Appendix 3

Agreement No. CE 60/2005 (TP)
Land Use Planning for the Closed Area – Feasibility Study

Strategic Environmental Assessment Study Brief

1. INTRODUCTION

1.1 Planning Department (Plan D) will commission a planning study which is referred to as the "Main Study" below. A SEA will be conducted as part of the study and in parallel with the Planning Study (hereinafter called "Main Study").

1.2 A description of the Closed Area is given in Clause 2.1 of the Study Brief of the Main Study. A large part of the Closed Area remains unspoiled. In particular, the western part of the Closed Area consists mainly of fishponds and is in close proximity to/within the Mai Po Inner Deep Bay Ramsar Site, i.e. a "Wetland of International Importance" listed according to the "Convention on Wetlands of International Importance especially as Waterfowl Habitat" (Ramsar Convention).

1.3 The area to the east of Lok Ma Chau Loop (Hoo Hok Wai) consists of fish ponds which form part of the Deep Bay wetland ecosystem. It has been identified as having ecological value under the "Study on the Ecological Value of Fish Ponds in Deep Bay Area". Within the existing Closed Area, a list of sites has been identified by the Agriculture, Fisheries and Conservation Department (AFCD) as having conservation value from an ecological point of view. The list has been included in the Hong Kong 2030: Planning Vision and Strategy (HK2030 Study) Working Paper No.32 on "Development Potential of Frontier Closed Area" which can be viewed at the HK2030 Study's web-page.

1.4 The Antiquities and Monuments Office (AMO) of the Leisure and Cultural Services Department has identified some archaeological sites within the Closed Area, namely Sha Tau Kok San Tsuen Archaeological Site, part of the Tong To Shan Archaeological Site, and Muk Wu Ngau Yiu Kilns. Apart from these sites, a large part of the Closed Area is not covered by any previous archaeological survey but may have archaeological value. In this regard, more sites of archaeological interest may be discovered within the Closed Area. For example, significant cultural remains were found at Yuen Leng Chai in 2000 and mitigation measures such as rescue excavation were implemented under the Shenzhen River Regulation Project in 2002.

1.5 The Lok Ma Chau Loop, among other sensitive areas, falls within the existing

Closed Area. During the Stages 1 and 2 works of the Shenzhen River Regulation project, large quantities of contaminated and uncontaminated mud were deposited in the Lok Ma Chau Loop.

1.6 A large part of the Closed Area is within the Deep Bay catchment with no existing or planned trunk sewers. The Deep Bay Water Quality Regional Control Strategy Study findings (endorsed by the then Hong Kong-Guangdong Environmental Protection Liaison Group) are observed on a step-by-step basis to ensure no additional pollution load to the Deep Bay. On the other hand, a small area at the eastern end of the Closed Area is within the catchment area of Mirs Bay Water Control Zone. A set of water quality objectives was recommended in the Study on the Environmental Protection of Mirs Bay, Stage I Phase II report dated December 1997 to provide the criteria of water quality for impact assessment.

1.7 The existing road network within the Closed Area mainly comprises sub-standard roads serving local villages. The roads are currently declared as closed roads. In case developments were proposed within the Closed Area, upgrading of these sub-standard local road networks and lifting of the closed road restrictions may be required. Apart from the Sha Tau Kok rural town, control points and the village clusters, there are basically no drains, sewerage and water supply infrastructure serving the Closed Area.

1.8 As stated in Clause 2.3 of the Study Brief of the Main Study, the Security Bureau announced the proposed revised Closed Area boundary in September 2006. Some 2,000 ha of land will be released from the original Closed Area.

2. OBJECTIVES OF THE SEA STUDY

2.1 The overall objective of the Main Study is to formulate a planning framework to guide the conservation and development of the Study Area, based on the principle of sustainable development.

2.2 This SEA Study will be conducted in parallel with and as an integral part of the Main Study, with a view to providing strategic and regional environmental information and suggestions to facilitate the formulation of an environmentally acceptable planning framework that could achieve sustainable development in the Study Area. In other words, the SEA Study is not intended to be a project-based study. When individual projects would be implemented at different stages in future, the responsible project proponents may have to undertake further studies and comply with the Environmental Impact Assessment Ordinance (EIAO) and other relevant Government legislations/regulations. The Study Area and the term “proposed developments” to be adopted in this SEA Study are described in

Clauses 4.1 to 4.4 of the Main Study.

2.3 The formulation of the planning framework for the Study Area should adhere to the principle of sustainable development. To achieve this, we need to strike a balance in the demand for and supply of environmental resources in the planning and development of the Study Area. In this regard, the key objectives of this SEA Study are:

(a) to review and establish the existing baseline environmental conditions of the Study Area;

(b) to identify the main environmental constraints and opportunities for any planned (albeit small scale) and unplanned developments, and the incremental changes over the next 10-20 years development in the Study Area;

(c) to assess the environmental and related infrastructures' carrying capacity on the Study Area as a whole (including, but not limited to, ecology, sites of cultural heritage, wastes, sewage, water quality, air quality, and noise) and the demand that would be generated from future developments within the Study Area, and propose ways for balancing the demand against the limited capacity and for better management of the environmental resources;

(d) to integrate the considerations of environmental factors together with other considerations in the formulation of a sustainable planning framework for the Study Area so as to enhance the environmental sustainability and to avoid potential environmental problems;

(e) to provide environmental inputs in the selection of the preferred broad land use concept and the formulation of a sustainable planning framework for the Study Area; and

(f) to evaluate at strategic level the potential environmental impacts, the cumulative impacts and the sustainability implications of the planning framework to be formulated under the Main Study, and to identify any environmental mitigation measures and follow-up investigations required including those in relation to policy and institutional arrangements.

3. DESCRIPTION OF THE SEA STUDY

3.1 The overall objective of the Main Study is to formulate a planning framework to guide the conservation and development of the Study Area, based on the principle

of sustainable development. We need to establish an acceptable environmental framework in order to ensure a balanced and coordinated approach for the future development.

3.2 Given the potential environmental problems that may arise from any proposed developments within the Study Area (e.g. cumulative impacts on ecology, cultural heritage, hazard, sewage and the associated water quality impact, noise and air quality impacts due to potential increase in traffic, etc), it is necessary to assess the environmental capital or budget for use as a basis, among other factors, for deriving an environmentally sustainable planning framework for the Study Area.

3.3 To maintain the long-term development sustainability of the Study Area, the SEA Study shall investigate from the supply management perspective on how resources could be used in the most efficient way, how the increasing demand for resources could be balanced against the limited availability, and the level and scope of environmental efficiency improvements needed to reduce the environmental pressure. On the demand side management, the SEA Study shall investigate various measures such as those effecting changes in the lifestyles or those following the polluter-pays principle.

3.4 Major development nodes near the Study Area (e.g. the possible development at the Lok Ma Chau Loop) may influence the environmental conditions of the Study Area. The recent and potential future developments in the Shenzhen areas and the Pearl River Delta region would also provide some hints on the environmental issues to which we should pay attention. The SEA Study shall, therefore, examine the implications of the regional development and its consequential regional environmental impacts on the environment of the Study Area. They should be taken into account in the SEA process with a view to providing a good quality environment in the Study Area.

3.5 There are a number of environmental assessment reports or studies that are either completed, on-going or to be commissioned. These reports/studies, as listed in **Appendix 2** and **Annex 1 of the SEA Study Brief**, may have bearing on this SEA Study. In carrying out this SEA Study, the Consultants must give due regard to the findings and recommendations of the relevant reports/studies and liaise closely with the Environmental Protection Department (EPD) and other relevant Government departments.

3.6 The SEA Study shall make use of suitable quantitative and qualitative assessment tools, if necessary, which may include indicators, environmental mapping, appraisal checking and sensitivity testing, educated guess, specific criteria and measurement, etc, to evaluate the environmental implications and to examine innovative ideas and new technologies that could help solve the existing and

potential environmental problems. Quantitative assessment tools shall be employed if qualitative assessment is not adequate to confirm the environmental acceptability of the planning framework to be formulated under the Main Study.

4. SCOPE OF THE SEA STUDY

4.1 The major tasks to be carried out by the Consultants in the SEA Study are as follows:

Task 1 : Baseline Review

4.2 The Consultants shall review and establish the ecological baseline conditions of the Study Area by making use of the available information from government studies, relevant surveys and baseline reviews and research findings. For this purpose, the following major tasks shall be undertaken:

(a) compile, review, and consolidate existing information regarding the ecological characters of the Study Area with reference to the studies listed in **Appendix 2** and **Annex 1 of the SEA Study Brief** and any other relevant information. To fill the information gap, if any, identified above, ecological surveys shall be carried out for the purpose of establishing the general ecological profile and preparing the habitat maps described in paragraph 4.2(b) and (c) below;

(b) establish a general ecological profile of the Study Area based on the information collected in paragraph 4.2(a) above. The ecological profile shall include a description of the characteristics of each habitat found, in particular sites of ecological importance which are worthy of protection and conservation; and

(c) prepare habitat maps of suitable scale (1:5,000 to 1:10,000) showing the distribution and extent of various habitats found in the Study Area, and annotating on the maps specific locations which are of conservation interest or ecological importance, in particular, sites of recognized ecological importance such as wetlands, fung shui woods, natural woodlands, natural streams, etc.

4.3 The Consultants shall also prepare a baseline of the environmental (such as air quality, water quality, noise, hazards, sewage, waste, etc) and cultural heritage conditions of the Study Area based on the existing available information and examine whether the environmental, ecological and cultural heritage conditions of the Study Area may be influenced by various local and regional factors.

4.4 The Consultants shall identify the limitations of the existing environmental capital stock and inventory of the existing and planned infrastructures (such as road networks, sewerage provision and water supply) and assess the committed demand to derive the broad reserve capacity as basis for the formulation and evaluation of broad land use concepts and the formulation of Concept Plan/Development Plan under the Main Study.

Task 2 : Identification of Constraints, Opportunities and Key Issues

4.5 The SEA Study shall identify the major environmental opportunities, constraints and key issues that may have bearings on the planning and development of the Study Area, as well as any planning principles/strategies and potential use of technologies and measures currently under development that could bring about environmental improvements in the Study Area. The SEA Study shall also identify the areas of special conservation importance with a view to developing a broad framework for protection and conservation.

Task 3 : Examination of Key Issues

4.6 The Consultants shall investigate the key environmental issues identified, including those identified in Task 2 above and in the previous public comments received on the Closed Area as stated in Clauses 2.5 to 2.8 of the Main Study. In particular, the Consultants shall explore the merits and broad implications of the previous public comments received that would have bearing on the SEA Study and take them into account in the SEA process. The Consultants shall suggest a list of strategic environmentally friendly alternatives and/or mitigation proposals to address the key environmental issues identified.

4.7 The SEA Study shall examine the suitability of the areas of natural/cultural heritage and high landscape value in the Study Area for development in order to safeguard these areas. The SEA Study shall also address and highlight heritage preservation as one of the factors to be considered in the formulation of broad land use concepts and Concept Plan/Development Plan under the Main Study.

Task 4 : Evaluation of Draft Concept Plan

4.8 Since considerations would be given for formulating and evaluating different land use proposals within the Study Area before finalizing the draft Concept Plan under Task 2 of the Main Study. The Consultants shall broadly identify, evaluate and compare the potential implications of the broad land use concepts on the environment of the Study Area. This shall include the predicted changes in the environmental conditions of the Study Area, changes in the pressure on the

environmental capital and resources of the Study Area and changes in the values of recognized sites of conservation importance and other ecologically sensitive areas in the Study Area, cumulative environmental impacts of the broad land use concepts, etc. The key environmentally favourable and unfavourable features, and any particular problematic areas of the broad land use concepts should be identified in order to facilitate the selection of the preferred broad land use concept.

4.9 Appropriate qualitative and/or quantitative methods/tools should be adopted in the evaluation. The evaluation methods/tools and criteria shall be clearly specified and agreed with the DR beforehand. In the evaluation process, the issues and consequences of the "do-nothing" scenario should also be identified, serving as a benchmark for evaluation in this task.

Task 5 : Strategic Environmental Performance of Recommended Concept Plan

4.10 The SEA Study shall adopt appropriate assessment methods/tools to examine the Recommended Concept Plan to be formulated under Task 4 of the Main Study in respect of its environmental sustainability implications and strategic environmental implications. The level and magnitude of impacts should be specified in quantitative terms if possible. Feasible mitigation measures should be recommended to reduce the impacts to acceptable levels.

4.11 The potential issues to be examined in the SEA Study shall include, but not limited to, ecology, water quality, air quality, hazard, noise implications as well as resources of landscape and heritage value. The impacts of any proposed tourism/recreational activities/uses (including eco-tourism) shall also be examined in the assessments. If major discharges as a result of the proposed developments are identified, strategic water quality modelling shall be needed. The use of appropriate model and methodology shall be agreed with EPD beforehand.

4.12 Appropriate qualitative and quantitative methods/tools, which may include indicators, environmental mapping, appraisal checking, sensitivity testing, educated guess, specific criteria and measurement, etc, shall be used for the assessments. The assessments shall meet the following technical requirements, as appropriate to the level of details:

Task 6 : Relevant Technical Requirements to Refine the Recommended Concept Plan

(A) Air Quality Impact

4.13 The Consultants shall assess the air quality impacts to all the air sensitive receivers (ASRs) (including existing, committed and planned uses) in areas in which developments are proposed under the Main Study and in the vicinity of the proposed developments during operation phase. The assessment shall include the following tasks:

(a) presentation of the existing and background air quality for the purpose of evaluating the cumulative impacts of all the proposed developments;

(b) description of the topographical and man-made features which may affect the dispersion characteristics of air pollutants;

(c) identification of representative ASRs and/or potential affected uses;

(d) identification of emission characteristics and provision of an emission inventory of all air pollution sources (including existing, committed and planned uses). The air pollution sources shall include road traffic emissions to be estimated based on the traffic data and vehicle emission factor, emissions from polluting land uses and other air pollution sources identified in the course of the SEA;

(e) description of the assessment method and the associated assumptions, validity of the method and limits of application. If necessary, the vehicle emission factors shall be determined by the motor vehicle emission model to be agreed with EPD;

(f) characterization, assessment and evaluation of the net and cumulative air quality impacts of the proposed developments;

(g) presentation of the assessment results in the form of summary table and pollution contours for comparison with relevant air quality standards and the examination of the land use implications of these impacts; and

(h) proposals of cost-effective mitigation measures to reduce the cumulative air pollution impacts to meet the established standards and assessment of the air quality implications of other environmental mitigation measures such as noise canopy and address their air quality impacts, if any.

(B) <u>Noise Impact Assessment</u>

4.14 The Consultants shall examine all desktop information/studies relevant to the proposed developments. The assessment area shall include the proposed development areas and in the vicinity of the proposed developments. In

identifying the noise sensitive receivers (NSRs), reference should be made to the Hong Kong Planning Standards and Guidelines (HKPSG). The NSRs include all existing NSRs and all planned/committed noise sensitive developments and uses. The Consultants shall select assessment points to represent all identified NSRs for carrying out quantitative noise assessment described below. The assessment points and methodology shall be agreed with EPD prior to the quantitative noise assessment. A map showing the location and description such as name of building, use and floors of each and every selected assessment point shall be given. For planned noise sensitive land uses without committed site layouts, the Consultants shall use the relevant planning parameters to work out site layouts for operational noise assessment purpose.

4.15 An emission inventory of noise sources shall be provided. For roads, the inventory shall include road traffic data. Confirmation of the validity of the inventory shall be obtained from the relevant government departments/authorities.

4.16 The noise assessment shall cover the cumulative noise pollution effects of fixed noise sources, road traffic noise, rail noise, etc on all developments within the assessment area. Drawings of appropriate scale (e.g. road-plots of traffic noise model) with sample calculations and input parameters as requested by EPD shall be prepared and provided. The noise levels at the NSRs shall be presented on tables and plans (or other forms) of suitable scale at various representative floors (in mPD). Also, unless required for determining the planning standards, such as those for planning of fixed noise sources, no existing noise levels are required.

4.17 In case of any identified adverse impacts, the Consultants shall recommend feasible mitigation measures to reduce the residual impacts to an acceptable level. Direct technical remedies shall be adopted as the first priority. In order to clearly present the extents/locations of the recommended noise mitigation measures, plans of appropriate scale showing the measures with their information (e.g. types, dimensions at different cross-section, extents/locations, lengths, mPD levels, etc) shall be given.

4.18 For planned noise sensitive uses which will still be affected even with all practicable direct technical remedies in place, the Consultants shall propose, evaluate and confirm the practicality of additional measures within the planned noise sensitive uses.

(C) <u>Water Quality Impact Assessment</u>

4.19 The Consultants shall identify and analyze in the assessment all physical, chemical and biological disruptions of marine, estuarine, fresh water, water gathering ground or ground water system(s) arising from the proposed developments. The

water quality impact assessment may include strategic water quality modeling as stated in paragraph 4.11 above and shall cover the following tasks:

(a) desktop review of background information on the existing water systems and the respective catchments;

(b) characterization of water quality based on existing information or site surveys/tests as appropriate;

(c) identification and analysis of all existing and future activities and beneficial uses related to the water system(s) and identification of all water sensitive receivers;

(d) establishment of pertinent water quality objectives, criteria and standards for the water systems and all the sensitive receivers;

(e) identification of any alteration of water courses, natural streams/ponds, wetlands, change of shoreline or bathometry, change of flow regimes, change of ground water levels, change of catchment types or areas;

(f) identification, analysis and quantification of all existing and future water pollution sources, including point discharges and non-point sources to surface water runoff. Field investigation and tests shall be conducted as appropriate. An emission inventory on the quantities and characteristics of all the pollution sources in the assessment area shall also be provided;

(g) prediction and quantification, by mathematical modeling or other technique approved by the EPD, of the impacts on the water systems and the sensitive receivers due to those alterations and changes identified in paragraph 4.19(e) above and the pollution sources identified in paragraph 4.19(f) above. Possible impacts include changes in hydrology, flow regime, water quality and the effects on the aquatic organism due to such changes. Cumulative impacts due to other projects, activities or pollution sources in the vicinity shall also be predicted and quantified;

(h) assessment and quantification of all existing and future waste water generation activities and analysis on the adequacy of existing and future sewerage infrastructure to cope with the Recommended Concept Plan;

(i) assessment and quantification of all existing and future water pollutants from non-point sources and analysis on the provision and adequacy of existing and future facilities to reduce pollutants;

(j) recommendation of mitigation measures to reduce the water quality impacts to acceptable levels; and

(k) evaluation and quantification of residual impacts on the water systems and the sensitive receivers with regard to the appropriate water quality objectives, criteria, standards, guidelines or government policies.

(D) Hazards

4.20 The Consultants shall examine if there are any Potentially Hazardous Installations (PHIs) and existing/old landfills and proposed landfill extensions (e.g. NENT Landfill, proposed NENT Landfill extensions, and Ma Tso Lung Landfills) within and adjacent to the Study Area that may affect or to be affected by the proposed developments, conduct the following hazard assessments, quantify the hazard risks and recommend practicable and effective risk mitigation measures.

(D1) Hazard Assessment for Potentially Hazardous Installations

4.21 Hazard assessment for PHIs shall be carried out to evaluate the degree of risk associated with the proposed developments if there is an increase in the number of persons within the Consultation Zone of the PHIs. The assessment shall include the following tasks:

(a) identify all credible and applicable hazardous scenarios requiring Quantitative Risk Assessment (QRA) associated with transport, storage and handling of dangerous goods within the Consultation Zone of PHIs;

(b) carry out a cumulative QRA expressing population risks in both individual and societal terms;

(c) compare individual and societal risks with the Criteria for Evaluating Hazard to Life stipulated in Annex 4 of the Technical Memorandum issued under section 16 of the EIAO;

(d) assess and recommend practicable and cost effective risk mitigation measures; and

(e) report the findings of the QRA in a Hazard Assessment Report and Co-ordinating Committee on Land Use Planning and Control Relating to Potentially Hazardous Installations Paper.

(D2) Landfill Gas Hazard Assessment

4.22 Landfill gas hazard assessment shall be carried out to evaluate the degree of risk associated with the proposed developments if they are affected by existing/old landfills and proposed landfill extensions. The assessment shall include:

(a) identify the affected proposed developments for the purpose of providing adequate safety and precautionary measures to avoid or minimize the risks due to landfill gas, migration or leachate contamination;

(b) desktop review of background information and studies related to the relevant landfills;

(c) identify the sources, nature and likely quantities/concentrations of hazardous emissions which have the potential to affect the proposed developments;

(d) identify the elements (targets) of the proposed developments which are sensitive to the effects of the hazardous emissions and qualitatively assess the degree of risk involved; and

(e) propose suitable types of gas protection measures to mitigate the identified hazards to an acceptable level and to render the proposed developments as safe as reasonably practicable.

(E) Solid Waste

4.23 The assessment shall examine the implications of the proposed developments on 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 proposed developments, their collection, recycle/reuse and disposal shall also be examined.

4.24 The implications of chemical wastes, if any, arising from industrial or chemical processes and their collection, treatment and disposal shall also be examined.

(F) Sewerage Impact Assessment

4.25 The Consultants shall carry out the following tasks:

(a) desktop review of the existing/committed/planned capacity of the sewage infrastructure (including sewerage and treatment facilities) in the Study Area;

(b) determine the sewage collection, treatment and disposal requirements for the Recommended Concept Plan and its proposals;

(c) derive the sewage flow and load projection arising from the Recommended Concept Plan;

(d) assess the sewage flow and load impacts of the Recommended Concept Plan on the existing/ committed/planned sewage infrastructure;

(e) identify, evaluate and recommend an optimum and cost-effective proposal for expanding/upgrading the existing/committed/planned sewage infrastructure and for providing new sewage infrastructure to meet the requirements and demands of the Recommended Concept Plan. If required, this shall include effluent export schemes for exporting effluent to ensure no additional pollution loading to the Deep Bay. The alignments and land requirements for any proposed sewage installations and reserves, if required, should be delineated. In the event that upgrading works identified cannot be implemented in time to cope with the Recommended Concept Plan, interim sewage infrastructure shall be recommended;

(f) identify any sewage infrastructure (both within or outside the Study Area) that may be affected by sewage generated by the Recommended Concept Plan, and where necessary, recommend the necessary diversion/reprovisioning arrangements and/or proposal for expanding/upgrading those infrastructures in question;

(g) prepare a Sewerage Master Layout Plan for the collection, treatment and disposal of sewage generated by the Recommended Concept Plan (including, inter alias, interim sewage infrastructure, if required) and a prioritized programme for works implementation with associated cost estimates; and

(h) recommend appropriate sewage infrastructure, taking into account the impacts arising from any variations in hydraulic and pollution loading conditions corresponding to the pace of developments as well as potential change of scope of the proposed developments.

(G) <u>Ecological Impact Assessment (Both Terrestrial and Aquatic)</u>

4.26 The Consultants shall confirm the acceptability of the residual and cumulative

impacts of the proposed developments and shall undertake the following tasks:

(a) review and incorporate the findings of the baseline review highlighted in paragraph 4.2 above regarding the ecological characters of the proposed development areas and where necessary, carry out additional field surveys so as to provide further information to fulfill the objectives of the SEA and the Main Study. The field surveys shall comprise general habitat surveys as well as wildlife surveys to identify the presence of wildlife uses. In general, the duration of field surveys shall be 4-9 months depending on the sufficiency of existing information and ecological importance of the area to be surveyed. The field surveys should be carried out as early as possible;

(b) based on the information gathered from paragraph 4.26(a) above, refine relevant parts of the ecological profile and relevant habitat maps produced from Task 1 of the SEA Study for the proposed development areas. The major information to be provided in the ecological profile shall include:

- ecological characteristics of each habitat type such as size, vegetation type, species present and abundance, community structure and inter-dependence of the habitats and species, and the presence of any species of conservation importance and features of ecological importance;
- general description of the existing wildlife uses of various habitats with special attention to various wildlife groups and habitats with conservation importance and interests;
- habitat maps of suitable scale showing the various habitats of the proposed development areas. Colour photos of important habitats or features of ecological importance identified shall be provided;

(c) identify, predict and quantify as far as possible any ecological impacts such as destruction of habitats, reduction of species abundance/diversity, loss of feeding grounds, reduction of ecological carrying capacity, habitat fragmentation. An overlay of the Recommended Concept Plan on the habitat maps of the proposed development areas shall be prepared to provide an overview of the impacts;

(d) evaluate the significance and acceptability of the ecological impacts identified using well-defined criteria;

(e) consider and recommend mitigation measures to avoid, minimize and/or compensate for the adverse ecological impacts identified in a preferential order. For all natural streams and rivers, reference shall be made to Environment, Transport and Works Bureau Technical Circular (Works) No.

5/2005 which provides an administrative framework for their proper protection; and

(f) evaluate the feasibility and effectiveness of the recommended mitigation measures, determine and quantify as far as possible the residual ecological impacts after implementation of the mitigation measures.

(H) Cultural Heritage Impact Assessment

4.27 The Consultants shall carry out a Cultural Heritage Impact Assessment on the proposed development areas following the Criteria for Cultural Heritage Impact Assessment at **Annex 2 of this SEA Study Brief**. In conducting the Cultural Heritage Impact Assessment, the Consultants shall make reference to the available information from relevant surveys, baseline reviews and research findings.

Task 7 : Strategic Environmental Performance of Revised Recommended Concept Plan and Mitigation Measures

4.28 The residual environmental implications of the revised Recommended Concept Plan with all proposed mitigation measures in place shall be presented. The Consultants shall confirm the environmental sustainability and environmental feasibility of the revised Recommended Concept Plan by identifying and evaluating the potential environmental impacts of the proposed developments and any mitigation measures and follow-up investigations required. Specific environmental concerns specified in quantitative term, if possible and necessary, should be identified with possible mitigation measures stated. For identifying the mitigation measures, innovative ideas and new technologies that could help solve the existing and potential future environmental problems should be examined.

5. DELIVERABLES

5.1 The Consultants shall submit the following deliverables to the Director's Representative (DR) as part of the SEA Study.

(a) SEA Inception Report which includes:
  (i) the Consultants' understanding and appreciation of the objectives of the SEA Study;
  (ii) the approach and methodology for the various parts of the SEA;
  (iii) a work programme with major work tasks and key decision points identified and briefly described;

(iv) a schedule detailing the submission dates of reports; and
(v) the curricula vitae of the professional and technical staff employed for the SEA Study.

(b) Baseline and Key Issues Report documenting the findings and recommendations of Tasks 1, 2 and 3 of the SEA Study.

(c) Evaluation of Concept Plan Report documenting the findings and recommendations for Task 4 of the SEA Study.

(d) Strategic Environmental Performance Report documenting the findings and recommendations of Tasks 5, 6 and 7 of the SEA Study.

(e) SEA Draft Final Report (SEA DFR) which fully satisfies the requirements of this SEA Study. It shall be a stand-alone document. To meet this requirement, appropriate matters covered by all previous submitted reports as well as services required under various tasks listed in Section 4 above shall be summarised in the SEA DFR. In particular, it shall provide clear summaries of the environmental evaluation and comparison of the Concept Plan and justifications for the selection of the Recommended Concept Plan , the strategic environmental performance of the Recommended Concept Plan, including the recommended mitigation measures and the acceptability of the residual environmental impacts.

(f) SEA Draft Executive Summary (SEA DES), in both English and Chinese versions, which is a consolidated summary of the SEA DFR with particular focus on the issues of concern to the community, such as the environmental budget, the acceptability of residual environmental impacts and cumulative effects. 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.

(g) SEA Final Report (SEA FR) after incorporating comments from the DR, ACE and other relevant bodies as directed by the DR.

5.2 For the draft and finalized versions of each of the reports listed in paragraph 5.1(a) to (d) above:

(a) a self-contained summary of the findings and recommendations, in both English and Chinese, shall be prepared and incorporated as part of the report. The summary of the finalized reports shall be prepared in Hyper Text Mark-up Language (HTML) format which can be readily uploaded onto Plan D's web-site.

(b) 50 hard copies for SEA Inception Report, Baseline and Key Issues Report, Evaluation of Concept Plan Report and Strategic Environmental Performance Report shall be submitted to the DR and Study Steering Group/Working Group members.

5.3 The draft version of the SEA DFR and SEA DES mentioned in paragraph 5.1(e) and (f) above shall be submitted to the DR and Study Steering/Working Group for comments and suitably revised to take account of comments received before consultation. 65 hard copies each of the draft and finalized versions of the SEA DFR shall be submitted to the DR. For the SEA DES, 65 hard copies each of the draft English and Chinese versions, 65 hard copies of the finalized Chinese version and 65 hard copies of the finalized English version shall be submitted.

5.4 For the SEA DFR, SEA FR, SEA DES and SEA ES, they shall also be prepared in HTML format (the SEA DES and SEA ES in both English, traditional and simplified Chinese character versions) which can be readily uploaded onto Plan D's web-site and in Acrobat (.PDF format) without loss of data and change in appearance compared with the corresponding hard copies.

5.5 Draft of all papers and reports including those mentioned in paragraph 5.1(a) to (g) above shall be prepared and submitted to the DR and EPD for comments, and any revisions or supplements to the above as may be required before submission to the Study Steering Group/Working Group.

5.6 The Consultants shall produce the reports mentioned in paragraph 5.1(a) to (g) above and send the required hard and digital copies of the reports within the specified time detailed below, unless otherwise agreed by the DR:

	Deliverables	Deadline for Submission from Commencement of the Study
(i)	Draft SEA Inception Report	Within 0.5 month of the Study
(ii)	Final SEA Inception Report	Within 1 month of the Study
(iii)	Draft Baseline and Key Issues Report	Within 1.5 months of the Study
(iv)	Final Baseline and Key Issues Report	Within 2.5 months of the Study
(v)	Draft Evaluation of Concept Plan Report	Within 2.5 months of the Study

(vi)	Final Evaluation of Concept Plan Report	Within 3.5 months of the Study
(vii)	Draft Strategic Environmental Performance Report	Within 12 months of the Study
(viii)	Final Strategic Environmental Performance Report	Within 13 months of the Study
(ix)	SEA Draft Final Report and Draft Executive Summary	Within 18.5 months of the Study
(x)	SEA Final Report and Executive Summary	Within 20 months of the Study

Others

5.7 The findings and recommendations of the SEA Study will be presented to the ACE and/or its Sub-committee and any other relevant bodies such as Antiquities Advisory Board as directed by the DR. The consultation schedule will be determined as the Study progresses.

5.8 At the conclusion of the SEA Study, all documents including technical papers, reports, together with supporting data and notes, sketches, plans, drawings, display materials, photographs, charts, software programmes designed for the SEA Study and all related computer tapes/disks shall be delivered to and shall become the property of the Government of the Hong Kong Special Administrative Region with full copyright. Such documents and information shall be delivered within 1 month of the acceptance of the SEA FR and SEA ES by the DR.

Annex 1 of Appendix 3

Agreement No. CE 60/2005 (TP)
Land Use Planning for the Closed Area – Feasibility Study

Relevant Reports/Studies/Papers to be Noted by the Consultants in the SEA Study

In addition to the information listed in **Appendix 2** of this Brief, the Consultants shall also take cognizance of, but not limited to, the documents, reports, projects, drawings and other materials produced by the following studies, projects and researches in the SEA Study.

1. Agreement No. CE 73/98 Investigation Assignment for Widening of Tolo Highway/Fanling Highway between Island House Interchange and Fanling Environmental Impact Assessment (EIA) (2000) (Highways Department)
2. Chiu, Helen M.C. and Morton, B. (1999). *The distribution of horseshoe crabs (Tachypleus tridentatus and Carcinoscorpius rotundicauda) in Hong Kong*. Asian Marine Biology 16: 185-196
3. CityU, Centre for Coastal Pollution and Conservation (2001). *Consultancy Study on Fisheries and Marine Ecological Criteria for Impact Assessment, Final Report (Agreement No. CE62/98)*. Unpublished Report Submitted to Agriculture, Fisheries and Conservation Department
4. Deep Bay Link EIA (2002) (Highways Department)
5. Drainage Improvement in Northern New Territories Package B Environmental Study Report (Drainage Services Department)
6. Drainage Improvement in Northern New Territories Package A Draft EIA Report (Drainage Services Department)
7. Drainage Improvement in Northern New Territories Package C Draft EIA Report (Drainage Services Department)
8. Essential Public Infrastructure Works associated with West Rail Stations in Yuen Long Tin Shui Wai and Tuen Mun Centre EIA (1999) (Kowloon-Canton Railway Corporation)
9. Essential Public Infrastructure Works with West Rail Stations EIA (the Eastern Access Road) (1999) (Kowloon-Canton Railway Corporation)
10. Greenhouse Gas Emission Control Study (2000) (Environmental Protection Department)
11. Improvements to San Tin Interchange EIA (2004) (Highways Department)
12. Light Rail Transit (LRT) Extension in Tin Shui Wai Reserve Zone and Grade Separation of the LRT with Pui To Road and Tsing Lung Road in Tuen Mun (1999) (Kowloon-Canton Railway Corporation)
13. Main Drainage Channels and Poldered Village Protection Schemes for San Tin, NWNT Development EIA Study (1999) (Civil Engineering and Development Department)

14. Provision of Sewerage to Unsewered Areas/Villages in NWNT – Feasibility Study (on-going) (Environmental Protection Department)
15. Second Railway Development Study Final SEA Report (2000) (Highways Department)
16. Shenzhen River Regulation Project Final EIA Study Report (Stages I and II) (1996) (Drainage Services Department)
17. Shenzhen River Regulation Project Stage III EIA (2000) (Drainage Services Department)
18. Shenzhen Western Corridor EIA (2002) (Highways Department)
19. Sheung Shui to Lok Ma Chau Spur Line EIA (2002) (Kowloon-Canton Railway Corporation)
20. Study of Air Quality in the Pearl River Delta Region (Environmental Protection Department)
21. Study on the Long-term Contaminated Mud Disposal Strategy and the Need for an Intermediate Contaminated Mud Disposal Facility (2003) (Civil Engineering and Development Department)
22. Territorial Development Strategy Review (environmental baseline conditions, strategic environmental assessment and broad conservation strategy) (1998) (Planning Department)
23. Third Comprehensive Transport Study – SEA Technical Report (1999) (Transport Department)
24. Tin Shui Wai Phase 4 Rail Extension (1999) (Kowloon-Canton Railway Corporation)
25. Update on Cumulative Water Quality and Hydrological Effects of Coastal Developments and Upgrading of Assessment Tool (2000) (Environmental Protection Department)
26. Upgrading and Expansion of San Wai Sewage Treatment Works and Expansion of Ha Tsuen Pumping Station EIA (2002) (Drainage Services Department)
27. Waterbird Monitoring Programme at Mai Po Inner Deep Bay Ramsar Site (Agriculture, Fisheries and Conservation Department)
28. Widening of Yuen Long Highway between Lam Tei and Shap Pat Heung Interchange EIA (2001) (Highways Department)
29. Working Paper No.32 “Development Potential of Frontier Closed Area” of Hong Kong 2030: Planning Vision and Strategy and other papers uploaded onto the Study’s web-page (Planning Department)
30. Yuen Long and Kam Tin Sewerage and Sewage Disposal Stage 1 Packages 1A-1T and 1B-1T - Kam Tin Trunk Sewerage Phase I and II EIA (2002) (Drainage Services Department)
31. Yuen Long and Kam Tin Sewerage and Sewage Disposal Stage 2 EIA (2004) (Drainage Services Department)
32. Yuen Long Bypass Floodway - Feasibility Study (1998) (Civil Engineering and Development Department)

Annex 2 of Appendix 3

Criteria for Cultural Heritage Impact Assessment

1. Baseline Study

1.1 A baseline study shall be conducted:

(a) to compile an inventory of archaeological sites (including marine archaeological sites where applicable), historic buildings and structures within the proposed development areas, which include:

(i) all sites of archaeological interest (including marine archaeological sites where applicable);
(ii) all pre-1950 buildings and structures;
(iii) selected post-1950 buildings and structures of high architectural and historical significance and interest; and
(iv) cultural landscape and features including sites of historical events or providing a significant historical record or a setting for buildings or monuments of architectural or archaeological importance, historic field patterns, tracks and fish ponds and cultural elements such as fung shui woodlands and clan grave;

(b) to identify the impacts of the proposed developments on the site of cultural heritage at the planning stage in order to avoid causing any negative effects.

(A) Desk-top Study

1.2 The baseline study shall start with desktop searches on the cultural heritage resources within the proposed development areas based on the existing available information which may include search of the list of declared monuments, deemed monuments, sites of cultural heritage identified by the Antiquities and Monuments Office (AMO), publications, historical documents, cartographic and pictorial documents and, if possible, discussion with local informants.

1.3 A full bibliography and the source of information consulted should be provided to assist the evaluation of the quality of the evidence.

(B) Field Evaluation

1.4 In areas where information is inadequate, the Consultants shall carry out the following field evaluation:

(a) a historic buildings and structures survey within the proposed development areas, including the following tasks:

(i) field scan of all the historic buildings and structures within the proposed development areas;

(ii) photographic recording of each historic building or structure including the exterior (the elevations of all faces of the buildings premises, the roof, close up for the special architectural details) and the interior (special architectural details), if possible, as well as the surroundings of each historic building or structure;

(iii) interview with local elders and other informants, if possible, on the local historical, architectural, anthropological and other cultural information related to the historic buildings and structures; and

(iv) architectural appraisal of the historic buildings and structures.

(b) an archaeological survey to assess the archaeological potential of the proposed development areas. A person leading and undertaking the survey involving search and excavation of antiquities is required to obtain a licence under the Antiquities and Monuments Ordinance. A survey programme should be designed to clearly elaborate the strategy and methodology adopted in the survey. The survey should include, but not limited to, actual field walking as well as consultation of old maps and old aerial photographs. When there is potential that unknown archaeological sites may exist, the Consultants shall undertake auger survey and excavation of test pits to determine the presence of archaeological deposits. Given the strategic nature of the Study, the requirements of the auger survey and excavation of test pits shall be general and broadbrush. Subject to the site conditions and accessibility, the auger survey shall generally be at 50m interval or more to establish the horizontal spread of cultural materials deposits and the hand digging of test pits shall generally be at 1m x 1m or 1.5m x 1.5m to determine the presence or absence of deeper archaeological deposits and their cultural history. The survey programme as well as scope of the auger survey and excavation of test pits shall be agreed with the DR in consultation with the AMO.

1.5 If the field evaluation identifies any additional sites of cultural heritage which are of potential historic or archaeological importance and not recorded by the AMO, the office should be reported as soon as possible. The historic and archaeological value of the items will be further assessed by the AMO.

1.6 The process and findings of the above desktop searches and/or field surveys should

be properly documented in the Strategic Environmental Performance Report.

2. Impact Assessment

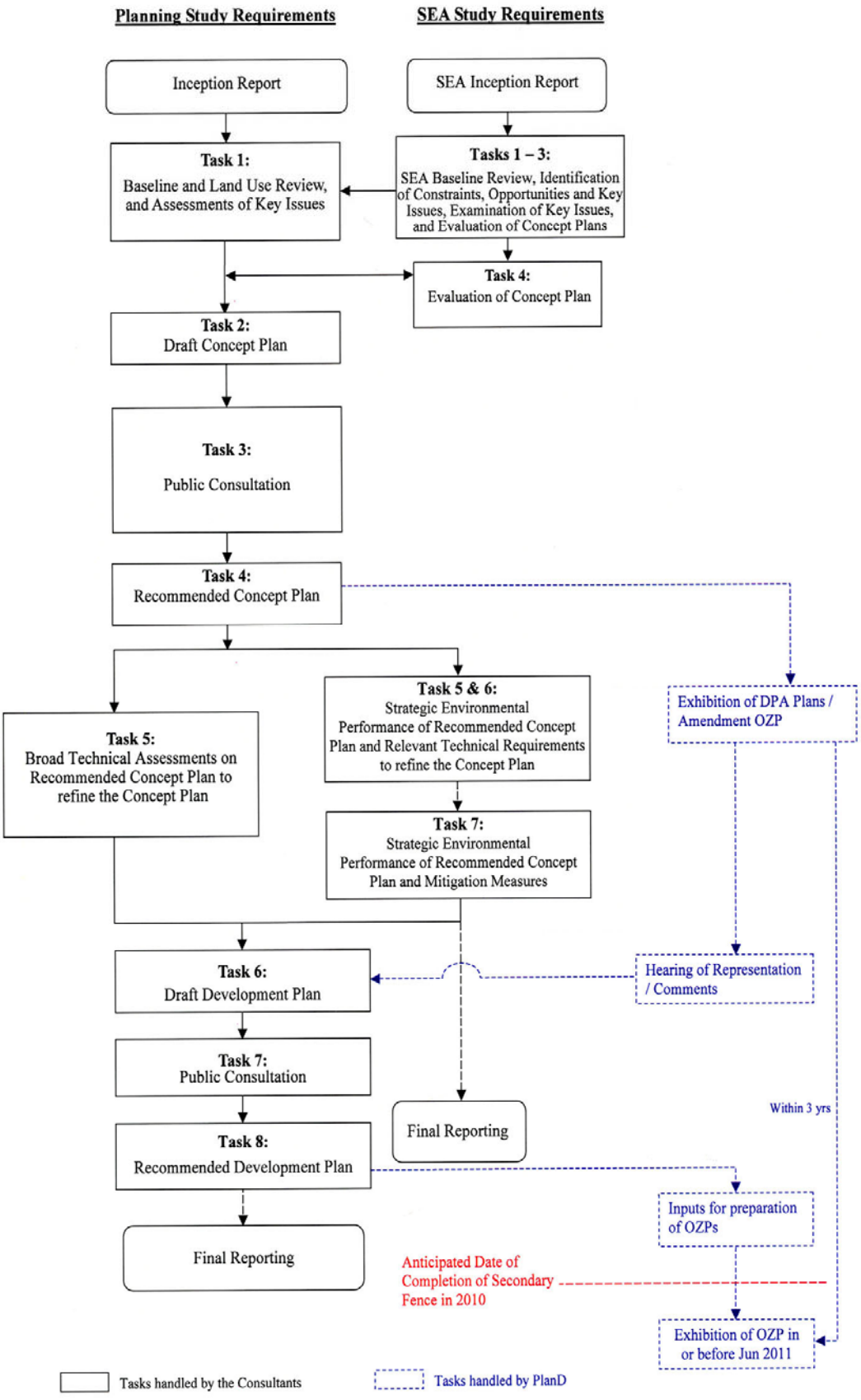
2.1 Cultural heritage impact assessment must be undertaken to identify the impacts of the sites of cultural heritage which will be affected by the proposed developments subject to the results of the desktop research and field evaluation. The prediction of impacts and an evaluation of their significance must be undertaken by an expert in cultural heritage. During the assessment, both the direct impacts such as loss or damage of important features as well as indirect impacts which may affect the preservation of the archaeological and built heritage in situ should be stated. A description and plans should be provided to elaborate to what extent the site of cultural heritage will be affected.

3. Mitigation Measures

3.1 Preservation in totality must be taken as the first priority. Therefore, in formulating the planning framework for the Study Area, the Consultants should avoid cultural heritage resources, i.e. preserving it in-situ or leaving a buffer zone around the site. Built heritage, sites and landscapes are to be in favour of preservation unless it can be shown that there is a need for a particular development which is of paramount importance and outweights the significance of the heritage feature.

3.2 If avoidance of the cultural heritage is not possible, the Consultants shall examine and recommend possible mitigation measures to be implemented by the project proponent when individual project is subsequently taken forward for implementation. The mitigation measures should be able to be implemented. The Consultants shall define and list out clearly the proposed mitigation measures to be implemented, by whom, when, where, to what requirements and the various implementation responsibilities when individual project is subsequently taken forward for implementation by the project proponent. The programme and costs estimates for the implementation of the recommended mitigation measures shall also be worked out as inputs to the outline development programme and cost estimations of the Development Plan under the Main Study.

Study on Land Use Planning for the Closed Area
Study Methodology



Appendix 5

Summary of Major Deliverables (Working Papers, Inception Report, Draft Final Report, Draft Executive Summary, Public Consultation Digests and Public Consultation Reports, Strategic Environmental Assessment Reports)

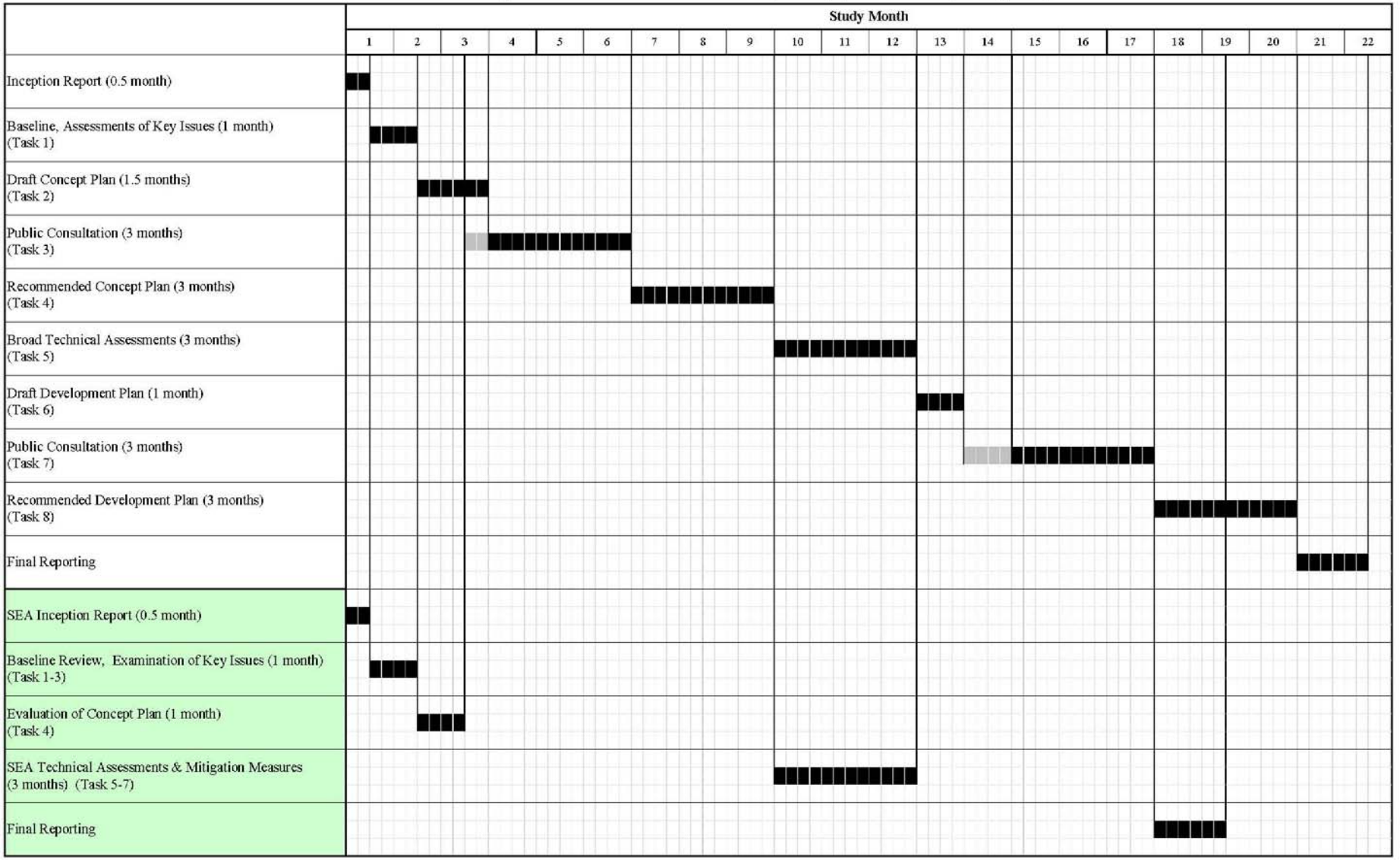
No.	Deliverables	No. of Hard Copies Draft (D) Final (F)	Deadline for Submission of Draft and Final versions (from commencement date of Assignment)
	Main Study		
1.	Inception Report (IR)	6 (D) 50 (F)	Within 0.5 month and 1 month respectively
2.	Working Paper 1 (WP 1) on Baseline and Land Use Review, and Identification of Key Issues	6 (D) 50 (F)	Within 1.5 months and 2.5 months respectively
3.	Working Paper 2 (WP 2) on Draft Concept Plan	6 (D) 50(F)	Within 3 months and 4 months respectively
4.	First Public Consultation – Public Consultation Digests (PCD) and Public Consultation Reports (PCR)	PCD – 6 (D) (both in English and Chinese versions) - 300 (F) (both in English and Chinese versions) PCR – 6 (D) (both in English and Chinese versions) - 300 (F) (both in English and Chinese versions)	PCD - Within 2.75 months and 3 months respectively draft PCR – delivered within 1 month after the closure of the First Public Consultation
5.	Working Paper 3 (WP 3) on Recommended Concept Plan	6 (D) 50(F)	Within 9 months and 10 months respectively
6.	Working Paper (WP 4) on Technical Assessments	6 (D) 50(F)	Within 12 months and 13 months respectively

7.	Working Paper (WP 5) on Draft Development Plan	6 (D) 50(F)	Within 13 months and 14 months respectively
8.	Second Public Consultation – Public Consultation Digests (PCD) and Public Consultation Reports (PCR)	PCD - 6 (D) (both in English and Chinese versions) - 300 (F) (both in English and Chinese versions) PCR – 6 (D) (both in English and Chinese versions) - 300 (F) (both in English and Chinese versions)	PCD - Within 13 and 14 months respectively draft PCR – delivered within 1 months after the closure of the Second Public Consultation
9.	Working Paper (WP 6) on Recommended Development Plan	6 (D) 50(F)	Within 20 months and 21 months respectively
10.	Draft Final Report (DFR)	6 (D) 65 (revised Draft) 65 (F)	Within 21.5 months and 22 months respectively
11.	Draft Executive Summary (DES)	6 (D) 65 (revised Draft) – each of the draft English and Chinese versions) 65 (F) – Chinese version; 65 (F) – English version	Within 21.5 months and 22 months respectively
12.	Final Report (FR)[1]	100 (F)	Within 22 months
13.	Final Executive Summary (ES)[2]	300 (F) – each of the English and Chinese versions)	Within 22 months
	Strategic Environmental Assessment (SEA)		
14.	SEA Inception Report	6 (D) 50(F)	Within 0.5 month and 1 month respectively
15.	Baseline and Key Issues Report	6 (D)	Within 1.5 months and

[1] On top of 100 hard copies, 100 digital copies (saved in compact discs) are required.
[2] On top of 300 hard copies, 300 digital copies (saved in compact discs) are required.

		50 (F)	2.5 months respectively
16.	Evaluation of Concept Plan Report	6 (D) 50(F)	Within 2.5 months and 3.5 months respectively
17.	Strategic Environmental Performance Report	6 (D) 50(F)	Within 12 months and 13 months respectively
18.	SEA Draft Final Report (DFR)	6 (D) 65 (revised Draft) 65 (F)	Within 18.5 months and 19.5 months respectively
19.	Draft Executive Summary (DES)	6 (D) 65 (revised Draft) – each of the draft English and Chinese versions) 65 (F) – Chinese version; 65 (F) – English version	Within 18.5 months and 19.5 months respectively
19.	SEA Final Report (FR)	65 (F) – each of the English and Chinese versions)	Within 20 months
20.	Executive Summary (ES)	65 (F) – each of the English and Chinese versions)	Within 20 months

Land Use Planning for the Closed Area - Feasibility Study (Outline Study Program)



Preparation / Printing work for public consultation exercises