

Agreement No. CE 69/97

Investigation Assignment for
Widening and Reconstruction of Tai Po Road (Sha Tin Section)

Brief

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Brief

1. Introduction

- 1.1 This Brief is to be read in conjunction with the Memorandum of Agreement, the General Conditions of Employment of Engineering and Associated Consultants for an Investigation Assignment (1994 Edition), Special Conditions of Employment, Schedule of Fees, and any other detailed instructions issued by the Director's Representative.

2. Description of the Project

- 2.1 This Project includes the widening of a section of the existing Tai Po Road between Sha Tin Rural Committee Road and Fo Tan Road from its existing dual 2-lane width to a dual 3-lane standard. The Project also includes the reconstruction of the section of Tai Po Road between Lion Rock Tunnel Road and Sha Tin Road. The location plan for the proposed works is shown on drawing no. PMH6707/1PL/001 in Appendix A of this Brief.
- 2.2 To cope with the increase in traffic demand as a result of the continuous development of Sha Tin and Ma On Shan areas, it was recommended in the Sha Tin and Ma On Shan District Traffic Study (STMOSDTS) to widen Tai Po Road, Sha Tin, including the replacement of the existing diamond interchange with an elevated roundabout at the junction of Tai Po Road / Sha Tin Rural Committee Road.
- 2.3 The subject section of Tai Po Road is experiencing traffic congestion problems during peak hours. The STMOSDTS, which was completed in 1995, forecast that the subject section of Tai Po Road will be seriously overloaded with a traffic volume to road capacity (v/c) ratio of about 1.60 by year 2001.
- 2.4 The widening of Tai Po Road, Sha Tin, would reduce the v/c ratio from 1.60 to 1.06. Additionally future provision of a new Trunk Road T4 connecting Trunk Road T3 to Sha Tin Road will divert some traffic away from Tai Po Road, reducing the v/c ratio further from 1.06 to 0.84.
- 2.5 The diamond shape interchange at Tai Po Road / Sha Tin Rural Committee Road is controlled by traffic signals and is operating close to capacity. To cope with the projected increase in traffic demand, the STMOSDTS recommended the replacement of the existing signal controlled interchange with an elevated roundabout which would provide adequate junction capacity beyond the year 2006.

The following v/c ratios are forecasted for the junction by the STMOSDTS with and without the improvement :-

<u>Year</u>	<u>% Reserve Capacity without Improvement</u>	<u>v/c Ratio of Proposed Roundabout</u>
2001	-30	0.59
2006	-25	0.58

- 2.6 The section of Tai Po Road between Lion Rock Tunnel Road and Sha Tin Road was constructed in 1978. Over the past few years, repeated local repair works have been carried out to maintain the road to a serviceable condition. Road test on the existing pavement conducted in 1992 confirmed that the road has no residual life and is beyond economical repair. Road reconstruction is therefore required to restore the serviceable life of this section of Tai Po Road.
- 2.7 The section of Tai Po Road between Wai Wah Centre and Lek Yuen Estate is the only section of Tai Po Road where the carriageway is in concrete construction. Polymer modified friction course has been laid on this section of the road to reduce traffic noise. To bring about a similar construction for the whole of Tai Po Road, flexible pavement with friction course on top should be adopted for this section of the road to be reconstructed or widened whenever possible.
- 2.8 In February 1996, Territory Development Department employed Maunsell Consultants Asia Ltd. to carry out a Preliminary Project Feasibility Study (PPFS) on the Project and the PPFS was completed in February 1997 and the Project was included in Category C of the Public Works Programme (PWP) in May 1997 as PWP Item No. 6707TH. A copy of the Study report will be provided to the Consultants for reference.
- 2.9 In August 1997, the Project was upgraded to Category B and included in the 1997 RAE.
- 2.10 The proposed scope of the Project includes the following :-
- a) widening of about 1.4 km of Tai Po Road between Sha Tin Rural Committee Road and Fo Tan Road from the existing dual 2-lane to dual 3-lane standard;
 - b) construction of an elevated roundabout to replace the existing diamond interchange at Tai Po Road / Sha Tin Rural Committee Road;
 - c) reconstruction of the section of Tai Po Road between Lion Road Tunnel Road and Sha Tin Road;

- d) reprovisioning of the following facilities across Tai Po Road:
- grade separated cycle track and footpath at J/O Tai Po Road / Sha Tin Rural Committee Road; and
 - footbridge at Wo Che Street;
- e) retaining walls as required;
- f) drainage, landscape, lighting and other works associated with this Project.

- 2.11 The proposed preliminary layout of the Project is shown on the drawing nos. PMH6707/1LG/001-007 in Appendix A of this Brief.
- 2.12 The existing elevated section of Sha Tin Rural Committee Road should be demolished in stages to create space for the construction of the new elevated roundabout. The stability of the elevated section should be assessed and maintained for various stages of construction. Careful and detail considerations will be needed to maintain the existing traffic along Tai Po Road and Sha Tin Rural Committee Road and the normal operation of Kowloon and Canton Railway (KCR) at all stages of construction.
- 2.13 The existing junction of Sha Tin Rural Committee Road is a very busy junction especially during morning and evening peak periods. Ducting provision should be allowed for possible signalisation of the proposed roundabout at a later stage, if required.
- 2.14 The proposed arrangement in the PPFs report of the re-provision of footpath and cycle track grade-separated crossing across Tai Po Road at a distance of about 100m away from the existing one alongside Sha Tin Rural Committee Road is not entirely satisfactory. Alternative arrangements should be further investigated.
- 2.15 A strip of Kowloon and Canton Railway Corporation (KCRC) land alongside existing Tai Po Road, Sha Tin, is affected by the Project and adjustment of the boundary of KCRC land would be required. It is also noted that another strip of KCRC land with Sha Tin Station Redevelopment site may be affected too. Further investigation on the effect and liaisons with KCRC should be carried out.
- 2.16 The normal operation of KCR needs to be maintained at all stages of construction. As some of the works would be carried out in the vicinity or above the KCRC land, the construction details should be submitted to KCRC for comment.
- 2.17 Noise mitigation measures along Tai Po Road near Wo Che Estate were proposed in the Final Report of "Noise Impact Assessment for 24-hour Opening of Border Crossings". The noise impact of the night-time cross border traffic and the recommendation of Report should be taken into consideration in the Environmental

Impact Assessment study.

- 2.18 As the land resumption and clearance works for this Project could only be dealt with by DLO/Shah Tin after 2000/01, the tentative implementation programme of the Project is to commence construction in December 2002 for completion in November 2005 (allowing possible extension of time). It is also noted that the completion of the Project should preferably be phased with those of Trunk Roads T3 and T4 in order to provide greater capacity to share with Road T4 and the increasing traffic flows from Road T3. However, according to the presently available information, Roads T3 and T4 are programmed to be completed in September 2002 and June 2006 respectively. It appears that while there is no substantial programming mismatch with Road T4, all possible means of advancing completion of this Project, in particular means to avoid any need of land resumption, should be examined and undertaken in order that the gap between completion of Road T3 and this Project can be shortened to alleviate the potential traffic congestion at the interim stage.
- 2.19 This Assignment is to commission a detailed investigation to identify the various impacts as a result of the Project and to consolidate the constraints and to define the project scope clearly, thereby producing preliminary designs such that a more realistic project implementation programme and more accurate expenditure cash flow pattern can be worked out.

3. Objectives of the Assignment

- 3.1 The objectives of the Assignment upon its completion are to have :-
- a) a topographic survey for the Project;
 - b) a detail assessment of the feasibility for the Project works together with a recommended general layout;
 - c) a Land Requirement report for the Project;
 - d) a technically sound and cost effective preliminary design for the Project;
 - e) a full impact assessment on existing traffic during construction, the environment, and existing drainage systems;
 - f) a detailed Design Memorandum for the Project;
 - g) a tree survey report;
 - h) a recommendation of the best construction methodology and implementation strategy for the Project;

- i) an updated implementation programmes for the Project;
- j) an updated estimate on the project capital and recurrent costs and expenditure cash flow; and
- k) a gazette plan required for the Roads (Works, Use and Compensation) Ordinance for the Project;

so that detailed design works of the Project could be proceeded as soon as possible.

3.2 In particular, the objectives of the Environmental Impact Assessment (EIA) Study are as follows :

- a) to describe the Project and associated works together with the requirements and environmental benefits for carrying out the Project;
- b) to identify and describe the elements of the community and environment likely to be affected by the Project, and/or likely to cause adverse impacts upon the Project, including both the natural and man-made environment and the associated environmental constraints;
- c) to identify and quantify emission sources and determine the severity of impacts on sensitive receivers and potential affected uses;
- d) to identify and quantify any potential losses or damage to flora, fauna and natural habitats;
- e) to identify existing landscape, visual and townscape quality and land use (both existing and planned) and to evaluate the landscape, visual, townscape and land use impacts of the Project;
- f) to identify any negative impacts on sites of cultural heritage and to propose measures to mitigate these impacts;
- g) to propose the provision of infrastructure or mitigation measures so as to minimise pollution, environmental disturbance and nuisance during construction and operation of the Project;
- h) to investigate the feasibility, effectiveness and implications of the proposed mitigation measures;
- i) to identify, predict and evaluate the residual (i.e. after practicable mitigation) environmental impacts and cumulative effects expected to arise during the construction and operation phases of the Project in relation to the sensitive receivers and potential affected uses;

- j) to identify, assess and specify methods, measures and standards, to be included in the detailed design, construction and operation of the Project which are necessary to mitigate these impacts and reduce them to established levels;
- k) to design and specify the environmental monitoring and audit requirements; and
- l) to identify any additional studies necessary to implement the mitigation measures, monitoring and proposals recommended in the EIA Study.

3.3 In particular, the objectives of the Drainage Impact Assessment (DIA) Study are as follows :

- a) to describe the Project and associated works together with the requirements for carrying out the Project;
- b) to identify and describe the elements of the community and the existing drainage characteristics likely to be affected by the Project, and/or likely to cause adverse impacts upon the Project, including both the natural and man-made drainage systems;
- c) to introduce a structured and systematic approach to identifying, assessing and mitigating potential adverse drainage impacts which might arise from the Project;
- d) to ensure that adequate connections are provided between the Project drainage works and the existing and planned river training drainage system such that gravity drainage will be permitted at all times;
- e) to propose the provision of infrastructure or mitigation measures so as to minimise the potential adverse drainage impacts during construction and operation of the Project;
- f) to identify, predict and evaluate the residual (i.e. after practicable mitigation) drainage impacts and cumulative effects expected to arise during the construction and operation phases of the Project;
- g) to identify, assess and specify methods, measures and standards, to be included in the detailed design, construction and operation of the project which are necessary to mitigate these impacts and reduce them to acceptable levels;
- h) to demonstrate that with all mitigation measures introduced, the development will have no detrimental flooding effects upstream or downstream of the development;

- i) to design and specify the monitoring and audit requirements necessary to ensure the implementation and the effectiveness of the mitigation measures adopted;
- j) to investigate the extent of side-effects of proposed mitigation measures that may lead to other forms of impacts;
- k) to identify constraints associated with the mitigation measures recommended in the Study; and
- l) to identify any additional studies necessary to fulfil the objectives of this DIA Study.

3.4 In particular, the objectives of the Traffic Impact Assessment (TIA) Study are as follows :

- a) to obtain traffic data (carry out traffic survey whenever necessary) for completion of the EIA;
- b) to assess the impact of the Project at the various stages throughout the construction period on the existing road network within the Area of Influence taking into account the implementation of other related road projects; and
- c) to determine appropriate temporary traffic management/measures to ameliorate the traffic impact on the road network.

4. Description of the Assignment

4.1 The Consultants shall, based on the previous preliminary works and other available latest information, carry out further investigation and studies (including TIA, EIA and DIA studies) to affirm the engineering feasibility of the Project and derive the optimum layout and alignment for the proposed works as indicated in Clause 2.10 of the Brief. The Consultants shall develop traffic management strategies, identify civil works requirements and propose implementation scheme during the construction of the project works. The Consultants shall carry out preliminary design for all the project works including mitigation measures identified, if any, and produce implementation programme, cost estimates and design manual for the Project. Details of the tasks to be accomplished by the Consultants shall be referred to Clause 6.

4.2 The Consultants shall liaise with the relevant project offices regarding the interfaces of the Project with the following projects :

- a) PWP Item 6695TH : Widening of Fo Tan Road and Related Improvement measures in Fo Tan

- b) Sha Tin New Town Stage II - Trunk Road T3 (Tai Wai)
- c) Sha Tin New Town Stage II -Trunk Road T4
- d) Sha Tin New Town Stage II -Flyover at the junction of Che Kung Miu Road and Hung Mui Kuk Road
- e) Road D15 linking Lo Shun Path and Tai Po Road
- f) Shing Mun River Flyover linking Fo Tan Road and Siu Lek Yuen Road, Sha Tin, and
- g) Improvement of water supply to Sha Tin North, Ha Wo Che and Pa Tau Hang.

5. Deliverables

5.1 The Consultants shall submit to the Director's Representative the following reports for the Project before the deadlines for submission, and circulate to all relevant parties:

Report Type	Report Content	No. of Copies	Deadline for submission
Inception Report	<ul style="list-style-type: none"> a) brief descriptions of the proposed approach and methodology for undertaking the key elements of the Investigation Study and the relevant authorities to be consulted; b) a comprehensive programme for the Assignment containing all activities, their timing, consultation required, key dates for receipt of approvals, reporting and meetings; and c) a list of staff together with their respective responsibilities. 	40 (draft Inception Report) 40 (Final Inception Report)	within 3 weeks from the commencement date of the Agreement
Draft Final Report	a summary of the findings, conclusions and recommendations by the Consultants to achieve the objectives as stated in Clause 3.1 above and the results after accomplishment of tasks of Assignment listed in Clause 6.	100	within 5 months from the commencement date of the Agreement
Final Report	base on the Draft Final Report but incorporate also any alterations considered necessary since the issue of the Draft Final Reports, comments received and the Consultants' responses thereto.	160	within 7 months from the commencement date of the Agreement
Executive Summary	contain information in condensed form of the key elements of the Final Report. It shall be in both English and Chinese.	200	simultaneously with the Final Report

5.2 The Consultants shall submit reports on TIA, EIA and DIA studies as follows:-

5.2.1 Reports on TIA Study:-

Report Type	Report Content	No. of Copies	Deadline for submission
Inception Report	Refer to Clause 6.16.2a)	40	within 2 weeks from the commencement date of the Agreement
Draft TIA Report	Refer to Clause 6.16.2b)	100	within 4 months from the commencement date of the Agreement
Final TIA Report	Refer to Clause 6.16.2c)	100	within 6 months from the commencement date of the Agreement
Executive Summary Report	Refer to Clause 6.16.2d)	160 (in both Chinese and English versions)	within 6 months from the commencement date of the Agreement

5.2.2 Reports on EIA Study :-

Report Type	Report Content	No. of Copies	Deadline for submission
Inception Report	Refer to Clause 6.14.8.1 a)	40 (draft)	within 3 weeks from the commencement date of the Agreement
		40 (final)	
EIA Report	Refer to Clause 6.14.8.1 b)	40 (draft)	within 4 months from the commencement date of the Agreement
		100 (final)*	within 6 months from the commencement date of the Agreement
Executive Summary Report	Refer to Clause 6.14.8.1 c)	40 (draft) 200 (final)* (in both Chinese and English versions)	within 6 months from the commencement date of the Agreement
Working Paper	Refer to Clause 6.14.8.1 d)	40 (draft) 100 (final)	As required
Environmental Monitoring & Audit Manual	Refer to Clause 6.14.4.5	40	within 6 months from the commencement date of the Agreement

*An additional 10 soft copies shall be submitted in CD-ROM (Compact Disc - Read Only Memory). The soft copies shall be prepared either by "WordPerfect for Windows, Version 6.0" or "Microsoft Word, Version 6.0", or an equivalent software to the satisfaction of EPD, with all texts, tables, graphics, illustrations and other

contents be presented in the same layout and appearance as the hard copy of the EIA Report (final) and the Executive Summary Report.

5.2.3 Reports on DIA Study :-

Report Type	Report Content	No. of Copies	Deadline for submission
Draft Drainage Impact Assessment Report	Refer to Clause 6.15.5 a)	40	within 4 months from the commencement date of the Agreement
Final Drainage Impact Assessment Report	Refer to Clause 6.15.5 b)	80	within 6 months from the commencement date of the Agreement
Executive Summary Report	Refer to Clause 6.15.5 c)	150 (in both Chinese and English versions)	simultaneously with the Final DIA Report
Drainage Monitoring & Audit Manual	Refer to Clause 6.15.3.4	25	within 6 months from the commencement date of the Agreement

5.2.4 The Consultants shall supply 30 copies of such reports, technical notes, working papers, briefs, supporting documents and other relevant inputs as may be required by the Director's Representative during the TIA, EIA and DIA studies or any public consultation exercise.

5.3 The Consultants shall also submit the following Deliverables to the Director's Representative :-

- a) five copies of plans, drawings, papers, design memorandum, programmes, estimates, summary of comments, land requirement plans and gazette plans which are required in accordance with Clause 6;
- b) five copies of programme as required in accordance with Clause 8 and five copies for each subsequent revision;
- c) five copies each of the monthly progress report and financial report within the first seven working days of each month in accordance with Clauses 9 and 10 respectively. Subject to the agreement of the Director's Representatives, these two reports may be combined into a single volume;
- d) ten copies of preliminary ground investigation report;
- e) five copies of plans, drawings, papers and other information as may be required by the Director's Representative for the purpose of or in connection with the Project, such as co-ordinated layout plans of the roadwork, land requirement plans and gazette plans;

- f) 15 copies of reports, drawings and all necessary plans and documents for submission to Advisory Committee on the Appearance of Bridges and Associated Structures (ACABAS), the Consultants shall attend the meetings of ACABAS to present the submission;
 - g) five copies of land requirement report in accordance with Clause 6.1e);
 - h) ten copies of tree survey report in accordance with Clause 6.1m); and
 - i) any other submissions as required in Clauses 6 to 20.
- 5.4 The Consultants shall prepare, supply and present all documents, drawings and display materials (including 1 set of ten photomontage) required for press release and submission to District Boards (DB), the Town Planning Board and the Regional Council (RC) as and when required by the Director's Representative and for compliance with various statutory and Government procedures required for the Project, including submission to the Advisory Council on the Environment (ACE) and the ACABAS. All the above deliverables shall be prepared in both English and Chinese. The Consultants shall provide a maximum of 150 copies of consultation papers for submissions to DB and RC for each meeting.
- 5.5 In this connection, the Consultants shall be required to attend a maximum of 30 meetings for the purpose of public consultation and endorsement of findings, conclusions and recommendations of the Project works. These meetings shall exclude Study Management and Steering Group meetings, Working Group meetings, progress meetings, liaison meetings and the like.
- 5.6 The Consultants shall prepare and circulate sufficient copies (but not exceeding 50 copies for each meeting) of working papers for discussion in Working Group meetings and other ad-hoc meetings. These papers shall be circulated to the respective members at least two weeks before the meetings.
- 5.7 Reports shall be in A4 size and accompanying drawings should be in convenient sizes but not exceeding A3 size unless otherwise approved by the Director's Representative. All drawings produced for circulation other than those incorporated in the working papers and Final Report shall be in A1 size.
- 5.8 The Consultants shall submit a set of transparency (A1 size) and a set of data diskettes in 'Microstation .DGN' format for all drawings submitted during the Study.
- 5.9 The Consultants shall draw to the Employer's attention any Deliverables that are under licence and any pre-existing copyright or patent on any Deliverables and any other restriction whatsoever affecting the Employer's use of the same and, if required by the Director's Representative, to establish the existence of any licence, copyright, patent or restriction.
- 5.10 The Consultants shall adopt the following green measures in preparing the

deliverables required above :-

- a) all Reports and Working Papers are to be printed on both sides;
- b) Final Report and Executive Summary have to be printed on recycled paper. The use of recycled paper with no less than 50% recycled materials and not exceeding 80 gsm should be used as a general rule. The logo of recycled paper should be printed in a prominent area of the report;
- c) documents other than Final Report and Executive Summary should preferably be printed on recycled paper;
- d) bleached papers should not be used if possible;
- e) 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;
- f) Final Report and Executive Summary should be of single line spacing on the both sides of the paper;
- g) 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;
- h) excessive use of blank papers should be avoided as far as possible; and
- i) number of pages can be reduced by reducing the size of typeface (font). For example, "Time Roman" or "CG Times" larger than point 12 or 10 characters per inch (cpi) should be used in balancing legibility and clarity against our waste reduction objective. The appearance and readability of the document can be improved by using two columns where the font size used is less than 12 points.

6. Services to be provided by the Consultants

6.1 The Consultants shall also carry out the following activities and procedures in producing the Deliverables:

- a) carry out or have carried out all necessary surveys, levels and soundings and make such investigations and inquiries as are necessary for the satisfactory completion of the Assignment;
- b) prepare and submit a report to the Director's Representative on the results, findings and conclusions of the surveys, levels, soundings, investigations

and inquiries carried out under Clause 6.1a);

- c) recommend a preliminary land ground investigation including associated in-situ and laboratory testing to be carried out during the Assignment with reference to available geological, topographical and ground investigation data. The Consultants shall within 4 weeks from the commencement date of the Agreement submit the detailed requirements and estimated cost of the investigation works to the Director's Representative for approval. The ground investigation shall be carried out by Geotechnical Engineering Office (GEO) administered contracts for ground investigation, and the Consultants shall liaise direct with GEO and supervise the works of the GEO term contractors. If GEO administered contracts are not available, the Consultants shall be required to call for tender from the Site Investigation Category in the List of Approval Suppliers of materials and Specialist Contractors for Public Works following normal government tendering procedures. In this case, the Consultants shall, be remunerated separately, prepare all relevant tender and contract documents, arrange to calling for tenders, assess the tenders, make tender recommendations, prepare the tender reports, administer the ground investigation contract, and supervise the ground investigation works and associated insitu and laboratory testings. For both cases, the Consultants shall assist in obtaining the relevant authorities' approval to enter the land required for the land investigation work. The Consultants shall also recommend detailed ground investigations with implementation programme and cost estimate necessary for the detailed design of the Project. The Consultants shall take note of WBTC No. 13/90. For avoidance of doubt, the site supervision for the ground investigations works and the associated laboratory testings shall be paid as additional services;
- d) shall carry out a detail assessment on the Project and ensure that the feasibility of Project is adequately assessed and reflected in the preliminary design taking into account of the result of the ground investigation carried out under Clause 6.1c) above. The essential contents of the assessment are as follows :
- i) an outline of the topography, geology and presumed groundwater conditions of the site;
 - ii) a report on the results, findings and conclusions of the tests, trials and investigation carried out under Clause 6.1c);
 - iii) a general description of the proposed works and discussion of how the existing geotechnical features (such as slopes, retaining walls and foundations) will affect or be affected by such works;
 - iv) an assessment to demonstrate the feasibility of the Project, including

descriptions of construction methods and sequence of works with traffic diversion schemes; schematic plans and sections of the proposed site formation works and foundation works, taking the above discussion into account;

- v) risk assessment to identify and evaluate all potential hazards of the construction works, in particular slope works, to the road users travelling along Tai Po Road and the operation of KCR. The Consultants shall complete a qualitative assessment to compare the risks to both individual and societal terms with established guidelines. Practicable and cost effective risk preventive, control and mitigation measures shall be assessed and recommended. The Consultants shall also make design provisions/revisions to integrate with these measures. US Defence Department Military Standard System Safety Programme may be used and the Consultants shall consider and recommend any more suitable standards/established guidelines and agree with the Director's Representative on their use. Reference may also be made to British Standard "BS 8800:1996 - Guide to occupational Health and Safety Management Systems". For major risks, a quantitative assessment including costs of personal injuries, deaths and property damages shall be carried out. The Consultants shall also recommend the need and extent of further risk assessment for the design and construction stage of the Project;
 - vi) a plan showing the scope and extent of the proposed ground investigation required for detailed design purpose and specifying, by reference to section 15.3 of "GEOGUIDE 2 : Guide to Site Investigation", the level of independent site supervision of the works to be undertaken; and
 - vii) description of intended investigations of the stability of existing slopes, retaining walls and structures, and any preventive or remedial works that may be needed;
- e) prepare Land Requirement report which shall contain the followings:
- i) a land requirement plan at 1:1000 scale showing the general layout overdrawn on the land status plan and with the proposed Project limit clearly delineated. The Consultants shall identify the need for any resumption, clearance and reprovisioning and liaise with relevant bodies and assist with negotiations for any resumption, clearance and reprovisioning that may be required. The Consultants shall clearly indicate on the plans, the boundary and registered number of each lot or part thereof to be acquired, cleared or reprovisioned. The Consultants shall indicate on the plan, by shading or hatching, all structures, graves or areas of crops to be cleared or minor roads to

be closed or diverted. Additionally, the plan shall also contain a table indicating the registered numbers and approximate areas (in square meters) of each of these lots (or part thereof) to be acquired or cleared;

- ii) a brief description on the results of investigation on the effects on KCRC land affected by the Project. The Consultants shall liaise with KCRC for land requirement and to identify any possible constraints and implication on the Project implementation;
- iii) a brief description of options that the Consultants have considered to reduce the area of land that the Project will consume. According to the PPFS report, two private lots and a STT would be affected by the reprovisioning of footbridge at Wo Che Street. As the start date of the construction works for the whole Project was hinged upon the time of the availability of land for the reprovisioning works, the Consultants shall assess and recommend feasible options to avoid or minimise the land resumption works to enable advancement of the Project programme. The Consultants shall also identify those options that have been incorporated and explain why other options have not been adopted;
- iv) a brief summary identifying the borrow area, dump sites, works area and temporary access of the Project. The Consultants shall propose and agree with the relevant authorities on borrow areas, dump sites and works areas at various stages of the Project. The Consultants shall also propose and agree with concerned authorities on the temporary accesses to the site; and
- v) a brief summary indicating all facilities, installations and existing rights that may impose adverse implication on the project implementation.

The Consultants shall closely liaise with DLO/Sha Tin in producing the report;

- f) review the preliminary findings and recommendations of the Project as indicated in the PPFS report and propose necessary modifications to it, acceptable to all concerned parties;
- g) propose three alternative options for the arrangement of the reprovisioning of the grade separated cycle track and footpath at J/O Tai Po Road / Sha Tin Rural Committee Road;
- h) evaluate the cost-effectiveness of each option and recommend the most cost-effective option for the arrangement as in g) above;

- i) carry out an Environmental Impact Assessment (EIA), Drainage Impact Assessment (DIA) and Traffic Impact Assessment (TIA) in accordance with the Study Brief specified in the following Clause 6.12, Clause 6.15 and Clause 6.16 respectively and provide preliminary engineering design for the mitigation measures recommended and acceptable by all parties concerned in the EIA, DIA and TIA;
- j) prepare the preliminary design for all civil (including drainage and sewerage), structural, geotechnical, architectural and landscaping works to the usual degree of accuracy such that detailed design may proceed therefrom based on the recommended layout of the Project;
- k) prepare a general layout (scale 1:1000) for the recommended layout of Project. The layout drawings should include horizontal and vertical alignments, and typical cross-sections of the road, earthworks, associated structures, footbridge, mitigation measures, cyclist and pedestrian facilities, and landscaping works;
- l) prepare a Design Memorandum necessary for the detailed design of the Project, stating the framework of design acceptable to Government, design approval and checking procedures that will be used throughout the design stage. The design Memorandum shall cover all aspects of the Project;
- m) carry out a tree survey on the Project, prepare a tree survey report and a tree felling proposal acceptable to DLO, DAF, DRS and SLA/HyD;
- n) investigate the best construction methodology and implementation strategy for the Project and advise the Director's Representative on the best construction option and the type and form of contract most suitable for the implementation of the Project;
- o) prepare a programme in Timeline format (or other format acceptable to the Director's Representative) with the critical activities identified for the implementation of the Project through the design and construction stages. The programme shall include a time schedule for land clearance and acquisition. The data diskette of the programme shall also be submitted;
- p) prepare a cost estimate of the Project including breakdown of cost of each item of works, land cost, cost of reprovisioning and compensation, cost on environmental mitigation measures, risk analysis and recurrent consequences. The risk analysis shall be in accordance with Works Branch Technical Circular No. 22/93; and
- q) prepare an estimated monthly expenditure cash flow schedule of the Project.

6.2 The Consultants shall allow the provision of ducting in the design of the proposed roundabout for possible signalisation in future.

6.3 The Consultants shall also take cognisance of all related studies, that are either completed or currently/to be carried out, in particular the following:-

- a) Noise Impact Assessment Study for 24 hours Opening of Border Crossing;
- b) Sha Tin and Ma On Shan Traffic Study;
- c) Trunk Road T3 Traffic and Transport Review Study;
- d) Lek Yuen Estate Infill Site, Site Potential Study;
- e) Feasibility Study on Housing Sites in Shatin District; and
- f) Study on Increased Population in Ma On Shan.

The Consultants shall integrate the results and findings of the above studies, reports and correlate them in this Study.

6.4 The Consultants shall identify the conflict of the Project with other ongoing/proposed projects as stated in Clause 4.2 and agree with the concerned parties the necessary interface works.

6.5 The Consultants shall investigate the locations of existing and proposed public and private utility services which may be affected by the Project and agree with the utility companies and the concerned parties the necessary utility diversions (with detailed programme and requirements).

6.6 The Consultants are expected to communicate and correspond direct with other Government departments and their consultants, appropriate authorities and private organisations to obtain information in connection with the Study. The Consultants shall copy such correspondence to the Director's Representative. Any problem in communication or liaison should be referred to the Director's Representative for assistance. In particular, consultation may be required with the following:

- a) Agriculture and Fisheries Department
- b) Architectural Services Department
- c) Buildings Department
- d) Civil Engineering Department
- e) Home Affairs Department

- f) Correctional Services Department
- g) Drainage Services Department
- h) Education Department
- i) Environmental Protection Department
- j) Electrical and Mechanical Services Department
- k) Fire Services Department
- l) Highways Department
- m) Housing Department
- n) Lands Department
- o) Planning Department
- p) Regional Services Department
- q) Hong Kong Police Force
- r) Social Welfare Department
- s) Transport Department
- t) Territory Development Department
- u) Urban Services Department
- v) Water Supplies Department
- w) Kowloon Canton Railway Corporation
- x) China Light & Power Co. Ltd.
- y) Hong Kong & China Gas Co. Ltd.
- z) Hong Kong Telephone Co.
- aa) Hutchison Communication Limited
- ab) New T & T Hong Kong Limited
- ac) New World Telephone Company Limited
- ad) Wharf Cable Ltd.
- ae) Kowloon Motor Bus Co. Ltd.

6.7 The Consultants shall take account of in providing the Services all Government regulations including Financial and Accounting Regulations, Secretariat Instructions, Lands & Works Branch Technical Circulars, Works Branch/Bureau Technical Circulars, Engineering Development Department Technical Circulars, Highways Department / Civil Engineering Services Department Instructions, Highways Department Technical Circulars, Civil Engineering Department Technical Circulars, Highways Office Instructions and all PWD Technical

Circulars.

- 6.8 The Consultants shall prepare and supply all necessary drawings, documents and presentation materials to comply with various statutory and Government procedures required for the Project, including procedures in respect of the submission for approval of the ACABAS for the design of highways structures (including noise barriers), gazetting under the Roads (Works, Use and Compensation) Ordinance and public consultation as mentioned in Clause 5.4. The Consultants will be required to attend and answer queries at these meetings.
- 6.9 The Consultants shall prepare land requirement and gazette plans and other documents for gazettal under Roads (Works, Use and Compensation) Ordinance, and presentation materials for District Boards meetings and other public consultations. The Consultants shall liaise and agree with DLO to finalise the land clearance boundary.
- 6.10 The Consultants shall circulate for comment the reports as stated in Clause 5 to relevant government departments and agencies, and all other parties involved in this and any other projects or developments likely to be affected by this development. In this connection, the Consultants shall submit the circulation list to the Director's Representative for agreement. The Consultants shall copy all correspondence with the above-mentioned parties and a summary of comments and response to the Director's Representative for information. The Consultants shall also distribute the Draft Reports, Final Reports and Executive Summary Reports to concerned parties for retention. The list of distribution of reports shall be submitted to the Director's Representative for agreement.
- 6.11 The Consultants shall prepare a summary of comments on the Project received from various Government offices, authorities, bodies and persons as a result of consultations or circulation of the Project. The summary shall include the Consultants' replies to, advice/recommendations for further action on, and/or report on action taken arising out of, those comments that have an influence on the design and/or construction of the Project.
- 6.12 The Consultants shall comply with and observe all ordinance, by-laws, regulations and rules for the time being in force in Hong Kong governing the control of any form of pollution for environmental protection. The Consultants shall obtain necessary licence and permits for the implementation of the Project.
- 6.13 The Consultants shall advise on the formulation and application of criteria for the identification, assessment, evaluation and adoption of option.

6.14 Environmental Impact Assessment Study

6.14.1 Introduction

6.14.1.1 The purpose of this Environmental Impact Assessment (EIA) Study is to provide information on the nature and extent of environmental impacts arising from the construction and operation of the Project and all related activities taking place concurrently. This information will contribute to decisions on whether:

- a) any environmental impacts that are likely to arise as a result of the Project are within the established standards/guidelines;
- b) there are any conditions and requirements for the detailed design, construction and operation of the Project; and
- c) residual impacts are within established standards/guidelines after the proposed mitigation measures are implemented.

6.14.1.2 No approval shall be given to the Project unless it can be demonstrated (quantitatively, if possible) that no unacceptable adverse environmental impacts will result from its implementation. Any statutory gazetting activity related to the Project shall be carried out after the satisfactory completion of the EIA Study and its subsequent public consultations. The EIA Study shall include any restoration (and decommissioning) work and any temporary and permanent activities to take place.

6.14.2 Study Area

In general, the boundary of the Study Area for the purpose of this EIA shall be of 300m from either side and along the full stretch of the proposed road alignments, except that, for landscape impact assessment and air pollution assessment, the study area shall generally be defined by a distance of 500m from the proposed road alignment. However, all sensitive receivers regarding the visual impact assessment shall be assessed within the visual envelope outlining the area of land which there is a view of any part of the proposed road, its structure, or the traffic which will use it.

With respect to noise impact assessment, the study area could be reduced accordingly if the first layer of noise sensitive receivers, closer than 300m from the road, provide acoustic shielding to those receivers at further distance behind.

All the figures of distance mentioned above shall be measured at the edge of kerb or hard shoulder whichever is applicable.

6.14.3 Requirements of the Environmental Impact Assessment Study

6.14.3.1 The Consultants shall meet the objectives listed in Clause 3.2 above by:

- a) carrying out the necessary background studies to identify, collect and analyse existing information relevant to the EIA Study;
- b) carrying out any necessary environmental survey, site investigations and baseline monitoring work to achieve the objectives;
- c) quantifying, by use of models or other predictive methods, the residual and cumulative environmental impacts (specifying whether these are transient, long term and/or irreversible) arising from the construction and operation of the Project;
- d) proposing practicable, effective and enforceable methods, measures and standards to effectively mitigate any significant environmental impacts in the short and long term; and
- e) outlining a programme by which the environmental impacts of the Project can be assessed, monitored and audited.

6.14.3.2 In further defining the scope of the EIA Study, consideration should be given to beneficial and adverse effects, short and long term effects, secondary and induced effects, cumulative effects, synergistic effects and transboundary effects.

6.14.4 Technical Requirements of the Environmental Impact Assessment Study

The EIA Study shall include the following tasks:-

6.14.4.1 Construction Phase Assessment

(A) Noise Impact Study

Task 1 : Identification of Representative Sensitive Receivers

Based on the existing and future planned land-uses in the Study Area, the Consultants shall prepare schedules and plans to identify both existing and planned noise sensitive receivers to be potentially affected by the Project. The potentially affected land-use shall include those described in the Environment Chapter of the Hong Kong Planning Standards & Guidelines (HKPSG). The existing noise levels shall be established for the Study Area and

presented on maps of suitable scale. The locations of the representative noise sensitive receivers (NSRs) for noise assessment and the map showing existing noise levels shall be clearly justified, documented and agreed with the Director of Environmental Protection (DEP).

Task 2 : Analysis of Construction Activities

From a knowledge of the likely type, sequence and duration of construction activities required for the implementation of the Project, the Consultants shall identify those activities likely to have an impact on the NSRs. An emission inventory of the noise sources shall also be provided.

The number of dwellings, classrooms and other noise sensitive elements and the corresponding number of population affected at various stages of the construction phase of the Project shall be quantified.

Task 3 : Assessment of Construction Noise Levels

The Consultants shall identify the interactions between the NSRs and the construction activities at every stage of the Project and determine the extent of potential construction noise impacts including assessment of construction impacts for putting the mitigation measures in place. The assessment shall follow the requirements contained in all the Ordinances and their Regulations governing the control of construction noise currently in force in Hong Kong and the guidelines as advised by DEP. The map showing the worst scenario noise levels shall be produced based on the analysis and assessment of the construction activities identified.

Task 4 : Proposals for Noise Control Measures

The Consultants shall formulate appropriate noise control measures for the inclusion into the contract documents. Based on the recommended noise control measures, predicted resulting noise levels shall be presented at the NSRs. Where appropriate, details of compliance monitoring shall be proposed.

(B) Air Pollution Impact Study

Task 1 : Identification of Representative Receptors

From a consideration of existing and future land use in the Study

Area, prepare plans identifying representative receptors in the vicinity of the Project. The locations of the representative receptors shall be agreed with the DEP.

Task 2 : Presentation of Background Air Pollution Levels

Background dust pollution levels in the Study Area shall be established for assessment of cumulative dust pollution impacts of the Project.

Task 3 : Analysis of Construction Activities

From a knowledge of the likely type, sequence and duration of construction activities required for the Project implementation, the Consultants shall identify those construction activities likely to cause potential dust problems to the receptors.

Task 4 : Air Pollution Impact Assessment

The Consultants shall assess the net and cumulative dust pollution impact of the Project to receptors by dispersion modelling. Fugitive Dust Model (FDM) is usually preferred.

Task 5 : Proposal for Air Pollution Control Measures

The Consultants shall recommend appropriate dust pollution control measures, accompanied with the predictions of the residual dust pollution impacts, to reduce the cumulative dust pollution impacts to established levels and for the inclusion in the contract documents. Where appropriate, compliance monitoring should be proposed.

(C) Water Quality Impact Study

Task 1 : Identification of Sensitive Receivers

The Consultants shall identify the water bodies, watercourses, streams, groundwater systems and any other sensitive receivers which will be affected by the proposed project together with their beneficial uses and their existing water quality.

Task 2 : Analysis of Construction Activities

From a knowledge of the likely type, sequence and duration of the construction activities required for the Project, the Consultants shall identify those activities likely to have an impact on the

identified water bodies, watercourses, streams, ground water systems and any other sensitive receivers. Such activities will include reclamation, dredging and excavation, or any activity which may involve alternations to watercourses, streams, ponds, wetlands and shorelines or induce any change to flow regimes, ground water levels and catchment areas.

Task 3 : Assessment of Water Pollution Problems

The Consultants shall assess and evaluate the potential adverse effects of construction of the Project on the identified water bodies, water courses, streams, ground water systems and any other sensitive receivers. The impacts on the surrounding environment / waters shall be quantitatively assessed taking into account the cumulative effects of all construction activities including those of the adjacent proposed projects. Any water quality modelling needs to be agreed with the Modelling Section of Environmental Protection Department (EPD).

The Consultants shall assess and evaluate any potential water quality impacts on the identified water bodies, watercourses, streams, ground water systems and any other sensitive receivers due to sewage effluent arising from on-site construction workforce. Any effluent generated shall require appropriate treatment and disposal. All sewage discharges from the Study Area have to meet TM Standards.

The Consultants shall identify, assess and evaluate any potential stormwater runoff impacts and investigate the opportunity of implementing stormwater Best Management Practices (BMPs), such as detention facilities, oil/grit separator, sediment trap, vegetative channel... etc., for minimising stormwater runoff pollution.

Task 4 : Proposal for Water Pollution Control Measures

The Consultants shall recommend water pollution control measures/BMPs with regard to the beneficial uses of the water bodies, watercourses, streams, ground water systems and any other sensitive receivers and water quality of all runoff from the Study Area will not lead to exceedance of the WQOs of the receiving water bodies.

(D) Construction Waste Impact Study

Task 1 : Analysis of Construction Activities

The Consultants shall identify the quantity, quality and timing of the waste (including dredged marine mud (contaminated and/or uncontaminated) and bentonite slurry if any) and surplus excavated material arising (including those with high clay/water content) as a result of the construction activities.

Task 2 : Proposal for Waste Handling and Disposal

The Consultants shall recommend appropriate waste handling and disposal measures/routings in accordance with the current legislative/administrative arrangements on the disposal of construction wastes including the reuse, recycle and/or reduction of construction waste, for the inclusion into contract documents.

(N.B. Construction Waste shall be sorted/separated as far as practicable to mainly two portions: the 'inert materials' (including soil, rock, concrete, brick, cement plaster/mortar, inert building debris, aggregates and asphalt) and the 'non-inert materials' (including timber, paper, glass, junk, general garbage and other organic). Suitable materials complying with conditions as set out in public dumping licence shall be disposed of at public dumps. Construction Waste with a small amount of inert materials (not more than 20% by volume) can be allowed to be disposed of at landfills.

The handling and disposal of bentonite slurries shall follow the requirements as set out in the Practice Note For Professional Persons ProPECC PN 5/93 - Construction Site Drainage.

The Consultants shall assess the construction waste in accordance with these arrangements and consult Waste and Water Division of EPD on the final disposal of this waste.

6.14.4.2 Operational Phase Assessment

(A) Traffic Noise Impact Study

Task 1 : Identification of Representative Sensitive Receivers

Same requirements as Clause 6.2.4.1(A), Task 1.

Task 2 : Calculation of Future Noise Levels

The Consultants shall produce an emission inventory of the noise sources, obtain confirmation on their validity, assess their noise impacts and present the predicted future noise levels on the NSRs.

The Consultants shall analyse the scope of the Project to identify appropriate new and existing road sections for the purpose of traffic noise impact assessment. When an existing road section undergoes major modification which will directly result in 25% increase in lanes or substantial changes in alignment or characters (e.g. change into high speed road) of the existing road, it shall be regarded as a new road for the purpose of this noise impact assessment.

The Consultants shall calculate the expected road traffic noise using methods described in the U.K. Department of Transport's "Calculation of Road Traffic Noise" (1988) (CRTN) published by Her Majesty's Stationery Office. Calculations for future road traffic noise shall be based on the peak hour traffic flow in respect of the maximum traffic projection within a 15 years period upon commencement of operation of the proposed roadwork or the year of traffic projection approved by DEP and the Director's Representatives. The volume of traffic, speed and percentage of heavy vehicles used in the calculation shall be justified through studies found acceptable to the Commissioner for Transport. The Consultants shall calculate the traffic noise levels in respect of each road section and overall noise levels from the combined road sections (both new and existing) at the NSRs.

Task 3 : Presentation of Existing Noise Level

The Consultants shall present the existing and future traffic noise levels in L_{10} (1 hour) at the NSRs at various representative floor levels (in m P.D.) on tables and plans of suitable scale.

Quantitative assessment at the NSRs for proposed road alignment shall be carried out and compared against the criteria set out in the HKPSG. The potential noise impact of proposed road alignment shall be quantified by estimating the total number of dwellings, classrooms and other noise sensitive elements that will be exposed to noise above the HKPSG criteria.

Task 4 : Proposals for Noise Mitigation Measures

After rounding off the predicted noise levels according to CRTN, the Consultants shall propose direct technical remedies in all situations where the predicted traffic noise level exceeds the HKPSG maxima by 1 dB(A) or more. Specific reasons for not adopting certain direct technical remedies in the design to reduce the traffic noise to a level meeting the HKPSG criteria or to maximise the protection for the NSRs as far as possible should be

clearly laid down. The total number of dwellings, classrooms and other noise sensitive elements that will still be exposed to noise above the HKPSG criteria with the implementation of all recommended direct technical remedies shall be quantified. If noise mitigation measures such as noise barriers or noise enclosures are proposed, landscape and visual impact assessment should be carried out. Besides, these measures should be submitted to ACABAS for comment and approval.

In case where a number of the NSRs cannot all be protected by the recommended direct technical remedies, the Consultants shall identify and estimate the total number of existing dwellings, classrooms and other noise sensitive elements which may qualify for indirect technical remedies under the ExCo directive "Equitable Redress for Persons Exposed to Increased Noise Resulting from the Use of New Roads", the associated costs and any implications for such implementation. For the purpose of determining the eligibility of the affected premises other than institutional buildings for indirect technical remedies, reference shall be made to the set of following three criteria:

- a) the predicted overall noise level from the new road together with other traffic in the vicinity must be above 70 dB(A) $L_{10}(1\text{hour})$;
- b) the predicted overall noise level is at least 1.0 dB(A) more than the prevailing noise level, i.e. the total traffic noise level existing before the works to construct or improve the road were begun; and
- c) the contribution to the increase in the overall noise level from the new road must be at least 1.0 dB(A).

In addition, reference shall also be made to the recommendations in the Final Report of "Noise Impact Assessment for 24-Hour Opening of Border Crossings" in determining the final requirement for noise mitigation measures along the relevant length of Tai Po Road.

Task 5 : Assessment of Side Effects and Constraints

The Consultants shall identify, assess and propose means to minimise any side effects and to resolve any potential constraints due to the inclusion of the recommended direct technical remedies. For instance, when decking over of roadways is identified to be necessary, the air quality and the increase in noise

levels below the deck and at the portals shall be addressed.

For planned developments which will still be affected even with all practicable direct technical remedies in place, the Consultants shall evaluate and confirm the practicability of additional measures. The agreed environmental requirements/constraints identified by the EIA Study will be taken into account when assessing the development potential of the concerned sites and will be made known to the relevant parties. The Consultants shall make recommendations on how these developments will be designed for the information of relevant parties.

(B) **Air Pollution Impact Study**

Task 1 : Identification of Representative Receptors

From a consideration of existing and planned land use in the Study Area, prepare plans identifying receptors that will likely be affected by emissions from the Project. The locations shall be agreed with the DEP.

Task 2 : Presentation of Background Air Pollution Levels

Background air pollution levels at the Study Area shall be established for assessment of cumulative air impacts and used in Task 3.

Task 3 : Air Pollution Impact Assessment

The Consultants shall assess the net and cumulative air pollution impact of the Project to receptors by dispersion modelling. The Consultants shall provide detailed methodology statement and key assumptions of the selected model such as emission factors and other input parameters etc. to DEP for comment and consent before commencement of the Study.

The report shall contain sample calculation and input parameters used in the modelling.

Air pollution isopleths shall be produced as an output of the Study.

The Consultants shall also assess the air quality implications of any proposed noise mitigation measures. If noise mitigation measures such as noise canopy, which will affect dispersion of air pollutants are proposed to mitigate noise impact due to traffic

flow, then the Consultants shall also assess the implications of such mitigation measures on air quality impact. If noise canopy in the form of total enclosure and/or decking over are proposed, then both 'tunnel' portal emissions and air quality inside the 'tunnel' shall also be addressed.

Task 4 : Proposal of Mitigation Measures

The Consultants shall propose effective mitigation measures, accompanied with the prediction of the residual air pollution impacts, to reduce the cumulative air pollution impacts to established levels.

(C) Water Quality Impact Study

Task 1 : Identification of Sensitive Receivers

Same requirements as Section D, Task 1.

Task 2 : Assessment of Water Pollution Impact

The Consultants shall assess and evaluate any possible adverse effects on the water quality of the water bodies, watercourses, streams, ground water systems and any other sensitive receivers as a result of the operational phase of the proposed highway system. The evaluation shall consider quantification of pollution loads, impacts due to any alteration of flow regimes, interception of flow, stormwater runoff, wastewater, spillage due to accidents and investigation of location of existing and proposed public stormwater drains and sewers which will be affected by the Project. Any necessary drainage and sewerage diversions shall be agreed with Drainage Services Department

Task 3 : Proposals for Mitigation Measures

The Consultants shall recommend mitigation measures/BMPs to minimise any potential adverse water quality effect identified and to ensure that any wastewater and runoff from the proposed highway system will not lead to exceedance of the WQOs of the receiving water bodies.

(D) Visual, Landscape and Townscape Impacts

Task 1: Assessment of Visual Impacts

The Consultants shall assess the visual impacts of the Project. The assessment shall include the following :

- a) identification of visual sensitive receivers within the visual envelope;
- b) identification of source of visual impact (including proposed noise mitigation measures); and
- c) identification of the visual impact to the visual sensitive receivers. The categorisation of visual change according to the following scale : substantial adverse impact; moderate adverse impact; slight adverse impact; no change; slight beneficial impact; moderate beneficial impact and substantial beneficial impact. Related mapping is required.

Task 2: Assessment of Landscape and Townscape Impacts

The Consultants shall assess the landscape impact of the Project. The assessment shall include the following :-

- a) **Description of Baseline Data**
Data should be collected on the physical elements of the landscape, including landform, vegetation, historical and cultural components which contribute to its character and value.
- b) **Classification and Assessment of Existing Landscape**
An analysis of data should include i) classification of the landscape into broadly homogenous units of the character and broadly homogenous units of value; ii) assessment and ranking the landscape character units according to the visual importance or scenic value of the landscape features noted. A five point scale will generally be appropriate (i.e. highest quality, very attractive, good landscape, ordinary landscape, and poor landscape). These are assessed separately and may not be necessarily coincide. Clear mappings of both assessments are required.
- c) **Identification of the Potential Positive and Negative Impacts of the Scheme**

The capacity of the landscape to accept change of the type and scale proposed should be assessed based on its vulnerability to degradation through the introduction of new features or the loss of existing components. The report should note any landscape considered to be particularly vulnerable in this way or particularly able to accept change. Information relating to landscape impact assessment should

include the following : i) landform; ii) vegetation; iii) historical and cultural components and iv) modern buildings, structures and landscape interests. Clear mapping is required. The landscape impact assessment should be according to the following scale: substantial adverse impact; moderate adverse impact; slight adverse impact; no change; slight beneficial impact; moderate beneficial impact; substantial beneficial impact. Related mapping is required.

Task 3: Proposals for Mitigation Measures

The Consultants shall recommend mitigation measures to minimise the adverse effects identified in Tasks 1 and 2 above, with the inclusion of an landscape and townscape design. The mitigation measures shall also include the retention of vegetation, provision of screen planting, revegetation of disturbed land, reprovisioning of amenity areas and open spaces, design of structures and provision of finishes to structures, and any measures to mitigate the disturbance of the existing agricultural and horticultural landuse. The advice from the ACABAS shall also be taken into account. Presentation of photomontages of the proposed road in the existing environment illustrating the effectiveness of visual impact mitigation measures shall be included.

(E) Land Use Impact

Task 1 : Assessment of the Implication on Land Use

The Consultants shall assess the implications on land uses in the vicinity of the Project (including works areas). Both the long and short term implications have to be assessed.

Task 2 : Proposals for Mitigation Measures

The Consultants shall recommend appropriate cost effective mitigation measures to minimise the adverse effects identified in Task 1 above. Special attention shall be paid to minimise restraints on the development potential of the areas in the vicinity. The method of assessing the development potential of the area shall be agreed with the Director of Planning.

6.14.4.3 Use of EIA models/Survey Techniques/Analytical Methods

The use of models, survey protocols and analytical methods (includes laboratory techniques) proposed in the Inception Report shall be agreed

and approved by the DEP prior to commencing with detailed studies. This shall include the following:

- a) elaboration of background assumptions;
- b) confirmation with data validation;
- c) calibration of model;
- d) prescription of tool application (such as, questionnaire, numerical/stochastic algorithm); and
- e) presentation of scenario projection and interpretation of results.

6.14.4.4 Impacts Summary

It is important to present the findings in simple terms to sum up all environmental impacts and select the appropriate alternative for the Project. The Study shall address the following:-

- a) elaboration of alternatives, including where appropriate the 'do nothing' scenario (i.e. without the Project);
- b) discussion of the extent of impacts and the proposed ranking system;
- c) presentation of the recommendations on overall adequacy of mitigation measures;
- d) justification of the proposed methodology to be adopted for an impacts summary and be agreed with the DEP;
- e) application of impacts summary; and
- f) summary of breakdown costs of recommended mitigation measures.

6.14.4.5 Environmental Monitoring & Audit (EM&A) Requirements

The Consultants is required to identify and justify whether there is a need for EM&A during project implementation and operation phases and to define the scope of the EM&A requirements for the Project, during the EIA Study. Subject to the confirmation of the EIA Study findings, the EM&A programme shall comprise the following:-

- a) The Consultants shall prepare, during the course of the EIA

Study, an Environmental Monitoring and Audit Manual which covers the requirements and recommendations in b), c) and d), below. This Manual shall be used as a guideline for environmental monitoring and audit during the construction, post-project and operational phases. This Manual shall be a stand-alone document and form part of the EIA Report. This Manual will need to be reviewed and revised at regular intervals by the Consultants.

b) **Environmental Monitoring**

The Consultants shall identify and recommend environmental monitoring requirements for all construction, post-project and operational phases of the Project. These requirements shall include 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 carry out baseline monitoring to establish the existing environmental quality within the Study Area. The results of the environmental baseline monitoring shall be included in the EIA Report.

c) **Environmental Audit**

The Consultants shall identify and recommend environmental audit requirements for all construction, post-project and operational phases of the Project which shall include, where appropriate, the audit of design submissions during the construction stage. These requirements shall include :

- i) organisation and management structure, and procedures for auditing of the design submissions and implementation of environmental mitigation measures recommended for the detailed design, contract document preparation, construction, post-project and operation stages of the Project;
- ii) environmental quality performance limits for compliance auditing of each of the recommended monitoring parameters to ensure compliance with relevant environmental quality objectives, statutory or planning standards, or established criteria recommended by the EIA Study. These limits shall give an indication of any deteriorating environmental quality

and shall allow proactive responses to be taken. (The usual approach is a set of action and limit levels);

- iii) organisation and management structure, and procedures for reviewing the design submissions, monitoring results and auditing the compliance of the monitoring data with the environmental quality performance limits (ii) above), contractual and regulatory requirements, and environmental policies and standards;
 - iv) Event and Action plans for impact and compliance monitoring;
 - v) complaint handling, liaison and consultation procedures; and
 - vi) interim notification of exceedances, reporting procedures, report formats and reporting frequency including periodical quarterly summary reports and annual reviews to cover all construction, post-project and operational phases of the Project.
- d) The Consultants shall prepare a project implementation schedule (check list) containing all the EIA Study recommendations and mitigation measures with reference to the implementation programme.

6.14.5 Compliance with Environmental Law

6.14.5.1 An EIA Study is a tool to identify potential environmental impacts arising from the Project and to provide a basis for decisions for the implementation of the Project, but it does not automatically exempt the proposal from licensing requirements and the approvals from relevant authorities.

6.14.5.2 The Consultants shall comply with and observe all Ordinances, by-laws, regulations and rules for the time being in force in Hong Kong governing the control of any form of pollution for environmental protection.

6.14.6 Liaison and Administration

6.14.6.1 The Consultants shall liaise with relevant Government departments and agencies, and all other parties involved in this and any other projects or developments likely to be affected by this Project. Any correspondence, notes or minutes arising from this liaison shall be

copied to the DEP and the Director's Representative.

6.14.6.2 The EIA Study will be managed by a Study Management Group (SMG) chaired by a representative of the DEP. This shall be the forum for liaison with Government departments and agencies, providing guidance to the Study Consultants, and for comment and review on the work and outputs of the Study.

6.14.6.3 The Consultants should make himself/herself available to be present in Advisory Council on the Environment (ACE), EIA sub-committee and its full council, DB and/or any public consultation meeting(s) (if necessary) to brief members.

6.14.6.4 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 ACE, appropriate Bureaux and Departments.

6.14.7 General Reference

The EIA Study shall be carried out with due regard to the information, policies, regulations and procedures contained in :-

- a) all anti-pollution Ordinances, Technical Memoranda, advisory booklets etc.;
- b) PEL Branch/Works Branch, April 1992 : 'EIA of major private sector projects' (Technical Circular No. 2/92, 14/92);
- c) PEL Branch, May 1994 : 'Public access to EIA reports' (General Circular No. 2/94);
- d) EPD and Planning Department, April 1991 : 'Environmental Guidelines for Planning in Hong Kong' (Chapter 9 of 'HKPSG');
- e) EPD : 'Environment Hong Kong' (Annual Review);
- f) PEL Branch, November 1993 : 'The Hong Kong Environment : A Green Challenge for the Community';
- g) EPD, February 1994 : Consultancy Documents Submitted to EPD - Working Greener' DTC No. 15.2.94;
- h) EPD, Practice Note for Professional Persons - ProPECC Note, 1993: Construction Site Drainage (PN5/93);

- i) EPD, May 1996 : Generic EM & A Manual; and
- j) All Ordinances and Regulations related to the protection of flora, fauna, endangered species, wildlife habitats, natural resources and landscapes.

6.14.8 Report Requirements

6.14.8.1 The assessment shall consist of at least the following :

- a) an Inception Report should be prepared and submitted, within 4 weeks of the Study commencing, by the Consultants (their agents, sub-consultants or representative). The Inception Report shall include the following :
 - i) the Consultants' understanding and appreciation of the objectives of the Study;
 - ii) the approach and methodology for the various parts of the Study;
 - iii) a work programme, with major work tasks and key decision points identified and briefly described;
 - iv) a schedule detailing the submission of reports and Study Management Group meetings (where necessary); and
 - v) organisation and staffing of the environmental study team and the curricula vitae of the key study team members.
- b) an EIA Report which
 - i) fully satisfies the requirements of this Brief in respect to the prediction and assessment of impacts, the identification of environmental impact mitigation measures and the associated residual impacts;
 - ii) provides a detailed assessment and evaluation of the environmental impacts and cumulative effects arising from the Project sufficient to identify, evaluate and mitigate those issues of key concern during the construction and operation of the Project which are likely to influence decisions on the Project;
 - iii) 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 and operation of the Project;

- iv) 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;
 - v) proposes a detailed programme of investigation able to meet all other objectives of the assessment;
 - vi) prescribes the specification for detailed design, construction and operation requirements of the Project; and
 - vii) provides with the impacts summary, the Study findings, conclusions, recommendations and a mechanism for implementation;
- c) an Executive Summary Report in both English and Chinese of the Study, highlighting the 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 ACE, DB and other public consultation(s);
- d) all reports/working papers should be prepared and submitted in draft to the DEP for comment; and
- e) any revisions or supplements to the above as might be required by the Director of Environmental Protection through the Director's Representative.

6.15 Drainage Impact Assessment Study

6.15.1 Introduction

6.15.1.1 The purpose of this Drainage Impact Assessment (DIA) Study is to

provide information on the nature and extent of potential drainage impacts arising from the construction and operation of the Project and all related activities taking place concurrently. This information will contribute to decisions on :

- a) the overall acceptability of any potential adverse drainage consequences that are likely to arise as a result of the Project;
- b) the conditions and requirements for the detailed design, construction and operation of the Project; and
- c) the acceptability of residual impacts after the proposed mitigation measures are implemented.

6.15.2 Requirements of the Drainage Impact Assessment Study

6.15.2.1 The Consultants shall meet the objectives listed in Clause 3.3 by :

- a) carrying out the necessary background studies to identify, collect and analyse existing information relevant to the DIA Study;
- b) carrying out any necessary survey, site investigations and monitoring work to achieve the objectives;
- c) quantifying, by use of mathematical models or other predictive methods, the residual and cumulative environmental impacts (specifying whether these are transient, long term and/or irreversible) arising from the construction and operation of the Project;
- d) proposing practicable, cost effective and enforceable methods, measures and standards to effectively mitigate any significant adverse drainage impacts in the short and long term;
- e) outlining a programme by which the drainage impacts of the Project can be assessed, monitored and audited; and
- f) carrying out the DIA Study in accordance with the standards set out in Drainage Services Department's Stormwater Drainage Manual.

6.15.2.2 In further defining the scope of the DIA Study, consideration should be given to beneficial and adverse effects, short and long term effects, secondary, induced and cumulative effects.

6.15.3 The Consultants shall consider all aspects of the activities arising from

the Project in all stages of implementation and the DIA Study shall provide and address the following :

6.15.3.1 An Outline of the Current Flooding Susceptibility and Proposed Drainage

The following details are required :

- a) an assessment of the susceptibility of the project site to flooding, preferably with a record of any past flooding which occurred within or adjacent to the project site; and
- b) a detailed layout plan at an appropriate scale of the project site with the site boundary, existing and proposed ground levels, existing and proposed drainage systems including any necessary upgrading drainage works within the catchment, and, existing and proposed land uses, all identified. If the ground levels or drainage or land uses adjacent to but outside the project site are likely to change, details should be provided if possible or, alternatively, attention drawn to the fact that changes are likely.

6.15.3.2 An Outline of the Changes to the Drainage Characteristics and Potential Drainage Impacts which might arise from the Proposed Project

6.15.3.2.1 The Consultants shall provide the following details to quantify the changes to the drainage characteristics of the catchment arising from the Project. Considerations should be given to all Government and private land development, highways, land drainage and other infrastructure facilities currently planned and under construction in the catchment basin.

- a) changes in land use and surface runoff characteristics;
- b) changes to surface runoff hydrographs for 2, 10, 50 and 200 years return period flood events for the project site and at the affected watercourses;
- c) change in flood storage caused by the project;
- d) assessment of timing of peak runoff from project site relative to timing of catchment peak runoff;
- e) an evaluation of the peak runoff from the catchment upstream of the project site for 2, 10, 50 and 200 years return period flood events;

- f) approximate hydraulic bankfull capacity of existing drainage upstream, within and downstream of project site;
- g) approximate hydraulic bankfull capacity of proposed drainage upstream, within and downstream of project site;
- h) changes in flood levels and/or velocities for 2, 10, 50 and 200 years return period flood events; and
- i) details of temporary drainage during construction including hydraulic capacities.

6.15.3.2.2 The Consultants shall provide details of all potential impacts which might arise as a result of changes to the drainage characteristics caused by the Project and identify land users which might be affected. Details of impacts caused by the following should be provided :

- a) changes in flood levels, flood frequency and/or velocities;
- b) changes in timing and magnitude of runoff peaks;
- c) changes to maintenance requirements and access for maintenance;
- d) changes to the drainage paths and regime during construction and thereafter;
- e) cumulative effects taking account of other developments in catchment; and
- f) other relevant considerations.

The potential impact should be considered on upstream, downstream and adjacent land users and land uses should be identified (e.g. residential, commercial, institutional, industrial, infrastructure, agricultural, recreational, conservation areas).

6.15.3.3 Details of any Proposed Drainage Impact Mitigation Measures and any Further Drainage Impact Implications

The Consultants shall provide details of any proposed drainage impact mitigation measures including necessary improvement works to existing and planned drainage systems which have effects on the Project. The following is a non-exhaustive list of items which should be considered:

- a) channel improvements;

- b) underground stormwater drainage conduits (such as pipes and box culverts);
- c) flood storage and runoff control devices (e.g. orifices, throttle pipes, weirs and float or electrically operated gates);
- d) stormwater pumping;
- e) soakaways;
- f) floodproofing/flood compatible materials;
- g) enhanced maintenance;
- h) works to enhance drainage maintenance (e.g. sand traps, desilting ponds);
- i) contractual controls (during construction); and
- j) other compensation measures.

The Consultants shall propose measures to mitigate any adverse drainage impacts to acceptable levels through application of best practical and cost effective means which preferably will require minimal management, operational and maintenance commitments and shall recommend the priorities in the provision of these measures and produce a programme for implementation of the mitigation works. The Consultants shall also consider the landscape and visual impacts of the proposed mitigation measures on the potential receptors.

6.15.3.4 Monitoring and Audit Requirements

a) Monitoring Requirements

The Consultants shall identify and recommend monitoring requirements for all construction, post-project and operational phases of the development. These requirements shall include but not be limited to the identification of 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.

b) Audit Requirements

The Consultants shall identify and recommend audit

requirements for all construction, post-project and operational phases of the development. These requirements shall include :

- i) organisation and management structure, and procedures for auditing of the implementation of respective mitigation measures recommended for the detailed design, contract document preparation, construction, post-project operation stages of the development;
 - ii) quality performance limits for compliance auditing for each of the recommended monitoring parameters to ensure compliance with relevant quality objectives, statutory or planning standards, or acceptance criteria recommended by the DIA. These limits shall give indication of a deteriorating 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 quality performance limits (point (ii) above), project contractual and regulatory requirements, and current policies and planning standards;
 - iv) Event/Action plans for impact and compliance monitoring;
 - v) complaints handling, liaison and consultation procedures; and
 - vi) reporting procedures, report formats and report frequency including periodical reports and annual reviews to cover all construction and post-project/operational phases of the development.
- c) The Consultants shall prepare a Monitoring and Audit Schedule (Manual) which covers the requirements and recommendations in (a) and (b) above. The Manual shall also contain a summary list of recommended mitigation measures. This Manual shall be used as a guideline for monitoring and audit during the construction and post-project operational phases. This Manual shall be a stand-alone document and form part of the DIA report.

6.15.4 Liaison and Administration

6.15.4.1 The Consultants shall liaise with relevant Government departments and agencies, and all other parties involved in this and any other projects or developments likely to be affected by this development. Any correspondence, notes or minutes arising from this liaison shall be copied to the Director's Representative and the Director of Drainage Services (DDS).

6.15.4.2 The DIA Study will be managed by a Study Management Group (SMG) chaired by the Director's Representative. The Consultants shall attend the SMG meetings as and when required. This shall be the forum for liaison with Government departments and agencies, providing guidance to the Study Consultants, and for comment and review on the work and outputs of the Study.

6.15.4.3 The Consultants shall make themselves available to be present in the District Boards (DB) and/or any public consultation meetings, if necessary, to brief the proposed cases against the relevant drainage impacts generated.

The Consultants shall carry out baseline monitoring. The results of the baseline monitoring shall be included in the DIA Study Final Report.

6.15.5 Report Requirements

The assessment shall consist of at least the following :

- a) a Draft Drainage Impact Assessment Report which
 - i) provides an initial assessment and evaluation of the drainage 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 the Project;
 - ii) defines measurable drainage parameters and features likely to be affected by the Project and identifies the monitoring programme which is required both to provide a baseline profile of existing drainage conditions and to monitor impacts and compliance during construction, commissioning, operation (and decommissioning) of the Project;
 - iii) defines the audit requirements for compliance and post-

project audit, which would include a review of the monitoring data both to identify compliance with regulatory requirement, policies and standards and to define any remedial works required to redress unanticipated or unacceptable consequential drainage impacts; and

- iv) proposes a detailed programme of investigation able to meet all other objectives of the assessment.
- b) a **Final Drainage Assessment Report** which
- i) fully satisfies the requirements of this Brief in respect of the prediction and assessment of impacts, the identification of drainage impact mitigation measures and the associated residual impacts;
 - ii) describes the agreed schedules and programmes for monitoring and audit requirements;
 - iii) prescribes the specification for detailed design, construction and operation requirements of the Project; and
 - iv) provides the Study findings, conclusions, recommendations and a mechanism for implementation.
- c) an **Executive Summary Report**, in both English and Chinese, of the Study, highlighting the issues of concern to the community, the acceptability of residual drainage 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 the DB and other public consultations; and
- d) any revisions or supplements to the above as might be required by the Director of Drainage Services through the Director's Representative.

6.16 Traffic Impact Assessment (TIA)

6.16.1 The Consultants shall include the following in the traffic impact assessment :-

- a) a sub-regional traffic model covering the Area of Influence (AOI).

The AOI shall include, but not limited to the following districts/roads :-

- i) the Route 1 (NT section) from Ma Liu Shui to Lion Rock Tunnel;
 - ii) all the Trunk roads, Distributor Roads in Sha Tin and Ma On Shan Districts;
 - iii) Tai Po Road (sections connecting Chinese University and Sha Tin); and
 - iv) External links connecting Sha Tin and Kowloon, including Tate's Cairn Tunnel, Lion Rock Tunnel, Shing Mun Tunnel and Tai Po Road;
- b) daily vehicle trip ends for the design year derived from the CTS-2MES will be supplied to the Consultants upon request for the purpose of developing the traffic model. The Consultants shall be responsible for making adjustments to these trip ends to take into account of the traffic generation of the committed and potential development in the area. For the avoidance of doubt, the CTS-2MES matrices will NOT be supplied to the Consultants;
 - c) the model shall be calibrated against observed flows in a Base Year to be approved by the Commissioner for Transport on major road links and key interchanges and junctions within the AOI to the satisfaction of the Commissioner for Transport and Director's Representative; and
 - d) the model shall provide forecasts for the existing and proposed road networks within the AOI for the year 2006.

6.16.2 Report Requirements

The assessment shall consist of at least the following :-

- a) an Inception Report with at least the following content :-
 - i) the Consultants' understanding and appreciation of the objective of the assessment;
 - ii) the approach and methodology for the various parts of the assessment, including the identification of the Area of Influence;

- iii) a Study programme detailing the programme for submission of reports; and
 - iv) organisation and staffing of the study team.
- b) a Draft Traffic Impact Assessment Report containing the following :-
- i) an initial assessment and evaluation of the traffic impact in the Area of Influence during the construction period with details outlining the situation at the various critical stages and phasing of the works;
 - ii) provision of a sub-regional traffic model covering the Area of Influence to the satisfaction of the Commissioner for Transport and Director's Representative;
 - iii) derivation of temporary traffic measures, in the light of the forecast situations at the various critical stages and phasing of traffic diversion/lane closure and construction access arrangement;
 - iv) circulation of the proposed temporary traffic measures to and subsequent consultation with the concerned parties including the Sha Tin Provisional District Board; and
 - v) an initial response to the various comments given by the concerned parties.
- c) a Final Traffic Impact Assessment Report containing the following :-
- i) a full assessment of the traffic impact based on the sub-regional traffic model at the various critical stages of the works with traffic forecasts for the road networks within the Area of Influence as specified in Clause 6.16.1;
 - ii) a full details with implementation programme and administration procedures of all the temporary traffic measures with respect to the various stages and phasing of the works, immediately prior to and during construction, and immediately before the completion of the Project;
 - iii) the preparation of traffic aids drawings, specification etc. for the above various temporary traffic measures, covering the affected carriageway, approaches, cycle track and

footpath; and

- iv) assessment findings, conclusions and recommendations.
- d) an Executive Summary Report, in both Chinese and English, of the assessment, highlighting the issues of concern to the community, the acceptability of the anticipated traffic impacts and cumulative effects, requirements for implementation of the Project, and the basis for the implications of those requirements. It is intended that the information contained therein would assist the Government in undertaking the DB's and other public consultations;
- e) any revision or supplements to the above as might be required by the Commissioner for Transport through the Director's Representative.

6.16.3 In the assessment of the traffic impact of carrying out the road works, the Consultants shall devise appropriate temporary traffic management measures, in the light of the forecast situations at the various critical stages and phasing of traffic diversion/lane closure proposals, to ameliorate the traffic impact of the road works. The measures shall include :-

- a) the derivation of the necessary traffic diversion/lane closure schemes and construction access arrangement at the various stages/phases of the works;
- b) preparation of drawings showing temporary works, temporary road signs/road markings for implementation prior to and during the construction period; and
- c) circulation of the proposals to and subsequent consultation with the concerned parties, and when necessary, attending the Traffic & Transport Committee Meetings of Sha Tin District Board.

7. Response to Queries

7.1 The Consultants shall respond to queries under Clause 20 of the General Conditions of Employment raised prior to a date 18 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 23 February 1998.

8.2 Pursuant to Clause 26(B) of the general Conditions of Employment, the Consultants shall submit the draft programme and revised draft programmes and the Director's Representative shall agree, or instruct, within the following periods:

Submission of the draft programme	:	Within 2 weeks of the due date for commencement of the Agreement
Agreement of the draft programme	:	Within 2 weeks from receipt of the draft programme or instruction for submission of the revised draft programme
Submission of revised draft programme	:	Within 1 weeks from the instruction of the Director's Representative -

The draft programme and revised draft programmes shall detail 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 the above periods to agree the timing of submission of reports, other documents and plans for each of the main elements of the Assignment, for inclusion in the draft programme and revised draft programme.

8.3 The key dates referred to in Clause 8.2 of this Brief shall include but not be limited to :

(a) The date of submission of the detailed requirements and estimated cost of the preliminary ground investigation : March 1998

(b) The dates of submission of TIA Study reports

Inception Report : March 1998

Draft Report : June 1998

Final Report and Executive Summary : August 1998

(c) The dates of submission of EIA Study reports

Inception Report : March 1998

EIA Report (draft) : June 1998
EIA Report (final),
Executive Summary, and
Environmental Monitoring & Audit Manual : August 1998

(d) The dates of submission of DIA Study reports

Draft Drainage Impact Assessment Report : June 1998
Final Drainage Impact Assessment Report,
Executive Summary Report, and
Drainage Monitoring & Audit Manual : August 1998

(e) The dates of submission of the Project Study reports

Inception Report : Within 3 weeks from the
commencement date of the
Agreement

Draft Final Report : July 1998

Final Report and Executive Summary : September 1998

8.4 All the Deliverables as mentioned in Clause 5 shall be submitted within 7 months from the commencement date of the Agreement, except otherwise specified in the Agreement.

8.5 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 Reports

9.1 The Consultants shall submit to the Director's Representative progress report at monthly intervals on all aspects of the Services relating progress to the Programme referred to in Clause 8 of this Brief. The report 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 report shall also include updated expenditure forecasts in accordance with Clause 10 of this Brief.

9.2 The Consultants shall attend meetings with the Director's Representative at monthly or as agreed intervals to review the Consultants' Services and progress and to receive guidance and instructions from the Director's Representative.

10. Financial Management

- 10.1 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 Specifications

- 11.1 The Consultants shall adopt such technical and design standards and specifications as are in current use by the Building, Civil Engineering, Drainage Services, Electrical and Mechanical Services, Environment Protection, Fire Services, Highways, Lands, Planning, Transport and Water Supplies Departments 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 Assistant Director/Major Works or such other person as may be authorised by the Director in writing and notified to the Consultants. 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.
- 12.2 During the course of the Agreement the Consultants shall report direct to the Director's Representative.

13. Control of the Project and Assignment

- 13.1 In amplification of Clause 13 of the General Conditions of Employment, the Consultants will be required to attend Steering Group, Study Management Group, Working Group and other ad hoc meetings in connection with the Project and the TIA, EIA and DIA studies, and also meetings of District Board, other committees or public consultation bodies as required by the Director's Representative.

14. Information and Facilities Provided by the Employer

14.1 All available information relevant to the Assignment will be provided to the Consultants. Relevant documents including reports and other background materials are listed below:

- (a) Preliminary Project Feasibility Study Report for Widening and Reconstruction of Tai Po Road (Sha Tin Section) and other related traffic improvement works
- (b) Noise Impact Assessment Study for 24 hours Opening of Border Crossing
- (c) Sha Tin and Ma On Sha District Traffic Study
- (d) Trunk Road T3 Traffic and Transport Review Study
- (e) Study on Increased Population in Ma On Shan

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 drawing, one transparency and two prints of each plan or drawing may 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.

16. Specialist and Sub-consultant Services

16.1 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. Surveys

- 17.1 One transparency and two prints of topographical mapping at 1:5,000 scale prepared by the Survey and Mapping Office of the Lands Department and one set of digital data for the 1:20,000 and 1:1,000 basic mapping series in "Microstation .DGN" format prepared by the Highways Department, where available for the area covered by the Project of which the Assignment forms a part, can be obtained free of charge on application to the Director's Representative. One copy each of the 1:1000 scale lot index plans OR one copy each of the digital land boundary data, AND the relevant cadastral plans prepared by the Survey and Mapping Office of the Lands Department, where available for the areas covered by the Project, may also be obtained free of charge on application to the Director's Representative. The Consultants shall update and verify the accuracy of the information supplied. All field survey work required for the proper execution of the Assignment shall unless otherwise provided for in the Agreement, be the duty of the Consultants. A copy of field notes, field data and resultant plans both of transparency and digital data in "Microstation .DGN" format arising from these surveys shall be handed over to the Director's Representative upon completion of the Assignment. The accuracy as well as presentation of these surveys shall be of a standard agreed by the Director's Representative. Appendix B specifies the division of responsibility for other surveying between the Consultants, the Lands Administration Office and Survey and Mapping Office as well as the relevant sub-offices at district level of the Lands Department. The Appendix also sets out the terms and conditions that the Consultants shall observe for the supply of the digital map data.

18. Insurance

- 18.1 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 One Million Seven, Hundred and Sixty-eight Thousand (HK\$ 1,768,000.00)

Appendix A

Agreement No. CE 69/97

Investigation Assignment for
Widening and Reconstruction of Tai Po Road (Sha Tin Section)

Drawing Nos :-

- PMH 6707/1PG/001 - Location Plan
- PMH 6707/1LG/001 - Proposed Layout Plan (Sheet 1 of 7)
- PMH 6707/1LG/002 - Proposed Layout Plan (Sheet 2 of 7)
- PMH 6707/1LG/003 - Proposed Layout Plan (Sheet 3 of 7)
- PMH 6707/1LG/004 - Proposed Layout Plan (Sheet 4 of 7)
- PMH 6707/1LG/005 - Proposed Layout Plan (Sheet 5 of 7)
- PMH 6707/1LG/006 - Proposed Layout Plan (Sheet 6 of 7)
- PMH 6707/1LG/007 - Proposed Layout Plan (Sheet 7 of 7)

Agreement No. CE 69/97Investigation Assignment for
Widening and Reconstruction of Tai Po Road (Sha Tin Section)(I) Responsibility for Survey Work

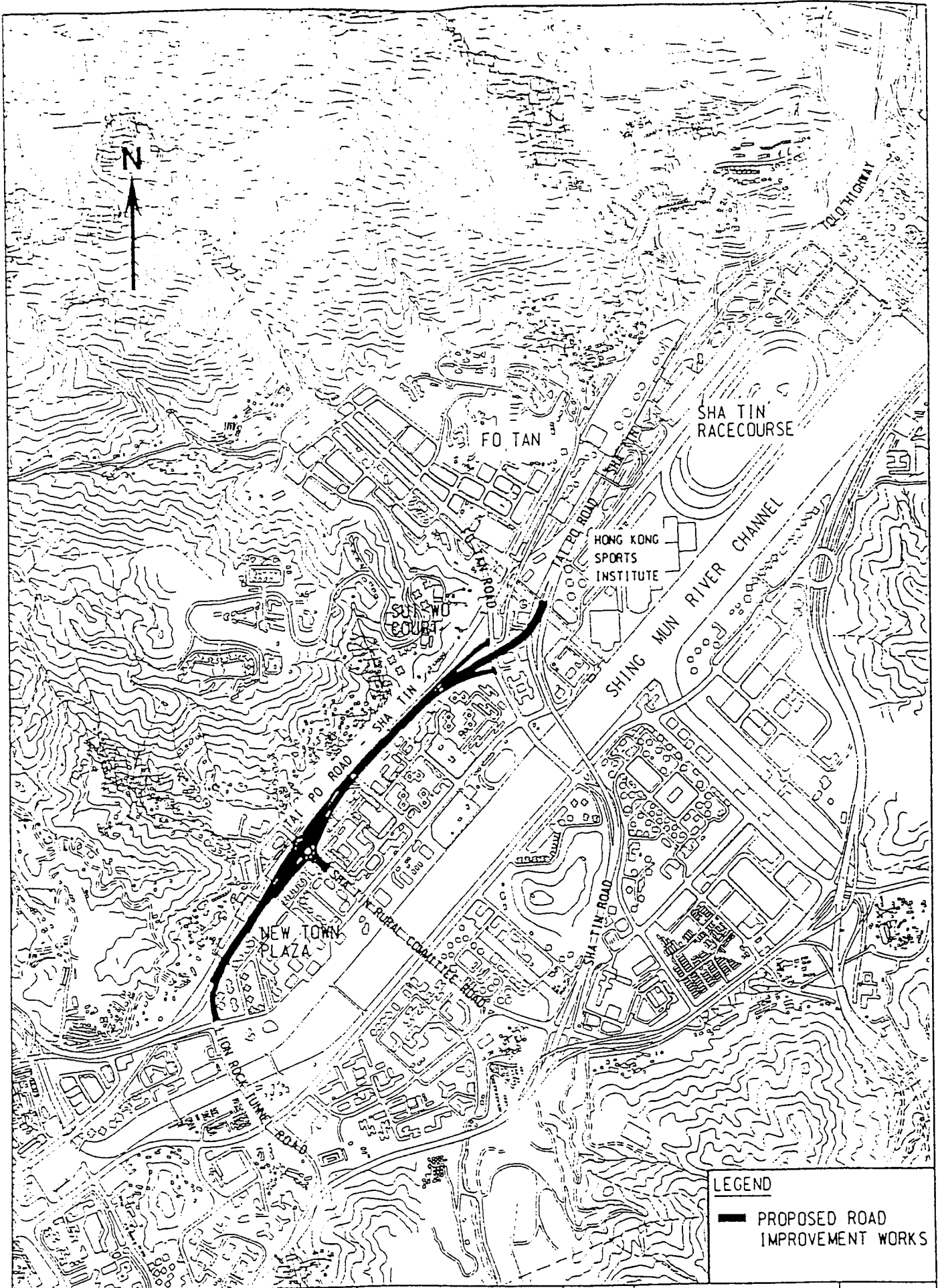
The division of responsibility among the Consultants, the Lands Administration Office, and the Survey and Mapping Office of the Lands Department for surveying required in connection with the Assignment shall be as follows: -


	<u>Task</u>	<u>Responsibility of</u>
(1)	(a) Provision of basic horizontal and vertical survey control	Survey and Mapping Office
	(b) Checking of given control point values and establishment of survey control net-work(s) based on survey control given vide (a)	Consultants
(2)	(a) Provision of basic mapping (at 1/1000 or digitised map base if available, other standard mapping relevant to the Assignment)	Survey and Mapping Office, and the Survey Section of HyD for the digitised map base (excluding those specified as to be provided by the Consultants in the Assignment)
	(b) Updating and verification of accuracy of information shown on plans supplied vide (a) as necessary in relation to the Assignment	Consultants
	(c) Carrying out detailed surveys for site investigation and for preparation of design and contract documents as necessary in relation to the Assignment	Consultants
(3)	Supply of existing cadastral plans and records and co-ordinate data	District Survey Office

Task	Responsibility of
(4) Computation of detailed dimensioned layouts of roads, drainage and WSD reserves, platforms, etc.	Consultants (checked and accepted by District Survey Office)
(5) Determination of site/lot boundaries, calculation of areas, etc. in connection with the agreed dimensioned layouts	District Survey Office (in liaison with District Lands Office)
(6) (a) Processing of resumption and surrender for privately owned land in Development Area	District Lands Office (in liaison with District Survey Office and Consultants)
(b) Resumption and surrender plans and demarcation of lands to be resumed	District Survey Office (in liaison with District Lands Office and Consultants)
(7) (a) Setting-out of roads, drainage works, formation areas, etc.	Contractors (checked and accepted by Consultants)
(b) Initial site survey, and interim and final payment surveys	Consultants (joint survey with contractors or agreed survey with contractors)
(8) Preparation of proposal plans for Government land allocations, and grants	District Survey Office (in liaison with District Lands Office)
(9) Preparation of dimensioned plans and setting out of boundaries of sites and lots for Government land allocation and for grant to architects (Government and Housing Authority)	District Survey Office
(10) As-constructed surveys (including records of levels on all underground pipelines, etc.)	Consultants
(11) To provide 1/1000 scale digitised as-constructed survey plans in Microstation.dgn format for Lands Department	Consultants

(II) Terms and Conditions for Supply of Government Digital Map Data

1. The supplied Government digital map data shall be used solely for the Assignment.
2. Upon completion of the Assignment, the Consultants shall immediately cease using the data and confirm to the Director's Representative in writing within fourteen (14) days that he is no longer in possession of the Government digital map data or any part thereof in any medium or in any form and that the same has been permanently erased and/or duly destroyed, as the case may be.
3. If the supplied Government digital map data is found to be corrupted or defective within one (1) calendar month from the date of collection by the Consultants, the Employer shall replace the supplied Government digital map data as discovered. The Government digital map data will not be regarded as corrupted or defective if it can be loaded into and displayed on the computer system of the Employer.
4. The Employer shall not be responsible to install the Government digital map data or provide any training in the use of the data and gives no warranty that the data can be processed on the Consultants' computer system.
5. The Consultants shall acknowledge that the Government digital map data has not been prepared specifically to meet his individual requirements and purpose and that he will not have any recourse against the Employer for any damage or loss he may suffer in any use or attempted use of the Government digital map data.
6. The Employer gives no warranty that the Government digital map data is error-free and shall in no way be held for any loss or damage which may be suffered by the Consultants from the use of the Government digital map data.
7. The Government remains the owner of the digital map data at all times. The Consultants shall not copy or otherwise infringe any intellectual property rights the Government may have in the digital map data, whether in whole or in part.
8. The Consultants shall display on and in the products containing the data an acknowledgement with the following wording "Map data reproduced with permission of the Director of Lands. (C) Hong Kong".



LEGEND
 PROPOSED ROAD IMPROVEMENT WORKS

title
 WIDENING AND RECONSTRUCTION
 OF TAI PO ROAD
 (SHA TIN SECTION) AND OTHER
 RELATED TRAFFIC IMPROVEMENT
 WORKS - LOCATION PLAN

drawn by
 W K LEUNG

date
 JUL 97

drawing no.
 PMH6707/1PL/001

scale
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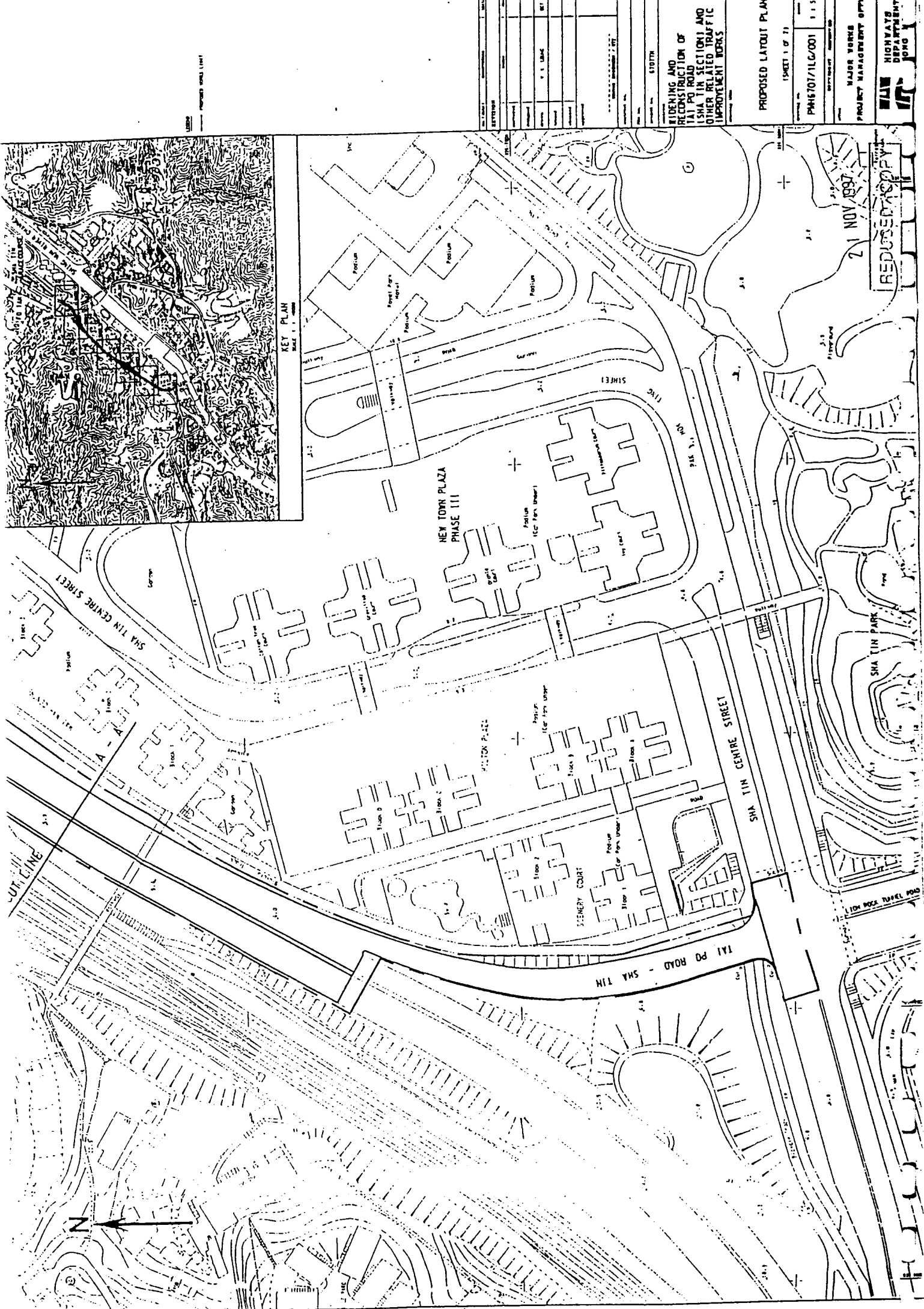
approved
 ESTHER YUNG

date
 JUL 97

office
 MAJOR WORKS
 PROJECT MANAGEMENT OFFICE



**HIGHWAYS
 DEPARTMENT
 HONG KONG**



PROPOSED SHEET 1/2071

KEY PLAN

SCALE 1:1000

SECTION		NO.	DATE

STATION

REVISION AND RECONSTRUCTION OF TAI PO ROAD (SHA TIN SECTION) AND OTHER RELATED TRAFFIC IMPROVEMENT WORKS

PROPOSED LAYOUT PLAN

(SHEET 1 OF 2)

PM416701/LG/001 1:15

HAJOR WORKS

PROJECT MANAGEMENT

HAJORS

HIGHWAYS DEPARTMENT

21 NOV 1997

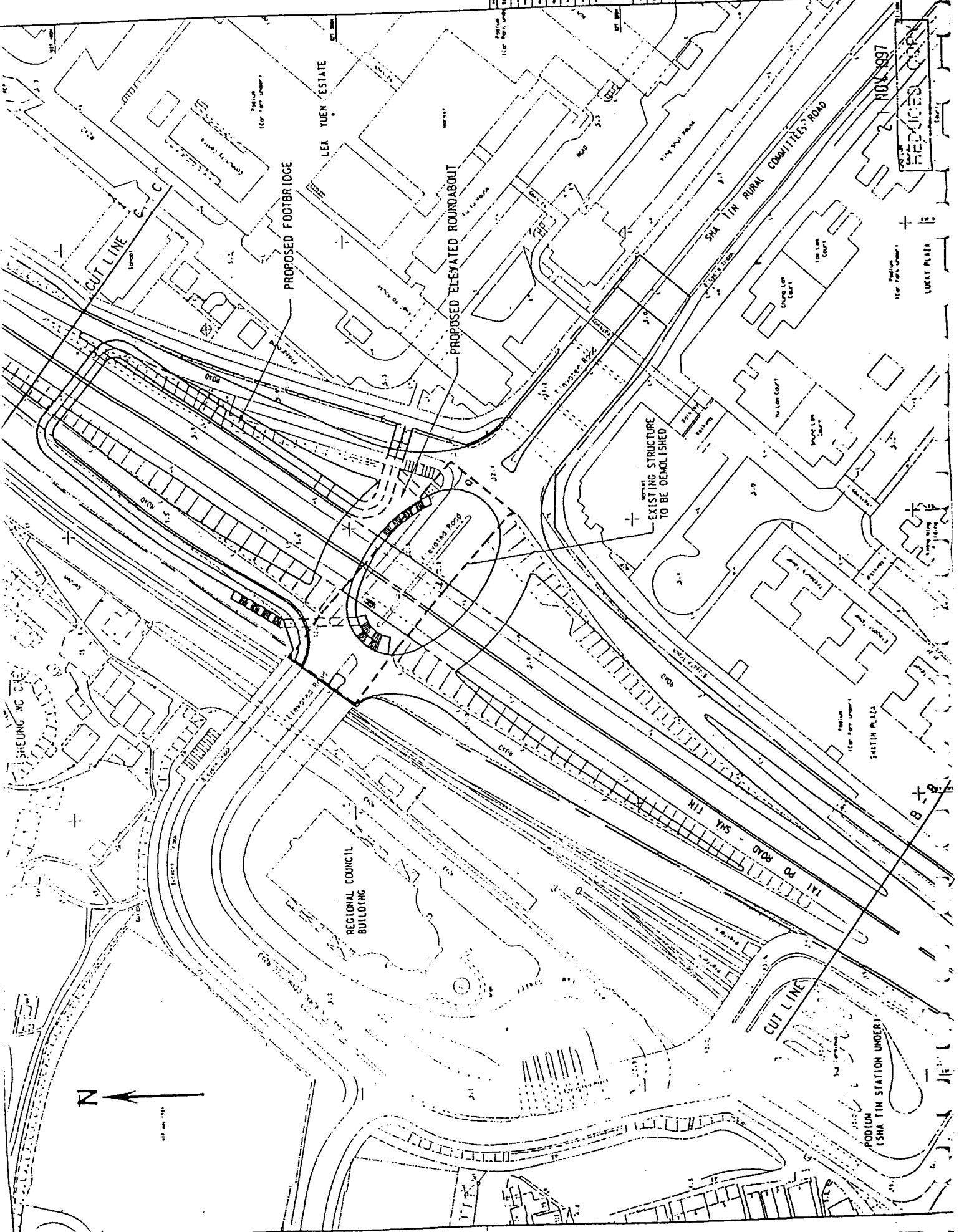
REDUCED SCALE

WIDENING AND RECONSTRUCTION OF TAI PO ROAD (SHA TIN SECTION) AND OTHER RELATED TRAFFIC IMPROVEMENT WORKS

NO.	DESCRIPTION	DATE	BY	CHECKED
1	ISSUED FOR TENDER	11/11/97
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3	REVISED
4	REVISED
5	REVISED
6	REVISED
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NO.	DESCRIPTION	DATE
1	PROPOSED LAYOUT PLAN	1/11/03
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WIDENING AND RECONSTRUCTION OF TAI PO ROAD (SHA TIN SECTION) AND OTHER RELATED TRAFFIC IMPROVEMENT WORKS

PROPOSED LAYOUT PLAN
SHEET 3 OF 11

PH16707/1/G/003 1 1 1

MAJOR WORKS PROJECT MANAGEMENT OFFICE

HA
HIGHWAYS DEPARTMENT
HONG KONG

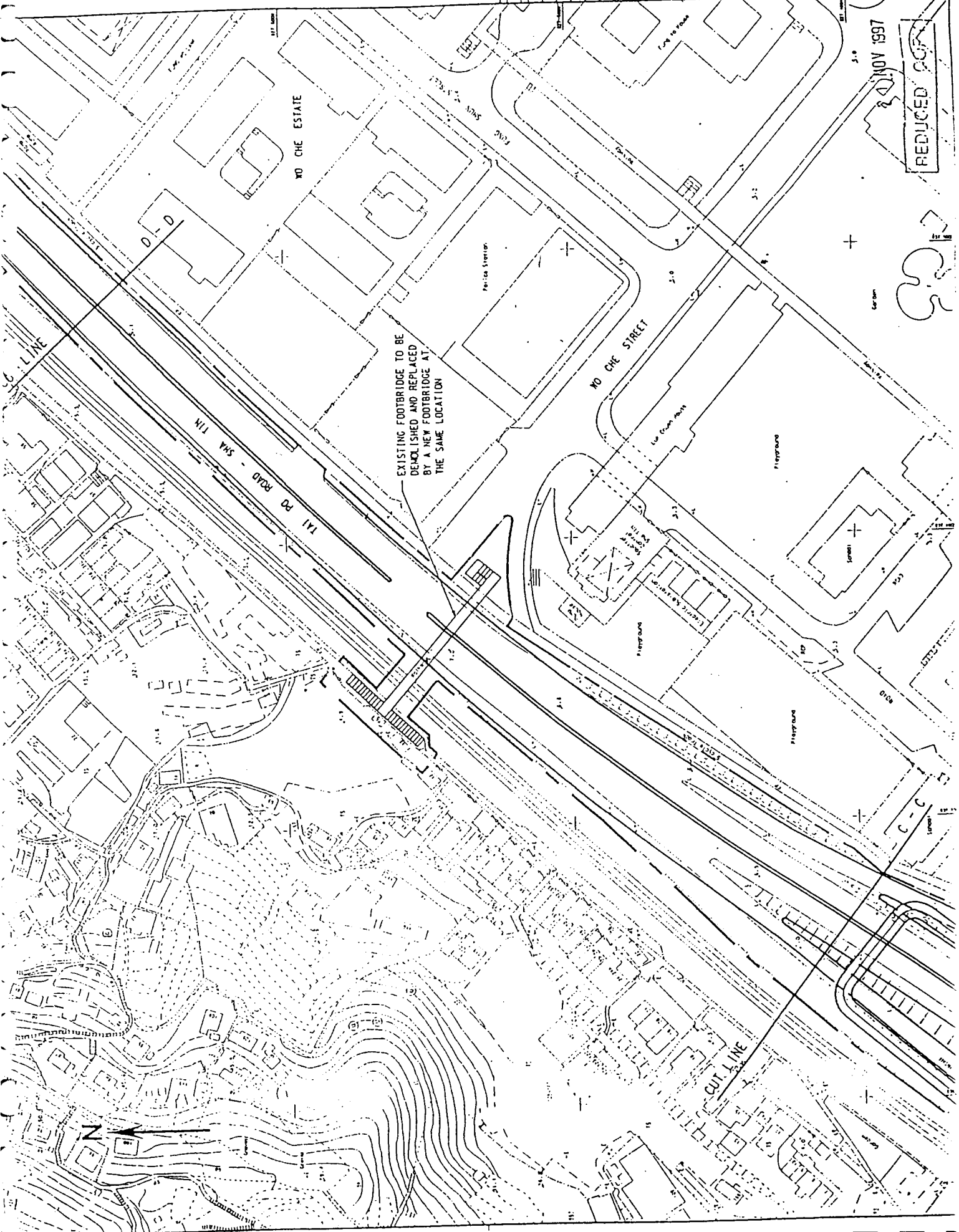
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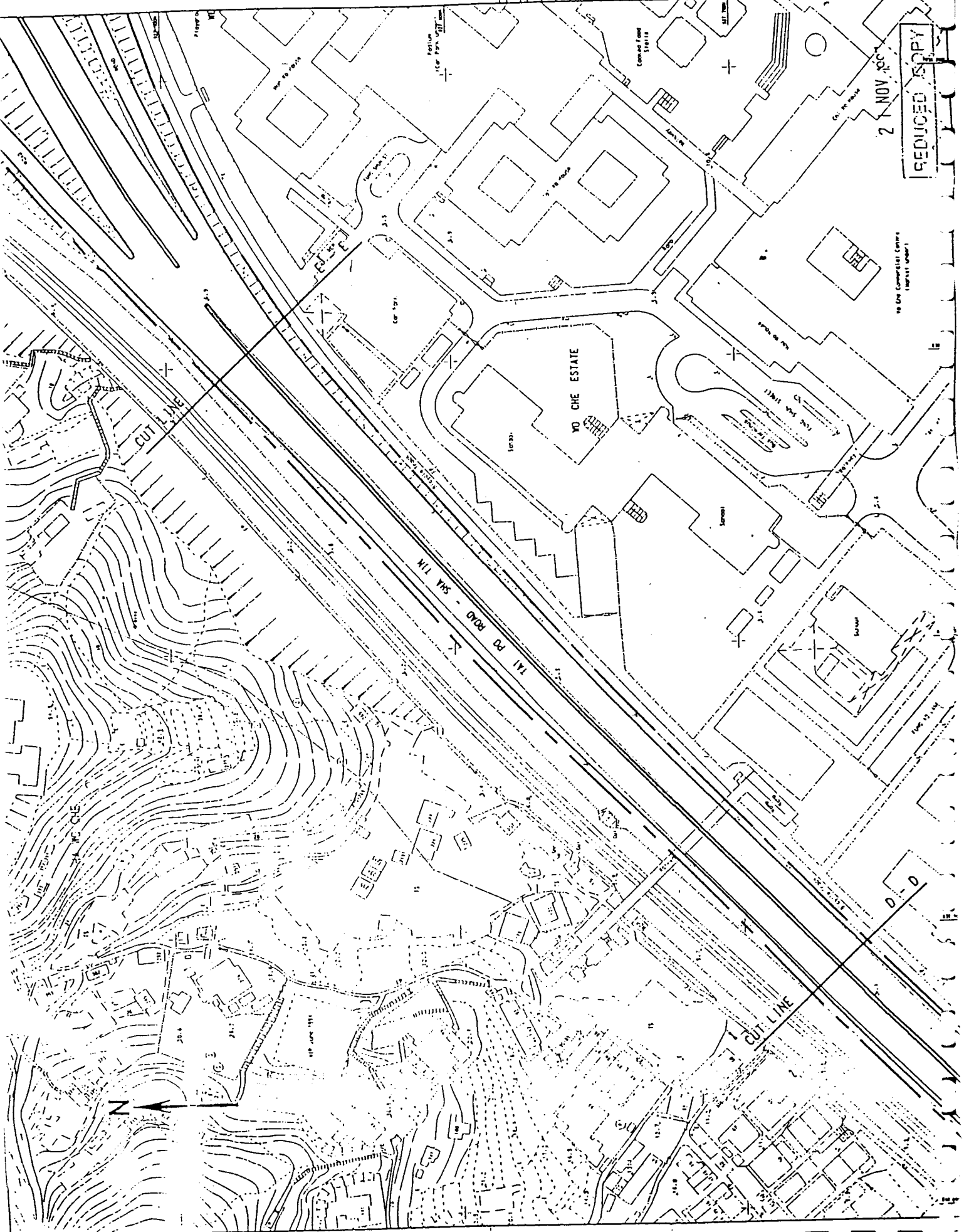
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LUCKY PLAZA

SHATIN PLAZA

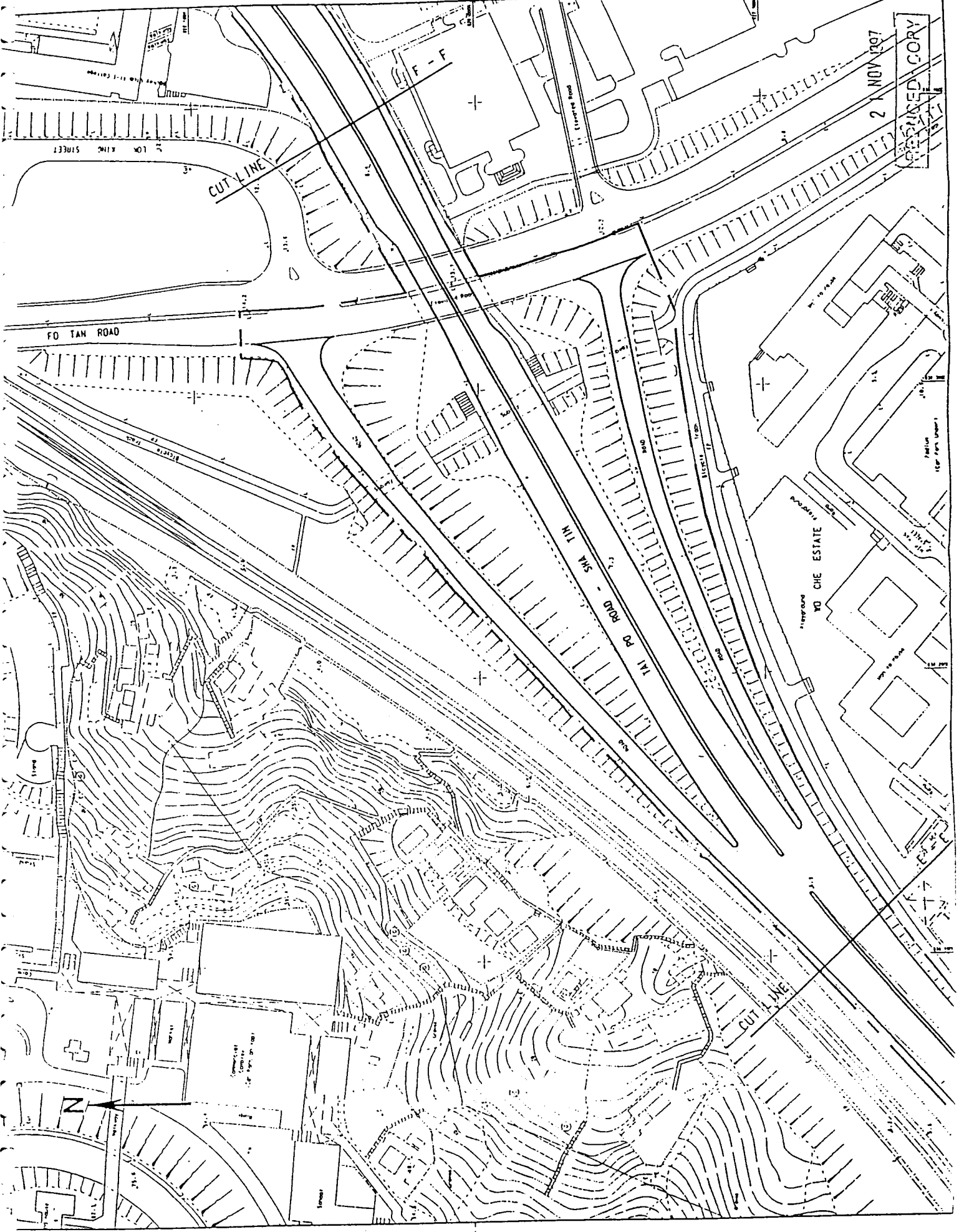
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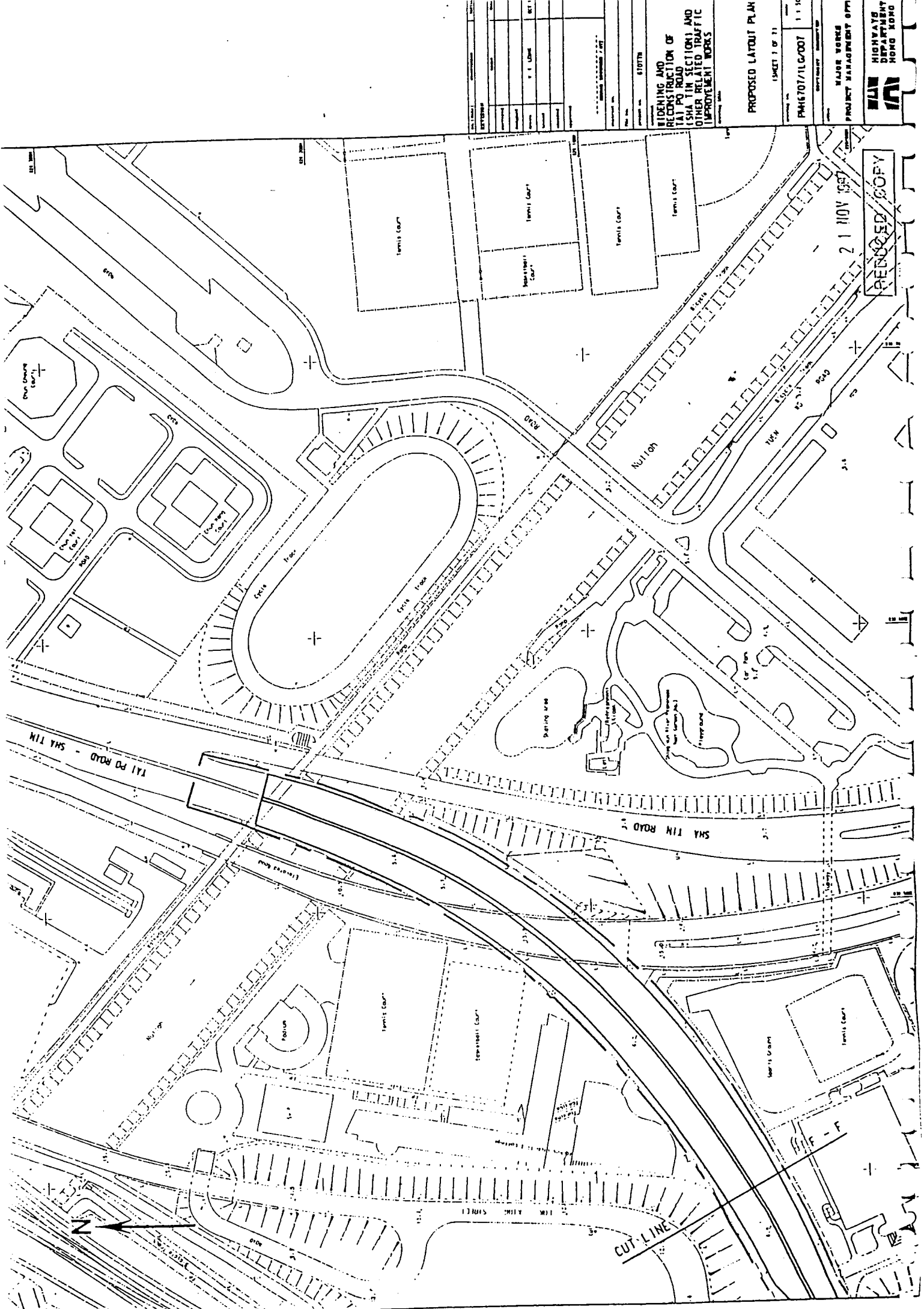


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 (IMPACT UNDER)



2 NOV 1997
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WIDENING AND RECONSTRUCTION OF TAI PO ROAD (SHA TIN SECTION) AND OTHER RELATED TRAFFIC IMPROVEMENT WORKS

PROPOSED LAYOUT PLAN

PROJECT NO. PM16707/1L/G007
 SHEET 1 OF 31
 DATE: 11/10

MAJOR WORKS PROJECT MANAGEMENT OFFICE

HIGHWAYS DEPARTMENT HONG KONG

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NO.	REVISION	DATE
1	Issue	11/10



CUT LINE

TAI PO ROAD - SHA TIN

SHA TIN ROAD

NUT ION

Tennis Court

Tennis Court

Tennis Court

Tennis Court

Tennis Court

Tennis Court

Tennis Court

Tennis Court

Pool

Starting Area

Starting Area

Starting Area

Starting Area

Starting Area

Starting Area

Starting Area

Starting Area