Guidelines on the information to be contained in Environmental Impact Statements

ENVIRONMENTAL PROTECTION AGENCY
An Ghníomhaireacht um Chaomhnú Comhshaoil

GUIDELINES ON THE INFORMATION TO BE CONTAINED IN ENVIRONMENTAL IMPACT STATEMENTS

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Eircom
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GCI Ltd.
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Geological Survey of Ireland
Glanbia Foods
GV Power Ltd.
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IBEC
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Irish Energy Centre
Irish Georgian Society
Irish Industry for Sustainable Development
Irish Landscape Institute
Irish Peatland Conservation Council
Irish Planning Institute
Irish Underwater Archaeological Research Team
Irish Wildlife Trust
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Salmon Research Agency of Ireland
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VOICE

GUIDELINES ON THE INFORMATION TO BE CONTAINED IN ENVIRONMENTAL IMPACT STATEMENTS

The 1992 Environmental Protection Agency Act (Section 72) provides for the preparation by the Environmental Protection Agency of guidelines on the information to be contained in an Environmental Impact Statement. The Act further provides that those preparing and evaluating Environmental Impact Statements shall have regard to such guidelines.

The Guidelines have been prepared following wide consultation with the benefit of a number of years in circulation as 'Draft Guidelines'. Experience has shown that the quality (sufficiency and relevance) of the information in EISs is closely related to the methods and procedures employed by the participants. For this reason additional guidance has been provided to address the process that gives rise to the information contained in an EIS.

At all times the Agency has attempted to stress that EIA is a practical and dynamic process of environmental protection. The specialist studies and professional evaluations used for EIA should principally aim to anticipate and avoid impacts. The greatest value occurs when the site/route is being selected and while the project is still being designed; it is first and foremost a process. Ideally the resultant EIS is a document that records this process - showing how environmental consideration helped the project to achieve the most sustainable and least disruptive integration with the local environment.

The Guidelines have been drafted with the primary objective of improving the quality of Environmental Impact Statements in Ireland. Quality improvements will result from better scoping and a closer integration of EIA into both the design and development control processes.

The Guidelines will help to provide developers, competent authorities and the public at large with a basis for determining the adequacy of Environmental Impact Statements, within the context of established development consent procedures. They will also provide a focus for scoping between the parties concerned. A consensus should provide all parties with the confidence to rely on concise Statements which are focused on the likely significant impacts. This will reduce the time, effort and expense required to prepare and evaluate Environmental Impact Statements and should facilitate public participation in the EIA process.

The Guidelines address a wide range of project types and potential environmental issues. It must be stressed that all of these issues are unlikely to apply to every project. Each Environmental Impact Statement is a unique result of specific site issues interacting with the effects of the proposed development.

From time to time the Agency intends to publish Advice Notes on Current Practice in the preparation of Environmental Impact Statements. These contain greater detail on many of the topics covered by the Guidelines as well as information on the likely range of impacts from certain classes of projects.

ENVIRONMENTAL IMPACT ASSESSMENT (EIA) LEGISLATIVE CONTEXT

EIA requirements derive from European Communities Directive 85/337/EEC (as amended by Directive 97/11/EC) on the assessment of the effects of certain public and private projects on the environment. The primary objective of the EIA Directive is to ensure that projects which are likely to have significant effects on the environment are subject to an assessment of their likely impacts.

The approach adopted in the Directive is that EIA is mandatory for all Annex I projects on the basis that these project classes will always have significant environmental effects. Thresholds are specified in respect of most project types in the Annex.

In the case of Annex II projects, Member States must determine on a case-by-case basis or on the basis of thresholds or other criteria (such as site sensitivity), or a combination of both approaches, whether or not a project should be subject to EIA.

In addition to transposing the mandatory requirements which apply to Annex 1 projects, Ireland choose to set thresholds for each of the project classes in Annex II. In setting these thresholds, account was taken of the relevant circumstances in Ireland, including the general nature, size and location of projects and the condition of the receiving environment. The thresholds were then set at levels which distinguish between those projects which, by virtue of their nature, size or location, would be likely to have a significant effect on the environment and those which would not.

In addition, Irish implementing legislation[1] addresses the possible need for EIA below the specified thresholds. In summary, these require the carrying out of EIA where the competent authority considers that a development would be likely to have significant effects on the environment. Specifically in the case of sub-threshold development on specified conservation sites, the competent authority is required formally to decide whether or not a project would or would not be likely to have significant effects on the environment. These provisions were introduced to address key requirements in relation to "nature, size and location" referred to in article 2 of the Directive (as amended).

In the light of the approach adopted by Ireland in relation to Annex II projects, there should be only a limited need for EIA below the thresholds specified.

The Irish EIA system implements the EU Directive through the integration of its requirements into the land-use planning consent system and several other development consent systems covering, for example, foreshore development, roads/motorway construction, light rail systems and the laying of oil and gas pipelines. Requirements on development which may arise from the provisions of legislation such as the European Communities (Natural Habitats) Regulations 1997[2], the National Monuments Acts 1930 to 1994 and the Wildlife Acts 1976 to 2000 are also significant.

[1] Each consent system e.g. planning, roads/motorway construction is governed by separate legislation.

[2] Additionally, two international conventions in the heritage area, which make specific reference to EIA, have been ratified in Ireland (i.e. the Council of Europe 1992 European Convention on the Protection of the Archaeological Heritage (revised) and the United Nations 1992 Convention on Biological Diversity).

1. PRELIMINARIES AND GENERAL METHODS

1.1 INTRODUCTION

Environmental Impact Assessment (EIA) is a process for anticipating the effects on the environment caused by a development. An Environmental Impact Statement (EIS) is the document produced as a result of that process. Where effects are identified that are unacceptable, these can then be avoided or reduced during the design process. The Environmental Impact Assessment procedure commences at the project design stage where it is decided whether an Environmental Impact Statement is required. If it is required, then the scope of the study is determined, after which the EIS is prepared as part of the application for development consent. The competent authority examines the EIS, circulating copies to statutory consultees while also making it available to the public. The competent authority then makes its decision to refuse or grant permission or to seek additional information, having regard to the information contained in the EIS among other factors.

1.2 BASIC METHODOLOGY

An Environmental Impact Statement (EIS) is defined in S.I. No 349 of 89 (Art. 3 (1)) as follows:-

"A statement of the effects, if any, which proposed development, if carried out, would have on the environment".

It consists of a systematic analysis of the proposed development in relation to the existing environment. This is carried out at a stage in the design process where changes can still be made to avoid adverse impacts *(See Figure 1).*

An Environmental Impact Statement provides information which the competent authority uses in determining whether or not to grant consent. This information is also used by affected parties to evaluate the acceptability of the development and its impacts.

Clear, concise, unambiguous communication is essential for the effective operation of EIA. A systematic approach, the observation of standard descriptive methods and the use of replicable prediction techniques and standardised impact description contribute to ensuring that all significant, likely effects are fully considered.

1.3 SCREENING

The first task is to determine whether an Environmental Impact Statement will need to be prepared. This is often referred to as 'screening'. The EIA Regulations, together with other environmental criteria, set out the thresholds or sizes of certain classes of projects which indicate that an EIS must be prepared.

It is important to note that the competent authority can also require an EIA where a project is below the specified threshold. This usually arises where there is a likelihood of significant effects on the environment by reference to the nature or location of a project e.g. potential impact on a designated conservation site or sensitive environments (see 3.2.4). In such cases, and where projects are close to the mandatory threshold, it is advisable that developers consult with the relevant competent authority regarding the possible needs for an EIS[3] .

1.4 SCOPING

The scoping process identifies the issues and emphasis that are likely to be important during EIA and eliminates those that are not. The information can be compiled by a formal process, whereby the competent authority is asked to consult with relevant agencies to draw up an opinion about the scope of the coverage required. More informal scoping can also be carried out to ensure that all relevant issues are identified and addressed to an appropriate level of detail.

In addition to consultation (formal or informal) with the competent authority, it is often prudent to contact authorities to whom aspects of the proposed development may be referred for comment. These are often contacted to determine the level of information which they may require and to confirm any designation they may have of the site. Dúchas, the Heritage Service of the Department of Arts, Heritage, Gaeltacht and the Islands or the relevant Regional Fisheries Board are typical of such consultees.

There are also Non Governmental Organisations (NGOs) that have interests in specific aspects of the environment likely to be affected by the

[3] An Bord Pleanála or other competent authority (e.g. relevant Government Minister) have the power to grant an exemption from the requirements to submit an EIS, in exceptional circumstances.

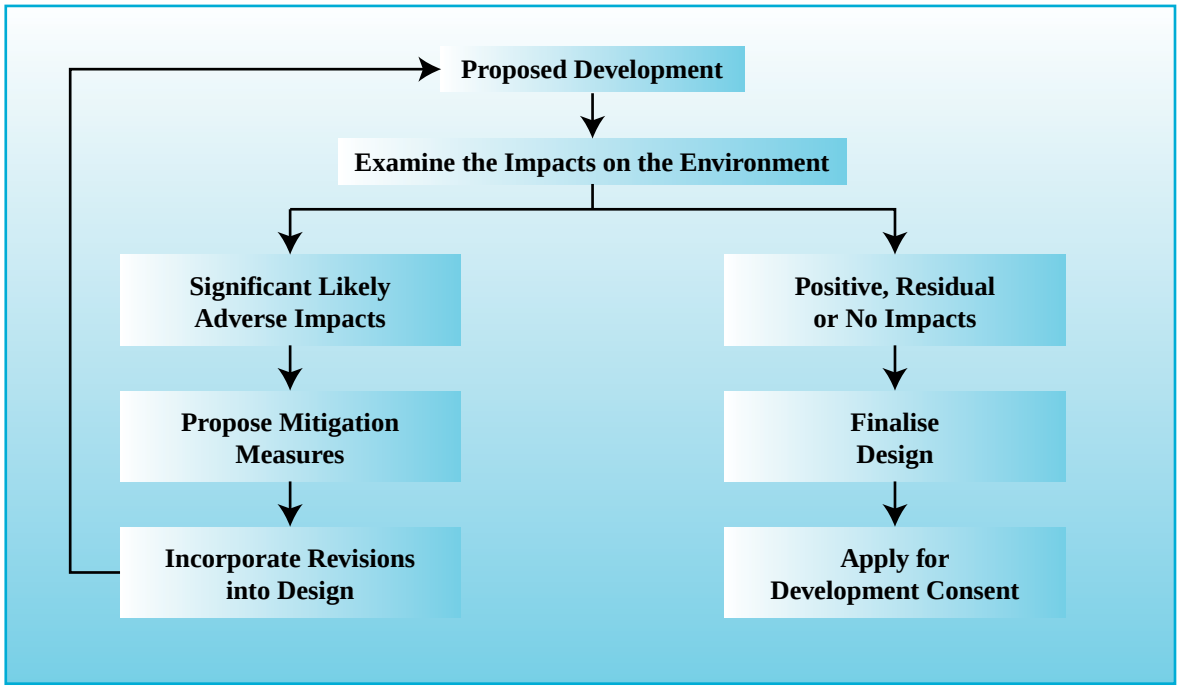


Figure 1 **Environmental Impact Assessment**

development, such as the Heritage Council, An Taisce or the Irish Wildbird Conservancy. Where relevant aspects of the environment are likely to be significantly affected, then the views of such organisations can be sought at an early stage.

Sensitive receptors such as neighbouring landowners, local communities or other parties likely to be affected are usually identified. In many instances it can be helpful to obtain their views or hear any concerns which they might express.

The importance of scoping cannot be over emphasised. It can help to avoid delays caused by requests for additional information. It also provides an opportunity for the exchange of views at an early stage when there is still flexibility in the design of the development. Ultimately it helps to increase confidence in the outcome of the process. The EPA advice notes on Current Practice provides useful preliminary information that may be of assistance to all parties during scoping, particularly for project types and topics.

1.5 CONSULTATION

From the outset it is important to distinguish between EIA related consultation – which gathers information – and the exercise of consensus building, or canvassing for project support, which often accompanies applications for permission. Ideally these two activities should be kept separate. Consultation forms a key element of any EIA process. Successful consultation for EIA is methodical and focused; it typically addresses three topics:-

Scoping to determine the issues and concerns which need to be evaluated and the methods to be used for that evaluation.

Impacts and Mitigation are proposed and discussed to determine the likely acceptability of the residual effects.

Alternatives are sometimes examined during consultation to ensure that the options that are of interest to all parties are evaluated, particularly topics such as site/route suitability.

For EIA purposes most consultation takes place with the competent authority, specialist agencies and those parties that are most likely to be directly affected.

Public consultation is used principally where the affected population is likely to be very large and/or difficult to identify. To be of value such consultation must have a sufficient time allocation and be expertly structured to ensure clarity and consistency.

1.6 THE STRUCTURE OF THE ENVIRONMENTAL IMPACT STATEMENT

To assist assessment and increase clarity, the

Environmental Impact Statement should be systematically organised *(See Figure 2)* to provide sections describing:-

- the Proposed Development;
- the Existing Environment;
- the Impacts of the Proposed Development;
- the Measures to Mitigate Adverse Impacts;
- a Non-Technical Summary.

The existing environment and the impacts of the development are explained by reference to its possible impact on a series of environmental topics:-

- Human Beings
- Fauna and Flora
- Soil
- Water
- Air
- Climatic Factors
- The Landscape
- Material Assets, including the Architectural and Archaeological Heritage, and the Cultural Heritage
- The Inter-Relationship between the Above Factors

Impacts should address direct, indirect, secondary, cumulative, short, medium and long-term, permanent, temporary, positive and negative effects as well as impact interactions.

None of the topics outlined above (Human Beings, Fauna, Flora etc) should be omitted at the risk of invalidating the legality of the process, although their level of detail may differ depending on the likelihood of impacts. In some instances it may be sufficient to mention the topics while explaining the reasons for omitting ("scoping out") or providing minimal detail about the topic. A formal scoping procedure will further assist in determining the level of detail required under various headings.

e.g. *"Fauna:- Because of the inner city location of the development and the lack of any natural habitats (or roosting sites) no significant or likely impacts on natural fauna are anticipated. Accordingly this EIS contains no further description of existing fauna, impacts on fauna, mitigation or monitoring proposals for fauna".*

1.7 ALTERNATIVE EIS FORMATS

The above information may be organised in a number of different ways. Generally two types of EIS structure are commonly used. Both are equally valid.

1.7.1 DIRECT FORMAT STRUCTURE

An EIS is prepared that directly follows the sequence of the Regulations, i.e. separate descriptions are provided of the proposed development, existing environment, impacts and mitigation measures. Within each description there is a section on the relevant topics set out in the Regulations (e.g. Impacts on Human Beings, Fauna, Flora, Soil etc.).

The advantages of this approach are that it facilitates a comprehensive understanding of the project, environment, impacts and mitigation measures; it is very useful for competent authorities or the public because all of the mitigation measures or impacts are grouped together. The main disadvantages are that it leads to repetition, the descriptions of impacts without mitigation measures can be viewed as theoretical and to follow a single topic (e.g. air), the reader must consult three different chapters.

Though technically desirable this format inevitably leads to repetition. As a result good editing and cross-referencing are very important. Sub-consultants review and comment on the final edited text.

1.7.2 GROUPED FORMAT STRUCTURE

An EIS is prepared in a format which examines each topic as a separate section referring to the existing environment, the proposed development, impacts and mitigation measures (e.g. flora and the proposed development, flora in the existing environment, impacts on flora, etc.).

The advantages of using this type of format are that it is easy to investigate a single topic and it facilitates

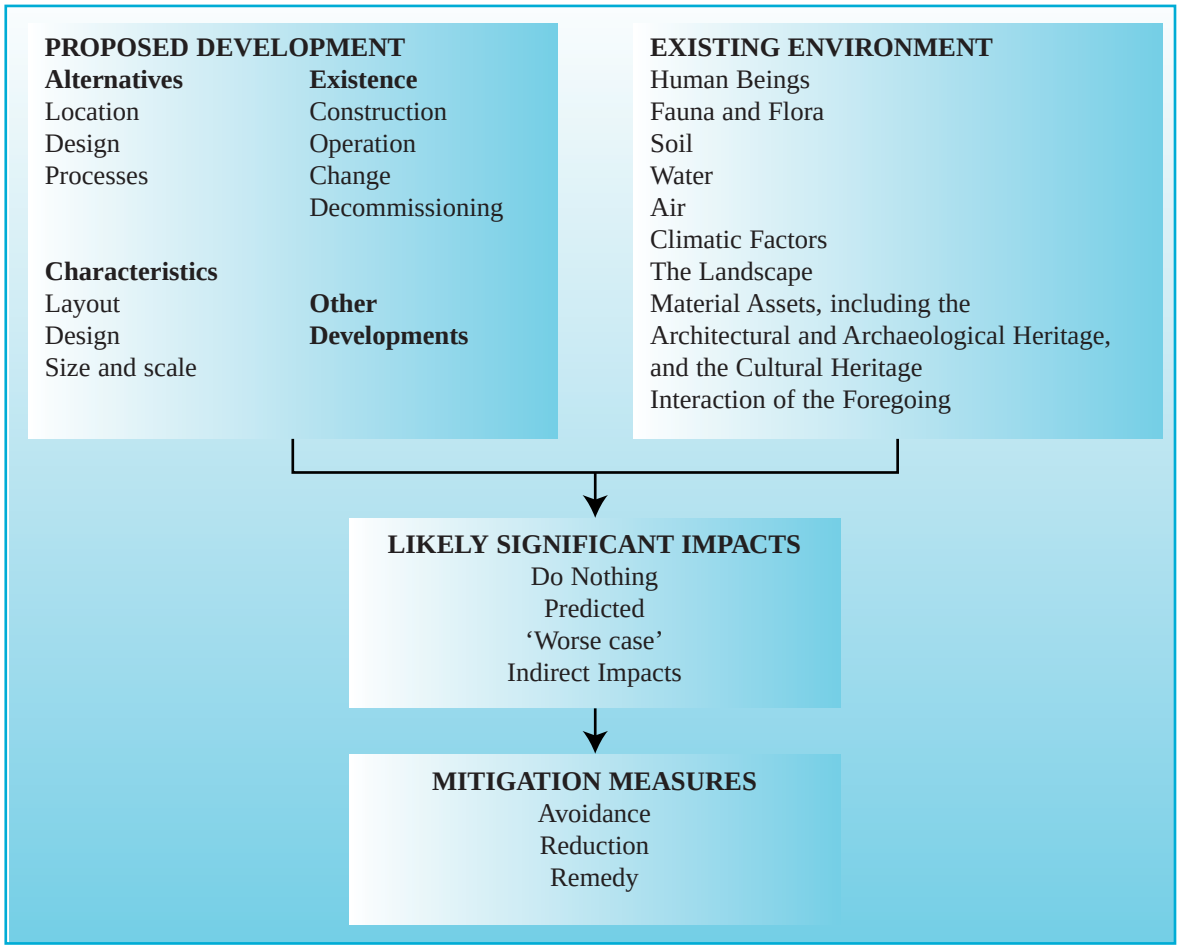


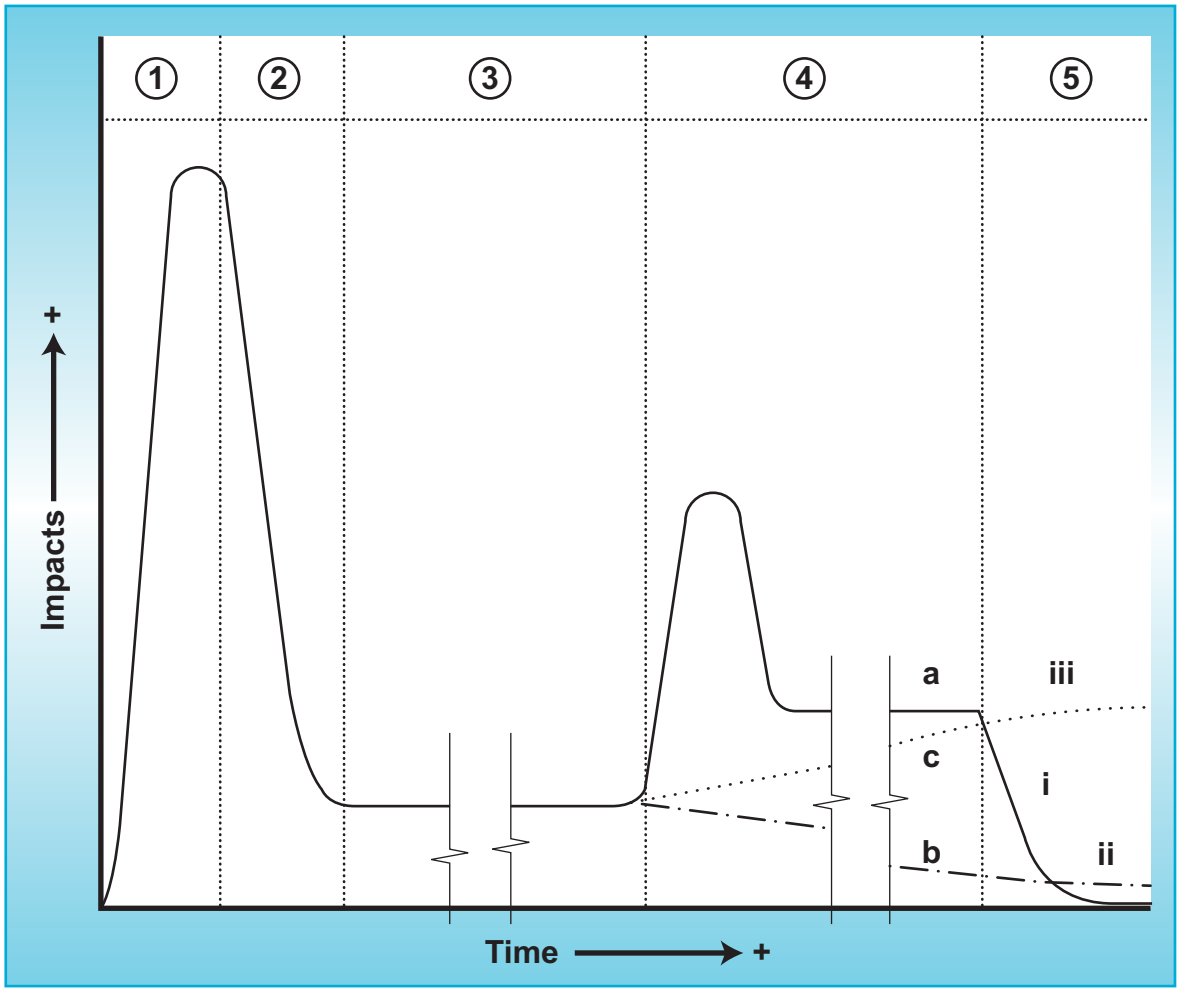
Figure 2 **The Structure of an Environmental Impact Statement**

easy cross-reference to specialist studies. The disadvantages are that it is more difficult to obtain a comprehensive understanding of the existing environment or of the full range of impacts and mitigation measures, particularly the interaction of factors.

EISs in this format must be carefully edited in order to avoid producing a disjointed EIS which is merely a collection of disparate reports by various consultants.

1.8 SIZE

It is in the interest of all parties that EISs are kept as concise as possible. Where appropriate, certain information may be appended to the main EIS document and made available separately when required. The EIS, together with its appendices should ideally constitute a self contained document i.e. there should not be significant reliance or reference to documentation not within the EIS. In this case it is important that proper cross-referencing be provided. Topics which are not relevant to an Environmental Impact Statement should be kept separate (e.g. planning application report).



1 Construction
2 Commissioning (mitigation becomes effective)
3 Operation (within a stable range of impacts)
4 Change
  a) expansion/intensification
  b) contraction
  c) cumulative deterioration*
5 Closure
  i) planned closure with decommissioning
  ii) gradual dilapidation
  iii) persistent impacts

* Due to deteriorating mitigation measures or accumulative of persistent pollutants.

Figure 3 **Impacts during the life cycle of a development**

2. PRINCIPLES AND PRACTICE

2.1 INTRODUCTION

Clear guidance is required to maintain Environmental Impact Assessment as a practical application of sound technical and specialist knowledge. EIA provides environmental information and guidance to the decision-making processes. It is a means to an end. This section gives prominence to this practical aspect of EIA. All participants in the process should be oriented towards the common goal of preventing any avoidable environmental deterioration due to development and ensuring that development is sustainable.

There can often be an excessive emphasis on EIA as a *document* to justify a project, rather than as a process to scrutinise and improve it. The *Principles* and *Roles in Practice*, set out below, aim to provide guidance on how to ensure that EIA is primarily and effectively directed towards the care for, and improvement of, the environment during and after development. *Section 2.4* also reviews some common EIA issues frequently encountered in practice.

2.2 PRINCIPLES

The basic tenets of Environmental Impact Assessment are:-

- Pursuing Preventative Action
- Informing the Decision
- Maintaining Environmental Focus and Scope
- Public Participation

2.2.1 PURSUING PREVENTATIVE ACTION

Methods, data and evaluations need to be constantly scrutinised to ensure that they contribute to the prevention of adverse environmental effects by anticipation and avoidance.

Anticipation of Impacts is an important technique during screening, scoping and the considerations of alternatives. It involves forming a preliminary opinion, in the absence of complete data, about the approximate magnitude and character of the likely impacts. Experience and expertise are most useful for such anticipation of impacts. However, the use of the guidance material, such as the *Advice Notes on Current Practice in the preparation of EISs*, can allow a wide constituency of interests to make meaningful contributions at the earliest stages of EIA.

Avoidance of Impacts is principally achieved by two means; firstly, the consideration of alternatives *(sections 2.4.3* and *3.2.2)* and secondly the review of designs *(section 3.1.3)* in light of environmental constraints. When successfully practised, Impact Avoidance can often lead to an EIS which predicts '*no significant adverse effects*. To avoid misinterpretation of this statement it is very important for the EIS to provide transparent, objective and replicable evidence of the evaluation and decision making processes which led to the adoption or selection of the final project configuration. Such evidence should clearly highlight the considerations of environmental effects that influenced the evaluation of alternatives. It also shows how the design incorporates mitigation measures, including impact avoidance, reduction or amelioration. Such measures can help to explain how significant adverse effects were avoided.

2.2.2 INFORMING THE DECISION

The Environmental Impact Assessment, though part of the decision making process, takes place before the actual decision about consent is made. This enables the competent authority to reach a decision in the full knowledge of the project's likely significant impacts on the environment, if any. Information should be *relevant* and *complete*, and legally compliant with the Regulations. It should be *appropriate* to the requirements of the consent procedure. The information should be *systematically* assessed and presented.

2.2.3 MAINTAIN ENVIRONMENTAL FOCUS AND SCOPE

Effectiveness and efficiency in EIA are most easily achieved where all parties ensure that documentation and analysis is confined to those topics and issues which are explicitly described in the relevant legislation. It is important for all parties to maintain a vigilance against the use of EIA to evaluate a wide range of related, but not directly, *environmental* topics - no matter how well-intentioned or seemingly convenient. Matters such as landuse planning,

employment, economic, financial or health considerations *are* of relevance but only insofar as they are physically manifested at, or directly adjacent to, the development site.

Evaluation and analysis is generally limited to areas where the indirect, secondary or cumulative impacts are either wholly or dominantly due to the project or development under consideration.

More detailed guidelines on scoping *(see Section 3.1.2)* provide specific criteria on how to ensure that the EIA remains focused on issues that:-

- are *environmentally* based;
- are *likely* to occur;
- have '*significant* and *adverse effects*'[4] .

Some project types (e.g. processing of minerals) are part of a larger chain of activities that may commence with resource extraction and end with disposal of the product following purchase and use. While it may be desirable to consider the integrated and holistic effects of such activities it may not be practical to evaluate the full chain of effects by EIA alone. The EIA is limited to the effects of the development project that is the subject of the relevant application for consent. Other effects (direct and indirect) that may be reasonably and specifically anticipated may be described for completeness. However, it should be noted that such other activities may be subject to other, separate, regulation and conditioning under separate legislation and jurisdiction.
(See also 2.4.3)

2.2.4 PUBLIC PARTICIPATION

Decisions are taken by competent authorities in consultation with the public, while receiving advice from other authorities with specific environmental responsibilities. The structure, presentation and the non-technical summary of the EIS as well as the arrangements for public access all facilitate the dissemination of the information contained in the EIS. The core objective is to ensure that society is made as fully aware as possible of the likely environmental impacts of projects *prior to the granting of consent.*

2.3 ROLES OF PARTICIPANTS IN PRACTICE

An EIS is the result of the activities of many people, each of whom need to make different and distinctive contributions. This section provides guidance on how each of the principal parties in EIA can most constructively and successfully contribute to the process.

2.3.1 THE DEVELOPER

Developers need to ensure that they allocate a realistic programme for an EIS to be properly prepared because the lack of adequate time can significantly reduce the effectiveness of the process. The length of time involved very much depends on the type of project being undertaken or the sensitivity of the receiving environment. For example, noise or ecological baselines may require observations over a monthly or even a seasonal basis. A complete assessment of flood returns, on the other hand, may take years. Experience suggests that a period of less than twelve weeks generally creates challenges for all participants, even on smaller projects, and should be avoided if possible.

It is particularly important that the developer should understand and accept all mitigation measures that are proposed in the EIS. These are enforceable undertakings that will have to be put in place and sustained when the project is implemented. Ideally such measures should be discussed with those responsible for day-to-day operations to ensure that the proposed mitigation or avoidance measures are practicable.

EIA is most effective where there is early and open communication between the participants in the process. The developer plays an important role by encouraging and facilitating the approach. It is also the responsibility of the developer to ensure that relevant design and environmental expertise is employed.

EIA requires disclosure of information and commitments to mitigation. These are the two unique responsibilities of the developer. Prior to the commencement of an EIA a developer should be aware of the requirements arising from the Regulations and be prepared to fully disclose the following as part of the process:-

- the range of alternative locations or routes (if

[4] EC (Environmental Impact Assessment) (Amendment) Regulations 1999, Second Schedule.

any) that were considered, together with the environmental factors which led to the selection of the preferred site;

- the range of design/layout alternatives considered for the proposed development;
- the range of alternative activities or processes (if any) by which the proposed development could operate, together with the environmental considerations which determined the selection of the proposed manufacturing technology or site activities;
- the nature of the processes and activities which will take place once the site is fully operational. This will include descriptions of the characteristics and qualities of materials which arrive at and leave the site, how these are used within the operation and the fate of all wastes and emissions which arise.

2.3.2 DESIGNERS

Professionals and specialists, who prepare the plans and other documentation to describe a development, should be aware that EIA may require slightly different roles from those that are normally required of them for other procedures.

The sequence and timing of the design process should be structured to allow environmental factors to be accommodated at appropriate stages. In the early stage of the design this may mean that siting and layout will need to be adjusted to avoid environmental vulnerabilities, such as designed landscapes, ecological, architectural or archaeological heritage. In the main process there will be design targets for emissions to air and water that will need to take account of the receiving environment. Landscape and noise factors may influence the site layout or the configuration of structures, sometimes late in the design process. There may also be a requirement for modifications. For example, the final external finishes, the locations of openings or drainage details may all need minor design changes to further mitigate such effects as visual impacts, noise or risk of water pollution.

Design Information will need to be made available to environmental specialists, agencies and consultees at an early stage. The designers need to make appropriate allowances so that preliminary designs are available and readily understood. Designers will also need to be available to communicate with specialists, both to explain the project and to learn about environmental design constraints. Finally designers will need to provide information on the methods, quantity and timing of construction/development activities to a greater level of detail than they might previously have been required when obtaining other permissions or consents.

2.3.3 ENVIRONMENTAL SPECIALISTS

EIA is critically dependent on the expertise, experience, independence and objectivity of environmental specialists. They characterise the existing environment and evaluate its significance and sensitivity. In addition to description, however, EIA demands that specialists must also predict how the receiving environment will interact with the proposed development. If they anticipate significant adverse impacts they will need to work with the developer and designers to devise measures to mitigate such impacts. The specialist who prepares each section should be identified in the report. To participate adequately in EIA environmental specialists will, in addition to their knowledge of the topic, need to:-

- have a knowledge of the relevant environmental legislation and standards which apply to their topic;
- be familiar with the relevant standards and criteria for evaluation and classification of significance and impacts;
- be able to interpret the specialised documentation of the construction sector so that they can understand and anticipate how their topic will be affected during construction and operation;
- be able to work with designers and other specialists to arrive at practical and reliable measures to mitigate adverse impacts;
- be able to clearly and comprehensively present their findings.

Considering the number of specialists who can become involved in an EIS, the importance of a competent project leader who can synchronise events and liase between specialists must be recognised.

In conclusion it is the responsibility of the specialists to understand the proposed development sufficiently so that likely significant adverse impacts can be anticipated and mitigated where possible.

2.3.4 COMPETENT AUTHORITIES

EIA always exists within a regulatory framework where an authority grants consent[5] for a project. The competent authority fulfils a number of important roles in EIA, particularly screening, scoping, evaluation and determination. The decisions about whether EIA is required *(Screening)* and of what the EIS should address *(Scoping)* are two principal roles. Early and careful consideration of these topics can affect confidence in the effectiveness of the process. These in turn can lead to significant reductions in delays and disputes.

Within the appropriate regulatory framework, the competent authority can positively contribute to the EIA process by the following means:-

Early involvement with willing applicants which can anticipate and avoid delays or disputes about screening or scoping.

Advising on environmental factors, other potentially interacting projects or drawing attention to likely local issues and concerns. The latter is a particularly important contribution which draws on the unique knowledge and experience of the Authority, particularly for the anticipation of indirect and interacting effects which might not otherwise be readily apparent. Potential difficulties or concerns should be highlighted at the earliest opportunity so that they can be addressed by the EIA and design process.

Providing Environmental Data which may be relevant to the project as early as possible. Competent authorities can often provide valuable information to applicants about where to obtain other relevant data.

Document Review, either in whole or part (also see *Section 3.1.3).* This has proven to be an extremely effective means of avoiding delays, disagreements or disappointments. It is particularly valuable where the detail of impact description and mitigation proposals are closely scrutinised.

2.3.5 AGENCIES

Agencies that are responsible for data provision and for the protection of environmental and cultural assets have special responsibilities to respond to the procedural and pragmatic demands of EIA. Such agencies are likely to be initially approached by applicants or competent authorities who will be seeking data either about the existence or the significance of resources. They may be approached later seeking evaluations of the likely acceptability of residual impacts or mitigation proposals.

Having regard to established procedures, precedent and the relevant regulations, agencies can positively contribute to the EIA process by providing:-
Timely Responses to requests for data or observations. Where complex or large-scale issues are involved it may be preferable to arrange communications in stages. By this method matters of principle (such as the intrinsic suitability of the site) can be raised as early as possible.

Appropriate Data should be readily available, current, accurate and as complete as possible. Early notification about data gaps can also be of considerable assistance to applicants. Agencies can often draw on their own depth of experience to provide valuable information to applicants about how or where to find other relevant data.[6]

Appropriate Observations can be extremely useful, particularly at the early stages of a project. In some instances it will be important to ensure that the views of local, regional or national officials are consistent .

2.3.6 NON GOVERNMENTAL ORGANISATIONS

Non Governmental Organisations (NGOs) have special rights and responsibilities which can interact with the EIA process in a number of ways. Early, open and constructive engagement has frequently proven to be beneficial to both the protection of the environment and to the quality of development projects. The significance of such organisations lies in their ability to provide an informed and experienced focus, particularly for the emerging concerns of society. A mutually satisfactory outcome can be achieved where applicants and NGOs engage in dialogue prior to the formal consent procedures. Ideally this takes place at a sufficiently early stage for concerns to be incorporated into the design process.

While respecting NGOs' independence, and recognising that some have non engagement philosophies or may have limited resources available, such organisations can usefully contribute to the EIA process by:-

Timely Participation which means availing of the earliest available opportunities to inform applicants about issues, concerns and criteria. Participation in scoping is of the greatest importance.

[5] Some projects may require consent from a number of authorities.

[6] This does not, however, detract from the requirement on the developer/EIA team to undertake up to date survey work/monitoring which is site specific and relevant to the study area in question.

Open Engagement which means a willingness to participate in dialogue by sharing data, particularly about environmental sensitivities or vulnerabilities. It also means being explicit, as early as possible, about criteria for environmental acceptability or indeed about non negotiable principles.
Constructive Engagement which involves a willingness to evaluate and respond to proposals by the applicant – particularly at early stages. This engagement may also involve a willingness to participate in evaluations of a number of versions of the project as it evolves. It may also involve a willingness to engage in document review (see 3.1.3).

2.3.7 THE PUBLIC

Public participation enhances the effectiveness and accountability of the process by increasing the explicit consensus of the decision making process. Local historians, farmers, wildlife experts etc. are an invaluable source of local information and if possible can be identified and consulted. Availing of opportunities for participation prior to consent is the key to influencing the development.

In addition to the rights of objection or observations which are provided by the existing regulations and procedures, the public can also participate in the EIA process by:

Making Observations or submissions in response to any preliminary invitations to participate such as scoping, evaluation of alternatives or document review. These opportunities may arise through public notifications, through public representatives or at community consultation meetings/exhibitions by the applicant. The most useful form of participation is to inform the applicant of concerns, as early as possible so that the EIA process can include and attempt to address them.

Direct Participation, wherever possible, is more likely to result in accurate and focused communications between applicants and members of the public – though community organisations and public representatives can provide invaluable facilities for organising and facilitating such participation.

2.4 EIA ISSUES

On large and controversial projects the EIS has often become a focus of objection, disagreement and debate. A review of experience indicates that the following six issues lie at the core of these EIA controversies. Each issue relates to adequacy of the overall EIS rather than any particular section. Attention to the following issues may help to minimise the potential for EIA controversy in future:

- Impartiality
- Health and Safety
- Alternatives
- Screening
- Scoping
- Availability of Documents

2.4.1 IMPARTIALITY

The most common general complaint arises from a fundamental lack of trust in the impartiality of an EIS. The question most frequently asked is:- *Is a developer likely to endure the expense and trouble of an EIS just to provide supporting evidence for an objector?*

To answer this question it is important to consider the function of both the structure of EIA as well as the regulatory obligations on the developer. These call for a comprehensive description of the existing environment. In most instances this consists of a compilation of information such as environmental vulnerabilities,[7] which is already available in the public domain. These circumstances render it difficult for an EIS to conceal the likelihood of impacts *(see also 'Published Data and Site Surveys', Section 3.2.4).*

Furthermore the complaint is often made that EISs often conclude that *'no significant adverse impacts are likely'*. This overlooks the preventative nature of EIA which causes the applicant to devise measures to avoid, reduce or remedy significant adverse impacts (i.e. to remove the causes of impacts *before* applying for consent).

Where EIA is *integrated with design development* it becomes easier to understand and to accept that the anticipation and avoidance of impacts is a very positive incentive for the developer to participate in EIA. Where EIA has helped to modify the design, to avoid or minimise impacts, it is also easier to understand and accept that an EIS, even for a large project, can credibly anticipate that *'no significant adverse impacts are likely'*.

[7] Such as the nutrient loading of a receiving water or an ecological designation for instance.

Notwithstanding these observations, it is important to acknowledge that valid concerns about impartiality remain because of the subjectivity about how some impacts are perceived. The description of the *magnitude of impacts* is the most controversial area. Whenever possible, impacts should be described by reference to an existing acknowledged standard or criteria for the topic. The criteria on which the terminology is based should be clearly defined for each discipline. Where this is not possible then it is recommended that impacts should be described by reference to the 'glossary of impacts' in *Section 3.2.5* of these guidelines.

Finally, wherever subjectivity and personal judgement are factors in the prediction of likely perceptions and responses, impacts should be suitably qualified[8].

2.4.2 HEALTH & SAFETY

The physical environment is one of a number of recognised determinants of health which is often at the forefront of community concerns. Health can be affected by a number of direct and indirect environmental pathways, such as air, water or soil. Populations can be affected either by direct contamination or by induced effects on disease vectors, food chains and exposure to risks. EIA typically deals directly with the environmental pathways and the extent to which these are affected by known contaminants, irritants or change inducing factors (e.g. nutrient enhancement or temperature change).

The evaluation of effects on these pathways is carried out by reference to accepted standards (usually international) of safety in dose, exposure or risk. These standards are in turn based upon medical and scientific investigation of the direct effects on health of the individual substance, effect or risk. This practice of reliance upon limits, doses and thresholds for environmental pathways, such as air, water or soil, provides robust and reliable health protectors for analysis relating to the environment.

Where anxieties about human health are understood to be of particular concern the scope of the EIS ensures that observance of and reliance upon conformity with recognised national and international standards is adequately related to the specific Health and Safety topic that are of local concern.

2.4.3 ALTERNATIVES

The consideration of alternative routes, sites, alignments, layouts, processes, designs or strategies, is the single most effective means of avoiding environmental impacts. The acceptability and credibility of EIA findings can be significantly affected by the extent to which this issue is addressed. For linear projects, such as roads and power lines, alternative routes may be the most important and effective mitigation strategy while for major infrastructure projects the intrinsic suitability of the site is the principal amelioration strategy. However, it is important, from the outset, to acknowledge the existence of difficulties and limitations when considering alternatives. These include:-

Hierarchy
EIA is only concerned with projects. Many projects, especially in the area of public infrastructure, arise on account of plans, strategies and policies which have previously been decided upon. It is important to acknowledge that in some instances neither the applicant nor the competent authority can be realistically expected to examine options which have already been previously determined by a higher authority (such as a national plan or regional programme for infrastructure or a spatial plan).

Strategic Environmental Assessment

Strategic Environmental Assessment is a process by which plans and programmes are evaluated by reference to the same environmental topics as are used in EIA and have regard to the likely significant environmental effects, of implementing the plan or programme. Like EIA, the assessment examines alternatives and proposes mitigation measures for any significant adverse effects that are anticipated. A Council Directive on the effects of certain plans and programmes on the environment has recently been officially adopted by the EC[1]

Non Environmental Factors
EIA is confined to the environmental effects which influence the consideration of alternatives. It is important to acknowledge that other non-environmental factors may have equal or overriding

[8] It is particularly important to exercise caution about combining impacts derived from different types of criteria (i.e. objective and subjective) within comparative, numerically weighted evaluation rankings, e.g. matrices.

importance to the developer, e.g. project economics, land availability, engineering feasibility, planning considerations.

Site Specific Issues
The consideration of alternatives also needs to be set within the parameters of the availability of land (it may be the only suitable land available to the developer) or the need for the project to accommodate demands or opportunities which are site specific. Such considerations should be on the basis of alternatives *within* a site e.g. design, layout.

2.4.4 SCREENING

It is important to acknowledge that EIA can be expensive, time consuming and difficult for all parties involved. Many poor-quality EISs arise where relatively small, poorly resourced projects have to carry the disproportionate cost of an unnecessary EIA. Wherever legally possible other forms of more limited appropriate evaluation (an Environmental Report or Appropriate Assessment) can be used instead (See 2.4.2). These can focus only on the topic(s) where impacts are likely to occur. These can be identified through consultation or scoping with relevant competent authorities. *Section 3.1.1* provides detailed guidance on criteria for screening as well as alternative forms of appropriate assessment.

2.4.5 SCOPING

Unnecessary or over elaborate evaluations create avoidable delays and excessive costs. They can also be unintentionally counterproductive by reducing the accessibility, clarity and focus of the EIS and the associated decision making process. Unsatisfactory studies can occur where demand for studies are oppressive or disproportionate. Scoping must be focused on issues and impacts which are:-

- Environmentally based
- Likely to occur
- Significant and adverse

Having regard to these criteria, competent authorities, agencies, NGOs and other consultees should ensure that a transparent and justifiable rationale exists when specifying the scope for EIA (see also *Section 3.1.2* for detailed guidance on methods and criteria).

2.4.6 AVAILABILITY OF DOCUMENTS

It is imperative to minimise barriers that limit the public access to the EIS. Barriers can include:-

Size and cost which can create difficulties for the public and for competent authorities. Wherever possible practitioners should aim to keep the length of the main volume of the EIS to less than 100 pages. The format and illustrations should be designed so as not to impede reproduction.

Availability and ease of reproduction should be facilitated by the applicant and the competent authority. The use of electronic access, loose leaf master copies and the provision (and supply) of adequate copies for public access can be discussed in advance by the applicant and the authority.

Comprehension can be influenced by structure, language, editing and presentation. Simple, self-explanatory graphics are provided, together with appropriately scaled drawings, photographs and photomontages. The requirement for a non-technical summary does not relieve the applicant of the responsibility of ensuring that the EIS is easily comprehended. Obscurity will often lead to queries, mistrust or even requests for additional information, none of which facilitate the decision making process.

2.4.7 APPROPRIATE EVALUATION

Where reasonable[9] concerns exist that a single or very limited number of environmental topics may be adversely[10] affected by a development proposal then an *appropriate evaluation* of the relevant[11] topic(s) may be carried out (See also 3.1.1).

The evaluation should generally observe both the structure and methods of an EIS, as set out in these guidelines, namely by describing:-

- The aspects of the construction, existence and operation of proposed developments that are likely to affect the environmental sensitivity.
- The context, character, significance and sensitivity of the relevant Environmental Topic(s).

[9] There should be a likely and demonstrable means by which the proposed change could significantly and adversely affect the specific environmental sensitivity.

[10] To alter or diminish the valued characteristic of the environmental topic.

[11] Assessments of specific topics should be limited to relevant issues (i.e. those likely to be affected by the proposed development).

- The likely significant impacts of the proposed development on the specific Environmental Topic(s).
- The measures to mitigate adverse impacts on the specific environmental topic(s).
- A non-technical summary of the assessment should also be provided.

The assessment employs:-

- A systematic approach
- Standard descriptive methods
- Replicable prediction techniques
- Standardised impact description

For assessments of a single or very limited number of topics the latter criterion assumes greater importance than it might in a full EIS. This is because the weight of the decision may fall upon the evaluation of the significance of the effects upon a single topic.

The evaluation of the significance of the impact should, wherever possible, use pre-existing standardised terms for the significance of impacts. Where these do not exist the scoping of the Appropriate Assessments should include an explicit statement of the criteria that will be used to evaluate the significance (and acceptability) of the resultant and residual impact(s).

The formulation of such criteria should be subject to replicable and systematic standards and should, wherever possible be based solely or predominantly upon the four explicitly objective criteria set out in part 3.2.5 of these guidelines namely:-

1. Magnitude and Intensity
2. Integrity
3. Duration
4. Probability

3. GUIDELINES

3.1 EIA STAGES

To assist in the production of EISs that achieve the objectives of Impact Anticipation and Avoidance it may be helpful to consider the relevant issues as they arise during each of the principal stages of EIA. These are discussed below.

3.1.1 SCREENING

Despite extensive and highly specific EIA legislation there will still be circumstances where a determination will be needed as to whether or not an EIS is mandatory. Where legislation or other official guidance is inconclusive on the matter it may be helpful to consider the following issues:-

- Could the development significantly affect more than one significant or sensitive environmentally based resource?
- Is the project of a large size and effect and does it involve emerging technologies or techniques?
- Are there significant levels of unpredictability about effect arising from the methods, technologies or because of the absence of data on the receiving environment?
- Is there reason to believe that there may be significant and reasonable levels of public concern about demonstrable effects on environmental resources?

If *Yes* is the clear and immediate answer to any of these questions then it is reasonable to anticipate that there would be a widely held expectation of stringent evaluation of such projects.

In such an evaluation, however, it is important to clearly examine whether concerns (public or expert) arise on account of:-

- a single or very specific environmental topic[12]
- a single or very restricted characteristic of the development[13]
- uncertainty or data limitations about a single or restricted aspect of the development.

If any or all of these concerns exist *in the absence of clear requirements for an EIS under the Regulations* consideration can be given to preparing a detailed evaluation solely of the single or restricted topic, issue or uncertainty as an appropriate evaluation (see Section 2.4.7).

3.1.2 SCOPING

The *prior* determination of the nature and detail of the information to be contained in an EIS is one of the most important, yet challenging, stages of the process. This may be a formal or informal process. The difficulty arises from the need to know the likely areas of potential impact and the appropriate methods by which to evaluate them prior to the commencement of detailed data collection or assessment.

Methods

Determination by personnel having direct or relevant prior experience of the constituent factors i.e. knowledge of the project type or of the proposed receiving environment or, ideally, both (See Roles below).

Guidelines The EPA Advice Notes on Current Practice in the preparation of EISs contains guidance both on environmental topics and for principal project types. Other international publications (see Advice Notes) provide summaries of the scope of EIA for various project types.

Precedent created by the EIA for similar or analogous projects or environments are now available by consulting the public files of competent authorities and environmental information databases, e.g. ENFO[14] .

Roles of Participants

The scope may emerge from a number of sources but most commonly emerges from a dialogue between some or all of the following:-

The Applicants' agent who may be an EIA specialist and who may propose an initial outline of the scope on the basis of a knowledge of the project and the

[12] For instance archaeology.

[13] For instance noise emissions.

[14] Ireland's public information service on environmental matters (Department of Environment and Local Government).

site.

The Competent Authority who will have a detailed knowledge of the procedural and legal requirements as well as a more extensive knowledge of both the context and local issues and concerns.

Other Specialist Agencies (including NGOs) who will have a detailed understanding of a particular aspect of the environment affected.

The Public, either individually or in groups, who are likely to have either thematically specific or area-specific concerns.

Criteria
All parties must be conscious of the need to keep the EIS as tightly focused as possible. This minimises expenses, delays and the potential for a confusing mass of data to obscure the relevant facts. To achieve this objective Scoping can be carried out by reference to the following criteria:-

- Use *precedence*, avoid 're-inventing the wheel'. Where similar projects on similar sites have previously been the subject of a satisfactory EIS then it is reasonable to use such reference for Scoping.

- Use *'Likely'* and *'Significant'* as criteria for determining the range of impacts and thresholds for data assembly respectively.

- Maintain *Environmental Focus* (see *Section 2.2.3).*

3.1.3 ON-GOING SCOPING

Design Review
As mentioned previously, the prevention of environmental degradation and associated impact on human beings, plants, animals etc. is the principal objective of EIA. This can only take place where the design is informed and reviewed by environmental criteria emerging from an appropriate assessment of the specific receiving environment. *Sections 2.3.2* and *2.3.3* provide specific recommendations on the need for the designers and the environmental specialists to maintain a regular dialogue through the design development to ensure that this objective is achieved. As such regular EIA project team meetings are important.

Document Review
Experience in practice, particularly on large and time-critical projects, has shown that considerable benefits accrue to all parties when the EIS is subjected to timely review by outside parties. This most commonly takes place with the competent authority[15] who may examine structure, overall coverage, findings and the likely acceptability of the residual impact levels or of the mitigation proposals. Consultation may take place on narrower issues with specialist agencies or occasionally with concerned or even potentially hostile third parties. The principal advantages of a Document Review are reported to include:-

- the avoidance of requests for additional information at a late stage in the process;

- the testing of the acceptability of residual impacts and mitigation proposals;

- discovering interactions or conflicts that were not evident at the earlier scoping stage.

3.1.4 CONDITIONS AND MONITORING

EIA related conditions that are imposed by the competent authority will form part of the Impact Anticipation and Avoidance strategy.

Conditions are principally used to ensure that undertakings to mitigate are secured by explicitly stating the location, quality, character, duration and timing of the measures to be implemented. A secondary role of EIA related conditions is to ensure that resources e.g. bonds / insurances will be available and properly directed for mitigation, monitoring or remedial action, in the event that the impacts exceed the predicted levels.

Monitoring of the effectiveness of mitigation measures put forward in the EIS, both by the competent authorities and the developer, is an integral part of the process. Monitoring of environmental media and indicators arise either from undertakings or from conditions. In either case it is important for all parties to be aware of the administrative, technical, legal and financial burdens that can accompany inflexible or unresponsive monitoring regimes. It is important to ensure that, where monitoring is provided for, it is clearly related to thresholds, which if exceeded cause a clearly defined set of actions to be implemented.

3.2 EIS PREPARATION

The previous sections have dealt with the generality of the content and procedures for EIA. This section provides guidance on each specific section of the

[15] It is important to note that some Competent Authorities - such as An Bord Pleanála - are precluded from having informal consultations with applicants.

EIS. It draws attention to the scope and focus of sections and to the topics that should be addressed in each.

3.2.1 PREAMBLE

A preamble can usefully establish the background and terms of reference for the EIS. Practitioners find it a useful way of explaining the structure and assumptions which underlie the EIS. The following topics are often included or referred to:-

- The approval process for which the EIS is prepared;
- The competent authority involved;
- Any correspondence, opinions or notice from the competent authority, Minister or other authority seeking an EIS;
- The full title of the application which the EIS accompanies, describing other documentation which may be relevant (e.g. drawings or planning application reports);
- The relationships between the topics used in the EIS and those stipulated by the Regulations (e.g. "In this report Fauna and Flora are combined as Ecology");
- The relevant category of development which is referred to in the Regulations;
- Any scoping or pre-application consultations which may have taken place. This specifies the bodies consulted and the principal concerns arising;
- The name and qualifications of the specialists who prepared each section;
- Any technical difficulties or lack of data which were encountered (this item is a requirement of the Regulations).

3.2.2 ALTERNATIVES

The presentation and consideration of the various alternatives investigated by the applicant is an important requirement of the EIA process.

Thus an outline of the main alternatives examined throughout the design and consultation processes is described. This serves to indicate the main reasons for choosing the development proposed, taking into account the environmental effects. For the purposes of the Regulations, alternatives may be described at three levels:-

- Alternative Locations
- Alternative Designs
- Alternative Processes

3.2.3 DESCRIPTION OF THE PROPOSED DEVELOPMENT

Introduction

The description of the proposed development is one of the two foundations upon which an EIA is made (the other is the description of the existing environment). A systematic approach is very important to ensure that all relevant aspects of the development are accurately and fully described. The objective is to provide a description in sufficient detail, which if taken together with the description of the existing environment, would allow an independent reader to understand the significant impacts likely to arise from the proposed development.

The description of the site, design, size or scale of the development, considers all relevant phases of the existence of the project from its construction through to its existence and operation (and in some cases to its restoration or decommissioning). It may also consider the evaluation of alternative locations, designs and processes. It is generally desirable to describe the proposed development in terms of those topics which will form the basis of the Impact Assessment, such as the emissions of the project into soils, water and air or the characteristics of the project which could potentially affect the flora, fauna or landscape.

The level of detail required will vary considerably according to the sensitivity of the existing environment and the potential of the project for significant effects. Also the focus of the EIS may change following initial baseline surveys e.g. occurrence of archaeological features, protected species, existence of buildings or designed landscapes (e.g. 18th Century demesne) etc. It must be stressed that not all of the topics described in the following section are likely to be of relevance to all projects.

The following headings may serve as useful reminders of the topics which can be addressed by descriptions or illustrations as appropriate:-

- Alternatives Examined
- Characteristics of the Project
- The Existence of the Project
- Description of Other Developments

Each of the headings is described in the following sections. (A detailed expansion of each topic is provided in the Advice Notes on Current Practice, which accompany these Guidelines).

Alternatives Examined
The requirement to present an outline of alternatives examined and the justification of the final proposed project is discussed above in *Section 3.2.2.*

Characteristics of the Project
The means of describing the physical characteristics of a development are summarized here. These topics are frequently cross-referenced to drawings and illustrations:

- the size of the proposed development;
- the cumulation with other proposed developments;
- the use of natural resources;
- the production of waste;
- pollution and nuisances;
- a description of the Risk of Accidents – having regard to substances or technologies used.

The Existence of the Project
Large projects, which require Environmental Impact Assessment, are described in a way, which takes account of their full "life-cycle". They have the potential to generate different effects at different times and at different places both at and beyond the development site.

The description should not overlook the other developments (often off-site) which occur as a direct result of the main project, such as a power line, a substation, road junction upgrade. These often result in significant impacts.

Description of Construction
Larger developments can take a number of years to complete. During this period there may be significant impacts, which are often of equal concern to that of the final project. The description can include, but not be limited to:-

- the Land-Use Requirement
- Proposed Works
- Significant Effects
- Environmental Protection Measures

Description of Commissioning
This section is included if the proposed development will not be substantially operational in the period immediately following construction. This description could include:-

- Phasing;
- Testing and commissioning;
- Occupation/use;
- Establishment of mitigation measures (monitoring, planting etc.).

The Operation of the Project
This is one of the most important sections of an EIS. While comprehensive, accurate descriptions are vital to ensure credibility, it must be stressed that not all of these topics will be relevant to many smaller projects.

- Description of the Principal Processes or Activities;
- The Scope of the Project;
- The Operations described in general terms;
- Processes;
- Occasional Activities;
- Occupants;
- Description of Materials Used;
- Description of Natural Resources Used;
- Description of Effects, Residues and Emissions;
- Description of Waste Management;

- Description of Secondary Processes/Activities.

Changes to the Project
Very few projects remain unaltered throughout their existence. Success may bring growth; technology or market forces may cause processes or activities to alter and all developments - like living entities - will some day cease to function. The lifecycles of some types of projects are finite and predictable. Such projects often consider their closure and decommissioning in detail from the outset, while for most developments a general indication of the nature of possible future changes may suffice. Descriptions may include:

- Description of Proposed Growth;
- Description of Decommissioning;
- Description of Other Changes.

Description of Other Developments
Many project impacts can arise from aspects of the development other than from the main project. These can loosely be grouped under two headings:- *Off-site and Secondary Developments.* Such impacts can often be as significant as those of the main project but are, occasionally, overlooked. The following are indicative of issues which may be examined:-

Off-Site Developments

Transportation
The provision of new access facilities (e.g. links to motorways) or the upgrading of existing facilities (e.g. road widths and junctions) carried out by other parties can give rise to significant environmental effects.

Energy
The provision of new power-lines or pipelines with associated sub stations or pumping stations can give rise (for instance) to impacts on landscape or ecological or archaeological heritage at a considerable distance from the project.

Secondary Developments
These include developments that arise solely as a consequence of the existence of the principal project, usually not carried out by the developer of the principal project. Examples include:-

- Commercial Developments at new major road junctions;
- Industrial and warehousing developments near new inter-modal transportation nodes;
- Recreational land-uses near new access in undeveloped areas;
- Retail development near new residential areas.

3.2.4 DESCRIPTION OF THE EXISTING ENVIRONMENT

Introduction
An accurate description of the existing environment is necessary to predict the likely significant impacts of a new development. This information also provides a valuable reference *(baseline)* which can be used for environmental monitoring of the impacts of the project, once it is in operation. It is important that the methodology used in undertaking baseline investigations is documented so that the results of later monitoring can be referenced.

Published Data and Site Surveys
Data on the existing environment is a fundamental resource for EIA. Descriptions should, in the first instance, rely upon published reference to ensure objectivity. Note that the absence of a designation or known feature (e.g. ecological or archaeological) does not mean that no such feature exists within the site. A detailed evaluation of the existing environment, by an independent specialist, is likely to be necessary for all topics that are likely to be significantly affected.

The environment is an extremely complex combination of natural and human factors, many of which are constantly changing. To ensure that comprehensive and accurate descriptions are provided in a manner which is consistent from one EIS to another, the Regulations specify the topics which should be used. These topics break the environment down into its constituent elements so that it can be systematically described. The topics are as follows:-

- *Human Beings*
- *Fauna and Flora*
- *Soil*
- *Water*
- *Air*
- *Climatic Factors*
- *The Landscape*
- *Material Assets, including the Architectural and Archaeological Heritage, and the Cultural Heritage*
- *The Inter-Relationship between the Above Factors*

This section provides general guidance on the scope, methodology and issues which an adequate description includes. *(See the Advice Notes on Current Practice* which accompany these Guidelines for more detail on description of each topic in the existing environment.).

General Methodology
To facilitate evaluation of the EIS, references to recognised descriptive standards are included where appropriate.

The description of any aspect of the environment should provide sufficient data to facilitate the identification and evaluation of the likely significant effects on that topic. Systematic, accurate and comprehensive descriptions include:

- Context
- Character
- Significance
- Sensitivity

Context
Describe the location, extent or magnitude of the environmental factor, e.g.:-

- *Where* is the monument?
- Are the air/water quality conditions *representative?*
- What proportion of the habitat is managed?

Character
Indicate the distinguishing aspects of the environment under consideration, e.g.:-

- Is it *unpolluted* air/water?
- What *types* of habitats are present?
- What *age* are the buildings?

Significance
What quality, value or designation is assigned to this aspect of the existing environment, e.g.:-

- Is it protected by legislation or designation?[16]
- Is it rare/scarce/common/abundant?
- Is it renewable/unique?
- Is it scenic/ordinary/derelict?

Sensitivities
What changes could significantly alter the character of this aspect of the environment, e.g.:-

- Would any increase in nutrients cause eutrophication?
- Would disturbance cause the nesting birds to leave?
- Would any manmade structures detract from the wilderness character?

Sufficiency of Data
How can a Competent Authority or Developer be assured that the EIS contains sufficient data? The following criteria can provide useful guidelines:-

- Is the information necessary for *identification of the main effects* available?
- Is the information necessary *for assessment* of the main effects available?
- Is the information focused on effects which are *likely* and *significant*?

The *certainty* or *confidence* which the information provides is a good basis for evaluating the quality of data. In practice unsatisfactory information is more likely to result from omissions than from inaccuracy.

All information is ultimately used to make decisions about whether to grant or withhold consent to

[16] See boxed text in Section 3.2.4.

LANDSCAPES OF THE EXISTING ENVIRONMENT
General Context
The 32.5ha site is located low on the northern slopes of the Suir River Valley in an area where the large irregular fields of the uplands give way to small and medium sized rectangular fields of the valley. These are enclosed by mature hedgerows which contain many tall ash, oak and sycamore. Dairy farming is the dominant land use which determines the character of the area, though a number of homes –unrelated to farming- have been built in the area in recent years, taking advantage of the panoramic views across the valley and the proximity of urban amenities of nearby Clonmel. The roads in the area are popular for walks on summer evenings and at weekends throughout the year.

When seen from the N24 (National Primary Route) the general area forms part of the foreground of the views towards Slievenamon. This road is designated as a scenic route on many tourist maps and the South Tipperary County Council Development Plan designates a number of views from the road for protection. The landscape of the general area plays an important role in literature and poetry, which is discussed in greater detail in Section 10, Cultural Heritage.

The site
The three fields and the farm buildings which comprise the site are typical of the area. The continuous line of mature ash and oak along the southern boundary limits views out of, or into, the site from the valley while the tall (5.5m high on average) vigorous hedgerows elsewhere provide significant visual enclosure. The interior of the site is visible from the upper slopes of Slievenamon (above 300m).

The lime-lined drive together with the stone gate posts and the laurel enclosed area in front of the house are locally distinctive man-made landscape elements. The steep slope towards the stream-side vegetation are important natural and visual amenities of the property.

Figure 4 **Sample Description of Landscape in the Existing Environment**

develop. "Sufficiency" may therefore be regarded as enough information upon which to base a decision.

Where it is the case that incomplete information is provided, it must be clear that this information is *not maliciously withheld* and that *all parties are aware of the incompleteness.* The resultant decision will usually be *qualified or conditional*. The following example will illustrate how incomplete information can be included.

The site was examined and was deemed to be grassland of a type which is very common throughout the Midlands. It should be noted that the examination was carried out in December when the full range of potential flora was not evident. A further study will be made, of the damp areas in particular, to determine whether any significant species are present during May-July. The detailed design of the carpark may need to be adjusted if anything of significance is encountered.

Figure 5 **Example of an ecological report which is qualified due to the necessity of being carried out at an unsuitable season of the year.**

Scope of Topics
The ten topics which are stipulated by the regulations – namely, Human Beings, Flora, Fauna etc. - are a necessary simplification of the environment. The full complexity of the environment may be described by reference to these topics. It is advisable to state in the preamble how specific issues (e.g. Insects) are related to a topic laid down in the Regulations (e.g. Fauna). Certain topics will have more significance for some projects than for others e.g. there will be more comprehensive detail than usual on geology for projects such as mining and quarrying.

The following is an indication of the range of environmental topics which can be organised within the headings provided by the Regulations.

Human Beings
Economic Activity
Social Patterns
Land-use
Employment
Health & Safety
Settlement Patterns

Fauna
Habitats
Breeding/Feeding/Roosting Areas
Routes
Mammals/Birds/Fish/Insects/Reptiles
Population Stability/Management
Critical Resources
Protection Status

Flora
Communities
Terrestrial/Aquatic/Marine
Seasonality
Succession
Existing Management
Habitat Requirements
Protection Status

Soils
Mineral Soils
Peats/Fens
Estuarine Sediments
Agricultural Capability
Engineering Characteristics
Geology (including surficial bedrock deposits, faulting, weathering and chemical characteristics)
Aquifers

Water
Ground/Surface/Estuarine/Marine
Physical
Chemical
Biotic
Beneficial Uses

Air
Air Quality
- Pollutants
- Suspended Particles

Odour
Noise
Vibration
Radiation

Climatic Factors
CFC's
Acid Rain
Thermal Pollution
Climate Change (macro and micro)
Pollution Transport

Landscape
Landscape Character
Landscape Context
Views & Prospects
Historical Landscapes
Manmade Landscapes

Material Assets ***(including Architectural and Archaeological Heritage and Cultural Heritage)***
Archaeological Heritage
Folklore/Tradition/History
Architecture/Settlements
Monuments/Features
Designed landscape
Natural Resources of Economic Value[17]

- Building & Structures
- Infrastructures

The Inter-Relationship between the Above Factors

The Changing Environment
When describing many aspects of the existing environment it is very important to be aware of their dynamic nature. Few aspects of nature remain unchanged for long. Communities grow, age or move, habitats have short and long term cyclical changes, monuments age, soils develop, even the climate has cycles of change.

Where applicable, the description of the environment can draw attention to any trends or other evidence of change which may be evident in the existing environment. Such information can significantly alter the perception of monitoring and cumulative impacts.

Significant Environments
A number of types of geographic areas are generally regarded as being particularly sensitive and/or significant. Many of these are officially designated, some may not be. The description of the existing environment may need to draw attention to the significance or sensitivity of the overall environment - even if no single factor is individually significant. Examples of such significant environments include:-

- Wetlands
- Coastal Zones
- Mountain and Forest areas
- Nature Reserves and Parks

[17] Resources that are valued and that are intrinsic to specific places are called ‘material assets’. They may be of either human or natural origin and the value may arise for either economic or cultural reasons. Examples of natural resources of economic value include assimilative capacity of air and water, non-renewable resources (e.g. minerals, soils, quarries and mines), renewable resources (hydraulic head, wind exposure).

- Areas classified or protected under legislation,[18] including special protection area designated pursuant to Directives 79/409/EEC and 92/43/EEC

- Areas in which environmental quality standards set by legislation have already been exceeded (i.e. areas where the capacity of the environment to facilitate more development has been exceeded.)
- Densely populated areas

- Landscapes of historical, cultural, or archaeological significance

3.2.5 DESCRIPTION OF THE LIKELY SIGNIFICANT IMPACTS

Introduction
It is a statutory requirement of EIA that the applicant presents an assessment of the likely impacts of the proposed development.

This section presents a number of challenges, namely to ensure that the EIS concentrates on:-

- Likely effects;

- Significant effects;

- Description of impacts that are accurate and credible.

Prediction of impacts is a more accurate description of this section since the impacts, by definition, have not yet occurred.

The statutory criteria for the presentation of the characteristics of potential impacts sets out that potential significant effects of the proposed development will be described with regard to:

- the extent of the impact (geographical area and size of the affected population);

- the magnitude and complexity of the impact;

- the probability of the impact;

- the duration, frequency and reversibility of the impact.

- the transfrontier nature of the impact (if applicable);

The Likelihood of Impacts
In theory, a new development can cause an infinite number of impacts which are *possible* while in practice a very limited number of impacts are *probable.*

Only probable or "likely" impacts are addressed. Probable impacts can be described as those which are *planned* to take place (e.g. the projected emissions, the proposed earthmoving etc.) and those which can be *reasonably foreseen* to be inevitable consequences of the normal construction and operation[19] of the development.

Provision for the prevention and control of abnormal operations (accidents) must be regarded as reasonable and prudent. The extent to which these circumstances (and their impacts) are examined, is guided by an assessment of the likelihood of their occurrence (risk).

This decision can be supported by judgment based on documented experience elsewhere or by a systematic risk assessment. Such assessments are usually employed only where the "worst case" impacts pose significant threats to the environment and/or human health. It should be noted that such risk assessments should only be undertaken where there is reasonable cause for it as they can be very time consuming, complex and expensive.

The Predicted Impact
The description of the impacts which are expected to occur should be as accurate and complete as possible. The method employed should be explained and justified with reference to the project and environment under consideration. Such methods should be judicious, accurate, complete and replicable. They should be carried out in accordance with established practice whenever this is applicable.

Potential Impact
In some circumstance, it may be necessary to describe the full extent of the proposed development's effects and emissions *before* the proposed mitigation measures become fully effective. Examples include the temporary displacement of wildlife or visual impacts before landscape establishment.

Residual Impact
The final or intended impact is that which occurs after the proposed mitigation measures have taken effect as planned. Examples include regeneration of ecological habitats, commissioning of environmental

[18] For example, sites and areas protected under the National Monuments Acts and the Planning and Development Act.

[19] Operation may be taken to mean all stages of the lifecycle of a project from commissioning to closure.

management systems, establishment of tree screening.

The "Do Nothing" Impact
All components of the environment are constantly changing due to a combination of natural and human processes.

When predicting likely impacts it is important to remember that there are two baselines available for comparison: the existing environment and the environment as it would be in the future if no management or development of any kind were to take place (the "*do nothing" impact*).

The "*do nothing*" scenario can be useful when assessing impacts caused by developments which themselves are designed to alleviate environmental or infrastructural problems - waste treatment facilities, flood relief projects, road building etc.

e.g. *"If this by-pass is not built then the trend of increasing road fatalities at that junction will continue". An example of a "do-nothing scenario".*

The "Worst Case" Impacts
Where the failure of the project, or its mitigation measures, could lead directly to profound, irreversible or life-threatening consequences then this scenario is described (examples include failure of a water impoundment structure, destruction of a unique habitat, obliteration of an historical site, contamination of a significant aquifer). It is important that the likelihood of such a scenario occurring is stated and explained.

Positive Impacts
While the principle objective of the EIS is to identify and mitigate significant adverse effects, it is also appropriate to describe the main positive environmental effects of the project.

The Significance of Impacts
The significance of an impact is the second criterion which is used to determine the scope of an EIS. Significance is usually understood to mean **either** the importance of the environment that is affected (its sensitivity to change) **or** the importance of the outcome of the impact (the consequences of the change). Significance is determined by a combination of (objective) scientific and subjective (social) concerns:

Objective Concerns
Topics are included if a development could cause significant impacts on an aspect of the environment which has been formally or systematically designated as being of importance. They are also included if the potential exists for the development to significantly alter the existing character of some aspect of the environment.

Four objective criteria can be used to determine whether an impact is of significance:-

- Magnitude & Intensity - Any development which can cause effects over a wide area, to a large number of receptors, or effects which are of an intensity which is significantly in excess of those normally experienced.

- Integrity - The degree to which the character or attributes of the baseline environmental topic is continued, enhanced or reduced.

- Duration - Any development which can cause impacts for a long period of time (more than one generation) or which will cause permanent changes to any aspect of the environment.

- Probability- Where the magnitude, intensity, duration or consequences of any change cannot be anticipated with a reasonable level of certainty.

Subjective Concerns
A topic can acquire significance where society as a whole, a community or a significant number of individuals are concerned. This usually arises when some aspect of a development may adversely affect them or something which they value.

The Description of Impacts
The description of impacts is usually subjected to closer scrutiny than any other part of the EIS Clarity of method, language and meaning are vital to accurately explain the full range of impacts. Adherence to a systematic method of impact description can be of considerable assistance in this matter. The following notes offer guidance on the issues that descriptions of impacts address.

Language and Terms
Impacts are described as clearly and as directly as possible.

- The phrase "...impact will occur" is always preferable to *may*, *could*, or *might* unless there is uncertainty about the impact;

IMPACTS

2.3 ha of freshwater marsh (marked 'A' on the site plan) will be filled by the new access causeway. This will cause the permanent loss of almost 35% of the site's wetland habitat, which in turn is among the biggest wetland areas in the country. Though uncommon in Leinster, these habitats are abundant elsewhere in Ireland. Therefore the impact may be characterised as a permanent, regionally significant, impact.

The consequence of this impact will be to reduce the attractiveness of the marsh as a nesting site for the grebes mentioned earlier (see Section 2.4). The deterioration of the qualities of this habitat will arise on account of two effects, the reduction in the extent of open water and the significantly greater likelihood of disturbance to nesting birds caused by the new path at the water's edge.

Mitigation

The affected area of freshwater marsh has been kept to a minimum by the consideration of a wide range of site layout options at the preliminary design stage. The residual impacts of the selected option will be mitigated by the following measures:

- *All remaining freshwater marsh areas (see 'B' on site plan) will be sterilised from further development and will be made accessible for ecological study by interested persons on application to the Company.*
- *A non-return tidal valve will be installed and maintained by the Company at Loughery's Bridge, to extend the area of freshwater marsh.*
- *The breeding population of grebes will be monitored. If the number of successful breeding pairs falls over three successive years then the new path will be closed, for the duration of the breeding season, between points 'X' and 'Y' as indicated on the site plan. The path will not be reopened until an alternative, ecologically sustainable, pattern of access can be devised to the satisfaction of the planning authority.*

Figure 6 **Sample Impact Description**

- Avoid euphemisms (e.g. the description of the clearfelling of a mature wood as "*a woodland management programme");*
- Use terms consistently throughout the EIS, ideally referring to a glossary of terms (See Section 4).

The description, clearly and consistently identifies four key aspects of any impact, namely *its character, magnitude, duration and consequence.*

Character of Impacts

- Identify the aspect of the environment affected;
- Describe whether the impact is positive, neutral or negative;
- Highlight significant impacts (positive and negative).
- Indicate whether the impact will be temporary, short, medium or long-term;
- Highlight permanent impacts.

Magnitude

- Quantify the *amount or intensity* by which the character/quality of any aspect of the environment will change (i.e. how much pollution);
- Indicate the spatial extent of the impact (will some, much or all of the areas be affected);
- Describe the degree of change; (i.e. imperceptible, slight, noticeable or significant);
- Highlight profound (i.e. complete) changes of character.

Duration

- State whether the impact will be continuous, intermittent or occasional;
- Indicate whether the impact will be temporary, short, medium or long-term;
- Highlight permanent impacts.

Consequences

- Identify the receptors which will be affected, indicating their sensitivity and significance;
- Indicate whether the impact can be avoided mitigated or remedied;
- State whether compensation[20] is available, possible or acceptable;
- Highlight irreversible impacts;
- Highlight when the consequence cannot be determined.

Indirect Impacts

Impacts which are caused by the interaction of effects, or by associated or off-site developments, are classed as indirect impacts. Cumulative and synergistic impacts are often indirect. Prediction of such impacts can be difficult until the full extent of direct impacts has been established, together with their mitigation measures. These in turn can establish secondary effects which are checked against the sensitivities of the existing environment described earlier. *Note in particular the capacity for mitigation measures to cause indirect impacts e.g. the visual impacts of an acoustic screen wall or the sludge waste disposal necessitated by water treatment*. The importance of considering these types of impacts as an integral part of the EIA process is recognised the recently published paper by the European Commission[21].

3.2.6 DESCRIPTION OF MITIGATION MEASURES

Introduction

The central purpose of Environmental Impact Assessment is to identify potentially significant adverse impacts at the pre-consent stage and to propose measures to mitigate or ameliorate such impacts. This section describes the range of methods which are available for mitigation. There are three established strategies for impact mitigation - avoidance, reduction and remedy. The efficacy of each is directly dependent on the stage in the design process at which environmental considerations are taken into account (i.e. impact avoidance can only be considered at the earliest stage, while remedy may be the only option available to fully designed projects).

Mitigation by Avoidance

Avoidance is generally the fastest, cheapest and most effective form of impact mitigation. Environmental effects and consideration of alternatives must be taken into account at the earliest stage in the site selection and project design processes, e.g. realignment of transport corridor to avoid residential property, avoid habitat destruction or to reduce agriculture severance etc.

Mitigation by Reduction

This is a very common strategy for dealing with effects which cannot be avoided. It concentrates on the emissions and effects and seeks to limit the exposure of the receptor. It is generally regarded as the "*end of pipe*" approach because it does not seek to affect the source of the problems (as do avoidance strategies above). As such this is regarded as a less sustainable, though still effective, approach.

Reducing the Effect

This strategy seeks to intercept emissions, effects and wastes before they enter the environment. It monitors and controls them so that acceptable standards are not exceeded. Examples include wastewater treatment, filtration of air emissions and noise attenuation measures.

Reducing Exposure to the Impact

This strategy is used for impacts which occur over an extensive and undefined area. Such impacts may include noise, visual impacts or exposure to hazard. The mitigation is effected by installing barriers between the location(s) of likely receptors and source of the impact (e.g. sound barriers, tree screens or security fences).

Mitigation by Remedy

This is a strategy used for dealing with residual impacts which cannot be prevented from entering the environment and causing adverse effects.

The Principle of Remedy

Remedy serves to improve adverse conditions which exist by carrying out further works which seek to restore the environment to an approximation of its previous condition or a new equilibrium.

Examples of Remedy

- Reinstating buildings, walls or features;
- archaeological excavation of deposits or features;
- recordings of buildings of architectural interest where they must be removed;
- Restoring water or soil quality;

[20] In this context compensation refers to environmental, not fiscal measures.

[21] EC XI 1999, Guidelines for the Assessment of Indirect and Cumulative Impact as well as Impact Interactions.

		DESCRIPTION			EVALUATION		
DESCRIPTION	**Impact No.**	**Character**	**Magnitude**	**Duration**	**Consequences**	**Significance**	**Certainty**
Human Beings	1	Loss of public access	2 km of Kerry Way	3 months of each summer	Diversion of hill walkers	Slight	High
Flora	2	Loss of vegetation	3 ha (5% of site)	Permanent	None Known	Slight	High
Fauna	-	-	-	-	-	-	-
Soil	3	Erosion of peat	Along 2km of boundary	Intermittent summer only	Loss of vegetation/ Visual impact	Slight	Low
Water	-	-	-	-	-	-	-
Air	-	-	-	-	-	-	-
Climate	-	-	-	-	-	-	-
Landscape I	4	Loss of solitude	See Map A	Long term	Loss of hill walker's amenity	Significant	-
Landscape II	5	Visibility of mast & fence	See Map A	Long term	Contrast with upland character	Significant	High
Cultural Heritage	6	Disturbance of summit cairn	30% of the site	Permanent	Loss of data	Significant	Low
Material Assets	-	-	-	-	-	-	-

Figure 7 **Sample Impact Evaluation Checklist**

- Increased planting of specific trees/shrubs to offset unavoidable loss of vegetation;
- Installing double-glazing, deeper wells or higher walls;
- Introduction of tunnels to accommodate badger movements.

Impacts which cannot be Mitigated

It will not always be possible or practical to mitigate all impacts (e.g. felling mature trees). Where this is the case then the *residual impacts* are clearly described in accordance with the system of impact description as set out previously.

3.2.7 NON-TECHNICAL SUMMARY

Introduction

The Regulations include this requirement because one of the fundamental objectives of the EIA process is to ensure that the public are made aware of the environmental implications of any decisions about whether to allow new developments to take place.

It is often useful to prepare a non-technical summary as a separate and self-contained document, which can be widely distributed, to the public who are likely to be affected by the development. It is helpful if it contains the name and address of the Competent Authority to whom any comment should be sent, indicating a latest date for such observations.

Structure and Contents

The non-technical summary is laid out in a similar, but condensed, format to the main EIS, i.e. describing the project, existing environment, impacts and mitigation measures. It often includes a site location and site layout plan (showing context) together with any easily interpreted graphical representation of the proposed development, such as a perspective drawing.

Language and Terms

The non-technical summary is short and easily followed, but it does not omit or understate any impacts which may be controversial. Significant impacts must be included.

Technical terms, abbreviation, references or jargon are omitted.

4. GLOSSARY OF TERMS

Alternatives (see sections 2.1.1, 2.3.1, 2.4.3, 3.2.2)
A description of alternatives - as defined by the Regulations - alternative locations, alternative designs and alternative processes.

Amelioration
Measures to diminish a negative impact.

Aquifer
A body of permeable rock that is capable of storing significant quantities of water.

Archaeology
The study of past societies of any period through the material remains left by those societies and the evidence of their environment. The material things (objects, monuments, sites, features, deposits) which archaeology uses to study past societies are referred to as 'archaeological heritage'.

Baseline Survey
A description of the existing environment against which future changes can be measured.

BAT – Best Available Techniques
Best Available Techniques shall mean the most effective and advanced stage in the development of activities and their methods of operation which indicate the practical suitability of particular techniques for providing in principle the basis for emission limit values designed to prevent and, where that is not practicable, generally to reduce emissions and the impact on the environment as a whole:

- 'techniques' shall include both the technology used and the way in which the installation is designed, built, maintained, operated and decommissioned;
- 'available' techniques shall mean those developed on a scale which allows implementation in the relevant industrial sector, under economically and technically viable conditions, taking into consideration the costs and advantages, whether or not the techniques are used or produced inside the Member State in question, as long as they are reasonably accessible to the operator;
- 'best' shall mean most effective in achieving a high general level of protection of the environment as a whole.

BAT may be determined in each EU member state with reference to the Bref documents.

BATNEEC - Best Available Technology Not Entailing Excessive Costs
Use of BATNEEC means that a greater degree of control over emissions to land, air and water may be exercised, utilising the best currently available technologies. In the identification of BATNEEC emphasis is placed in pollution prevention techniques including cleaner technologies and waste minimisation. This was required by the EPA as part of Integrated Pollution Control Licence under the EPA ACT 1992. BATNEEC is superseded by BAT.

Biotic
Processes which relate to living organisms.

BPEO - Best Practicable Environmental Option
Takes accounts of the total pollution from a process (including the risk of transfer of pollutants from one medium to another) and the technical possibilities for dealing with it.

***Bref* (See Article 16 of IPPC Directive 96/61/EC)**
These are reference documents developed under the aegis of the European Commission with input from industry, (MS) Regulators and NGO's, at the European IPPC Bureau in Seville. These documents are intended to advance the development of BAT throughout the EU (see http://www.eippcb.jrc.es).

Competent Authority (see sections 2.3.4, 3.1.2)
Any authority charged with examining an Environmental Impact Statement with a view to issuing a consent to develop.

Commissioning (see section 3.2.3)
The rendering fully operational of a project or process.

Decommissioning (see section 3.2.3)
The final closing down, and putting into a state of safety of a development, project or process when it has come to the end of its useful life.

"Do nothing" Scenario (see section 3.2.5)
The situation or environment which would exist if no intervention or development were carried out[22] .

Ecology
The study of the relationships between living

[22] It is worth noting here that this is not necessarily an option under the Local Government (Planning and Development) Act 1999, where the owner or occupier of a protected structure has a duty to protect it from endangerment and it can be an offence to allow a structure to deteriorate.

organisms and between organisms and their environment (especially animal and plant communities), their energy flows and their interactions with their surroundings.

Effluent
Any liquid discharged from a source into the environment.

Environmental Impact Assessment – EIA (see sections Legislation, 1.1)
The process of examining the environmental effects of development - from consideration of environmental aspects at design stage through to preparation of an Environmental Impact Statement, evaluation of the EIS by a competent authority and the subsequent decision as to whether the development should be permitted to proceed, also encompassing public response to that decision.

Environmental Impact Statement – EIS (see sections Introduction, 1.1, 1.7, 1.8)
A statement of the effects, if any, which the proposed development, if carried out, would have on the environment.

Emission (see sections 3.2.3, 3.2.6)
a) an emission into the atmosphere of a pollutant within the meaning of the Air Pollution Act 1987.
b) a discharge of polluting matter, sewage effluent or trade effluent within the meaning of the Local Government (Water Pollution) Act 1977 to waters or sewers within the meaning of that Act.
c) disposal of waste, or
d) noise.

EPA (see section EPA)
The Environmental Protection Agency.

Geology (see section 3.2.4)
The science of the earth, including the composition, structure and origin of its rocks.

Habitat (see section 3.2.4, 3.2.6)
The area in which an organism or group of organisms live.

Hydrology
The science concerned with the occurrence and circulation of water in all its phases and modes, and the relationship of these to man.

Impact (see sections 1.6, 2.2.1, 3.2.5, 3.2.6)
The degree of change in an environment resulting from a development.

Impact Anticipation (see section 3.1.4)
Using knowledge of both the development and the receiving environment to predict the likely effects and consequences.

Impact Avoidance (see sections 2.2.1, 3.2.6)
The modification of project decisions (about site location or design for example) having regard to predictions about potentially adverse environmental effects.

Infrastructure (see section 3.2.4)
The basic structure, framework or system which supports the operation of a development project for example, installations such as roads and sewers which are necessary to support development projects.

Integrated Pollution Control - IPC
This was a National licensing/enforcement regime for specified activities. It aimed at preventing or resolving pollution problems rather than transferring them from one medium to another. All major emissions to land, air and water were considered simultaneously and not in isolation in order to minimise pollution of the environment as a whole. IPC is superseded by IPPC.

Integrated Pollution Prevention and Control – IPPC (see Directive 96/61/EC)
This is an EU-wide licensing/enforcement regime for specified activities. It aims to prevent, reduce, and as far as possible eliminate pollution by giving priority to intervention at source and ensuring prudent management of natural resources, in compliance with the 'polluter pays' principle and the principle of pollution prevention. Emphasis is placed on energy efficiency and residuals management.

Land-use
The activities which take place within a given area of space.

Life Cycle (see section 3.2.3)
Refers to the stages in the life of a process or development including construction, operation, existence, extraction, manufacture, storage, transport, handling, use, disposal and decommissioning.

"Likely Effects / Impacts" (see sections 2.2.1, 3.2.5)
The effects that are proposed to take place - based on an understanding of the interaction of the proposed

development and the receiving environment".

Methodology (see section 3.2.4)
The specific approach or techniques used to analyse impacts or describe environments.

Mitigation (see sections 2.3.1, 3.2.6)
Measures designed to avoid, reduce, remedy or compensate for impacts.

Mitigation by Remedy (see section 3.2.6)
Impact Avoidance
When no change is caused.

Impact Reduction
Where the significance of adverse impacts is lessened.

Impact Remedy
When an adverse effect is replaced with a more acceptable effect.

Mitigation Measures (see sections 3.2.5, 3.2.6)
The means by which decisions about a proposed development are modified to avoid, reduce or remedy the adverse environmental effects that are identified.

Monitoring (see sections 3.1.4, 3.2.4)
The repetitive and continued observation, measurement and evaluation of environmental data to follow changes over a period of time, to assess the efficiency of control measures.

NGO (see sections 1.4, 2.3.6)
An acronym used to describe Non Governmental Organisations.

Palaeontology
The branch of science that deals with extinct and fossil animals and plants.

Particulates
Fine solids or liquid droplets suspended in the air.

Pollution (see sections 3.2.3, 3.2.4, 3.2.5)
Any release to the environment which has a subsequent adverse effect on the environment or man.

Precautionary Principle
The theory that the absence of complete information should not preclude precautionary action to mitigate the risk of significant harm to the environment.

Processes (see sections 1.4, 2.3.6)
The activities which take place within a development.

Project Promoter
A term sometimes used to describe persons or organisations proposing to carry out a development.

Reasonably Foreseen (see section 3.2.5)
A working assumption about the future that assumes that a project will be developed as planned and used within a receiving environment that will change in accordance with currently evident trends. It will include a consideration of the likelihood and consequences of abnormal occurrences - such as accidents.

Receptor (see section 1.4)
Any element in the environment which is subject to impacts.

Risk Assessment (see section 3.2.5)
An analytical study of the probabilities and magnitude of harm to human health or the environment associated with a physical or chemical agent, activity or occurrence.

Scoping (see sections 1.4, 2.4.5, 3.1.2)
The process of identifying the significant issues which should be addressed by a particular Environmental Impact Assessment.

Screening (see sections 1.3, 2.4.4, 3.1.1)
The process of assessing the requirement of a project to be subject to Environmental Impact Assessment based on project type and scale and on the significance or environmental sensitivity of the receiving environment.

Sensitivity (see sections 2.3.1, 2.4.7, 3.2.3, 3.2.4)
The potential of a receptor to be significantly changed.

Significance (see sections 2.4.7, 3.2.4, 3.2.5)
The sensitivity of a receiving environment to change or the consequence of change for the receiving environment.

Statutory EIS
A term sometimes used to describe an EIS prepared in accordance with the regulations.

Statutory Consultees (see section 1.1)
Organisations and authorities stipulated by Legislation to be notified by a competent authority if an application is made which might give that

organisation a cause for concern.

Sustainable Development
Defined by the Brundtland Commission 1987
"Development that meets the needs of the present without comprising the ability of the future generation to meet their own needs".

Threshold (see section legislation)
The magnitude of a project which, if exceeded, will trigger the requirement for an Environmental Impact Assessment to be carried out.

Vector (see section 2.4.2)
An organism (animal or fungus, for example) which transmits or acts as a carrier of parasites or disease.

5. GLOSSARY OF IMPACTS

Quality of Impacts

Positive Impact
A change which improves the quality of the environment (for example, by increasing species diversity; or the improving reproductive capacity of an ecosystem, or removing nuisances or improving amenities).

Neutral Impact
A change which does not affect the quality of the environment.

Negative Impact
A change which reduces the quality of the environment (for example, lessening species diversity or diminishing the reproductive capacity of an ecosystem; or damaging health *or* property or by causing nuisance).

Significance of Impacts

Imperceptible Impact
An impact capable of measurement but without noticeable consequences.

Slight Impact
An impact which causes noticeable changes in the character of the environment without affecting its sensitivities.

Moderate Impact
An impact that alters the character of the environment in a manner that is consistent with existing and emerging trends.

Significant Impact
An impact which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment.

Profound Impact
An impact which obliterates sensitive characteristics.

Duration of Impacts

Short-term Impact
Impact lasting one to seven years.

Medium-term Impact
Impact lasting seven to fifteen years.

Long-term Impact
Impact lasting fifteen to sixty years.

Permanent Impact
Impact lasting over sixty years.

Temporary Impact
Impact lasting for one year or less.

Types of Impacts

Cumulative Impact
The addition of many small impacts to create one larger, more significant, impact.

'Do Nothing Impact'
The environment as it would be in the future should no development of any kind be carried out.

Indeterminable Impact
When the full consequences of a change in the environment cannot be described.

Irreversible Impact
When the character, distinctiveness, diversity or reproductive capacity of an environment is permanently lost.

Residual Impact
The degree of environmental change that will occur *after* the proposed mitigation measures have taken effect.

Synergistic Impact
Where the resultant impact is of greater significance than the sum of its constituents.

`Worst case' Impact
The impacts arising from a development in the case where mitigation measures substantially fail.