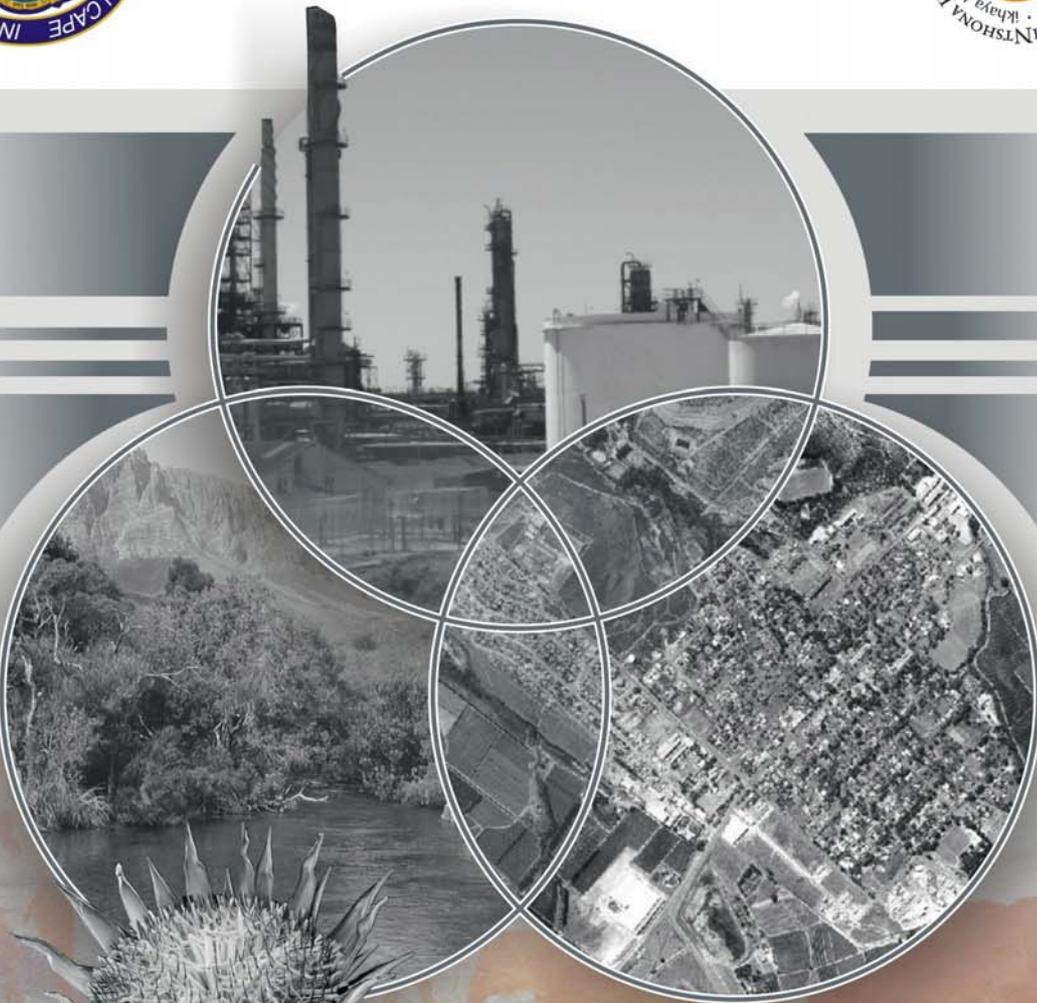


# GUIDELINE FOR DETERMINING THE SCOPE OF SPECIALIST INVOLVEMENT IN EIA PROCESSES



PROVINCIAL GOVERNMENT OF THE WESTERN CAPE:  
DEPARTMENT OF ENVIRONMENTAL AFFAIRS  
AND DEVELOPMENT PLANNING



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# GUIDELINE FOR DETERMINING THE SCOPE OF SPECIALIST INVOLVEMENT IN EIA PROCESSES

## *Edition 1*

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# PREFACE

The purpose of an Environmental Impact Assessment (EIA) is to provide decision-makers (be they government authorities, the project proponent or financial institutions) with adequate and appropriate information about the potential positive and negative impacts of a proposed development and associated management actions in order to make an informed decision whether or not to approve, proceed with or finance the development.

For EIA processes to retain their role and usefulness in supporting decision-making, the involvement of specialists in EIA needs to be improved in order to:

- Add greater value to project planning and design;
- Adequately evaluate reasonable alternatives;
- Accurately predict and assess potential project benefits and negative impacts;
- Provide practical recommendations for avoiding or adequately managing negative impacts and enhancing benefits;
- Supply enough relevant information at the most appropriate stage of the EIA process to address adequately the key issues and concerns, and effectively inform decision-making in support of sustainable development.

It is important to note that not all EIA processes require specialist input; broadly speaking, specialist involvement is needed when the environment could be significantly affected by the proposed activity, where that environment is valued by or important to society, and/or where there is insufficient information to determine whether or not unavoidable impacts would be significant.

The purpose of this series of guidelines is to improve the efficiency, effectiveness and quality of specialist involvement in EIA processes. The guidelines aim to improve the capacity of roleplayers to anticipate, request, plan, review and discuss specialist involvement in EIA processes. Specifically, they aim to improve the capacity of EIA practitioners to draft appropriate terms of reference for specialist input and assist all roleplayers in evaluating whether or not specialist input to the EIA process was appropriate for the type of development and environmental context. Furthermore, they aim to ensure that specialist inputs support the development of effective, practical Environmental Management Plans where projects are authorised to proceed (refer to *Guideline for Environmental Management Plans*).

The guidelines draw on best practice in EIA in general, and within specialist fields of expertise in particular, to address the following issues related to the timing, scope and quality of specialist input. The terms “specialist involvement” and “input” have been used in preference to “specialist assessment” and “studies” to indicate that the scope of specialists’ contribution (if required) depends on the nature of the project, the environmental context and the amount of available information and does not always entail detailed studies or assessment of impacts.

	ISSUES
<b>TIMING</b>	<ul style="list-style-type: none"> <li>▪ When should specialists be involved in the EIA process; i.e. at what stage in the EIA process should specialists be involved (if at all) and what triggers the need for their input?</li> </ul>
<b>SCOPE</b>	<ul style="list-style-type: none"> <li>▪ Which aspects must be addressed through specialist involvement; i.e. what is the purpose and scope of specialist involvement?</li> <li>▪ What are appropriate approaches that specialists can employ?</li> <li>▪ What qualifications, skills and experience are required?</li> </ul>
<b>QUALITY</b>	<ul style="list-style-type: none"> <li>▪ What triggers the review of specialist studies by different roleplayers?</li> <li>▪ What are the review criteria against which specialist inputs can be evaluated to ensure that they meet minimum requirements, are reasonable, objective and professionally sound?</li> </ul>

The following guidelines form part of this first series of guidelines for involving specialists in EIA processes:

- Guideline for determining the scope of specialist involvement in EIA processes
- Guideline for the review of specialist input in EIA processes
- Guideline for involving biodiversity specialists in EIA processes
- Guideline for involving hydrogeologists in EIA processes
- Guideline for involving visual and aesthetic specialists in EIA processes
- Guideline for involving heritage specialists in EIA processes
- Guideline for involving economists in EIA processes

The *Guideline for determining the scope of specialist involvement in EIA processes* and the *Guideline for the review of specialist input in EIA processes* provide generic guidance applicable to any specialist input to the EIA process and clarify the roles and responsibilities of the different roleplayers involved in the scoping and review of specialist input. It is recommended that these two guidelines are read first to introduce the generic concepts underpinning the guidelines which are focused on specific specialist disciplines.

***Who is the target audience for these guidelines?***

The guidelines are directed at authorities, EIA practitioners, specialists, proponents, financial institutions and other interested and affected parties involved in EIA processes. Although the guidelines have been developed with specific reference to the Western Cape province of South Africa, their core elements are more widely applicable.

***What type of environmental assessment processes and developments are these guidelines applicable to?***

The guidelines have been developed to support project-level EIA processes regardless of whether they are used during the early project planning phase to inform planning and design decisions (i.e. during pre-application planning) or as part of a legally defined EIA process to obtain statutory approval for a proposed project (i.e. during screening, scoping and/or impact assessment). Where specialist input may be required the guidelines promote early, focused and appropriate involvement of specialists in EIA processes in order to encourage proactive

consideration of potentially significant impacts, so that negative impacts may be avoided or effectively managed and benefits enhanced through due consideration of alternatives and changes to the project.

The guidelines aim to be applicable to a range of types and scales of development, as well as different biophysical, social, economic and governance contexts.

***What will these guidelines not do?***

In order to retain their relevance in the context of changing legislation, the guidelines promote the principles of EIA best practice without being tied to specific legislated national or provincial EIA terms and requirements. They therefore do not clarify the specific administrative, procedural or reporting requirements and timeframes for applications to obtain statutory approval. They should, therefore, be read in conjunction with the applicable legislation, regulations and procedural guidelines to ensure that mandatory requirements are met.

It is widely recognized that no amount of theoretical information on how best to plan and coordinate specialist inputs, or to provide or review specialist input, can replace the value of practical experience of coordinating, being responsible for and/or reviewing specialist inputs. Only such experience can develop sound judgment on such issues as the level of detail needed or expected from specialists to inform decision-makers adequately. For this reason, the guidelines should not be viewed as prescriptive and inflexible documents. Their intention is to provide best practice guidance to improve the quality of specialist input.

Furthermore, the guidelines do not intend to create experts out of non-specialists. Although the guidelines outline broad approaches that are available to the specialist discipline (e.g. field survey, desktop review, consultation, modeling), specific methods (e.g. the type of model or sampling technique to be used) cannot be prescribed. The guidelines should therefore not be used indiscriminately without due consideration of the particular context and circumstances within which an EIA is undertaken, as this influences both the approach and the methods available and used by specialists.

# SUMMARY

This guideline describes a systematic yet flexible approach to determining the need for, timing, role and scope of specialist involvement during the various stages of the EIA process in order to ensure that specialist input is efficient (i.e. no waste of resources), effective (i.e. provides relevant, appropriate information to inform decision-making) and is of a high quality (i.e. provides credibility to the EIA process).

Current EIA practice often only involves specialists during the impact assessment phase of the process when the opportunity to provide substantive inputs to project planning and design decisions (including the identification of reasonable alternatives) is limited. Therefore, the guideline adopts a best practice approach which encourages early, appropriate specialist involvement in the EIA process.

Specialists can be involved for different purposes during various stages of the EIA process, regardless of whether the process is initiated before or upon submission of an application for statutory approval. Specialists can therefore provide input during pre-application planning or following the submission of an application for statutory approval of the proposed development (i.e. during screening, scoping and/or impact assessment).

The *Guideline for determining the scope of specialist involvement in EIA processes* clarifies:

- The key principles and concepts underpinning the involvement of specialists in EIA processes (Section 3);
- The different roles of specialists in EIA processes (Section 4);
- The different stages in the EIA process at which a specialist can be involved (Section 4);
- The generic approach that can be used to determine at which point in the EIA process the specialists should be involved and for what purpose (Section 4);
- The prerequisites for a specialist to be involved efficiently and effectively in EIA processes (Section 5);
- The elements to be considered when determining the scope of specialist inputs and when developing specialist terms of reference (Section 6);
- The information required by specialists to provide input to the EIA process (Section 7); and
- The responsibilities of different roleplayers in the EIA process in order to ensure efficient, effective and high quality specialist involvement in EIA processes (Section 8).

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# ***SCOPE OF SPECIALIST INVOLVEMENT GUIDELINE***

## **1. INTRODUCTION**

The current process of determining whether, when and to what extent to involve a specialist in the Environmental Impact Assessment (EIA) process is largely based on EIA practitioner's professional opinion and experience, coupled with the identification of issues of concern through engagement with stakeholders during the scoping phase of the EIA. Typically the issues that cannot be resolved with available information become the focus of detailed specialist assessments in the impact assessment phase of the EIA. Although stakeholder engagement is a critical component in determining whether to involve a specialist and for what purpose, reliance on this process alone runs the risk of key issues being overlooked, considered too late in the project planning and design phase to effectively avoid negative impacts and enhance project benefits, or specialist's involvement being incorrectly scoped. These risks manifest as poor specialist terms of reference (TOR) and specialist inputs which do not meet the information needs of authorities, project proponents and other stakeholders.

These guidelines describe a systematic yet flexible approach to determining the need for, timing, role and scope of specialist involvement during the various stages of the EIA process. This aims to ensure that specialist input is efficient (i.e. no waste of resources), effective (i.e. provides relevant, appropriate information to inform decision-making) and is of a high quality (i.e. provides credibility to the EIA process).

## **2. PURPOSE OF THIS GUIDELINE**

The specific purpose of the *Guideline for determining the scope of specialist involvement in EIA processes* is to clarify:

- The key principles and concepts underpinning the involvement of specialists in EIA processes (Section 3);
- The different roles of specialists in EIA processes (Section 4);
- The different stages in the EIA process at which a specialist can be involved (Section 4);
- The generic approach that can be used to determine at which point in the EIA process the specialists should be involved and for what purpose (Section 4);
- The prerequisites for a specialist to be involved efficiently and effectively in EIA processes (Section 5);
- The elements to be considered when determining the scope of specialist inputs and when developing specialist terms of reference (Section 6);
- The information required by specialists to provide input to the EIA process (Section 7); and
- The responsibilities of different roleplayers in the EIA process in order to ensure efficient, effective and high quality specialist involvement in EIA processes (Section 8).

### 3. PRINCIPLES AND CONCEPTS UNDERPINNING SPECIALISTS' INVOLVEMENT IN EIA PROCESSES

The following generic principles apply to the involvement of specialists in EIA processes and underpin this series of guidelines:

- Eliminate unnecessary specialist involvement through proactive project planning and design to avoid or sufficiently reduce negative impacts that may otherwise require specialist assessment;
- Maximise use of existing relevant information prior to involving a specialist;
- Where appropriate and necessary, involve specialists early in the EIA process to increase efficiency and effectiveness of their involvement.
- Maintain continuity of specialist involvement throughout the process (specialist involvement should add value to project planning and design);
- Support flexible, focused and appropriate involvement of specialists to provide adequate, relevant information to make informed decisions (i.e. the correct level of information should be supplied at the right time in the EIA process);
- Allow for greater involvement of specialists in the identification of key issues, over and above those identified through stakeholder engagement processes;
- Allow for efficient and effective interaction between specialists and the EIA practitioner, the project proponent, the authorities, other specialists on the EIA team and other interested and affected parties (I&APs) to improve the quality of the EIA process and outcomes and ensure that findings are informed by local and indigenous knowledge and experience.

Common EIA terms and concepts used throughout this series of guidelines are summarised in Box 1.

#### *Box 1: Common EIA terms and concepts*

The following definitions aim to clarify common EIA terms and concepts:

- **Environmental impact assessment process:** A process that is used to identify, predict and assess the potential positive and negative impacts of a proposed project (including reasonable alternatives) on the biophysical, social and economic environment and to propose appropriate management actions and monitoring programmes. The EIA process is used to inform decision-making by the project proponent, relevant authorities and financial institutions. The process includes some or all of the following components: pre-application planning, screening, scoping, impact assessment (including the identification of management actions and monitoring requirements), integration and decision-making. Suitably qualified and experienced specialists may be required to provide input at various stages of the EIA process.
- **Pre-application planning:** The process of identifying and incorporating environmental opportunities and constraints into the early stages of project planning and design, prior to the submission of an application for statutory approval. This includes the identification of potential fatal flaws and negative impacts of potentially high significance, as well as the identification of alternatives and management actions that could prevent, avoid or reduce significant impacts or enhance and secure benefits. This process is sometimes referred to as “pre-application screening”, “positive planning” or “fatal flaw assessment”.
- **Screening:** A decision-making process to determine whether or not a development proposal requires environmental assessment, and if so, what level of assessment is appropriate. Screening is usually administered by an environmental authority or financial institution. The outcome of the screening

process is typically a Screening Report/Checklist.

- **Scoping:** The process of determining the spatial and temporal boundaries (i.e. extent) and key issues to be addressed in an impact assessment. The main purpose is to focus the impact assessment on a manageable number of important questions on which decision-making is expected to focus and to ensure that only key issues and reasonable alternatives are examined. The outcome of the scoping process is a Scoping Report that includes issues raised during the scoping process, appropriate responses and, where required, terms of reference for specialist involvement.
- **Impact assessment:** Issues that cannot be resolved during scoping and that require further investigation are taken forward into the impact assessment (the final phase of the EIA process). Depending on the amount of available information, specialists may be required to assess the nature, extent, duration, intensity or magnitude, probability and significance of the potential impacts; define the level of confidence in the assessment; and propose management actions and monitoring programmes. Specialist studies/reports form the basis of the integrated Environmental Impact Report which is compiled by the EIA practitioner.
- **Trigger:** A particular characteristic of either the receiving environment or the proposed project which indicates that there is likely to be an *issue* and/or potentially significant *impact* associated with that proposed development that may require specialist input. Legal requirements of existing and future legislation may also trigger the need for specialist involvement but are not discussed in this guideline.
- **Issue:** A context-specific question that asks “what will the impact of some activity/*aspect of the development* be on some *element of the biophysical, social or economic environment?*” (e.g. what is the impact of atmospheric emissions on the health of surrounding communities?).
- **Impact:** A description of the effect of an aspect of the development on a specified component of the biophysical, social or economic environment within a defined time and space (e.g. an increased risk of respiratory disease amongst people living within a 10km radius from the industry, for the duration of the life of the project, due to sulphur dioxide emissions from the industry).
- **Root cause/source of impact:** A description of the aspect of the development that will result in an impact on the biophysical, social or economic environment (e.g. atmospheric emissions from industrial stacks).
- **Risk situation:** A description of the environmental or operating circumstances that could influence the probability of a significant impact occurring.
- **Scenarios:** A description of plausible future environmental or operating conditions that could influence the nature, extent, duration, magnitude/intensity, probability and significance of the impact occurring (e.g. concentration of sulphur dioxide emissions during normal operations vs during upset conditions; dispersion of atmospheric pollutants during normal wind conditions vs during presence of an inversion layer).
- **Alternatives:** A possible course of action, in place of another, that would meet the same purpose and need but which would avoid or minimize negative impacts or enhance project benefits. These can include alternative locations/sites, routes, layouts, processes, designs, schedules and/or inputs. The “no-go” alternative constitutes the ‘without project’ option and provide a benchmark against which to evaluate changes; development should result in net benefit to society and should avoid undesirable negative impacts.
- **Best practicable environmental option:** This is the alternative/option that provides the most benefit or causes the least damage to the environment as a whole, at a cost acceptable to society, in the long term as well as in the short term.
- **Impact significance:** A term used to evaluate how severe an impact would be, taking into account objective or scientific data as well as human values. A specific significance rating should not be confused with the acceptability of the impact (i.e. an impact of low significance is not automatically “acceptable”).
- **Thresholds of significance:** The level or limit at which point an impact changes from low to medium significance, or medium to high significance.
- **Management actions:** Actions – including planning and design changes - that enhance benefits associated with a proposed development, or that avoid, mitigate, restore, rehabilitate or compensate for the negative impacts.

- **Monitoring programmes:** Programmes established to observe, take samples or measure specific variables in order to track changes, measure performance of compliance, and/or detect problems.
- **Review:** The process of determining whether specialist input meets minimum requirements, is reasonable, objective and professionally sound.

## 4. THE ROLE AND TIMING OF SPECIALIST INPUT WITHIN THE EIA PROCESS

As illustrated by Figure 1, specialists can be involved for different purposes during various stages of the EIA process, regardless of whether the process is initiated before or upon submission of an application for statutory approval. Specialists can therefore provide input during pre-application planning or following the submission of an application for statutory approval of the proposed development (i.e. during screening, scoping and/or impact assessment)<sup>1</sup>. Differences in the nature and outcome of specialist involvement at different stages of the project cycle and EIA process are summarized in Table 1. Although current EIA practice often only involves specialists during the impact assessment phase of the process, these guidelines promote earlier, focused and appropriate involvement of specialists in order to improve the efficiency and effectiveness of their input.

The involvement of specialists should not be seen as an obstacle in the approval process. Specialist input, especially at the early concept stage of the project, can play an important role in helping to identify potential “fatal flaws” and formulate practical design alternatives that enhance project benefits, as well as minimise negative impacts, and possibly even costs, of the project.

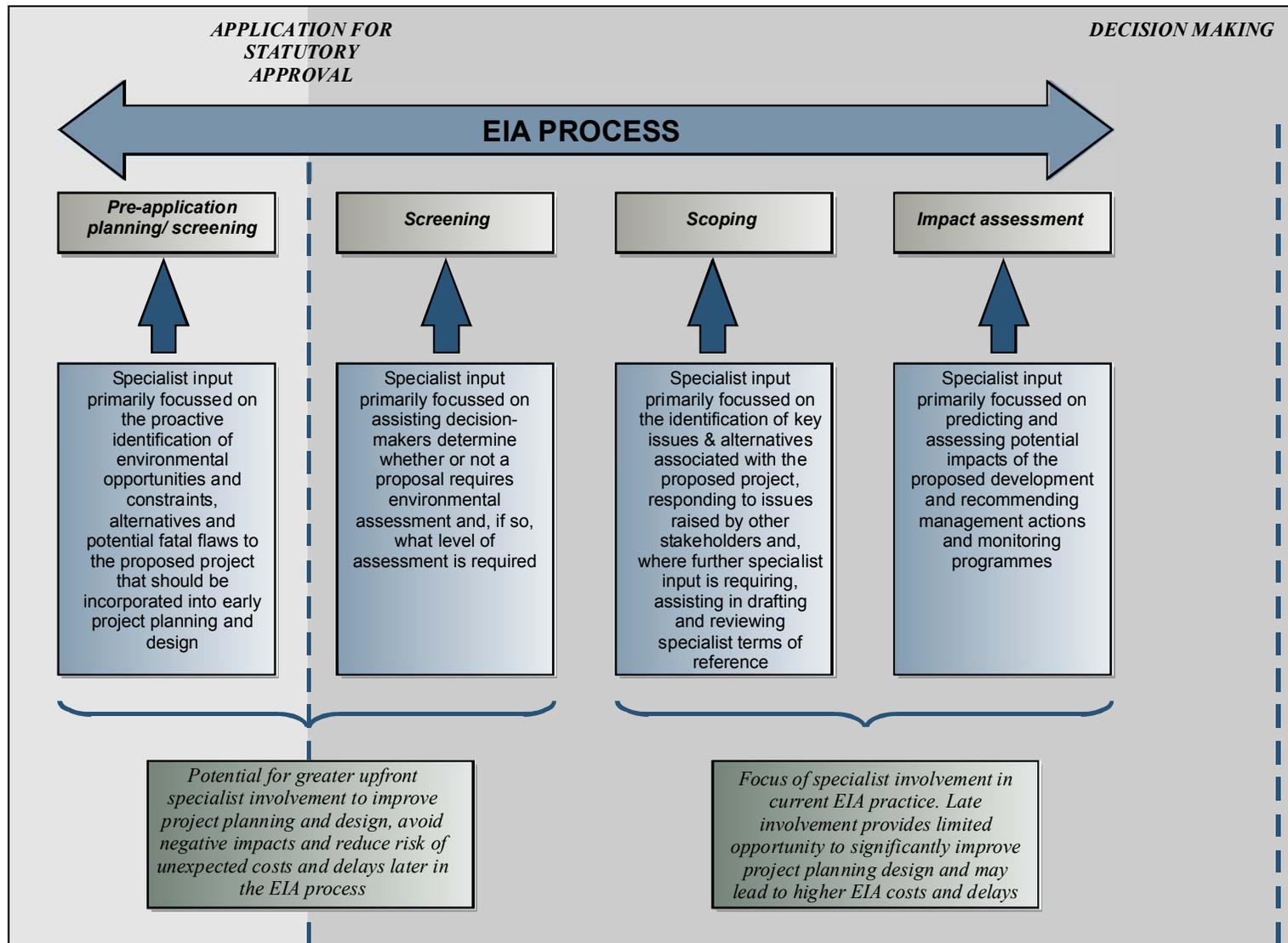
Depending on the nature of the project, the stage of project planning and the EIA process, the environmental context and the amount of available information, specialist involvement will vary in intensity (i.e. level of detail) and may include any or all of the following approaches:

- Provision of a specialist opinion or comment;
- Archival research and literature review;
- Detailed baseline survey (including site visit/s);
- Consultation and interviews;
- Mapping and simulation modelling;
- Assessment of impacts and their significance.

Terms of reference for specialist involvement should, therefore, be appropriate to the purpose and intensity/scale of involvement and should be discussed and agreed between the EIA practitioner and the specialist (and the authority where relevant).

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<sup>1</sup> Recommended reading: DEAT, 2002a



*Figure 1: Focus of potential specialist involvement at different stages in the EIA process*

*Table 1: Differences in the nature and outcome of specialist involvement at different stages of the project cycle and EIA process*

	<b>Pre-application planning</b>	<b>Mandatory screening and scoping</b>	<b>Impact assessment</b>
<b>Timing of specialist involvement</b>	Prior to submission of application for statutory approval of the proposed project.	According to statutory approval process	
<b>Nature of involvement</b>	Pro-active & advisory. Intensity of involvement determines whether or not TORs are required.	Proactive, reflective & advisory. Intensity of involvement determines whether or not TORs are required.	Investigative, analytical and advisory. TORs required.
<b>Extent of stakeholder engagement</b>	Issues and information drawn from key stakeholders in order to avoid raising undue expectations and concerns amongst the wider public.	Issues and information drawn from the broad spectrum of stakeholders interested in or affected by the proposed project.	
<b>Purpose of specialist involvement</b>	Informs proponent's planning and design (including alternatives) and whether or not to proceed with the project, including application for statutory approval of the proposed project.	<p>Screening: Informs authority's decision as to whether approval may be granted, or the level of further assessment required.</p> <p>Scoping: Informs authority and EIA practitioner's decision on the scope of the EIA, the need for additional specialist assessment and TORs.</p>	<p>Informs authority's decision whether or not to grant statutory approval for the proposed project based on results of impact assessment.</p> <p>Where approval is granted to proceed, specialist involvement informs the conditions attached to the Record of Decision (i.e. the management actions and monitoring programmes)</p>
<b>Confidentiality</b>	Potentially confidential specialist involvement due to sensitivity of commercial and design information at the early stages of the project cycle. Relevant information should be made public if project proceeds with an application for statutory approval	Specialist involvement is open to stakeholder review.	

A specialist's role in the EIA process could be to assist with any or all of the following:

### ***Describing the affected environment***

Where insufficient information exists from previous studies, and the potential exists for potentially significant resources and/or processes to be affected by the proposed project, the specialist may be required to provide (or supplement) information describing specific aspects of the biophysical, social or economic environment. This description should support the identification (or confirmation) and/or assessment of key issues and impacts associated with the proposed development, as well as the identification of reasonable alternatives (i.e. changes to the project description) and practical management actions and monitoring programmes.

The involvement of specialists should be based on the need to supply information relevant to impacts associated with the development proposal. Gaps in scientific information for geographical areas/ ecosystems of habitats, especially where the information is not readily linked to development impacts, or where impacts can be avoided/mitigated without specialist input, should not be used to motivate for specialist involvement.

### ***Describing the legal, policy and planning context***

The specialist may be required to provide a summary of relevant international, national, local and corporate legislation, policies and plans. The purpose is to provide an indication of potential opportunities for and constraints to the development (including potential "fatal flaws"<sup>2</sup>) that may determine the level of environmental assessment required. This may justify early changes to the project description (e.g. if legislated thresholds/standards are exceeded). Specialist input may also reveal and describe implications of any contradictions in current and pending legislation, policies and plans.

### ***Identifying and responding to issues***

The specialist may be involved to assist in the identification of issues associated with the proposed project, as well as to provide responses to the issues raised by stakeholders. The purpose is to draw on specialist expertise to ensure that the full range of key issues are identified as early as possible in the EIA process to avoid key issues being overlooked or identified late in the process. The role of the specialist is also to advise on the need for further specialist involvement.

### ***Identifying alternatives***

Specialist involvement may be required to proactively identify, advise and/or investigate reasonable alternatives to the original project description (e.g. design, layout, location, technology, approach, route alternatives) that avoid or reduce negative impacts and enhance project benefits. Alternatives should be well motivated and take into account the opportunities and constraints posed by the receiving environment, including the legal, policy and planning context, as well as the alternatives proposed by stakeholders. The identification of reasonable alternatives to be considered in the EIA process is usually best undertaken in a workshop forum

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<sup>2</sup> A fatal flaw is defined as an impact that has a "no-go" implication for the project.

involving the project proponent, the EIA practitioner, other specialists and relevant authorities. This aims to avoid the inefficient use of time and resources investigating unreasonable alternatives.

### ***Developing specialist terms of reference***

Where the need for specialist involvement in the EIA process is identified, whether this is to undertake a baseline survey and description of the affected environment or to assess potential impacts associated with the proposed development, a specialist may be required to assist the EIA practitioner in drafting appropriate terms of reference for the proposed specialist input.

### ***Predicting and assessing impacts***

Where insufficient information is available to address key issues raised during scoping, a specialist may be required to assess the potential positive and negative impacts of the proposed development on the biophysical, social and economic environment (as relevant to the issue). The level of detail of specialist input will vary, depending on the type of development, the environmental context and extent and quality of available information. Any assessment should, however, evaluate direct, indirect and cumulative effects and should be undertaken in accordance with defined impact assessment criteria.

### ***Recommending management actions and monitoring programmes***

The specialist may be required to provide practical, clear and unambiguous recommendations for management actions and monitoring programmes. In recommending management actions consideration should be given to a hierarchy of possible measures. Measures for avoiding negative impacts are preferable, followed by measures for mitigating, restoring, rehabilitating or compensating for negative impacts. Recommendations for management actions should also include consideration of possible measures for enhancing project benefits.

The purpose of recommending monitoring programmes is to ensure that information gaps are addressed (where these exist) and/or to ensure that impacts or performance is tracked and measured to determine the accuracy of predictions, to ensure compliance with stated management actions and to detect potential problems as early as possible.

Monitoring programmes may need to be recommended for the pre-construction, construction, operational and/or decommissioning phases of a project. Recommendations for monitoring programmes should include the specific questions to be answered through monitoring, the frequency of monitoring, responsibility for carrying out monitoring and analysis, targets and indicators to be used in monitoring, significance thresholds, responsibility for implementing adaptive management responses when required, as well as reporting and audit requirements.

Without compromising the objectivity of the specialist assessment, the identification of appropriate, practical and feasible management actions and monitoring programmes is generally best achieved through workshops and discussions between the EIA team of specialists and the project proponent, facilitated by the EIA practitioner. This is particularly important to resolve situations where two or more specialists on the EIA team might propose conflicting management actions, or might propose actions that might give rise to impacts that need to be addressed by other specialists. The Environmental Impact Report that is presented

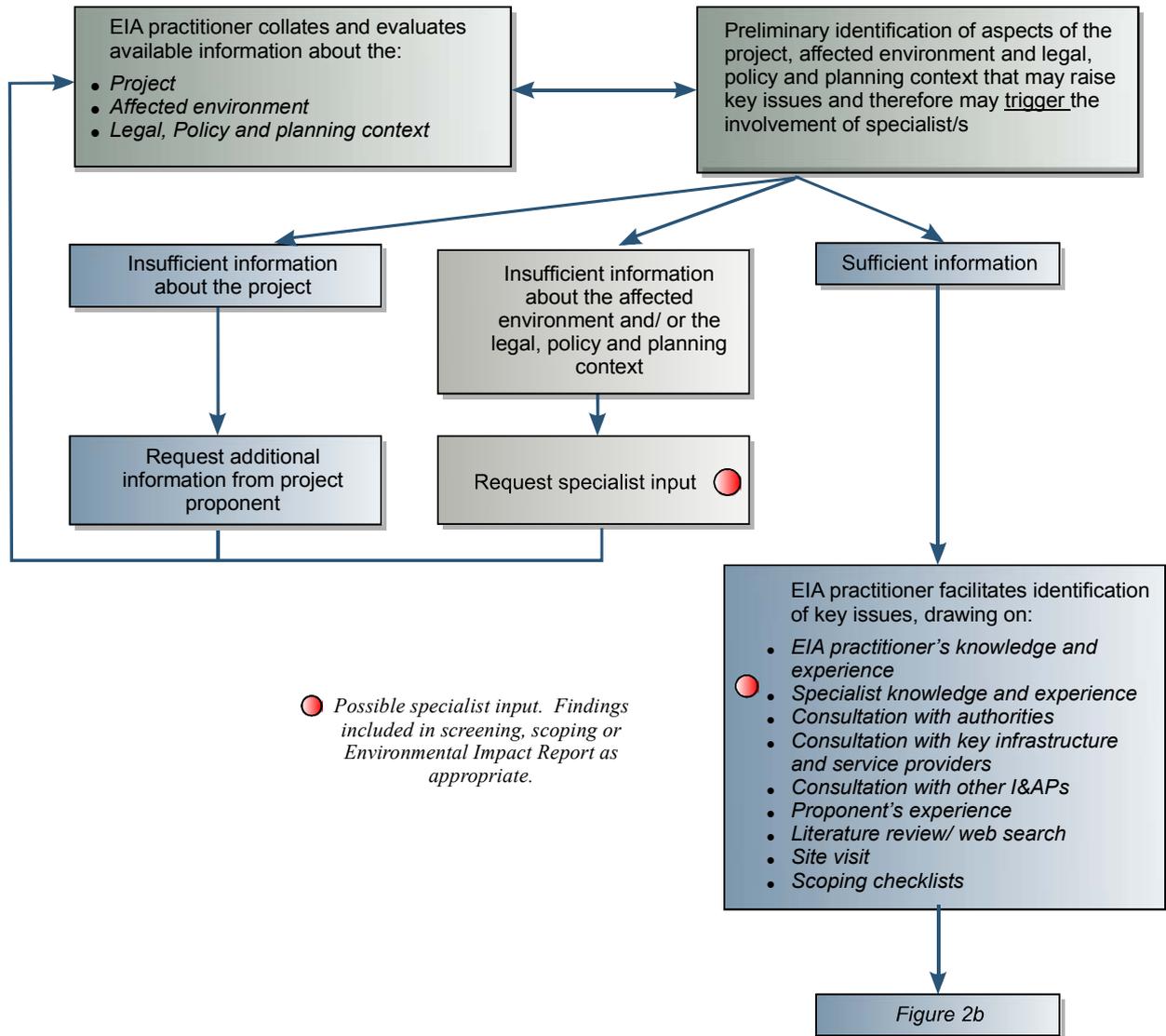
to the authorities and other stakeholders should not include recommendations that conflict or are impractical.

***To undertake an independent peer review of specialist input***

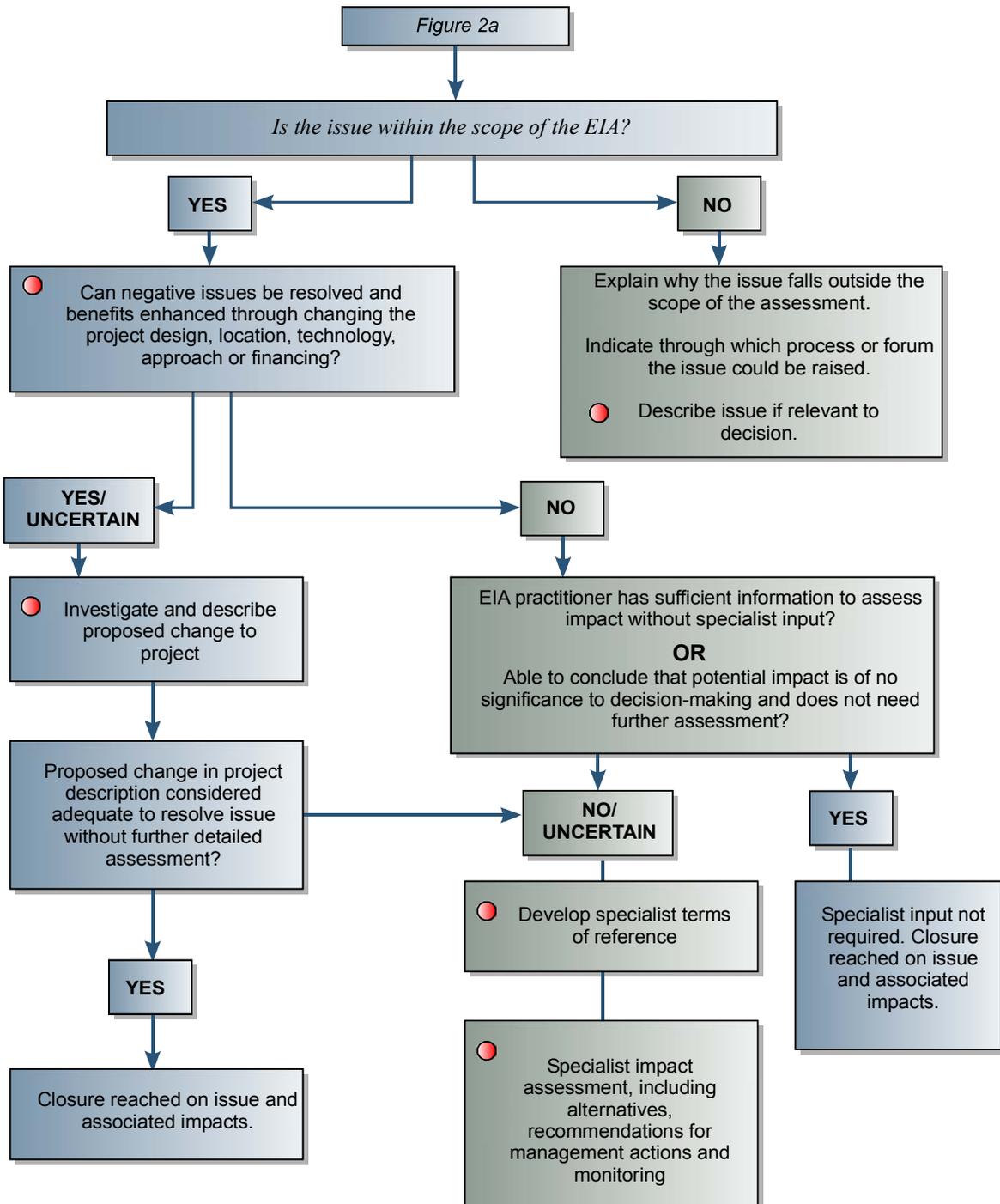
In certain circumstances the need for independent peer review of specialist studies may be identified during the course of the EIA process. For example, this may be required if the project is complex and controversial or if there are high levels of uncertainty and risk associated with the information provided (other triggers for independent peer review are provided in the *Guideline for the review of specialist input in EIA processes*). Where specialists are commissioned to provide an independent peer review, the purpose of their involvement is to check whether the specialist report meets minimum requirements, is reasonable, objective and scientifically sound.

In order to establish the need for specialist involvement in EIA processes, as well as the purpose and scope of specialist involvement, the EIA practitioner needs to first identify issues associated with the proposed project (Figure 2a) and, secondly, evaluate which of these issues need to be addressed by specialists (Figure 2b). These two stages are necessary regardless of whether the potential impacts of a project are identified and evaluated during pre-application planning, screening, scoping or the impact assessment phase of the EIA process.

The following generic approach can be used at various stages during the EIA process to identify and evaluate issues and determine the need for specialist involvement. These steps (illustrated by Figures 2a and 2b) define the logical thought process that should underpin these decisions. Although described as a series of systematic steps, in practice the process should be sufficiently flexible and iterative to take into account additional information that becomes available through the course of the EIA process. A need for the review of specialist input may be identified at various stages of the process (refer to the *Guidelines for the review of specialist input to the EIA process*). Specific triggers for involving specialists are identified in the specialist guidelines along with specific issues typically associated with these different specialist fields.



**Figure 2a:** Approach to determining the need for, timing and role of specialists in the EIA process



● Possible specialist input. Findings included in screening, scoping or Environmental Impact Report, as appropriate

**Figure 2b: Approach to determining the need for, timing and role of specialists in the EIA process**

***Step 1: Collate and evaluate adequacy of available information***

At the outset of the EIA process, the EIA practitioner collates the available information on the project, the affected environment and applicable legislation, policies and plans. The EIA practitioner must evaluate whether there is sufficient, appropriate information about key aspects of the project, the affected environment and the legal, policy and planning context to identify issues that may have a positive or negative impact on the biophysical, social or economic environment or that may present opportunities or constraints to the development (refer to Section 7 for a description of the type of information required). At this step, information should be sufficient to identify issues (Step 2 below), rather than to assess the significance of potential impacts. If the later steps determine the need for an assessment of impacts, additional information about the project, the environment and the legal, policy and planning context may be required.

If the project information is insufficient to proceed with the EIA process, the proponent must provide additional information.

If insufficient information on the affected environment or the legal, policy and planning context is available and an aspect of the proposed project or the context triggers concerns about significant negative impacts, the EIA practitioner should **involve an appropriate specialist(s)** to provide the outstanding information.

***Step 2: Identify potential issues and concerns***

In order to focus the EIA process and avoid the generation of excessive amounts of irrelevant information, “issues-focused scoping” is used in South Africa to focus the EIA process (including specialist input) on a manageable number of key issues that should be taken into account in decision-making (DEAT, 2001b). Issues related to the proposed development, generally are phrased as questions, taking the form “what will the *impact* of some *activity* be on some *element of the biophysical, social or economic environment?*” (Weaver, *et al.*, 1999).

The purpose of the EIA process is to provide decision-makers (be it the authorities, the proponent or financial institutions) with relevant information to decide whether or not the proposed development is aligned with the principles and objectives of sustainable development. Sustainable development is defined as “development that meets the needs of the present without compromising the ability of future generations to meet the needs of others” (Bruntland, 1987). The scoping process must, therefore, ensure that it adequately identifies issues of potential concern to future generations as well as the current generation. Furthermore potential local, regional, national and international issues should be identified. Importantly, the EIA practitioner should ensure that the scoping process identifies issues that may influence the realization of sustainable development objectives: i.e. maintenance of biophysical integrity, enhancement of social equity, economic growth and good governance.

Existing scoping processes in South Africa rely heavily on stakeholder engagement to identify and raise key issues that should be addressed by the EIA process<sup>3</sup>. Although the stakeholder

<sup>3</sup> Recommended reading: DEAT (2001c); SAIEA (2005)

engagement process may involve extensive consultation with the project proponent, authorities, specialists, civil society groups, infrastructure and service providers and a range of other interested and affected parties, issues raised are often largely of concern to the current generation of stakeholders and often dominated by the concerns of local stakeholders (i.e. those in closest proximity to, or most affected by the proposed development). EIA practitioners should therefore adopt a more rigorous, systematic process to identify biophysical, social (including heritage), economic and governance issues applicable to both current and future generations that should be assessed in the EIA process and taken account of in the decision-making process.

Issues and concerns can be identified through a combination of the following approaches:

- EIA practitioner's knowledge and experience from similar developments;
- **Specialist knowledge and experience;**
- Consultation with relevant authorities;
- Consultation with key infrastructure and service providers;
- Consultation with other I&APs;
- Proponent's knowledge and experience in constructing, operating and decommissioning similar developments;
- A review of relevant literature (e.g. EIAs conducted for similar projects) and best practice guidelines (e.g. World Bank Group's Safeguard Policies and Environmental Guidelines; European Commission Reference Documents on Best Available Techniques for industrial activities)<sup>4</sup>;
- Site visit; and
- Scoping checklists.

Techniques such as cause-effect mapping can assist in the identification of issues (and specialist involvement) by illustrating and unpacking the linkages between the various aspects of the project (i.e. sources/root causes of impacts) and their effects on the biophysical, social, economic and governance environment. A workshop with the proponent, the EIA practitioner and **various specialists** can be an efficient and effective way of identifying possible cause-effect relationships and ensure that **linkages between specialist studies** are identified and established early on in the EIA process. The use of scenario tools can assist in defining future scenarios which can be used as the basis for identifying issues of concern for future generations.

Adopting a more systematic process of issues identification (i.e. beyond public scoping) reveals more clearly the requirements for specialist involvement in EIA processes; the TOR for such specialist involvement; the prediction and assessment of direct, indirect and cumulative impacts; and recommendations for appropriate, practical and effective management actions and monitoring programmes.

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<sup>4</sup> Good sources include: <http://www.ifc.org/enviro/> or <http://eippcb.jrc.es>

Issues may be substantive (i.e. related to the nature of the development and its possible impacts) or procedural (i.e. related to the EIA process) and may be based on both objective knowledge and subjective perceptions or values. Although it is the responsibility of the EIA practitioner to respond to all issues that are raised within the scoping process, not all issues automatically require specialist input. The relevance of the issue to decision-making and the amount of available information will determine whether or not closure can be reached on the issue without further assessment. The rationale used for determining which issues are “closed off” without further specialist input and which issues are assessed in more detail (potentially by specialists) is described in Steps 3-5.

The following criteria can be used to establish “key” issues:

- An aspect of the project is inconsistent with the legal, policy or planning framework;
- The proposed project evokes strong public opinion (even if it does not necessarily result in an impact of high significance);
- The project is considered to have potential for impacts of high significance; or
- An aspect of the project, the environment or the legal context may result in the project having a fatal flaw.

***Step 3: Evaluate whether or not the issue falls within the scope of the EIA process***

Following the identification of issues through the scoping process, and prior to determining whether or not further assessment and specialist involvement is required, the EIA practitioner first needs to determine whether or not the issue falls within the scope of the specific EIA process. This step is necessary as the stakeholder engagement process may have raised a number of issues that lie outside the scope and responsibility of the project proponent to address. For example, issues related to strategic policy or planning decisions may have been raised that cannot be addressed in a project specific EIA process.

If the issue falls outside the scope of the EIA, this should be explained in the issues-response section of the Scoping Report. If possible, the response should indicate the correct forum or process through which this issue can be taken forward by stakeholders (e.g. commenting processes on policy or legislation affecting strategic level decisions). If the issue that falls outside the scope of the EIA is, however, considered to be of such relevance and significance that it should be taken into account by decision-makers, then the EIA practitioner should include a discussion of the issue and implications in the Scoping Report and/or Environmental Impact Report. If necessary, this **may require inputs from an appropriate specialist**.

If the issue falls within the scope of the EIA, continue with step 4.

***Step 4: Determine whether the issue can be resolved through changing the project proposal***

This step determines whether concerns regarding negative impacts can be effectively resolved, and benefits enhanced through changing the project proposal (e.g. design, layout, location, technology, route). This **may require specialist involvement** to propose and investigate the possible impacts of practical changes to the project proposal, taking into account the nature of the receiving environment. Alternatives should be well motivated. The initial identification of alternatives to the original project design is usually best undertaken in a workshop involving the

project proponent, the EIA practitioner and appropriate specialists. Relevant authorities may also be involved in this process.

If changes to the project can be made which effectively avoid or minimize negative impacts or enhance positive impacts, and which do not raise other key issues, closure can be reached on the issue without further assessment or specialist involvement. Changes to the project proposal and the rationale for reaching closure on the issue, should, however, be clearly documented and communicated. If the issue cannot be resolved through changing the project proposal, the EIA process continues with step 5.

***Step 5: Assess potential impacts associated with the proposed development, including recommendations for management actions and monitoring programmes***

Issues that cannot be resolved through changes to the project description need to be evaluated by the EIA practitioner to determine whether sufficient information exists to assess the associated impacts without specialist involvement. If the EIA practitioner is able to draw on existing information and experience to confidently assess the impact without specialist input, or is able to conclude that the potential impact is of such low significance that no further impact assessment is required, then the issue can be closed off without specialist involvement.

Issues that cannot be addressed by the EIA practitioner with available information are taken forward into the impact assessment and are addressed through the **involvement of appropriate specialists**. The EIA practitioner, in conjunction with the specialists, draft the TOR for the required input. At this stage the specialist's role is to assess the potential impacts of the proposed development (including feasible alternatives within the project description) and provide recommendations for management actions and monitoring programmes.

Without compromising the objectivity of the specialist assessment, the identification of appropriate, practical and feasible management actions and monitoring programmes is generally best achieved through workshops and discussions between the specialist and the project proponent, facilitated by the EIA practitioner. This is particularly important to resolve situations where two or more specialists on the EIA team propose conflicting management actions. The Environmental Impact Report that is presented to the authorities and other stakeholders should not include conflicting or unfeasible recommendations.

## **5. PREREQUISITES FOR A SPECIALIST TO PROVIDE EFFICIENT, EFFECTIVE AND QUALITY INPUT**

Prior to determining the scope of specialist involvement, the following sub-sections identify and summarise the prerequisites that underpin efficient and effective involvement of specialists in EIA processes.

### **5.1 APPOINTMENT OF THE RIGHT SPECIALIST**

Specialists appointed to provide input to the EIA process should have the appropriate qualifications and experience. Specialists should, ideally, have experience in EIA processes, the

type of development being proposed, as well as the area within which the development is being proposed. Where legal requirements exist for specialists to be registered with professional associations in order to practice, these must be complied with. For complex and controversial EIAs, the appointment of a specialist with a high standing in their professional community is recommended.

The choice of specialist should be informed by the:

- Type of project;
- Nature of the affected environment or resource (e.g. archaeological vs palaeontological resources require different types of heritage specialists);
- Issues and potential impacts posed by the development (e.g. the assessment of impacts on vegetation as a result of atmospheric emissions require different skills from assessing the loss of vegetation as a result of land clearance);
- Specific purpose for which they are required (e.g. it would be inappropriate to involve a generalist ecologist when a detailed baseline vegetation survey is required); and
- Type of approach and method applied (e.g. if modelling is required an appropriately qualified specialist must be appointed).

## **5.2 INDEPENDENCE OF THE SPECIALIST**

Specialists must have no vested financial interest in the outcome of the development application. Furthermore, specialists are required to provide objective information to the EIA process, regardless of their personal opinion on the proposed project. On condition that specialists provide objective, professional input in pre-application planning studies (which are sometimes confidential at the early stages of project development), their early involvement should not be automatically regarded as a compromise of their credibility.

## **5.3 CLEAR COMMUNICATION AND TERMS OF REFERENCE**

Clear communication and a common understanding of what is expected is a prerequisite for efficient and effective specialist involvement. Where significant specialist input is required (i.e. not just a brief specialist opinion or response to issues raised during scoping), clear communication is supported by the development of TOR that have been negotiated and agreed between the EIA practitioner and the specialist. The EIA practitioner therefore needs to have sufficient understanding of the role and timing of different specialist disciplines within the EIA process, the questions they need to address, the possible approaches that can be adopted and the information exchange requirements between specialists on the team.

The TOR should address the type of approach and methods and EIA terminology to be used by the specialist, how information is to be communicated, as well as structural and content requirements where written input is required. TORs should clarify procedural aspects such as the agreed project schedule (including requirements to attend meetings and workshops), budget and payment schedule, confidentiality requirements, sign-off and review requirements, interactions and information exchanges with other specialists on the EIA team, as well as

communication protocols between specialists, authorities, EIA practitioners, the project proponent, other stakeholders and the media (see Appendix B for elements of TOR).

#### **5.4 EFFECTIVE INTERACTION WITH OTHER SPECIALISTS ON THE EIA PROJECT TEAM**

Issues and impacts associated with any proposed development often require the involvement of a number of different specialists due to the multiple linkages that exist between the direct, indirect and cumulative impacts on the receiving environment. Ensuring that these impacts are correctly identified, assessed and managed requires effective interaction and communication between different specialists involved in the EIA process. The EIA practitioner therefore needs to facilitate and encourage this interaction and ensure that specialists communicate during the EIA process to identify and resolve issues, exchange information, identify conflicting findings, re-evaluate impacts following inputs from other specialists and agree on practical, feasible management actions.

#### **5.5 AVAILABILITY OF RELEVANT INFORMATION**

The quality of specialist input is strongly influenced by the availability of relevant, high quality information about the project, the affected environment and the legal, policy and planning context, as well as information from other specialists. In situations where there is limited knowledge and information about the receiving environment, there is a greater need to first commission a specialist to collect baseline data (Section 7 describes the type of information that is required). Approaches to baseline data collection include, for example, field surveys (extending to seasonal studies when necessary), archival research and/or use of remote sensing technologies. Remote sensing is particularly useful where it may be inappropriate or impossible to go into the field or to employ other more time-consuming approaches. Where relevant information is not available, and cannot be collected (e.g. seasonal studies cannot be carried out due to time constraints), these limitations must be clearly communicated to highlight uncertainties and possible implications.

#### **5.6 ADEQUATE TIME AND RESOURCES TO PROVIDE SPECIALIST INPUT**

The project and the environmental context from which issues arise influence the TOR for specialist involvement (including the budget and time allocated for involvement). It is therefore impossible to define, in advance, a standard budget and timeframe for specialist involvement in EIA processes. For projects requiring a comprehensive EIA process, this cannot be done prior to completion of the scoping process. Budgets and the timeframes therefore need to retain a reasonable amount of flexibility to ensure responsiveness to issues identified through the process and to accommodate unforeseen requirements as progress is made in the EIA process and through specialist involvement.

The specialist should discuss with the EIA practitioner the time and resources they deem necessary for their involvement in the process to ensure that their findings are not undermined unnecessarily by low levels of confidence. The principle of efficiency, effectiveness and quality should underpin budget and timeframe discussions between the project proponent, the EIA practitioner and the specialist.

Where little is known about the affected environment and/or where it is suspected that key issues may reveal negative impacts of high significance, provision should be made for additional time, budget and specialist input to carry out the necessary baseline studies to support the assessment of impacts.

Where time and budget is limited, specialists should clearly state whether and how this affected the findings and recommendations, and what implications this has for decision-making.

## 5.7 COOPERATION FROM THE PROPONENT

The effectiveness, efficiency and quality of specialist input into the EIA process depends largely on the degree of cooperation by the project proponent in allocating sufficient time and resources to ensure that accurate and relevant information is provided proactively and timeously to specialists.

## 6. DETERMINING THE SCOPE OF SPECIALIST INPUT (DRAWING UP THE TERMS OF REFERENCE)

Once the need for, timing and role of specialist involvement has been determined and the prerequisites met, the scope of the specialist input needs to be clarified through discussion between the EIA practitioner, the specialist, the proponent and, possibly, the relevant authorities. For this it is important that the participants in this discussion have a common understanding of the commonly used (and confused) EIA terms (refer back to Section 3, Box 1).

Sections 6.1 – 6.9 provide a brief overview of elements that should be discussed and agreed upon at the outset of the specialist's involvement in the EIA process and in drafting TOR<sup>5</sup>. Specific requirements for specialists are described in the respective specialist guidelines that have been developed as part of this series.

In complex and/or controversial projects, the draft TOR for specialists should preferably be seen by key stakeholders before they are finalized. Alternatively, the TOR for specialists should be evaluated by an independent reviewer.

### 6.1 IDENTIFYING AND RESPONDING TO ISSUES

The specialist could be asked *either* to identify issues, *and/or* to respond to, *and/or* to investigate issues raised through the scoping process (Figure 2a and 2b). The Scoping Report should be consulted by the specialist(s) in order to ensure that any issues raised are considered appropriately. The economist should therefore determine:

- Whether the issues raised through the scoping process are valid in the context of the proposed project, and need to be addressed further. The specialist is not necessarily required to assess each issue raised during scoping; a response or a comment on why the

<sup>5</sup> Recommended reading: DEAT, 2002d

issue is not relevant or is not assessed further may suffice in some cases. The specialist must give sound reasons to support his/her conclusions.

- Whether there is enough information to predict reliably the likely significance of key issues and associated impacts. If not, additional information should be gathered.
- Whether or not additional key issues need to be considered (i.e. issues that were not raised by stakeholders through the scoping process). The specialist must provide clear reasons for including any additional issues in the EIA process.
- Where there is sufficient reliable information, the economic specialist must determine:
  - (a) Whether or not it can be reliably concluded that impacts could be avoided either by amending the project proposal, pursuing alternatives, and/or by appropriate management actions. *In this instance the specialist should provide sound motivation and justification for his/her conclusions. There would then not be a need to assess these issues further in the impact assessment phase and the further involvement of the specialist/s would be unnecessary.*
  - (b) Whether or not the issue is potentially significant, and/or the issue and associated impacts cannot be avoided. *In this instance the specialist should indicate the field of expertise need to address the issue and help draw up sound terms of reference for specialist inputs during the impact assessment phase.*

If appointed to provide specialist input during the impact assessment phase, the specialist should respond to and/or address all those issues raised during scoping (and falling within the specialist's sphere of expertise) which were deemed to lead to potentially significant impacts, were unavoidable and/or about which there was insufficient information to reach conclusions at the scoping stage about their potential impact significance.

The specialist may be requested to evaluate the adequacy of stakeholder scoping from the specialist's perspective, particularly where disadvantage or vulnerable communities have not been given an adequate opportunity to raise issues concerning the potential impact of the proposed project on their livelihoods, or where significant heritage or ecological resources may be at risk. Such circumstances may warrant additional scoping of key issues by the specialist.

## 6.2 ESTABLISHING APPROPRIATE TIME AND SPACE BOUNDARIES

The size and nature of the proposed development influences the time and space boundaries of the specialist's involvement. Furthermore, the various components of the environment, (i.e. social, economic and biophysical), need to be taken into account. Boundaries primarily need to be agreed upon between the EIA practitioner, the specialist, the proponent and the decision-making authority, however, they should also be acceptable to other stakeholders.

### *Time boundaries*

In determining the appropriate **time boundaries** for the specialist's involvement, the following needs to be considered:

- The specialist must consider short to long-term implications of impacts for different phases of the proposed development (i.e. construction, operation and decommissioning), highlighting irreversible, permanent impacts and irreplaceable losses of natural and heritage

resources.

- The time needed will vary, depending on the available existing information and levels of knowledge about the project and the affected area. Where there is a high risk of potentially significant impacts and a paucity of information, it may be necessary to conduct additional baseline surveys. Without adequate information, the credibility of the specialist input may be compromised.
- The specialist must consider any expected or predictable trends or changes over time without the proposed activity in order to evaluate the potential significance of the activity against those changes. This may require consideration of impacts against different possible scenarios (section 6.4).
- Characteristics and uses of the receiving environment at different times of year, or over different periods, should be taken into account.
- Recommendations for management actions should consider the optimum times of year for construction and start-up (i.e. commissioning) in order to avoid, prevent or minimize negative impacts. Periods or circumstances during which activities should not be undertaken should be highlighted and justified (e.g. wind directions and conditions under which industrial processes should not be started up).

### *Spatial boundaries*

In determining the appropriate **spatial boundaries** for the specialist's involvement, the following needs to be considered:

- The specialist should be asked to consider the broad context of the proposed project (i.e. beyond the boundaries of the specific site) and the role of the site within that context, e.g. whether or not the site is located within a migratory corridor influences the spatial boundary of the specialist's input.
- Where a proposed project (and associated infrastructure) is likely to have off-site impacts, the spatial extent of the study needs to be adjusted to include potentially significant off-site impacts.
- The specialist must consider the full spectrum of contexts within which impacts may be realized, i.e. the local, regional, national or global context.

## **6.3 CLARIFYING APPROPRIATE DEVELOPMENT ALTERNATIVES**

In some cases changes to the project description can help to avoid or minimize negative impacts and enhance positive impacts. The alternatives to be considered by the specialist must be identified and agreed upon.

Alternatives considered in the EIA process can include *location* and/or *routing* alternatives, *layout* alternatives, *process* and/or *design* alternatives, *scheduling* alternatives or *input* alternatives<sup>6</sup>. Any development proposal may include a range of possible alternatives from some or all of these various categories of alternatives. The "no-go" alternative in EIA provides a benchmark against which to evaluate potential impacts of the proposed project alternatives. Alternatives must focus on addressing the significant issue at hand. It would not be reasonable

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<sup>6</sup> Recommended reading: DEAT, 2004a

to expect the project proponent to consider alternative water supply options is there is adequate water of good quality available. Similarly, if the single issue of concern is the visual impact of the proposed development, alternatives that reduce insignificant noise impacts may be of no value.

Alternatives are best considered in the pre-application planning, screening and scoping phase of the EIA where there is the most flexibility and opportunity to make amendments to the project description to avoid or prevent significant negative impacts and that enhance benefits.

#### **6.4 ESTABLISHING ENVIRONMENTAL AND OPERATING SCENARIOS**

Scenarios are plausible future environmental or project operating conditions that could influence the outcomes of the impact prediction and assessment. Informed decision-making needs to be based on a consideration of possible impacts under a range of scenarios. For example, where there is a significant risk of upset conditions occurring at an industrial plant, it is necessary to base decisions on the impact assessment findings for normal and upset operating conditions.

##### *Environmental scenarios*

In determining environmental scenarios, the specialist should, where relevant and possible, take into account expected trends such as climate change, social movements and terms of trade.

The specialist should take into consideration any anticipated environmental changes which could aggravate or ameliorate potential impacts of the proposed development. Possible changes that may result in different environmental scenarios include:

- Different development trends or strategies that would lead to different “future states” for the affected area (e.g. any initiatives to remove or manage alien invasive organisms, or planned conservation areas);
- Different possible interest, inflation and exchange rates;
- Different growth rates for property values.
- Changes in the landscape and surrounding use over time;
- Different rates of informal settlement or in-migration to the area;
- Different levels of reliance on ecosystem goods and/or services in the area.

##### *Operating scenarios*

With respect to operating scenarios that may determine the significance of impacts, the specialist should evaluate impacts in terms of the following scenarios, where relevant:

- Normal operating conditions;
- Shut-down and start-up following routine maintenance or on project commissioning;
- Extreme upset or emergency conditions;
- Expansion of the project;
- Different types of technology or operating processes;
- Different types of materials or finishes used;

- Different possible costs and sources of materials and skills used;
- Different values for the goods or services to be produced by the proposed project;
- Different costs for accessing/utilising the proposed development.
- Various degrees of effectiveness of processes or mitigation measures (e.g. the removal of screening vegetation).

The nature of the affected environment and communities, in particular the likely vulnerability and resilience to the above conditions, needs to be taken into account in assessing potential impact significance and recommending proposed management actions and monitoring programmes.

## **6.5 ADDRESSING DIRECT, INDIRECT AND CUMULATIVE IMPACTS**

The specialist must consider potentially significant direct, indirect and cumulative impacts of a proposed activity<sup>7</sup>. This requires the following:

- Conceptualisation of possible cause-effect pathways resulting from the proposed development<sup>8</sup>;
- An understanding of current and future plans, projects and activities in the same area;
- An awareness of other threats or trends that could affect the system, communities or species located within the area in which the development is proposed;
- An understanding of the likely resilience and status of affected systems, communities or species;
- An understanding of broader strategic goals or targets for the area that would be affected by the proposed project.

The level of detail to which these should be considered will be influenced by the nature of the proposed project and issues raised through the scoping process.

Where potentially significant cumulative effects are likely and cannot be addressed in the EIA, the specialist should alert the EIA practitioner and decision-maker/s to these effects and make explicit recommendations as to ways of addressing them (e.g. through a strategic environmental assessment or systems-based approach).

<sup>7</sup> Recommended reading: DEAT, 2004b

<sup>8</sup> Münster & Davies, 2005

Box 2 provides definitions and components of these different effects.

***Box 2: Definitions and components of direct, indirect and cumulative effects***

**Direct (or primary) effects** occur at the same time and in the same space as the activity. For example, the loss of habitat through mining or the creation of temporary employment opportunities on the construction site.

**Indirect (or secondary) effects** occur later in time, or at a different place, from the causal activity, or as a result of a complex pathway. For example, abstraction of groundwater leading to changes in the water table and affecting a distant groundwater dependent wetland.

**Cumulative effects** can be:

- Additive: the simple sum of all the effects (e.g. fertilizer inputs to a river from farms in the catchment);
- Synergistic: effects interact to produce a total effect greater than the sum of individual effects. These effects often happen as habitats or resources approach capacity (e.g. fragmentation of habitat for a species can have limited effect until additional fragmentation makes areas too small to support that species at all);
- Time crowding: frequent, repetitive impacts on a particular resource at the same time (e.g. small-scale mining within a particular ecosystem).
- Neutralizing: where effects may counteract each other to reduce the overall effect (e.g. infilling of a wetland for road construction, and creation of new wetlands for water treatment).
- Space crowding: high spatial density of impacts on an ecosystem (e.g. rapid informal settlement).

*Source: Adapted from Cooper, 2004.*

## 6.6 SELECTING THE APPROPRIATE APPROACH AND METHOD

The approach and method should be appropriate to the purpose of the specialist's involvement, as well as to the context and type of information available. The decision on what approach and method to use will be influenced by the following:

- The type of development;
- The environmental context within which the development is proposed (i.e. type and significance of resource affected);
- The type of issues or questions which need to be addressed;
- The amount of information available at the outset of the EIA process;
- The potential significance of impacts;
- The level of certainty and confidence required;
- The time and budget available; and
- Legal requirements

The selected approach and method should be clearly justified and communicated by the specialist.

## 6.7 CLARIFYING THE TIMING, SEQUENCING AND INTEGRATION OF SPECIALIST INPUT

The timing of a specialist's involvement in relation to other specialists is central to effective and efficient EIA. The relative timing of different specialist studies should aim to maximize potential benefits to one another in terms of information gathering, identification of alternatives, the assessment of impacts and provision of recommendations for management actions and monitoring programmes. Cooperation and communication between specialists and with the EIA practitioner is critical in this regard.

Factors that determine or influence the timing of the specialist's involvement in relation to other specialists include the following:

- **The need for adequate information on the receiving environment** – Specialists undertaking the impact assessment may first require a description of the affected environment. Baseline studies often have constraints with regard to timing and may need to be undertaken at specific times of the year. This may have knock-on timing implications for specialist studies that rely on the outcomes of the baseline study.
- **The need for adequate information on the proposed project** - Project information, including the identification of possible alternatives (which may only emerge in the course of the EIA process), may be an input requirement to other specialists.
- **The need for information on impacts and management actions** - Predicted impacts and proposed management actions identified by one specialist may present knock-on impacts that may need to be evaluated by another specialist. In other cases, the information may be required by other specialists, for example, in order to provide an integrated cost-benefit analysis of the project.
- **The need to consider environmental externalities** – Where there are potential environmental externalities that require assessment, for example through cost-benefit analysis, the impact significance ratings from the suite of specialist studies are required as input for such analysis.

Optimum scheduling of different specialist inputs is specific to each EIA and should be carefully determined to ensure that specialists integrate effectively and efficiently. Cause-effect mapping during scoping can assist in identifying linkages and associated sequencing and scheduling implications for specialist involvement in the EIA process. The specific information requirements, inter-dependencies and timing constraints of the various specialists should be clearly articulated in an interdisciplinary workshop at the start of the EIA, preferably following a presentation of the proposed project by the proponent and a joint site visit. This enables the scheduling and focus of the different studies to be optimized. Follow up workshops may also be necessary as various specialist inputs advance towards the formulation of project alternatives, the identification of the BPEO and specification of impact mitigation and benefit enhancement measures.

## 6.8 ENSURING APPROPRIATE STAKEHOLDER ENGAGEMENT

In certain cases, it may be necessary for specialists to engage with stakeholders over and above the EIA stakeholder engagement process. For example, a visual specialist may need to consult with local stakeholders to identify scenic viewpoints of particular significance or value. Specialists should, however, have a clear understanding of and respect the communication and engagement principles and protocols established for the EIA process by the EIA practitioner and/or, where applicable, the stakeholder engagement practitioner. These need to be clearly communicated and agreed upon prior to focused consultation being undertaken.

## 6.9 CLARIFYING CONFIDENTIALITY REQUIREMENTS

Issues of confidentiality need to be discussed and agreed upon upfront. These may relate to how commercially confidential information is treated and communicated, or which information about the receiving environment should be kept confidential in order to protect sensitive resources. For example, it may sometimes be inadvisable to make public information on heritage resources or rare and endangered species in order to protect these resources. Respect for confidentiality (where there is good reason for this) should not be confused with a lack of transparency in the EIA process.

# 7. INFORMATION REQUIRED TO PROVIDE SPECIALIST INPUT

An important prerequisite for efficient and effective specialist inputs is the upfront identification of the information required by the specialist. Specialists should provide a list of information requirements to the EIA practitioner as early as possible in the EIA process in order to ensure that this is provided timeously by the project proponent, EIA practitioner, authorities and/or other parties. Responsibilities for sourcing the necessary information should be clarified between the EIA practitioner and the specialist.

The following information is generally required:

- Relevant project information (including relevant alternatives under consideration);
- Information describing the affected environment;
- Legal, policy and planning context;
- Issues raised in the scoping process; and
- Information generated by other specialists.

As discussed in Section 4, where information on the affected environment or the legal, policy and planning context is not available at the outset of the EIA process, this may point to the need for upfront specialist involvement to fill this information gap. The type of information which may be relevant to these components is described below.

Specific information requirements for different specialist disciplines are described in the respective specialist guidelines that have been developed as part of this series.

## 7.1 RELEVANT PROJECT INFORMATION

A project description is required in order to identify aspects of the proposed development that could negatively or positively impact the biophysical, social or economic environment. The project description provided by the proponent must therefore include sufficient, appropriate information on all aspects of the proposed development that may affect the receiving environment. Relevant company policies, management systems and commitments to sustainable development should be provided.

The project description should be of sufficient detail to identify and assess issues and reasonable alternatives; however, it should not be so far advanced in design and planning as to limit the options for incorporating management actions that may be identified and recommended through specialist involvement in the EIA process.

The project description must include:

- Rationale and societal need for the project;
- Location of the project (including relevant coordinates, farm or erf numbers);
- Scheduling details for construction, start-up/commissioning, operation and decommissioning;
- Reasonable alternatives;
- Sources/root causes of direct, indirect and cumulative impact during the different project phases – both on and off-site (sometimes referred to as project aspects) (See Box 3);
- Possible expansion plans.

### *Box 3: Sources/root causes of impacts*

- **Activities:** vegetation clearance, excavation, piling, blasting, dewatering, water abstraction, dredging, onsite storage, transporting labour and materials, industrial processes, resettlement, recruitment etc.
- **Inputs:** water, electricity, fuel, fertilizer, seeds and plants, construction materials, raw materials, temporary and permanent employees, finance, equipment, sub-contracted services, etc.
- **Outputs:** final products or services, atmospheric emissions, dust, noise, wastewater (e.g. agricultural effluent, industrial process wastewater, sewage/domestic wastewater and stormwater), radiation, other waste (e.g. solid, hazardous and chemical waste), salaries, government revenues, debt repayments, profits, etc.
- **Buildings and structures:** height, footprint area of disturbance, volume, bulk, density of buildings, design, composition, colour, lighting, etc.
- **Temporary and fixed infrastructure:** water supply, water treatment, process wastewater, sewage/domestic and stormwater infrastructure (e.g. treatment works, canals, pipelines, dams, boreholes); transport infrastructure (e.g. conveyor belts, cable way, roads, railways, airports, ports); power supply infrastructure (e.g. power stations, sub-stations, transmission lines, distribution lines); waste management facilities (e.g. recycling facilities, land fills, incinerators); telecommunications; onsite and offsite housing; medical facilities, etc.

Sources of impacts should be described in terms of the following: **source, destination, route and distance to the receiving environment, physical characteristics, quantity, quality and timeframes** (See Box 4 for examples). **Feasible alternatives** should also be described (refer to Section 6.3). Where relevant clearly legible and appropriate **maps, photos, route descriptions and layout plans** should be provided.

Where relevant, different **operating scenarios** (as well as probability of occurrence) should be provided, including normal and worst-case scenarios, to ensure that these are taken into account in the impact assessment and decision-making process. For example, atmospheric emission data should be provided for project commissioning (start-up), normal operations and upset conditions to ensure the full range of possible negative impacts are taken into consideration.

Furthermore, key “**swing variables**” (i.e. those key variables that influence project feasibility and the consideration of project alternatives) should be identified and defined upfront (e.g. minimum number of units required to ensure financial viability, type of energy supply, maximum distance from port/airport, minimum stack height, exchange rate).

<i>Box 4: Examples of project description information</i>		
<b>Labour input during construction</b>	<b>Wastewater output during operation</b>	<b>Electricity supply infrastructure (transmission lines)</b>
<p><b>Source and quantity:</b> Local: 3000 National: 200 Foreign: 10</p> <p><b>Destination:</b> N/A</p> <p><b>Quality/skills level:</b> Unskilled: 2000 Semi-skilled: 800 Highly-skilled: 500</p> <p><b>Timeframe/schedule:</b> March 2006 – April 2008</p> <p><b>Maps:</b> N/A</p>	<p><b>Source and quantity:</b> Cooling water: 6 m<sup>3</sup>/s</p> <p><b>Destination:</b> Discharged to marine environment</p> <p><b>Quality:</b> Chlorine: 0.5ppm</p> <p><b>Timeframe/schedule:</b> Life of plant (i.e. 30 years) from commissioning during April 2008.</p> <p><b>Maps:</b> Illustration of alternative discharge locations.</p>	<p><b>Source, destination and distance:</b> Saldanha Bay to Cape Town (150km)</p> <p><b>Quantity:</b> 2 x 400kV transmission lines</p> <p><b>Quality:</b> N/A</p> <p><b>Timeframe/schedule:</b> Permanent</p> <p><b>Maps:</b> Illustration of alternative routing options.</p>

## 7.2 INFORMATION DESCRIBING THE AFFECTED ENVIRONMENT

The description of the affected environment sets out the relative importance and values of different environmental components and processes, forming the foundation of the identification of potential issues and impacts associated with the proposed development. Key sources of information about the local and regional environment include, for example, national, provincial and municipal State of the Environment reports; biodiversity conservation strategies and action

plans; Spatial Development Frameworks; previous Strategic Environmental Assessments and EIAs. Information sources should be clearly referenced.

The environmental description should include the following elements, but other points of discussion may be added if these are deemed to be important:

- **Maps, photos and location plans** should illustrate the spatial relationship between the proposed development and important components of the affected environment. These should indicate scale, direction, contours, existing servitudes, 1:50 year and 1:100 year floodlines (if available), adjacent land use and development, existing infrastructure and other relevant information.
- Description of the **local and regional context** of the proposed project and identified site(s), (e.g. description of zoning and existing land use, biomes, ecoregions, vegetations types, faunal or floral biogeographic classes, land classes, unique landscape and heritage characteristics and “sense of place”, demographics, settlement patterns, proximity to community facilities, economic development status, socio-economic activities, available infrastructure and services, and institutional arrangements and capacity). Specific attributes relating to natural and heritage conservation value, conservation importance and vulnerability should be identified. Variations over time and spatially should be highlighted (e.g. seasonal changes resulting from migration patterns, or differences in vegetation/habitat stemming from changes in altitude).
- Description of the **current state** of the affected environment in terms of degree of modification, transformation or development (e.g. as defined by IUCN threat categories, DWAF river health classification or socio-economic development indicators), as well as the associated conservation and protection status (e.g. IUCN protected area categories, protected heritage sites). Where relevant, the state and availability (or lack of) existing infrastructure and social services (e.g. schools and clinics) should be described. To avoid duplication of specialist involvement, it is important to review available information, such as regional and local conservation plans and state of the environment reports. These sources of information provide useful background information that may determine the need for impact assessment, and may identify agreed upon thresholds of significance, management actions and monitoring indicators.
- Description of the **desired future state** of the environment and development, as reflected in broad sustainable development objectives and targets, specific visions and strategies for the area, integrated development plans or specific resource management objectives (e.g. the Millennium Development Goals, City of Cape Town Integrated Metropolitan Environmental Policy, the City of Cape Town Biodiversity Strategy, or the national River Health Programme).
- Identification of **sensitive or significant receptors, resources or components** of the environment that may be affected. These could be species, communities, populations, processes, heritage resources or any other environmental component.
- Identification of the **uses and users** of the affected environment (e.g. local residents; informal businesses based on collecting of medicinal plants from the site; commercial fisheries).
- Identification of **environmental or development trends and pressures** on the affected environment, (e.g. ecologically undesirable fire regimes, climate change, human settlement

patterns, alien plant invasion, infrastructure development). This may include land use, social, cultural, economic, legislative, policy or political pressures that have a bearing on the status of the site and region.

- Plausible **future environmental scenarios** should be described in order to evaluate potential impacts on the current state of the receiving environment, as well as plausible future conditions. These should take into account the identified trends and pressures. For example, a project's water requirements may be considered acceptable under the current rainfall regime, however, these may not be met in the event of drought/drier conditions.
- Identification of the potential footprints associated with the different aspects of the proposed development, such as the land transformation footprint, water systems footprint and atmospheric emission footprint. If **multiple footprints** can be discerned, these should be described and mapped individually.

### 7.3 LEGAL, POLICY AND PLANNING CONTEXT

The following information may be of relevance and may need to be considered to establish potential non-compliance of the project with existing legislation, policies and plans or other environmental permitting requirements. This information is also relevant in order to evaluate whether or not the proposed development contributes to, or is in conflict with, the achievement of the vision/desired future state of the area.

- International agreements and conventions to which the country is a signatory (bear in mind the various statutes that are possible, and the general need to move towards giving full effect to the instruments through ratification in local law. In general, conventions are acceded to or joined, then signed, and finally ratified or 'entered into force' when appropriate legal and protection provisions are included in national legislation);<sup>9</sup>
- National legislation and policy (Acts, Bills, Green and White Papers and other related documents, e.g. regulations and guidelines);<sup>10</sup>
- Provincial Acts, Ordinances and Bills;
- Local municipal policy documents, by-laws and plans (e.g. Integrated Development Plans, Spatial Development Frameworks);
- Other sector- or industry-specific standards or best practice (e.g. International Finance Corporation sector specific guidelines for pollution prevention and abatement).

Previous applications for rezoning approval or development authorization from the environmental or heritage authorities should also be considered.

### 7.4 ISSUES RAISED IN THE SCOPING PROCESS

As discussed in Section 6.1, the issues raised during the scoping process are a critical information requirement for specialists, to ensure that their inputs are focused on addressing

<sup>9</sup> Also protocols, memoranda of understanding, etc. under the formal conventions

<sup>10</sup> Good sources for these are <http://www.info.gov.za/documents/index.html> or <http://www.polity.org.za/pol/home/>

key issues. A consolidated set of issues is prepared by the EIA practitioner and should be made available to specialists along with their terms of reference.

## **7.5 INFORMATION GENERATED BY OTHER SPECIALISTS IN THE EIA PROCESS**

Specialists may require information that is being generated by other specialists (Section 6.7). This may include information on the project, the affected environment, the legal, policy and planning context or potential impacts and management actions. For example, the assessment of impacts of atmospheric emissions on vegetation relies on the air dispersion modeling results produced by an air quality specialist.

## **8. RESPONSIBILITIES OF DIFFERENT ROLEPLAYERS**

The following section clarifies the key responsibilities of the various roleplayers, with particular reference to specialist involvement in EIA processes. This section should be read in conjunction with the relevant statutory responsibilities.

### **8.1 SPECIALISTS ON THE EIA TEAM**

Specialists carry the following responsibilities in the EIA process:

- Negotiate TOR with the EIA practitioner;
- Ensure TOR are appropriate to the nature of the project and the environmental context;
- Follow the EIA process and terminology defined by the EIA practitioner and seek clarification from the EIA practitioner where this is unclear or not possible;
- Deliver services in accordance with the agreed TOR and other legal requirements, including adherence to agreed communication protocols;
- Provide objective, relevant and professionally sound information to the EIA process;
- Identify if and how specialist findings may have implications for other specialists or components of the EIA process;
- Identify the need for other/wider specialist involvement where this has not yet been identified by the EIA practitioner;
- Liaise with other relevant specialists where their areas of expertise and project issues overlap or affect one another;
- Clearly and timeously communicate additional information requirements (over and above those provided by the EIA practitioner and/or the proponent) to the EIA practitioner; including information required from other specialists;
- Timeous provision of relevant information to other specialists;
- Participate constructively in meetings, workshops and other communication sessions where required;
- Conduct additional targeted consultation with stakeholders where required (ensuring there is harmonization with the stakeholder engagement process defined by the EIA practitioner or their appointed stakeholder engagement practitioner);
- Source indigenous and local knowledge where relevant;

- Contribute to the baseline information, the identification of issues, reasonable alternatives, practical management actions and monitoring programmes associated with the proposed development;
- Use (and explain choice of) the most appropriate approach and method to respond to the key issues raised during the EIA process;
- Consider site-specific, off site and strategic issues;
- Use professional judgement and a systematic and explicit approach when assessing the significance of potential impacts;
- Clearly communicate findings and ensure that information is relevant and accessible to inform decision-making for sustainable development;
- Identify the BPEO from the range of alternatives to the specialist's scope of input and participate in discussions with the EIA practitioner, other specialists and the proponent with regard to determining the overall BPEO. *(It is **not** the responsibility of the specialist to make trade-offs between different issues).*
- “Sign-off” on information provided to the EIA practitioner;
- Review and “sign off” on the EIA practitioner’s incorporation of the specialist’s contribution to the Environmental Impact Report prior to its submission to the relevant authority and external stakeholders to ensure that information has been interpreted and integrated correctly;
- Obtain permission for use of copyrighted or confidential data produced through the specialist study if this is to be used for purposes other than the EIA process.

Further criteria for ensuring that specialist reports meet minimum requirements, are reasonable, objective and professionally sound are described in the *Guideline for the review of specialist input in EIA processes*.

## 8.2 EIA PRACTITIONER

The EIA practitioner carries the following responsibilities in the EIA process:

- Determine the need for and purpose of specialist involvement in the EIA process;
- Where appropriate, ensure that specialists are involved as early as possible in the EIA process (This includes determining the appropriate level of specialist input required – i.e. to determine if a specialist comment will be adequate, or if a detailed specialist assessment will be required);
- Ensure specialist involvement is appropriately budgeted and planned for;
- Negotiate TOR with the specialist;
- Ensure specialist TOR are appropriate to the nature of the project and the environmental context;
- Clarify the EIA process (including review requirements) and common terminology to be adopted by the specialist;
- Identify linkages between specialists (and scheduling implications);
- Act as the communication channel between the specialists, the proponent, the authorities and other I&APs, for example, to communicate information requirements, issues, possible

alternatives, changes to the project description, outcomes of the impact assessment and recommended management actions and monitoring programmes. Communication protocols should be established and agreed upfront.

- Facilitate interactions and information exchanges between members of the EIA team (i.e. between specialists, stakeholder engagement practitioner and reviewers), as well as with the project proponent in accordance with agreed timeframes;
- Ensure specialists deliver according to the agreed TOR and have signed off on reports;
- Review specialist inputs and determine additional review requirements where necessary (e.g. independent peer review, authority review). Where the review recommends modifications to the specialist input these must be justified;
- Ensure specialist inputs are communicated clearly and are readily accessible for comment by stakeholders, including relevant government departments and other institutions;
- Integrate and coordinate the various specialist inputs into the Screening, Scoping and/or Environmental Impact Report, as appropriate, and ensure that the specialist's findings are accurately and faithfully reflected in that report;
- Evaluate the BPEO recommended by the various specialists on the team, discuss and agree on the overall BPEO taking into account the findings of the various specialist inputs. In the event that there have been differences of opinion between specialist assessments regarding the BPEO, the EIA practitioner must highlight these differences in the integrated report and explain why they have arisen (e.g. differences may arise due to conflicting sustainable development objectives).
- Ensure specialists have the opportunity to review integrated reports prepared by the EIA practitioner prior to submission to the authorities and other external stakeholders to confirm that the interpretation and presentation of the specialist's findings is correct.

### 8.3 PROJECT PROPONENT

The project proponent carries the following responsibilities in the EIA process:

- Allocate adequate time and budget to the involvement of specialists in EIA processes;
- Maintain a contingency budget in the event that additional specialist involvement may be required during the course of the EIA, recognizing that it is impossible to accurately determine the scope of specialist involvement during the initial EIA budgeting process;
- Recognise that changes to the project description during the course of the EIA process may have time and budgetary implications for the EIA practitioner and the specialist;
- Respect the requirement for EIA practitioners and specialists to provide accurate and objective information to decision-makers;
- Timely provision of relevant and accurate project information required to assess potential impacts on the biophysical, social and economic environment, as well as governance implications;
- Contribute constructively to the identification of issues, reasonable alternatives, practical management actions and monitoring programmes associated with the proposed development;
- Participate constructively in meetings, workshops and open days where required;

- Review specialist reports and ensure that implications are understood. Where the review recommends modifications to the specialist report these must be justified.

#### **8.4 DECISION-MAKING AUTHORITIES**

The decision-making authority is the authority that grants or refuses statutory approval to the proposed development and is therefore the lead authority in the EIA process. The decision-making authority carries the following responsibilities in the EIA process:

- Clarify procedures relating to specialist involvement in EIA process;
- Provide relevant information to support effective and efficient involvement of specialists in EIA processes, where this information is held by the decision-making authority;
- Review specialist TOR and determine whether or not they require revision prior to their acceptance and approval;
- Contribute constructively to the identification of issues, reasonable alternatives, practical management actions and monitoring programmes associated with the proposed development;
- Review specialist reports and decide whether they are acceptable, require further information and revision or should be rejected. Where the review recommends modifications to the specialist report these must be justified and motivated in writing;
- Give due consideration to information provided through the EIA process in decision-making;
- Provide comments and decisions within legislated timeframes. Where no timeframes are legislated, timeframes should be agreed upon between the authority, the EIA practitioner and the proponent.

#### **8.5 OTHER AUTHORITIES**

Other authorities include those authorities who may be required to verify information included in the specialist input and/or comment on specialist input as this has implications falling within the scope of their mandate. Depending on the nature of the EIA, authorities may carry the following responsibilities in the EIA process:

- Provide relevant information to support effective and efficient involvement of specialists in EIA processes, where this information is held by the authority;
- Contribute constructively to the identification of issues, reasonable alternatives, practical management actions and monitoring programmes associated with the proposed development;
- Where the authority is a commenting authority, the authority must review specialist TOR and specialist reports and provide timely comments and feasible recommendations to the decision-making authority. Where the review recommends modifications to the specialist report these must be justified.

## 8.6 OTHER INTERESTED AND AFFECTED PARTIES

Interested and affected parties (I&APs) include individuals, communities or groups whose interests may be positively or negatively affected by the proposed development and/or who are concerned with the proposed development and its consequences. I&APs carry the following responsibilities in the EIA process:

- Contribute constructively to the identification of issues, reasonable alternatives, practical management actions and monitoring programmes associated with the proposed development;
- Provide relevant information to support effective and efficient involvement of specialists in EIA processes.
- Review specialist TOR and specialist reports and provide timeous comments and feasible recommendations to the EIA practitioner (or the stakeholder engagement /public participation practitioner). Where the review recommends modifications to the specialist report these must be justified.

## 9. REFERENCES AND RECOMMENDED READING

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## APPENDIX A: ACRONYMS

### ACRONYMS

<i>BAT</i>	Best available technology
<i>BPEO</i>	Best Practicable Environmental Option
<i>DEA&amp;DP</i>	Department of Environmental Affairs and Development Planning
<i>DEAT</i>	Department of Environmental Affairs and Tourism
<i>DWAF</i>	Department of Water Affairs and Forestry
<i>EIA</i>	Environmental Impact Assessment
<i>I&amp;AP</i>	Interested and affected party
<i>TOR</i>	Terms of Reference

## **APPENDIX B: MODEL TERMS OF REFERENCE FOR SPECIALIST INPUT**

Terms of reference for specialist input should include the following elements:

- 1) Project description
- 2) Overview of EIA process and timeframes
- 3) Specific issues and information requirements to be addressed by the specialist
- 4) Key sources of information
- 5) Assumptions, limitations and uncertainties
- 6) Approach to be used
- 7) Requirements to attend meetings and workshops
- 8) Requirements to liaise and exchange information with other specialists
- 9) Protocol for additional stakeholder engagement
- 10) Report template providing structure of contents, formatting styles and standard terminology (including impact assessment criteria if applicable)
- 11) Clarification of review and integration process
- 12) Requirements for specialist sign off on the specialist report and inputs to integrated reports
- 13) Summary of tasks, deliverables and due dates
- 14) Budget and payment schedule, including penalty clause for late delivery
- 15) Confidentiality agreement
- 16) Protocols for communication with outside parties during the project