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ACE Paper 20/2006
For discussion

Study on Land Use Planning for the Closed Area

INTRODUCTION

This paper presents to Members the scope of the captioned Study to be commissioned by the Planning Department (PlanD).

BACKGROUND

2. In October 2005, the Chief Executive announced in the Policy Address that the size of the Frontier Closed Area (Closed Area) would be reduced after review and that the Government will commence a planning study for the land to be released from the Closed Area, consult the public and then draw up statutory plans.

3. On 7 September 2006, the Security Bureau announced the new boundary of the Closed Area. The revised Closed Area boundary will come into effect after the secondary boundary fence has been constructed, which is currently scheduled for completion by 2010. Subject to the necessary statutory process, the land area of the Closed Area, as delineated in **Appendix 1**, will then be reduced from about 2,800 ha to 800 ha.

4. This means some 2,000 ha of land will be released from the Closed Area. Of which, only about 23% (i.e. around 470 ha of land) is currently subject to statutory planning control.

5. To examine the future use of the areas to be released from the Closed Area and to put them under planning control, PlanD has to carefully examine the development potential and constraints of these areas. Then, statutory plans will be prepared.

STUDY AREA

6. The area covered by the Planning Study (Study Area in **Appendix 1**) covers all the 2,000 ha of land to be released from the Closed Area. Immediately outside the existing Closed Area lie about 330 ha of land, including about 280 ha of land which have not been covered by any statutory plans and about 50 ha of land at Kong Nga Po. Although the 50 ha of land at Kong Nga Po fall outside the existing Closed Area and are already covered by statutory plan, the area has been identified as having the potential for development under the Hong Kong 2030: Planning Vision and Strategy (HK2030 Study). Taking into account the above, these 330 ha of land will also be included in the Study Area for a comprehensive assessment. Hence, the total land area of the Study Area is about 2,330 ha.

7. Within the Study Area, around 520 ha of land (including San Tin, Fu Tei Au, Sha Ling and Kong Nga Po areas) have already been covered by statutory plans with planning intentions clearly specified for each land use zoning designation. Development control and zoning changes can be effected through the existing statutory planning mechanism. Therefore, the focus for these areas is to, by taking the prevailing statutory plans as a basis, assess and address the implications of the study proposals on these areas as well as confirm, or amend as necessary, the current zoning control.

8. Technical assessments for any proposed developments within the Study Area may not be confined to the Study Area and may need to take into account of the conditions outside the Study Area, including Shenzhen. For the purpose of the study brief, the term "proposed development(s)" refers to all the uses/developments which are proposed under the Study, including the supporting transport and infrastructural works/facilities that may fall outside the Study Area, but excluding land for conservation and non-development purposes.

STUDY OBJECTIVES

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

10. The planning study shall include a Strategic Environmental Assessment (SEA), which will be conducted in parallel with and as an integral part of the planning study. The objective of the SEA Study is to provide strategic environmental information and suggestions to facilitate the formulation of an environmentally

acceptable planning framework for the Study Area. The findings and recommendations of the SEA process shall serve as inputs to various stages of the planning study.

KEY TASKS

11. The planning study is divided into two stages:

(a) Stage 1 focuses on the formulation of a Concept Plan, which shows the broadbrush land use framework for the Study Area and will form the basis for the preparation of Development Permission Area (DPA) Plans; and

(b) Stage 2 on the formulation of a Development Plan, which shows the more detailed land use framework for the Study Area and will form the basis for the preparation of Outline Zoning Plans (OZPs).

12. The DPA Plans and OZPs would be prepared by PlanD.

13. Both the planning study and the SEA Study are not intended to be a project-based study. The DPA Plans and OZPs would only provide a framework to guide future development and development control for the areas. When the proposed developments (including both public and private sector works) recommended under the planning study would be subsequently taken forward for implementation at different stages in the future, the responsible project proponents may have to undertake further studies and comply with the Environmental Impact Assessment Ordinance and other relevant Government legislations/regulations.

14. The key tasks for each stage of the study methodology of the planning study, including the SEA Study, are shown in **Appendix 2**. Details of each individual task for the planning study and SEA Study are enumerated at **Appendices 3 and 4** respectively.

ENVIRONMENTAL TASKS

15. For easy reference, the environmental tasks to be covered in the planning study (Tasks 1, 2 and 5 in Stage 1 and Task 9 in Stage 2) and the SEA Study are briefly summarised below.

Stage 1 Planning Study

Task 1 **Baseline Review and Identification of Key Issues** – to collect and analyze the baseline conditions of the Study Area, including the environmental and ecological conditions, landscape, cultural heritage and archaeological resources, and to examine the development opportunities, constraints and key issues for the Study Area, particularly the ecologically important areas.

Task 2 **Land Use Review** – to undertake a land use review for the Study Area, including the definition of the non-development areas, taking into account areas/sites with high landscape, environmental, ecological, cultural heritage and archaeological value that merit conservation and protection.

Task 5 **Preliminary Assessments on Draft Concept Plan** – to conduct preliminary technical assessments on the draft Concept Plan, including traffic, drainage and sewerage, water supply and utilities, visual, landscape, air ventilation as well as socio-economic impacts. The broad environmental assessments to be conducted in this task shall include ecological, noise, air quality, water quality, solid waste and hazard impact assessments. Their technical requirements are enumerated at **Appendix 3**.

Stage 2 Planning Study

Task 9 **Detailed Assessments to Refine Draft Development Plan** – to conduct detailed technical assessments to establish the feasibility of the draft Development Plan, including traffic, drainage, water supply and utilities, geotechnical, visual, landscape, and air ventilation impacts, etc. The environmental assessments of the SEA as enumerated in paragraphs 12 to 34 of the SEA at **Appendix 4** will provide environmental inputs to the planning study so as to refine the Development Plan.

Stage 1 SEA Study

Task 1 **Baseline Review** – to establish the environmental, ecological and cultural heritage baseline conditions of the Study Area and assess the carrying capacity of the Study Area in environmental and infrastructural terms.

Task 2 **Identification of Constraints, Opportunities and Key Issues** – to identify the major environmental opportunities, constraints and key issues that may have bearings on the planning and development of the Study Area and to

identify areas of special conservation importance with a view to developing a broad framework for protection and conservation.

Task 3 **Examination of Key Issues** – to examine the key environmental issues identified in the previous tasks and previous public comments received on the Study Area.

Task 4 **Evaluation of Broad Land Use Concepts** – to evaluate the strategic implications of the three broad land use concepts on the environment of the Study Area to facilitate the selection of a sustainable preferred broad land use concept.

Stage 2 SEA Study

Task 5 **Strategic Environmental Performance of Development Plan and Relevant Technical Requirements** – to examine the draft Development Plan in respect of its strategic environmental implications. The assessments shall include air quality, noise impact, water quality impact, hazard, solid waste, sewerage impact, ecological impact and cultural heritage impact assessments.

Task 6 **Refinement of Development Plan** – to revise and re-test the draft Development Plan with a view to improving its strategic environmental performance and acceptability based on the results of the assessments conducted under Task 5.

Task 7 **Strategic Environmental Performance of Revised Development Plan and Mitigation Measures** – to identify the residual environmental implications of the revised Development Plan with all proposed mitigation measures in place and confirm the environmental sustainability and feasibility of the revised Development Plan.

STUDY PROGRAMME

16. The entire planning study (both Stages 1 and 2) will last for a total of 30 months, including the SEA Study and extensive public consultation. The outline study programme is shown in **Appendix 5**.

PUBLIC CONSULTATION

17. The planning study will involve a two-staged public consultation exercise to collect views from members of the public, interested parties, relevant stakeholders and statutory/advisory bodies on the draft Concept Plan in Stage 1 and the draft Development Plan in Stage 2. Apart from the formal public consultation exercises during the study process, discussions and meetings with interested parties may also be held throughout the study process.

18. Before the planning study commences, we are now:

(a) carrying out sounding out activities with the major stakeholders and local representative bodies, including Heung Yee Kuk, relevant District Councils and Rural Committees, and environmental concern groups to gauge their views and visions on the future development in the area; and

(b) launching a dedicated webpage to invite public views on the future use of the Study Area as inputs to the planning study. The gist of recommendations of the Working Paper of each task would also be uploaded onto the webpage for public inspection as the planning study proceeds.

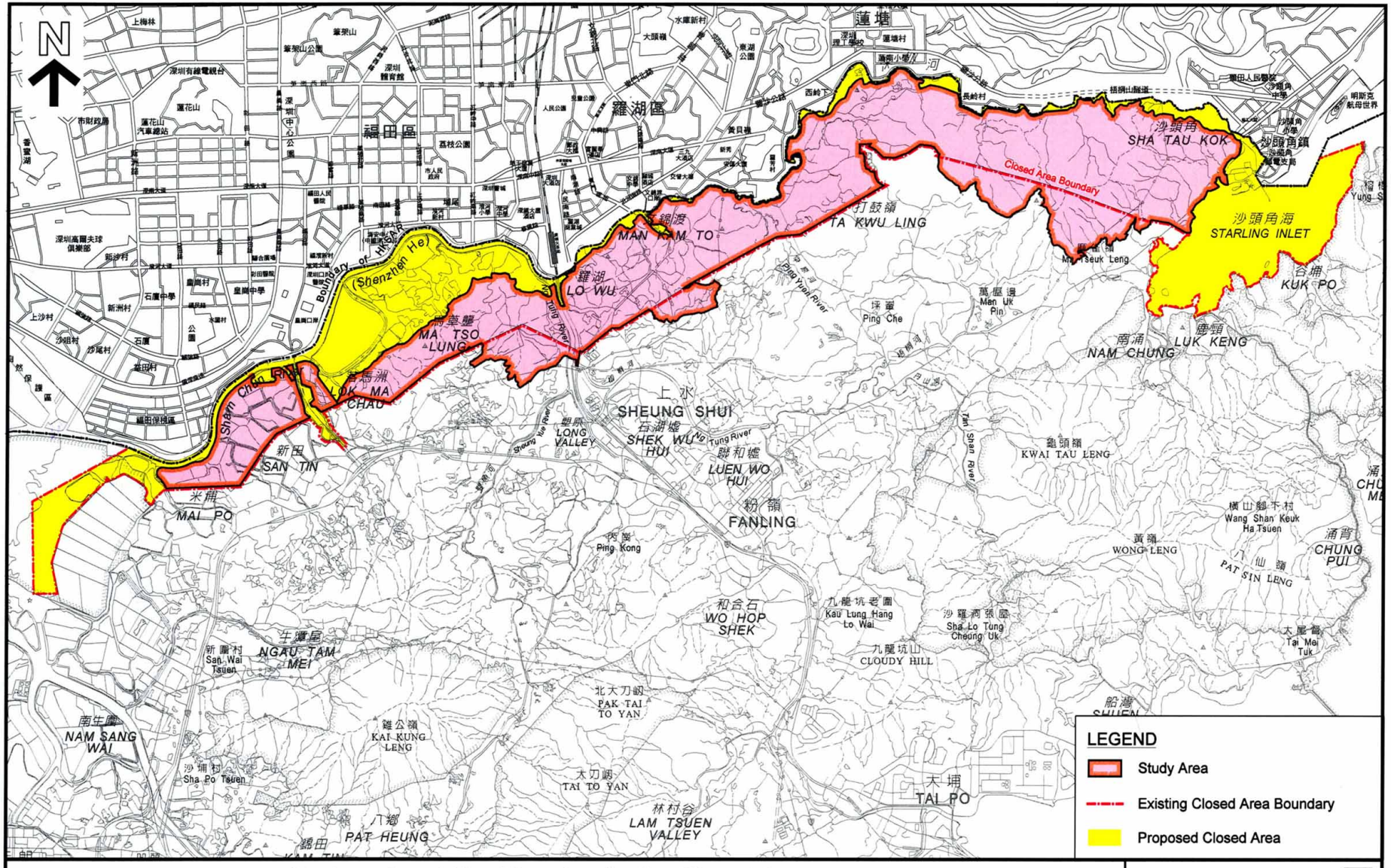
ADVICE SOUGHT

19. We welcome any views and comments from Members on the scope of the SEA Study and the planning study.

ATTACHMENTS

Appendix 1	Study Area
Appendix 2	Study Methodology
Appendix 3	Major Tasks for Planning Study
Appendix 4	Major Tasks for Strategic Environmental Assessment
Appendix 5	Outline Study Programme

Planning Department
October 2006



Study on Land Use Planning for the Closed Area

Study Area

SCALE

km 1 0 1 2 3 4 km

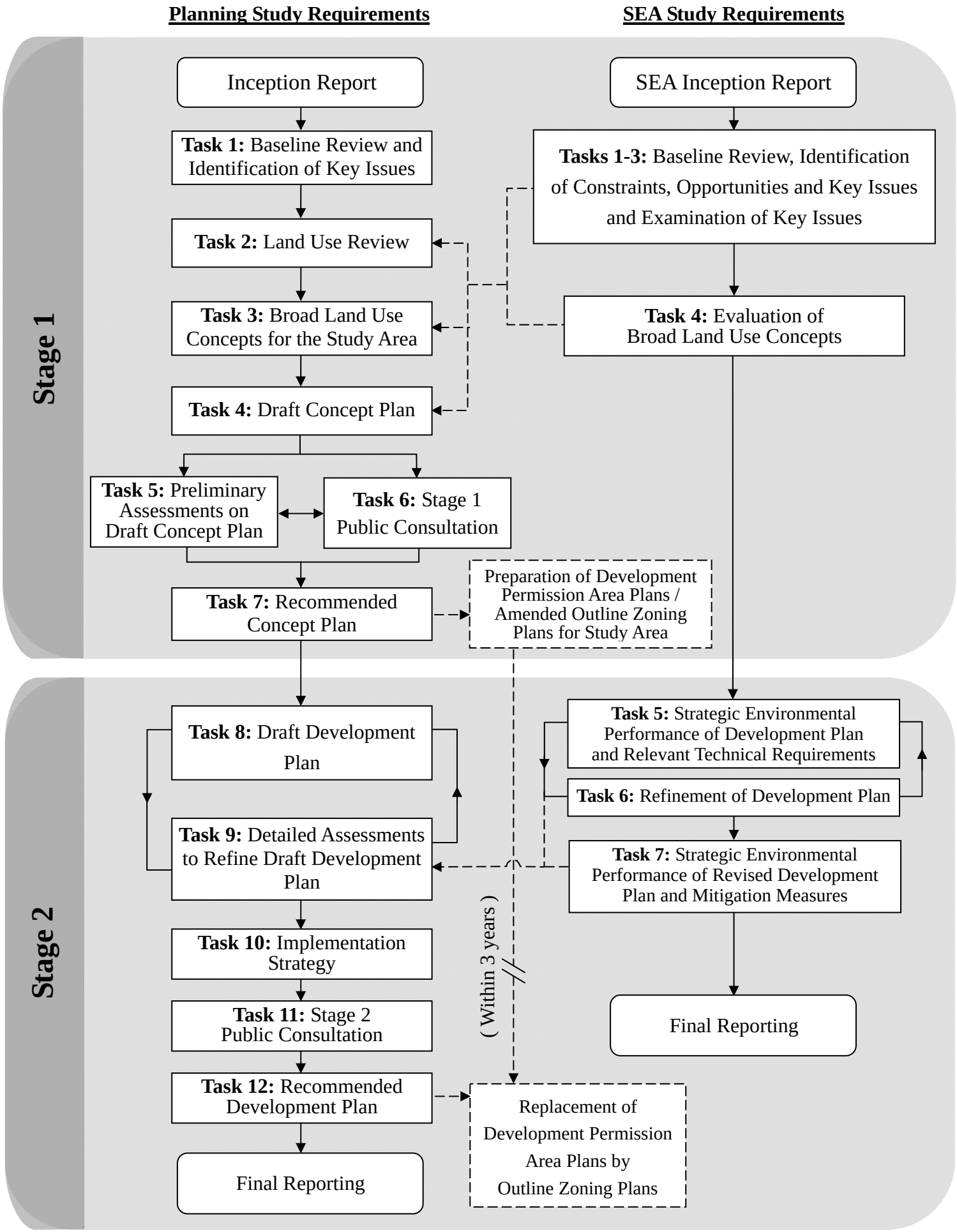
PLANNING DEPARTMENT

M/SR/05/103_7

Appendix 1

DATE : 28/09/2006

Study on Land Use Planning for the Closed Area
Study Methodology



Appendix 3

Study on Land Use Planning for the Closed Area
Major Tasks for Planning Study

STAGE 1 PLANNING STUDY

Task 1 **Baseline Review and Identification of Key Issues** - to establish the baseline profile of the Study Area and its relationship with the adjoining areas (particularly the major development sites/nodes including Shenzhen, Lok Ma Chau Loop, cross-boundary links/facilities and the possible New Development Areas in the Northern New Territories, etc). This task shall also examine the development opportunities, constraints and key issues for the Study Area, particularly the strategic role of the Study Area in the Pearl River Delta region and ecologically important areas.

Task 2 **Land Use Review** - to undertake a land use review for the Study Area with particular emphasis on the definition of the non-development areas, taking into account areas/sites with high landscape, environmental, ecological, cultural heritage and archaeological value that merit conservation and protection; definition of development opportunities; and assessment of the development opportunities having regard to the strategic role of the Study Area in the Pearl River Delta region, territorial needs (such as columbarium and crematorium facilities, latest findings of the HK2030 Study and other bureaux/departments' requirements), latest position of the possible Lok Ma Chau Loop development, cross-boundary activities, boundary security, public views, local aspirations/needs, etc.

Task 3 **Broad Land Use Concepts for the Study Area** - to formulate three alternative broad land use concepts for the Study Area and their respective infrastructural support for evaluation and selection based on a set of evaluation criteria.

Task 4 **Draft Concept Plan** - to formulate a Concept Plan for the Study Area based on the preferred broad land use concept identified under Task 3 and conduct sustainability assessment on the draft Concept Plan.

Task 5 **Preliminary Assessments on Draft Concept Plan** - to conduct preliminary technical assessments to establish the prima facie feasibility of the draft Concept Plan, including traffic, drainage and sewerage, water supply and utilities, visual, landscape, air ventilation as well as the socio-economic impacts. The broad environmental assessments to be conducted in this task shall include the following aspects:

(a) ecological impact – to make a preliminary assessment of the potential ecological impacts arising from the proposed developments in the Study Area. The guiding principle for the assessment is avoidance of developments and disturbances in areas and/or habitats of ecological importance, such as existing and potential Country Parks and Special Areas, SSSIs and other ecologically sensitive areas like fish ponds (both active and abandoned), mangroves and other wetland habitats, natural coasts, woodlands, breeding/nesting grounds of protected/endangered species and sites of high ecological value identified in the Study. The assessment shall focus on issues relevant to confirm the acceptability of the proposed developments of the Draft Concept Plan from an ecological perspective;

(b) noise impact - the assessment should include the cumulative and off-site noise impacts due to the proposed developments as well as the noise impacts due to traffic growth on major roads and fixed noise as a result of the proposed developments. The assessment should be quantified wherever possible to a level sufficient to demonstrate the noise impacts and to confirm the preliminary feasibility of the proposed developments;

(c) air quality impact - the assessment should address the cumulative and off-site impacts including air pollution problems caused by projected traffic growth and the proposed developments, etc;

(d) water quality impact - to assess the adequacy of sewerage infrastructure and the impacts of the draft Concept Plan on the sewerage infrastructure. The assessment should also address the cumulative impacts on the receiving water bodies. It should demonstrate whether the Water Quality Objectives can be complied with at the receiving water bodies when the treated effluents arising from the proposed developments are discharged. Impacts on the water bodes include physical, chemical and biological disruption of

either marine water, fresh water and/or ground water systems;

(e) solid waste - the assessment shall focus on issues affecting the prima facie feasibility of the proposed developments, including waste disposal needs, the requirements and suitable locations for additional waste transfer/disposal facilities. The quantity of solid waste and construction waste shall be estimated as far as practicable; and

(f) hazards - to examine if there are any Potentially Hazardous Installations (PHIs), existing/old landfills and proposed landfill extensions (e.g. NENT and Ma Tso Lung Landfills) within and adjacent to the Study Area that may affect the proposed developments. If any of the proposed developments are affected by the PHIs/landfill sites, the Consultants shall quantify the hazard risks and recommend practicable and effective risk mitigation measures.

Task 6 **Stage 1 Public Consultation** - to assist PlanD in Stage 1 Public Consultation on the draft Concept Plan, which is to be conducted in parallel with the undertaking of the preliminary technical assessments.

Task 7 **Recommended Concept Plan** - to finalize the Concept Plan and work out the broad implementation arrangements.

STAGE 2 PLANNING STUDY

Task 8 **Draft Development Plan** - to formulate a Development Plan for the Study Area having regard to the recommended Concept Plan, findings/recommendations of the SEA process, the new/amended statutory plans to be prepared by PlanD within the Study Area based on the Recommended Concept Plan, public comments/development proposals received during the plan objection procedures of the new/amended statutory plans and the study process, as well as the latest position of relevant studies, major development nodes/sites and cross-boundary links/facilities within and in the surrounding areas of the Study Area, etc.

Task 9 **Detailed Assessments to Refine Draft Development Plan** - to conduct detailed technical assessments to establish the feasibility of the draft Development Plan, including traffic, drainage, water supply and utilities, geotechnical, visual, landscape, and air ventilation impacts, etc. The environmental assessments of the SEA as enumerated in paragraphs 12 to

34 of the SEA at **Appendix 4** will provide environmental inputs to the planning study so as to refine the Development Plan.

Task 10 **Implementation Strategy** - to work out the broad implementation strategy for the draft Development Plan, including broad land requirements, broad development cost and revenue analysis, scope of public works projects, outline implementation programme and implementation mechanisms and agents.

Task 11 **Stage 2 Public Consultation** - to assist PlanD in Stage 2 Public Consultation on the draft Development Plan and the implementation strategy.

Task 12 **Recommended Development Plan** - to finalize the Development Plan and the implementation strategy.

Appendix 4

Study on Land Use Planning for the Closed Area
Major Tasks for Strategic Environmental Assessment

STAGE 1 SEA STUDY

Task 1 : Baseline Review

1. The Consultants shall review and establish the ecological baseline conditions of the Study Area. For this purpose, the following major tasks shall be undertaken:

   (a) compile, review, evaluate and consolidate existing information regarding the ecological characters of the Study Area. 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 1(b) and (c) below. The ecological surveys should be general in nature and are not intended to provide exhaustive ecological information or species list of the Study Area;

   (b) establish the general ecological profile of the Study Area based on the information collected in paragraph 1(a) above, describe the general characteristics of each habitat found, including sites of high ecological value 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.

2. 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.

3. 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 planning study.

Task 2 : Identification of Constraints, Opportunities and Key Issues

4. 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

5. 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. 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.

6. 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 planning study.

Task 4 : Evaluation of Broad Land Use Concepts

7. Three broad land use concepts will be formulated under Task 3 of the planning study. From the information available on the potential developments in the Study Area and other known development proposals and the required supporting infrastructures, 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.

8. 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 Director's Representative (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.

STAGE 2 SEA STUDY

Task 5 : Strategic Environmental Performance of Development Plan and Relevant Technical Requirements

9. The SEA Study shall adopt appropriate assessment methods/tools to examine the draft Development Plan to be formulated under Task 8 of the planning 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.

10. 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.

11. 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:

Relevant Technical Requirements

(A) Air Quality Impact

12. 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>

13. 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.

14. 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.

15. 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.

16. 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.

17. 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>

18. 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 10 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 alternations and changes identified in paragraph 18(e) above and the pollution sources identified in paragraph 18(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 draft Development 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) <u>Hazards</u>

19. The Consultants shall examine if there are any Potentially Hazardous Installations (PHIs) and existing/old landfills and proposed landfill extensions (e.g. NENT Landfilll, proposed NENT Landfill extensions, and Ma Tso Lung

Landfills) within and adjacent to the Study Area that may affect 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

20. 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; and

(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

21. 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

22. 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.

23. 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

24. 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 draft Development Plan and its proposals;

(c) derive the sewage flow and load projection arising from the draft Development Plan;

(d) assess the sewage flow and load impacts of the draft Development 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 draft Development 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 draft Development 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 draft Development 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 draft Development 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>

25. 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 1 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 planning study. The field surveys shall comprise general habitat surveys as well as wildlife surveys to identify the presence of wildlife uses by direct observations. 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 25(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:

(i) 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;

(ii) general description of the existing wildlife uses of various habitats with special attention to various wildlife groups and habitats with conservation importance and interests;

(iii) 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 draft Development 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

26. The Consultants shall carry out a Cultural Heritage Impact Assessment on the proposed development areas. The assessment shall include the following tasks:

Baseline Study

27. 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) landscape 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.

28. 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.

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

30. 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.

31. 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.

Impact Assessment

32. 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.

Mitigation Measures

33. 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 outweighs the significance of the heritage feature.

34. 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 planning study.

Task 6 : Refinement of Development Plan

35. As an iterative process, based on the results of the assessments carried out under Task 5 of this SEA Study, the Development Plan shall be revised and re-tested with a view to improve its strategic environmental performance and acceptability.

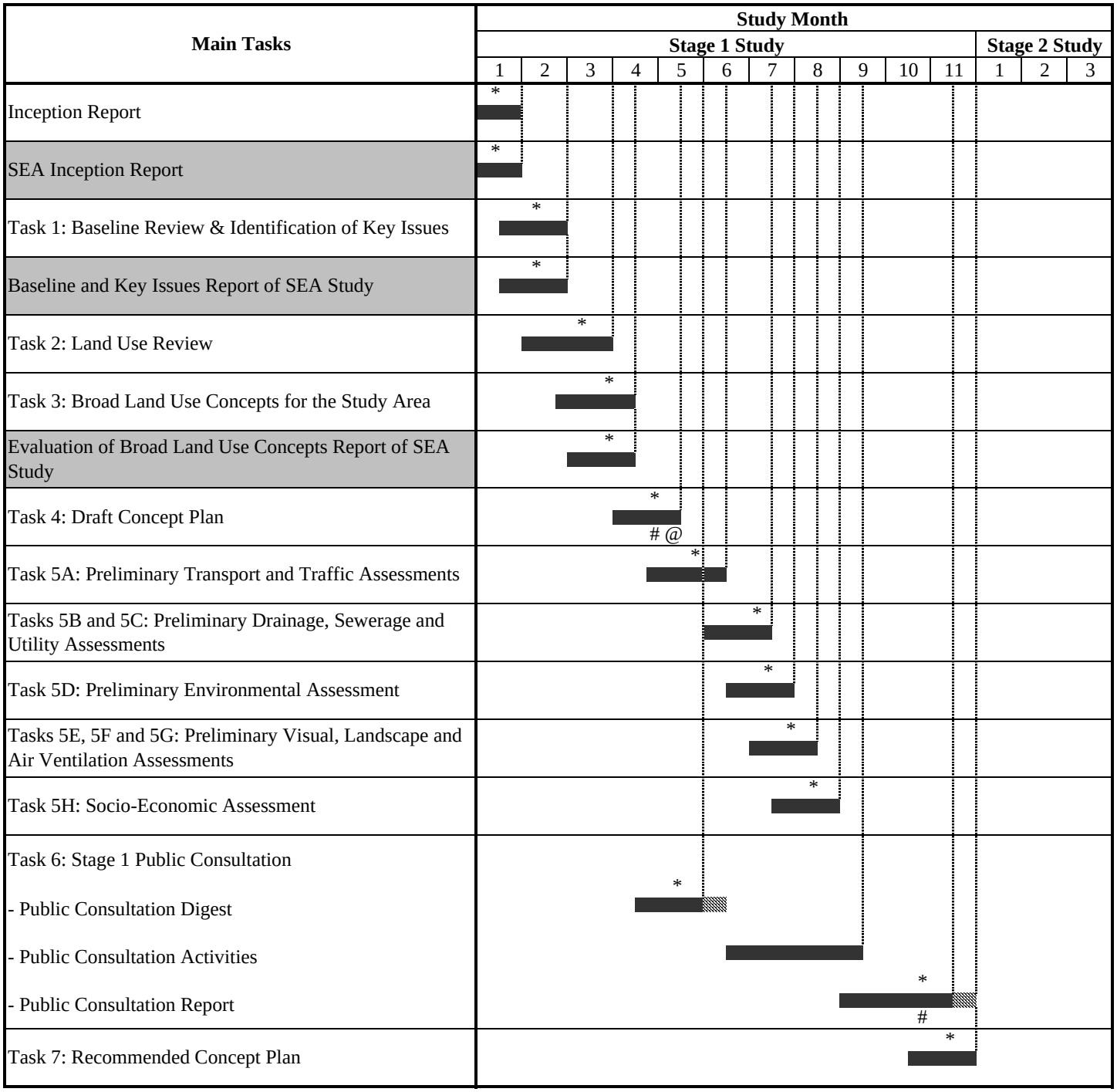
Task 7 : Strategic Environmental Performance of Revised Development Plan and Mitigation Measures

36. The residual environmental implications of the revised Development Plan with all proposed mitigation measures in place shall be presented.

37. The Consultants shall confirm the environmental sustainability and environmental feasibility of the revised Development 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.

Appendix 5

Study on Land Use Planning for the Closed Area
Outline Study Programme



(to be cont'd)

Deliverables of SEA Study

Preparation/printing work for public consultation exercises

* Submission of draft reports/documents/materials for Study Steering Group/Working Group's consideration

\# Submission to CPLD

@ Submission to Sustainable Development Unit

Schedule of meetings is indicative only. The number and schedule of meetings will be determined as the Study progresses.

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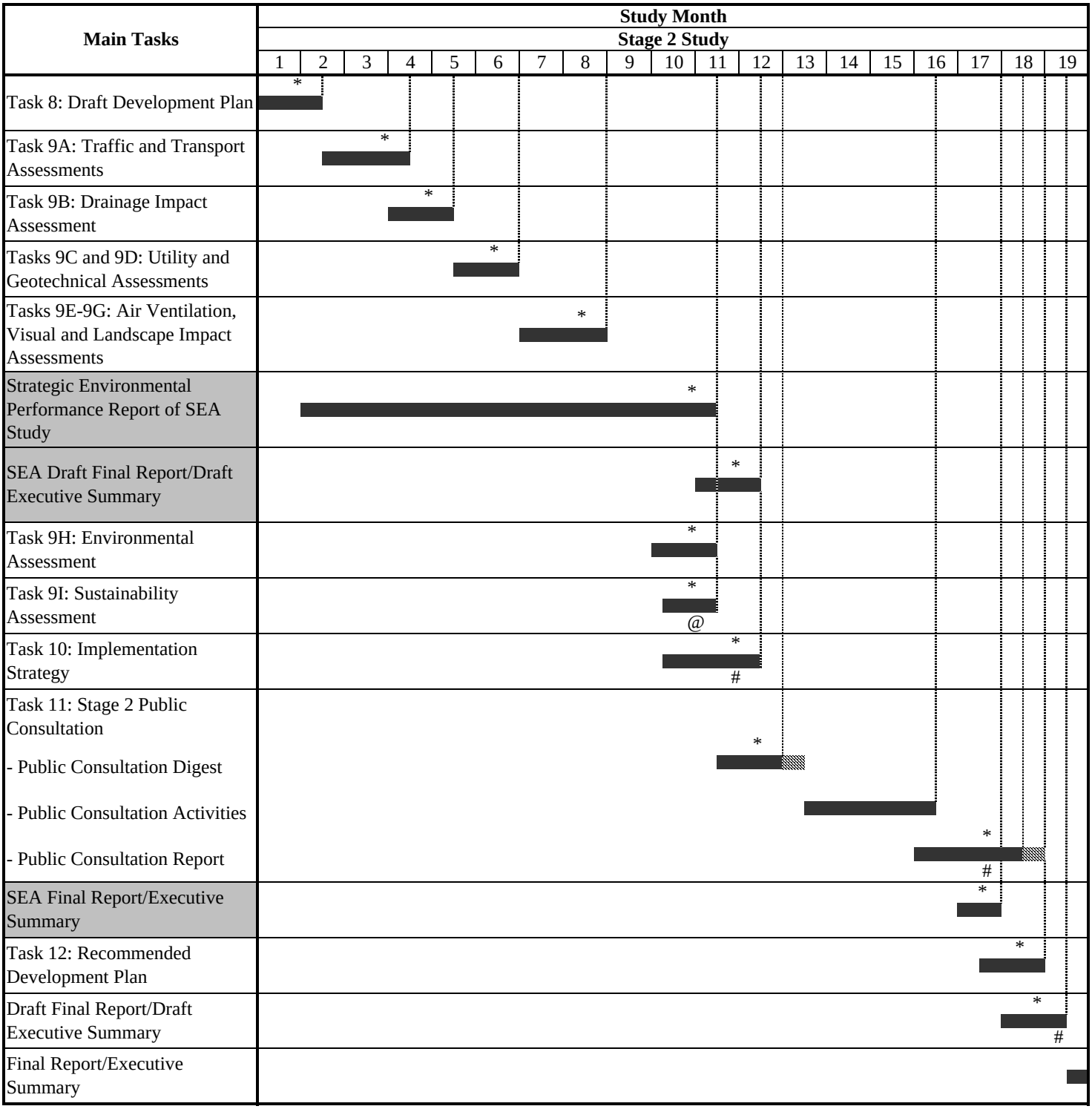

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