

AGREEMENT NO. CE 25/2001

**HONG KONG 2030 : PLANNING VISION AND STRATEGY
STRATEGIC ENVIRONMENTAL ASSESSMENT**

STUDY BRIEF

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Strategic Environmental Assessment

Study Brief

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STUDY BRIEF

1. INTRODUCTION

This Brief is to be read in conjunction with the Memorandum of Agreement, General Conditions of Employment (1997 Edition) for a Feasibility Assignment, Special Conditions of Employment and Schedule of Fees.

2. DESCRIPTION OF THE PROJECT

Background

- 2.1 The first Territorial Development Strategy (TDS) was produced in 1984 to establish a broad land use-transport-environment framework to guide the physical development of Hong Kong into the 1990s. Although it had been updated twice in 1986 and 1988 to take account of changing circumstances, it was not until 1990 that a comprehensive review of the TDS was commenced. The technical work of the TDS Review was completed in late 1996 and the report was published in 1998.
- 2.2 Since the completion of the TDS review in late 1996, some fundamental assumptions underlying the review have become outdated (e.g. population projections, economic growth rates) and some new factors having strategic planning implications have emerged (e.g. China's imminent entry into the World Trade Organisation, the increasing socio-economic interactions between Hong Kong and the Mainland). We need an updated planning framework with recommended long-term development strategy (referred to as *HK 2030*) to guide the future development of Hong Kong and to provide a basis for allocating land for various land uses and investment in infrastructure.
- 2.3 The last round of TDS Review which assumed a maximum population of 8.1 million by year 2011 had identified major environmental problems. With further increase in future population, there would undoubtedly be severe additional pressure on our sensitive environment. Without a healthy environment, it will not be able to achieve the long-term vision for Hong Kong to be the world city in Asia as well as the major city in China and it might also affect investment by major international companies in Hong Kong.
- 2.4 Furthermore, given the long time frame of the study (30 years), significant changes in Hong Kong and improvements in the environment through various measures and applications of new technologies are possible. Although there may be uncertainties in the projection over 30 years, such as changes in population, transportation, housing and the provision of other facilities, effort should be made to assess the potential changes. More importantly, opportunity should be taken to

examine innovative ideas, options and measures which could be adopted in the future to bring about continuous and sustainable improvements to Hong Kong's living environment.

3. OBJECTIVES OF THE ASSIGNMENT

3.1 Under the overarching goal of adhering to the principle of sustainable development, the planning objective of the HK 2030, *inter alia*, is to provide a good quality living environment. To achieve this, we need to strike a balance in the demand for and supply of environmental resources. As an integral part of the *HK 2030 Study* (referred as "the Main Study"), a Strategic Environmental Assessment (SEA) will be carried out with the following objectives:

- (a) to establish environmental targets in order to achieve a good quality environment which is in effect a fundamental building block to enable Hong Kong to become a world city in Asia;
- (b) to assess our environmental and related infrastructures' (such as wastes and sewage) carrying capacity and the demand that would be generated from future developments, and propose ways for balancing the demand against the limited capacity and for better management of our environmental resources;
- (c) to integrate the consideration of environmental factors together with other considerations in the building of scenarios, development, evaluation and refinement of options, and formulation of response plans to enhance environmental sustainability and to avoid potential environmental problems;
- (d) to identify the environmentally preferred option(s), and provide environmental input into the options refinement and selection process; and
- (e) to evaluate at a strategic level the potential environmental impacts and sustainability implications of the preferred option(s) under various scenarios proposed by the Main Study, and to identify any environmental mitigation measures and follow-up investigations required, including those in relation to policy and institutional arrangements.

4. DESCRIPTION OF THE ASSIGNMENT

4.1 Providing a good quality environment is a fundamental building block to enable Hong Kong to become a world city in Asia. Hong Kong also needs to respond to its regional and global environmental responsibilities. We need to establish the required environmental targets in order to achieve a good quality environment meeting people's likely future expectation, and to meet the regional and global environmental responsibilities. Given the potential environmental problems identified in the last TDS review, such as air quality and sewage and waste disposal, it is also necessary to assess our environmental capital or budget for use as a basis, among other factors, for deriving development scenarios and options.

4.2 To maintain Hong Kong's long term development sustainability, the Assignment shall broadly investigate how resources, such as land, energy and materials, could be used in the most efficient way, how the carrying capacity could be increased to cater for future changes, how the increasing demand for resources could be balanced against the limited supply, and what the amount of environmental efficiency improvements needed to reduce the environmental pressure is. Various demand management measures, such as those effecting changes in lifestyles or those following the polluter-pays-principle, should be broadly investigated in the SEA.

4.3 The preparation of the HK 2030 would involve four key stages of work viz.:

- Stage 1 : Agenda Setting, Baseline Review and Identification of Key Issues;
- Stage 2 : Examination of Key Issues;
- Stage 3 : Formulation and Evaluation of Scenarios and Options; and
- Stage 4 : Formulation of Development Strategies and Response Plans.

The key tasks proposed to be undertaken at each stage of the Main Study are shown in the flowchart at Appendix A. Also, in order to enhance public awareness and to promote ownership of the HK 2030, extensive consultations with stakeholder groups and members of the general public will be conducted throughout the entire study process. The Consultants shall make allowance in the study programme for the time input to the public consultations and any adjustments needed for the SEA output consequent upon the outcome of the public consultations.

4.4 The SEA will contribute to each stage of the Main Study by providing strategic environmental information and suggestions to facilitate the formulation, development, and identification of scenarios and options which could meet the environmental targets of a world city in Asia.

4.5 Strategic evaluation methodologies/tools shall be used to examine the development options in respect of their environmental sustainability implications and strategic environmental impacts. Potential issues to be examined include air quality implications of the transportation, energy and industrial sectors; water quality implications due to sewage load increase and sewage infrastructure constraints, reclamation and increase in toxic chemicals discharge; waste management implications due to increase in resources consumption and waste generation; potential changes in noise levels due to transportation, port operation and future port development plans, and increase in development density; increase in greenhouse gas emission; any increase in hazards risks; and implications on the integrity of important terrestrial and marine habitats as well as on resources of landscape and heritage value. Reference should be made to the environmental part of the *Study on Sustainable Development for the 21st Century (SUSDEV21)* in considering and evaluating the environmental sustainability implications.

4.6 Apart from the developments in Hong Kong, development in the Pearl River Delta (PRD) region also influences Hong Kong's environmental conditions. The recent and potential future developments in the PRD would provide some hints on the environmental issues to which we should pay attention. The Assignment would therefore examine the implications of the regional development and its consequential regional environmental impacts on Hong Kong's environment. Such

environmental implications would be considered in formulating the development strategies with a view to provide a good quality environment in Hong Kong.

- 4.7 There are a number of environmental assessment reports or studies that are either completed, on-going or to be commissioned in the near future. These reports/studies, as listed in *Appendix B*, may have bearing on this Assignment. In carrying out this Assignment, the Consultants must have due regard to the findings and recommendations of the relevant reports/studies and liaise closely with the Environmental Protection Department and other relevant Government departments.
- 4.8 In view of the long planning horizon, the Consultants should try to examine innovative ideas and new technologies that could help solve the existing and potential future environmental problems. The Consultants shall participate actively in the Main Study in formulating the development scenarios, options and strategies to ensure proper integration of environmental considerations and improvement measures into the development scenarios, options and strategies.

5. DELIVERABLES

- 5.1 The Consultants shall submit the following deliverables to the Director's Representative as part of the Assignment.

5.1.1 An SEA Inception Report which includes:

- (a) the Consultants' understanding and appreciation of the objectives of the SEA and the Main Study;
- (b) the approach and methodology for the various parts of the SEA;
- (c) a work programme with major work tasks and key decision points identified and briefly described;
- (d) a schedule detailing the submission dates of reports and proposed dates of the Environmental Study Management Group (ESMG) meetings; and
- (e) the curricula vitae of the professional and technical staff employed under the Agreement.

5.1.2 An Initial Assessment Report (for Tasks 1, 2 and 3 viz. services described in Sections 6.2, 6.3 and 6.4 below) which :

- (a) ~~establishes the environmental targets to be met by Hong Kong;~~
- (b) reviews the baseline conditions and the environmental capital stock and carrying capacity; and
- (c) identifies the environmental opportunities, constraints and key environmental issues.

5.1.3 Key Issues Reports (for Task 4 viz. services described in Section 6.5 below) covering those issues of key environmental concerns identified in the Initial Assessment Report, review of the Initial Assessment Report by

the ESMG and relevant comments raised in public consultations. Initially, the following subjects are identified:

- (a) the conservation policy currently under formulation and proposals on strengthening and enhancement of our ecological and landscape resources raised by green groups and members of the public that may have interface with this Study;
- (b) developments in the Pearl River Delta region that would have implications on Hong Kong's environment; and
- (c) environmental-friendly strategic options that could potentially enhance the environmental conditions and facilitate achievement of the environmental targets.

5.1.4 An Options Evaluation Report (for Tasks 5 and 6 viz. services described in Sections 6.6 and 6.7 below) which:

- (a) proposes environmental performance indicators, criteria and methodologies for strategic evaluation and comparison of the development options considered in the Main Study;
- (b) provides an initial evaluation of the potential key environmental impacts and cumulative effects arising from different development scenarios and options considered by the Main Study, with the key environmentally favourable and unfavourable features and problematic areas stated as input for the refinements of options; and
- (c) identifies the environmentally preferred option(s) and clearly states any mitigation measures assumed in evaluating the option(s).

The findings and conclusions of the report as well as relevant comments gathered from the Third Stage Public Consultation will serve as input to Stage 4 of the Main Study for formulating the development strategies taking account of other non-environmental considerations.

5.1.5 A SEA Draft Final Report (DFR) which:

- (a) fully satisfies the requirements of this Study Brief. The DFR shall be a self-contained document. To meet this requirement, appropriate matters covered by other reports such as the Initial Assessment Report, Key Issues Reports and Options Evaluation Report as well as services required under Tasks 7 and 8 viz. those described in Sections 6.8 and 6.9 below shall be summarised in the report; and
- (b) provides clear summaries of the environmentally friendly strategic options identified, environmental evaluation and comparison of the options considered; mitigation measures, residual environmental impacts, strategic environmental impacts and environmental sustainability implications of the preferred option(s) and recommended strategies and justifications for their selection; and strategic environmental action plan and programme including a Strategic Environmental Monitoring and Audit Plan.

- 5.1.6 A Draft Executive Summary (DES) of the SEA, in both English and Chinese, highlighting the issues of concern to the community, such as the environmental targets and budget, the acceptability of residual environmental impacts and cumulative effects, any further improvements in environmental efficiency needed to reduce the environmental pressure, requirements for implementation of the option(s), and the basis for and implications of those requirements. It is intended that the information contained therein will assist the Government in undertaking consultation with the Advisory Council on the Environment (ACE) and other public consultations.
- 5.1.7 Draft of all papers and reports including the Initial Assessment Report, Key Issues Reports, Options Evaluation Report, DFR, DES, FR, and ES shall be prepared and submitted to the Director's Representative for comment, and any revisions or supplements to the above as may be required by the Director's Representative.
- 5.1.8 The Consultants shall produce the above reports and send one hard copy and one electronic copy of the reports to the Director's Representative within the specified time detailed below, unless otherwise agreed by the Director's Representative:

<u>Deliverables</u>	<u>Deadline for submission from the commencement of the Agreement</u>
(i) Draft SEA Inception Report	3 weeks
(ii) Final SEA Inception Report	5 weeks
(iii) Draft Initial Assessment Report	7 weeks
(iv) Final Initial Assessment Report	12 weeks
(v) Draft Key Issues Reports	9 weeks
(vi) Final Key Issues Reports	14 weeks
(vii) Draft Options Evaluation Report	27 weeks
(viii) Final Options Evaluation Report	32 weeks
(ix) SEA Draft Final Report and Draft Executive Summary	56 weeks *
(x) SEA Final Report and Executive Summary	76 weeks *

* *The draft version for departments' comments should be submitted at least 4 weeks before the deadline.*

- 5.1.9 The electronic copies of the reports shall be prepared with the following specifications: -

Word Processing: MS Word 6.0 or MS Word 2000
Spreadsheet: MS Excel 2000 or Lotus 1-2-3
Others: as agreed by the Director's Representative

- 5.1.10 For the electronic copies of both the FR and ES, they shall be prepared in Hypertext Markup Language (HTML) (version 4.0 or later) and in Portable

Document Format (PDF version 4.0 or later), unless otherwise agreed by the Director's Representative. For the HTML version, a content page capable of providing hyperlink to each section and sub-section of the FR and ES shall be included in the beginning of the document. Hyperlinks to all figures, drawings and tables in the FR and ES shall be provided in the main text from where the respective references are made. All graphics in the FR and ES shall be in interlaced GIF format unless otherwise agreed by the Director's Representative.

5.1.11 Responses to Comments

The Consultants shall prepare a tabulated summary of comments and responses for the SEA Inception Report, Initial Assessment Report, Key Issues Reports, Options Evaluation Report, DFR and DES, FR and ES. The responses to comments shall be submitted within 2 weeks upon the deadline for the receipt of comments.

5.1.12 The Consultants shall prepare, for each submission to the Main Study Steering Group, Working Group, ESMG, government committees, advisory committees and other public forums as specified in Section 6.13 below, a covering information/consultative paper to comply with standard formats and procedures on the main findings, points of issues and guidance/decisions sought for the submission.

5.1.13 The SEA FR and ES will be made available to the public. The SEA findings will be presented to the ACE EIA Sub-Committee and/or its full Council.

5.1.14 If there is any disagreement on the findings of the SEA or on the necessary environmental protection and pollution control measures, the issue will be referred to the ESMG, which is chaired by the Deputy Director of Environmental Protection, to resolve the differences as detailed in Section 13.1 below. Any further disagreement should be referred to the Steering Group, which is chaired by the Secretary for Planning and Lands, for directive.

5.1.15 The guidelines and requirements in the PLB Technical Circular No. 1/97 on off-site ecological mitigation measures shall be taken into account. Any necessary off-site measures determined during the SEA shall be referred to the Secretary for Environment and Food for approval.

5.2 At the conclusion of the Assignment, all documents including technical papers, reports, models, together with supporting data and notes, sketches, plans, drawings, display materials, photographs, charts, software programmes designed for the Assignment and all related computer tapes/disks shall be delivered to and shall become the property of the Hong Kong SAR Government with full copyright. Such documents and information shall be delivered within 4 weeks of the acceptance of the FR and ES by the Director's Representative.

5.3 The Consultants should 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.

6. SERVICES TO BE PROVIDED BY THE CONSULTANTS

- 6.1 The major tasks to be carried out by the Consultants of the Assignment are as follows:

Major Tasks

6.2 Task 1 : Environmental Targets for Hong Kong to be a World City in Asia

The Consultants shall propose environmental targets to be met by Hong Kong in order to achieve Hong Kong's long-term vision based on review of existing targets and standards, international review and benchmarking, and feedback from public consultation. Consideration should be given to the likelihood that development in technologies and other measures could tackle the current environmental problems. Consideration should also be given to the need to set separate sets of targets depending on the technological progress from the present to year 2030, and indicate any further potential improvements afterwards.

6.3 Task 2 : Baseline Review and Environmental Capital/Budget

The environmental, ecological and cultural heritage baseline conditions will be established from existing available information and current studies to serve as inputs to the preparation of development scenarios and options in the Main Study. The Consultants are required to review and update, where necessary, the baseline conditions and examine whether they may be influenced by various local and regional factors. The Consultants shall also define how much environmental capital we have and the pressure that has been and might be generated from future developments. With reference to the environmental capital and pressure, the environmental carrying capacity will be measured using appropriate strategic indicators, such as total pollution load, maximum energy and material consumption level without causing unacceptable pollution. For those environmental capital which may face severe pressure, the Consultants shall estimate the extent of improvement in environmental efficiency needed to improve the situation, and the potential for meeting such amount of improvement. Reference should also be made to the environmental indicators proposed and environmental baseline established in SUSDEV21.

6.4 Task 3 : Identification of Constraints, Opportunities and Key Issues

The Consultants shall identify the major environmental constraints and key issues that would have influence on land use planning, the environmental opportunities that land use planning could make use of, and any land use planning principles/options and other measures, including potential use of technologies and measures currently under development that could bring about environmental improvements. Key opportunities or options should be identified for further examination under Task 4. Reference should also be made to the guiding principles for sustainable development proposed under SUSDEV21.

6.5 Task 4 : Examination of Key Issues

- (a) The Consultants shall investigate the key environmental issues identified, including those mentioned in Section 5.1.3 and Task 3 above and those major concerns raised during the public consultations.

Landscape and Ecological Conservation

- (b) To build a better environment, “no-go” areas should be identified to safeguard those areas of natural heritage and high landscape value that are worth conserving. In relation to this, the conservation policy is currently under review. In the meantime, the green groups and members of the public have on occasions advocated strengthening the conservation and enhancement of our ecological resources. The Consultants shall explore the merits of those ideas and proposals that would have bearing on this Assignment.

Regional Developments

- (c) From information available on the potential developments in the Pearl River Delta region, the Consultants shall identify potential implications on Hong Kong’s environment, including any changes in the environmental condition of the whole region, any changes in the pressures on our limited environmental capital, any changes in the values of the recognised conservation areas and other ecologically sensitive areas within Hong Kong in a regional and global sense, and any environmental opportunities offered by the regional developments.

Environmentally Friendly Strategic Options

- (d) The Consultants shall suggest a list of environmentally friendly strategic options (including strategic physical development, policy, institutional and technology options, features, measures and principles) that could potentially enhance the environmental conditions and facilitate achievement of the environmental targets, in particular for those areas where improvements in environmental efficiency are needed (such as new and renewable energy). Assumptions and information on the identified potential strategic options and/or features should be provided to allow incorporation into the development scenarios, options and strategies under the Main Study.
- (e) As the planning horizon is year 2030, environmentally friendly options that may be viable in the future, or reflect a potential direction for further investigations or development should also be included in the list. The characteristics and potential advantages and disadvantages of the options should be stated. On the other hand, practices which may further increase the pressure on the environment causing further deterioration in the environmental quality shall also be identified.

Others

- (f) For air quality, based on the existing air quality conditions and trend of technology development, the Consultants shall recommend various

practicable emissions reduction strategies to be integrated in the development options.

- (g) For the Potentially Hazardous Installations (PHIs), based on available information on the future development in technology, economic and market trends, the Consultants shall try to identify strategic opportunities to reduce the number of PHI sites to as low as reasonably practicable within the 30 year time frame.
- (h) The Consultants shall participate actively in the Main Study in formulating the development options to ensure proper integration of the identified environmentally friendly options in the formulation, development and refinement of the development scenarios, options and strategies under the Main Study.

6.6 Task 5 : Strategic Environmental Performance of Development Options

- (a) The Consultants shall propose appropriate environmental performance indicators, criteria and evaluation methodologies/ tools, in quantitative terms wherever possible, to evaluate the strategic environmental impacts and environmental sustainability implications of development options. Prior to the commencement of options evaluation process, the Consultants shall seek views and agreements from the ESMG on the proposed environmental performance indicators, criteria and evaluation methodologies/tools.
- (b) For the evaluation of environmental sustainability implications, reference should be made to the environmental aspect of SUSDEV21 to ensure that appropriate strategic level environmental information would be available for input into the "Computer Aided Sustainability Evaluation Tool" (CASET) produced under SUSDEV21 to evaluate sustainability impact assessment.
- (c) Using the environmental performance indicators, criteria and methodologies/tools established in paragraph (a) above, the Consultants shall carry out broad-brush assessments of the development options considered in the Main Study.
- (d) The development options shall be ranked according to their relative environmental performance. The key environmentally favourable and unfavourable features, and any particular problematic areas related to the options should be identified to facilitate refinement of options.
- (e) The performance of the options should be evaluated at appropriate scenario years, i.e. year 2010 for the short term options, year 2020 for the medium term options, and year 2030 for the long term options.
- (f) The broad-brush assessments of the development options should cover those environmental capitals which may face severe pressure. The results of the evaluation should be adequate to allow the use of the CASET to evaluate sustainability impact assessment to determine the effectiveness of various development options. Aspects to be assessed include the followings:

(i) *Air Quality Impact*

- The assessment shall evaluate the air quality and greenhouse gas implications due to the activities and potential changes in the transportation, energy, domestic and industrial sectors as well as major activities in the Pearl River Delta region. The Consultants shall evaluate the emissions and concentrations associated with each development option, and impacts due to likely and emerging changes in technologies in the various sectors. Reference should be made to the results of other strategic studies such as the *Third Comprehensive Transport Study (CTS-3)* and *Air Quality Study of the Pearl River Delta Region* to estimate future emissions inventory of key pollutants.

(ii) *Water Quality Impact*

- The assessment shall examine the water quality implications due to sewage load increase, reclamation and increase in toxic chemicals discharge etc. It should also address the cumulative impacts on receiving water bodies include physical, chemical and biological disruption of marine water, fresh water and ground water systems.
- If major reclamation or new sewage facilities of a significant scale are suggested, strategic water quality modelling tools shall be used to determine the cumulative impacts. *Appendix C* shows the water quality modelling requirements laid down by the Environmental Protection Department.
- Broad estimations should be made on the amount, costs, time and land requirements of sewage infrastructure enhancements needed to handle the wastewater generated while meeting the environmental targets. The amount of pollution load reduction or improvements in environmental efficiency needed in the wastewater generating sectors to meet the environmental targets should be estimated with elaboration on the potential of meeting these targets.

(iii) *Solid Waste*

- The assessment shall examine the implications of the development options on the material consumption and waste generation, and existing and planned waste reduction, collection, treatment and disposal measures or facilities for various solid waste reduction and disposal options. The need for and the costs of additional facilities to handle the solid wastes should be estimated. The implications of construction and demolition materials arising from the development options, their collection, recycle/reuse and disposal shall also be examined.
- The implications of chemical wastes arising, if any, from industrial or chemical processes and their collection, treatment and disposal shall also be examined.

(iv) *Noise Impact*

- The potential changes in noise exposure due to changes in development density, transportation and port operation, as well as changes in population along existing major roads or near noise sources shall be examined.
- The assessment shall evaluate various kinds or combination of noise sources to facilitate an efficient overall review of the effectiveness of various development options.
- Broad recommendations on, such as direct mitigation measure(s) at source, suitable land use arrangement, quieter transport mode, traffic management and other alternative environmentally favourable ways to manage/satisfy both economic and social demand, shall also be made as to how adverse noise impacts identified may be mitigated for all existing, committed and planned noise sensitive land uses likely to be affected by new developments under the development options.

(v) *Ecological Impacts*

- An up-to-date general ecological profile of areas likely to be affected by different development options should be provided.
- Any impacts arising from different development options that may lead to the destruction or adverse effect on recognised conservation areas, i.e. Ramsar Site, Special Areas, Country Parks, Marine Reserves, Marine Parks, Sites of Special Scientific Interest, and other ecologically sensitive areas such as wetland and woodland, should be identified.
- Issues that should be considered and addressed at the detailed environmental impact assessment stage of relevant development should be determined and specified.
- For the avoidance of doubt, all ecological assessment work will be qualitative in nature.

(vi) *Cultural Heritage and Landscape Impacts*

- The development options shall be assessed for their implications on recognised sites of cultural heritage and landscape value importance. For the assessment of landscape aspect, map scale at 1:20,000 shall be used. Appropriate mitigation measures and further investigations required shall also be identified.

(vii) *Hazard Assessment*

- The status of Potentially Hazardous Installations (PHIs) at the different scenario years shall be forecasted taking into account available information on the existing PHI decommissioning,

relocation and commissioning new PHIs and the strategic opportunities identified to reduce the number of PHI sites to as low as reasonably practicable within the 30 year time frame.

- For the evaluation of development options, broad assessment in terms of the population capacity inside the Consultation Zone (CZ) of PHIs should be made with reference to the existing PHI Planning Studies. The constraints on the increase of population should be assessed.

6.7 Task 6 : Refinement of Development Options

- (a) Based on the results of the broad assessments carried out under Task 5 above, development options found not sustainable will be refined and re-tested with a view to improve the options' environmental performance and acceptability.
- (b) The findings and conclusions on the strategic environmental comparisons of the development options should then be provided to the Main Study for inclusion into the overall comparison of the development options.

6.8 Task 7 : Strategic Environmental Performance of Development Strategies

- (a) After the preferred option(s) under various scenarios have been selected, the Consultants shall confirm its environmental sustainability and environmental feasibility by identifying and evaluating the potential environmental impacts and any mitigation measures and follow-up investigations required. The information and findings of the environmental performance evaluation and comparison carried out under Tasks 5 and 6 above should be used where appropriate to avoid duplication of effort. In the assessment, specific environmental concerns should be identified with possible mitigation measures stated.
- (b) The Consultants shall identify major environmental constraints and opportunities in the process of formulation of development strategies and response plans for the Main Study.

6.9 Task 8 : Strategic Environmental Action Plan and Programme

The Consultants shall recommend specific environmental action plans and programmes, including a Strategic Environmental Monitoring and Audit Plan. For avoidance of doubt, the actual monitoring and auditing work will not form part of the SEA.

General Matters

- 6.10 The duties of the Consultants shall be as defined in the General Conditions of Employment and as amplified, extended and set out in this Brief.
- 6.11 The Consultants shall comply with all reasonable instructions of the Director's Representative and with all relevant Circulars, Standing Instructions and Technical Memoranda as directed by the Director's Representative.

- 6.12 Throughout the course of the Assignment, the Consultants shall need to consult relevant Policy Bureaux and Government Departments such as Planning and Lands Bureau; Environment and Food Bureau; Environmental Protection Department; Agriculture, Fisheries and Conservation Department; Antiquities and Monuments Office of Leisure and Cultural Services Department etc. and other organisations/agencies as necessary. Relevant records of meetings and correspondence shall be copied to the Director's Representative.
- 6.13 The Consultants shall attend discussion and core meetings to discuss progress or related technical issues of the Assignment with the Director's Representative and other Government Departments/Bureaux, individually or collectively, and to present the findings and recommendations of the SEA to the Steering Group, Working Group and ESMG as required by the Director's Representative. The attendance and presentation at these meetings are included in the lump sum fee of the Assignment.
- 6.14 In addition to the meetings as specified in Section 6.13 above, the Consultants shall be required to attend and make presentations at external meetings which would involve members not within Government, including public forums, Advisory Council on the Environment (ACE), Town Planning Board (TPB), and other relevant committees or authorities as and when reasonably required, subject to the determination of the Director's Representative. The Consultants shall be required to attend a **maximum of 25 external meetings**. Attendance at further external meetings may be required and shall be paid on a time-charge basis.

7. RESPONSE TO QUERIES

The Consultants shall respond to queries under Clause 20 of the General Conditions of Employment raised prior to a date 3 months after the acceptance of the SEA Final Report and Executive Summary by the Director's Representative. 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 10 October 2001.
- 8.2 The SEA shall be completed within **76 weeks** (actual work will only take about 52 weeks due to the intermediate consultation periods which will not require substantial input from the Consultants) from the date of commencement of the Agreement subject to an agreed programme. However, the Consultants should maintain a certain degree of flexibility in the programme to cater for any unexpected changes in the work schedule of the Main Study.
- 8.3 The Consultants shall produce the Programme referred to in Clause 26 of the General Conditions of Employment together with the SEA Inception Report in draft form within **3 weeks** from the commencement of the Agreement detailing the activities to be carried out, target dates for particular tasks and any decision dates that may be required for the Assignment. The Consultants shall discuss with the

Director's Representative during this period to agree on 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.

9. **PROGRESS REPORTS**

The Consultants shall submit to the Director's Representative progress reports at **monthly or such other intervals** to be agreed by the Director's Representative on all aspects of the Services relating progress to the Programme referred to in Section 8 of this Brief.

10. **FINANCIAL MANAGEMENT**

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

11. **STANDARDS AND SPECIFICATIONS**

The Consultants shall adopt the technical, design and planning standards and specifications which are in current use by the relevant Government departments or, if non-existent, British Standard Codes of Practice and Specifications for reference. 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 the Deputy Director of Planning/Territorial and Sub-Regional (DD/T) or such other person as may be authorised by the Director of Planning 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 of Planning for a ruling.

12.2 During the course of the Agreement, the Consultants shall report direct to the Director's Representative via the Chief Town Planner/Strategic Planning (CTP/SP).

13. **CONTROL OF THE PROJECT AND ASSIGNMENT**

13.1 An Environmental Study Management Group (ESMG) will be formed under the HK2030 Study Steering Group to provide technical guidance and to oversee the environmental part of the Main Study. The ESGM will be chaired by the Deputy

Director of Environmental Protection or his representative. The composition and terms of reference of the ESMG are shown in *Appendix D*.

- 13.2 The representative(s) of the Consultants shall attend and present findings of their work at meetings of the ESMG, as well as the Study Steering Group/Working Group when concerned working papers/reports are considered.
- 13.3 Consultants Liaison Meetings (CLM) shall be held between the Director's Representative and the Consultants at regular intervals to discuss the progress and issues relevant to the Agreement and the SEA. CLM is one of the core meetings as specified in Section 6.13 above to be included in the lump sum fee of the Assignment.

14. INFORMATION AND FACILITIES PROVIDED BY THE EMPLOYER

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

15. CONSULTANTS' OFFICE AND STAFFING

- 15.1 The Consultants shall maintain for the duration of this Agreement an office in Hong Kong under the control of the Project Director of the Consultants who shall be responsible for the Project. He shall have adequate authority and sufficient professional, technical and administrative support staff in all relevant disciplines to ensure progress to the satisfaction of the Director's Representative.
- 15.2 The Project Director of the Consultants will provide the necessary curricula vitae of the members of the Study Team. Other than in exceptional circumstances no changes in key staff will be permitted during the progress of the Study. Should a change become necessary, the Consultants shall seek prior approval of the Director's Representative in writing, and informing him the circumstances that require the change and providing the personal particulars of the replacement of equivalent rank and experience.
- 15.3 Staff outlined in the Consultants' Technical Proposals shall be committed to the Assignment and key staff shall be resident in Hong Kong for the length of their involvement in the Assignment unless with prior notice given to the Director's Representative for any absence exceeding one week. The Director's Representative may under critical circumstances request for temporary

replacement of key staff of equivalent rank and experience when the absence of the key staff may affect the progress of the Assignment.

16. SPECIALIST AND SUB-CONSULTANT SERVICES

The Consultants shall provide all specialist and sub-consultant services, as well as purchase and hiring of equipment, computer software and system, and verbal and written translation service 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

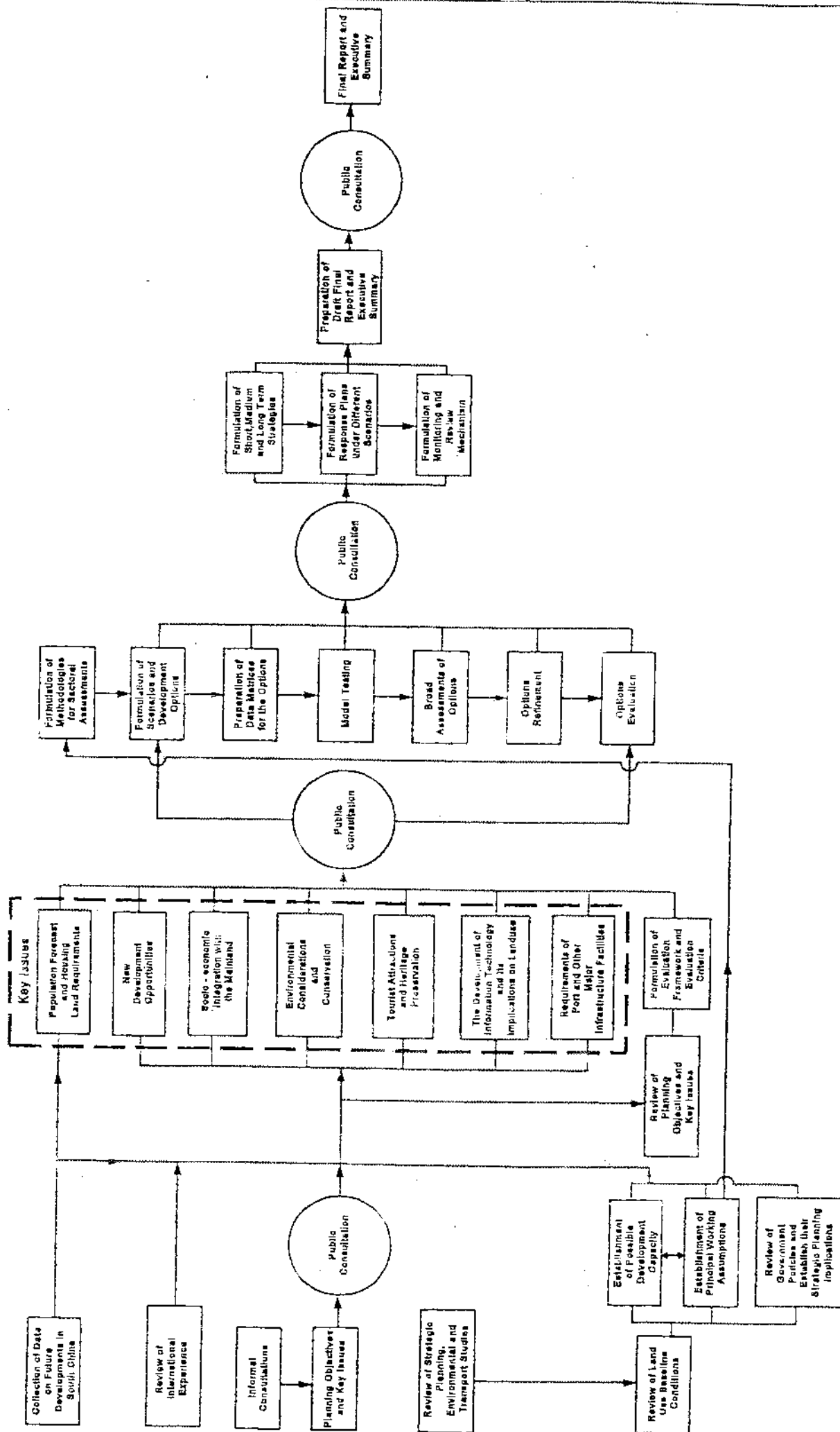
17.1 The Consultants shall propose for agreement of the Director's Representative and conduct all the surveys for the satisfactory completion of the Assignment, where necessary. A copy of field notes, field data and resultant plans arising from these surveys shall be handed over to the Director's Representative upon completion of the Assignment. The methodology and standards of accuracy as well as presentation of these surveys shall be agreed by the Director's Representative. *Appendix E* 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.

17.2 One velograph and two prints of topographical mapping at 1:20000, 1:10000, 1:5000 and 1:1000 scales prepared by the Survey and Mapping Office of the Lands Department, where available, for the area covered by the Assignment, can be obtained free of charge on application to the Director's Representative. The Consultants shall bear all costs if digitised survey data are required from the Lands Department to facilitate their works. The Consultants shall be responsible for the updating and verification of information shown on these plans as necessary in relation to the Assignment.

18. INSURANCE

The amount of insurance cover to be maintained in accordance with sub-clause (A) of Clause 47 of the General Conditions of Employment shall be HONG KONG dollars 2,900,000.

Key Tasks of HK2030 Study



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Relevant Reports/Studies to be noted by the Consultants

(A) Completed Studies

1. Territorial Development Strategy Review (environmental baseline conditions, strategic environmental assessment and broad conservation strategy) (1992-98) (Planning Department).
2. Deep Bay Water Quality : Regional Control Strategy Study (1998) (Environmental Protection Department).
3. Review of the Public Filling Strategy and Programme (1998) (Civil Engineering Department).
4. Sludge Treatment and Disposal Strategy Study (1999) (Environmental Protection Department).
5. Third Comprehensive Transport Study - Strategic Environmental Assessment Technical Report (1999) (Transport Department).
6. Greenhouse Gas Emission Control Study (2000) (Environmental Protection Department).
7. Second Railway Development Study – Final Strategic Environmental Assessment Report (2000) (Highways Department).
8. Study on Sustainable Development for the 21st Century [SUSDEV 21] (2000) (Planning Department).
9. Update on Cumulative Water Quality and Hydrological Effects of Coastal Developments and Upgrading of Assessment Tool (2000) (Environmental Protection Department).
10. South West New Territories Development Strategy Review (2001) (Planning Department).
11. Study to Analyse Broad Land Use Pattern of Hong Kong (2001) (Planning Department).

(B) Ongoing Studies

1. Assessment of the Engineering and Economic Viability and Associated Impacts for the Pilot Construction and Demolition Materials Recycling Facility at Kai Tak (Civil Engineering Department).
2. Feasibility Study for Material Recovery/Recycling Facilities (Environmental Protection Department).
3. Feasibility Study of Waste-to-Energy Incineration Facilities (Environmental Protection Department).
4. Planning and Development Study on HK Island South and Lamma Island (Planning Department).
5. Planning and Development Study on North East New Territories (Planning Department).
6. Planning and Development Study on North West New Territories (Planning Department).
7. Study of Air Quality in the Pearl River Delta Region (Environmental Protection Department).
8. Study on Extension of Existing Landfills and Identification of Potential New Waste Disposal Sites (Environmental Protection Department).
9. Study on South East New Territories Development Strategy Review (Planning Department).
10. Study on the Long-term Arrangements to Accommodate Inert Construction and Demolition Materials and Dredged Mud (Civil Engineering Department).
11. Study on the Potential Applications of Renewable Energy in Hong Kong (Electrical and Mechanical Services Department).
12. Wetland Compensation Study (Agricultural, Fisheries and Conservation Department).

(C) Studies to be commissioned in 2001/02

1. Environmental and Engineering Feasibility Assessment Studies in relation to the Way Forward of the Harbour Area Treatment Scheme (Environmental Protection Department).
2. Study on Landscape Value Mapping of Hong Kong (Planning Department).

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Hydrodynamic and Water Quality Modelling Requirements

Modelling Software General

1. The modelling software shall be fully 3-dimensional capable of accurately simulating the stratified condition and salinity transport within the model area.
2. The modelling software shall consist of hydrodynamic, water quality and particle dispersion modules. The hydrodynamic and water quality modules shall have been proven with successful applications locally and overseas.
3. The hydrodynamic and water quality modules shall be strictly mass conserved at all levels.

Model Details – Calibration & Validation

1. No field data collection is required for model calibration for this Study. However, the models shall have been properly calibrated and validated before commencement of this Study in the eastern part of Pearl River Estuary, North Western Waters, Western Harbour, Victoria Harbour, East Lamma Channel and West Lamma Channel and other relevant parts of Hong Kong waters with the field data collected by:
 - Hydraulic and Water Quality Studies in Victoria Harbour (1987)
 - Port and Airport Development Strategy - Enhancement of WAHMO Mathematical Models (1990)
 - Strategic Sewage Disposal Scheme Stage II - Oceanic Outfall, Oceanographic Surveys and Modelling (1992)
 - Update on Cumulative Water Quality and Hydrological, Effect of Coastal Developments and Upgrading of Assessment Tool (1998)
 - EPD's routine monitoring data
 - Tidal data from HK Observatory, Macau and relevant Mainland Authorities.
2. Tidal data shall be calibrated and validated in both frequency and time domain manner.
3. For the purpose of calibration and validation, the model shall run for not less than 15 days of real sequence of tide (excluding model spin up) in both dry and wet seasons with due consideration of the time required to establish initial conditions.
4. In general the hydrodynamic models shall be calibrated to the following criteria:

<u>Criteria</u>	<u>Level of fitness with field data</u>
• tidal elevation (rms)	< 8 %
• max. phase error at HW and LW	< 20 minutes
• max. current speed deviation	< 30 %
• max. phase error at peak speed	< 20 minutes
• max. direction error at peak speed	< 15 degrees
• max. salinity deviation	< 2.5 ppt

Model Details – Simulation

1. The water quality modelling results shall be qualitatively explainable, and any identifiable trend and variations in water quality shall be reproduced by the model. The water quality model shall simulate and take account of the interaction of dissolved oxygen, phytoplankton, organic and inorganic nitrogen, phosphorus, silicate, BOD, temperature, suspended solids, air-water exchange and benthic processes. It shall also simulate salinity and *E. coli*. Salinity results simulated by hydrodynamic models and water quality models shall be demonstrated to be consistent.
2. The models shall at least cover the whole of Pearl River Estuary (including all major tributaries), Macau, Lamma Channel, and Mirs Bay to incorporate all major influences on hydrodynamic and water quality.
3. Model grid across major flow channels in Hong Kong waters including the Ma Wan Channel, Kap Shui Mun, Rambler Channel and Lei Yue Mun shall be less than 75m. In general, grid size at the area affected by the project shall be less than 400m in open waters and less than 75m around sensitive receivers. The grid schematisation shall be agreed with EPD. All models shall either be dynamically linked to a far field model or form part of a larger model by gradual grid refinement.

Modelling Assessment

1. Scenarios to be assessed shall cover all phases of development being considered. Corresponding pollution load, bathymetry and coastline shall be adopted in the model set up.
2. Model results should be presented in format assessable for compliance of Water Quality Objectives.
3. Hydrodynamic and water quality models shall be run for at least 15 days (excluding model spin up) of real sequence of tide.
4. Assess the impact on all sensitive receivers including the application of bacterial dispersion module.
5. All modelling input data and results shall be submitted in digital media to EPD and shall become the property of the Hong Kong SAR Government with full copyright.

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Environmental Study Management Group

Membership

Chairman Deputy Director of Environmental Protection *or his representative*

Members *Representative of:*
Secretary for the Environment and Food
Secretary for Planning and Lands
Director of Agriculture, Fisheries and Conservation
Director of Civil Aviation
Director of Civil Engineering
Director of Drainage Services
Director of Electrical and Mechanical Services
Director of Highways
Director of Housing
Director of Lands
Director of Marine
Director of Planning
Director of Territory Development
Director of Water Supplies
Commissioner for Transport
Antiquities and Monuments Office, Leisure and Cultural Services Department
Air, Water, Waste and Noise Specialist Groups within Environmental
Protection Department

Director of Fire Services) *only attend the meeting on need basis*
Director of Health)

Secretary Environmental Protection Officer (Territory Assessment)

Terms of Reference

- (a) To coordinate activities related to the environmental aspect of the Study to achieve timely completion.
- (b) To provide guidance on technical aspects related to the environmental aspects of the Study.
- (c) To resolve any difference in opinion among various Government offices and relevant parties that cannot be resolved at the working level, and, if necessary, seek guidance and resolution from the Steering Group.
- (d) To consider and endorse environment-related Working Papers/Reports to be prepared under the Study.
- (e) To consider environmental components of the documents for consultation purpose.

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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 other 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 network(s) based on survey control given vide (a).	Consultants
2. (a) Provision of basic mapping (at 1/1000 or other standard mapping relevant to the Assignment).	Survey and Mapping Office (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, records and co-ordinate data.	District Survey Office
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)

<u>Task</u>	<u>Responsibility of</u>
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, usually by resident site staff under their supervision.)
(b) Initial site survey, and interim and final payment surveys.	Consultants, usually by resident site staff under their supervision (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 grants to architects (Government and Housing Authority).	District Survey Office
10. As-constructed surveys (including records of levels on all underground pipelines, etc.)	Consultants, usually by resident site staff under their supervision.