

**Environmental Impact Assessment Ordinance, Cap.499  
Guidance Note**

**Ecological Baseline Survey for Ecological Impact Assessment**  
(This guidance note supersedes EIAO Guidance Note No. 7/2010 with immediate effect)

*Important Note :*

*The guidance note is intended for general reference only. You are advised to refer to and follow the requirements in the Environmental Impact Assessment Ordinance (Cap 499) and the Technical Memorandum on Environmental Impact Assessment (EIA) Process. Each case has to be considered on individual merits. This guidance note serves to provide some good practices on EIA and was developed in consultation with the EIA Ordinance Users Liaison Groups and the Advisory Council on the Environment. This guidance note may be subject to revision without prior notice. You are advised to make reference to the guidance note current to the date. Any enquiry on this guidance note should be directed to the EIA Ordinance Register Office of EPD on 27<sup>th</sup> Floor, Southorn Centre, 130 Hennessy Road, Wan Chai, Hong Kong. (Telephone: 2835-1835, Faxline: 2147-0894), or through the EIA Ordinance web site ([www.epd.gov.hk/eia](http://www.epd.gov.hk/eia))*

## **1 Purpose**

- 1.1 As stipulated in Section 5.1.1 of Annex 16 of the Technical Memorandum on EIA Process (EIAO-TM), the objective of the baseline study of an ecological assessment is to provide adequate and accurate ecological baseline information. The ecological baseline survey forms an important part of the baseline study to:
  - (a) provide first hand, specific and updated information on the existing ecological characters of the proposed development site and its vicinity;
  - (b) verify information obtained from the review of existing information (Section 5.1.2.1 of Annex 16 of EIAO-TM); and
  - (c) fill existing information gaps.
- 1.2 This guidance note aims at providing the general guidelines for conducting an ecological baseline survey in order to fulfil the requirements stipulated in the TM in respect of ecological assessment for a proposed development. It should be read in conjunction with EIAO Guidance Note (GN) No. 10/2023: *Methodologies for Terrestrial and Freshwater Ecological Baseline Surveys* and GN No. 11/2023: *Methodologies for Marine Ecological Baseline Surveys*, which provide the generally adopted methodologies for conducting ecological baselines surveys for Ecological Impact Assessment.

## **2. Underlying Principles**

- 2.1 The purpose of baseline survey is to obtain a general overview of the existing ecological function / habitat characteristics of the study site to facilitate subsequent ecological assessment. Collection of a great deal of data with little focus does not facilitate subsequent ecological assessment, hence it would not be necessary or appropriate to gather very detailed ecological information in the baseline study. Before conducting the baseline surveys, major faunal and floral groups that are considered relevant and susceptible to the impact arising from the designated project should be identified,

through a review on the findings of relevant studies/surveys based preferably on published data of recognized sources, as the focal points of the survey. In addition, efforts should be focused on locations or target taxa groups on which the impacts are likely to be significant.

- 2.2 Unlike academic research, the ecological baseline survey aims at collecting ecological data through sampling with reasonable efforts. The actual sampling effort would generally depend on the physical size of the site, diversity of the habitats, flora and fauna, seasonal variation of the target taxa groups under study and availability of existing ecological baseline information. The project proponent, in consultation with environmental consultants where applicable, should determine the appropriate amount of sampling efforts in each case based on their professional judgement and actual site situations, such that the data obtained are representative to address both spatial and temporal variations. The general sampling efforts (e.g. number and frequency of sampling, locations and timing of surveys, duration of survey, etc.) and methods should be briefly described in the EIA report.
- 2.3 Survey methods used should be scientifically robust and appropriate for the habitats and target taxa groups under study. Standardized survey methods should be applied wherever appropriate so that results can be compared with those arising from other EIA studies. If the methods used vary from accepted methods in order to meet the specific needs of a study, the justifications and reliability of the results should be clearly presented in the EIA report. The surveys should also be carried out by personnel with adequate knowledge and field experience of the target taxa groups to be surveyed.
- 2.4 Besides recording the species of the target taxa groups at the site through sampling, the dominant flora and fauna as well as any species of conservation importance should also be noted. The ecological baseline survey should also aim at providing insight into the ecological functions and importance of the habitats in question. For instance, during a bird survey, any notable behaviour such as feeding, roosting or breeding of the birds and the associated habitats and vegetation where they show such behaviours should be recorded. In fact, any special species-habitat relationships observed during the survey should be included, as such information is relevant and essential for subsequent impact identification, evaluation and mitigation.
- 2.5 In essence, an ecological baseline survey aims at revealing the ecological profile of the study area to facilitate the subsequent impact assessment and, if necessary, formulation of mitigation measures and monitoring programme. The EIA study brief (SB) may also stipulate additional requirements on the ecological baseline survey taking into account the nature of the project, site conditions and valid concerns of the public. However, as each survey has its specific constraints and, probably, unique circumstances, it may not be possible nor appropriate to specify every single detail (e.g. the exact numbers, dates, routes, methodology, etc.) in the EIA SB. Further investigations to address specific issues may be required during the course of the EIA study and be presented in the EIA report.

### **3 Duration of Survey**

- 3.1 Section 5.1.4 of Annex 16 of EIAO-TM states that an “ecological baseline survey” shall

be of at least 6-month and up to 12-month duration.

- 3.2 Referring to Figure 1 of Annex 16 of EIAO-TM, the duration of an ecological baseline survey should be commensurate with the scale and complexity of the proposed development at hand, and take into account the diversity of habitats and/or presence of species with marked seasonality in the study area. Representative information could be obtained in a reasonable period of time if appropriate survey and sampling methods are adopted. An unnecessarily long ecological baseline survey may not yield useful additional information but may impose difficulties on the project proponent in terms of costs, programming and project implementation.

#### 4. Seasonality

- 4.1 Hong Kong has a sub-tropical climate and hence does not have four distinct seasons. Typically, Hong Kong has a wet hot “summer” and a dry cool “winter”. (The average monthly temperature and rainfall are shown in Figures 1 and 2.) These two periods may be simply referred as “wet” season (April to October) and “dry” season (November to March). However, April and October are regarded by some ecologists as transitional months, the weather of which may not be typical for wet season and may vary from year to year. These considerations should be taken into account when designing survey programme and interpreting survey results.
- 4.2 In the marine environment, there are also seasonal variations. During the wet season, the discharge of the Pearl River makes the western waters remarkably low in salinity (can be lower than 10 parts per trillion (ppt)) while the eastern waters remain oceanic (salinity generally above 30 ppt). In the dry season when the freshwater discharge is much reduced, most of our waters are of rather uniformly high salinity. There are also some differences in water temperature and consequently dissolved oxygen levels between the two seasons. The range can be from under 10°C to over 30°C, and from less than 2 mg/L of dissolved oxygen in wet season to over 8 mg/L in dry months.
- 4.3 Different wildlife groups may differ in their activities and hence conspicuousness at different times of the year, as a result of difference in breeding seasons, migratory behaviour, or physiological changes (e.g. low temperature restricts activity of poikilotherms but not homeotherms). Therefore, to obtain good results, a target taxa group should be surveyed at the time of the year when the group is more active, conspicuous or easy to be identified.

Figure 1. Monthly means of air temperature in Hong Kong for the period 1991-2020

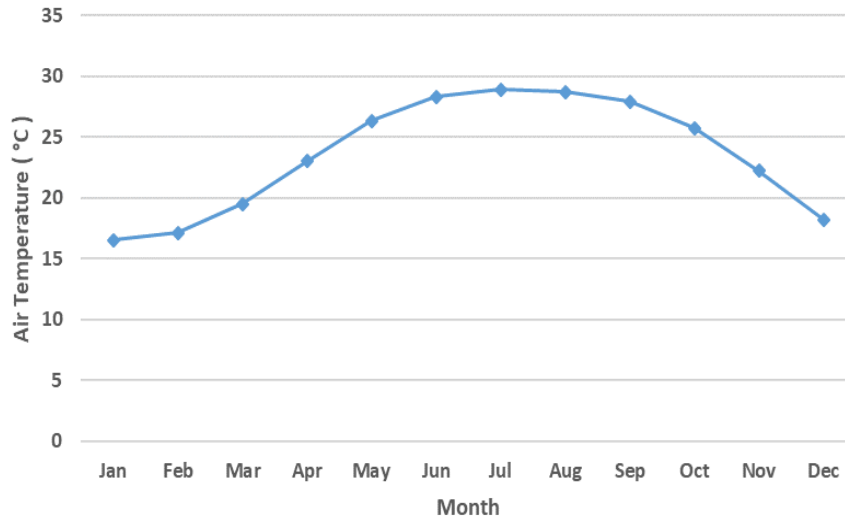
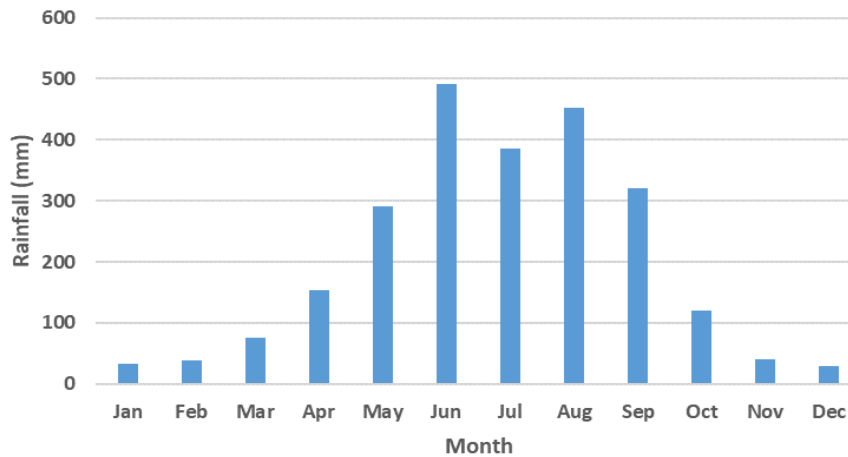


Figure 2. Monthly means of rainfall in Hong Kong for the period 1991-2020



Data Source : Hong Kong Observatory Almanac, Hong Kong Observatory (2023)

- 4.4 The recommended optimal time of the year/day for the major faunal and floral groups that are usually included in ecological baseline surveys are provided in Appendix B of Annex 16 of EIAO-TM. The figure serves as a reference for the period of a year when different faunal or floral groups are generally more conspicuous. The actual timing of survey may need to be adjusted if a target species has special seasonal or diurnal pattern (e.g. egretty should be surveyed during the breeding season of egrets and herons between March and August) or for special habitat types where certain target species groups are expected.

### Types of Survey Period

- 5.1 On the basis of the factors described in Section 3.2 above, three types of ecological survey periods are provided in the Figure 1 of Annex 16 of EIAO-TM, i.e. 6-month, 9-month or 12-month. More specific considerations in respect of the determination of different survey durations are given below:

- (a) 6-month survey
  - ◆ The study area consists of low to moderate diversity of common habitats.
  - ◆ Limited species with marked seasonality is known from the study area.
  - ◆ The 6-month period should provide reasonable amount of information on wildlife use of the study area.
  - ◆ Sufficient surveys in the wet season are necessary if there are stream courses or wetlands in the study area.
  
- (b) 9-month survey
  - ◆ The study area consists of relatively diverse habitats.
  - ◆ Seasonal patterns in wildlife use of the study area is known.
  - ◆ Sufficient surveys in the wet season are necessary if there are streams courses or wetlands in the study area.
  
- (c) 12-month survey
  - ◆ The study area consists of diverse habitats including important habitat types as listed in TM Annex 8.
  - ◆ Target species with marked seasonality is known to be present in the study area.

5.2 The above requirements could vary from case to case depending on the actual scale and complexity of the designated project. If a planning application has to be made in parallel, the project proponent is reminded of the Town Planning Board Guidelines for Application for Developments within Deep Bay Area under Section 16 of the Town Planning Ordinance (TPB PG-No. 12C (Revised May 2014)), which also has a special requirement for field investigation normally covering a period of not less than 12 months.

## **6. Survey Programme**

- 6.1 The project proponent and environmental consultants shall make sure that the entire duration of survey is well covered to take into account the temporal variations and seasonality, if any, of different target taxa groups.
  
- 6.2 To fulfil the requirements of TM in providing adequate and accurate ecological baseline information (Section 5.1 of Annex 16 of EIAO-TM), the surveys or samplings for individual target taxa groups should be conducted at appropriate timing and frequencies. Reference should be made to Appendix B of Annex 16 of EIAO-TM. However, for taxa groups which fluctuate greatly in abundance (e.g. birds) or are difficult to detect (e.g. some cryptic or secretive species), higher survey frequencies at appropriate time during the survey period are recommended. There should also be adequate samplings/surveys at larger or more diverse sites to ensure that the data obtained are representative.

## **7. Ecological Survey Results**

- 7.1 According to Section 5.1.3 of Annex 16 of EIAO-TM, results of all relevant field surveys, the names and relevant experience of the persons leading and conducting the surveys, shall be documented in field survey reports prepared, checked and signed by relevant professionals or experts. Such information should be included as an Appendix in the ecology chapter of the EIA report in the following format:

Faunal/floral group under study	Key surveyor		
	Full Name	Brief description of relevant experience	No. of years of relevant experience

- 7.2 According to Section 5.1.6 of Annex 16 of EIAO-TM, the information gathered from the ecological baseline surveys shall be valid for 36 months upon their completion, after which the information should be verified through field surveys to confirm its validity for the purpose of ecological impact assessment. This is to ensure the representativeness of the ecological data, especially when there is substantial time gap between the completion of the surveys and the formal submission of the EIA report.
- 7.3 A verification survey should aim to identify notable habitat changes, whether due to natural causes or human influence, in order to confirm that the previously completed survey results are still valid and suitable for the impact assessment.

(a) Habitat verification

Broad-brush field surveys should be conducted to determine if there have been significant changes to the previously surveyed habitats. Updated literature review should also be conducted to ascertain if there have been any new reports of significant ecological findings. If there are no significant changes to the habitats and new ecological findings are absent, the previous surveys results should be considered still valid for the purpose of ecological impact assessment of the project concerned.

(b) Follow-up surveys

In the event that significant changes to the previously surveyed habitats are detected and/or new significant ecological findings have been reported, a fresh round of ecological baseline surveys with the same scope as specified in the EIA SB should be carried out.

Agriculture, Fisheries and Conservation Department  
in conjunction with Environmental Protection Department

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