Integrated Environmental Management Information Series

Environmental Management Plans

12

Department of
Environmental Affairs and Tourism

Other topics in the series of overview information documents on the concepts of, and approaches to, integrated environmental management are listed below. Further titles in this series are being prepared and will be made available periodically. Sequence of release and titles are subject to change.

Information Series 0:	Overview of Integrated Environmental Management
Information Series 1:	Screening
Information Series 2:	Scoping
Information Series 3:	Stakeholder Engagement
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Information Series 6:	Ecological Risk Assessment
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Information Series 12:	Environmental Management Plans
Information Series 13:	Review in Environmental Impact Assessment
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PREFACE

This document is one of a series of overview information documents on the concepts of, and approaches to, Integrated Environmental Management (IEM). IEM is a key instrument of South Africa's National Environmental Management Act (NEMA). South Africa's NEMA promotes the integrated environmental management of activities that may have a significant effect (positive and negative) on the environment. IEM provides the overarching framework for the integration of environmental assessment and management principles into environmental decision-making. It includes the use of several environmental assessment and management tools that are appropriate for the various levels of decision-making.

The aim of this document series is to provide general information on techniques, tools and processes for environmental assessment and management. The material in this document draws upon experience and knowledge from South African

practitioners and authorities, and published literature on international best practice. This document is aimed at a broad readership, which includes government authorities (who are responsible for reviewing and commenting on environmental reports and interacting in environmental processes), environmental professionals (who undertake or are involved in environmental assessments as part of their professional practice), academics (who are interested in and active in the environmental assessment field from a research, teaching and training perspective), non-government organisations (NGOs) and interested persons. It is hoped that this document will also be of interest to practitioners, government authorities and academics from around the world.

This document has been designed for use in South Africa and it cannot reflect all the specific requirements, practice and procedures of environmental assessment in other countries.

This series of documents is not meant to encompass every possible concept, consideration, issue or process in the range of environmental assessment and management tools. Proper use of this series of documents is as a generic reference, with the understanding that it will be revised and supplemented by detailed guideline documents.

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SUMMARY

Most of the global environmental assessment practice appears to be directed at the scoping and assessment stages of the Environmental Impact Assessment (EIA) process. The mitigation, monitoring and management component of EIAs receive less attention. Attention is now being focused on the need to demonstrate that impacts can be monitored and managed. The Environmental Management Plan (EMP) is recognised as the tool that can provide the assurance that the project proponent has made suitable provisions for mitigation. The EMP is the document that provides a description of the methods and procedures for mitigating and monitoring impacts. The EMP also contains environmental objectives and targets which the project proponent or developer needs to achieve in order to reduce or eliminate negative impacts. The EMP document can be used throughout the project life cycle. It is regularly updated to be aligned with the project progress from construction, operation to decommissioning. EMPs provide a link between the impacts predicted and mitigation measures specified within the EIA report, and the implementation and operational activities of the project. EMPs outline the environmental impacts, the mitigation measures, roles and responsibilities, timescales and cost of mitigation.

Three broad categories of EMPs can be recognised in the project lifecycle. They are the construction phase EMP, the operational phase EMP and the decommissioning phase EMP. The objectives of these EMPs are all the same, namely to:

* identify the possible environmental impacts of the proposed activity; and
* develop measures to minimise, mitigate and manage these impacts.

The difference between these EMPs is related to the difference in mitigation actions required for the different stages of the project cycle.

The development and implementation of a successful EMP has benefits beyond merely meeting legal obligations. It contributes to environmental awareness of the workforce. It can facilitate the prevention of environmental degradation, and minimise impacts when they are unavoidable. Given the current focus on the assessment stage of EIA, EMPs add value to decision-making by demonstrating commitment to implementation of mitigation actions. The EMP facilitates progress towards environmental targets and provides a tool for continual improvement of a company's environmental performance.

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1. INTRODUCTION

Since the 1970s, the approach to integrated environmental management (IEM) in South Africa has undergone significant changes (Mafune et al., 1997). From modest beginnings as a voluntary process, IEM in South Africa reached a milestone in 1997 with Environmental Impact Assessment (EIA) becoming mandatory. Despite IEM being conceptualised as a toolbox and promoting the concept of "cradle-to-grave" environmental management (DEAT, 2004a), EIA received greater attention than the other tools. Since EIAs became a regulated process in South Africa in 1997, most of the effort was directed at the scoping and assessment stages of the EIA process. The mitigation, monitoring and management component of EIAs received much less attention.

Attention is now being focused on the need to demonstrate that impacts can be monitored and managed. The Environmental Management Plan (EMP) is recognised as the tool that can provide the assurance that the project proponent has made suitable provision for mitigation.

The EMP provides a description of the methods and procedures for mitigating and monitoring impacts. The EMP also contains environmental objectives and targets which the project proponent or developer needs to achieve in order to reduce or eliminate negative impacts. The EMP document can be used throughout the project life cycle. It should be regularly updated to remain aligned with the project as it progresses from construction to operation and, finally to decommissioning. Developing countries have been slow to use and implement EMPs (George, 2000). Ira et al. (2000) and Parkes et al. (2001), attribute the slow utilisation of EMPs to the following:

* EIA policy systems generally focus on the assessment part of the process;
* the lack of guidelines for the compilation and implementation of EMPs;
* the lack of legal enforcement of EMPs;
* the failure of EMPs to take account of the financial implications of environmental controls; and
* governments not focusing on and building the institutional capacity for monitoring and enforcing compliance.

However, there is now a growing recognition that EMPs can be effective environmental management tools by linking their implementation to project authorisation.

2. PURPOSE OF THIS DOCUMENT

This document serves as an initial reference text for a broad readership, including government authorities, environmental professionals, academics, and NGOs. It aims to provide a generic introductory information source on the purpose, objectives and content of EMPs.

3. ENVIRONMENTAL MANAGEMENT THROUGHOUT THE PROJECT LIFE CYCLE

Integrated Environmental Management (IEM) is a continuous process that ensures that environmental impacts are avoided or mitigated throughout the project life cycle from design, to implementation, operation and decommissioning (DEAT,2004a). After the feasibility and design stage of a project, the project proposal is usually subjected to an EIA. The resultant EIA report normally specifies mitigation and management actions.

One of the IEM tools that practitioners use for managing environmental impacts at the project implementation stage is the Environmental Management System (EMS). EMS provides a systematic framework and approach to minimise risks and control environmental aspects (i.e. activities that cause impacts) and impacts (i.e. effect or change to the environment resulting from an activity). EMS is a cyclical process aimed at assisting an organisation to achieve continuous improvement in environmental performance (EPA, 1995a).

Companies use the EMS framework to achieve continuous improvement in environmental performance. The International Standards Organization has issued the international standard ISO 14001, to provide an agreed definition of a sound EMS (George, 2000). ISO 14001 is one of a series of environmental standards, covering areas such as the environmental management of operations. Among the series of standards, ISO 14004 (general guidelines on EMS), ISO 14010 (principles of auditing), ISO 14011 (audit procedures for EMS) and ISO 14012 (auditor qualifications) provide guidance and support for the environmental management systems framework described in the ISO 14001 document (DEAT, 2004b).

As well as defining what constitutes a sound EMS, ISO 14001 makes it possible for operators to obtain independent certification to prove that their environmental management system meets the requirements of the standard (George, 2000).

According to George (2000) the basic elements of an EMS complying with ISO 14001 are:

* a list of potential environmental impacts;
* a set of operational procedures for monitoring, controlling and reducing impacts, and recording the results; and
* a procedure for internal audits of the procedures.

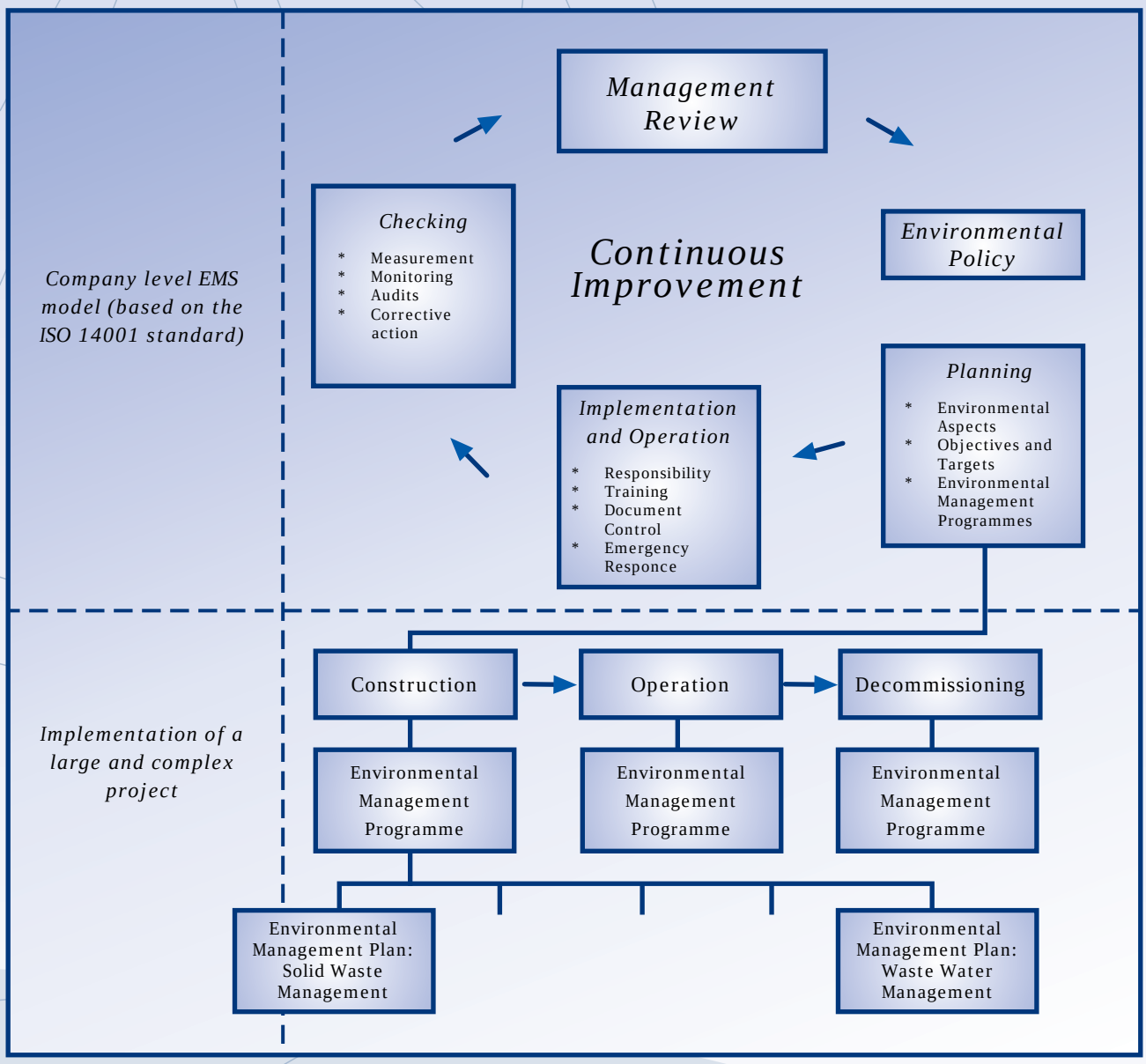
An important feature of ISO 14001 is its requirement that impacts should not only be controlled, but reduced, with specific targets and action plans defined by the operator (George, 2000). The components of an EMS consist of policy, planning, operational procedures, checking and review. In the implementation of projects there is the tendency to refer to an Environmental Management Programme, which provides the overall framework for environmental management. In the implementation of large, complex projects EMPs fit within the overall Environmental Management Programme. EMPs may be prepared for specific areas or management functions such as solid waste management. Figure 1 provides an illustration of the link between Environmental Management Systems, Environmental Management Programmes and Environmental Management Plans. Figure 1 provides a conceptual framework for the location and function of EMPs for

complex projects such as aluminium smelters, petro-chemical plants and large mining operations. It is acknowledged that in practice and where EMPs are used may differ from the way Figure 1 illustrates the concept. The context and the need will determine whether Environmental Management Programmes or EMPs are developed. In practice EMPs may be consolidated into an integrated document, describing all facets of the development activities. In Figure 1, EMPs are illustrated as being prepared for isolated and distinct functions.

For small to medium sized projects of the type which are implemented frequently and where the impacts are known and the mitigation measures are standard, EMPs for construction are the most appropriate tool. Generic construction EMPs can be developed for projects such as road infrastructure, electrical powerlines, petrol filling stations, golf courses and cellular phone infrastructure. These small projects normally have standard construction and implementation specifications. Standard EMP formats, therefore, can be applied to them.

EMPs provide a link between the impacts predicted and mitigation measures specified within the EIA report, and the implementation and operational activities of the project. EMPs outline the environmental impacts, the mitigation measures, roles and responsibilities, timescales and cost of mitigation (World Bank, 1999).

Figure 1: Illustration of the hierarchical link between an Environmental Management System (EMS) (for an organisation), the Environmental Management Programme (which fits within the EMS) and the Environmental Management Plan (which fits within the Environmental Management Programme) (Source: Lochner and Rossouw, in litt., 2004)



4. ENVIRONMENTAL MANAGEMENT PLANS

There is no universally accepted standard format for EMPs. The format needs to fit the circumstances in which the EMP is being developed and the requirements which it is designed to meet (World Bank, 1999). According to the World Bank (1999) EMPs should contain the following components:

* Summary of Impacts: The predicted negative environmental impacts for which mitigation is required should be summarized.
* Description of mitigation measures: The EMP identifies feasible and cost effective mitigation measures to reduce significant negative environmental impacts to acceptable and legal levels. Mitigation measures should be described in detail and be accompanied by designs, equipment descriptions, and operating procedures.
  The technical aspects of implementing the mitigation measures should be described.
* Description of monitoring programme: Environmental performance monitoring should be designed to ensure that mitigation measures are implemented. The monitoring programme should clearly indicate the linkages between impacts, indicators to be measured, measurement methods and definition of thresholds that will signal the need for corrective actions.
* Institutional arrangements: Responsibilities for mitigation and monitoring actions should be clearly defined.
* Legal enforceability: The key legal considerations with respect to EMPs are:
  - Legal framework for environmental protection; and
  - Legal basis for mitigation.
* Implementation schedule and reporting procedures: The timing, frequency, and duration of mitigation The measures should be specified in an implementation schedule, showing links with the overall project. Procedures to provide information on the progress and results of mitigation and monitoring measures should also be clearly specified.
* Cost estimates: Costs should be calculated for both the initial investment and recurring expenses for implementing the mitigation measures.

After the feasibility and design stages of the project, those projects, which have significant negative impacts are subjected to EIA. For projects of the type, which are undertaken frequently and which require authorisation, it may be advisable to develop the EMP as part of the Environmental Impact Report. This ensures that mitigation, monitoring and management considerations form part of the documentation used for decision-making. This has the benefit of giving the authority some assurance that mitigation measures proposed during the EIA will be implemented during the construction and operation phases of the project.

The benefits of including the EMP as part of EIA (EIA Newsletter, 1996) are:

* encouraging applicants to be more systematic and explicit in the design and development of mitigation measures and the intended means of implementation;
* encouraging authorities to check the practicality and likelihood of implementation of mitigation and monitoring measures;
* ensuring that the mitigation measures are properly incorporated into the project design and contract documentation after authorisation is granted;
* encouraging the project proponent to meet the requirements of the EMP which now form the basis for the conditions attached to authorisation of the project; and
* forcing the project proponent to internalise environmental impacts that would otherwise become a social cost.

Box 1 provides detailed information and guidance on the development of EMPs. The information provided in Box 1 can be applied to developing an EMP for all phases in the project life cycle.

Box 1: Guidance for the formulation and implementation of EMPs

1. Obtain a comprehensive understanding of the activities and associated impacts of all the phases of the project. Appropriate mitigation and monitoring measures can then be implemented.
2. Identify specific environmental risks and issues. This entails identifying the elements of the environment that need to be protected as well as the range of activities that could possibly adversely affect them.
3. Develop the suite of environmental controls and, ideally, prepare these as a set of specifications for integration into the construction tender or contract document. These environmental controls will include the mitigation measures, management controls, and environmental standards to be met.
4. When designing the EMP, questions to ask include:
   * What is the scale of the construction and operational activities?
   * How sensitive is the receiving environment?
   * What are the potential environmental risks?
5. The mitigation measures must be practical and cost efficient so that they are readily implementable.
6. Method statements are useful tools for the contractor to specify how mitigation actions will be implemented. Method statements describe:
   * Construction and operational procedures;
   * Materials and equipment to be used;
   * How and where material will be stored;
   * Action to contain leaks or spills of any liquid or material;
   * The timing and location of construction and operational activities;
7. Identify and allocate roles and responsibilities for specific actions associated with mitigation, monitoring and performance assessment.
8. Establish a monitoring programme.
9. Specify the mechanisms for achieving compliance (i.e. rewards and penalties).
10. Develop an environmental awareness programme.

5. LEGAL ENFORCEABILITY OF ENVIRONMENTAL MANAGEMENT PLANS

In South Africa EMPs have increasingly become part of the conditions of approval for development. The project proponent cannot delegate accountability for compliance to individual sub-contractors.

A good approach to facilitate legal enforceability of the EMP, is to integrate the EMP into the tender and contract document (between the proponent and sub-contractor) as a set of environmental specifications. The incorporation of environmental considerations into the tender and contract documents is a fundamental prerequisite for the effective implementation of the EMP (Barker and Hill, 2000).

Using this approach the contractor thus has a clear understanding of the environmental requirements and associated costs prior to being appointed.

To ensure compliance, it is essential that the environmental specifications are written in the same language style and format as the rest of the contract document. The text for the mitigation measures and environmental specifications has to be developed early in the process so that it can be incorporated into the tender and contract documents. In cases where the environmental specifications are developed after the tender has been awarded, it is much less likely that mitigation measures will be implemented.

Enforcement is more readily achieved if the project proponent has a clear understanding early in the contracting process of the actions and costs associated with environmental mitigation.

6. TYPES OF ENVIRONMENTAL MANAGEMENT PLANS

There are three broad categories of EMPs in the project lifecycle: the construction EMP, the operations EMP and the decommissioning EMP.

The objectives of these EMPs are all the same, namely to:

1. identify the possible environmental impacts of the proposed activity; and
2. develop measures to minimise, mitigate and manage these impacts.

The difference between these EMPs is related to the difference in mitigation actions required for the different stages of the project cycle.

6.1 The Construction Phase Environmental Management Plan

The construction phase EMP provides specific environmental guidance for the implementation and construction phase of a project. It is intended to enable the management and mitigation of construction activities so that environmental impacts are avoided or reduced. These impacts range from those incurred during start up (e.g. site clearing, erection of the construction camp) to construction activities (i.e. erosion, pollution of watercourses, noise, dust).

Information presented in the EMP is typically categorised as follows:

* identify the specific activity or potential impact that requires management;
* determine the mitigation measures to be implemented;
* identify the performance indicator;
* identify who would be responsible for implementation; and
* identify who would be responsible for monitoring.

6.2 The Operational Phase Environmental Management Plan

The operational phase EMP provides specific guidance related to the operational activities associated with a particular development. The roles and responsibilities for mitigation, monitoring and performance assessment for the operational life of the development are specified in the EMP.

6.3 The Decommissioning Phase Environmental Management Plan

As the final phase in the project cycle, decommissioning may present positive environmental opportunities associated with the return of the land for alternative use and the cessation of impacts associated with operational activities. However, depending on the nature of the operational activity, the need to manage risks and potential residual impacts may remain well after operations have ceased. Examples of potential residual impacts and risks include contamination of soil and groundwater, stock that has been abandoned (e.g. oil drums, scrap equipment, old chemicals) and old (unserviceable) structures. The decommissioning phase EMP provides specific guidance with respect to the management of the environmental risks associated with the decommissioning stage of a project. The decommissioning phase EMPs are typically encountered within extractive industries such as minerals mining and oil and gas exploration and extraction.

7. STRATEGIC ENVIRONMENTAL MANAGEMENT PLANS

Strategic Environmental Assessment (SEA) is commonly referred to as a process for assessing the environmental consequences of policies, plans and programmes (PPPs) (Sadler and Verheem, 1996). SEA has been identified as an appropriate instrument to incorporate environmental aspects into strategic planning processes. It is not intended that SEA should replace EIA, rather SEA streamlines project-specific assessment by providing an effective instrument for environmental assessment at the plan and programme level. SEA may form the context for lower levels of planning and provide input into higher, more strategic levels (DEAT and CSIR, 2000).

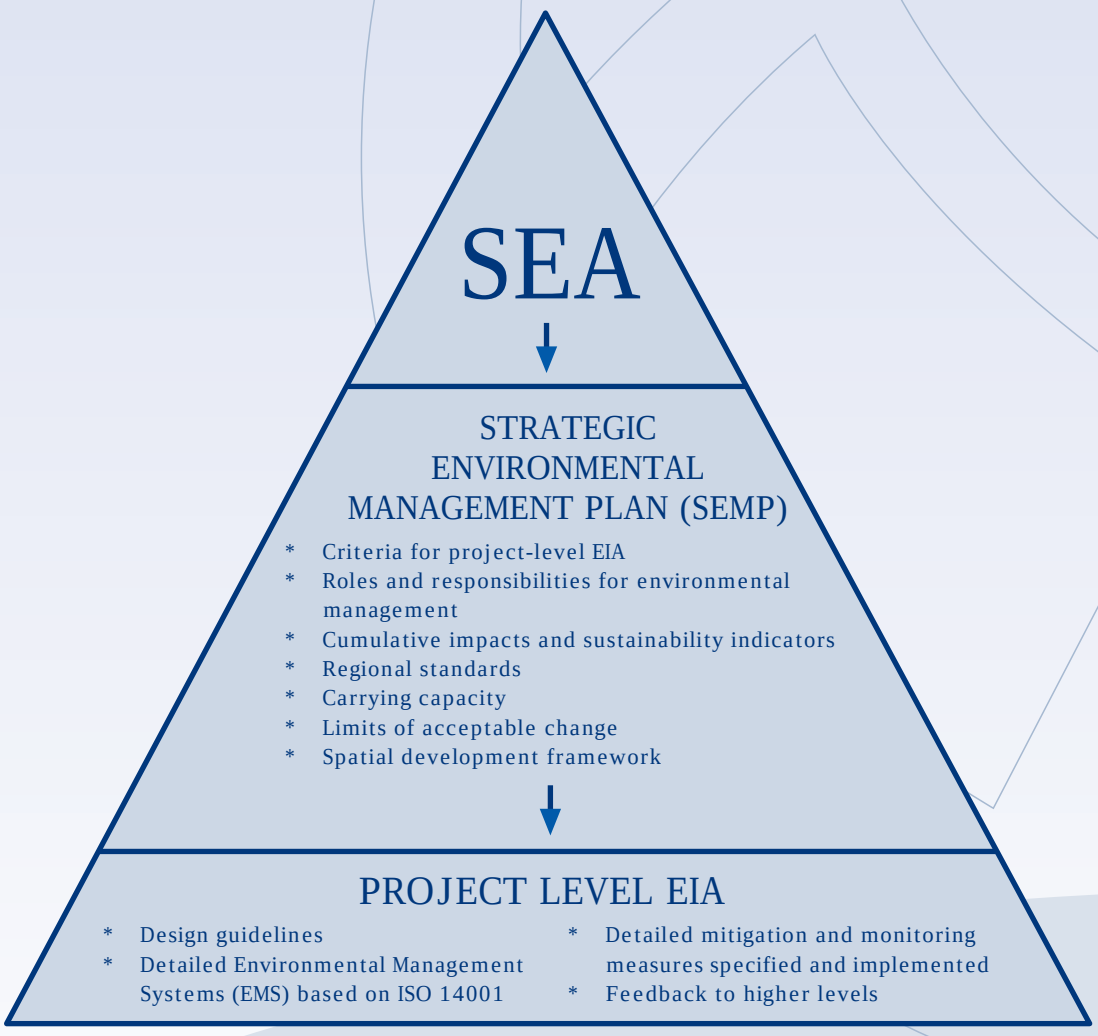
However, since SEA informs the EIA process, which in turn informs and guides the EMP, SEA establishes a sound basis for mitigation, monitoring and management at a project level (World Bank, 1999).

An EMP that has been developed where a SEA framework exists should help to establish a sound planning and management framework. This EMP is known as a Strategic Environmental Management Plan (SEMP). The SEMP provides the framework for addressing cumulative impacts of ongoing developments through a spatial approach to mitigation, monitoring and management (Figure 2).

SEAs highlight key issues of concern in the sector or region, whilst SEMPs may prescribe standard approaches to project design and mitigation through environmental guidelines and monitoring requirements. This reduces the scope of work for individual EIAs and detailed EMPs for projects.

SEMPs have increasingly been used in South Africa to provide management frameworks to guide development. The SEMP provides the means to incorporate environmental objectives into development decision-making processes.

Figure 2: Hierarchy of environmental systems, showing the conceptual relationship between SEA; a Strategic Environmental Management Plan (SEMP); and Environmental Management Systems (adapted from CSIR, 1997)



8. INTEGRATION OF THE EMP INTO OPERATIONS

The EMP should not become an additional requirement separate from the day-to-day activities of the site. If the EMP becomes another layer of control the staff will see it as an obstruction to normal duties and operations. For the EMP to be effective it must be part of a company's routine operations (EPA, 1995a).

Commitment from all levels of management and the workforce is the most important element in the success of an EMP.

An EMP shifts the focus of operations and places a slightly different emphasis on operations and on the role of many individuals. Employees are not only required to carry out their traditional duties, but must be able to identify and act to minimise or avoid environmental impacts (EPA, 1995a).

Environmental requirements should be integrated into existing procedures, rather than becoming a new layer of control.

9. IMPLEMENTATION AND MONITORING

The key to the success of an EMP lies in its effective implementation. Compliance monitoring is therefore crucial. Monitoring ensures that the environmental requirements stipulated in the EMP are being complied with. It also allows for ongoing impacts to be tracked so that the effectiveness of the mitigation can be measured (EIA Newsletter, 1996).

9.1 Developing a monitoring programme

Environmental monitoring provides the data for review, checking and revising the EMP. By instituting regular monitoring, environmental impacts can be detected early and remedial action implemented (EPA, 1995b). The process for establishing a monitoring programme consists of the following actions:

* specify management objectives;
* specify monitoring objectives;
* identify the scope of monitoring;
* recommend appropriate monitoring technology;
* specify how the information collected should be used in decision-making;
* define the spatial boundaries and select map scales and sites for observation, measurement or sampling;
* select key indicators for direct measurement, observation or sampling;
* define how the data will be analysed and interpreted and how it should be presented in monitoring reports;
* define the precision and accuracy required in the data;
* consider compatibility of data to be collected with historical data and with related contemporary data; and
* set minimum requirements for monitoring.

The monitoring actions described above fits within the overall process of developing the EMP, monitoring programme and performance assessment (Figure 3).

Figure 3: Framework process for developing the EMP and monitoring programme (adapted from EPA, 1995b)

GOAL OF THE EMP	Demonstrate to authorities and stakeholders that activities comply with legislated environmental quality objectives and achieve good environmental performance.
STANDARDS	Apply national standards for environmental management. Environmental systems should comply with the international standards series ISO 14000.
MANAGEMENT OBJECTIVES	* detect short and long term trends; * recognize environmental changes and analyse causes; * measure impacts and compare with predicted impacts; * improve the monitoring system; and * improve practices and procedures for mitigation.
↓ MONITORING	
Specific monitoring requirements are developed in the process of preparing the EMP. They include	* what to measure; * where to measure; * when to measure; * how to measure; * how often to measure; * methods to be used; * additional information required.
↓ PERFORMANCE ASSESSMENT	
	* identify trends, causes and impacts; * assess performance and compliance; * modify practices and procedures for mitigation; and * modify monitoring programme.

9.2 Monitoring and Data Collection

The monitoring programme should detect trends and changes to enable intervention or remedial measures to be taken in order to achieve good environmental performance. Within each environmental component or specialist area (e.g. groundwater, terrestrial ecology and avifauna) there are appropriate techniques for collection, analysis and interpretation of data. The criteria that need to be employed for effective data collection, management and reporting include:

* realistic sampling programme (temporal, spatial and point data);
* collection of quality data;
* compatibility of new data with historical data;
* cost effective data collection;
* quality control in measurement and analysis;
* appropriate databases to capture, store, retrieve and display the data; and
* reporting for internal management and external auditing.

Ideally, the monitoring data should be presented in the form of maps, photographic records, data tables and graphs. An example of a format for data collection and monitoring is given in Table 1.

Table 1: Example of a format for data collection and monitoring

ENVIRONMENTAL COMPONENT	MONITORING FREQUENCY	MONITORING METHOD	DATA CAPTURE	REMEDIAL ACTION
Groundwater				
Monitoring bore holes	Monthly	Water levels taken and translated to height datum. Flow rates and pump rates and flow metre reading taken.	Capture data in spreadsheet. Calculate salinity. Trends analyses every month.	
	Six monthly	Samples taken for major ion analysis.	Capture data in spreadsheet. Trends analyses every six months.	
Terrestrial Ecology				
Rehabilitation: plan establishment	Survey re-vegetated area every six months	Density of seedlings measured. Survey area every six months.	Capture data in spreadsheet. Use graphs to illustrate trends.	Remedial action as required.
Rehabilitation: plant species diversity	Survey plots once a year	Record number of indigenous plant species in selected plots	Capture data in spreadsheet. Use graphs to illustrate trends.	Remedial action as required.
Fauna	Six monthly	7 sites x 2 transects	Record species present. Capture data in spreadsheet. Use graphs to illustrate trends.	
Feral animal control	Inspect for feral animals every two days.	Control feral animals by trapping, baiting or shooting as recommended by conservation authorities.	Areas where feral animals have been trapped or baited are inspected every two days.	If method of control is not successful further trapping or baiting is carried out.
Avifauna				
	Survey bird pairs during breeding and nesting periods.	Record breeding, nesting and survival success.	Capture data in spreadsheet. Use graphs to illustrate trends.	

9.3 The Environmental Awareness Training

The workforce should undergo an environmental awareness training course. This should be in addition to any specific detailed training they may require to conduct monitoring. Environmental awareness training is critical for the workforce to understand how they can play a role in achieving the objectives specified in the EMP.

9.4 Audits

Regular reviews of the company's environmental performance are necessary during the operational phases of a project to ensure procedures are appropriate, and to ensure that environmental objectives and targets are being achieved. The reviews should be regular and assess the company's performance against legal standards and internal objectives and targets (EPA, 1995a).

Environmental audits identify existing and potential problems on the environment, and determine what action is needed to comply with legal requirements and internal. Further detailed information on environmental auditing is presented in the DEAT (2004c) publication on Environmental Auditing.

10. PUBLIC INVOLVEMENT IN EMPS

Generally, the public is not directly involved in the development of the EMP. Rather, public issues and concerns expressed during the EIA process are incorporated into the EMP. A way of eliciting public comment on the EMP is to present it in the Environmental Impact Report (EIR). At this early stage it would be difficult to present a comprehensive EMP. A "framework" EMP included as part of the EIR can highlight key environmental issues and identify appropriate mechanisms to deal with these issues. It would allow members of the public an opportunity to comment on the mitigation and monitoring specifications.

Usually there are no formal mechanisms for the public to determine whether the environmental commitments in the EMP are being met (World Bank, 1999), nevertheless the public may still have an important role to play during the implementation of the EMP. Since many of the environmental controls are designed to mitigate potential impacts on neighbouring communities, the public may provide a specific monitoring role to ensure that they are not being unduly affected by the proposed activities associated with the particular project. An Environmental Monitoring Committee (EMC) or Environmental Liaison Committee may be established to monitor progress and performance.

Interaction between the community and the company is essential to build levels of confidence and trust.

11. CONCLUSIONS

The development and implementation of a successful EMP has benefits beyond merely meeting legal obligations. It contributes to the environmental awareness of the workforce. It can facilitate the prevention of environmental degradation, and minimise impacts when they are unavoidable.

Given the current focus on the assessment stage of environmental impact assessment, EMPs add value to decision-making by demonstrating commitment to implementation of mitigation actions.

An EMP can cover all company and site activities, from construction to operation to decommissioning. An EMP can ensure good environmental performance and improve community relations. The EMP facilitates progress towards environmental targets and provides a tool for continuous improvement of a company's environmental performance. The key to a successful EMP is commitment by all levels of management and the workforce. The integration of the EMP into daily operations is crucial.

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13. GLOSSARY

Definitions

Affected environment
Those parts of the socio-economic and biophysical environment impacted on by the development.

Affected public
Groups, organizations, and/or individuals who believe that an action might affect them.

Alternative proposal
A possible course of action, in place of another, that would meet the same purpose and need. Alternative proposals can refer to any of the following but are not necessarily limited thereto:
* alternative sites for development
* alternative projects for a particular site
* alternative site layouts
* alternative designs
* alternative processes
* alternative materials

In IEM the so-called "no-go" alternative also requires investigation.

Authorities
The national, provincial or local authorities, which have a decision-making role or interest in the proposal or activity. The term includes the lead authority as well as other authorities.

Baseline
Conditions that currently exist. Also called "existing conditions."

Baseline information
Information derived from data which:
* Records the existing elements and trends in the environment; and
* Records the characteristics of a given project proposal

Decision-maker
The person(s) entrusted with the responsibility for allocating resources or granting approval to a proposal.

Decision-making
The sequence of steps, actions or procedures that result in decisions, at any stage of a proposal.

Environment
The surroundings within which humans exist and that are made up of -
i. the land, water and atmosphere of the earth;
ii. micro-organisms, plant and animal life;
iii. any part or combination of (i) and (ii) and the interrelationships among and between them; and
iv. the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being. This includes the economic, cultural, historical, and political circumstances, conditions and objects that affect the existence and development of an individual, organism or group.

Environmental Assessment (EA)
The generic term for all forms of environmental assessment for projects, plans, programmes or policies. This includes methods/tools such as EIA, strategic environmental assessment, sustainability assessment and risk assessment.

Environmental consultant
Individuals or firms who act in an independent and unbiased manner to provide information for decision-making.

Environmental Impact Assessment (EIA)
A public process, which is used to identify, predict and assess the potential environmental impacts of a proposed project on the environment. The EIA is used to inform decision-making.

Fatal flaw
Any problem, issue or conflict (real or perceived) that could result in proposals being rejected or stopped.

Impact
The positive or negative effects on human well-being and/or on the environment.

Integrated Environmental Management (IEM)
A philosophy which prescribes a code of practice for ensuring that environmental considerations are fully integrated into all stages of the development and decision-making process. The IEM philosophy (and principles) is interpreted as applying to the planning, assessment, implementation and management of any proposal (project, plan, programme or policy) or activity - at the local, national and international level - that has a potentially significant effect on the environment. Implementation of this philosophy relies on the selection and application of appropriate tools to a particular proposal or activity. These may include environmental assessment tools (such as Strategic Environmental Assessment and Risk Assessment); environmental management tools (such as monitoring, auditing and reporting) and decision-making tools (such as multi-criteria decision-support systems or advisory councils).

Interested and affected parties (I&APs)
Individuals, communities or groups, other than the proponent or the authorities, 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. These may include local communities, investors, business associations, trade unions, customers, consumers and environmental interest groups. The principle that environmental consultants and stakeholder engagement practitioners should be independent and unbiased excludes these groups from being considered stakeholders.

Lead authority
The environmental authority at the national, provincial or local level entrusted in terms of legislation, with the responsibility for granting approval to a proposal or allocating resources and for directing or coordinating the assessment of a proposal that affects a number of authorities.

Mitigate
The implementation of practical measures to reduce adverse impacts.

Non-governmental organizations (NGOs)
Voluntary environmental, social, labour or community organisations, charities or pressure groups.

Proponent
Any individual, government department, authority, industry or association proposing an activity (e.g. project, programme or policy).

Proposal
The development of a project, plan, programme or policy. Proposals can refer to new initiatives or extensions and revisions to existing ones.

Public
Ordinary citizens who have diverse cultural, educational, political and socio-economic characteristics. The public is not a homogeneous and unified group of people with a set of agreed common interests and aims. There is no single public. There are a number of publics, some of whom may emerge at any time during the process depending on their particular concerns and the issues involved.

Role-players
The stakeholders who play a role in the environmental decision-making process. This role is determined by the level of engagement and the objectives set at the outset of the process.

Scoping
The process of determining the spatial and temporal boundaries (i.e. extent) and key issues to be addressed in an environmental assessment. The main purpose of scoping is to focus the environmental assessment on a manageable number of important questions. Scoping should also ensure that only significant issues and reasonable alternatives are examined.

Screening
A decision-making process to determine whether or not a development proposal requires environmental assessment, and if so, what level of assessment is appropriate. Screening is initiated during the early stages of the development of a proposal.

Significant/significance
Significance can be differentiated into impact magnitude and impact significance. Impact magnitude is the measurable change (i.e. intensity, duration and likelihood). Impact significance is the value placed on the change by different affected parties (i.e. level of significance and acceptability). It is an anthropocentric concept, which makes use of value judgements and science-based criteria (i.e. biophysical, social and economic). Such judgement reflects the political reality of impact assessment in which significance is translated into public acceptability of impacts.

Stakeholders

A sub-group 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 therefore includes the proponent, authorities (both the lead authority and other authorities) and all interested and affected parties (I&APs). The principle that environmental consultants and stakeholder engagement practitioners should be independent and unbiased excludes these groups from being considered stakeholders.

Stakeholder engagement

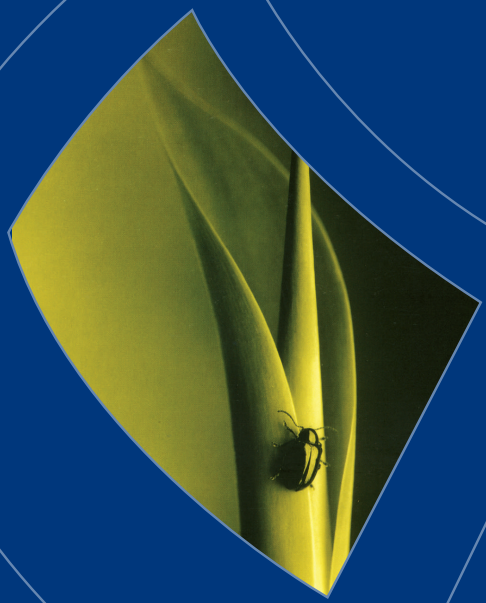
The process of engagement between stakeholders (the proponent, authorities and I&APs) during the planning, assessment, implementation and/or management of proposals or activities. The level of stakeholder engagement varies depending on the nature of the proposal or activity as well as the level of commitment by stakeholders to the process. Stakeholder engagement can therefore be described by a spectrum or continuum of increasing levels of engagement in the decision-making process. The term is considered to be more appropriate than the term "public participation".

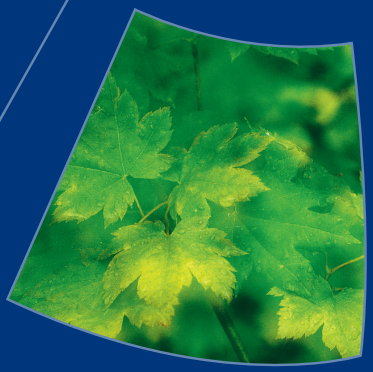
Stakeholder engagement practitioner

Individuals or firms whose role it is to act as independent, objective facilitators, mediators, conciliators or arbitrators in the stakeholder engagement process. The principle of independence and objectivity excludes stakeholder engagement practitioners from being considered stakeholders.

ABBREVIATIONS

CBO	Community-based Organization
EA	Environmental Assessment
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EMS	Environmental Management Systems
I&AP	Interested and Affected Party
IEM	Integrated Environmental Management
NGO	Non-governmental Organization
SEA	Strategic Environmental Assessment





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