

MAIN DRAINAGE CHANNELS
AND POLDERED VILLAGE PROTECTION SCHEMES FOR SAN TIN, NWNT
ENVIRONMENTAL IMPACT ASSESSMENT (EIA) STUDY

BRIEF

1. Introduction

This Brief is to be read in conjunction with the Memorandum of Agreement, the General conditions of Employment for an Investigation Assignment, Special Conditions of Employment and Schedule of Fees.

2. Description of the Project

2.1 The construction of the Main Drainage Channels and Poldered Village Protection Schemes for San Tin (the Project) is to alleviate the recurrent floods in the northern part of the Yuen Long and Kam Tin basins.

2.2 The Project will be carried out under three PWP Items. They are 35CD covering the village flood protection for San Tin villages and Chau Tau Tsuen, 73CD consisting of the eastern main drainage channel for San Tin, and another project covering the western main drainage channel for San Tin.

2.3 Due to the urgent need to protect the San Tin villages and Chau Tau Tsuen from prone of flooding, village flood protection work under 35CD will proceed before the construction of the eastern and western main drainage channels for San Tin. During implementation of 35CD, mitigation measures to control noise and dust emissions and surface run-off will be undertaken in accordance with that recommended for PWP Item No. 71CD "Village Flood Protection for Sha Po Tsuen, Kam Tin, New Territories".

3. Objectives of the Assignment

3.1 The objectives of the Environmental Impact Assessment (EIA) are as follows :-

- (i) to describe the Project (which includes alternative channel alignments for the San Tin Western Drainage Channel) and associated works together with the requirements for carrying out the Project;
- (ii) to review the information and data including the assumptions and approaches related to the evaluation of the environmental and ecological

impacts arising from the construction and operation of the Main Drainage Channels and Poldered Village Protection Schemes;

- (iii) to identify and describe elements of the community, environment and ecology likely to be affected by the construction and operation activities;
- (iv) to identify and quantify any potential losses or damage to flora, fauna and natural/man-made habitats;
- (v) to review and predict the net and cumulative environmental impacts due to the construction and operation of the Project in relation to the Inner Deep Bay Environs and areas along the Channels (including proposed alternative channel alignment(s) for the San Tin Western Drainage Channel which should be assessed and compared);
- (vi) to propose the provision of mitigation measures so as to minimize pollution, environmental and ecological disturbance arising from the construction and operation of the Schemes;
- (vii) to identify, predict and evaluate the residual (i.e. after practicable mitigation) environmental impacts and cumulative effects expected to arise during the construction, operation (and decommissioning) phases of the Project in relation to the sensitive receivers and potential affected uses;
- (viii) to identify, assess and specify methods, measures and standards to be included in the detailed design, which are necessary to mitigate these impacts and reduce them to within establish standards/guidelines;
- (ix) to design and specify the environmental monitoring and audit requirements necessary to ensure the effectiveness of the environmental protection measures adopted;
- (x) to investigate the extent of side-effects of proposed mitigation measures that may lead to other forms of impacts;
- (xi) to identify constraints associated with the mitigation measures recommended in the study;
- (xii) to identify any additional studies necessary to fulfil the objectives to the requirements of this EIA Study; and
- (xiii) to compile an EIA report (with relevant working papers and Executive Summary) for the Main Drainage Channels and Poldered Village Protection Schemes to comprehensively cover the environmental considerations of selecting alternatives channel alignment(s), and the design, construction and operation of the Project.

4. **Description of the Assignment**

A 4.1 The area for this EIA Study shall cover broadly the territory north of the New Territories Circular Road (NTRC) and the Mai Po Natural Reserve (MPNR) between Chau Tau and Inner Deep Bay. The broad study area is shown on Drawing No. DDN/35CD/0004A in Appendix A.

4.2 The EIA Study is required to provide information on the nature and extent of the net and cumulative environmental impacts arising from the construction, operation and decommissioning of the proposed Main Drainage Channels and Poldered Village Protection Schemes (including alternative channel alignments for the San Tin Western Drainage Channel) and all related activities. This information will contribute to decisions on :-

- (i) the broad acceptability of any environmental consequences that are likely to arise as a result of the Project;
- (ii) principal environmental constraints to be imposed on the Project;
- (iii) the required environmental impact mitigation conditions for the detailed planning, design and construction (including decommissioning) of the Project; and
- (iv) the acceptability of residual impacts after the proposed mitigation measures are implemented.

4.3 An EIA report for all stages of the Project which comprehensively covers the operation and construction stages of the Main Drainage Channels and Poldered Village Protection Schemes will need to be compiled to report on the findings of the assessment. The acceptability of the design and environmental advantages/disadvantages of alternative channel alignments should also be discussed.

4.4 The EIA Study shall cover any advance works, site restoration works and any temporary and permanent activities to take place.

4.5 The EIA Study shall address the environmental implications, including both the adverse and beneficial effects, of any drainage channel/flood protection scenarios proposed under the Project. It is important to note that any modifications required for these scenarios should be suggested in order to have the environmental issues associated with the works scenarios to be acceptable and surmountable.

4.6 The EIA Study shall include the following :-

- (i) carrying out the necessary background studies to identify, collect and analyze information about the Inner Deep Bay Environs, which are likely to be affected by the construction and operational phases of the Project

and to identify the conservation and ecological concerns of the area due to the Project;

- (ii) carrying out any necessary environmental survey, site investigation and baseline monitoring work;
- (iii) assessing the environmental (including ecological and landscape) impacts potentially arising from the construction and operational aspects of the Project on the background conditions;
- (iv) quantifying, by use of models or other predictive methods, the residual and cumulative environmental impacts to the Inner Deep Bay Environs due to the construction and operation of the San Tin Main Drainage Channels and the proposed Poldered Village Protection Schemes (the Consultants should specify whether these impacts are transient, long term and/or irreversible)
- (v) assessing the environmental effects to the Inner Deep Bay Environs as a result of diverting the streams and flood discharges to the San Tin Main Drainage Channels.
- (vi) preparing a monitoring and audit programme by which environmental acceptability of the Project implementation during construction and operation can be assessed and controlled. Establishing Environmental Monitoring and Audit requirements, including 'trigger', 'action' and 'target' levels, Action Plans and baseline data requirements, by which remedial action will be taken to prevent unacceptable deterioration in environmental quality. Proposing practicable, effective and enforceable methods, measures and standards to effectively mitigate any significant environmental impacts in the short and long term.

5. Deliverables

5.1 Throughout the duration of this Agreement, the following deliverables are to be supplied by the Consultants :-

- (i) an Inception Report should be prepared and submitted, within the first month of the Study commencement, by the Consultants. The Inception Report shall include, inter-alia, the following :-
 - (a) the Consultants' understanding and appreciation of the objectives of the Study. The identification of all environmental issues and other key issues, which are considered necessary and relevant for the purpose of this assessment;
 - (b) the approach and methodology for the various parts of the Study;
 - (c) a Study Programme which identifies and clearly describes the major tasks, and clearly defines the critical activities in the Programme, in

particular the inter-relationship with the programme for detailed design and construction of the major elements of the development. The Study Programme will be subject to the approval by the Director's Representative; and

- (d) a schedule for the submission of the reports, working papers and Environmental Study Management Group (ESMG) meetings (where necessary) to fulfil the requirement of this ELA Study; and
 - (e) organisation and staffing of the environmental study team and the curricula vitae of the key study team members.
- (ii) Working Paper(s) to report on the assessment for the 35CD works, which
- (a) provides an initial assessment and evaluation of the environmental impacts and cumulative effects arising from the 35CD works sufficient to identify those issues of key concern during the construction, operation and decommissioning of the works;
 - (b) defines measurable environmental parameters and environmental features likely to be affected by the 35CD works of the Project and identifies the environmental monitoring programmes which are required both to provide a baseline profile of existing environmental conditions and to monitor impacts and compliance during construction, commissioning, operation (and decommissioning) of the works;
 - (c) defines the environmental audit requirements for compliance and post-project audit, which would include a review of the monitoring data both to identify compliance with regulatory requirements, policies and standards and to define any remedial works required to redress unanticipated or unacceptable consequential environmental impacts.
- (iii) an Initial Assessment Report for all stages of the Project, which
- (a) provides an initial assessment and evaluation of the environmental impacts and cumulative effects arising from the Project sufficient to identify those issues of key concern during the construction, operation and decommissioning of the Project which are likely to influence decisions on various stages of the Project;
 - (b) defines measurable environmental parameters and environmental features likely to be affected by the Project and identifies the environmental monitoring programmes which are required both to provide a baseline profile of existing environmental conditions and to monitor impacts and compliance during construction, commissioning, operation (and decommissioning) of the Project;

- (c) defines the environmental audit requirements for compliance and post-project audit, which would include a review of the monitoring data both to identify compliance with regulatory requirements, policies and standards and to define any remedial works required to redress unanticipated or unacceptable consequential environmental impacts; and
 - (d) proposes a detailed programme of investigation able to meet all other objectives of the assessment.
- (iv) **Key Issue Reports** covering those issues of key concern identified through the Initial Assessment Report or the review of the Initial Assessment Report by the Director's Representative.
- (v) **a Final Assessment Report, which**
 - (a) fully satisfies the requirements of this Brief in respect to the prediction and assessment of impacts, the identification of environmental impact mitigation measures required to supplement that undertaken by 35CD and the associated residual impacts;
 - (b) describes the agreed schedules and programmes for monitoring and audit requirements;
 - (c) prescribes the specification for detailed design, construction and operation requirements of the Project in any case, the projected decommissioning scenario(s) should be addressed and outline the action(s) to restore and/or rehabilitate the site(s) to an acceptable level prior to handing over to Government or any legal successor(s)); and
 - (d) provides with the impacts summary, the study findings, conclusions, recommendations and a mechanism for implementation;
- (vi) **an Executive Summary** in both English and Chinese of the EIA Study, highlighting the major aspects of the Project, perceived issues of concern to the community, the acceptability of residual environmental impacts and cumulative effects, requirements for implementation of the Project, and the basis for and implications of those requirements. It is intended that the information contained therein would assist the Government in undertaking Advisory Council on the Environment (ACE), District Board (DB) and other public consultation(s);
- (vii) the Consultants shall prepare an **Environmental Monitoring and Audit (EM&A) Manual** which covers the requirements and recommendations in Clause 6.8 of this Brief. The Manual shall also contain a summary list of recommended environmental mitigation measures. This Manual shall be used as a guideline for environmental monitoring and audit during the

construction and post-project operational phases. This Manual shall be a stand-alone document and form part of the EIA report.

- (viii) all Inception Report, Working Paper(s), Initial Assessment Report, Key Issue Report, Final Assessment Report and Executive Summary should be prepared and submitted in draft to the Director's Representative for comment;

5.2 The Consultants shall produce the following reports to the Director's Representative :

- i) a draft Inception Report (30) copies
- ii) a final Inception Report (30) copies
- iii) draft Working Paper(s) (30) copies
- iv) final Working Paper(s) (80) copies
- v) a draft Initial Assessment Report (30) copies
- vi) a final Initial Assessment Report (80) copies
- vii) a draft Key Issue Report (30) copies
- viii) a final Key Issue Report (80) copies
- ix) a draft Final Assessment Report (30) copies
- x) a Final Assessment Report (80) copies
- xi) a draft Executive Summary Report (30) copies
- xii) an Executive Summary Report* (150) copies
- xiii) an Environmental Monitoring & Audit Manual (30) copies

* in Chinese and English versions.

5.3 More copies of the reports which will be paid for as additional work may be required by the Director's Representative if necessary.

5.4 The Consultants shall also supply the Director's Representative with appropriate copies of such reports, technical notes, working papers, briefs, supporting documents and other relevant inputs as may be required during the EIA Study or any public consultation exercise.

5.5 The reporting programme will be subject to the approval by the Director's Representative.

6. Services to be provided by the Consultants

6.1 To ensure the Project is in compliance with the mitigation measures recommended in the Government's Deep Bay Guidelines (DBG) for Dredging, Reclamation and Drainage Works, the Consultants shall adopt the findings of the DBG in preparing the EIA report and its Executive Summary for all construction stage impacts and their mitigation measures and propose any additional enhanced mitigations measures as necessary.

6.2 The EIA Study shall comprise quantitative assessment, where applicable, to fully address the key environmental issues which constrain or are likely to arise from the Project. (Details of the assessment methodology shall be agreed with Director's Representative).

6.3 The key environmental issues to be addressed by the Consultants in the EIA Study shall include the following environmental issues:-

(i) Water Quality Impacts

The assessment of the water quality implications of the Project to the water bodies (including physical, chemical and biological disruption of marine water, fresh water, and ground water systems). The water quality implications assessment shall address the following:-

- (a) information and analysis of the existing water systems and sediments. Characterisation of water and sediment quality;
- (b) identification of all sensitive receivers and establishment of the water quality objective, criteria and standard for these sensitive receivers;
- (c) identification of all existing and future activities that either related to the use of water or would affect the water systems and sensitive receivers;
- (d) identification of any alteration of water courses, natural streams/ponds, wetland, change of shoreline, change of flow regimes, change of sediment erosion and deposition pattern, change of ground water levels and catchment areas during different phases of the river training works and upon the completion of works;
- (e) identification of all existing and future water and sediment pollution sources and provision of an emission inventory;
- (f) assessment of all existing and future wastewater generation activities, qualitative and quantitative analysis of the wastewater arising from these activities, and assessment of the adequacy of existing and future sewerage infrastructure;

- (g) assessment of all dredging, spoil excavation, reclamation, temporary storage, transport and mud disposal activities, their impacts on the physical regime and quality of the affected water systems and sediment;
 - (h) assessment on the water quality implications of the proposed works due to construction discharge, diversion of drainage regimes and draining of pond water;
 - (i) assessment and recommendation of the environmentally-acceptable flood control and drainage arrangement in the short and long term to ensure proper disposal of intercepted flow during the construction and operation phase;
 - (j) evaluation of the water quality impacts on the nearby sensitive water bodies, streams, fishponds/Gei Wais, Site of Special Scientific Interests (SSSIs) and other sensitive uses due to the construction, operation of the drainage channels and flood protection works (include any reclamation, dredging and related sediment handling and stockpiling activities) and recommend suitable, effective mitigation measures;
 - (k) evaluation of the proposals for water pollution control measures with regard to the nearby sensitive uses e.g. fishponds/Gei Wais, Mai Po Nature Reserve and nearby SSSIs;
 - (l) assessment should also be made on the impacts of drainage discharge on the circulation, quality of the receiving waters at the point of discharge;
 - (m) review of existing water quality information and carrying out appropriate field measurements and sampling and relevant physical, chemical and biological analyses.
 - (n) identification of all activities generated by other development that may impact the water systems and evaluation of the cumulative impacts with regard to the beneficial uses of the water body;
 - (o) proposals of effective water pollution prevention and mitigation measures to reduce the cumulative water quality impacts to the satisfaction of DEP; and
 - (p) evaluation of the residual impacts on the water systems and sensitive receivers with regard to the water quality criteria.
- (ii) **Dredging and Reclamation Impacts**
- (a) identification and evaluation of all impacts associated with dredging, spoil excavation, fill extraction, temporary storage, stockpiling,

rehandling, transport, reclamation and dumping activities on the water systems, sediment and sensitive receivers;

- (b) identification and evaluation of the best practicable dredging and reclamation methods to minimize dredging and dumping requirements and demand for fill sources based on criterion that existing marine mud shall be left in place and not be disturbed as far as practicable;
- (c) quantification of the materials required for dredging/excavation, filling and dumping; special emphasis shall be put onto the presence and distribution of contaminants (e.g. organics, heavy metals, toxic trace organics, etc.) and to assess the chance of leaching and mobilisation into water column;
- (d) identification and evaluation of possible beneficial uses of dredged/excavated materials which can achieve waste minimisation, avoiding the need for marine disposal and saving of landfill disposal space;
- (e) identification and evaluation of possible option(s) for restoration/reclamation/ beneficial uses of abandoned and isolated old river channel segments or meandering resulting from river training; and
- (f) review of existing information and carrying out appropriate field measurements and sampling and relevant physical, chemical and biological analyses.

(iii) Noise Impacts

The noise assessment shall address the following :-

- (a) background information and existing noise levels;
- (b) identification of potential sensitive receivers and/or potentially affected uses and select representative receivers;
- (c) provision of an emission inventory of the noise sources;
- (d) analysis of construction activities and noise levels generated;
- (e) presentation of predicted future noise levels; and
- (f) evaluation of the noise impacts and proposals for noise control or mitigation to minimize the impacts to within the established standards/guidelines and the DBG recommended levels (for area within the Deep Bay Special Measure Zone).

(iv) Air quality Impacts

The air quality impact assessment shall address the following :-

- (a) existing and background air quality in the study area for the purpose of evaluating the cumulative air quality impacts of the Project;
 - (b) identification of sensitive receptors and/or affected uses and select representative receptors ;
 - (c) provision of an emission inventory of the air pollution sources;
 - (d) analysis of construction activities and related adverse air quality impacts;
 - (e) analysis of operational phase impacts*, if any;
 - (f) assessment and evaluation of the net and cumulative air quality impacts of the air emissions identified in (c) at the sensitive uses/receptors identified in (b);
 - (g) presentation of the predicted residual air quality impacts in the form of pollution contours, whenever practicable, for the examination of the these impacts; and
 - (h) proposals of effective mitigation measures to reduce the cumulative air pollution impacts to within the established standards/guidelines and the DBG recommended levels (for area within the Deep Bay Special Measure Zone).
- *(In case of odour impact, any odour prediction at a receptor exceeding five odour units based on a prediction averaging time of five seconds shall be considered as an indication of odour nuisance to the receptor. For odour monitoring, two odour units at the site boundary shall be the criteria for odour nuisance.)

(v) Ecological Impacts

The EIA Study should take account of the importance of the ecological components for flora/fauna habitats around the Deep Bay Environs. It is essential to observe the importance of protecting, rehabilitating and maintaining the existing habitats. In particular, the proposed Project should avoid impacts on the Mai Po Nature Reserve (MPNR) and the designated/proposed Sites of Special Scientific Interests (SSSIs) in San Tin and around the Inner Deep Bay. The assessment shall focus on the following :-

- (a) description of the physical environmental background and habitat characterization of the development site(s) and the nearby MPNR,

SSSIs (designated and proposed) and fishponds/Gei Wais/mudflats habitats;

- (b) investigation of the existing (baseline) situation likely to be affected by the Project. The baseline survey shall include species list and counts of the flora and fauna found on the study area and Inner Deep Bay, their abundance, adaptation to environmental changes, and identification of any major habitats and/or endangered/rare species as well as any other information on the ecological attributes. The list of species found within the study area should be prepared with special reference to those which are rare, endangered, restricted in distribution or protected under local legislation or international conventions.
- (c) identification and quantification as far as possible the actual and potential ecological impacts during the construction period and subsequent operation. Any direct/indirect and on-site/off-site impacts that may lead to the destruction, displacement or adverse effect on flora and fauna composition (such as, loss of shelter and feeding ground, reduced in population and/or species diversity, loss of breeding/wintering ground, loss of fishpond/mud-flat/wetland, loss of fisheries, species extraction, loss of carrying capacity); and
- (d) evaluation of the impacts and proposals for any habitat preservation/creation/compensation measures. All the surveys/studies, evaluation and proposed impact mitigation measures shall cover at least a four-season cycle.

(vi) **Visual Impact and Landscape Treatment**

A complete visual impact and landscape treatment assessment shall include the following elements :-

- (a) identification of the visual attributes, landscaping strategy of the site and potential sensitive receptors;
- (b) illustrations of the proposed landscape treatment of the project by photomontage and/or scale models (N.B. The directions of the perspectives and elevations should be incorporated into a map for illustration);
- (c) assessment of the visual and landscape impacts of the proposed structures/developments to potential receptors and identification of the visual intrusions; and
- (d) proposals of short and long term visual planning, screening and/or landscape measures required for the disturbed receptors.

(vii) Solid Waste Pollution Aspects

The solid waste assessment shall focus on :-

- (a) identification of the sources of solid waste with details of the waste generation, waste characterization and waste separation;
- (b) investigation on any secondary impacts such as, odour, gas emission, noxious leachate;
- (c) evaluation of the proposed waste management strategy, and, waste handling, treatment and disposal methods; and
- (d) incorporation of waste reduction/reuse/recycling by any practical means.

(viii) Handling of Contaminated Substances

In the case there is land contamination on site, suitable treatment and/or disposal for the contaminated substances are required. The assessment on these aspects shall address the following :-

- (a) provision of a clear account on the contamination history including investigation reports and information on the present and proposed uses of the land;
- (b) contamination characterization of the site(s) to identify the quality, quantity and the extent of the contamination (information shall include surface area, soil depth, ground/sea water movements and contamination levels etc);
- (c) evaluation of the potential environmental hazards and the assessment in detail the selection of the appropriate handling methodologies and disposal options; and
- (d) submission of a contamination management plan to seek approval from the Director's Representative on the proposed course of action.

(ix) Socio-economic and Community Impacts

The potential socio-economic and community impacts in the study area arising from physical, socio-economic and demographic impacts upon the human habitats and the community. These may include community gains/losses, change in public and private services/provisions, severance of access/resources, community and recreational facilities, health and lifestyle implications, significant changes of land/property values as well as the associated economic activities. The assessment shall highlight and evaluate on this aspects the actual or potential impacts due to the Project, the potential responses of the community, and address the following :-

- (a) investigation the existing background views of the community;
- (b) identification of the critical socio-economic factors/issues;
- (c) projection of the future socio-economic changes and assess the predictive impacts;
- (d) evaluation of the proposed approach(es) to be adopted for EIA public consultations; and
- (e) evaluate impacts of proposals and alternative channel alignments on the local pond fish farming industry.

6.4 Identification of Sensitive Uses

Due consideration should be given to existing and future land-uses and all sensitive receivers in the study area must be identified. Reference should be made to Chapter 4,9 & 10 of the "Hong Kong Planning Standards and Guidelines" and other relevant Ordinances, Regulations and guidelines. Future land-uses should include those that will be occupied during the construction and operation of the Project.

6.5 Mitigation Measures

Effective mitigation measures should be proposed to reduce impacts to within established standards and guidelines and to minimize the probability, occurrence and consequences of predicted impacts in terms of the layout and design of the Project, the duration of pollution activities, construction methods and equipment, operational procedures and administrative controls.

6.6 Residual Impacts

Residual environmental impacts of the Project shall be identified and quantified and their acceptability should be determined against the Environmental Chapter of the "Hong Kong Planning Standards and Guidelines" and other statutory/non-statutory requirements such as Water Pollution Control Ordinance (WPCO), Air Pollution Control Ordinance (APCO) and Noise Control Ordinance (NCO) and the DBG's recommended environmental measures for the Deep Bay Special Measures Zone.

If there are emissions of non-criterion pollutants with health implications, the Consultants should review relevant standards of other countries and international bodies, such as, World Health Organization (WHO), US Environmental Protection Agency (USEPA), US National Research Council (USNRC), and propose for the Director's Representative's agreement on the appropriate reference criteria.

6.7 Impacts Summary

An EIA Study is based on different techniques, interpretations and measurements. It is important to present the findings in simple terms to sum up all environmental impacts and select the acceptable alternative for the Project. The Impacts Summary shall address the following :-

- (i) elaboration of alternatives, including where appropriate the 'do nothing' scenario;
- (ii) discussion of the extent of impacts and the proposed ranking system;
- (iii) presentation of the recommendations on overall acceptability;
- (iv) justification of the proposed methodology to be adopted for an Impacts Summary and be agreed with the Director's Representative; and
- (v) application of the Impacts Summary.

6.8 Environmental Monitoring and Audit (EM&A) Requirements

The Deep Bay Guideline has recommended a comprehensive set of monitoring requirements during the construction phase. Based on these criteria, the Consultants shall design the monitoring and audit programme during the construction and operational phases. In this regard, the Consultants shall identify and recommend environmental monitoring requirements for all construction, post-project and operational phases of the Project. These requirements shall include but not be limited to the identification of sensitive receivers, monitoring locations, monitoring parameters and frequencies, monitoring equipment to be used, and any other necessary programmes for baseline monitoring, impact and compliance monitoring, and data management of monitoring results.

The Consultants shall identify and recommend environmental monitoring and audit requirements for all construction, post-project and operational phases of the Project. These requirements shall include :-

- (i) organisation and management structure, and procedures for auditing of the implementation of respective environmental mitigation measures recommended for the detailed design, contract document preparation, construction, post-project operation stages of the Project;
- (ii) environmental quality performance limits for compliance auditing for each of the recommended monitoring parameters to ensure compliance with relevant environmental quality objectives, statutory or planning standards, or acceptance criteria recommended by the EIA. These limits shall give indication of a deteriorating environmental quality and shall allow proactive responses to be taken. (The commonly used approach is a set of trigger, action and target levels);

- (iii) organisation and management structure, and procedures for reviewing the monitoring results and auditing the compliance of the monitoring data with the environmental quality performance limits (point (ii) above), project contractual and regulatory requirements, and environmental policies and standards;
- (iv) Event/Action plans for impact and compliance monitoring;
- (v) complaints handling, liaison and consultation procedures; and
- (vi) reporting procedures, report formats and reporting frequency including periodical reports and annual reviews to cover all construction and post-project/operational phases of the Project.
- (vii) the Consultants shall prepare an Environmental Schedule (Manual) which covers the requirements and recommendations in (i) and (ii) above. The Manual shall also contain a summary list of recommended environmental mitigation measures. This Manual shall be used as a guideline for environmental monitoring and audit during the construction and post-project operational phases. This Manual shall be a stand-alone document and form part of the EIA report.

6.9 The recommended green measures in preparing documents by the Consultants should include :-

- (i) All Tender Documents, Tender Submissions, Reports, Technical Notes and Working Papers are to be printed on both sides.
- (ii) Final Reports and the Executive Summary have to be printed on recycled paper with no less than 50% recycled materials. The logo of recycled paper should be printed in a prominent area of the report.
- (iii) Documents other than Final Reports and Executive Summaries should preferably be printed on recycled paper.
- (iv) Bleached papers should not be used if possible. Papers exceeding 80 gsm are not recommended as a general rule.
- (v) Unnecessary or excessive use of plastic laminates, glossy covers or double covers should be avoided as far as possible. Use of recyclable non-glossy art board paper as document covers should be encouraged.
- (vi) Final Reports and Executive Summary should be of single line spacing on both sides of the paper.
- (vii) Excessive white space around the borders and in between the paragraphs of all documents prepared by the consultants should be avoided. A margin of 2 cm should be sufficient.

- (viii) Excessive use of blank papers should be avoided as far as possible.
- (ix) Number of pages can be reduced by reducing the size of typeface (font). Suitably sized fonts should be used in balancing legibility and clarity against the waste reduction objective. The appearance and readability of the document can be improved by using two columns where the font size used is ≤ 12 points.
- (x) In addition to paper copies, Final Report and Executive Summary in electronic file should also be provided.

6.10 The Consultants are required to :-

- (i) Carry out or have carried out all necessary surveys, baseline monitoring work and make such investigations and inquiries as are necessary for the satisfactory completion of the Assignment.
- (ii) Prepare and submit reports to the Director's Representative on the results, findings and conclusions of the surveys and inquiries carried out in (i) above.
- (iii) Carry out necessary works to achieve the objectives of the Assessment specified under Section 3 of this Brief.
- (iv) Identify all facilities, installations and existing rights that may be affected by the Assignment.
- (v) Determine the extent of further surveys, if required, for detailed design, auditing and monitoring purposes.
- (vi) Prepare preliminary layout designs, plans, drawings, profiles, sections, specifications and calculations for the proposed environmental mitigation measures.
- (vii) Prepare estimates of the cost of works proposed in (vi) above including the cost of compensation and re-provisioning.

6.11 Referring to Clause 19 of the General Conditions of Employment, the Consultants shall be expected to communicate and correspond direct with other Government departments and relevant organisations to obtain information in connection with the Assignment, copying such correspondence to the Director's Representative. Any problem in communication or liaison should be referred to the Director's Representative for assistance.

6.12 The Consultants shall prepare consultation papers and present their case(s) against the relevant environmental impacts generated to the ACE, DB and/or any public consultation meeting(s) (if necessary).

6.13 Other items of work directly or indirectly related to the Assignment may be added by the Director's Representative with the agreement of the Consultants and shall form part of the overall Scope of the Assignment and be covered by the terms of the Memorandum of Agreement.

7. Response to Queries

The Consultants shall respond to queries under Clause 20 of the General Conditions of Employment raised prior to a date SIX months after the final submission of the deliverables required under the Agreement. Such date shall be confirmed in writing to the Consultants by the Director's Representative.

8. Programme of Implementation

8.1 The due date for commencement of the Agreement is 14 February 1997.

8.2 The Assignment shall be completed within eighteen months, working to an agreed Study Programme referred to in Clause 5.1(i)(c) of this Brief. The following key activities of this Assignment are to be completed within the number of months specified below from the commencement date of the Agreement.

<u>Key Activities</u>	<u>Months</u>
Submit Inception Report	1
Submit working Paper(s)	4
Submit Initial Assessment Report	7
Submit Key Issue Report(s)	10
Submit Final Assessment Report	14
Submit Executive Summary	16
Submit Environmental Monitoring & Audit Manual	18

8.3 The Consultants shall produce the programme referred to in Clause 26 of the General Conditions of Employment in draft form within the first month of the Assignment detailing the activities to be carried out, target dates for particular tasks and any decision dates that may be required for the uninterrupted progress of the Assignment. The Consultants shall discuss with the Director's Representative during this period to agree the timing of submissions of reports and plans for each of the main elements of the Assignment, for inclusion in the draft Programme.

8.4 The Consultants shall endeavour to ensure that the Assignment is carried out in accordance with the Programme and shall submit regular programme reviews as part of the progress reports referred to in Clause 9 of this Brief.

9. Progress Report

The Consultants shall submit to the Director's Representative 30 copies of the progress reports at monthly intervals on all aspects of the Services relating progress to the Programme referred to in Clause 8 of this Brief. The reports shall include a list of those parts of the Services the execution of which is behind the Programme together with proposals to expedite progress, so as to complete the work on time. The reports shall also include updated expenditure forecasts in accordance with Clause 10 of this Brief.

10. Financial Management

At monthly intervals or at such other intervals as the Director's Representative may require, the Consultants shall submit a report on the current and forecast expenditure on the Assignment and the fees due to the Consultants, in a form to be agreed by the Director's Representative.

11. Standards and Specification

The Consultants shall adopt such technical and design standards and specifications as are in current use by Government Department(s) or, if non-existent, British Standard Codes of Practice and Specifications. Should instances arise for which suitable standards or specifications do not exist or for which the current standards or specifications appear to require modification or if by the adoption of current standards the Consultants would incur additional expenses not within reasonable contemplation, the Consultants shall submit recommendations on appropriate alternatives to the Director's Representative for agreement.

12. Director's Representative

12.1 The Director's Representative as defined in the General Conditions of Employment shall be Project Manager (New Territories North) or such other person as may be authorised by the Director in writing and notified to the Consultants and all communications in connection with or arising from this Study are to be addressed to him. The Director's Representative may delegate any of the powers and functions vested in him to other officers. If the Consultants are dissatisfied with a decision or instruction of any such officer the matter shall be referred to the Director's Representative for a ruling.

13. Control of the Project and Assignment

13.1 The EIA Study will be managed by an Environmental Study Management Group (ESMG) chaired by a representative of the Director of Environmental Protection (DEP). The ESGM will provide guidance and comment to the Consultants to ensure that the EIA Study is conducted in a satisfactory manner to cover adequately all the requirements of the Brief and report the study outputs to the Advisory Council on the Environment (ACE) or other committees within the government for endorsement as necessary.

13.2 Under PELB GC 2/94, it is now Government policy to make available Government-owned EIA study reports and Executive Summaries to the public. The Consultants should note that the final EIA reports and the Executive Summary of this EIA shall be made available to the public for consultation. The EIA Study findings may be presented to the ACE EIA Sub-committee and its full Council.

13.3 In accordance with PELB T/C 2/92, if there is any disagreement on the finding of the study or on the necessary environmental protection and pollution control measures, the issue will be referred to the Secretary for Planning, Environment and Lands who shall resolve the differences in consultation with the appropriate Branches and Departments.

14. Information and Facilities Provided by the Employer

B

All available information relevant to the Assignment will be provided to the Consultants. Relevant documents, reports and other background materials are listed in Appendix B to this Brief. The Consultants shall indicate for guidance those documents which they currently hold and those of which a copy may be needed, should the Assignment be awarded to them. A copy of each of the documents indicated as needed will be supplied free of charge by the Director's Representative on request from the Consultants, except those currently available from the Sales section of the Information Services Department. In the case of plans and drawings, one transparency and two prints of each plan or drawing shall be provided free of charge if requested by the Consultants.

15. Consultants' Office and Staffing

15.1 The Consultants shall maintain for the duration of this Agreement an office in Hong Kong under the control of the Project Director of the Consultants who shall be responsible for the Project. He shall have adequate authority and sufficient professional, technical and administrative support staff in all relevant disciplines to ensure progress to the satisfaction of the Director's Representative.

15.2 Staff shall be outlined in the Consultants' proposal and be committed to the Assignment. Other than in exceptional circumstances no staff changes shall be permitted during the progress of the Assignment. Should a change be necessary, the Consultants shall seek prior approval in writing, informing the Director's Representative the circumstances that the change and providing information on any replacement proposed.

15.3 Staff outlined in the Consultants' proposal shall be resident in Hong Kong for the length of their involvement in the Assignment. Consultants in joint ventures shall give an assurance that each of the collaborating parties involved will be bound to the undertaking until the satisfactory completion of the Assignment.

16. **Specialist and Sub-Consultants Services**

The Consultants shall provide all specialist and sub-consultant services required for the satisfactory completion of the Assignment. No additional fees or expenses for the provision of such services rendered locally or overseas shall be payable by the Employer except as otherwise provided for in the Schedule of Fees.

17. **Survey**





One velograph and two prints of topographical mapping at 1:20,000, 1:5,000 and 1:1,000 scales prepared by the Survey and Mapping Office of the Buildings and Lands Department, where available for the area covered by the Project for which the assignments forms a part, can be obtained free of charge on application to the Director's Representative.

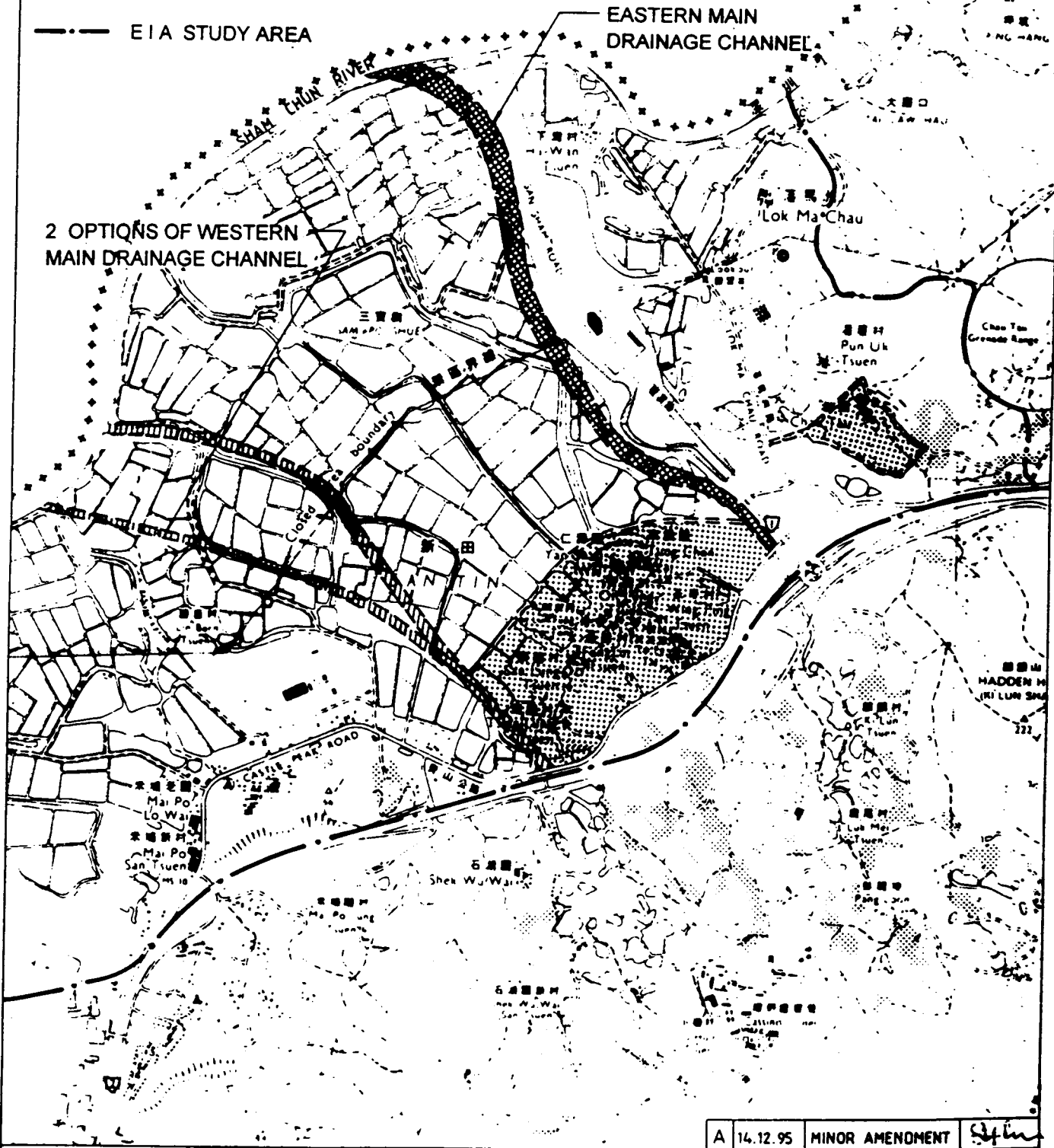
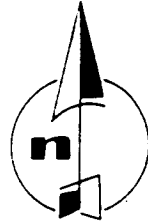
18. **Insurance**

The amount of insurance cover to be maintained in accordance with sub-clause (A) of Clause 47 of the General Conditions of Employment shall be HONG KONG Dollars ___ million.

Appendix A


Drawing No. DDN/35CD/0004A

-  STAGE 1 - 35CD
VILLAGE FLOOD PROTECTION
FOR SAN TIN VILLAGES
AND CHAU TAU TSUEN
-  STAGE 2 - 73CD
EASTERN MAIN DRAINAGE
CHANNEL FOR SAN TIN
-  STAGE 3 - NOT YET ITEMIZED
WESTERN MAIN DRAINAGE
CHANNEL FOR SAN TIN
-  EIA STUDY AREA



Title
**MAIN DRAINAGE CHANNELS
 AND POLDERED VILLAGE
 PROTECTION SCHEMES
 FOR SAN TIN, NWNT.**

drawn by *L.K. YIM* L. K. YIM Date 27.9.94
 approved *S.M. MA* S. M. MA Date 27.9.94
 office DRAINAGE PROJECTS DIVISION

A	14.12.95	MINOR AMENDMENT	<i>[Signature]</i>
drawing no			SCALE
DDN/35CD/0004A			1 : 20 000
			DRAINAGE SERVICES DEPARTMENT HONG KONG

Sources of Information and General References

The EIA Study should be carried out with due regard to the information, policies and procedures included in, but not limited to :-

- (a) "Hong Kong Planning standards and Guidelines - Chapter 4, 9 & 10", Planning Department, Hong Kong Government;
- (b) "Environment Hong Kong 1996" (EPD 1996);
- (c) 'U.K. Department of Transport's -- "Calculation of Road Traffic Noise"' published by H.M. Stationery Officer;
- (d) Technical Memoranda of the Noise Control Ordinance;
- (e) "Deep Bay Integrated Environmental Management Report" December 1988 by Environmental Resources Ltd (Asia) for the Environmental Protection Department, Hong Kong Government;
- (f) "The Deep Bay Guidelines for Dredging, Reclamation and Drainage Works" September 1991 by Environmental Resources Ltd (Asia) for the Environmental Protection Department, Hong Kong Government;
- (g) "Assessment of Effects of Mangrove Removal on Water Quality in Deep Bay" April 1992 by Binnie Consultants Limited for the Territory Development Department, Hong Kong Government;
- (h) "The Water Quality Assessment - North West New Territories Development : main drainage improvement works for Yuen Long Creek and Kam Tin River", Environmental Protection Department;
- (i) "The North West New Territories Development Strategy Review - DFR (1994)" Planning Department, Hong Kong Government;
- (j) EIA reports for the Main Drainage Channel for Ngau Tam Mei, Yuen Long and Kam Tin; and
- (k) EIA Study for Shenzhen River Regulation Project.