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REVIEWING THE QUALITY OF ENVIRONMENTAL STATEMENTS AND ENVIRONMENTAL APPRAISALS

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1. INTRODUCTION

Many countries and international organisations now use procedures for the *environmental impact assessment* (EIA or, in the United Kingdom, EA) of projects which may give rise to significant environmental impacts (Lee, 1995; Sadler, 1996). These procedures establish an EIA process of which one principal element is the requirement to prepare and publish an *environmental impact statement* (EIS or, in the United Kingdom, ES).[1] The overall performance of the EIA process depends on many factors (Lee, Walsh and Reeder, 1994) but, among these, the quality of the statements is of particular importance. Yet, as many studies have shown, the quality of EISs, particularly in the early years of their use, has often been unsatisfactory.

In 1989, Colley developed a review package for use in assessing the quality of environmental statements submitted in response to UK planning regulations which had newly mandated environmental assessments in accordance with EC Directive 85/337 (Colley, 1989; Department of Environment, 1989). This formed the basis for the ES review package first published as OP 24 in 1990 and, with minor changes, as a second edition of OP 24 in 1992 (Lee and Colley, 1990; 1992). This is the version which is re-produced in Part B of this Occasional Paper, with minor changes to take account of anticipated modifications in environmental assessment provisions which will be required by Directive 97/11/EC (CEC, 1997a).

The development and method of using this ES review package is described in the first part of chapter 2. The second part summarises various findings from its application both in the United Kingdom and in a number of other countries. It also includes information relating to the use of other review packages developed by different authors for similar purposes. Collectively, the findings confirm there was a serious EIS quality problem during the early years of Directive 85/337's application which has subsequently been reduced, but not yet fully eliminated, due to a combination of improved EIA guidance and training and increased practical experience.

During the 1990s, an increasing number of countries and international organisations has also been developing procedures for the *strategic environmental assessment* (SEA or, in the United Kingdom, environmental appraisal) of policies, plans and programmes (Lee, 1995; Sadler and Verheem, 1996). Both SEA regulatory requirements and practice are much less developed than in the case of EIA for projects. Nevertheless, within the European Union, the possible regulatory form of SEA for land use plans has been indicated in the European Commission's proposal for an SEA directive concerning certain plans and programmes (CEC, 1997b). Also, in the United Kingdom, Planning Policy Guidance Note 12 (PPG 12), issued by the Department of the Environment in 1992, though non-mandatory, provides strong encouragement to local planning authorities to undertake environmental appraisals of their development plans (DoE, 1992). In 1993, it also issued some guidance, mainly based on existing practice, concerning how such environmental appraisals might be undertaken (DoE, 1993). (Other related environmental appraisal guidance includes DETR, 1998a, 1998b, 1999 forthcoming.) However, recent reviews of environmental appraisal reports[2] which have been produced since 1993 suggest that similar quality problems exist to those encountered with the early environmental statements (Therivel, 1998; Curran, Wood and Hilton, 1998).

During 1998, Bonde and Simpson developed a review package for assessing the quality of environmental appraisal reports for land use (development) plans (Bonde, 1998; Simpson, 1998). Their joint version of this Package is re-produced in Part C of this Occasional Paper. Its development and method of use is described in the first part of chapter 3. The findings from its application to a sample of environmental appraisals are summarised in the second part of the same chapter. These re-enforce the findings of the more general reviews mentioned above and suggest that the quality problem is at least as severe as that experienced with the first generation of UK project-level environmental statements.

However, the findings relating to the quality of environmental appraisal reports are provisional for a number of reasons. First, since the formal requirements for such reports are not yet well-defined and perceptions of best practice are still evolving, the criteria by which the quality of environmental appraisals should be evaluated are not yet finalised. Secondly, the Package has so far only been applied to a small sample of appraisal reports; greater numbers of reviews need to be completed before firm conclusions are drawn.

It is intended to address both of these limitations in on-going work, and the participation of others in these activities is encouraged. In our view, the future agenda might include the following:

- Further development and testing of the Package in relation to environmental appraisal reports for UK land use/development plans.
- Application of the Package to a greater number of environmental appraisal reports both to reach more reliable conclusions on their general quality but also to identify, more precisely, the main types and sources of poor quality within these reports. This will enable guidance, training, etc. to be better targeted to achieve the most needed improvements in assessment practice.
- Modifications to the Package to adapt its use to SEA reports for different types of policies, plans and programmes, different regulatory frameworks and different country situations.
- Modifications of the Package to evaluate the quality of integrated sustainability appraisals for policies, plans and programmes as these begin to be prepared in the near future.
- Studies of the relationship between the quality of SEA reports and the overall performance of the SEA process, which will parallel similar studies of the relationship between the quality of EISs and the

overall performance of the EIA process (Lee, Walsh and Reeder, 1994).

Overall, it is hoped that cost-effective, systematic reviews of the quality of EISs and SEA reports will become more widely used as a measure of quality control and that these will assist in improving the overall performance of the process of which they form part. Comments on the two review packages in this Paper, reports on the findings from their use, and suggestions for their improvement are welcomed.

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PART A

REVIEW METHODS AND FINDINGS

2. QUALITY OF ENVIRONMENTAL STATEMENTS

2.1. Developing and Using the Environmental Statement Review Package

The ES review package, contained in Part B of this Paper, has been prepared primarily to assist in assessing the quality of environmental statements submitted in response to UK planning regulations which require environmental assessments to be undertaken in accordance with Directive 85/337/EEC, as amended by Directive 97/11/EC from March 1999 (DoE, 1989; DETR, 1999 forthcoming).

It is mainly intended for use by the staff of local planning authorities and other competent authorities, developers and consultancies, statutory consultees and non-governmental organisations, and researchers involved in the environmental assessment process. With limited amendment, it is also applicable to reviewing the quality of other UK environmental statements which are prepared under different UK regulations (DoE, 1989). Additionally, as illustrated in section 2.2 below, the Package has also been adapted and applied in a number of other countries.

The Package was prepared initially taking into consideration the quality review criteria proposed at that time (notably, Ross, 1987; Elkin and Smith, 1988; Tomlinson, 1989). Subsequently, it has been revised in the light of experience but remains substantially in its original form (Lee and Colley, 1992). It is designed as a self-contained package with these components:

- advice for reviewers (i.e. necessary background information and guidance on the use of review criteria)
- a list of criteria (called Review Topics) to be used in each ES review;
- a collation sheet on which to record the findings from using the criteria.

It was decided that the criteria should, as far as possible, satisfy the following requirements:

- each should be well defined and unambiguous;
- each should be capable of reasonably consistent and objective application;
- each should serve a distinct purpose different from the purposes of other criteria;
- each should be considered sufficiently important to merit influencing the ultimate assessment of ES quality;
- the number of criteria should be as few as possible, consistent with covering all topics identified as essential (judged, in this instance, by reference to the requirements of the EC directive, UK planning regulations (SI No. 1199, 1988) and to good internationally-recognised EIA practice (e.g. as reviewed in Lee, 1989; updated by Sadler, 1996, Canter and Sadler, 1997);
- they should be usable by reviewers who may not possess specialist environmental expertise but who are familiar with the relevant EIA regulations, have a basic, non-specialist understanding of EIA methodologies and current ideas on good practice in EIA, and have a broad knowledge of environmental concerns.

To facilitate their use, the criteria are arranged in a hierarchical (or pyramidal) structure. The reviewer commences the review at the lowest level, i.e. the base of the pyramid, which contains simple criteria relating to specific tasks and procedures. Then, drawing upon these assessments, he/she progressively moves upwards from one level to another in the pyramid applying more complex criteria to broader tasks and procedures in the process until the overall assessment of the ES has been completed (see Figure 2-1).

Figure 2-1. The assessment pyramid (environmental statements)

The assessment resulting from applying each criterion is recorded by the reviewer on the Collation Sheet using a standard list of assessment symbols as described in Table 2-1. ‘Letters’ rather than ‘numbers’ are used as symbols to discourage reviewers from crude aggregation to obtain assessments at the higher levels in the pyramid.

The Review Package has evolved through many versions, being tested at each stage of development on individual ESs, using pairs (or greater numbers) of independent reviewers. Where significant differences occurred between reviewers' assessments, the source of the differences was investigated and, where appropriate, the Review Package was revised to correct any ambiguities, etc. in wording. The current version has been extensively tested both within and outside the EIA Centre and, particularly at the higher levels in the assessment pyramid, there has been a substantial level of agreement in the assessments made by different reviewers of the same ES. Subsequent experience in using the Review Package has supported earlier conclusions on its consistency.

Table 2-1. List of assessment symbols (environmental statements)

Symbol	Explanation
A	Relevant tasks well performed, no important tasks left incomplete.
B	Generally satisfactory and complete, only minor omissions and inadequacies.
C	Can be considered just satisfactory despite omissions and/or inadequacies.
D	Parts are well attempted but must, as a whole, be considered just unsatisfactory because of omissions or inadequacies.
E	Not satisfactory, significant omissions or inadequacies.
F	Very unsatisfactory, important task(s) poorly done or not attempted.
NA	Not applicable. The Review Topic is not applicable or it is irrelevant in the context of this Statement.

In our experience, an ES of average length (say 50 pages – many well vary considerably below and above this figure) can be reviewed, using this Package, in three hours. Both the speed and quality of review increases after the first review has been completed. Each ES should be reviewed independently by two persons and any significant differences in the assessment of particular Review Topics should be systematically examined by them to see whether they can be resolved. The Collation Sheet should not only be used to record the chosen assessment symbols, but also to record, in a brief summary, the principal strengths and weaknesses of the Statement that has been assessed. This discourages 'over-mechanical' reviews.

The findings of a review can be used in different ways. For example, a developer, having carried out a review of his own draft ES and having identified a number of deficiencies in it, can alert those responsible for its preparation (whether 'in-house' or external consultants) to correct any deficiencies before the ES is finalised. Where the review has been undertaken by a statutory environmental authority or a non-governmental organisation, as part of the formal consultation process following the publication of the ES, its findings may form part of the consultee's submission to the competent authority.

The competent authority (for example, the local planning authority, in the UK situation) may use review findings in a number of ways, such as:

- as a basis for identifying any additional information, required from the developer, which is not satisfactorily provided in the ES (if such information is not forthcoming the planning authority may refuse to grant planning permission - DOE (1989) para. 42);
- as a basis for identifying those environmental aspects described in the ES which the planning authority needs to review in greater depth (e.g. through a literature search, consultations with other authorities and organisations with environmental expertise, or hiring consultants). In such cases, the Review Package may be used as the first stage of a two-stage Review. It should then save time, and

consultation fees as well, in 'scoping' any follow-up work required at the second stage of the Review;

- as an aid in evaluating the likely environmental impacts of the project, prior to reaching a decision on its authorisation.

2.2 Quality of Environmental Statements: Review Findings

The Review Package has been used to evaluate the quality of a number of samples of UK environmental statements between 1988 and the mid-1990s. Lee and Brown (1992) and European Commission (1996), taken in combination, cover the whole period. Lee and Brown (1992) found that two thirds of the ESs they sampled were of unsatisfactory quality in 1988/89 (i.e. in 'D', 'E' or 'F' quality categories). Wood and Jones (1991) obtained very similar results, based upon a different sample of ESs. However, using a later sample of ESs completed in 1990/91, Lee and Brown (1992) found that the proportion that were unsatisfactory had fallen to around two fifths. The European Commission (1996) study, which compared the quality of samples of ESs in 1990-1 and 1994-96 in various EU [check in full when first used] countries, recorded a further, but relatively modest, fall in the proportion of unsatisfactory quality ESs in the United Kingdom. Thus, by the mid-1990s, a significant ES quality problem seemed to have been considerably reduced but a sizeable minority of unsatisfactory ESs was still being produced.

The Review Package has also been used in a number of EIS quality studies involving other European Union countries. Lee and Dancey (1993) compared the quality of samples of EISs in Ireland and the United Kingdom between 1988 and 1992. In 1988/9 the percentage of EISs of unsatisfactory quality in Ireland was even higher than in the UK but by 1991/2 there had been a substantial improvement in both countries so that a similar percentage (around 60%) of the two samples were of satisfactory standard ('A', 'B' or 'C' grades) by the end of the period. The European Commission (1996) study also presented findings on EIS quality changes, between 1990-1 and 1994-96, in Belgium, Denmark, Germany, Greece, Ireland, Portugal and Spain, as well as in the United Kingdom. It found that, taking all of these countries together, the proportion of EISs sampled that were satisfactory increased from 50% to 71% over the period. Though the findings varied between countries, partly due to sample sizes, the overall trend within the EU appears to have been broadly similar to that in the United Kingdom. Where similar kinds of studies have been undertaken, using other review methodologies – for example, the European Commission checklist or the Oxford Brookes methodology – similar results have been obtained (European Commission, 1994; Glasson et al, 1996).

Outside the European Union, the Review Package has also been adapted and applied to evaluate the quality of samples of EISs, or their equivalent, in a number of developing countries and countries in transition. Studies have been reported relating to India (Rout, 1994), Malaysia (Ibrahim, 1992) and Tanzania (Mwalyosi and Hughes, 1998) as well as to Russia, Hungary and the Czech Republic. In certain cases, the samples are quite small or the studies are not yet completed and, therefore, any findings have to be interpreted with care. However, the provisional findings reveal a number of similarities with the UK and EU situation. There are examples of both satisfactory and unsatisfactory quality EISs in most countries but a significant proportion within the chosen samples are deficient, especially those completed in the earlier years of EIA regulation.

A number of the studies mentioned above (both UK-based and elsewhere) have also analysed the more specific strengths and weaknesses of EISs at the Area, Category and Sub-category review levels. A number of common features emerge, for example:

- Quality tends to be better in Areas 1 and 4 than in Areas 2 and 3. It tends to be better than average in Area 1 (Description of the development, the local environment and base-line conditions), possibly because a number of the tasks are more descriptive and familiar to those responsible for EIS preparation. However, they tend to be less satisfactory where quantified measures, relating to wastes or base-line environmental conditions, are required. Performance also tends to be better than average in Area 4 (Communication of Results) once there is sufficient understanding of the presentational

requirements for potential users, in the EIS and its non-technical summary. More subtle presentational deficiencies, relating for example to concealed bias, tend to persist.

- Quality in Area 2 (Identification and evaluation of key impacts) is often more problematic. Deficiencies are most evident in Review Categories relating to scoping, impact prediction and the determination of impact significance. These contain more challenging tasks which lie at the heart of the impact assessment process. Quality in Area 3 (Alternatives and Mitigation) is variable but frequently unsatisfactory. This is partly due to inadequate consideration of alternatives, (which is often caused by starting the EIA process too late in the project cycle). It can also result from a failure to identify, and insufficient commitment to, mitigation measures which would offset significant negative impacts.

There are many practical uses for these analyses. For example, they can play an important role in EIS quality control, in strengthening EIA guidance and in developing better EIA training programmes. In these ways they can contribute to improving EIS quality and enhancing the performance of the EIA process as a whole (Lee, Walsh and Reeder, 1994).

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CONTENTS

B.1 ADVICE FOR REVIEWERS

1. INTRODUCTION

1.1 The Review Package

This document comprises a complete package for the review of environmental statements and consists of:

- B.1: Advice for Reviewers (page 27);
- B.2: List of Review Topics (page 35);
- B.3: Collation Sheet (page 43).

It has been used successfully to locate strengths and weaknesses in a wide spectrum of environmental statements (ESs) produced in the wake of UK implementation of the EC Directive on environmental assessment. Although the review procedure may initially appear complex, the underlying structure is simple and easy to learn. With a little practice, reviewers should be able to review ESs quickly, accurately and reproducibly. With small-scale amendments it may be adapted for use in other countries.

In certain cases (e.g. where projects are technically complex and controversial) the Package may be used with the assistance of consultants or, (during the first stage of a two-stage review) prior to using consultants for more specialised, in-depth review work.

1.2 Purpose of the review

This review is performed using a set of hierarchically arranged Review Topics with a view to assessing the quality of environmental statements submitted in anticipation of, or in response to, UK regulations mandating environmental assessment (EA) in accordance with EC Directive 85/337[3]. The regulations produced under the Town and Country Planning Act (TCPA) are taken as the standard UK interpretation of the Directive[4],[5]. An EA capable of producing a good quality ES is, in this context, one which conforms to the TCPA Regulations (hereafter called 'the Regulations') in scope whilst conforming to current, international conceptions of best practice in procedure and methods.

An ES will usually contain a large amount of information about the form and consequences of a development. It is the purpose of this review to:

- provide the reviewers with a framework within which to interpret this information;
- enable reviewers to assess the quality and completeness of the information relatively quickly;
- enable reviewers to make an overall judgement of the acceptability of the ES as a planning document.

1.3 Information and expertise needed for review

This review process is intended primarily to be applied by planners and other interested parties who:

- are familiar with the requirements of the regulations relating to environmental assessment;
- have at least a basic, non-specialist knowledge and understanding of impact assessment methodologies and current ideas on best practice in EA.

1.4 Strategy of the review

It is not intended that reviewers should attempt to refute the findings presented in an ES or to supplant them with conclusions of their own. Reviewers should, rather, be alert to areas of weakness, omission or even concealment in the Statement. These may most often occur when certain tasks are omitted; unsuitable or *ad hoc* methods are used; biased or inaccurate supporting data are introduced, often without references; or the rationale or justification for conclusions is not given. The Review Topics are intended to direct the Reviewers' attention to these areas. In this way sources of *potential* error are located which can be the subject of further, if necessary specialist, investigation.

1.5 Organisation of Review Topics

A **List of Review Topics** is included as part of this Review Package. It contains Review Topics arranged hierarchically in three levels. These are:

- *Review Areas*. These are the four major areas of EA activity (they are preceded by one digit in the List of Review Topics, e.g. "4. Communication of Results").
- *Review Categories*. These are the categories of EA activity which must be undertaken within each Review Area (they are preceded by two digits in the List of Review Topics, e.g. "4.2 Presentation").
- *Review Sub-categories*. These comprise the detailed Review Sub-categories within each Review Category. (They are preceded by three digits in the List of Review Topics, e.g. "4.2.1 Information should be ....").

These form a hierarchy (or pyramidal structure) whereby reviewers:

- assess the quality of each Review Sub-category within a particular Category;
- use these assessments *and* any other impressions gained from the Statement, which they feel are relevant, to assess the Review Category;
- use the results to assess the Review Areas and to summarise the quality of the Statement in a brief synopsis of its main strengths and weaknesses.

A schematic diagram of this hierarchy is presented in Figure B-2.

Figure B-2. A schematic representation of the Review Topic hierarchy in Review Areas 1 and 2 (ES review package)

At the lowest level of the hierarchy are the Review Sub-categories, represented by three digits. The quality assessments of these are used to assess the next highest level, the Review Categories, represented by two digits. Review Category assessments are then used to evaluate the next higher level, the Review Areas, represented here by one digit. In assessing the higher levels, reviewers are expected to use personal judgements about the relative importance of the various sub-topics and additional knowledge gained from the Statement as well as their assessments of the level immediately below.

The Review Topics are, so far as is possible, arranged so as to reflect the order in which the tasks should be performed. This is important because many of the later tasks require information which will only be available if earlier tasks have been adequately performed. Comprehensive treatment of mitigation measures, for example, will only be possible if all significant impacts have been correctly identified. Reviewers should be alert to these interactions and should take them into account in their assessments.

It should be noted that, in order to promote objectivity in ES reviewing, it is recommended that each ES should initially be separately reviewed by two different reviewers who should then endeavour to reconcile any differences when finalising their joint review.

2. Review Procedure

2.1 Conducting a review

Select two reviewers for the ES review. In order to conduct a review, each should first independently undertake the following steps sequentially.

1. Read all of the **Advice for Reviewers** carefully.
2. Read through the **List of Review Topics (**Areas, Categories, Sub-categories) and familiarise yourself with them and the data required.
3. Read the Statement quite quickly noting the layout and the whereabouts of essential information[6].
4. Read the first Review Category (1.1) and its component Sub-categories (1.1.1-1.1.5). Remember that the Sub-categories refer to actions which must be undertaken in order that tasks described by the Category are performed fully and well. Interpret them in this context.
5. Assess each of the Sub-categories (1.1.1-1.1.5) referring closely to the Statement. Be aware that the required information will not all be located in the same place for any one review topic. It will probably be necessary to make notes. Carefully read the **List of Assessment Symbols**. (These are listed in Section B.3: **Collation Sheet** on page 43.) The appropriate assessment symbol is to be chosen based on the way the tasks relating to the Sub-category are performed throughout the Statement. Before deciding on the symbol it may be helpful to refer once more to the wording of the Review Sub-Category and to recall the strategy of review explained above.
6. Decide which assessment symbol is appropriate for each Sub-category and record it on the **Collation Sheet** provided in Section B.3 (page 43). Note that a task should be assessed as having been satisfactorily handled if there is sufficient information provided in the Statement on the topic concerned to allow a decision-maker to make an informed decision without having to seek further advice. It is the *appropriateness* and *quality*, and not the *volume*, of information provided which is the relevant consideration. It could be justifiable to supply more limited information for small projects having few and less complex impacts than for much larger projects with multiple major impacts. Where data on a particular topic is not explicitly provided but is, nevertheless, implicit in the treatment of other topics, the reviewer may decide that it should be assessed as adequate. Such instances should be recorded in the synopsis (see below).
7. Use the assessments of Sub-categories 1.1.1-1.1.5, and any other information gained from the Statement which you considered relevant, to assess the Review Category 1.1. Note that the assessment of the Category should not be derived by a simple averaging of the assessments of the component Sub-categories. Your evaluation of both the relative importance of these Sub-categories and any information in the Statement not covered by them, should also be taken into account.
8. Proceed to the next Review Category (1.2) and evaluate it in the same way as Review Category 1.1. Continue until all categories in the Review Area have also been assessed in the same manner.
9. Your evaluations of the Review Categories can now be used to assess the Review Area in the same way in which they themselves were derived from the Review Sub-category assessments (see 7 above). Thus, for example, the assessment of Review Area 1 is to be based upon the assessments of Categories 1.1-1.5.
10. When all Review Areas have been assessed the Statement as a whole can be assigned an assessment symbol. This overall judgement should, however, be supplemented with a brief synopsis of the Statement's strengths and weaknesses and a consideration of whether, for example, it meets minimum

requirements (see below).

Then the two reviewers should compare their review findings as recorded on their Collation Sheets. Where differences in their assessments occur (at Sub-category, Category, etc levels), reviewers should jointly re-examine them with a view to reconciling their findings on a common Collation Sheet.

2.2 Deciding on compliance with the Regulations

The minimum information which an ES should contain, in any particular case, is specified in the EC Directive. This 'specified information' is interpreted in the Regulations, Schedule 3(2)(a-e). These are reproduced in full below.[7]

(a) A description of the development proposed, comprising information about the site and the design and size or scale of the development.

(b) The data necessary to identify and assess the main effects which that development is likely to have on the environment.

(c) A description of the likely significant effects, direct and indirect, on the environment of the development, explained by reference to its possible impact on:

human beings
flora
fauna
soil
water
air
climate
the landscape
the inter-action between any of the foregoing
material assets
the cultural heritage

(d) Where significant adverse effects are identified with respect to any of the foregoing, a description of the measures envisaged in order to avoid, reduce or remedy those effects.

(e) A summary in non-technical language of the information specified above.

It is clearly an important consideration, in deciding the suitability of the Statement as a planning document, that these minimum data should be provided. Transposition of their exact requirements into Review Topics, however, is problematic, particularly as it could be argued that the exact nature of the information required varies from case to case. In this context paragraph (b) is particularly difficult to interpret.

However, it has been assumed that in the large majority of cases "the data necessary to identify and assess" impacts in paragraph (b) above – in addition to that required by other paragraphs – will be:

- size and design features of the development;
- quantity of raw materials needed, a description of the production processes and the transportation arrangements for materials and products;
- the numbers of workers and/or visitors expected;
- the quantities of wastes expected to be produced;
- a description of the environment;
- a description of the data used to predict impact magnitude.
- other data needed to identify and assess impacts.

The Regulations' minimum requirements would then broadly correspond to the following Review Sub-

categories[8] (see Section B.2: List of Review Topics):

(a) 1.1.2, 1.2.1
(b) 1.1.4, 1.1.5, 1.2.1, 1.2.2, 1.2.4, 1.3.2, 1.4.1, 1.4.2, 1.5.1, 1.5.3, 2.4.1
(c) 2.1.1, 2.1.2, 2.5.1, 2.5.2
(d) 3.2.1, 3.3.1
(e) 4.4.1, 4.4.2

If it is agreed by the two reviewers that all of these Sub-categories are assessed, at least 'Satisfactory', ie (A, B or C) or 'Not applicable' (NA), the Statement in question is likely to comply with the minimum requirements. However, reviewers should exercise judgement and check, for themselves, the content of the particular Statement being reviewed against the actual Regulations to verify this.

An ES may normally be expected to contain information additional to this specified minimum. The standard of an ES anticipated by the EC Directive is specified in Article 5(i) and Annex III of that document and the additional information mentioned there. This is paraphrased in the Regulations Schedule 3(3). The Regulations advise that this additional information may also be included 'by way of explanation or amplification' so that the Statement contains environmental information which planning authorities consider ...

> "sufficient for the proper consideration of the application".

The Statement would then be in broad compliance with the spirit of the Directive. The estimation of the extent to which this has been achieved is one of the principal objects of this review process, and should therefore coincide with the final judgement of the review. Thus, broad compliance is taken to mean that the Statement has met the minimum requirements of the Regulations as interpreted above and furthermore that each Review Area has been assessed as, at least, "satisfactory", i.e. A, B or C in each Review Area.

2.3 Outcome of a review

Having assessed the Review Areas, assigned an assessment symbol to the Statement as a whole, and checked compliance with relevant Regulations, it remains to summarise the joint judgement of ES quality in one or two paragraphs. This summary should list the main strengths and weaknesses of the Statement, especially those omissions which should be rectified before impacts can be satisfactorily assessed or evaluated. It should also record whether the Statement complies with minimum requirements and whether it complies more broadly with both the Regulations and the EC Directive as defined above.

B.2 LIST OF REVIEW TOPICS

This is a list of hierarchically arranged topics for reviewing the quality of environmental statements submitted in response to UK regulations implementing EC Directive 85/337.

There are four areas for review.

1. Description of the development, the local environment and the baseline conditions.
2. Identification and evaluation of key impacts.
3. Alternatives and mitigation of impacts.

4. Communication of results.

In each of these areas there are several categories of activity which must be completed if the area is to be dealt with in a satisfactory manner. Similarly, each Category contains several Sub-categories. Below is a list of these topics arranged in a hierarchy. Review Areas are designated by a single digit, e.g. 1.; within these are Review Categories, designated by two digits, e.g. 1.1; and within each Review Category are Review Sub-categories, designated by three digits, e.g. 1.1.1.

1. DESCRIPTION OF THE DEVELOPMENT, THE LOCAL ENVIRONMENT AND THE BASELINE CONDITIONS

1.1 Description of the development: The purpose(s) of the development should be described as should the physical characteristics, scale and design. Quantities of materials needed during construction and operation should be included and, where appropriate, a description of the production processes.

1.1.1 The purpose(s) and objectives of the development should be explained.

1.1.2 The design and size of the development should be described. Diagrams, plans or maps will usually be necessary for this purpose.

1.1.3 There should be some indication of the physical presence and appearance of the completed development within the receiving environment.

1.1.4 Where appropriate, the nature of the production processes intended to be employed in the completed development should be described and the expected rate of production.

1.1.5 The nature and quantities of raw materials needed during both the construction and operational phases should be described.

1.2 Site description: The on site land requirements of the developments should be described and the duration of each land use.

1.2.1 The land area taken up by the development site should be defined and its location clearly shown on a map.

1.2.2 The uses to which this land will be put should be described and the different land use areas demarcated.

1.2.3 The estimated duration of the construction phase, operational phase and, where appropriate, decommissioning phase should be given.

1.2.4 The numbers of workers and/or visitors entering the development site during both construction and operation should be estimated. Their access to the site and likely means of transport should be given.

1.2.5 The means of transporting raw materials and products to and from the site and the approximate quantities involved, should be described.

1.3 Wastes: The types and quantities of wastes which might be produced should be estimated, and the proposed disposal routes to the environment described.

[NB: Wastes include all residual process materials, effluents and emissions. Waste energy, waste heat, noise etc, should also be considered.]

1.3.1 The types and quantities of waste matter, energy and other residual materials, and the rate at which these will be produced, should be estimated.

1.3.2 The ways in which it is proposed to handle and/or treat these wastes and residuals

should be indicated, together with the routes by which they will eventually be disposed of to the environment.

1.3.3 The methods by which the quantities of residuals and wastes were obtained should be indicated. If there is uncertainty this should be acknowledged and ranges of confidence limits given where possible.

1.4 Environment description: The area and location of the environment likely to be affected by the development proposals should be described.

1.4.1 The environment expected to be affected by the development should be indicated with the aid of a suitable map of the area.

1.4.2 The affected environment should be defined broadly enough to include any potentially significant effects occurring away from the immediate construction site. These may be caused by, for example, the dispersion of pollutants, infrastructural requirements of the project, traffic, etc.

1.5 Baseline conditions: A description of the affected environment as it is currently, and as it could be expected to develop if the project were not to proceed, should be presented.

1.5.1 The important components of the affected environments should be identified and described. The methods and investigations undertaken for this purpose should be disclosed and should be appropriate to the size and complexity of the assessment task. Uncertainty should be indicated.

1.5.2 Existing data sources should have been searched and, where relevant, utilised. These should include local authority records and studies carried out by, or on behalf of, conservation agencies and/or special interest groups.

1.5.3 Local land use plans and policies should be consulted and other data collected as necessary to assist in the determination of the "baseline" conditions, i.e. the probable future state of the environment, in the absence of the project, taking into account natural fluctuations and human activities (often called the "do-nothing" scenario).

2. IDENTIFICATION AND EVALUATION OF KEY IMPACTS

2.1 Definition of impacts: Potential impacts of the development on the environment should be investigated and described. Impacts should be broadly defined to cover all potential effects on the environment and should be determined as the predicted deviation from the baseline state.

2.1.1 A description should be given of the direct effects and any indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative effects of the project.

2.1.2 The above types of effect should be investigated and described with particular regard to identifying effects on or affecting; human beings, flora and fauna, soil, water, air, climate, landscape, material assets, cultural heritage (including architectural and archaeological heritage) and the interactions between these.

2.1.3 Consideration should not be limited to events which will occur under design operating conditions. Where appropriate, impacts which might arise from non-standard operating conditions, due to accidents, should also be described.

2.1.4 The impacts should be determined as the deviation from baseline conditions, i.e. the difference between the conditions which would obtain if the development were not to proceed and those predicted to prevail as a consequence of it.

2.2 Identification of impacts: Methods should be used which are capable of identifying all significant impacts.

2.2.1 Impacts should be identified using a systematic methodology such as project specific checklists, matrices, panels of experts, consultations, etc. Supplementary methods (eg cause-effect or network analyses) may be needed to identify secondary impacts.

2.2.2 A brief description of the impact identification methods should be given as should the rationale for using them.

2.3 Scoping: Not all impacts should be studied in equal depth. Key impacts should be identified, taking into account the views of interested parties, and the main investigation centred on these.

2.3.1 There should be a genuine attempt to contact the general public and special interest groups - clubs, societies, etc. - to appraise them of the project and its implications.

2.3.2 Arrangements should be made to collect the opinions and concerns of relevant public agencies, special interest groups, and the general public. Public meetings, seminars, discussions groups, etc. may be arranged to facilitate this.

2.3.3 Key impacts should be identified and selected for more intense investigation. Impact areas not selected for thorough study should nevertheless be identified and the reasons they require less detailed investigation should be given.

2.4 Prediction of impact magnitude: The likely impacts of the development on the environment should be described in exact terms wherever possible.

2.4.1 The data used to estimate the magnitude of the main impacts should be sufficient for the task and should be clearly described or their sources be clearly identified. Any gaps in the required data should be indicated and the means used to deal with them in the assessment should be explained.

2.4.2 The methods used to predict impact magnitude should be described and be appropriate to the size and importance of the projected impact.

2.4.3 Where possible, predictions of impacts should be expressed in measurable quantities with ranges and/or confidence limits as appropriate. Qualitative descriptions, where these are used, should be as fully defined as possible (e.g. ‘insignificant means not perceptible from more than 100m distance’).

2.5 Assessment of impact significance: The expected significance that the projected impacts will have for society should be estimated. The sources of quality standards, together with the rationale, assumptions and value judgements used in assessing significance, should be fully described.

2.5.1 The significance to the affected community and to society in general should be described and clearly distinguished from impact magnitude. Where mitigating measures are proposed, the significance of any impact remaining after mitigation, should also be described.

2.5.2 The significance of an impact should be assessed, taking into account appropriate national and international quality standards where available. Account should also be taken of the magnitude, location and duration of the impact in conjunction with national and local societal values.

2.5.3 The choice of standards, assumptions and value systems used to assess significance should be justified and any contrary opinions should be summarised.

3. ALTERNATIVES AND MITIGATION

3.1 Alternatives: Feasible alternatives to the proposed project should have been considered. These should be outlined in the Statement, the environmental implications of each presented, and the reasons for their rejection briefly discussed, particularly where the preferred project is likely to have significant, adverse environmental impacts.

3.1.1 Alternative sites should have been considered where these are practicable and available to the developer. The main environmental advantages and disadvantages of these should be discussed and the reasons for the final choice given.

3.1.2 Where available, alternative processes, designs and operating conditions should have been considered at an early stage of project planning and the environmental implications of these investigated and reported where the proposed project is likely to have significantly adverse environmental impacts.

3.1.3 If unexpectedly severe adverse impacts are identified during the course of the investigation, which are difficult to mitigate, alternatives rejected in the earlier planning phases should be re-appraised.

3.2 Scope and effectiveness of mitigation measures: All significant adverse impacts should be considered for mitigation. Evidence should be presented to show that proposed mitigation measures will be effective when implemented.

3.2.1 The mitigation of all significant adverse impacts should be considered and, where practicable, specific mitigation measures should be put forward. Any residual or unmitigated impacts should be indicated and justification offered as to why these impacts should not be mitigated.

3.2.2 Mitigation methods considered should include modification of the project, compensation and the provision of alternative facilities as well as pollution control.

3.2.3 It should be clear to what extent the mitigation methods will be effective when implemented. Where the effectiveness is uncertain or depends on assumptions about operating procedures, climatic conditions, etc., data should be introduced to justify the acceptance of these assumptions.

3.3 Commitment to mitigation: Developers should be committed to, and capable of, carrying out the mitigation measures and should present plans of how they propose to do so.

3.3.1 There should be a clear record of the commitment of the developer to the mitigation measures presented in the Statement. Details of how the mitigation measures will be implemented and function over the time span for which they are necessary should also be given.

3.3.2 Monitoring arrangements should be proposed to check the environmental impacts resulting from the implementation of the project and their conformity with the predictions within the Statement. Provision should be made to adjust mitigating measures where unexpected adverse impacts occur. The scale of these monitoring arrangements should correspond to the likely scale and significance of deviations from expected impacts.

4. COMMUNICATION OF RESULTS

4.1 Layout: The layout of the Statement should enable the reader to find and assimilate data easily and quickly. External data sources should be acknowledged.

4.1.1 There should be an introduction briefly describing the project, the aims of the environmental assessment and how those aims are to be achieved.

4.1.2 Information should be logically arranged in sections or chapters and the whereabouts of important data should be signalled in a table of contents or index.

4.1.3 Unless the chapters themselves are very short, there should be chapter summaries outlining the main findings of each phase of the investigation.

4.1.4 When data, conclusions or quality standards from external sources are introduced, the original source should be acknowledged at that point in the text. A full reference should also be included either with the acknowledgement, at the bottom of the page, or in a list of references.

4.2 Presentation: Care should be taken in the presentation of information to make sure that it is accessible to the non-specialist.

4.2.1 Information should be presented so as to be comprehensible to the non-specialist. Tables, graphs and other devices should be used as appropriate. Unnecessarily technical or obscure language should be avoided.

4.2.2 Technical terms, acronyms and initials should be defined, either when first introduced into the text or in a glossary. Important data should be presented and discussed in the main text.

4.2.3 The Statement should be presented as an integrated whole. Summaries of data presented in separately bound appendices should be introduced in the main body of the text.

4.3 Emphasis: Information should be presented without bias and receive the emphasis appropriate to its importance in the context of the ES.

4.3.1 Prominence and emphasis should be given to potentially severe adverse impacts as well as to potentially substantial favourable environmental impacts. The Statement should avoid according space disproportionately to impacts which have been well investigated or are beneficial.

4.3.2 The Statement should be unbiased; it should not lobby for any particular point of view. Adverse impacts should not be disguised by euphemisms or platitudes.

4.4 Non-technical summary: There should be a clearly written non-technical summary of the main findings of the study and how they were reached.

4.4.1 There should be a non-technical summary of the main findings and conclusions of the study. Technical terms, lists of data and detailed explanations of scientific reasoning should be avoided.

4.4.2 The summary should cover all main issues discussed in the Statement and contain at least a brief description of the project and the environment, an account of the main mitigation measures to be undertaken by the developer, and a description of any significant residual impacts. A brief explanation of the methods by which these data were obtained, and an indication of the confidence which can be placed in them, should also be included.

B.3 COLLATION SHEET

1. ASSESSMENT SYMBOLS: Use the following symbols when completing the Collation Sheet below.

Symbol	Explanation
A	Relevant tasks well performed, no important tasks left incomplete.
B	Generally satisfactory and complete, only minor omissions and inadequacies.
C	Can be considered just satisfactory despite omissions and/or inadequacies.
D	Parts are well attempted but must, as a whole, be considered just unsatisfactory because of omissions or inadequacies.
E	Not satisfactory, significant omissions or inadequacies.
F	Very unsatisfactory, important task(s) poorly done or not attempted.
NA	Not applicable. The Review Topic is not applicable or it is irrelevant in the context of this Statement.

2. COLLATION SHEET

Overall assessment .....

1	**.....**	**2**	**.....**	**3**	**.....**	**4**	**.....**
1.1	.....	**2.1**	.....	**3.1**	.....	**4.1**	.....
1.1.1	.....	2.1.1	.....	3.1.1	.....	4.1.1	.....
1.1.2	.....	2.1.2	.....	3.1.2	.....	4.1.2	.....
1.1.3	.....	2.1.3	.....	3.1.3	.....	4.1.3	.....
1.1.4	.....	2.1.4	.....			4.1.4	.....
1.1.5	.....						
1.2	.....	**2.2**	.....	**3.2**	.....	**4.2**	.....
1.2.1	.....	2.2.1	.....	3.2.1	.....	4.2.1	.....
1.2.2	.....	2.2.2	.....	3.2.2	.....	4.2.2	.....
1.2.3	.....			3.2.3	.....	4.2.3	.....
1.2.4	.....						
1.2.5	.....						
1.3	.....	**2.3**	.....	**3.3**	.....	**4.3**	.....
1.3.1	.....	2.3.1	.....	3.3.1	.....	4.3.1	.....
1.3.2	.....	2.3.2	.....	3.3.2	.....	4.3.2	.....
1.3.3	.....	2.3.3	.....				
1.4	.....	**2.4**	.....			**4.4**	.....
1.4.1	.....	2.4.1	.....			4.4.1	.....
1.4.2	.....	2.4.2	.....			4.4.2	.....
		2.4.3	.....				
1.5	.....	**2.5**	.....				
1.5.1	.....	2.5.1	.....				
1.5.2	.....	2.5.2	.....				
1.5.3	.....	2.5.3	.....				

Minimum Requirements[9]

Were minimum requirements met, taking into account whether or not the following Review Sub-categories were all performed satisfactorily, i.e. assessed A, B, or C?

(a) 1.1.2, 1.2.1

(b) 1.1.4, 1.1.5, 1.2.1, 1.2.2, 1.2.4, 1.3.2, 1.4.1, 1.4.2, 1.5.1, 1.5.3, 2.4.1

(c) 2.1.1, 2.1.2, 2.5.1, 2.5.2

(d) 3.2.1, 3.3.1

(e) 4.4.1, 4.4.2

YES NO

Broad Compliance

Were minimum requirements met, AND Review Areas 1, 2, 3 and 4 **all** performed satisfactorily, i.e. assessed A, B or C?

YES NO

Overall Quality

Assign an assessment symbol (A, B, C, D, E or F) to the Statement as a whole and summarise, in one or two paragraphs, the key factors which have determined your overall assessment.

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[1] EA/ES is used whenever referring specifically to the UK situation; EIA/EIS is used when describing international procedures and literature.

[2] The terminology currently in use does not clearly distinguish between the *process* of environmental appraisal and the *report* in which the environmental appraisal findings are presented. In many cases in this paper it is clear from the context in which sense the term "environmental appraisal" is being used. Where it is not, or where it is stylistically better, the term "process" or "report" is added or substituted.

[3] Reviewers in other countries should, where necessary, amend the list of Review Topics in Section B.2 to take account of any differences from the EIA regulations in their country. Note that DOE regulations are, in any case, closely modelled on the provisions of EC Directive 85/337 and this is expected to continue when Directive 97/11/EC is implemented.

[4] Directive 97/11/EC, which amends Directive 85/337/EEC, is due to be implemented in all Member States by 14 March 1999. In the case of the town and country planning system in England and Wales these will be implemented through new Town and Country Planning (Assessment of Environmental Effects Regulations) (for other details see URL DETR). The changes in regulations resulting from Directive 97/11/EC are unlikely to require any significant change to the List of Review Topics or their contents. However, the increased importance given to the consideration of alternatives and its inclusion in the "minimum information requirements" in Article 5 probably means that greater weight should be given to Review Category 3.1 in the overall review of an ES's quality than previously. Review Sub-categories 3.1.1 and 3.1.2 should also be considered when determining whether an ES meets minimum requirements.

[5] Town and Country Planning (Assessment of Environmental Effects) Regulations (SI No 1199), to be amended when Directive 97/11/EC is implemented.

[6] If practicable, undertake a site visit to become more familiar with the location of the proposed development.

[7] Directive 97/11/EC includes an additional category of information: "an outline of the main alternatives studied by the developer and an indication of the main reasons for this choice, taking into account the environmental effects."

[8] Sub-categories 3.1.1 and 3.1.2 should be added, when Directive 97/11/EC comes into operation.

[9] Also consider 3.1.1 and 3.1.2 when Directive 97/11/EC comes into operation.