

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

**Preparation of Landscape and Visual Impact Assessment
Under the Environmental Impact Assessment Ordinance**

(This guidance note supersedes EIAO Guidance Note No. 8/2002 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 the 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 is 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 27th 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)

1. Purpose

- 1.1 The guidance note (GN) advises on the requirements in vetting Landscape and Visual Impact Assessment (LVIA) of designated projects (DPs) under the Technical Memorandum on EIA Process (TM) for the Environmental Impact Assessment (EIA) Ordinance. The main aim is to facilitate practitioners to prepare LVIA and to satisfy their own Quality Management System prior to making submissions under the EIA Ordinance.
- 1.2 The GN is applicable to all EIA reports submitted under the EIA Ordinance unless otherwise specified in the study brief. It is advisory in nature and is not intended to supersede the relevant Annexes of the TM.
- 1.3 The considerations in identifying environmental impacts, criteria for evaluating landscape and visual impacts, contents of EIA Report, guidelines for LVIA, guidelines for the review of an EIA report, contents of Environmental Monitoring and Audit Programme are respectively detailed in Annexes 3, 10, 11, 18, 20 and 21 of the TM.
- 1.4 The GN should not be considered as a prescriptive set of rules or an exhaustive manual of methods/techniques. It does not obviate the need for the compliance of all the requirements in the relevant Annexes of the TM and the study brief of the project. The main determining factor for endorsement of a LVIA is the quality and accuracy of the report prepared by the applicant of the DP.
- 1.5 The coverage of the GN includes those types of DP that may create significant landscape and visual impacts. The level of information required for individual LVIA and hence the application of relevant parts of the GN are dependent on the type of DP and the landscape and visual context in which the DP is located.

1.6 The GN may be updated and supplemented by other advice from the Environmental Protection Department and Planning Department from time to time to take into account changing circumstances. Revised GN will be promulgated should such a need arise.

2. **Approach to LVIA**

2.1 LVIA shall be directed towards predicting and judging of the magnitude and significance of the effects that new development/redevelopment may have on landscape resources/characters and visual amenities.

2.2 LVIA should be an independent and informed professional assessment of the impacts from a DP. It should be based on the reasonable case scenario and/or where there is uncertainty the worst case scenario. Both positive and negative landscape and visual impacts should be given due consideration in the process.

2.3 It is recognised that, unlike other impact assessments, LVIA relies more upon experienced professional judgment and less on quantitative measurements. Hence, it is important to adopt a structured and systematic approach in LVIA to facilitate the public to understand the potential landscape and visual impacts arising from the DP.

2.4 In assessing the significance of impacts in LVIA, it is necessary to differentiate between judgment on the significance of change, which involves a greater degree of subjective opinion, and measurement of magnitude of change, which is normally a more objective and quantifiable task. Assessment should always be supported by quantified data, clear evidence, logical deduction, reasoned argument and informed judgment.

2.5 Based on the best information available at the time of the assessment, LVIA might report the main concerns on landscape and visual issues raised by interested parties¹.

2.6 Information in the LVIA should be consistent with that used for other impact assessments covered by the same EIA report such as :

- noise assessment in respect of the location, extent and size of noise barriers/enclosures,
- ecological impact assessment in respect of the quantification of landscape features and the potential impacts on them, and
- assessment of waste management implications, e.g. in respect of potential loss of topsoil, vegetation removal and other landscape resources.

¹ In general, interested parties may include:

- Advisory Council on the Environment (ACE)
- Advisory Committee on the Appearance of Bridges and Associated Structures (ACABAS),
- Country and Marine Parks Board (C&MPB),
- District Councils (DCs),
- Harbour-front Enhancement Committee,
- Town Planning Board (TPB),and
- Public comment from consultation forum (if any/applicable as stated in para. 3.1(b)).

2.7 For easy understanding, annotated illustrative materials such as computer-generated photomontages, oblique aerial photographs, photographs, plans, elevations and section drawings should be extensively used to convey the findings of LVIA to the readers. Descriptive text should provide a concise and reasoned argument.

2.8 As LVIA involves appraisal of landscape and visual resources, professional judgment of impact significance and formulation of sensible mitigation measures, it is therefore recommended that professional landscape architects, planners and/or urban designers, or other competent persons be appointed to carry out the full scope of LVIA as identified in the study brief.

3. **Points to note in undertaking LVIA**

3.1 **Background of DP and Options**

- (a) The background of the DP should include a broad description of the alternative option(s)/alignment(s)/design(s) which have been examined in related studies if such information is not included in the EIA report. The potential landscape and visual impacts of all options should be broadly stated and the rationale for the recommended option should be clearly explained.
- (b) Comments collected from previous consultation, if any, with relevant advisory bodies including those in section 2 above and the general public on landscape and visual aspects of the project should be summarised together with a discussion on how their comments have been addressed in the report. If there is no previous consultation or no comment has been received on landscape and visual aspect, this should be clearly stated.
- (c) The environmental, economic, social and other benefits/disbenefits of the DP and the consequences of not proceeding with the DP should also be briefly mentioned.

3.2 **Project Description**

- (a) All works that may give rise to landscape and visual impacts should be clearly annotated on plans such as:
 - location plan including phasing boundary where applicable,
 - details of all structures/buildings (in terms of length, width and height in mPD),
 - layouts, plans, sections and elevations,
 - materials of finishes (e.g. reflective or non-reflective materials) and colours of external appearance, and
 - extent of temporary works area.

Descriptive text should generally be confined to supplement understanding of the illustrative materials.

- (b) For construction phase, some impacts may be temporary in nature, but can be significant if left unattended. The assessment should include, where applicable, consideration of all permanent works and also temporary works undertaken during the construction stage. Construction works may include the following:
- reclamation (temporary and/or permanent),
 - site formation including slope works,
 - temporary works including vegetation clearance,
 - haul road,
 - borrow areas, and
 - dumping grounds.
- (c) For operation phase, assessment should include, where applicable, consideration of all constructed works at commencement of operation of the project, particularly the following features, which are also prominent in the landscape and visual context:
- viaducts,
 - retaining structures,
 - vent shafts,
 - tunnel portals,
 - cutting and filling,
 - embankments,
 - any mitigation measures such as noise barriers/enclosures, and
 - ancillary buildings.

3.3 **Assessment Area**

- (a) For the Landscape Impact Assessment (LIA), the assessment area should normally include all areas within 500m from the work limit of DP.
- (b) For Visual Impact Assessment (VIA), the assessment area should be up to the visual envelope (zone of visual influence) which is generally the viewshed formed by natural/man-made features such as ridgeline or building blocks. The defined visual envelope must be shown on plan.
- (c) The visual envelope may contain areas, which are fully visible, partly visible and non-visible from the DP. In order to define the visual envelope, cross-sectional drawings shall be prepared to demonstrate the various degree of visibility in the visual envelope. Such information is generally not required to be included in the LVIA but should be kept by the applicant for verification upon request by Planning Department.

3.4 **Baseline Study**

- (a) Baseline conditions are not static and may change over time according to the planning framework. Hence, it is necessary for the Baseline Study to capture the existing condition as well as the future outlook of the assessment area.
- (b) The Baseline Study should include an appraisal of the landscape and visual resources and character of the assessment area focusing particularly on the sensitivity of the landscape and visual system and their ability to accommodate change.
- (c) Landscape resources should be quantified, with respect to special landscape features. Landscape character of the project area and its relationship with the adjacent areas should be addressed. Landscape character areas (LCAs) and key landscape elements within the assessment area should be identified and annotated on plan. Some projects may require a broad tree and/or vegetation survey to be carried out.
- (d) A broad-brush tree/vegetation survey should be prepared as an integral part of the landscape baseline study. Unless specified elsewhere in the study brief, a detailed tree survey to fulfill the requirements as stipulated in the Environment, Transport and Works Bureau Technical Circular (Works) No. 3/2006, or Lands Administration Office, Lands Department Practice Note No. 7/2007 for tree felling application is usually not necessary for the preparation of LIA.
- (e) Besides vegetation, other landscape resources such as topographical or geological features, reservoirs, streams and other water bodies, etc should be investigated as part of the baseline study.
- (f) Visual resources such as key views, viewing corridors/viewing directions, harbour and ridgelines, and visual characters should also be identified on plans.
- (g) Landscape and visually sensitive receivers (SRs) should be identified. SRs with similar landscape and visual sensitivity can be grouped with their locations clearly shown on plans.
- (h) Annotated oblique and aerial photographs, photographs taken at key viewpoints and relevant maps/plans with short notes should be used to illustrate the existing baseline conditions.

3.5 **Review of Planning and Development Control Framework**

- (a) The review should cover information in the statutory plans prepared under the Town Planning Ordinance, and non-statutory plans² published by the Planning Department when the EIA report is under public inspection. Planning Department can advise on the updated information in respect of planned use.
- (b) Planned uses shown in plans as described in paragraph 3.5a above which are

² Non-statutory plans generally include layout plans, outline development plans and other departmental plans

within the study area should also be taken as SRs.

- (c) For areas zoned under “Undetermined ” use or areas of unspecified use in the plans as detailed in paragraph 3.5a above, existing conditions should be based on for identification of SRs.
- (d) If plans in paragraph 3.5a above are outdated or unavailable, the LVIA should be based upon existing conditions on site.
- (e) Relevant planning/landscape guidelines as recommended in planning studies, planning briefs or planning documents relevant to the assessment area such as landscape/urban design strategies, frameworks and concepts, building height profiles, special design areas, landmarks, designated view corridors, open space networks, landscape links and landscape character types, etc. should also be studied and highlighted.
- (f) Any departure from the published town plans arising from the DPs should be highlighted.
- (g) The study could be presented in a table form to cover:
 - plan title/number,
 - land use zonings,
 - approximate area of the land use zones to be affected by the DP,
 - design and conservation intention, and
 - future outlook of the area.

3.6 **Scope of Impacts**

- (a) LIA should comprise assessments of the impacts both on landscape resources and landscape character of the area, which is created by the combination of landscape resources and built developments.
- (b) VIA should identify and predict the type and extent of impacts from visual obstruction, glare, changes in visual amenity and compatibility with surroundings.
- (c) The presentation of landscape and visual impacts in construction and operation stages should preferably be in table form covering items as specified in section 3.7 below.
- (d) Extent of work limits including temporary works areas should be presented on plan. The duration of construction impact should be stated.
- (e) For DPs under Schedule 3 of the EIA Ordinance, the LVIA should include a list of all DPs under Schedule 2 within the assessment area. If possible, it should contain individual LVIA for each DP under Schedule 2 or for each contract, which may consist of a number of DPs under Schedule 2, with a cumulative assessment of the potential landscape and visual impacts from all DPs and

non-DPs within the assessment area. This may save the need to carry out further LVIA prior to the application of environmental permit (EP) for the DPs under Schedule 2. However, if detailed information for the DPs under Schedule 2 is not available, the LVIA for the DP under Schedule 3 should contain a broad assessment of the potential landscape and visual impacts arising from all DPs and non-DPs within the assessment area with a recommendation to carry out further detailed LVIA's before the application of EP for the DPs under Schedule 2.

3.7 **Impact Assessment**

- (a) LVIA should take into account existing/planned/approved land uses as the baseline conditions. All direct and indirect impacts on existing/planned/approved land uses, and on future outlook of the area should be discussed.
- (b) Landscape impacts should be quantified based on landscape dynamics i.e. different conditions at different planning horizons should be provided when considering the magnitude of change.
- (c) Prediction of potential landscape and visual impacts should cover beneficial/adverse, direct/indirect, short term/long term, reversible/irreversible and cumulative impacts.
- (d) Impact of the DP on landscape resources including special landscape features and on the LCAs should be assessed. Where situations warrant, it may be necessary to evaluate the merits of preservation in totality, in parts or total destruction of existing landscape and the establishment of a new landscape character area.
- (e) Impact assessment can be made for individual SR, SR group, or if appropriate for representative SRs.
- (f) LVIA should be determined in significance thresholds, which are made up of two components, namely magnitude of change to baseline conditions due to the DP and sensitivity of receivers. An evaluation matrix shall be derived for judging impact significance. Broadly speaking, magnitude of change relates to parameters of the DP in the context of baseline conditions while sensitivity of receivers refers to properties of SRs. The following are some common but non-exhaustive factors normally considered in deriving the magnitude of change and sensitivity in assessing landscape and visual impacts:
 - (i) Factors affecting the magnitude of change for assessing landscape impacts include:
 - compatibility of the project with the surrounding landscape,
 - duration of impacts under construction and operation phases,
 - scale of development, and
 - reversibility of change.
 - (ii) Factors affecting the sensitivity for evaluation of landscape impacts include:

- quality of landscape characters/resources,
 - importance and rarity of special landscape elements,
 - ability of the landscape to accommodate change,
 - significance of the change in local and regional context, and
 - maturity of the landscape.
- (iii) Factors affecting the magnitude of changes for assessing visual impacts include:
- compatibility of the project with the surrounding landscape,
 - duration of impacts under construction and operation phases,
 - scale of development,
 - reversibility of change,
 - viewing distance, and
 - potential blockage of view.
- (iv) Factors affecting the sensitivity of receivers for evaluation of visual impacts include:
- value and quality of existing views,
 - availability and amenity alternative views,
 - type and estimated number of receiver population,
 - duration or frequency of view, and
 - degree of visibility.
- (g) Landscape impacts should be classified depending on whether the impacts are adverse/beneficial, and irreversible/reversible. Separate assessment should be made for construction phase and operation phase impacts. Assessment of landscape impacts should include presentation of the following in a matrix format:
- Landscape resources / landscape character,
 - Sources of impact,
 - Type of impacts: impact on landscape resources and impact on landscape character,
 - Magnitude of change: negligible, small, intermediate or large with quantification if possible,
 - Landscape sensitivity: low, medium or high,
 - Significance thresholds of potential landscape impact (before mitigation);
 - Mitigation measures, and
 - Significance thresholds of residual impact (after mitigation): Operation Day 1 and Year 10.
- (h) Similarly, visual impacts should be classified depending on whether the impacts are adverse/beneficial, and irreversible/reversible. Separate assessment should be made for construction phase and operation phase impacts. Assessment of visual impacts should include presentation of the following in a matrix format:

- Location of visually sensitive receivers (VSR),
 - Type and approximate number of VSRs,
 - Description of existing view and degree of visibility of DP (such as no view, glimpse, partial view, vista, open view, and panorama view),
 - Receiver sensitivity: low, medium or high,
 - Source of impact,
 - Minimum viewing distance of VSRs
 - Magnitude of change: negligible, small, intermediate, large,
 - Significance thresholds of potential visual impact (before mitigation),
 - Mitigation measures, and
 - Significance thresholds of residual impact (upon mitigation): Operation Day 1 and Year 10.
- (i) For some DPs such as transport projects, different sections may create different landscape and visual impacts. The LVIA should contain assessments and mitigation measures specific to each section and the SRs affected.
- (j) In order to illustrate the landscape and visual impacts and to demonstrate the effectiveness of the proposed landscape and visual mitigation measures, photomontages at selected representative viewpoints shall be prepared to illustrate :
- existing conditions,
 - unmitigated impacts at Operation Day 1 of the DP (may not be required for assessment of DP under Schedule 3),
 - partially mitigated impacts after implementation of the proposed mitigation measures at Operation Day 1 of the DP (may not be required for assessment of DP under Schedule 3), and
 - residual impacts at Year 10 of the operation stage.
- (k) Applicants may consult Planning Department on the proposed selection of suitable representative viewpoints for the preparation of the photomontages after the preliminary assessment.

3.8 **Recommendation of Mitigation Measures and Implementation Programme**

- (a) Alternative alignment(s), design(s) and construction method(s) that would avoid or reduce the identified impacts on landscape, or that would make the DP visually more compatible with the setting shall be thoroughly examined before adopting other mitigation measures to alleviate the impacts.
- (b) Solid mitigation measures that are practical and viable to implement rather than design intent should be proposed.
- (c) The agreement from relevant parties should be sought in respect of the responsibility of funding, implementation, management and maintenance of the proposed mitigation measures prior to their inclusion into the LVIA. It should be noted that any “grey” areas in these aspects would affect the implementation and/or the effectiveness of the mitigation measures during the operation phase.

Unless these issues have been resolved, the effects of these mitigation measures should be discounted in the LVIA.

- (d) Project boundaries should be clearly indicated on all scaled plans including mitigation plans, which can indicate any off-site mitigation measures. Land matters arising from such measures should be fully resolved prior to inclusion of any off-site mitigation measures into the LVIA. In addition, the locations and types of VSRs should also be annotated on mitigation plans to facilitate assessment of residual impacts.
- (e) In addressing environmental monitoring and audit, a schedule should be prepared to show the implementation details and the parties responsible for all the mitigation measures from design stage to operation stage.
- (f) A practical programme for implementation of the recommended mitigation measures shall be worked out to ensure timely completion of the mitigation measures.

3.9 **Noise Barriers / Enclosures**

- (a) Given the fact that using noise barriers/enclosures as a means to reduce adverse noise impact have their own impact on the visual amenity, they should not be widely adopted as the only way to reduce traffic noise. Alternative ways for mitigation and good environmental land-use transport planning should firstly be explored.
- (b) The choice of colours, design and materials of the noise barriers/enclosures should be compatible with the surrounding buildings and development context.
- (c) If there is insufficient space to screen the noise mitigation structures by design features, integrating with boundary walls, or landscape plantings, efforts should be made in the design of the overall form and surface treatment of the structures to make them to become features of aesthetic value in order to give character to the area.
- (d) To ensure good and innovative design, it is advisable to seek early advice from the ACABAS and agreement with relevant implementation and maintenance departments.

3.10 **Presentation Materials**

- (a) All illustration materials should be clearly annotated to facilitate understanding of the LVIA.
- (b) Colour photos should be used to show special landscape elements, LCAs, key views and VSRs.
- (c) Mapping of landscape impacts and visual impacts should be made in colour.

- (d) If possible, computer-generated photomontages should be prepared to illustrate LVIA and the mitigation effects. In preparing the photomontage from key viewpoints, the following should be considered :
- where necessary, it shall include photomontages to illustrate the effect of the proposed mitigation measures at close range,
 - the main associated features of the DP such as viaducts, retaining structures, noise barriers, catenary system, tunnel portals, vent shafts, cuttings, embankments, lighting poles and associated buildings, etc as in the case of road project should be reflected in the photomontages,
 - viewpoints shall be taken at practical human eye level and at representative locations,
 - the overall impact of the DP on the adjacent setting should be shown, and
 - photomontages shall be presented at a minimum of A4 size.
- (e) Computer graphics shall be in a common format compatible with desktop computers.. In addition, technical details such as system set-up, software, data files and functions in preparing the illustrations shall be recorded as these may need to be submitted for verification of the accuracy of the illustrations.
- (f) Other illustrative materials shall be legible and of suitable sizes, preferably no larger than A3 size, can be used to supplement photomontages to facilitate easy understanding of the DP by the public:
- oblique and aerial photographs showing the general setting of DP in relation to the surrounding setting,
 - plans, cross-sections and elevations showing important details of the DP, and
 - physical models and computer-aided drawings.

3.11 **Conclusion of LVIA**

- (a) The conclusion should briefly recap the impacts of the DP. Any localised areas where the residual impacts remain significantly adverse after exhaustive mitigations should be clearly highlighted and the justifications for accepting such cases should be put forward.
- (b) All mitigation measures should be summarised and a comparison with quantification should be made on the net gain/loss of landscape resources affected by the DP.
- (c) The impacts on individual LCAs or VSRs should be clearly stated as to how they are synthesized to arrive at the overall impact of the DP.

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