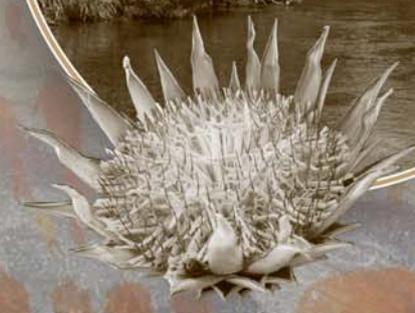
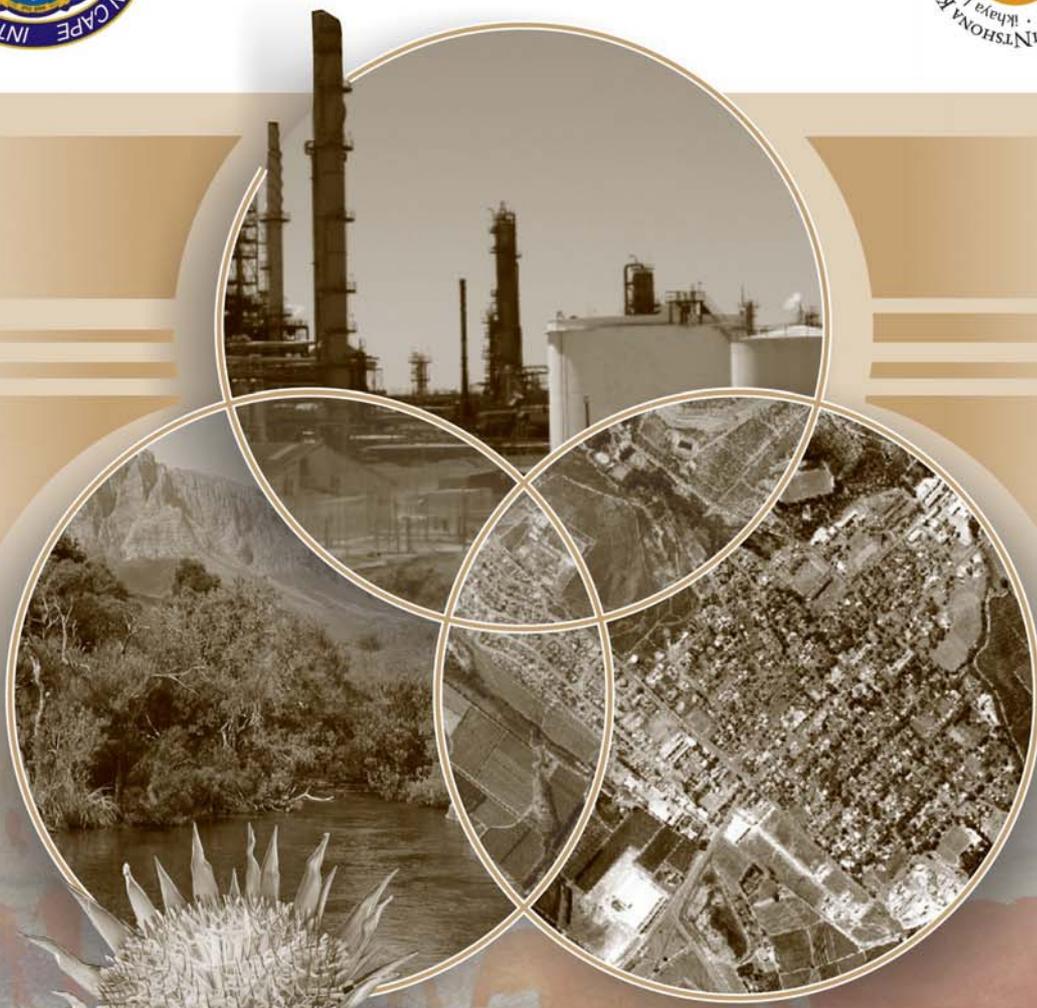


GUIDELINE FOR ENVIRONMENTAL MANAGEMENT PLANS



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



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GUIDELINE FOR ENVIRONMENTAL MANAGEMENT PLANS (EMPs)

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This Guideline has been primarily informed by the following documents (refer to References for details):

- DEAT Integrated Environmental Management Information Series, in particular the documents *Overview of IEM* (no. 0), *Stakeholder Engagement* (no. 3), *Environmental Management Plans* (no. 12), *Environmental Auditing* (no. 14), *Linking EIA and EMS* (no. 20) and *Environmental Monitoring Committees* (no. 21).
- *Guidelines for standardised Environmental Management Plans for projects within the water resource management component of the Department of Water Affairs and Forestry*, prepared for DWAF by CSIR in 2002.
- Environmental Management Programme (Version 5) for Civil Engineering Construction Activities, published by the City of Cape Town in 2002.

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PREFACE

The Department of Environmental Affairs and Development Planning (DEA&DP) of the Western Cape Government is in the process of publishing a series of guidelines related to environmental assessment and management. The overall purpose of these guidelines is to improve the efficiency, effectiveness and quality of environmental assessment and management processes.

At present, the following guidelines have been prepared:

- 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
- Guideline for Environmental Management Plans.

Although these guidelines have been developed with specific reference to the Western Cape Province of South Africa, their core elements are more widely applicable.

SUMMARY

An Environmental Management Plan (EMP) can be defined as “*an environmental management tool used to ensure that undue or reasonably avoidable adverse impacts of the construction, operation and decommissioning of a project are prevented; and that the positive benefits of the projects are enhanced*”. EMPs are therefore important tools for ensuring that the management actions arising from Environmental Impact Assessment (EIA) processes are clearly defined and implemented through all phases of the project life-cycle.

The overall purpose of the guideline is twofold: to inform and guide the preparation and implementation of EMPs in a manner that promotes the effectiveness of EMPs; and to assist authorities and other reviewers in objectively evaluating the quality of EMPs. This guideline for EMPs describes the key components that should be included in an EMP, drawing from relevant existing guidelines as well as South African EMP experience.

Key features of this guideline are that it:

- Is applicable to a range of types and scales of projects or developments, from projects with a low level of environmental risk to those with high environmental risk;
- Assumes a broad understanding of the term “environment”, that includes the biophysical, social and economic components;

- Includes the enhancement of positive impacts (benefits) as well as the mitigation of negative impacts; and
- Should not be viewed as a prescriptive and inflexible document.

The guideline for EMPs describes the envisaged scope and content of an EMP, covering both the preparation and implementation stages of an EMP process, as well as the roles of key stakeholders associated with EMPs. To assist in the review of EMPs by the authorities, as well as other reviewers, a set of review criteria has been identified. It must emphasized that these criteria are not intended to provide a prescriptive list of requirements for each and every EMP, but to provide prompts for reviewers regarding the scope and level of detailed appropriate for an EMP.

Looking ahead, EMPs provide an essential tool for ensuring that the mitigation of negative impacts and enhancement of positive impacts is carried out effectively during the project life-cycle. It is therefore intended that this guideline be used in the spirit of continual improvement, to assist in promoting best practice in environmental management, in a manner that is pragmatic, efficient and cost-effective.

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GUIDELINE FOR EMPS

1. INTRODUCTION

A suite of environmental assessment and management processes are being applied internationally to promote sustainable development¹. Of these, Environmental Impact Assessment (EIA) has been one of the most widely used processes, largely due to EIA becoming a legislated process internationally since the 1970s and in South Africa since 1997. At the heart of EIAs is a focus on the identification and assessment of predicted impacts, with the management actions to mitigate negative impacts or enhance positive impacts (i.e. benefits) often being described only in illustrative terms in EIA reports, unconnected to the project design (World Bank, 1999). In order to promote effective environmental management throughout the life-cycle of a project, it is therefore important that the management actions arising from EIAs are clearly defined and translated into an Environmental Management Plan (EMP) for the design, construction, operation and/or decommissioning phases of a project. An EMP can be defined as follows (adapted from DEAT, 2004b):

An EMP is an environmental management tool used to ensure that undue or reasonably avoidable adverse impacts of the construction and operation, and decommissioning of a project are prevented; and that the positive benefits of the projects are enhanced.

1.1 NEED FOR THIS GUIDELINE

The need for this guideline arises from the following factors:

- In South Africa, EMPs are frequently a condition of approval in environmental authorizations granted by authorities in terms of environmental legislation. The authorities are required to review (and sometimes participate in) EMP processes, approve EMP reports and review the effectiveness of the implementation of EMPs. Consistency in the review and approval of EMPs is difficult given the absence of appropriate EMP guidelines.
- Project proponents and their consultants are frequently required to prepare EMPs, and are looking for guidance from the authorities as to the scope, content and quality of EMPs, as well as the process to be followed in the preparation, approval and implementation of the EMP.

¹ In South Africa, the term *Integrated Environmental Management* is used to refer to this range of environmental assessment and management processes that extend over the full life-cycle of a policy, plan or project. Refer to *Overview of IEM* (DEAT, 2004a) for a summary of the concepts, principles and tools of IEM, and an indication of where EMPs fit within IEM.

- Broadening stakeholder engagement in EMPs and the emergence of Environmental Monitoring Committees², particularly for larger-scale projects, results in greater scrutiny of the EMP process and decision-making by authorities. The EMP is an essential reference document for an Environmental Monitoring Committee (EMC). Guidelines for the formulation and implementation of EMPs are therefore important to assist an EMC in their monitoring functions.
- Presentation of management actions (to mitigate impacts or enhance benefits) is frequently one of the weaker areas of the EIA process. The statement of these actions is often vague and impractical, and they not formulated for incorporation into the project design. There is a need therefore for environmental management actions to be properly addressed in EMPs and thereby improve the effectiveness of EIA (University of Manchester, 2003).

Considering the above factors, this guideline has been developed by the Department of Environmental Affairs and Development Planning (DEA&DP) to describe best practice with regard to EMPs. The guideline promotes an efficient and effective approach to preparing and implementing EMPs, as well as providing guidance for their review. In this respect, the guideline supports the Department's overall intent of promoting sustainable development.

1.2 PURPOSE AND SCOPE OF THIS GUIDELINE

EMPs are usually prepared in the course of applications submitted for the environmental authorization of projects in terms of regulations promulgated under the Environment Conservation Act (Act 73 of 1989)³. Therefore, the key purpose of this guideline is to:

- assist proponents and their consultants in the formulation of EMPs which effectively address the management actions identified in the EIA process;
- support the Department in objectively reviewing EMPs that are processed by the Department; and
- guide the proponent with respect to the appropriate implementation of the EMP throughout the project life-cycle.

This guideline aims to be applicable to a range of types and scales of development, as well as different biophysical, social, economic and governance contexts. This guideline is focused on EMPs at the project level, but may also be adapted and applied to higher-level Strategic Environmental Management Plans (SEMP) or Environment Management Frameworks (EMF).

The guideline should not be viewed as a prescriptive and inflexible document; its intention is to provide best practice guidance. Although focused on DEA&DP's requirements, this guideline is sufficiently generic to also apply to diverse situations when an EMP may be required, outside of an EIA process. Examples of such types of EMPs are listed in Section 2.3.

² Environmental Monitoring Committees are increasingly being used in South Africa to monitor: (i) that the conditions of approval in the Record of Decision arising from an EIA process are implemented effectively; and (ii) the performance and implementation of the EMP. Refer to the document *Environmental Monitoring Committees* (DEAT, 2005a) for more information.

³ EIA regulations are being revised and will be replaced by regulations promulgated in terms of the National Environmental Management Act (Act No. 107 of 1989)

1.3 TARGET AUDIENCE

The guidelines are directed at authorities, environmental assessment and management practitioners, specialists, project proponents, financial institutions and other parties interested in or affected by EMP processes.

1.4 HOW TO USE THIS GUIDELINE

This guideline should be used:

- ***In conjunction with other guidelines:*** This guideline should be used in conjunction with other guiding documents on EMPs and related activities, in particular the documents published as part of the IEM Information Series on *Environmental Management Plans* (DEAT, 2004b), *Environmental Auditing* (DEAT, 2004d), *Environmental Monitoring Committees* (DEAT, 2005a) and *Linking EIA and EMS* (DEAT, 2005b). Specific EMP guidelines should also be consulted, for example, the generic guideline for Environmental Management Programmes for Civil Engineering Construction Activities prepared by the City of Cape Town (City of Cape Town, 2002) - an overview of the scope of this guideline is provided in Appendix B.
- ***In combination with practical experience:*** Practical experience is critical in preparing and reviewing EMPs. This guideline is intended to reinforce such experience.
- ***With due consideration of the particular context:*** The guideline should not be used indiscriminately without due consideration of the particular context and circumstances within which an EMP is prepared and implemented. The context influences both the approach to an EMP and the methods available to and used by environmental practitioners.
- ***In conjunction with the applicable legislation:*** In order to retain their relevance in the context of changing legislation, the guidelines promote EMP best practice without being tied to specific legislated national or provincial EIA or EMP requirements. Therefore, they do not clarify the specific administrative, procedural or reporting requirements and timeframes for applications to obtain statutory approval. They should, be applied in conjunction with the applicable legislation, regulations and procedural guidelines to ensure that mandatory requirements are met.

2. OVERVIEW OF ENVIRONMENTAL MANAGEMENT PLANS

This section provides the following:

- Overview of the objectives and scope of an EMP (with further detail provided in Section 3)
- Triggers for preparing an EMP
- Potential links between an EMP and other environmental assessment and management tools
- Guidance on how the comprehensiveness of the EMP should be adjusted according to the level of environmental risk associated with a particular project.

2.1 OVER-ARCHING OBJECTIVES OF AN EMP

The objectives of an EMP should include (Hill, 2000):

- Ensuring compliance with regulatory authority stipulations and guidelines which may be local, provincial, national and/or international;
- Ensuring that there is sufficient allocation of resources on the project budget so that the scale of EMP-related activities is consistent with the significance of project impacts;
- Verifying environmental performance through information on impacts as they occur;
- Responding to changes in project implementation not considered in the EIA;
- Responding to unforeseen events; and
- Providing feedback for continual improvement in environmental performance.

2.2 GENERIC SCOPE OF AN EMP

In order to achieve the above objectives, the generic scope of an EMP should include the following:

- Definition of the environmental management objectives to be realized during the life of a project (i.e. pre-construction, construction, operation and/or decommissioning phases) in order to enhance benefits and minimise adverse environmental impacts.
- Description of the detailed actions needed to achieve these objectives, including how they will be achieved, by whom, by when, with what resources, with what monitoring/verification, and to what target or performance level. Mechanisms must also be provided to address changes in the project implementation, emergencies or unexpected events, and the associated approval processes.
- Clarification of institutional structures, roles, communication and reporting processes required as part of the implementation of the EMP.
- Description of the link between the EMP and associated legislated requirements.
- Description of requirements for record keeping, reporting, review, auditing and updating of the EMP.

2.3 TRIGGERS FOR AN EMP

The primary focus of this guideline is on EMPs that follow as a result of applications submitted under the Environment Conservation Act (Act No. 73 of 1989) and associated EIA regulations and that require approval from the relevant authority. The following situations could trigger the need for an EMP requiring authority approval(s):

- **EMP following application:** For certain applications, the authorities may not require scoping or impact assessment following the submission of the initial application. For example, this may occur for small-scale projects; projects in non-sensitive environments; projects where the negative impacts have already been assessed in analogous EIAs and found to be minimal; and/or projects fully aligned with the land use zoning. Nonetheless, an EMP may be required for authority approval (e.g. application to erect and operate a cellular telephone communications mast within a residential area).

- **EMP following Scoping Study:** In certain situations, project authorization may follow a scoping process. Such authorization may be conditional upon the preparation and implementation of an EMP. The EMP would be based upon the mitigation measures proposed in the Scoping Report as well as any additional requirements emanating from the Record of Decision.
- **EMP following Environmental Impact Report.** Following a full EIA process, culminating in the submission of an Environmental Impact Report, an EMP may be required as a condition of project approval. The EMP would be based largely on the mitigation measures proposed in the EIA, as well as any additional requirements from the Record of Decision (if issued prior to the EMP) and more detailed project design.
- **EMPs covering specific activities assessed through an over-arching EIA and incorporated into a Strategic Environmental Management Plan⁴ (SEMP).** A tiered system of EIA leading to a SEMP and multiple EMPs may apply to large-scale complex developments with several sub-projects. In this case, an over-arching EIA may serve as the basis for environmental approval for the overall development. This may be supported by a SEMP that is approved by the authorities. However, one or more EMPs may be required for specific activities that form part of the larger development (eg. EMP for constructing a new road within an industrial zone, where the development of planned roads is covered by an existing EIA for the industrial zone).

An EMP may also be required for reasons other than the environmental authorization requirements covered above. For example:

- **EMP for an area of ecological or social value.** The EMP may be required as the foundation for responsible management of an area (eg. EMP for a nature area or cultural site). For example, it may be used to inform the rehabilitation of an area, to secure funding or land transfer, to satisfy donor requirements, or to obtain or maintain a special designated status for that area (eg. EMP for Robben Island as part of the legislated requirements for a World Heritage Site). The EMP may require approval from donors or other bodies. Such EMPs could also be prepared at a higher strategic management level (eg. a strategic management plan for a national park).
- **EMP as part of an Environmental Management System.** An EMP may be prepared as part of an Environmental Management System (EMS), such as the ISO14001 standard. In this case, the EMP is usually focused on an existing operation or activity and does not require authority approval(s). A change in company ownership may also lead to the need for an EMP for a project/activity that is being incorporated into the overall company EMS.

⁴ A SEMP is a higher-level EMP that provides an over-arching framework for the environmental management of several projects. In practice, other terms might be used for such higher-level EMPs, such as *Environmental Management Programme Framework* or *Environmental Management System*. For more information on SEMPs refer to DEAT (2004b).

2.4 EMP WITHIN THE CONTEXT OF IEM

This section explains how EMPs may fit within the wider Integrated Environmental Management (IEM) process.

Within IEM, there are many tools and processes that share the common aim of promoting sustainable development. These processes can be applied at different levels (i.e. at a policy, programme or project level) and throughout the activity life-cycle (i.e. during the pre-feasibility, feasibility, design and planning, construction/establishment, operation/implementation, and decommissioning stage of an activity).

At a programme level, a Strategic Environmental Management Plan (SEMP) might be prepared. For example, a SEMP might be prepared for an industrial development zone that includes several projects. The SEMP provides the over-arching framework for addressing cumulative impacts of a suite of existing and potential developments. A key manner in which this is achieved is by setting limits of environmental quality (i.e. performance targets) that need to be achieved by the suite of projects. The SEMP usually incorporates the principles of Strategic Environmental Assessment (SEA)⁵, and thereby provides a framework for future project-specific EMPs. In situations where a SEMP exists, a subordinate EMP will need to be prepared within the context of this SEMP, incorporating all relevant environmental management specifications. The potential inclusion of a SEMP within the wider environmental assessment and management process is shown in Figure 1.

At a project level, EMPs are usually prepared following an EIA and incorporate the proposed management actions (i.e. actions to mitigate negative impacts and enhance positive benefits). Separate EMPs can be prepared for the construction, operation and decommissioning phases, particularly for large-scale complex projects (Figure 1). The EMP for the operation phase can often be linked with an Environmental Management System (EMS), as discussed in Section 2.6.

⁵ SEA is a tool for incorporating environmental considerations into the early planning stages for policies, plans or programmes. In South Africa, a sustainability-led approach to SEA has been pursued, where the SEA sets over-arching sustainability objectives. For more information on SEA, refer to DEAT (2004c).

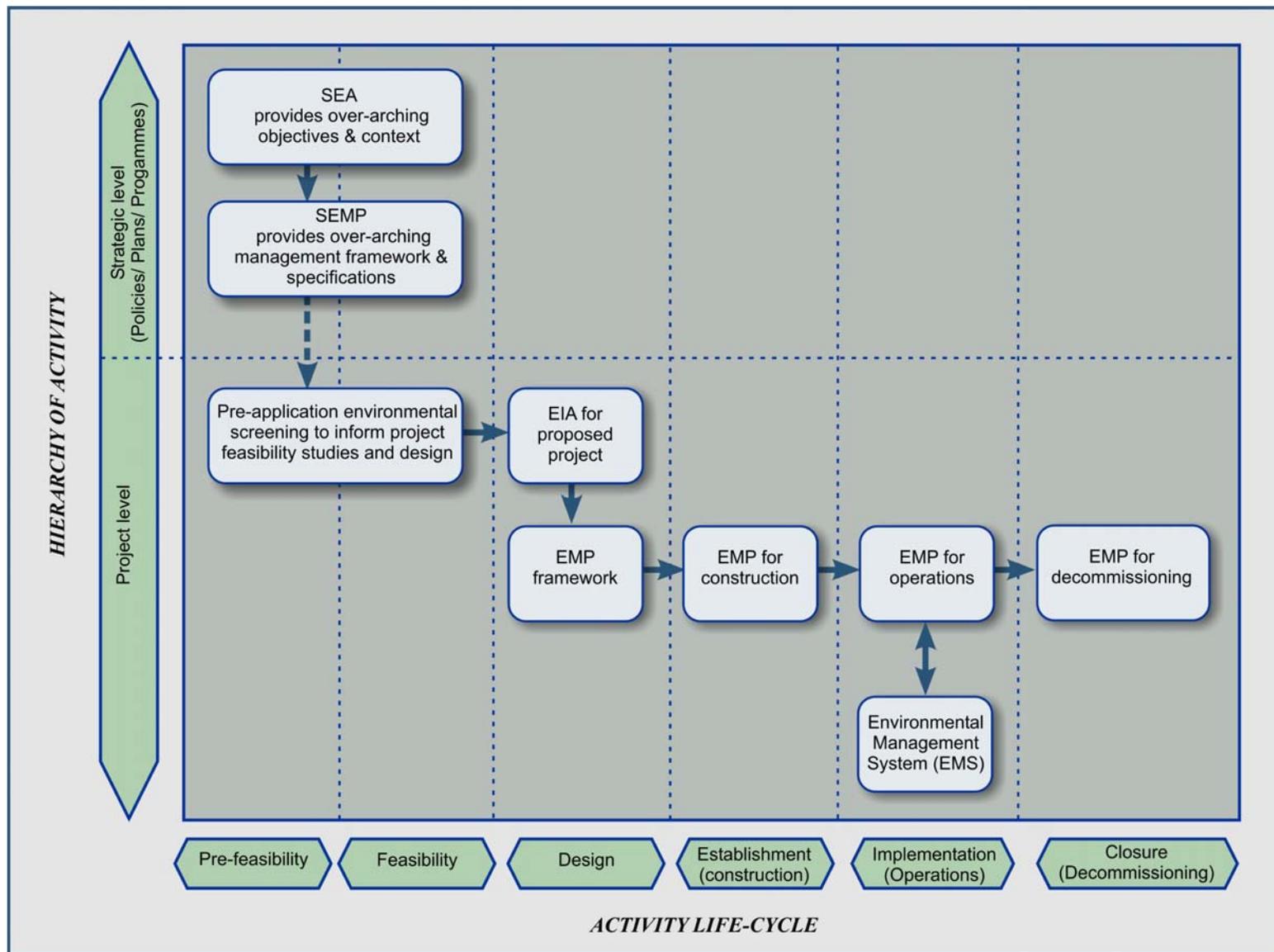


Figure 1:
Context of EMPs within wider environmental assessment and management processes

2.5 PHASING OF THE EIA AND EMP

An EMP is usually drawn up after an EIA has been conducted, often as a requirement of the Record of Decision (ROD) drafted by the lead environmental authority. The EMP is then implemented during the construction phase and, thereafter, throughout the project life-cycle up to, and including, decommissioning. Future changes in South African legislation may require that the EMP (or at least a framework for an EMP) should be in place prior to issuing of the ROD. A key reason for this approach is to ensure that environmental management objectives and actions have been investigated and integrated into the project planning and design.

However, in terms of the phasing of the EIA and EMP, completing the EMP as part of the EIA can be problematic, as explained below. Often EIAs tend to be based on preliminary planning which doesn't necessarily give an indication of, for example, the approach to construction. A clear understanding of the management challenges for the construction phase often only develops once the detailed design has been completed. At most, a draft EMP should be included in the Environmental Impact Report and there should always be a provision for updating the draft EMP once the detailed design is complete. Therefore, at the time of completing the EIA, it is often only possible to prepare an EMP framework that provides the over-arching requirements for environmental management. This framework specifies the management actions (eg. mitigation) required and performance targets to be achieved. However, the specific requirements to implement these mitigation requirements will often need to be developed during the detailed design and planning phase, and as part of the bidding and sub-contracting process for the construction phase.

2.6 LINKING EMPS WITH ENVIRONMENTAL MANAGEMENT SYSTEMS

One of the IEM tools that organisations use for managing environmental performance at the project implementation stage is the Environmental Management System (EMS). An EMS provides a systematic framework and approach to minimize risks and manage environmental aspects (i.e. activities that cause impacts) and impacts (i.e. effect or change to the environment resulting from an activity). An EMS is an iterative process that requires ongoing commitment from an organisation, in order to achieve continuous improvement and enhanced environmental performance (DEAT, 2004b).

One of the most widely used environmental management systems, which has been developed by the International Standards Organisation (ISO), is the ISO14001 standard for environmental management of activities. Independent certification of an EMS can be achieved, which demonstrates conformance with the requirements of the ISO14001 standard. The ISO14001 standard provides a logical framework within which to prepare an EMP, even in cases where an organisation is not intending to obtain certification.

In the ISO14001 process, an Environmental Management Programme⁶ is prepared during the *Planning* stage, as shown in Figure 2. The key objectives of the Environmental Management Programme are to:

- Achieve the environmental performance objectives and targets that have been set
- Identify the responsibilities for the actions required
- Identify the means for conducting the actions (eg. technical, financial and organisational resources)
- Specify timeframes
- Specify procedures for amending the programme when necessary.

An EMS approach is usually applied to the operations phases of projects, rather than the construction or decommissioning phases, as it is strongly based on a cyclical process of continuous improvement. By contrast, project construction is often a “once-off” activity.

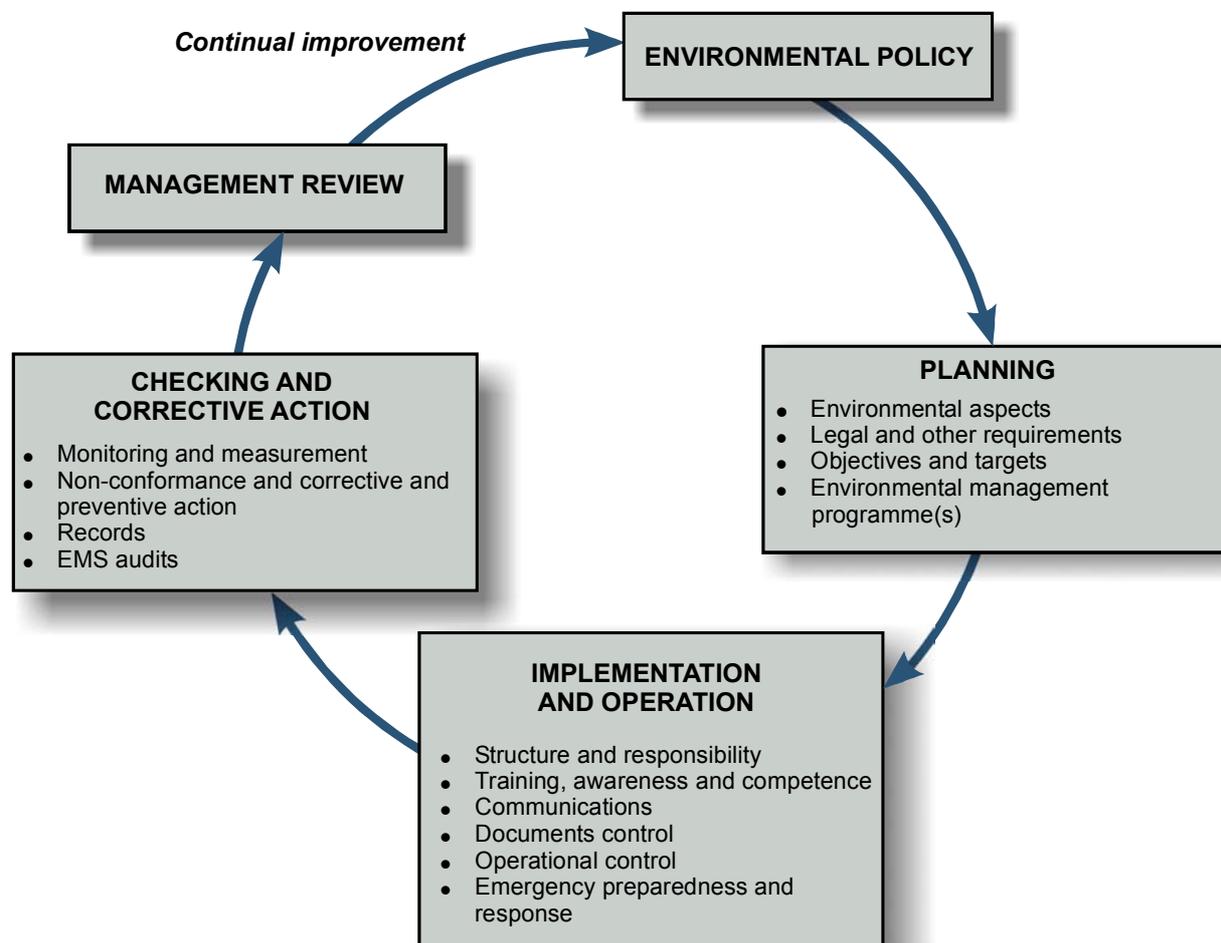


Figure 2: The ISO14001 approach to Environmental Management Systems

⁶ Note that the ISO14001 standard uses the term *environmental management programme* and not *environmental management plan*. The ISO14001 objectives described in this section correspond with the requirements for an Environmental Management Plan (as described in this Guideline).

2.7 ADJUSTING EMPs TO PROJECT SCALE AND CONTEXT

The scope and level of detail of the EMP need to be adjusted according to the level of environmental risk associated with the proposed project. The level of risk can be considered a function of the *type and scale of activity* and the *sensitivity of the affected environment*. Distinguishing features for projects with *low* or *high* levels of environmental risk are summarized in Table 1. It should be noted that a continuum of environmental risks exists, from the *low* risks presented in this Table, to the *high* risks. The scope and level of detail of the EMP will follow a similar continuum, from simple EMPs for low-risk projects (eg. petrol filling stations and cellphone infrastructure located within areas planned for such purposes) through to detailed EMPs for high-risk projects (eg. smelters, petro-chemical plants and large mining operations; or projects located within highly sensitive environments such as the coastal zone).

For large-scale, complex projects that involve numerous Sub-contractors during construction, the EMP for the construction phase can be prepared as a number of separate management plans for different areas or management functions (eg. management plan for solid waste, management plan for wastewater and stormwater, and management plan for dust). These management plans must be prepared in a manner so that they integrate to form an overall EMP.

3. PREPARATION AND IMPLEMENTATION OF THE EMP

This section describes the following:

- Information required when preparing the EMP
- Sections that should be included in the EMP report
- Actions required as part of the ongoing implementation of the EMP.

It is important to note that an EMP for a project with low environmental risk (as described in Section 2.7) may not need to include all the aspects listed in Section 3. The components presented in this section are therefore not intended to be prescriptive. The need remains for the person preparing or reviewing the EMP to determine which of the following components need to be incorporated into the EMP, based on the type of project and its particular context. It should also be noted that this section applies to EMPs for the construction, operation and/or decommissioning phase of a project.

3.1 BACKGROUND INFORMATION REQUIRED TO PREPARE THE EMP

When preparing the EMP for a proposed activity, useful background information includes:

- **Documents from the EIA process** (eg. Final Scoping Report and/or Environmental Impact Report) and Record of Decision (ROD), that provide the context for the EMP, and which should include background information on the proposed project, predicted positive and negative impacts, management actions to mitigate negative impacts and enhance positive impacts, as well as a statement of commitment from the Project Proponent regarding their commitment to implementing the management actions.

Table 1: Features of projects with low or high environmental risk

Project features	Features of projects with low environmental risk	Features of projects with high environmental risk
<i>Issues</i>	Issues are simple, narrow in scope, well-defined and well-understood.	Broad scope of issues, covering biophysical and socio-economic aspects.
<i>Assessment of impacts</i>	Impacts are well understood, with high level of certainty in predictions. The significance of the impacts is low to negligible. Impacts occur at a local scale.	Complex links between impacts on biophysical and socio-economic environment. Significance of several impacts is medium to high, requiring effective management. Impacts could occur at a national to international scale.
<i>Mitigation and monitoring</i>	Focuses primarily on construction phase. EMP may only be required for construction phase, since operations phase does not present environmental impacts that need to be managed on an ongoing basis.	Required for the construction, operation and decommissioning phases of the project. Separate EMPs usually prepared for each of these phases.
<i>Legal requirements</i>	Few legal requirements besides, perhaps, approval of the EMP. Legal requirements can be met readily.	Suite of legal requirements needs to be met. Environmental permits and/or licences required in addition to approval of EMP.
<i>Stakeholder interest</i>	Tends to be localized, as extent of impacts usually at local scale and of negligible to low significance.	Wider-scale stakeholder interest. Stakeholder interests may be coordinated by an Environmental Monitoring Committee.
<i>Complexity of project activities</i>	Limited variety of Contractors involved during construction, making for easier project management. Project activities relatively simple. For projects that are repeated regularly, generic construction EMPs can be developed (eg. for roads, powerlines, petrol filling stations and cellphone infrastructure).	Numerous types of Contractors involved in construction, requiring more active management. EMP responsibilities need to be clearly delegated, monitored and evaluated.

- **High-level documents that set the framework for environmental management** for the proposed activity, such as a Strategic Environmental Assessment (SEA), Strategic Environmental Management Plan (SEMP), over-arching Environmental Management System (EMS), or results from an Integrated Development Planning (IDP) process.
- **Local monitoring programmes** that the EMP would need to take into consideration. Sometimes certain monitoring requirements for the project can be served by existing monitoring programmes such as those carried out by a local authority.
- **Information on existing monitoring and liaison forums** that the EMP could link with in terms of communication and reporting, such as an Environmental Monitoring Committee.

- **Environmental policies or guidelines** from the project proponent that need to be applied to the EMP for a particular activity. This is particularly relevant for international companies.
- **Updated project information** that may provide more detail than presented for the EIA. The EIA process may lead to more detailed investigations into implementation of certain mitigation actions. The findings of these investigations can be included in the EMP.
- **Applicable legislation** that would be of relevance to the implementation of the project.

If the EMP is being prepared for an existing activity, the above information requirements may still be relevant. In addition, information will be required on existing environmental management practice. This could include previous authority approvals, environmental policy, relevant permits and licences, information on verified environmental impacts and risks, monitoring, records and reporting, non-conformances and corrective actions, roles and responsibilities, communication protocols, outcomes from meetings with stakeholders, and any environmental audits and reviews that may have taken place.

3.2 PREPARATION OF AN EMP

It is widely recognized that there is no standard format for EMPs. The format needs to fit the circumstances in which the EMP is being developed and the requirements that it is designed to meet (World Bank, 1999; CSIR, 2002; DEAT, 2004b). The level of detail in the EMP may vary from a few pages for a project with low project-related environmental risks; to a substantial document for a large-scale complex project with potentially high environmental risks.

The following sections provide an overview of information that should be included in an EMP, building on the World Bank's (1999) EMP Guidelines, the Department of Water Affairs and Forestry's EMP Guidelines (CSIR, 2002) and South African EMP experience.

3.2.1 Overview of the proposed activity and the local context

Provide a brief summary of the:

- *proposed project and associated construction or operational activities;*
- *affected biophysical, economic and social environment;*
- *local environmental management, legal and planning context relevant to the EMP.*

In order to place the EMP in context, a brief summary should be given of the proposed development and associated processes involved in both the construction and operational phases. This should cover project location, layout plans, project phases (eg. design, construction, commissioning, operations and decommissioning), construction activities, operational processes and activities, employment and labour, directly associated infrastructure, and project schedule.

A brief description of the affected environment should also be provided, particularly those elements of the environment that may be impacted upon by the project and which should be included in the monitoring programme. The environment in this context includes the biophysical, economic and social components. Key information about the local environmental management

context for the project (eg. if the project environmental management is located within an overarching EMS or SEMP) and the relevant legal and planning context should be provided.

The above information should be contained within the Environmental Impact Report (EIR) and/or Scoping Report, where these exist.

3.2.2 Summary of impacts associated with the proposed activity

Summarise the predicted negative and positive impacts associated with the proposed project, particularly those presenting impacts of medium to high significance.

A summary should be provided of the predicted positive and negative impacts associated with the proposed project that require management actions (i.e. mitigation of negative impacts or enhancement of positive impacts). The necessary information should be obtainable from the EIA process. In order to refer the reader to more detailed assessment from the EIA, cross-references should be made to the relevant EIA reports (i.e. Environmental Impact Report or Scoping Report).

It should be noted that while the EIA may cover the construction, operation and decommissioning phases of the proposed activity, separate EMPs may be prepared for each phase (eg. construction) and will then only cover impacts associated with that phase.

3.2.3 Project Proponent's environmental management policies and commitments

Summarise the Project Proponent's existing policies, guidelines and commitments relating to health, safety and environment.

An overview should be provided of:

- Corporate governance structure of the Project Proponent, to convey the hierarchy of responsibilities within the company/organisation for matters relating to health, safety and environment. In the case of a local authority being the Project Proponent, the commitments to be highlighted could include service delivery, environmental protection and social responsibility.
- Company/organisation guidelines or policies relating to health, safety and environment (eg. corporate commitment to capping greenhouse gas emissions). This is particularly relevant for international companies who may have corporate policies that are applied world-wide across their operations.
- Environmental commitments of the parent company/organisation for that particular project (eg. commitment for the proposed activity to develop an EMS and obtain ISO14001 certification).

3.2.4 *Institutional arrangements: roles and responsibilities*

Clearly define the responsibilities for management actions contained in the EMP and clarify arrangements for coordination among the role players involved in implementation.

The roles and responsibilities of the key parties involved in the implementation of the EMP (in particular, the management actions and monitoring requirements), and in meeting the conditions of the ROD, must be clearly defined. A flow diagram should be included showing responsibilities and communication channels. Where specific EMP responsibilities are assigned to Contractors or Sub-contractors, there must be clearly stipulated and included in the contract documentation.

The EMP must specify responsibilities for the range of actions specified in the EMP. Section 4 of this guideline describes the roles of the various stakeholders involved in the EMP, indicating proposed responsibilities for the key players. It is recommended that the roles and responsibilities of key members of the Project Proponent and Contractor's team involved in implementing the EMP be written up as Terms of Reference (i.e. job descriptions) for each job function. Having Terms of Reference is also important in facilitating continuity when there is a change in personnel.

3.2.5 *Legal requirements*

Identify the legislation, standards, guidelines and associated permits or licences that apply to the project and are related to management activities specified in the EMP.

The authorization to undertake the construction and operation of the project may be subject to compliance with other environmental legislation, such as legislation related to: water; air quality; hazardous substances; storage, transport and disposal of waste; occupational health and safety; traffic and transportation; cultural and heritage resources; and noise.

Compliance with environmental legal requirements is an essential project consideration and therefore needs attention in the EMP. Failure to meet legal environmental requirements could result in the environmental authorization for the project being withdrawn and effectively result in operations having to cease until such non-compliances are addressed.

The relevant legal requirements could stem from the requirements of national, provincial or local government. International compliance requirements could also apply. For example, if the World Bank is a lender to a proposed project, the Bank's various guidelines would apply.

Projects locating within a particular development initiative (eg. business park or industrial development zone) could be subject to additional legal conditions or guidelines that need to be included in the EMP (eg. visual guidelines for all developments in the area; or specifications for re-vegetation, waste management or water conservation in the area).

The legislation, standards or guidelines could be used to set performance targets, and thereby provide an important reference in the EMP.

3.2.6 *Implementation programme*

Presents the objectives to be achieved through the EMP and the management actions that need to be implemented in order to mitigate the negative impacts and enhance the benefits of the project. Associated responsibilities, monitoring, criteria/targets and timeframes are clearly specified.

The implementation programme provides the core of the EMP and should include a description of the following:

- Objectives
- Management actions
- Responsibilities for the identified actions
- Monitoring
- Performance specifications (i.e. criteria and targets)
- Implementation schedule.

The EMP should provide over-arching **objectives** to be achieved through the management of project activities and risk sources. These objectives are based on managing the environmental impacts identified *inter alia* through an EIA process; and specify the desired outcomes from effectively minimizing the negative impacts and enhancing the positive impacts.

Management actions are actions that are feasible, practical and cost-effective, and need to be implemented in order to achieve the objectives described above. These actions are based on the mitigation and enhancement actions identified in the EIA, together with additional information that may become available subsequent to completing the EIA. The EMP must specify a programme for implementing the management actions, including: who, when and how; as well as what resources should be allocated. Enhancing the positive impacts of a project is often overlooked, and it is important that the EMP contains clear actions in this regard, based, for example, on the EIA recommendations.

The management actions could apply to the following stages of a project:

- Engineering design, to ensure that mitigation measures are included in design
- Construction
- Commissioning
- Operations
- Decommissioning.

The management actions can be arranged in different ways, according to the needs of the project and in order to optimize their effectiveness. The following pages describe the core elements that need to be included and the links that need to be made between these elements.

The objectives of management actions aimed at reducing adverse impacts are listed in Box 1. All management actions, whether aimed at mitigation or enhancement, must be clearly defined.

Key requirements for determining whether management actions are clearly defined are provided in Box 2. Potential negative secondary impacts as a result of management actions should be taking into consideration in the design and implementation of the EMP.

Box 1: Objectives of mitigation actions aimed at reducing adverse impacts

Mitigation measures are aimed at eliminating, offsetting, or reducing adverse environmental impacts and could have a range of objectives, such as:

- *Avoidance:* Avoiding projects or activities that could result in adverse impacts; avoiding certain types of resources or areas considered to be environmentally sensitive. This approach is most effective when applied in the earliest stages of project planning.
- *Prevention:* Measures aimed at preventing the occurrence of negative environmental impacts and/or preventing such an occurrence having harmful environmental and social impacts.
- *Preservation:* Preventing any future actions that might adversely affect an environmental resource. This is typically achieved by extending legal protection to selected resources beyond the immediate needs of the project.
- *Minimisation:* Limiting or reducing the degree, extent, magnitude or duration of adverse impacts. This can be achieved by scaling down, relocating, or redesigning elements of a project.
- *Rehabilitation:* Repairing or enhancing affected resources, such as natural habitats or water sources, particularly when previous development has resulted in significant resource degradation.
- *Restoration:* Restoring affected resources to an earlier (and possibly more stable and productive) state, typically a 'pristine' condition.
- *Compensation:* Creation, enhancement, or protection of the same type of resource at another suitable and acceptable location, compensating for lost resources. It should be noted that compensation may be a suitable mitigation measure for certain impacts of certain projects, but is often not a sustainable measure to implement.

Source: CSIR, 2002

Box 2: Requirements for determining whether management actions are clearly defined

To determine whether the management actions are adequately defined they need to satisfy the following key requirements:

- *Written:* Management actions should be stipulated in writing, this forces the formulators to think through each action carefully.
- *Dated:* A management action must indicate a specific time by when the action should be implemented.
- *Risk- or impact-specific:* Each management action must link to a specific impact (either positive or negative) or environmental risk, and should be worded in specific terms rather than in general terms.
- *Time and space specific:* An indication must be given as to the conditions under which the management action applies (continuously or only in the event of contingencies). The time (such as the season or time of day) and location of the application of the management action.
- *Measurable:* Management actions must, where possible, be quantitatively defined. A standard with which performance can be compared, must thus be set. Objectives and targets of the management action must be clearly stated.
- *Achievable:* The management action must be realistic, feasible and hence achievable;
- *Reasonable:* The management action must be readily implementable within the time and budget constraints of a project.
- *Timely:* Measures must be put in place to coincide with specific project activities.
- *Understandable:* Management actions must be described simply, using clear, non-technical language where possible.

Source: Adapted from CSIR, 2002

An example of the scope of management actions typically required for the construction of a new large-scale industrial project is provided in Box 3.

Box 3: Example of the scope of management actions typically required for construction of a new large-scale industrial project

- Baseline monitoring pre-development (eg. ambient air quality, groundwater conditions on the site)
- Environmental engineering design requirements for operations phase (eg. to ensure that the necessary mitigation measures for key environmental variables such as water use and re-cycling are investigated and incorporated into the design)
- Pre-operations environmental management planning to be undertaken during the construction phase (eg. planning for operations phase recruitment, skills development and training)
- Approvals, permits and licensing requirements for operations
- Site clearing and landscaping
- Site management (eg. management of any archaeological material found on site)
- Water use management
- Materials handling and storage (eg. hazardous substances)
- Fire control and emergency procedures (eg. fire risk management)
- Leak and spillage management (eg. containment of leakage and spills)
- Solid waste management
- Dust management
- Wastewater and stormwater management
- Transportation management
- Noise management
- Management of recruitment, labour, skills development and training during the construction phase
- SMME development plan
- Investment, procurement and sales management
- Environmental and HIV/AIDS awareness training for employees and contract workers.

As part of implementing the management actions, **Method Statements** should be prepared by the Contractor and/or Sub-contractor. These Method Statements should specify how they will manage potential environmental impacts in line with the requirements of the EMP, and, where relevant, environmental best practice; and how they will practically ensure that the objectives of the EMP are achieved.

Responsibilities must be clearly identified for the different parties involved in implementing the management actions and monitoring.

Monitoring programmes should be prepared to determine the effectiveness of the management actions and to understand the actual residual impact of the construction and/or operations on the environment. These monitoring programmes (e.g. air quality or groundwater monitoring) may be designed by specialists in consultation with the Project Proponent and relevant stakeholders, depending on the complexity of the monitoring required. Where monitoring programmes are required, these should be designed to be pragmatic and

implementable. As far as possible, measurement parameters should be selected which provide immediate results in order for appropriate management actions to be taken as soon as possible, in the event of an exceedance of guideline values or accepted performance levels.

The monitoring programme could comprise three main aspects:

- **Baseline measuring:** This should occur prior to the start of the project or activity in order to determine the level and status of the environmental parameters prior to any impacts associated with the project or activity.
- **Impact (or performance) monitoring:** This monitoring should be ongoing throughout the project life-cycle and must be implemented to ensure that environmental impacts are within the predicted levels and that specified environmental performance targets are being achieved.
- **Compliance monitoring:** This monitoring should be implemented to ensure that the prescribed mitigation measures are having the predicted and desired effect. This monitoring would be conducted periodically, the timing of which will vary from project to project. It must be used to check that the levels of specific environmental parameters are compliant with laws, regulations, standards or guidelines, as applicable. The programme must make provision for remedial measures to be effectively implemented in the event of non-compliance - i.e. when mitigation measures are inadequate or when impacts have been underestimated in the EIA.

Detailed monitoring and analytical methods need not be included in the EMP. However, the EMP should include a description of the means by which final monitoring arrangements will be agreed upon. For example, it must be stipulated that:

- Measuring equipment must be accurately calibrated;
- The environmental officer (or other designated personnel) must ensure quality control of the sampling undertaken;
- Accredited laboratories must be used;
- Certified methods of testing must be employed; and
- Where legal specifications exist for testing and sampling methods, these must be taken into account.

The following additional aspects, where relevant, should be addressed in the description of the monitoring activities:

- Indication of the linkages between the impacts identified in the EIA;
- Environmental parameters to be monitored;
- Indicators to be measured;
- Mitigation objectives;
- Targets for optimum performance (minimum environmental impact);
- Thresholds;
- Monitoring methods to be used (where a range of alternative methods exist);
- Sampling locations;
- Frequency of monitoring measurements;
- Detection limits (where appropriate);
- Definition of thresholds that will signal the need for corrective action;
- Responsibility for monitoring;

- Responsibility for corrective action;
- Details of how results will be analysed to determine whether corrective actions are necessary;
- Reporting procedures; and
- Opportunities that will be provided for I&APs to contribute input into the revision of the EMP and to the design of corrective actions where appropriate.

The design of monitoring activities must be based on the type of information required for determining whether objectives and targets are being met. Not all projects, and not all impacts of any one project, need to be monitored. Monitoring will be necessary and appropriate, if (CSIR, 2002):

- There are residual negative impacts that could not be avoided through changes to project design or reduced through the implementation of other mitigation measures;
- Secondary negative impacts arise as a result of the mitigation measures;
- There is significant public concern or controversy about an impact;
- Potential impacts are complex and poorly understood, or if there is disagreement, for example, between the specialists employed for the EIA;
- The outcome of the recommended mitigation measure(s) is uncertain.

The management actions and monitoring need to take into account the following three scenarios:

- Normal operations
- Abnormal situations (eg. planned shutdown to service equipment)
- Emergency situations (eg. unexpected oil spill).

Performance specifications (eg. criteria or targets) must be provided for each management action or monitoring activity, in order to assess whether the actions have been effective. Performance specifications could be based on the level at which an environmental condition must remain (eg. habitat in a part of the site that must not be disturbed), or the level to which the environmental condition must be restored (eg. habitat rehabilitation), or legislated or agreed limits (eg. air quality standards), or the level of socio-economic benefits to be realized through the project (eg. use of local labour and enterprises). Where possible, these performance specifications should be quantitative. These specifications might be revised during the implementation of the EMP, in the spirit of promoting continuous improvement.

An **implementation schedule** must be prepared showing the sequence and timing (including frequency and duration) of the management actions and monitoring activities of the EMP. Where monitoring reports are produced, the timing of such reports should be indicated. The schedule must be drawn up with the Project Proponent, to ensure necessary links are made between the implementation schedule for the EMP and the overall project schedule.

An example of how the links between objectives, management actions, monitoring, and criteria/targets can be presented in a table format is provided in Appendix C.

3.2.7 Cost estimates and financial resources

Provide cost estimates for initial and recurring expenses for implementation of the EMP, including provision for: mitigation and enhancement actions; training and environmental awareness requirements; monitoring; auditing; and corrective actions.

In order for the proponent to understand the implications of the mitigation and enhancement measures, cost estimates should be specified for both the initial investment and recurring expenses for implementing the mitigation and enhancement measures contained in the EMP. The costs of initial and recurring expenses for implementing an EMP should be included in the overall project costs. Recurring expenses include all costs (administrative, design and consultancy, operational and maintenance, monitoring and auditing costs) associated with meeting specific project criteria. If there are reasonable confidentiality concerns about releasing these budgets into the public domain (eg. related to commercial competitiveness), then the budgets may be kept confidential.

Providing cost estimates can be problematic, as these estimates can be inaccurate. In some cases the costs are still being determined at the time of preparing the EMP. In other cases, there are different mitigation options, with different cost implications, that can achieve the mitigation objectives. Ultimately, what is important is that the Project Proponent and/or Contractors have committed to meeting the environmental performance targets and have budgeted accordingly; and have retained sufficient flexibility to meet unforeseen, but reasonable, costs.

For certain projects or activities, the budget should include environmental management contingency funds, which would be available for the implementation of remedial actions when mitigation measures are not sufficiently effective or when unanticipated impacts occur.

The World Bank (1999) advocates that, where practical, decisions regarding the most appropriate mitigation measures should be justified by an economic evaluation of the potential environmental impacts and mitigation options. This evaluation would probably only apply to projects with high environmental risk (eg. large-scale projects) and should:

- evaluate the costs and benefits of the potential environmental impacts;
- compare the cost-effectiveness of the different mitigation options;
- determine the appropriate level of mitigation where there is scope for a trade-off between environmental quality and the costs and benefits of achieving it; and
- internalise the economic value of residual impacts or intended environmental improvements into the final economic appraisal of the project.

Since the management actions often involve extensive costs, which need to be borne by the Project Proponent, the costing must be as accurate as possible and taken into account when preparing the total costing of the project. The costing should be done with inputs from appropriate technical members of the project team. These technical advisors should have knowledge of the management actions being recommended as well as practical experience in implementing similar measures and techniques (CSIR, 2002).

3.3 IMPLEMENTATION OF THE EMP

3.3.1 *Training and environmental awareness*

Specify the requirements in terms of training and environmental awareness for all site and other project personnel to ensure that the actions specified in the EMP are implemented effectively and efficiently.

Training is essential for ensuring that the EMP provisions are implemented efficiently and effectively. Training needs should be identified based on the available and existing capacity of site and project personnel (including the Project Proponent, Contractors and Sub-contractors) to undertake the required EMP management actions and monitoring activities. It is vital that all personnel are adequately trained to perform their designated tasks to an acceptable standard.

In addition to training, general environmental awareness must be fostered among the project's workforce to encourage the implementation of environmentally sound practices throughout its duration. This ensures that environmental accidents are minimized and environmental compliance maximized. The onus is on the different parties involved in the various stages of the life-cycle of the project to be environmentally conscious. Contractors should forward internal environmental awareness and training procedures to the Project Manager and Environmental Control officer for comment prior to the commencement of the project (CSIR, 2002).

Environmental awareness could be fostered in the following manner:

- Induction course for all workers on site, before commencing work on site.
- Refresher courses as and when required.
- Daily toolbox talks at the start of each day with all workers coming on site, where workers might be alerted to particular environmental concerns associated with their tasks for that day or the area/habitat in which they are working.

Courses must be given by suitably qualified personnel and in a language and medium understood by workers/employees.

3.3.2 *Documentation and record keeping*

Stipulate the document handling and control system that is to be followed for all EMP documentation.

A document handling system must be established to ensure accurate updating of EMP documents, and availability of all documents required for the effective functioning of the EMP. The document handling system must be devised by the Project Proponent and/or Contractor, and agreed upon by all key parties. Responsibilities must be assigned to relevant personnel for ensuring that the EMP documentation system is maintained and that document control is ensured through access by, and distribution to, identified personnel. Where an adequate

document management system already exists, then the environmental documentation should be integrated into this system rather than creating a new system.

Supplementary EMP documentation could include:

- EMP implementation activity specifications (including Method Statements);
- site instructions;
- emergency preparedness and response procedures;
- incident reports;
- training records;
- site inspection reports;
- monitoring reports;
- auditing reports; and
- complaints received.

The Environmental Control Officer is usually responsible for ensuring that the registration and updating of all relevant EMP documentation is carried out. It is usually the responsibility of the Project Manager to ensure that all personnel are performing according to the requirements of this procedure and to initiate the revision of controlled documents, when required by changes in process, operating procedures, legislation, specifications, audit findings or any other circumstances, by informing the Environmental Control Officer of the changes. A controlled document is official only if the issue/revision has been approved.

The EMP documents must be numbered and only distributed according to a distribution list compiled by the Environmental Control Officer. These documents should be marked "controlled copy". Holders of controlled documents should sign the distribution list when they receive a new or revised document and must destroy the old version. Copies of all EMP documentation should be kept on site or at the nearest project office. The documents should be kept as hardcopies as well as in electronic format.

Documents must be revised as required by changing circumstances. Clear procedures must be specified in the EMP for making changes to EMP documents, circulating updated documents, and destroying obsolete versions. Distribution lists and document change control sheets must be kept for all documents. Records must be kept for at least five years.

3.3.3 Reporting procedures

Stipulate the reporting procedures and practices to be followed during EMP implementation.

Reporting procedures for conveying information from the monitoring activities must be developed in order to ensure that management is able to take rapid corrective action should certain thresholds be exceeded.

Project-specific EMPs should include reporting procedures for dealing with (Hill *et al.*, 1997):

- Inspections;

- Accidents and emergencies;
- Measuring performance indicators and interpreting and acting on the indicators;
- Records of monitoring activities to test the effectiveness of mitigation measures and impact controls, as well as for compliance auditing purposes; and
- Training programmes and evidence of appropriate levels/amount of skills/capacities created.

3.3.4 Stakeholder engagement

Specify the stakeholder engagement process to be followed during EMP development, implementation, and revision phases.

The process to be followed and the degree of stakeholder engagement⁷ associated with the EMP will vary between projects, depending on the project and the preceding environmental assessment process. If the EMP follows an EIA, then it is expected that the stakeholders would have had opportunity to comment on the impacts and management actions described in the Environmental Impact Report (EIR). In such cases, the EMP might follow without further specific consultation with stakeholders regarding the EMP. However, where an EMP needs to be developed for a project, but no EIA has been done, best practice requires an appropriate level of stakeholder engagement in the development of the EMP. The EMP must also be developed and implemented in consultation with government departments (besides the lead environmental authority) that may have to authorize environmental aspects of the project or provide specific permits or licenses.

An Environmental Monitoring Committee or Environmental Liaison Committee may be established to monitor progress in the implementation of the EMP, and can provide a forum for stakeholder engagement (DEAT 2004b). This approach is usually reserved for large-scale projects and provides an opportunity for regular dialogue.

Once the project or activity has begun, the stakeholders should be provided with information on the progress with the implementation of the EMP (in particular, the management actions and monitoring activities). The stakeholders should be provided with opportunity during the construction and operational phases of the project to provide input into the revisions of the EMP as well as the design of corrective actions where appropriate (CSIR, 2002).

The main benefit of involving stakeholders in the EMP is to include local knowledge (eg. in the design of monitoring activities) and to ensure that the EMP addresses aspects of the project that could be a source of social risk. Stakeholders need to understand that their safety, health and environment are not being compromised. They should be kept informed (for example, via newsletters and notices) so that no uncertainty exists in this regard.

⁷ The term “stakeholder engagement” is defined in the IEM Series document on this subject (DEAT, 2002). Stakeholders could consist of the authorities, funders/donors, business, communities, non-governmental organisations and other interested and affected parties.

3.3.5 Auditing

Environmental audits should be scheduled and conducted by competent auditors, properly recorded, and where corrective actions are undertaken these should be verified.

An audit analyses the results obtained from monitoring, assesses whether objectives and targets have been met and whether there are variances from the stipulated EMP and legal requirements. In addition, the audit assesses whether EMP implementation has been undertaken according to planned arrangements and that the EMP itself is being appropriately updated. The audit should confirm that identified corrective actions have been undertaken and then assess the effectiveness of such actions. The timing of audits should be included in the implementation schedule in the EMP.

The key steps in a successful audit are:

- Establish audit procedures.
- Determine the frequency of audits.
- Ensure that the auditors are competent, in that they must be able to undertake the audit objectively and competently. Audits may be undertaken by internal or external parties, although certain I&AP requirements may define a need for external auditors.
- Maintain records of audits (CSIR, 2002).

A procedure should be developed by the project management team for conducting EMP audits, and should incorporate processes for scheduling and reporting, as well as the timing and frequency of the audits. This procedure should also address responsibilities and required resources. The Environmental Control Officer is usually responsible for the maintenance of the environmental audit information that is required prior, during and after an audit. The HSE Manager is usually responsible for scheduling and ensuring execution of the audit, as well as for the verification of the implementation of corrective action.

3.3.6 Responding to non-compliance

The approach to non-compliance (whether based on penalties or incentives) must be described in the EMP and specified, for example, in tender documents and contracts.

If the mitigation measures stated in the EMP are not adequately implemented, or do not achieve the desired result, the authorities may stop the project until corrective actions have been taken and the desired environmental objective or target has been met.

The system for dealing with non-compliances (i.e. incentives or disincentives for conformance and non-conformance with the EMP requirements) to be employed by the Project Proponent will vary depending on the type and specific nature of the project. The system to be used must be described in the EMP, included in the tender documents and contracts, and made clear to all project workers.

3.3.7 *Transfer of EMP requirements to Contractor, Sub-contractors or other parties*

The actions specified by the EMP must be enforced through the legal standing of the EMP.

Stipulating the requirement for an EMP may ensure its satisfactory development, but does not guarantee its implementation. It is therefore important to ensure that the actions specified by the EMP are enforced through the EMP being given some form of legal standing. This can be achieved through integration of the EMP into the tender documents for a particular project as a set of environmental specifications. To ensure compliance, it is essential that the environmental controls identified in the EMP be translated into a suite of environmental specifications that are written in the same language style and format as the rest of the contract document, thereby ensuring that the environmental controls integrate seamlessly into the tender document and are presented in a familiar form to the Contractor. Ultimately, only those aspects of the EMP that are directly relevant to the Contractor's activities should be contained within the environmental specifications. This approach will ensure that obligations are clearly communicated to Contractors and that submitted tenders have taken into account, and budgeted for, the environmental requirements specified in the EMP. For a new project, the proponent should not start with construction on site until the EMP has been approved by the authorities and a pre-start inspection has been undertaken.

In cases where the EMP cannot, for whatever reason, be included in the tender document (eg. due to the contracts being signed before the EMP is available), the EMP requirements should be included as a change or variation order to the contract. Similarly, any alterations to the EMP should be included as a change or variation order to the contract.

In some cases, certain requirements of the EMP may need to be legally transferred to other parties, such as some form of property owners association. EMP requirements may also be transferred to tenants or owners of individual properties (eg. in a golf course development).

3.3.8 *Management review and revision of the EMP*

Management reviews should be scheduled at key stages in the life-cycle of the project and the EMP revised accordingly.

EMPs should be dynamic, flexible and subject to periodic review (Hill, 2000). The extent to which EMPs should be reviewed will vary depending on the project or activity. Where the major negative impacts are associated with the construction phase, the EMP may require no, or limited, revision following construction. For projects where the major environmental impacts are associated with the operational phase, the EMP may require regular review and subsequent revision. In part, this is linked to the influence of changes in environmental legislation (CSIR, 2002).

Conditions under which the EMP would require revision include:

- changes in legislation;
- occurrence of unanticipated impacts or impacts of greater intensity, extent and significance than predicted;
- inadequate mitigation measures (i.e. where environmental performance does not meet the required level despite the implementation of the mitigation measure); and
- secondary impacts occur as a result of the mitigation measures.

Senior management responsible for a project should conduct a review of the EMP and its implementation to ensure that the EMP remains effective and appropriate. A review should be conducted at each of the following stages, before continuation to the next phase of the project life-cycle:

- pre-construction;
- construction and commissioning;
- operation and maintenance;
- expansion; and
- closure and decommissioning.

4. PRINCIPLES UNDERPINNING EMPs

The principles underpinning EMPs can be defined at three levels:

- *Principles of sustainable development*, which provide the ultimate vision for guiding the preparation and implementation of EMPs;
- *Principles for ethics and quality*, which relate to the quality of the process, including record keeping and the professional integrity of the authors and implementers of the EMP; and
- *Principles specific to EMPs*, which relate to the conceptual and actual implementation requirements for meeting best practice in EMPs.

4.1 PRINCIPLES OF SUSTAINABLE DEVELOPMENT

The overall objective of Integrated Environmental Management (IEM), as proposed in South Africa, is to promote sustainable development (DEAT, 2004a). EMPs are one of several IEMS tools, and are therefore intended to contribute to realising this over-arching vision. Box 4 shows the definition of sustainable development used in South African legislation. An implication of this definition is that EMPs should incorporate the biophysical, social and economic components of sustainable development. However, it is important to note that not all of these aspects will be relevant to every EMP.

Box 4: Definition of Sustainable Development

The National Environmental Management Act (Act No.107 of 1998) defines sustainable development as: “the integration of social, economic and environmental factors into planning, implementation and decision-making so as to ensure that development serves present and future generations”. Sustainable development has also been defined in several other policy-level documents (WCED, 1987; IUCN, 1991; SADC, 1995). The common attributes of these definitions include concern for the welfare of future generations, the improvement of the quality of life and the maintenance of essential ecological processes, as well as the adoption of decision-making processes that integrate ecological, social, and economic systems.

4.2 PRINCIPLES FOR ETHICS AND QUALITY

The preparation and implementation of EMPs must be guided by the following principles related to ethics and quality:

- **Consistency with legal and planning context.** Consistency with national, regional and local legislation, policies and plans, as well as with international commitments and obligations, where relevant.
- **Professional rigour.** This includes an evaluation as to whether or not the actions and monitoring proposed are appropriate; that specialist skills have been sourced where necessary (eg. for technically complex aspects of the monitoring); and that the report responds to and addresses all of the management actions identified in the EIA and Record of Decision.
- **Clear and easily understood reporting.** The EMP should be easily understood, clearly laid out, an accepted documentation style should be used; and all the tables, figures and illustrations should be appropriate and necessary.
- **Professional capability.** The qualifications, experience and competence of the author(s) of the EMP should be commensurate with the complexity and scope of the EMP.

4.3 PRINCIPLES SPECIFIC TO EMPS

EMPs must also be guided by the following conceptual and actual implementation requirements that broadly reflect best practice in EMPS:

- **Continuous improvement.** The project proponent (or implementing organisation) should be committed to review and to continually improve environmental management, with the objective of improving overall environmental performance.
- **Broad level of commitment.** A broad level of commitment is required from all levels of management as well as the workforce in order for the development and implementation of the EMP to be successful and effective.
- **Flexible and responsive.** The implementation of the EMP needs to be responsive to new and changing circumstances. This could be realized through rapid short-term responses to problems or incidents, as well as regular planned review and revision of the EMP at key stages in the project cycle. The EMP report is a dynamic “living” document that will need to be updated regularly throughout the duration of the project life-cycle.
- **Integration across operations.** The EMP needs to be integrated across existing line functions or operational units. This is when the full benefits of the EMP can be realized and requires a change in mindset from seeing environmental management as the domain of one unit (eg. the Health, Safety and Environmental department in a company), to being an imperative that cuts across all line functions. This is necessary if the higher principles of sustainable development are to be realized.

5. ROLES OF KEY STAKEHOLDERS

This section describes the roles and responsibilities of the key stakeholders involved in the development, implementation and review of the EMP⁸. For the purpose of illustration, reference is made to the project construction phase, which is the focus of the majority of EMPs requiring authority approval. However, the roles that are described would in general also apply to the operations phase of a project. An example of how the roles of the key stakeholders can be organized is shown in Figure 3.

Roles and responsibilities of stakeholders will depend on the scale and scope of the EMP. For example, smaller-scale projects might not involve all the functions described below, which might be conflated into fewer job descriptions. However, larger projects might have more complex requirements in terms of roles and responsibilities of stakeholders. The titles of the various environmental management personnel will also differ between projects and it is not the intention of this guideline to define exact titles. As a minimum, the following two roles need to be specified:

- A person to implement the EMP requirements. For the construction phase, this person is usually appointed by the Contractor. For the purposes of this guideline, this person is referred to as the **Environmental Officer** (EO).
- A person to monitor that the EMP requirements are implemented. For the construction phase, this person is usually appointed by the Project Proponent. For the purposes of this guideline, this person is referred to as the **Environmental Control Officer** (ECO).

5.1 PROJECT PROPONENT

The person or organisation proposing a project or activity may be described as the **Project Proponent**. Ultimately, the Project Proponent is responsible for the development and implementation of the EMP and, where relevant, ensuring that the conditions in the Record of Decision (ROD) are satisfied.

Where construction or operation activities are contracted out (eg. to Contractors and Sub-contractors), the liability associated with non-compliance still rests with the Project Proponent (unless otherwise agreed upon between the authorities, the Project Proponent and the contracting parties). The Project Proponent (and not the Contractor) is therefore responsible for liaising directly with the relevant authorities with respect to the preparation and implementation of the EMP and meeting ROD conditions.

For some projects, the operation of the project may be transferred to a separate legal entity from the one involved in the design and construction phase of the project. In such cases, the legal requirements of the ROD and EMP must be transferred to the “operations company”, with the record of this transfer clearly communicated to all stakeholders.

⁸ This section builds on the EMP Guidelines prepared by CSIR for the Department of Water Affairs and Forestry (DWAFF) for projects relating to water resource management (CSIR, 2002).

The Project Proponent must identify a **Project Manager**⁹ who has over-all responsibility for managing the Project Contractors and for ensuring that the environmental management requirements are met. During the construction phase, the Project Manager might be the Proponent's construction manager; during the operations phase this role might be fulfilled by the operations manager.

All decisions regarding environmental procedures and protocol must be approved by the Project Manager, who also has the authority to stop any construction activity in contravention of the EMP.

An **Environmental Control Officer (ECO)**¹⁰ should be employed by the Project Proponent for the duration of the project. The ECO should have appropriate training and experience in the implementation of environmental management specifications. The ECO provides feedback to the Project Manager regarding all environmental matters. Contractors are answerable to the ECO (or Project Manager, depending on contractual arrangements) for non-compliance with the requirements stated in the EMP. The responsibilities of the ECO could include the following:

- Maintenance, update and review of the EMP.
- Liaison between the Project Proponent, Contractors, authorities and other lead stakeholders on all environmental concerns.
- Compilation and administration of an environmental monitoring plan to ensure that the environmental management measures are implemented and are effective.
- Monitoring the performance of the Contractor (and Sub-contractors) and ensuring compliance with the EMP and associated Method Statements.
- Validating the regular site inspection reports, which are to be prepared by the Contractor's Environmental Officer (EO). The role of the EO is described in Section 5.2.
- Checking the EO's *record of environmental incidents* (spills, impacts, legal transgressions etc) as well as corrective and preventive actions taken.
- Checking the EO's *public complaints register* in which all complaints are recorded, as well as action taken.
- Issuing of site instructions to the Contractor for corrective actions required.
- Assisting in the resolution of conflicts.
- Communication of all modifications to the EMP to the relevant stakeholders.
- Conducting regular audits to ensure that the system for implementing the EMP is operating effectively.

For larger-scale projects, the Proponent might also have a **Health, Safety & Environment (HSE) Manager** in charge of all matters related to health, safety and environmental issues, from the

⁹ On large projects, often referred to the Project General Manager.

¹⁰ For some projects, the title of ECO may be applied to an independent environmental consultant, who may report directly to the Project Proponent and the EMC.

design phase, through the construction period, and including the future operation. The ECO would report to the HSE Manager. The HSE Manager's responsibilities would include, amongst others:

- Implementation of the recommendations in the EIA and satisfying the conditions in the ROD.
- Design and implementation of EMPs for the construction, operations and decommissioning phases of the project
- Ensuring that the requirements of the EMPs are communicated, understood and enforced for all activities on site.
- Ensuring that monitoring programmes are set up and implemented during the construction, operations and decommissioning phases of the project.

5.2 CONTRACTORS

Each Contractor affected by the EMP should appoint a **Contractor's Representative** (the title may vary), who is responsible for the on-site implementation of the EMP (or relevant sections of the EMP). The Contractor's representative can be the site agent; site engineer; a dedicated environmental officer; or an independent consultant. The Contractor must ensure that the Contractor's Representative is suitably qualified to perform the necessary tasks and is appointed at a level such that she/he can interact effectively with other site Contractors, labourers, the Environmental Control Officer and the public. The Contractor's Representative ensures that all Sub-contractors working under the Contractor abide by the requirements of the EMP.

The Contractor is answerable to the Project Manager for all environmental issues associated with the project. Contractor performance will, amongst others, be assessed on health, safety and environmental management criteria.

The Project Proponent must inform the Contractor of the ROD and EMP obligations (which have ideally been integrated into the tender document), as well as any **Method Statements** to be prepared or environmental training to be undertaken by the Contractor in terms of these obligations. Contractors must communicate these obligations to their Sub-contractors and ensure that there is compliance.

The Contractor or Sub-contractors (depending on the particular project) will be required, where specified, to provide **Method Statements** setting out in detail how the management actions contained in an EMP will be implemented in order to ensure that the environmental management objectives are achieved. If separate Method Statements are provided by different Sub-contractors, these may need to be consolidated by the Contractor in order to ensure consistency and optimize overall environmental performance and use of resources. The Method Statements must be reviewed and approved by the Project Proponent.

The Contractor may appoint an **Environmental Officer (EO)**, or officers, if more than one is required. Their primary role is to coordinate the environmental management activities of the Contractor on site. The EO may be required to perform the following roles:

- Support the ECO in the monitoring and execution of the Contractors or Sub-contractors' Method Statements by maintaining a permanent presence on site.
- Inspect the site as required to ensure adherence to the management actions of the EMP and the Method Statements.
- Complete Site Inspection Forms on a regular basis (eg. daily or weekly).
- Provide inputs to the regular (eg. monthly) environment report to be prepared by the ECO.
- Liaise with the construction team on issues related to implementation of, and compliance with, the EMP.
- Maintain a *record of environmental incidents* (spills, impacts, legal transgressions etc) as well as corrective and preventive actions taken, for submission to the Project Proponent.
- Maintain a *public complaints register* in which all complaints are recorded, as well as action taken, for submission to the Project Proponent.

5.3 LEAD AUTHORITY

The extent to which authorities are involved with an EMP will depend on its scale and scope, and whether it forms part of an authorization process. The authorities may be required to perform the following roles:

- Participate in a meeting(s) with the Project Proponent at the start of the EMP process in order to reach agreement on the approach to the EMP.
- Review the draft EMP submission. Based on the review, the authority will either (i) approve the EMP (with or without conditions), (ii) return the EMP for further improvement and re-submission, giving guidance on what needs to be revised or added, or (ii) reject the EMP, giving reasons.
- Process and issue the permits/licences necessary for the construction and operation of the project. These environmental permitting processes should be incorporated into the EMP. Note that permits may not be issued only by the lead authority for the EMP, but also by associated authorities (eg. DWAF).
- Review Monitoring and Audit reports, if required.
- Participate in an Environmental Monitoring Committee associated with the project, if relevant.
- Review whether there is compliance by the Project Proponent and Contractor with the terms of the EMP and ROD specifications, permit/licence conditions, and, possibly, the Method Statements. Whenever necessary, the authorities should assist the Project Proponent in understanding and meeting the specified requirements.
- The authorities may perform random controls to check compliance. In case of persistent non-compliance, the Project Proponent will be required to provide an action plan with corrective measures and have it approved by the authorities.

5.4 OTHER AUTHORITIES

Other authorities may be involved in activities relating to the EMP. For example, a local authority might provide stormwater infrastructure downstream from the project site and be responsible for monitoring stormwater quality from when it leaves the project site. In such cases, the project EMP must reflect linkages with wider monitoring and management systems.

Other authorities may also be involved in the development, implementation, review and approval of the EMP. The reason for their involvement is primarily to verify the accuracy and comprehensiveness of the information provided from the viewpoint of their specific mandates and areas of responsibility (eg. permits and licences). For example, if aspects of the project operations require an air emissions permit from the relevant national authority, then that authority should review and comment on the air quality component of the EMP.

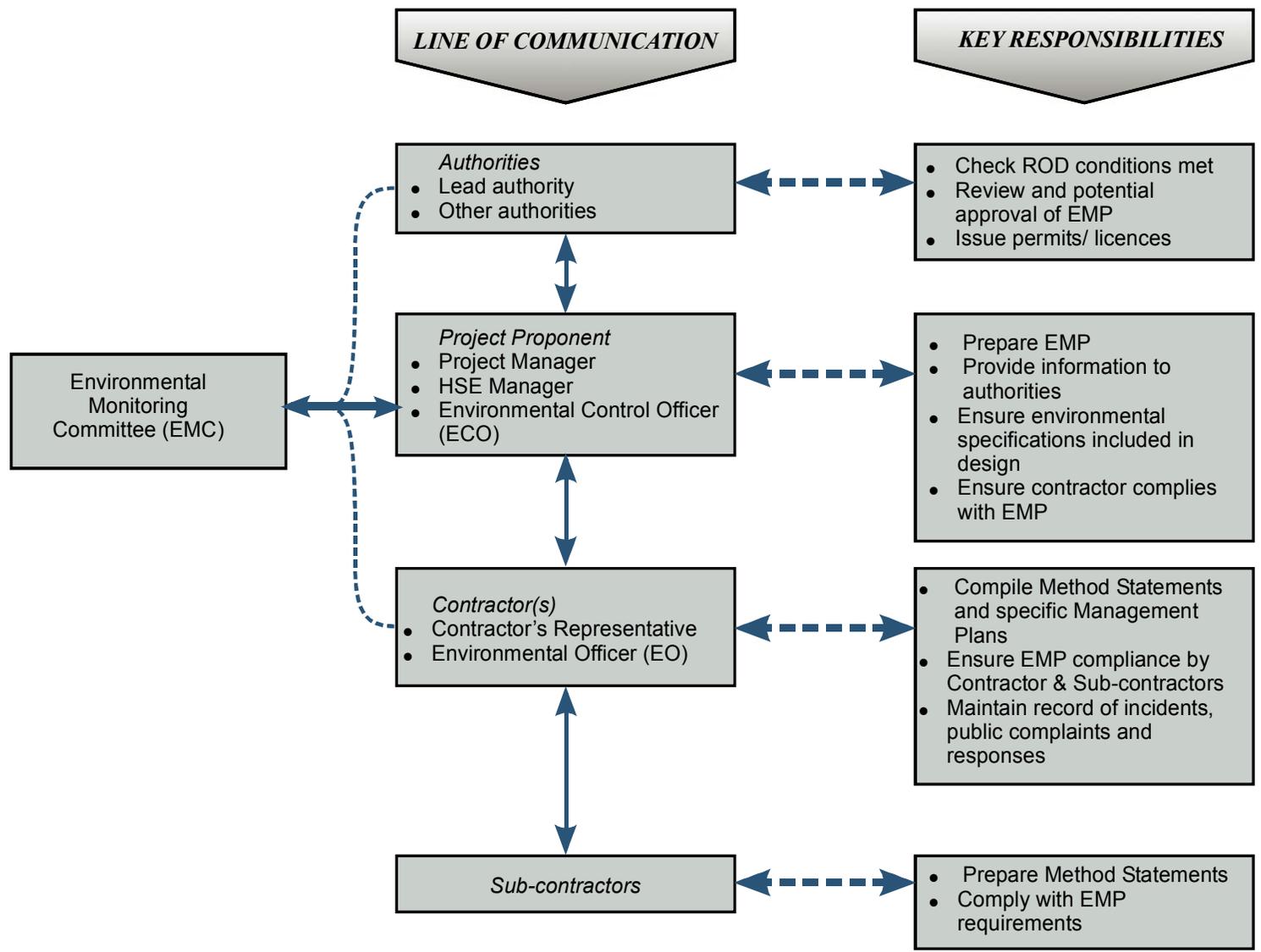


Figure 3:
Example of how communications channels and responsibilities can be structured for a construction EMP

5.5 INTERESTED AND AFFECTED PARTIES

The contributions received from the interested and affected parties (I&APs) should support the design of achievable mitigation measures. In some cases, inputs from I&APs should shape the design of the management actions (eg. identifying training needs in order to support use of local labour). I&APs should also be provided with updates on the progress of the project and the effectiveness of the EMP implementation during the construction and operational phases. During these project phases they should also be able to provide input into corrective actions where appropriate and to the revisions of the EMP.

5.6 FINANCIAL INSTITUTIONS OR DONORS

Some projects involve financial institutions or donors that need to approve the EMP. The agencies therefore need to assure themselves that the EMP is defensible (technically and in other aspects) and that the levels of risk linked to funding the proposed project are acceptable. They need to consider whether or not the management actions are practical and acceptable, and to take cognisance of associated time and cost implications. Also, they need to ensure that the EMP meets their own internal requirements or procedures (e.g. World Bank protocols).

5.7 ENVIRONMENTAL MONITORING COMMITTEE

In recent years, Environmental Monitoring Committees (EMCs) have become an effective mechanism for monitoring the implementation of the EMP and compliance with the ROD, as well as for improving communication amongst key stakeholders. In South Africa, several EMCs have been established by authorities as part of the ROD issued for EIAs of large-scale projects. The committee has an advisory, monitoring and “watch-dog” role that can extend for the duration of the construction or operational phase of the project. EMCs typically consist of the project proponent, key stakeholders and authorities that are involved in or concerned about the project activities and associated environmental management. It is important that clear terms of reference for the EMC are agreed to by the stakeholders, in order to facilitate the effective functioning of the committee. For more information on EMCs, refer to the document in the national IEM series (DEAT, 2005a).

5.8 INDEPENDENT ENVIRONMENTAL CONSULTANT

An independent environmental consultant may be appointed on certain projects and may be given the title of Environmental Control Officer. Their main responsibilities would be monitoring the implementation of the EMP and providing feedback to the Project Proponent and EMC.

6. REVIEWING EMPs

6.1 SCOPE AND TIMING OF THE REVIEW

The extent and detail of the review of an EMP will need to be determined on a case-by-case basis. All the stakeholders identified in Section 5 could potentially participate in the review of the EMP. Ideally, the EMP should be reviewed by the DEA&DP case officer responsible for drafting the ROD, as they would have a thorough understanding of the environmental issues and impacts associated with the project and would be able to track these impacts from the EIA phase, through the ROD and to the EMP.

The EMP review and approval process conducted by the authorities could occur at different stages in the process:

- Review and potential approval of the EMP
- Review of the monitoring reports (frequency of this review would depend on the project)
- Review of an audit, if conducted.

Where the EIA has identified the need for management actions to occur through the construction and operation phases, it is likely that the authorities will need to be involved in reviewing EMPs for both these phases. The outcome of the authority review is usually presented in the form of a letter report.

6.2 INFORMATION REQUIRED FOR THE REVIEW

The following supporting information is required for the review of an EMP by the authorities, although the level of detail necessary will vary between projects:

- **EMP Report:** The latest version of the EMP document, which might incorporate some of the information requirements listed below.
- **Relevant project information:** Background information on the project will be contained in the EIA reports (if available). Subsequent, more detailed project information could be available at the time of preparing the EMP. For example, project information should include a description of the design, location, duration and phasing of the project; as well as description of inputs of raw materials, labour, on-site processes and outputs such as noise, emissions, residues and waste over the entire project life-cycle. This project information might be included in the EMP report or provided via a supplementary report.
- **Information describing the affected environment:** This information may be provided in the EMP or provided via a supplementary report (eg. EIA reports). The type of information required for the review includes: a map, and possibly photographs, of the area to illustrate its spatial context in relation to the proposed development; and a description of baseline conditions covering social, economic and biophysical components.

- **The legal, policy and planning context for the project:** This information may be provided in the EMP or provided via a supplementary report (eg. EIA reports). The type of information needed should cover legal requirements at an international, national, provincial and local scale, as well as planning requirements that affect environmental management of the project.
- **Record of Decision:** If the EMP was preceded by an EIA process and a Record of Decision (ROD) has already been issued granting environmental authorization, then the ROD should be provided.
- **Permit and licence requirements:** Information on any permit and licence requirements must be provided. This should be included in the EMP document. If any environmental permits or licences have been applied for or already obtained, this should be explained.
- **Existing monitoring programmes:** Information should be provided on existing monitoring programmes that have informed the development of the EMP.

6.3 REVIEW CRITERIA

The following criteria are provided to guide the review of EMPs. The main purpose of these criteria is to assist the reviewer in evaluating whether: (i) all necessary sections have been included in the EMP documentation; and (ii) whether adequate provision has been made for the effective implementation of the EMP. These criteria are not intended to provide a prescriptive list of requirements for each and every EMP; but to provide a prompt for reviewers of the scope of potential EMP requirements. The reviewers will need to ascertain which criteria are applicable to the particular EMP under review.

For projects with *low environmental risk*, as defined in Section 2.7, these criteria may not all apply. Therefore, a set off minimum EMP requirements is provided in Box 5. These minimum criteria may typically apply to projects that are not required to follow the full EIA route but nonetheless require an EMP to be prepared and approved.

Table 2: Review criteria for EMPs

EMP component or requirement	Review question
1. Overview of the proposed activity and the local context	Has a brief description of the project been provided in order to place the EMP in context? (Reference should be made to EIA reports, if relevant)
	Has an adequate description of the affected environment (biophysical, social and economic) been provided in order to place the EMP in context? (Reference should be made to EIA reports, if relevant)
2. Summary of impacts associated with the proposed activity	Has a summary been provided in the EMP of the significant negative and positive impacts associated with the project that gave rise to the need for environmental management actions? (Reference should be made to EIA reports, if relevant)
3. Proponent's environmental management policies and	Have the proponent's environmental management policies and commitments that apply to the EMP been described and are the

EMP component or requirement	Review question
commitments	implications for the EMP explained?
4. Institutional arrangements: roles and responsibilities	Has an organisational structure been specified for managing and implementing the EMP?
5. Legal requirements	Have relevant legal requirements (such as policies, standards, guidelines and plans) been specified in the EMP? Has a process been developed to ensure that all legal and regulatory requirements are complied with?
6. Management actions	Does the EMP include all management actions applicable to the Project Proponent and Contractors, as specified in the relevant EIA documents and the Record of Decision? Are the prescribed management actions (i.e. actions to mitigate negative impacts and enhance positive impacts) well-defined and fully explained? Have procedures and schedules been identified for implementing the prescribed management actions? Have methodologies (eg. approach and technical specifications) been identified for conducting management actions? Have objectives and targets been set for the implementation of the management actions? Are the prescribed management actions practical, measurable and achievable? (Note: independent technical review might be required to test this) Has the project design and/or operations been updated according to the prescribed management actions? Have inspection or monitoring procedures been specified for ensuring that the management actions are applied?
7. Roles and responsibilities	Have roles and responsibilities been allocated to all parties involved with EMP implementation?
8. Monitoring	Have environmental monitoring requirements been developed to monitor environmental impacts and verify the performance of management actions that are being implemented?
9. Performance specifications	For the management actions and monitoring, have criteria and targets been identified that indicate what level of biophysical or socio-economic condition must be maintained or realised?
10. Implementation schedule	Has an implementation schedule been prepared with timeframes for conducting all EMP activities?
11. Cost estimates and financial resources	Have cost estimates been specified for both the initial investment and recurring expenses for preparing and implementing the EMP? Has budgetary provision been made for achieving all identified EMP activities during project implementation? Are the financial resources, allocated for carrying out the mitigation measures, consistent with the significance of the project impacts?
12. Remedial actions	Have response mechanisms and communication channels been identified in the case of unexpected events that require rapid remedial action?
13. Training and capacity building	Has provision been made to ensure that there is sufficient capacity to implement the EMP? Have EMP implementation training requirements been identified and a training programme devised?
14. Creating environmental awareness	Has an environmental awareness programme been devised for all parties involved with the EMP?
15. Documentation and record keeping	Has an EMP document handling and control system been specified for all EMP documentation (implementation procedures, site

EMP component or requirement	Review question
	inspection reports, monitoring reports, auditing reports, training needs analysis and reports, etc.)?
16. Reporting procedures	Has a reporting structure been specified and documented?
	Are there reporting procedures for implementing the EMP activities?
17. Stakeholder engagement	Have stakeholders been involved in the preparation of the EMP, at a level that is appropriate for the particular project?
	Is a strategy provided regarding ongoing stakeholder involvement during project implementation and reporting of EMP outcomes to the public?
	Has the role of stakeholder monitoring bodies (such as Environmental Monitoring Committees) been clarified in the EMP (if relevant)?
18. Auditing	Has an internal/external audit schedule been specified, including identification of responsibilities and scheduling?
19. Responding to non-compliance	Have incentive schemes and/or penalties that will be levied for non-compliance been stipulated, together with the process that will be followed in administering such schemes?
20. Transfer of EMP requirements to Contractor and Sub-contractors	Have the EMP requirements been specified, for example, under the special conditions of contract for the tender; or have EMP requirements been incorporated into the tender documents?
21. Management review and revision of the EMP	Is there a specified strategy for dealing with regular updates to the EMP and incorporating feedback for continuous improvement in environmental performance?

Box 5: Summary of minimum requirements for EMPs for projects with low environmental risk, within the context of the EIA process in the Western Cape

Step 1: Application and submission of completed DEA&DP checklist

The applicant (i.e. project proponent) submits an application in terms of the Environment Conservation Act and completes the checklist that has been developed by DEA&DP. The completion of the checklist can be done by an environmental assessment practitioner, on behalf of the proponent.

Step 2: Record of Decision (ROD) issued

An ROD is issued by DEA&DP, which may authorise the project subject to various conditions stated in the ROD.

Step 3: Preparation of an EMP, usually in the form of “Environmental Specifications for Contractors”

As a minimum, these environmental specifications must contain the following:

- **Roles and responsibilities of the key players** - This includes the roles of the Project Proponent, Contractor(s), and the Contractor’s Environmental Site Agent¹¹. The Environmental Site Agent is responsible for the implementation of the EMP (i.e. the environmental specifications) during the construction phase and is usually appointed by the Contractor.
- **Obligations for the Contractor** - The actions to be taken to minimise negative impacts and enhance benefits must be clearly stipulated. Method Statements, to be prepared by the Contractor, may be required for specific actions and will form part of the EMP.
- **Environmental awareness and training for site personnel** – For example, this might consist of various types of briefings for the Contractor teams.
- **Communication procedures on site** – For example, this includes requirements for the Environmental Site Agent to keep Site Instruction Entries and Diaries with the Agent’s comments. These documents should include minutes of meetings and form part of the official environmental management record.
- **Monitoring requirements** – This should explain what will be monitored, how, where, and when (i.e. how frequently). This monitoring is usually done by the Environmental Site Agent.
- **Record keeping** – All records relating to the implementation of the EMP must be maintained. Records should include photographs of the site that are taken prior to, during and immediately after construction. Record keeping may also be in the form of completed monthly checklists.

Step 4: Closure letter to DEA&DP (i.e. Environmental Completion Statement)

A closure letter is drafted to DEA&DP stating that construction is completed and explaining how the conditions of the ROD were met. In the event of non-compliances, the reasons for these must be explained and the remedial actions clearly described. This letter replaces the final audit that is usually required for development projects with high environmental risk.

Source: Andrew Spinks, pers comm, and Ecosense, 2000.

¹¹ The term Environmental Site Agent is obtained from the *Standard Construction Phase EMP for implementation on small or low impact developments*, prepared by Ecosense (2000) for the Western Cape provincial government.

7. CONCLUSIONS

The guideline for EMPs describes the envisaged scope and content of an EMP, covering both the preparation and implementation stages of an EMP process, as well as the roles of key stakeholders associated with EMPs. To assist in the review of EMPs by the authorities, as well as other reviewers, a set of review criteria has been identified and presented in the form of questions. It must be emphasized that these criteria are not intended to provide a prescriptive list of requirements for each and every EMP, but to provide prompts for reviewers when assessing the scope and level of detail appropriate for an EMP. These questions enquire whether the EMP has included the following, either through the preparation of documentation or through recorded implementation of the EMP:

- Overview of the proposed activity and the local context
- Summary of impacts associated with the proposed activity
- Proponent's environmental management policies and commitments
- Institutional arrangements: roles and responsibilities
- Legal requirements
- Management actions
- Roles and responsibilities
- Monitoring
- Performance specifications
- Implementation schedule
- Cost estimates and financial resources
- Remedial actions
- Training and capacity building
- Creating environmental awareness
- Documentation and record keeping
- Reporting procedures
- Stakeholder engagement
- Auditing
- Responding to non-compliance
- Transfer of EMP requirements to Contractor and sub-contractors
- Management review and revision of the EMP.

Looking ahead, EMPs provide an essential tool for ensuring that the mitigation of negative impacts and enhancement of positive impacts is carried out effectively during the project life-cycle. It is therefore intended that this guideline be used in the spirit of continual improvement, to assist in promoting best practice in environmental management, in a manner that is pragmatic, efficient and cost-effective.

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APPENDIX A: DEFINITIONS AND ACRONYMS

DEFINITIONS

<i>Alternative</i>	A possible course of action, in place of another, that would meet the same purpose and need defined by the development proposal. 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.
<i>Aspect</i>	Element of an organisation's activities, products or services that can interact with the environment.
<i>Auditing</i>	A systematic, documented, periodic and objective evaluation of how well the environmental management plan is performing with the aim of helping to safeguard the environment by: facilitating management control which would include meeting regulatory requirements.
<i>Corrective (or remedial) Action</i>	Response required to address an environmental problem that is in conflict with the requirements of the EMP. The need for corrective action may be determined through monitoring, audits or management review.
<i>Environmental Impact Assessment</i>	An Environmental Impact Assessment (EIA) refers to the process of identifying, predicting and assessing the potential positive and negative social, economic and biophysical impacts of a proposed development. The EIA includes an evaluation of alternatives; recommendations for appropriate management actions for minimising or avoiding negative impacts and for enhancing positive impacts; as well as proposed monitoring measures.
<i>Environmental Impact Report</i>	A report describing the process of examining the environment effects of a development proposal, the expected impacts and the proposed mitigating measures.
<i>Environmental Management System</i>	Environmental Management Systems (EMS) provide guidance on how to manage the environmental impacts of activities, products and services. They detail the organisational structure, responsibilities, practices, procedures, processes and resources for environmental management. The ISO14001 EMS standard has been developed by the International Standards Organisation.
<i>Environmental Policy</i>	Statement of intent and principles in relation to overall environmental performance, providing a framework for the setting of objectives and targets.
<i>Impact</i>	A description of the potential effect or consequence of an aspect of the development on a specified component of the biophysical, social or economic environment within a defined time and space.
<i>Management actions</i>	Actions to mitigate negative impacts or enhance positive impacts associated with a proposed project.

<i>Mitigation</i>	Measures designed to avoid, reduce or remedy adverse impacts
<i>Scoping Report</i>	A report presenting the findings of the scoping phase of the EIA. This report is primarily aimed at reaching closure on the issues and alternatives to be addressed in the EIA (in the case of a full EIA process).
<i>Stakeholders</i>	A subgroup of the public whose interests may be positively or negatively affected by a proposal or activity and/or who are concerned with a proposal or activity and its consequences. The term includes the proponent, authorities and all interested and affected parties.

ACRONYMS

<i>ECA</i>	Environment Conservation Act
<i>DEA&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>EIR</i>	Environmental Impact Report
<i>EMF</i>	Environmental Management Framework
<i>EMP</i>	Environmental Management Plan
<i>EMS</i>	Environmental Management System
<i>I&APs</i>	Interested and Affected Parties
<i>NEMA</i>	National Environmental Management Act
<i>SEMP</i>	Strategic Environmental Management Plan

APPENDIX B: OVERVIEW OF THE ENVIRONMENTAL MANAGEMENT PROGRAMME FOR CIVIL ENGINEERING CONSTRUCTION ACTIVITIES PREPARED BY THE CITY OF CAPE TOWN

The City of Cape Town has developed a generic Environmental Management Programme (EMP) for civil engineering construction. The EMP was developed to be a practical, flexible working document and is based on on-site experience. The EMP is designed to be included as an integral component in Tender and Contract documentation; and can be downloaded from the following website: www.capetown.gov.za/enviro/emd/downloads.asp

The City of Cape Town encourages the use of this document by any professional in the engineering and environmental fields. In order to ensure the continued improvement of this EMP, it is requested that potential users inform the City of Cape Town of the intended use and provide feedback to the City of Cape Town after the EMP has been used. The incorporation of the City of Cape Town's EMP (whether it is used in whole or part) should be acknowledged in the EMP document itself.

The EMP consists of the following components that can be downloaded from their website:

Generic EMP Overview

This contains a PowerPoint Presentation that provides an overview of the EMP and its components. It is recommended that this document should be looked at first.

Compilation: Guidelines for Document Preparation

This Word Document describes in detail how the Standard and Detailed Environmental Specifications should be incorporated into the Tender Document.

Standard Environmental Specifications

This Word Document provides the Standard Environmental Specifications that can be inserted virtually unmodified into the Tender Document.

Detailed Environmental Specifications

This Word Document forms a library of detailed environmental specifications that should be **used with care** by the Environmental Specialist in consultation with the Engineer to draw up the *Project Specifications* that apply to a specific Contract.

Standard Revegetation Specifications

Word Document containing the Standard Revegetation Specifications.

Detailed Revegetation Specifications

Word Document forming a library of detailed revegetation specifications. Again, depending on the nature of the Contract, the *Project Specifications* need to be compiled with care by a Specialist in consultation with the Engineer.

Guideline Document for the Contractor

Word Document that details the role of the Contractor with respect to the implementation of the EMP. Helps the Contractor to understand the EMP.

Guideline Document for the Environmental Site Officer (ESO) and the Engineer's Representative

This Word Document details the role of the Environmental Site Officer (ESO) and the Engineer's Representative (ER) with respect to the implementation of the EMP and provides additional information and checklists.

Education Courses

This contains generic education courses for management and site staff in three different sub-folders in English, Afrikaans and Xhosa. These courses are in PowerPoint. The courses should be **customised** for the contract. The courses can be printed out on paper to allow for on-site flip chart style presentations if required.

Drawings

This contains drawings (in Word Documents) that may be used in the compilation and implementation of EMPs. These include examples of best practise with regard to temporary fuel storage tanks, river crossings, silt (erosion) fencing as well as signs.

The City of Cape Town's generic EMP for Civil Engineering Construction Activities has primarily been designed to be used by the City of Cape Town's own Engineering Departments. Therefore, adequate care should be taken when this document is used for other construction projects. The detailed revegetation specifications are tailored for conditions in the Western Cape Province. Therefore, if the EMP is to be used in other parts of the country, obviously these would need to be revised.

APPENDIX C: EXAMPLE OF HOW THE LINKS BETWEEN OBJECTIVES, MANAGEMENT ACTIONS, MONITORING, CRITERIA/TARGETS AND REMEDIAL ACTIONS CAN BE PRESENTED USING A TABULAR FORMAT

This example is extracted from the EMP (Lochner *et al*, 2003) for the operational phase of the wetlands and canals at Century City, Cape Town. The EMP contains a suite of 10 environmental management goals that cover planning, legal status of the wetland, water quality and quantity, vegetation, birds, other animals, tourism, recreation, education and public awareness. The EMP is implemented by the ECO of Property Owners Association (POA). Performance is monitored via an environmental committee that includes the POA, authorities, specialists, local non-governmental organisations (NGOs), and an independent chairperson. The extract below is from the goal relating to birds. The full text for this EMP is available at the following website: www.intaka.co.za.

GOAL 7: Manage habitats at Intaka Island to support the feeding, roosting and breeding of wild birds.

<i>OBJECTIVES</i>	<i>RISKS</i>	<i>ACTIONS</i>	<i>MONITORING</i>	<i>CRITERIA/TARGETS</i>	<i>REMEDIAL ACTIONS</i>
<p>Constructed Wetland Zone (8 ha)</p> <p>1] <i>Maintain a variety of wetland habitats for birds, including sufficient edge habitats.</i></p> <p>2] <i>Enhanced</i></p>	<p>1) Water of poor quality.</p> <p>2) Damage to heronry by wind.</p> <p>3) Excessive reed growth.</p>	<p>1) Extend the heronry structures.</p> <p>2) Manage the growth of reeds to keep within the March 2003 extent of reed growth.</p> <p>3) Plant more indigenous trees and large shrubs around the heronry to create a windbreak.</p>	<p>1) Monitor bird populations (bi-monthly, by specialist, with annual report)</p> <p>Responsibility: Bird Specialist(s)</p> <p>2) Monitor habitat structure by means of</p>	<p>1) Breeding colonies in the heronry structures enlarges by 50-100% relative to 2002 levels.</p>	<p>1) Lower the island in cell 4 to just above water level.</p>

OBJECTIVES	RISKS	ACTIONS	MONITORING	CRITERIA/TARGETS	REMEDIAL ACTIONS
<p><i>terrestrial bird habitat through planting of indigenous trees and shrubs.</i></p> <p>3] <i>Creation of a birding attraction for the public, especially with respect to the heronry.</i></p> <p>4] <i>Encouragement of onsite ornithological research, including bird ringing.</i></p>	<p>4) Disturbance by visitors.</p> <p>5) Fish populations may decline.</p> <p>6) Predation by feral cats and House Crows.</p>	<p>4) Diversify habitats within cells wherever possible. For example: create openings and channels in reedbeds to create edge habitats.</p> <p>5) Lower the island in cell 4 to just above water level.</p> <p>6) Increase bird-viewing facilities, including hides.</p> <p>7) Encourage relevant institutions and individuals (e.g. Bongani) to conduct ornithological research, including bird ringing.</p> <p>Responsibility (1-7): ECO, in consultation with Blouvillei Environmental Committee (BEC)</p>	<p>fixed-point photography (semi-annually). Responsibility: ECO</p> <p>3) Monitor the fish populations. Responsibility: Fish Specialist (to be identified)</p>	<p>2) Other bird populations remain stable, or increase, relative to 2002 levels.</p> <p>3) Visitation increases relative to 2002.</p> <p>4) There is a regular ringing programme and results are reported to the BEC.</p>	