

PART ONE - BEFORE YOU START THE EIA PROCESS

1. BEFORE YOU START THE EIA PROCESS

1.1 PURPOSE AND NEED OF THE EIA MECHANISM

The Environmental Impact Assessment (EIA) Mechanism is a planning and decision making tool spanning a project development lifecycle. A brief review of its uses by different countries is presented in Section 2.1



An EIA may be applied in feasibility and design stage, or even in project conceptual stage. After predicting likely environmental impacts, **an EIA identifies alternative solutions or design measures to avoid or minimize problems and outlines ways to improve environmental performance of a proposal or project.** The aim of an EIA is to ensure that potential environmental problems are foreseen and avoided **at an early stage** in planning cycle so as to pre-empt problems (See Figure 1.1).

There are sometimes confusions over the interpretation of 'EIA mechanism' and the 'EIA under the EIAO'. The EIA mechanism is **a process starting right from conceptual stage till implementation**, irrespective of whether a project is a designated project under the EIAO. The EIAO process is a part of the EIA mechanism.

Like economic analysis and engineering feasibility studies, the EIA mechanism is a management tool for decision makers or engineers. A designer that develops a project suiting local environmental settings/ conditions is more likely to complete project on time and within budget.

Figure 1.1 illustrates a typical project life cycle.

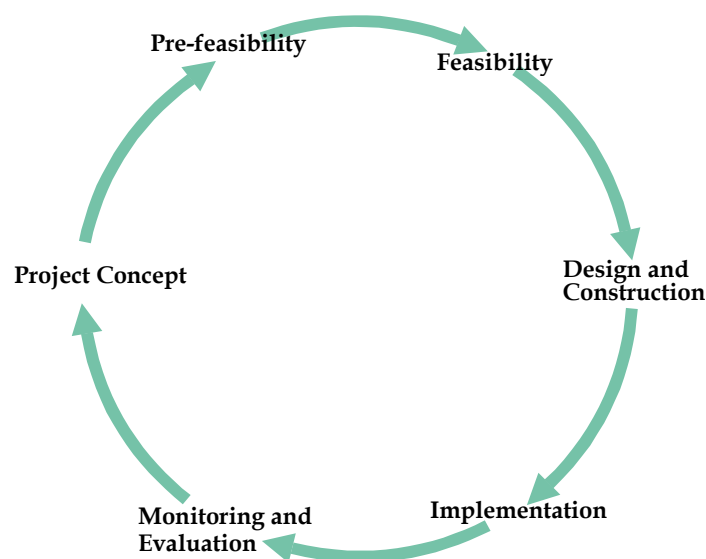


Figure 1.1 Typical Project Life Cycle

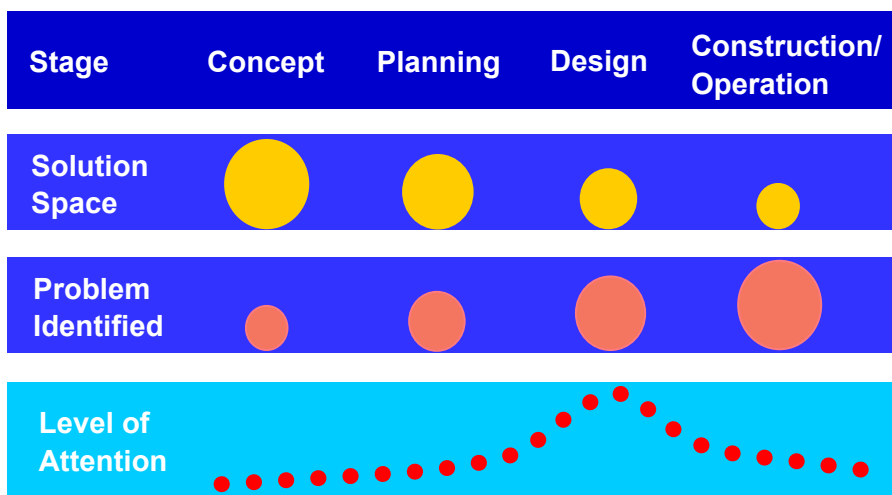
“Conventional Way of Running a Project”

- Level of attention to environmental issues/problems during project concept and planning stage is low.
- Environmental problems are often identified at late stage of the project life cycle, such as detailed design and construction stage, with limited solution space.

Problems Encountered
Late focus might affect the overall project programme.

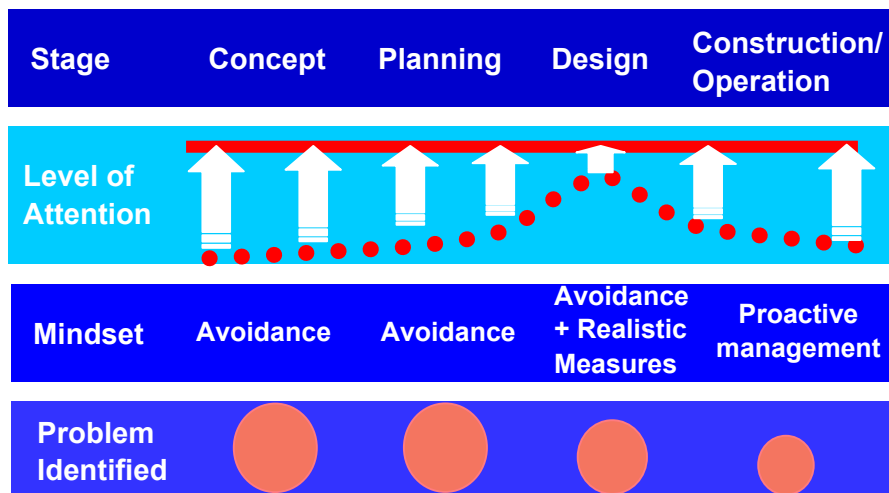
Conventional Approach of running a Project

Solution space decreases over time in project planning hence a need for early focus



“Recommended Approach”

Early dialogue and involvement - Need for a Mindset Change





There is a need to increase the level of environmental attention during early stage of a project so as to increase the solution space. A proactive approach during early planning stage shall be adopted by integrating the EIA process into the project planning cycle.

Benefits

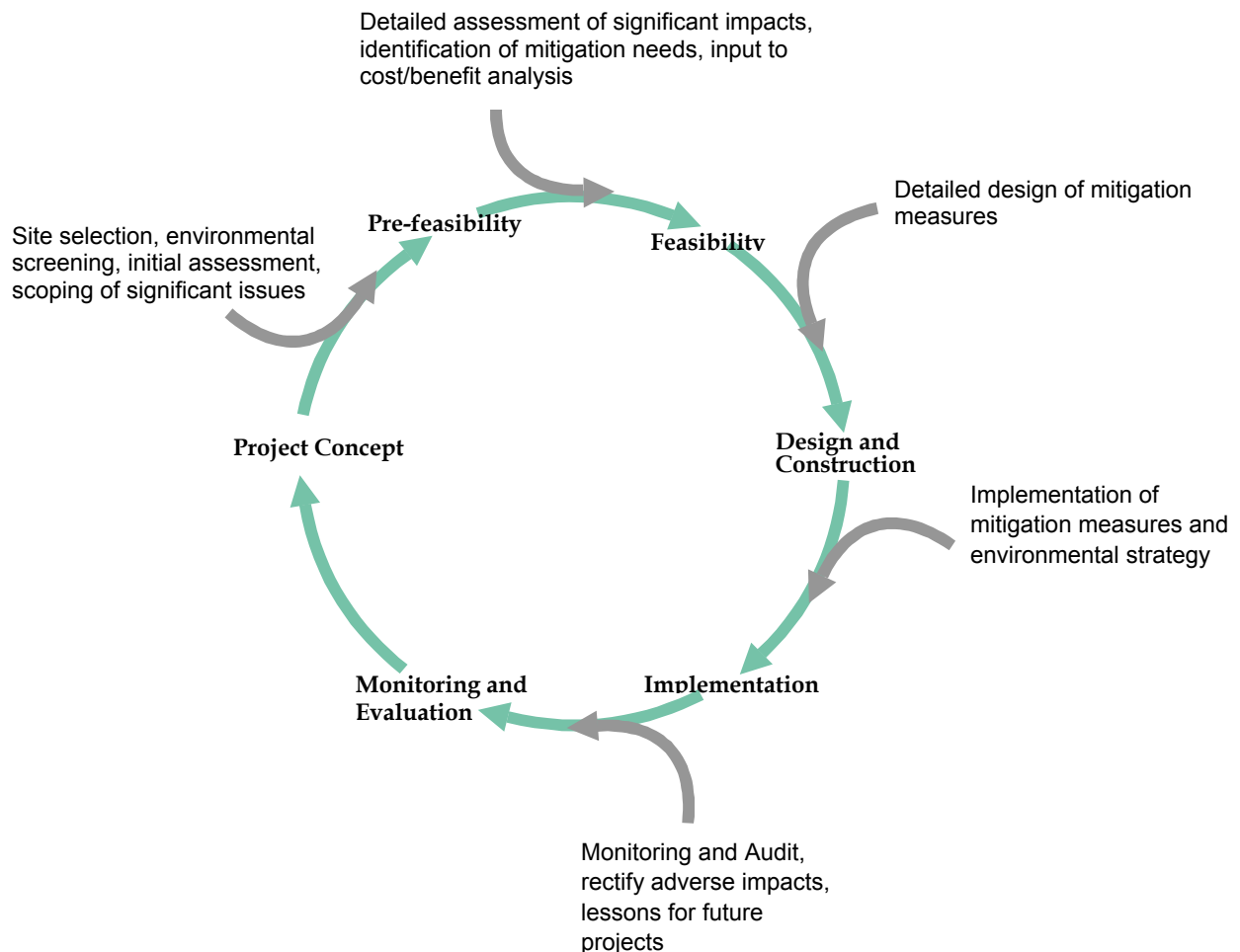
- Smooth project running and minimize public comments and objections (See Case Study in Section 1.7.2 of Part One of this Manual : HEC's 1,800MW Gas-fired Power Station at Lamma Extension)

1.2 INTERACTION OF PROJECT LIFE CYCLE WITH THE EIA MECHANISM

The EIA mechanism provides important information for decision making.

Figure 1.2 illustrates how environmental considerations integrate with the project life cycle, showing when and how an EIA can contribute positively to the project progress.

Figure 1.2 Integration of Project Life Cycle with the EIA mechanism





A thorough evaluation of environmental considerations in the early stage of project life cycle helps pre-empt environmental problems which might otherwise lead to uncertainties or even delay at later stage of project implementation. It is also very important that a project proponent should identify and avoid environmental problems, especially in project conceptual stage, by maintaining a close liaison with relevant authorities and parties involved during the whole project life cycle.

1.3

SNAPSHOTS FOR EIA ORDINANCE IN THE EIA MECHANISM

Commentaries in a Nutshell

What is the EIA Ordinance (EIAO)?

An Ordinance to provide for assessing the impact on the environment of **certain projects and proposals** for **protecting the environmental** and for incidental matter.

Why?

The Policy Objectives 2001 stated that the EIA mechanism provided for under the EIA Ordinance plays a significant role in balancing the need to protect the environment and development needs. It helps project proponents to pay due regard to environmental protection requirements, through evaluating potential impacts on the environment and the necessary prevention and mitigation measures, at the early stage of project planning and design.

When?

The EIAO went into effect on 1st April 1998.

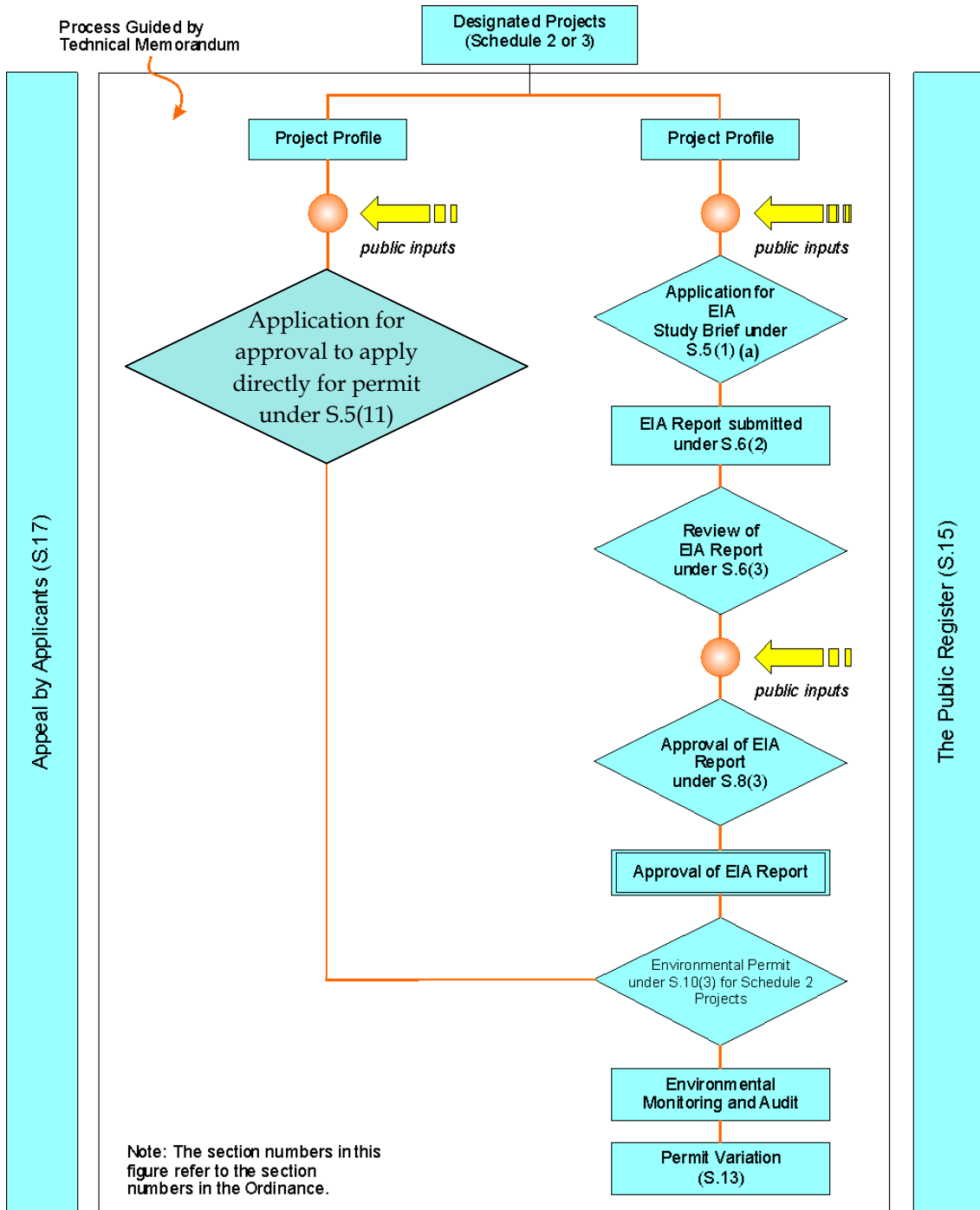
How?

- The list of Designated Projects (DP) in Schedule 2 & 3 of the Ordinance are those having potential for adverse environmental impacts. They are drawn from a list of completed or on-going EIA studies.
- If the project is classified as a DP, it will need to go through the EIAO procedure.

Whom?

- A person shall not construct or operate a DP without an Environmental Permit.

Figure 1.3 The Statutory Environmental Impact Assessment Process



(Source: Figure 1 of "A Guide to the Environmental Impact Assessment Ordinance, Environmental Protection Department)

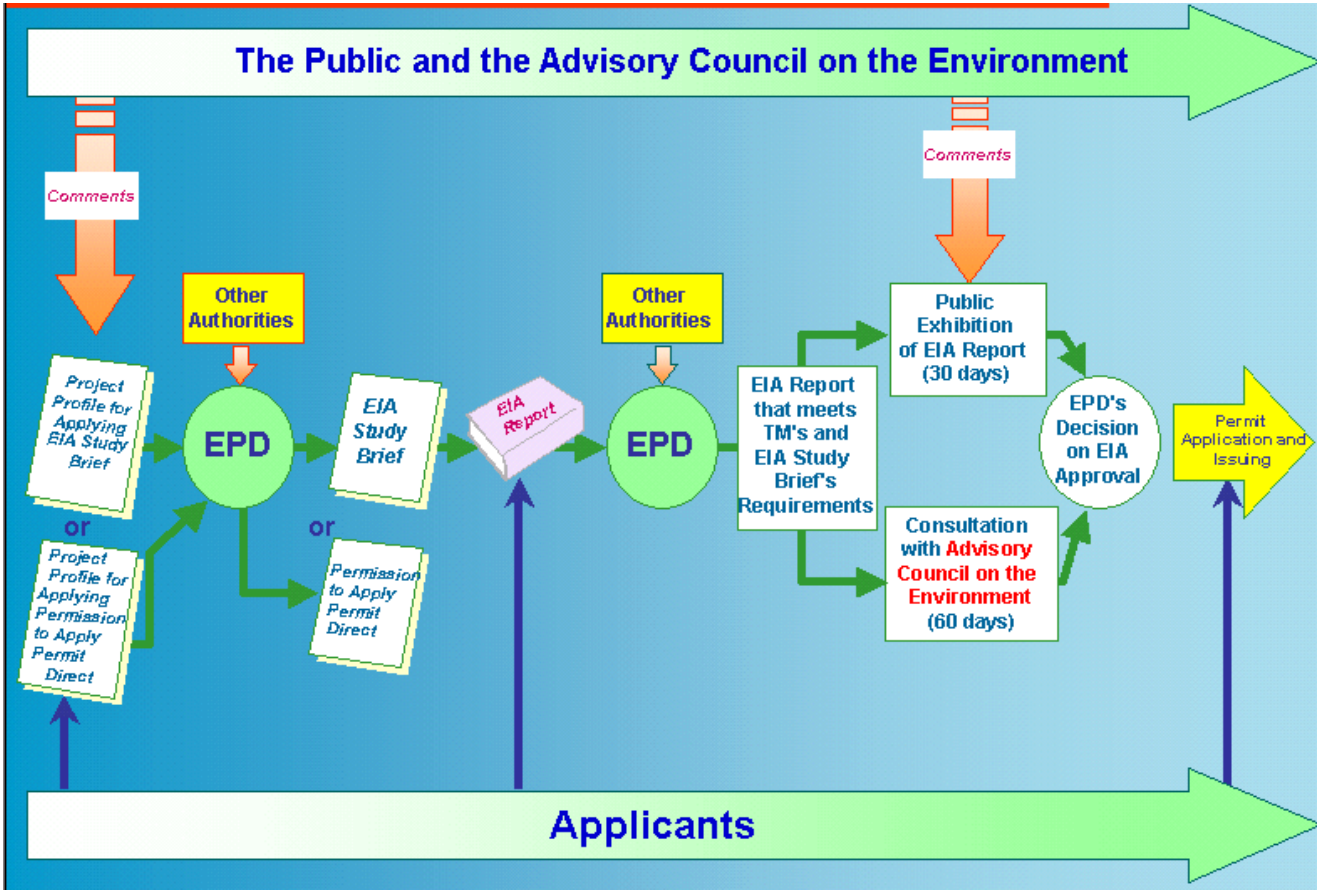


Figure 1.4 Public Participation under the EIA Ordinance

(Source: Figure 2 of "A Guide to the Environmental Impact Assessment Ordinance", EPD)

1.3.1

Timeline of the EIA Ordinance

	Time Limit for the Director	Time Limit for the Public	Time Limit for the ACE
Application for an EIA Study Brief	45 days of receiving the application or further information	14 days of placing the advertisement	14 days of placing the advertisement
Application for approval to apply directly for an environmental permit	45 days of receiving the application or further information	14 days of placing the advertisement	14 days of placing the advertisement
Review of EIA Report	60 days of receiving the EIA Report		
Public inspection of EIA Report		30 days of placing the advertisement	60 days of receiving the EIA Report
Approval of EIA Report	30 days of the expiry of the public inspection period, or the receipt of comments from the ACE, or the receipt of further information		
Application for environmental permit	30 days of receipt of the application (the same time limit as the approval of EIA Report if the two applications are submitted at the same time)		
Application for a further environmental permit	30 days of receipt of the application		
Application for variation of an environmental permit	30 days of receipt of the application		

(Source: Section 8 of "A Guide to the Environmental Impact Assessment Ordinance", EPD)

In a project, the role of a project manager is multi-facet and can make a significant contribution to the efficiency and timely delivery of a project.



The <Project Management for the Public Works Programme> outlines that the aims of the PWP as:

“... the infrastructure of Hong Kong is developing rapidly to meet the needs of its people. PWP projects are a major part of this development and can involve thousands of people and billions of dollars. With projects of this scale, there is always the potential for problems when co-ordinating activities and keeping to defined scope, budgets and deadlines...”

whereas the Policy Objectives 2001 said:

“Public works provide the cornerstone of Hong Kong’s physical infrastructure. We need to ensure that these projects are properly planned, thoroughly studied and well coordinated before proceeding to the construction stage. In so doing, we must also ensure that the planning and design process is completed efficiently so that construction could start in the shortest possible time in accordance with the planned programmes.”

Of these, the environmental consideration invariably is one of the significant factors to be contemplated with during the decision making process.

Indeed, the Policy Objectives 2001 put it as:

“The EIA mechanism provided for under the EIAO plays a significant role in balancing the need to protect the environment and development needs. It helps project proponent to pay due regard to environmental protection requirement, through evaluating potential impacts on the environment and necessary prevention and mitigation measures, at the early stage of project planning and design. Effective operation of the EIA mechanism is very important as development pressures continue to increase.”

In each stage of project development, a project proponent can play an active role to enable that environmental considerations are being factored into decision making process so to affirm creditability of the decision making process, strengthen public trust, and ensure timely and efficient promise delivery.

1.5

ENVIRONMENTAL CONSIDERATIONS IN DEVELOPMENT OF PUBLIC WORKS

The Project Administration Handbook for Civil Engineering Works (hereafter call “the Handbook”), of which a softcopy is now available in website of the Civil Engineering Department in downloading area, overviews that the general steps of public works development as:

- A. Identification of needs for a project
- B. Completion of a Project Definition Statement (PDS) by Policy Bureau to gain status in the Public Works Programme (PWP)
- C. Completion of Technical Feasibility Study (TFS) to ascertain viability, identify development/environmental constraints, formulate implementation strategy and estimate cost. Thereafter, inclusion of the project in Category C of the PWP
- D. Successful inclusion of the project in the Resource Allocation System will entitle it to attain a Category B status. Works Departments can carry out further planning and design into it
- E. Upon completion of detail design, Works Departments can seek funding from the Legislative Council
- F. After funding approval, Works Departments will take out projects for tendering and construction

Works Department should monitor the planning, design and construction of works to ensure that there is adequate consultation among the parties concerned.

For small scale projects not exceeding the cost ceiling, these Category D projects do not generally require a PDS and TFS.

As environmental consideration is an integral part of this process, a project proponent should best use the information in the design or planning process.

1.6

HOW TO USE THIS MANUAL IN PROJECT DEVELOPMENT WORKS?

1.6.1

How this Manual is built?

Readers might take note that the Handbook does indeed see that environmental considerations, consideration of alternatives, and project justifications as an integral part of project development lifecycle. This Manual will further elaborate good environmental practice with examples in modules to tie in with the above steps in the Handbook. Readers should take note that the Handbook is under regular updates in collaborating with EPD.

Readers from private sectors might draw parallel reference.

1.6.2

Where to get important background information?

Readers might be aware that when a project is being proposed, some decisions, based on previous studies, invariably would have been made. A project proponent is advised to gather this information, especially recommendations on environmental matters and alternative considerations, for follow up. Typical source of background history might come from:

- strategic studies, such as Comprehensive Transport Strategy, Territory Development Strategy, Sub-regional studies and plans, Port Development Strategy
- site search exercises
- deliberations in decision making committees such as Strategic Highways Committee for major highways
- outcomes in public consultation, such as meeting with the Advisory Council on the Environment, District Councils, or the Legislative Council

Part 3.1 of this Manual can be referred to.

Thereafter, a generic approach of defining problems; avoiding them or finding solutions; setting the timeline can be applied.

1.6.3

Where to refer in this Manual?

In each step of project development cycle for public works, a project proponent can apply relevant sections in this Manual for building up of environmental considerations. They are:

A. Identification of needs for a project

Part 2.4 of this Manual will discuss requirements following the Handbook especially over alternative considerations.

A project proponent can apply the avoidance-minimization-mitigation principle for better planning.

B. Completion of a Project Definition Statement (PDS) for inclusion into the Public Works Programme (PWP)

The PDS explains the rationale for the project and the commitment to it. According to the Handbook, the PDS should determine that:

- (a) the need for a project has been identified and justified;
- (b) the proposed project will meet the need in full or in part;
- (c) the proposed project will not duplicate or be in conflict with any other existing or planned projects, and

- (d) the proposed project is in line with approved policy and approved plans.

As a good practice, a project proponent is advised to review and follow up recommendations of strategic planning studies, if available. Then, the project proponent should anticipate and avoid environmental problems; or infringement into ecologically, environmentally, etc. sensitive areas. Part 2.3 of this Manual can be referred to.

If in doubt, a project proponent should seek advice from EPD as soon as practicable.

C. Completion of Technical Feasibility Study (TFS) for inclusion into Category C of the PWP

The Handbook requests preliminary considerations in TFS should be given to:

- (a) The scope of the project;
- (b) Land requirements;
- (c) Development constraints;
- (d) Environmental consideration including whether a project is a Designated Project and application of avoidance-minimization-mitigation principle;
- (e) Project Programme; and
- (f) Capital Cost Estimate.

With a more defined project scope, a project proponent should seek advice from EPD on whether the work is a Designated Project. Part 3.2 of this Manual can be referred to.

Irrespective of whether a project falls under remit of the EIAO, a project proponent should plan the layout, design, or alignment to avoid environmental impacts as the first priority together with minimizing and mitigating the environmental impacts.

If a project is a Designated Project, a project proponent can prepare a project profile for application of study brief or seek permission to apply directly for Environmental Permit. Part 3.3 of this Manual can be referred to.

A project proponent should plan the project programme to avoid putting environmental assessment on a critical path; might decide whether to

commence EIA or gather background and baseline information at this stage.

If a value management study is required for major projects exceeding HK\$200 million following Environmental, Transport and Works Bureau Technical Circular (Works) No. 35/2002, a project proponent will find useful information in Part One to Part Three in this Manual.

The Environment, Transport and Works Bureau Technical Circular (Works) 13/2003 is relevant.

If in doubt, the project proponent should seek early advice from EPD.

D. Successful inclusion of the project Category B for further planning and design

If an EIA is carried out, a project proponent would have the role of steering environmental, engineering and other consultants to see that predictions and recommendations of EIA are reasonable, practicable and effective.

Part 4 & 5 of this Manual can be referred to. The Parts include good practices for a project proponent in reviewing a consultant's EIA report for practical outcomes; preparing for consultations steering positive environmental outcomes.

E. Completion of detail design . Funding from the Legislative Council for inclusion into Category A of the PWP

Feedback from public comments on EIA would be useful.

F. Construction and Operation Stage

The delivery of promises is essential in implementation stage together with handling of variations. Some feedbacks during construction stage including better drafting of EIA recommendations; and good planning of reporting are included. Part 6 of this Manual can be referred to.

Proactive planning is the key to success in an EIA mechanism.



Some tips for a project proponent about proactive planning of the EIA mechanism....

- Understand a project, particularly over its need and justifications, and identify its environmental concerns
- Take a pro-active role and seek an early dialogue with EPD, relevant authorities under the EIAO, the ACE and other stakeholders, as appropriate
- Inject environmental considerations into project life cycle as early as possible, i.e. at strategic level or conceptual stage
- Rigorously apply the cardinal principle of EIA viz, avoidance-minimization-mitigation at each stage of a project life cycle
- Carry out objective and comprehensive alternative considerations to avoid environmental problems. Document rationale and justifications in coming up with a particular decision or choice. Follow them through in project life cycle
- Plan to avoid putting environmental studies on the critical path of a project delivery
- Constantly validate fundamental assumptions in an EIA and see that promises/mitigation measures can be delivered timely and efficiently

1.7.1

Good Practices of Proactive Planning of the EIA Mechanism

A project proponent can make positive impacts during a project life cycle. The followings are some good practices:

Strategic Planning Studies/Sectoral Policy Studies/Sub-regional Plans/Site Search Exercise

Understandably, there would be limitations on information available in planning studies. Despite that, in project implementation stage, a project proponent and planning authorities are advised to make use of existing database or other best available information to identify environmental constraints.

Alternative scenarios or development options can then be developed to avoid environmental problems through rigorously applying the cardinal principle of EIA, viz, avoidance-minimization-mitigation.

The considerations should be well documented for future reference and follow through.

Project Conceptual Stage/Pre-feasibility

With due regard to the need and justification of a project, a project proponent should critically review alternatives and/or options to avoid major environmental problems. If strategic planning studies are not available, a project proponent can apply the avoidance-minimization-mitigation principle in project planning through site selection, alternative alignment, and initial screening etc. On the other hand, if strategic planning studies are complete, a project proponent should recap and review the findings and recommendations with a view to following through and implementing them.

In the event that further detailed studies are reasonably anticipated, a project proponent should seek early dialogue with EPD; plan for the timeline and funds for study; understand issues involving stakeholders' concerns; and gather baseline information available.



About gathering baseline information, ecological survey can be used as an example to demonstrate how time can be saved. After reviewing available database and completion of desktop studies, if an ecological survey is contemplated, a project proponent can plan for an early start when floats are plenty in a project timeline. This is indeed one of the common practices in private sector project to fast-track their works.

Project Feasibility Stage / EIA Stage

A project proponent is advised:

- To thoroughly understand the project and the issues in an EIA study brief;
- To seek early advice from EPD with maintaining open and frank dialogue;
- To understand and anticipate both the adverse and beneficial impacts of a project at the start of an EIA;
- To get first-hand information on site conditions, environmental and physical constraints. To update them regularly;
- To find out stakeholders' concerns, rather than peripheral issues, and use an EIA as a tool to address them;
- To manage and lead EIA consultants and understand their assumptions; take ownership of the EIA process to facilitate project design and implementation;

- To set clear milestones in the EIA process including submission of working papers and draft reports;
- To steer agreement over parameters in quantitative assessment throughout the EIA process;
- To scrutinize input assumptions, e.g. construction sequence or plant inventory, and scenario to see that they are reasonable and practicable, but not underestimating nor overestimating;
- To build in flexibility in project implementation, a scenario approach can be set up in the study;
- To critically review recommendations of an EIA to see that they are practicable and effective measures, ready to be implemented by the project proponent.

Implementation Stage

Even though contractors would normally be engaged, a project proponent can make positive contributions:

- To ensure relevant parties, including the contractors and resident site staff at all levels understand the conditions listed in the environmental permit and fully implement them;
- To establish efficient and effective communication channels;
- To see that Environmental Team and Independent Environmental Checker are independent professionals to monitor and audit changes.

1.7.2 *A Consultant's Tip on good practice: HEC's 1,800 MW Gas-fired Power Station*

The Hongkong Electric Company Limited (HEC) proposed to develop a new 1,800MW power station development in Hong Kong in the mid 90's to meet the forecast growth of electricity demand in the 21st century. Sufficient time was allowed to ensure the site search and subsequent EIA studies to meet Government requirements and public expectations before construction work commenced.

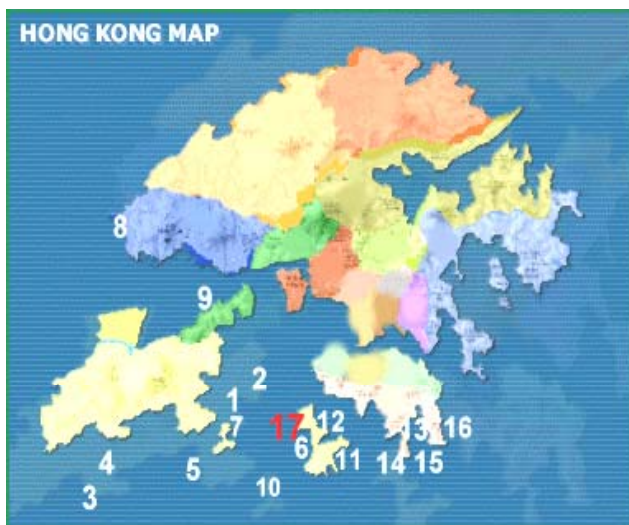
Before starting the formal EIA process, extensive studies including the Stage I EIA has been undertaken as an integral part of a wider site search study. The assessment included the environmental implications of alternative fuels, power generation technologies and design options and to determine the environmental feasibility of building a new power station within the territorial boundaries of the Hong Kong SAR. These studies also helped in identifying the key issues that would need to be addressed in the detailed assessment of the significant impacts.

The outcome of the Stage I EIA is that the preferred fuel is natural gas and the preferred technology is combined cycle technology. The site search study concluded that an extension to Lamma Power Station was the preferred site for a new power station without significant impacts on the environment. The

sharing of facilities and services with the existing power station has resulted a much smaller reclamation area (about 22 ha versus a stand alone site of 50 ha). This helps to minimise the reclamation size and hence reduce the potential impact to the marine environment. The proposed gas-fired combined cycle units will also reduce the total emissions of SO₂, NO_x, particulates and greenhouse gas emissions from the HEC system with Lamma Extension fully operational when compared with the emissions before commissioning of the new power station.

Case Study: HEC's 1,800 MW Gas-fired Power Station

Comprehensive Site Screening - At the early planning stage, 17 alternative sites were shortlisted for comparative assessment of their environmental performance:



- Site 1 - South Hei Ling Chau
- Site 2 - South Sunshine Island
- Site 3 - South Tai A Chau
- Site 4 - South Siu A Chau
- Site 5 - South Shek Kwu Chau
- Site 6 - West Lamma
- Site 7 - North Cheung Chau
- Site 8 - Lung Kwu Tan
- Site 9 - North Lantau
- Site 10 - Artificial Island, West Lamma Channel
- Site 11 - South East Lamma
- Site 12 - East Lamma
- Site 13 - Western Coastline of D'Aguiar Peninsula
- Site 14 - South West Stanley Peninsula
- Site 15 - South East Stanley Peninsula
- Site 16 - Artificial Island, Bokharo Rocks
- Site 17 - Lamma Extension

Avoidance of Adverse Impact - At the early planning stage, different coal and gas firing technologies identified and evaluated:

Coal Fired

- Advanced pulverized Coal-fired (without De-NO_x)
- Advanced pulverized Coal-fired (with De-NO_x)
- Integrated gasification combined cycle
- Pressurized fluidized bed combustion
- Circulating fluidized bed combustion

Gas Fired

- Combined cycle
- Steam cycle

Alternative Environmental Technology and Siting of the Facility - Adopting environmentally friendly fuel for new power generation to avoid significant pollutants emission and minimizing reclamation

