWNSTREAM
CP	CATCHPIT
	SETTING OUT POINT (S.O.P.) FOR CHANNEL
BOA	BEGINNING OF ALIGNMENT
EOA	END OF ALIGNMENT
	TYPE 2 RAILING
	PROPOSED FLOOD WARNING SIGN

Revision	Date	Description			Initial
	Designed	Checked	Drawn	Checked	
Initial	WLC	CWW	QYD	CWW	
Date	07/11	07/11	07/11	07/11	

Approved

Contract No.
DC/2011/06

Contract Title
REPROVISIONING OF BOUNDARY PATROL ROAD AND ASSOCIATED SECURITY FACILITIES BETWEEN PING YUEN RIVER AND PAK FU SHAN AND DRAINAGE WORKS IN NORTH DISTRICT

Drawing Title
GENERAL LAYOUT PLAN FOR DRAINAGE CHANNEL LYT04

Drawing No.
DDP/DC1106/31011

Scale
1:250 (A1)
1:500 (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

SETTING OUT TABLE FOR DRAINAGE CHANNEL LYT04

S.O.P.	CHAINAGE (m)	EASTING	NORTHING
BOA	0.00	833409.57	839792.07
P1	6.65	833412.53	839798.03
P2	11.78	833412.82	839801.15
P3	18.08	833411.84	839809.38
P4	24.73	833410.79	839815.97
P5	29.02	833410.45	839820.27
P6	36.09	833409.80	839827.31
P7	37.95	833409.96	839829.17
P8	40.00	833410.17	839831.21
P9	45.38	833410.70	839836.56
P10	50.57	833411.38	839841.70
P11	53.74	833411.79	839844.84
P12	75.18	833417.18	839865.59
P13	78.75	833417.71	839869.11
P14	82.27	833418.24	839872.60
P15	86.20	833418.73	839876.50
P16	89.74	833419.17	839880.01
P17	102.59	833420.27	839893.27
EOA	103.39	833420.13	839894.06

CATCHPIT SCHEDULE

CATCHPIT NO.	CATCHPIT C.L./G.L.(mPD)	CATCHPIT I.L.(mPD)	OUTFALL DRAINAGE PIPE BETWEEN CATCHPIT AND CHANNEL				
			U.S. I.L. (mPD)	D.S. I.L. (mPD)	DIAMETER (mm)	APPROX. LENGTH (m)	FLAP VALVE REQUIRED
CP4-1	9.35	7.90	7.90	7.828	450	6	NO

Plot Date = 10/04/2011

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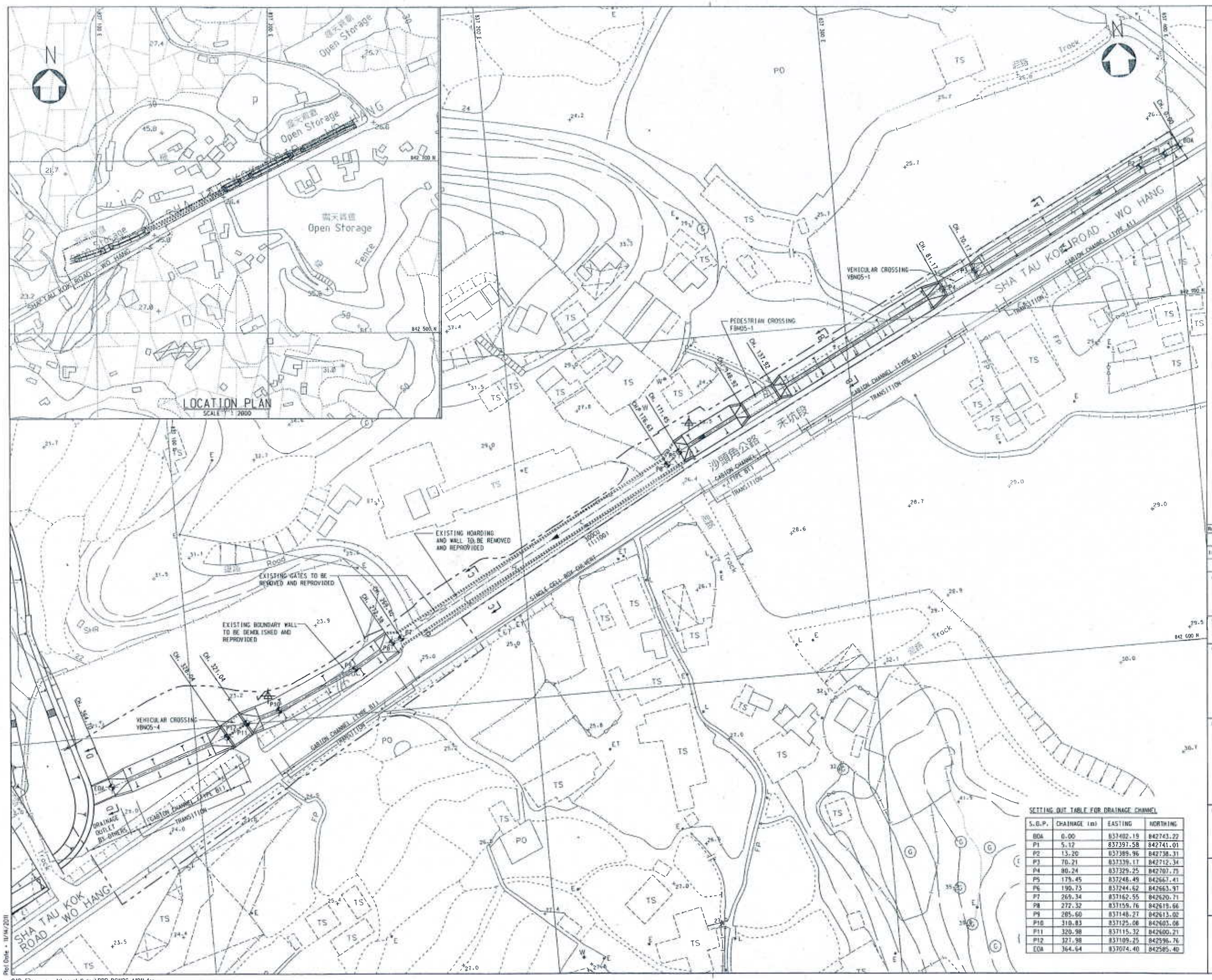


NOTES:

1. ALL LEVELS ARE IN METERS ABOVE PRINCIPAL DATUM OF HONG KONG.
2. GRIDLINES ARE HONG KONG METRIC GRID(1980).
3. DIMENSIONS AND CHAINAGES ARE IN METERS. UNLESS OTHERWISE STATED.
4. THE CHAINAGE FOR THE CHANNELS ARE INDICATIVE ONLY. THE EXACT CHAINAGE MAY BE CHANGED ACCORDING TO THE SITE CONDITION.
5. THE EXACT LOCATION FOR THE REPROVISION OF WALLS, HOARDING AND GATES TO BE AGREED WITH THE ENGINEER ON SITE.
6. FLOOD WARNING SIGN REFER TO DSD STANDARD DRAWING NO. DS107Z.
7. EXACT LOCATIONS OF FLOOD WARNING SIGN SHALL BE AGREED WITH THE ENGINEER ON SITE.

LEGEND:

———	WORKS LIMIT
⊕	SETTING OUT POINT (S.O.P.) FOR CHANNEL
BOA	BEGINNING OF ALIGNMENT
EOA	END OF ALIGNMENT
300DU (1:100)	U-CHANNEL WITH CONCRETE COVER IN THE DIRECTION OF FLOW AND SIZE SPECIFIED (GRADIENT OF FALL SPECIFIED)
	PROPOSED MANHOLE
	PROPOSED FLOOD WARNING SIGN

CONTROLLED COPY

SETTING OUT TABLE FOR DRAINAGE CHANNEL

S.O.P.	CHAINAGE (m)	EASTING	NORTHING
BOA	0.00	837402.19	842743.22
P1	5.12	837397.58	842741.01
P2	13.20	837389.96	842738.31
P3	70.21	837339.17	842712.34
P4	80.24	837329.25	842707.75
P5	179.45	837248.49	842667.41
P6	190.73	837244.62	842663.97
P7	269.34	837162.55	842620.71
P8	272.32	837159.76	842619.66
P9	285.60	837148.27	842613.02
P10	310.83	837125.08	842603.06
P11	320.98	837115.32	842600.21
P12	327.98	837109.25	842596.76
EOA	364.64	837074.40	842585.40

Revision	Date	Description			Initial
	Designed	Checked	Drawn	Checked
Initial	WLC	CNW	SZ	CNW
Date	10/11	10/11	10/11	10/11

Approved

Contract No.
DC/2011/06

Contract Title
REPROVISIONING OF BOUNDARY PATROL ROAD AND ASSOCIATED SECURITY FACILITIES BETWEEN PING YUEN RIVER AND PAK FU SHAN AND DRAINAGE WORKS IN NORTH DISTRICT

Drawing Title
GENERAL LAYOUT PLAN FOR DRAINAGE CHANNEL MUP05

Drawing No.
DDP/DC1106/41011

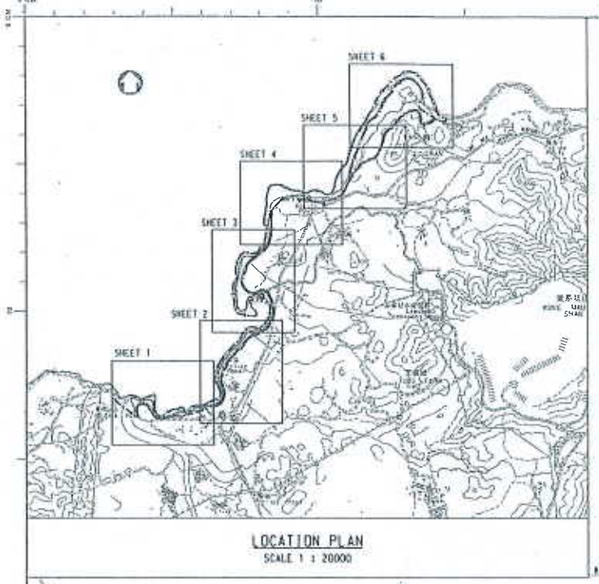
Scale
1:500 A1
1:1000 A3

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 = 11/14/2011

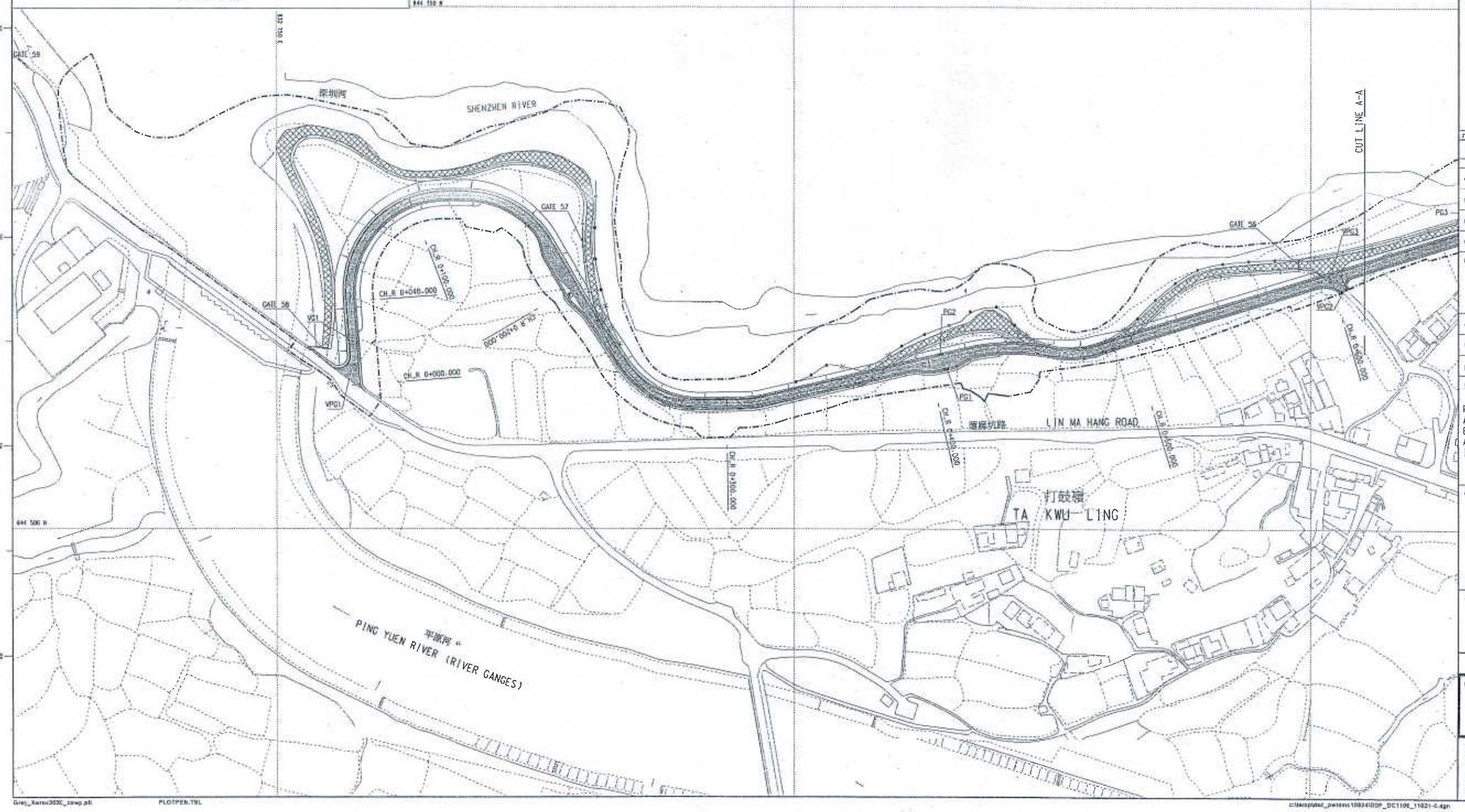
CAD Filename = t:\crystal\dgn\DDP-DC1106-41011.dgn



LOCATION PLAN
SCALE 1 : 20000

深圳市
SHENZHEN SHI

CONTROLLED COPY



NOTES:

1. GRID LINES ARE HONG KONG GRID 1980.
2. ALL LEVELS ARE IN METRES AND REFERRED TO H.K.P.D.

LEGEND :

- LIMIT OF THE SITE
- EXISTING BOUNDARY PATROL ROAD
- EXISTING BOUNDARY PATROL ROAD TO BE RECONSTRUCTED
- PROPOSED BOUNDARY PATROL ROAD
- PROPOSED XPM MESH PRIMARY BOUNDARY FENCE
- PROPOSED XPM MESH SECONDARY BOUNDARY FENCE
- EXISTING BOUNDARY FENCE AND ASSOCIATED LAMP POST AND PILLAR BOX
- EXISTING BOUNDARY FENCE AND ASSOCIATED LAMP POST AND PILLAR BOX TO BE DEMOLISHED UPON SATISFACTORY COMPLETION OF PROPOSED PRIMARY FENCE AND/ OR WITH INSTRUCTIONS FROM THE ENGINEER
- EXISTING XPM MESH PRIMARY BOUNDARY FENCE TO BE MODIFIED
- EXISTING CHAIN LINK FENCE
- EXISTING CHAIN LINK FENCE TO BE DEMOLISHED
- PROPOSED CUT SLOPE
- PROPOSED FILL SLOPE
- CH_R 0+400.000 CHAINAGE FOR BOUNDARY ROAD
- PROPOSED VEHICULAR AND PEDESTRIAN GATE (VPG)
- PROPOSED VEHICULAR GATE (VG)
- PROPOSED PEDESTRIAN GATE (PG)
- EXISTING GATE
- EXISTING GATE TO BE DEMOLISHED
- PILLAR BOX
- SWITCH ROOM

no.	date	description	initial
REVISION			

	name	date
designed	C. F. CHAN	28 NOV 2011
drawn	T. M. LEE	28 NOV 2011
checked	W. H. POON	28 NOV 2011
vetted	T. C. LAU	28 NOV 2011

approved

K. L. TSANG
Ag. Chief Engineer
28 NOV 2011
Date

contract no.	DC/2011/06
file no.	DP/8/5018GB
project no.	5018GB

contract

REPROVISIONING OF BOUNDARY PATROL ROAD AND ASSOCIATED SECURITY FACILITIES BETWEEN PING YUEN RIVER AND PAK FU SHAN AND DRAINAGE WORKS IN NORTH DISTRICT

drawing title

GENERAL LAYOUT

(SHEET 1 OF 6)

drawing no.	scale
DDP/DC1106/11021	1 : 1 000

office

DRAINAGE PROJECTS DIVISION

DRAINAGE SERVICES DEPARTMENT
GOVERNMENT OF THE
HONG KONG
SPECIAL ADMINISTRATIVE REGION

CUT LINE A-A

EXISTING HKPF LO FONG BRIDGE POST TO BE MAINTAINED

REPROVISION OF HKPF LO FONG BRIDGE POST

深圳市
SHENZHEN SHI

打鼓嶺
TA KWU LING

CUT LINE B-B

NOTES :

1. FOR GENERAL NOTES & LEGEND, REFER TO DRG. No. DDP/DC1106/11021.

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no.	date	description	initial
REVISION			

	name	date
designed	C. F. CHAN	26 NOV 2011
drawn	T. K. LEE	26 NOV 2011
checked	W. H. POON	26 NOV 2011
vetted	T. C. LAU	26 NOV 2011

approved

K. L. TSANG 26 NOV 2011
Ag. Chief Engineer Date

contract no. DC/2011/06

file no. DP/8/5018GB

project no. 5018GB

contract

REPROVISIONING OF BOUNDARY PATROL ROAD AND ASSOCIATED SECURITY FACILITIES BETWEEN PING YUEN RIVER AND PAK FU SHAN AND DRAINAGE WORKS IN NORTH DISTRICT

drawing title

GENERAL LAYOUT

(SHEET 2 OF 6)

drawing no.	scale
DDP/DC1106/11022	1 : 1 000

office

DRAINAGE PROJECTS DIVISION

DRAINAGE SERVICES DEPARTMENT
GOVERNMENT OF THE
HONG KONG
SPECIAL ADMINISTRATIVE REGION

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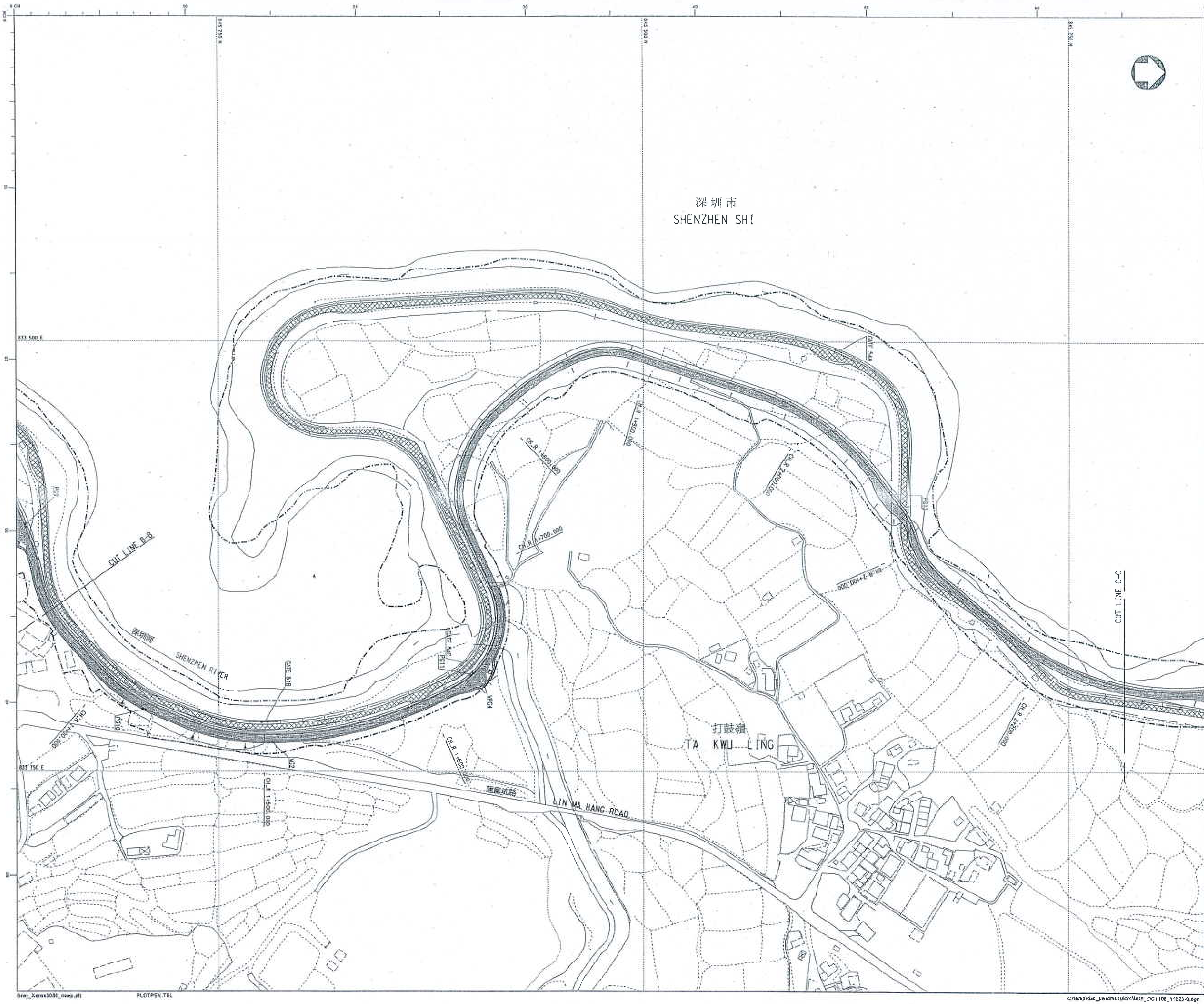

NOTES:

1. FOR GENERAL NOTES & LEGEND, REFER TO DRG. No. DDP/DC1106/11021.

CONTROLLED COPY

no.	date	description	initial
REVISION			

	name	date
designed	C. F. CHAN	28 NOV 2011
drawn	T. H. LEE	28 NOV 2011
checked	W. N. POON	28 NOV 2011
vetted	T. C. LAU	28 NOV 2011

approved
K. L. TSANG — Ag. Chief Engineer — 28 NOV 2011 Date

contract no. DC/2011/06

file no. DP/8/5018GB

project no. 5018GB

contract

REPROVISIONING OF BOUNDARY PATROL ROAD AND ASSOCIATED SECURITY FACILITIES BETWEEN PING YUEN RIVER AND PAK FU SHAN AND DRAINAGE WORKS IN NORTH DISTRICT

drawing title

GENERAL LAYOUT

(SHEET 3 OF 6)

drawing no. DDP/DC1106/11023

scale 1 : 1 000

office

DRAINAGE PROJECTS DIVISION

DRAINAGE SERVICES DEPARTMENT
GOVERNMENT OF THE
HONG KONG
SPECIAL ADMINISTRATIVE REGION

NOTES :

1. FOR GENERAL NOTES & LEGEND, REFER TO DRG. No. DDP/DC1106/11021.

CONTROLLED COPY

no.	date	description	initial
REVISION			

	name		date
designed	[illegible]	C. F. CHAN	28 NOV 2011
drawn	[illegible]	T. W. LEE	28 NOV 2011
checked	[illegible]	W. H. POON	28 NOV 2011
vetted	[illegible]	T. C. LAU	28 NOV 2011

approved

[illegible] K. L. TSANG 28 NOV 2011
Ag. Chief Engineer Date

contract no.	DC/2011/06
file no.	DP/8/5018GB
project no.	5018GB

contract

REPROVISIONING OF BOUNDARY PATROL ROAD
AND ASSOCIATED SECURITY FACILITIES
BETWEEN PING YUEN RIVER
AND PAK FU SHAN AND DRAINAGE WORKS
IN NORTH DISTRICT

drawing title

GENERAL LAYOUT

(SHEET 4 OF 6)

drawing no.	scale
DDP/DC1106/11024	1 : 1 000

office

DRAINAGE PROJECTS DIVISION

DRAINAGE SERVICES DEPARTMENT
GOVERNMENT OF THE
HONG KONG
SPECIAL ADMINISTRATIVE REGION

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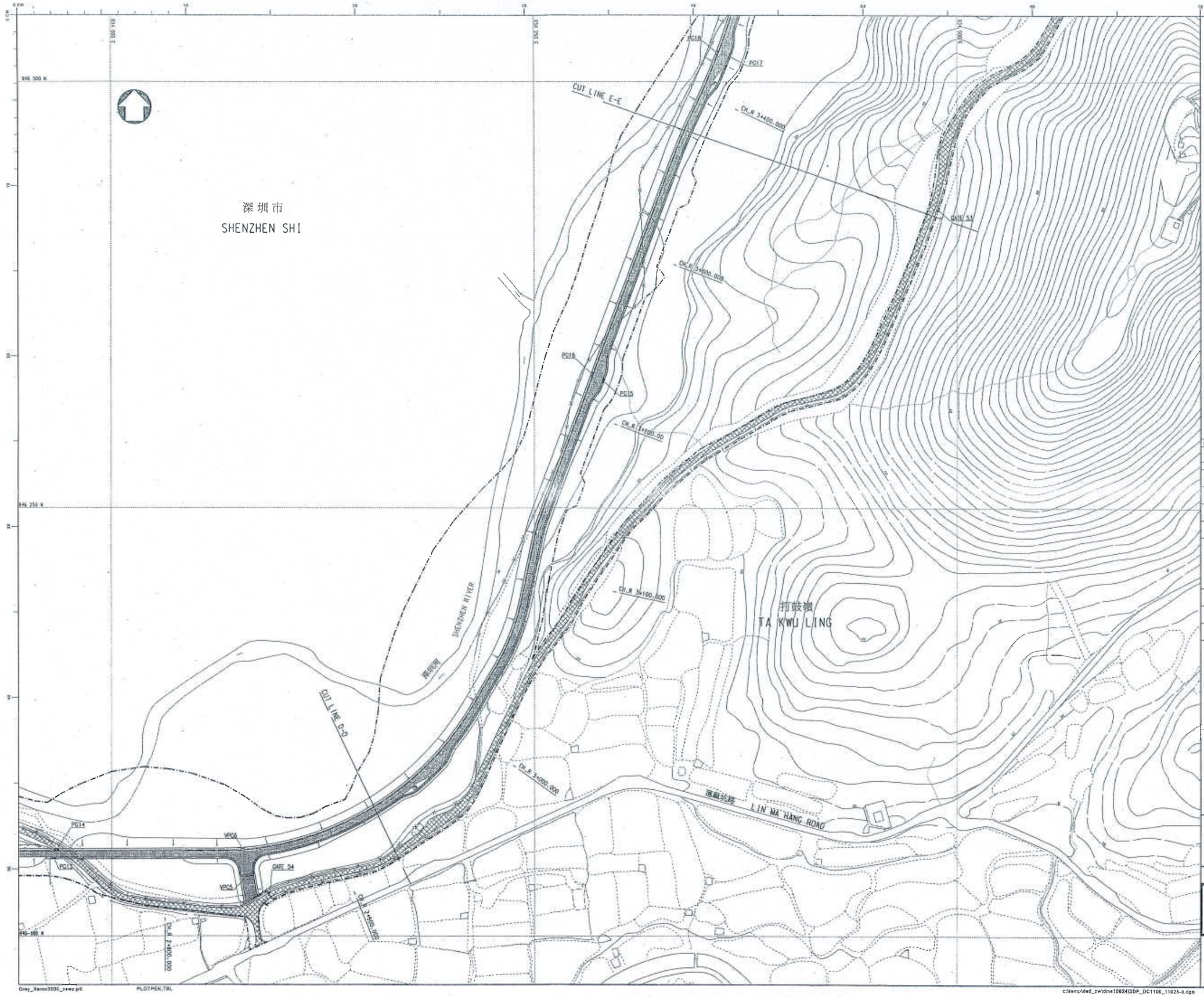

no.	date	description	initial
REVISION			

	name	date
designed	E. F. CHAN	26 NOV 2015
drawn	F. W. LEE	26 NOV 2015
checked	K. K. POON	26 NOV 2015
vetted	T. C. LAU	26 NOV 2015

approved

K. L. TSANG — Ag. Chief Engineer — 26 NOV 2015 Date

contract no. DC/2011/06

file no. DP/8/5018GB

project no. 5018GB

contract

REPROVISIONING OF BOUNDARY PATROL ROAD AND ASSOCIATED SECURITY FACILITIES BETWEEN PING YUEN RIVER AND PAK FU SHAN AND DRAINAGE WORKS IN NORTH DISTRICT

drawing title

GENERAL LAYOUT

(SHEET 5 OF 6)

drawing no. DDP/DC1106/11025

scale 1 : 1 000

office

DRAINAGE PROJECTS DIVISION

DRAINAGE SERVICES DEPARTMENT
GOVERNMENT OF THE
HONG KONG
SPECIAL ADMINISTRATIVE REGION

深圳市
SHENZHEN SHI

SHENZHEN RIVER
深圳河

PG22
PG21
PG20
PG19
PG18
PG17
PG23

CH.R 3+900.000
CH.R 4+000.000
CH.R 4+100.000
CH.R 3+800.000
CH.R 3+700.000
CH.R 3+600.000
CH.R 3+500.000
CH.R 3+400.000

GATE 52
GATE 51
GATE 53

VG3
VG7

EXISTING BOUNDARY PATROL ROAD TO BE RECONSTRUCTED

CUT LINE E-E

打鼓嶺
TA KWU LING

NOTES :

1. FOR GENERAL NOTES & LEGEND, REFER TO DRG. No. DDP/DC1106/11021.

CONTROLLED COPY

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designed	C. F. CHAN	28 NOV 2011
drawn	T. W. LEE	28 NOV 2011
checked	W. H. POON	28 NOV 2011
vetted	T. C. LAU	28 NOV 2011

approved

S. L. TSANG
Ag. Chief Engineer — 28 NOV 2011 Date

contract no.	DC/2011/06
file no.	DP/8/5018GB
project no.	5018GB

contract

REPROVISIONING OF BOUNDARY PATROL ROAD AND ASSOCIATED SECURITY FACILITIES BETWEEN PING YUEN RIVER AND PAK FU SHAN AND DRAINAGE WORKS IN NORTH DISTRICT

drawing title

GENERAL LAYOUT

SHEET 6 OF 61

drawing no.	scale
DDP/DC1106/11026	1 : 1 000

office

DRAINAGE PROJECTS DIVISION

DRAINAGE SERVICES DEPARTMENT
GOVERNMENT OF THE
HONG KONG
SPECIAL ADMINISTRATIVE REGION

A1 841x594