through the operation of laws and time. This can be interpreted as having explicit opportunities and constraints for any particular human use. The EMFs will reveal the most fit locations and processes.

The EMFs primarily study the biophysical and socio-cultural systems of a geographically defined area to reveal where specific land uses may best be practiced.

The development and compilation of an EMF can be divided into two major sections, namely the technical development and public awareness and involvement process. Both are inextricably linked. Previous environmental planning processes disregarded the valuable input provided by the public and the various participation processes. Inherently the EMF addresses land use conflict aspects of a geographical area through the integration of biophysical, social, economic, statutory and policy requirements. Environmental management frameworks are conducted or developed in a response to specific environmental problems; or as a counter, measure or control to determine the potential impact of a policy, plan or programme.

In the case of the former the EMF is predominantly focused and developed as a response to a significant environmental problem or driver / trigger, such as; development pressure on sensitive ecological areas, land use conflict areas, resource conservation, amongst others. In the latter the EMF is developed on the basis of a neutral information input. The EMF functions as a platform or framework against which planning policy, programmes (Strategic Development Frameworks and other local authority planning frameworks) and land use decision making can be gauged with respect to environmental sensitivity, rights and responsibilities.

3. PURPOSE AND OBJECTIVES OF THE EMFs

3.1 Purpose of EMFs

The EMF regulations provide that the Minister or MEC, with concurrence of the Minister, may initiate an environmental management framework (EMF) for an area. EMFs that are adopted by the Minister or MEC must be taken into account in the consideration of applications for environmental authorisation in or affecting the areas to which the EMF applies.

The primary purpose of the EMFs are to function as a support mechanism in the environmental impact assessment process in the evaluation and review of development applications, as well as making strategic informed decisions regarding land use planning applications.

Similarly, EMFs provide a vast array of information which becomes useful in a diverse field of environmental application. EMFs provide a compilation of information and maps illustrating attributes of the environment for a specific geographical area. Not only useful for the EIA process but also for other planning processes.

EMFs that have been adopted by the Minister can therefore be used to facilitate the compilation and consideration of applications for environmental authorisation in terms of the regulations. In this regard –

- EMFs provide applicants with an early indication of the areas in which it would be potentially appropriate to undertake an activity;
- Co-operative government is facilitated through the identification of different regulatory responsibilities and recommending mechanisms for addressing the needs of the relevant authorities; and
- The competent authority has information which will guide and inform decision-making.

In practice it is foreseen that EMFs will mostly be joint initiatives between provincial departments and local authorities that act within the mandates of the MECs. It is also likely that the formulation of EMF's will in most cases be contracted out to teams of specialists.

In addition to the above, EMFs can have indirect uses.

- EMFs can be used as a basis for the Minister or MEC to identify areas where environmental authorisation will be required for certain additional listed activities;
- Where the undertaking of certain activities may be excluded from requiring environmental authorisation.; and
- For the co-ordinated management of strategic spatial environmental information about a specific geographic area.

3.2 OBJECTIVES

The objectives of an EMF should be to:

- Support informed and integrated decision-making by making significant and detailed information about an area available before activity proposals are generated;
- Contribute to environmentally sustainable development by anticipating potential impacts and by providing early warnings in respect of thresholds, limits and cumulative impacts;
- Support the undertaking of environmental impact assessments in the area by indicating the scope of potential impacts and information needs that may be necessary for environmental impact assessments; and
- Support the process of delineating geographical areas within which additional specified activities are to be identified in terms of NEMA;
- Support the process of delineating geographical areas within which activities listed in terms of NEMA may be excluded by identifying areas that are not sensitive to the potential impacts of such activities.

4. PRINCIPLES AND CONTEXTUALISATION OF EMFs

4.1 Guiding Principles for EMFs

The following principles should be applied in the development of an EMF:

- The EMF should be customised to the context of the area;
- The EMF should be undertaken with reference to environmental goals and priorities;
- The EMF should encourage sustainable development;
- The scope of the EMF should be comprehensive enough to provide assistance to all levels and types of environmental and planning decision-making in the area ;
- The EMF should place specific focus on the issues and information that matter in decision-making in the area;

- Bio-physical, social, and economic, and other aspects that are relevant in the area should be reflected in the EMF;
- The EMF should be clear and easy to understand;
- The process of developing the EMF should provide for an appropriate level of public participation; and
- The process of developing the EMF should be carried out fairly, impartially and professionally, having regard to legal and policy requirements as well as guidelines applicable to the area.

4.2 Determination of the Context of an EMF

With regard to the context within which an EMF is developed it must be noted that, although the content of an EMF is prescribed in the regulations, the nature of each EMF will be determined by the context of the area for which it is done and the contents of each EMF will vary accordingly. The context is often determined by a range of factors, including the following:

- The types and nature of environmental attributes;
- The types of development pressures experienced;
- The status of conservation of sensitive elements; and
- The need for cooperative government.

4.3 Legislative Contextualisation

As stipulated earlier the contextualisation of the EMFs is entrenched in framework legislation.

Section 24 (2) and (3) of NEMA, and Government Notice R.385 stipulates regulation 70 (1) that the Minister, and every MEC with the concurrence of the Minister may identify:

2 (b) geographical areas based on environmental attributes, and as specified in spatial development tools adopted in the prescribed manner by the environmental authority, in which specified activities may not commence without environmental authorisation from the competent authority; and

2 (c) geographical areas based on environmental attributes, and specified in spatial development tools adopted in the prescribed manner by the environmental authority, in which specified activities may be excluded from authorisation by the competent authority.

3 The Minister, and every MEC with the concurrence of the Minister, may compile information and maps that specify the attributes of the environment in particular geographical areas, including sensitivity, extent, interrelationship and significance of such attributes which must be taken into account by every competent authority.

Section 24 (5) The Minister, and every MEC with the concurrence of the Minister, may make regulations consistent with subsection (4)-

(bA) laying down the procedure to be followed for the preparation, evaluation and adoption of prescribed environmental management instruments, including-

(i) environmental management frameworks

Due to the their strategic nature, the statutory standing of the EMFs have been elevated and removed from under the current EIA regulations and now constitute a regulation on their own. This strengthens the position of the EMFs under NEMA, and similarly affords the opportunity to ensure that the development of the EMFs is not unnecessarily restricted by the EIA regulations and process.

5. PROCESS OF FORMULATING AN EMF

This section describes the typical technical development process of the EMF. It considers the various phases and provides detail regarding the end deliverables required for conducting EMFs successfully.

5.1 Pre-EMF Development Aspects

Before commencing with the EMF certain administrative and institutional aspects should be in place which includes:

- Issues of concurrence between the relevant tiers of government;

- Who has initiated the EMF;
- Formal agreements between the relevant parties to the EMF, where and if required; and
- Define the scope of works (terms of reference) for the compilation of the EMF.

The above will ensure a defensible process, which has been agreed upon by all the relevant tiers of government, which is important when addressing issues of co-operative governance.

The Terms of Reference should as a minimum:

- Define the purpose of the EMF;
- Clearly demarcate the study area;
- Information and technical requirements;
- Public participation process and requirements;
- Methodology and approach;
- Project deliverables required; and
- The composition and structure of the EMF project steering committee.

The project initiator should:

- Indicate the key criteria and aspects which are required in the EMF;
- The operational scale of the EMF;
- Identify and be clear regarding the trigger for the EMF;
- Establish the policy objectives of the EMF to address the trigger;
- Establish the minimum requirements of the EMF which include aspects regarding consultation with the public and relevant authority.

5.2 Technical EMF Development Process

The technical development phases of the EMF can be summarised into five basic phases, namely;

1. Status quo assessment;
2. Sensitivity analysis;
3. Environmental opportunities and constraints;
4. Identification of specific management zones; and
5. Management guidelines.

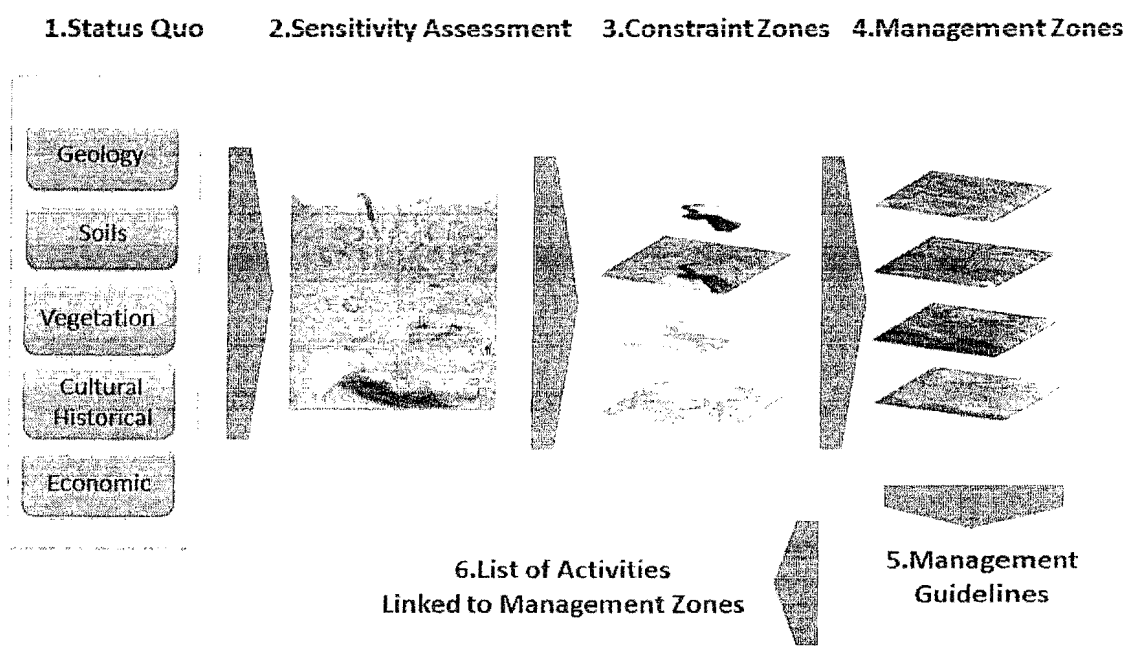

Figure 1: Overall EMF Technical Phases

5.3 Information Gathering

The platform of the EMF is developed upon baseline information. It is very important to ensure that sufficient emphasis is placed upon the development of the baseline assessment phase for any specific EMF. Similarly, the ultimate success of the EMF is determined by the quality and accuracy of primary

information input. Status quo information and assessment forms the basis for all the ensuing development phases of the EMF.

5.3.1 Information Gathering, Quality and Detail

Information gathering is an activity that takes place throughout the formulation of an EMF. It is important for defining the:

- Status quo of the project area;
- Environmental opportunities and constraints,
- Development pressures and trends in the area; and
- The establishment of management priorities in the area.

When planning how to produce an EMF, it is important to be systematic and make sure that information is gathered and captured correctly. Accurate and relevant baseline information is imperative to the successful spatial analysis and determination of applicable environmental opportunities and constraints. Garbage in, garbage out, rings true to the overall effectiveness, acceptability and implementability of the EMF. The status quo assessment forms the repository of all biological, physical, social and economic data, and where applicable and possible should be represented spatially. The spatial mapping of baseline information constitutes the framework and platform upon which the EMF is further developed. The eventual quality and relevance of an EMF will to a large extent depend on:

- The information included;
- The credibility of information sources; and
- The quality and detail of the information.

All data sources should accordingly be subjected to stringent quality controls and, in most cases, verified at the source to ensure that errors are not built into the EMF due to erroneous or sub-standard quality information. New research and high resolution data capture may be required to ensure that the quality of information is both adequate and appropriate to the development of the EMF, in instances where this does not exist.

The level of detail required for spatial data capture, especially in respect of key environmental attributes, will normally vary from 1:1000 to 1:5000. Coarser data is unlikely to meet the requirements of the competent authorities. Spatial data capture requires up-to-date aerial photography and in some instances satellite remote sensing images. There should be clear integration with other information sources where these meet the above criteria.

5.3.2 Information that should be included in the EMF

It is necessary to ensure that the content and context of the EMF is appropriate to its application. Information irrelevant to the EMF should not be included. A distinction must be made between information utilised in the status quo assessment for background and information purposes only, and which will have no operative function in the further development and analysis phases of the EMF; and information that will be utilised in the further spatial analysis phases of the EMF development. The typical baseline information that should be included must reflect the following;

- A clear delineation of the baseline/status quo category of information (environmental attributes);
- A clear description and depiction of the features making up the categories (environmental attributes);
- The specific activities and impact aspects that need to be assessed, or which will influence the environmental attributes significantly; and
- The project extent and study boundaries.

Information management will be important in the compilation of the EMF as the primary platform for all analysis is represented spatially. In order to manage this process effectively and to ensure a record is kept with regards to the credibility of information used an information metadata matrix should be developed.

The information matrix should include the following:

- The nature and type of information required;
- The format of the information;
- The scale and quality of the information;
- The intended approach to getting and capturing the information; and
- The information source.

The project steering committee should jointly decide on the information matrix and the requirements for the baseline spatial data.

5.3.3 Information sources

As referred to above the emphasis on reliable, accurate and current spatial information will establish the integrity and applicability of the EMF. Baseline information sources should primarily be structured around the acquisition of existing information sources. Generation of new data sets should only be done in situations where:-

- Required and appropriate spatial information pertinent to the analysis does not exist;
- Where the scale is too broad and not detailed enough for the application; and
- Where serious discrepancies regarding the integrity of existing information exists.

Links with other baseline sources should firstly be established, before the generation of new data sets, where these do not exist. Similarly, where credible initiatives are underway, and which have been completed, this information should be utilised in the EMF where appropriate.

Access to information

The project steering committee should assist the service provider with access to information, especially information of which a statutory body is the custodian.

The utilisation of existing data sets must take the following into consideration:-

- The information must be from an acceptable source e.g. SANBI and other sources which have already been through a broad consultative process, and where the information has been reviewed, verified and ground truthed;
- The inclusion of existing data (i.e. C-plans etc) must be consolidated as a baseline for the EMFs;
- EMFs must look at national and provincial targets rather than just local targets in instances where biodiversity decisions are made;
- The EMF process needs to synergise with existing information;
- EMFs should address implementation issues of broader initiatives, such as bioregional plans; and
- Plans of National importance should, where appropriate and relevant, be integrated into the EMF to prevent and address discrepancies.

Information can be obtained from various sources including:

- Government institutions such as SANBI, Department of Land Affairs: Chief Directorate Surveys and Mapping, DWA AND DEA;
- Municipal cadastral and zoning documents;
- Aerial photography which should be used for surveys, ground truthing and intensification of information gathered from less accurate sources;
- Information in the databases of government departments;
- Strategic development frameworks and integrated development plans applicable to the area;
- Information gathered as part of other projects in the area;

- Government policies;
- Site/area surveys;
- Specific local subject specialists; and
- Interviews with stakeholders, community leaders, and the general public during the public participation process.

5.4 Status Quo Assessment

The following diagram illustrates the various levels of information input and the interphase and relationship between the descriptive analytic data.

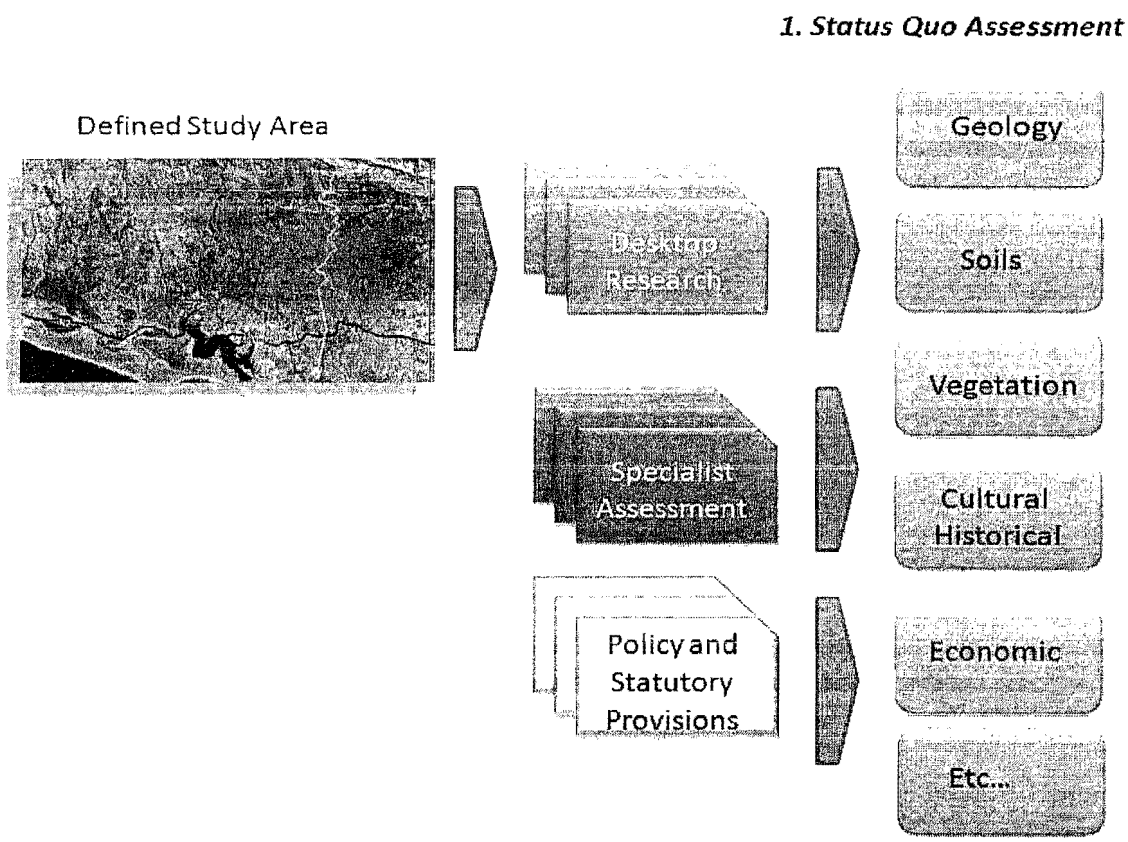

Figure 2: Status quo technical assessment

5.4.1 Determining the project boundary

On commencing the project, a clear delineation of the project boundary is required. When considering the boundary, it is important to have a clear understating of how the specific EMF will be applied and administered. A logical demarcation should be used such as:-

- An administrative boundary;
- Cadastral boundary;
- Water catchment boundary; or
- Logical ecological delineation (e.g. vegetation type, biome or eco-region).

5.4.2 Content of the Status Quo

In order to ensure that the end product is both practical and scientifically based, information should be translated into data categories (e.g. hydrology), which consists of data features (e.g. natural flood plain, flood dissipation areas, river course, sandbanks, wetlands etc.). Each of the features should then be described and its current status should be established.

An assessment of the status quo of the area should always form the point of departure for producing an EMF. The exact contents of the status quo section will depend on the specific requirements of the authorities and context of the area. The following is a broad list of typical categories and attributes that should be included in the EMF as required and aligned to the purposes of the EMF:

- Geology, including geological stability;
- Geohydrology, including water quality, water quantity and irrigation potential;
- Surface hydrology, including drainage systems, flow rates, water quality and ecological requirements;
- Topography, including landscapes and visual character;
- Soil, including erosion potential and agricultural potential;

- Vegetation, including important habitats, threatened species and conservation potential;
- Fauna, including threatened species and conservation potential;
- Current use of land depicting the actual uses that occur on land in detail;
- Infrastructure and engineering services, including water provision, sanitation, transportation elements, electricity, solid waste disposal and telecommunication;
- Current and potential sources of air pollution;
- Current and potential sources of water pollution;
- Current and potential sources of noise or other types of irritation;
- Land which is subject to mining activities;
- Cultural and historic features, including archaeological sites, old buildings, important structures and sites associated with current use or past events and religious structures and sites;
- Population characteristics, including spatial distribution, structure, income levels, age, gender, literacy and growth trends;
- Economic characteristics, including employment sectors, economic drivers and growth sectors;
- Current laws, policies, plans and programmes that are applicable in the EMF area;
- Other environmental management plans or frameworks that may exist in respect of the area covered by the EMF being conducted; and
- Existing reports undertaken in terms of other legislation.

The status quo assessment should also address the interrelationships between the different attributes as well as the importance of the attributes in the context of the area. Issues and trends in respect of attributes should also be described, where appropriate.

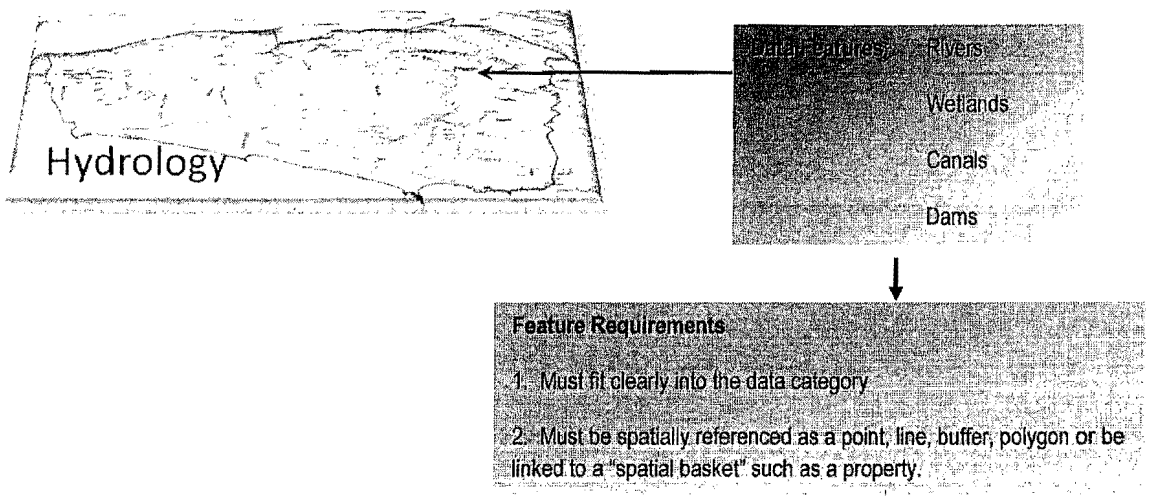

Figure 3: Status Quo Data Structure

5.5 Desired State of the Environment

The analysis and evaluation of the baseline information, issues raised throughout the Public Participation Process, and authority requirements identifies and provides basis for the establishment of environmental priorities. These priorities are expressed through a 'Desired State of the Environment' statement which underpins the management guidelines and strategically the objectives of the EMF. Further, these objectives will establish principles on how the environmental resource should be managed to improve its environmental status. Priorities will be typically focused around critical environmental conflict points and could include:

- Conservation priorities;
- Protection of cultural and heritage landscapes;
- Natural resource protection;
- Land use planning conflict priorities;
- Waste management;
- Ambient air quality;
- Energy use;
- River health;
- Groundwater use and quality;

- Access to the open space system; and
- Rehabilitation or reuse of derelict land.

5.6 Identifying development pressures and trends

In order to establish what can realistically be achieved in the area in bridging the gap between the status quo and the desired state, it is also necessary to understand the development pressures, trends and needs in the area. Development trends, pressures and needs should be identified. These trends and pressures may come from a range of issues such as:

- Population growth;
- Population distribution;
- Population structure (age and gender);
- Income distribution;
- Education and literacy;
- Employment sectors;
- Economic drivers;
- Natural resource exploitation;
- Growth sectors;
- Development policies and plans.

5.7 Environmental Sensitivity Analysis

The environmental sensitivity analysis is the product of the integration of the various baseline information layers as defined in the project status quo assessment, after assessing it in terms of current policies and discussions with key stakeholders. The purpose of the environmental sensitivity analysis is to provide an overarching view of the inherent environmental sensitivity of the study area. Functionally the sensitivity analysis does not contribute substantially to any further downstream development in the EMF, and it is primarily used as a 'control' to test the applicability and accuracy of the identified environmental constraints and opportunities.

The sensitivity analysis is determined by allocating a weighting, or value to each of the environmental features in the status quo spatial layers. The subjectivity regarding the allocation of weighting is largely removed through the use of acceptable scientific knowledge. An environmental sensitivity evaluation, represented spatially in the EMF, comprises the integration of all the data categories and features. The specific feature weightings determine the level of environmental sensitivity, which ranges as low, medium, high and very high.

In this stage of the EMF baseline information is transformed into secondary information that attaches value to different features. The following figure illustrates the data integration process of baseline data to depict overall environmental sensitivity.

The sensitivity analysis can be additionally used as a platform for the identification of open space systems, and for spatial support in conservation planning initiatives.

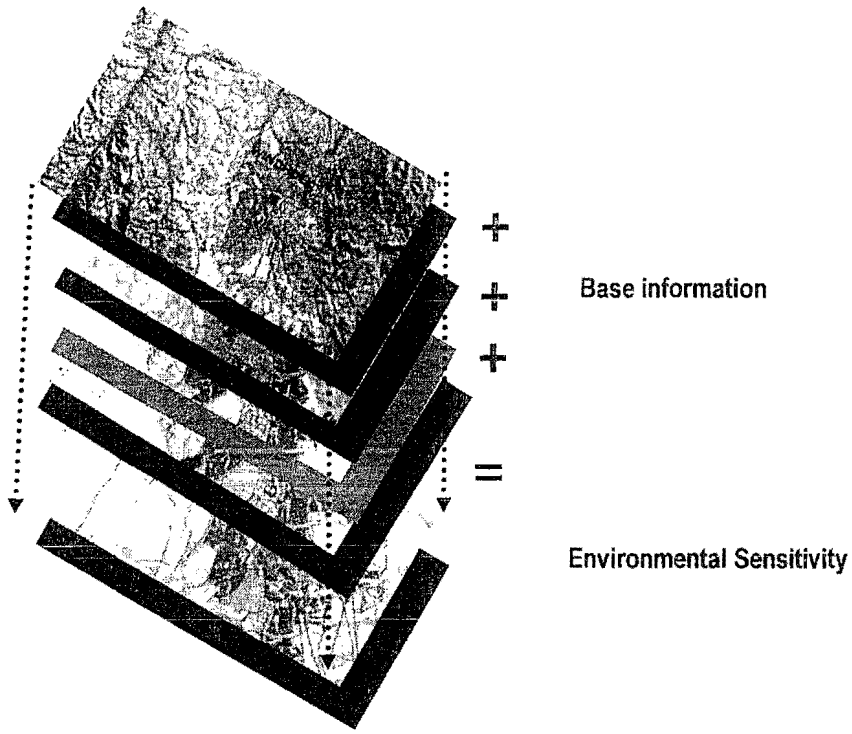

Figure 4: Environmental Sensitivity Evaluation

Feature Status and Weighting

The status of each of the features is determined through legislative requirements, accepted norms and quality standards, as well as through technical and specialist input. The status of a feature will determine the type and extent of the management intervention required. Feature status can be improved through the establishment of stringent management requirements (parameters/responses). The weighting of each individual feature where possible should illustrate the features inherent sensitivity to development pressure or resilience to change. In order to retain a certain degree of objectivity the band or spectrum of weighting is kept narrow.

Table 1: Example of a typical Feature Value Criteria

Weighting	Description	Sensitivity
-1	The inherent feature status and sensitivity is already significantly degraded. Any significant environmental development change will not influence the current status.	Low / poor
0	The inherent feature status and sensitivity will not be influenced by any significant environmental – development change.	Undetermined
+1	Environmental – development change will influence the current status of the feature, either negatively or positively.	High
+2	Environmental – development change will significantly influence the feature, either negatively or positively.	Very high

5.8 Identifying Constraint Zones -Establishing opportunities and constraints

These can also be considered environmental sensitivity zones, or land use opportunity and constraint zones. Environmental constraint zones are a spatial representation of the critical environmental aspects identified in the foregoing processes. Further, environmental constraint zones determine the fitness and environmental suitability of a specific area for certain types of development based upon the baseline inventories and the values and inherent characteristics of land uses of the area, as well as the sensitivity assessment.

Opportunities may include aspects such as:

- Areas that can accommodate specific development growth demands with minimal environmental impact;
- Sensitive environmental attributes that can be conserved within the current policy and budgetary capacities of the different spheres of government; and
- Limits on pollution and waste generation that can be achieved without significant cost;

Examples of constraints include:

- Population growth trends that exceed the ability of the area to accommodate the anticipated additional housing demand in areas that are not environmentally sensitive;
- The location of good building sand in an area with a habitat for rare and endangered species; and
- Low ambient air quality in an area where there is a high demand for industrial growth.

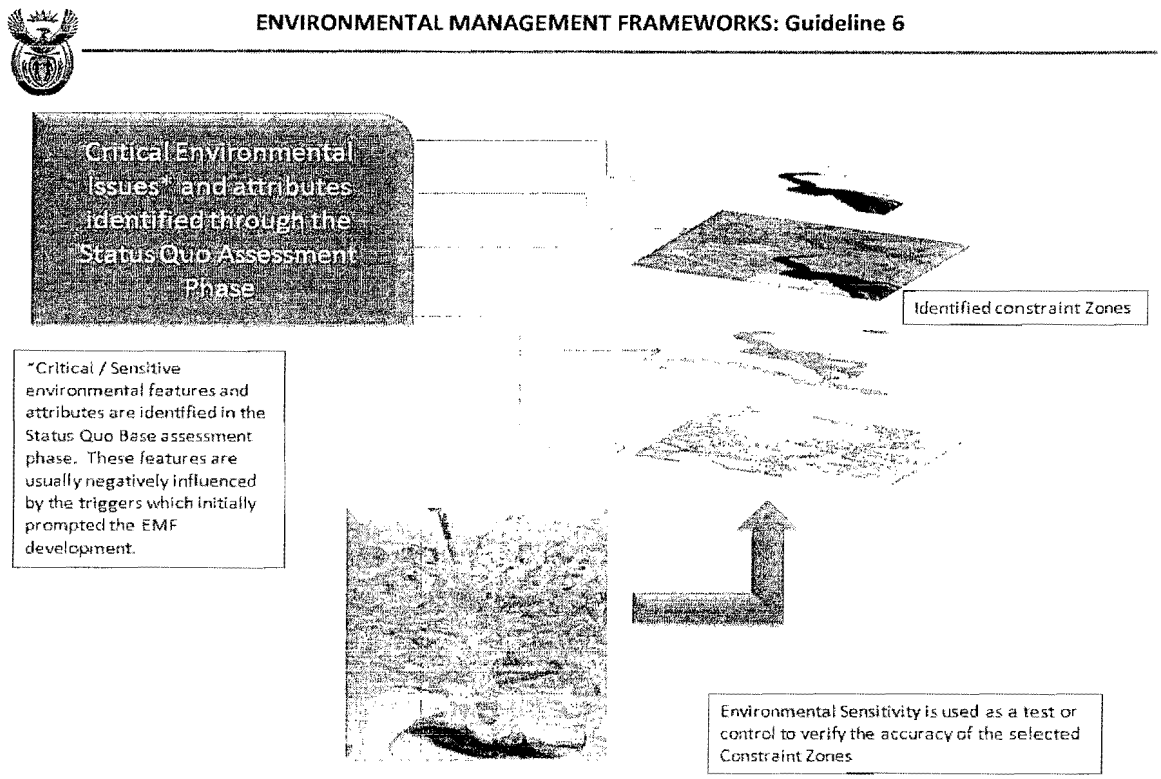

Figure 5: Determining Environmental Constraint Zones

5.9 Management Zones

The development of the management zones are informed by the integration of a selection of the critical environmental constraint attributes. The management zones illustrate the interrelationship between the various attributes, specifically focusing on the peculiarities which determine their sensitivity.

These areas are structured around a derived function of the environmental constraint zones consolidating and integrating specific categories which reflect a homogeneous composition, and which have been identified through the EMF development process as being significantly sensitive to development pressure to warrant specific management intervention.

Usually, the sensitive environmental components which have been identified upfront necessitating the development of the EMF will feature quite prominently in the development of the management zones.

The features comprising the management zones are then specifically linked to management parameters and guidelines in the management guidelines document.

The purpose of management zones is to focus attention of the relevant authority on the critically important areas and to facilitate effective decision making in them. Management zones should inform decisions for proposed activities in less sensitive areas. Management zones will similarly 'red flag' critical environmental areas and ensure that any development applications lodged in these areas adhere to the management criteria (management guidelines).

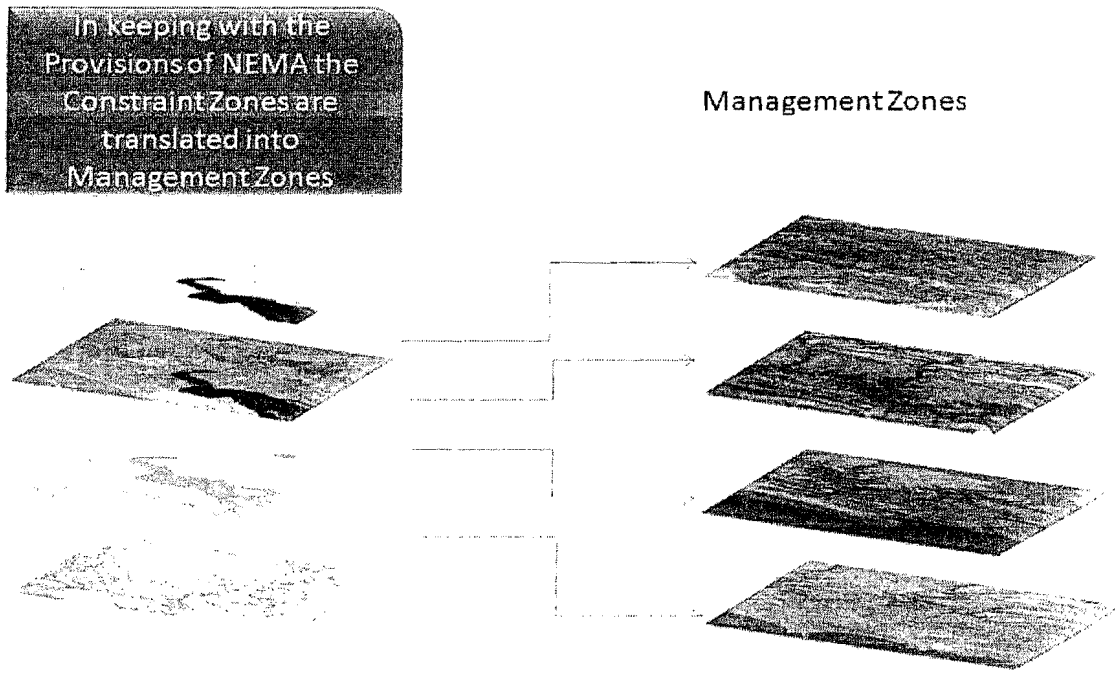

Figure 6: Determining Management Zones

5.10 Management Guidelines

The functionality of the EMF is largely dependent on the implementability of the recommendations made in the management guidelines. After the assessment of inputs from the public participation process and information gathered from the various assessments; management provisions and guidelines can be developed. These provisions and guidelines should be informed by the opportunities and constraints which have been identified and should aim to:

- Integrate the outcomes of the desired state of the environment,
- Clearly define and address any management objectives which have been established and identified through the development of the desired state of environment,
- Maximise the opportunities to the benefit of both the environment and development in the area;
- Make clear recommendations regarding the way that development should occur in a specific geographical area;
- Provide guidance as to the environmental thresholds to development in a geographical area;
- Identify development that would not be appropriate in sensitive areas; and
- Manage the constraints of the area through interventions that seek to protect the environment against significant impacts while being sensitive to the social needs and aspirations in the area.

The purpose of the management guidelines are to link management requirements to each of the attributes comprising the geographical areas. The guidelines are not prescriptive in terms of land use and do not indicate which land uses must occur in which areas. Rather, the guidelines indicate specific minimum environmental requirements and performance criteria, through management parameters, which have to be met satisfactorily before approval of a development application should be considered.

Similarly the management guidelines indicates the level of assessment expected and required in the specified geographical area. The management guidelines should also be used as the environmental input for the LDO and IDP processes. The management guideline introduces a risk adverse approach to development planning decision-making. It fulfils the requirements of the environmental management mandates of the specific authorising authorities, while it does not impose land uses on the planning mandate of the local authorities. They in effect establish performance standards or criteria which must be met before a certain use will be permitted. These criteria usually involve a combination of economic, environmental and social factors.

5.10.1 Content of the Management Guidelines

The content of the management guidelines should be structured from existing policies, statutory provisions and guidelines. This will ensure that the management guidelines are defensible and based

CONTINUES ON PAGE 162—PART 2

upon existing, recognised and accepted management information. Environmental priorities established in the desired state of the environment provide the framework for the management objectives of this document. Management guidelines should be structured and contain the following:

- Environmental management priorities in the area;
- Existing statutory and regulatory provisions (e.g. Acts and regulations);
- Management guidelines sourced from other approved plans and programmes (e.g. PSDFs and IDPs that have already been put through public review and a consultative process, and which have subsequently been adopted by the relevant provincial and local authorities);
- Accepted ordinances and local authority provisions; and
- Existing provincial policies and guidelines.

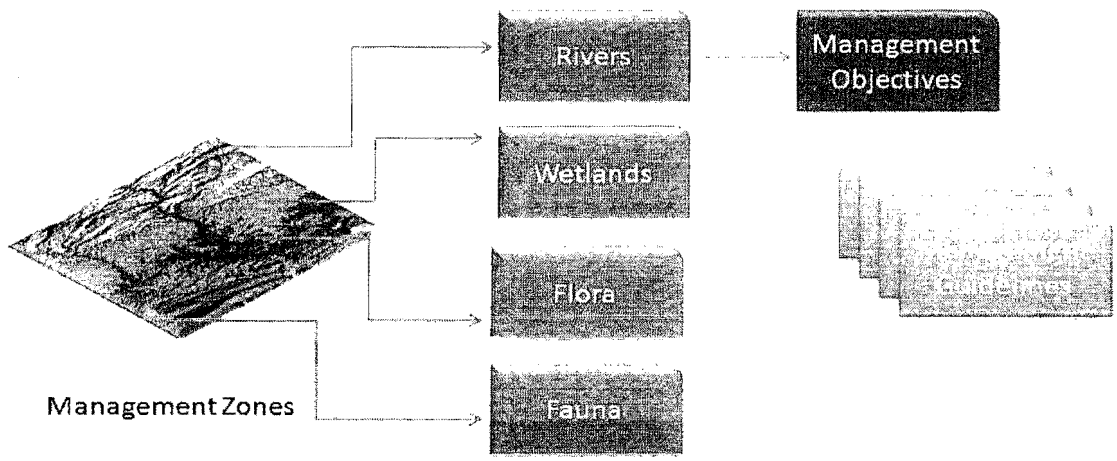

Figure 7: Determining Management Guidelines

5.11 List of Activities

NEMA makes provision for the listing or identification of activities in terms of the EIA regulations. If listed in terms of the EIA regulations an environmental authorisation will be required, while certain activities may be excluded from the requirement of an environmental authorisation. The decision whether an activity should be included or excluded from the list requiring environmental authorisation

could be based upon an EMF. The inclusion and exclusion process will require its own legal process [for the inclusion or exclusion of activities could be based upon the results of an EMF.]

The sensitivity of the environment depicted through the management zones, together with the opportunities and constraints illustrated in the management guidelines will provide an indication of which listed activities could be excluded from a certain area (excluded from obtaining an environmental authorisation); and any additional activities which may have a substantially negative influence on the environment which should be included.

- The kinds of activities that are undesirable in the area or part of the area; and
- Make recommendations with regards to the type of assessment that would be required for additionally identified activities.

5.12 The Structure and Content of the EMF Report

In terms of the regulations, an EMF must contain the following:

- An identification of the area – whether by map or otherwise;
- A specification of the environmental attributes in the area, including sensitivity, extent, interrelationship and significance of the attributes;
- An identification of any parts in the area to which the attributes relate to;
- An indication of the conservation status of, and environmental management priorities, in the area;
- A description of the environmental priorities in the area;
- Information on activities that would have a significant impact on those attributes and those that would not;
- Information on activities that would be undesirable in the area or specific parts of the area; and
- Any matters specified by the Minister or MEC.

It is recommended that for completeness, the EMF report should also contain the following (depending on the nature and context of the EMF):

- The terms of reference for the EMF;
- A description of how information was captured;
- A description of the public participation process including issues raised by I&APs;
- The desired state of the environment;
- Development pressures and trends;
- Opportunities and constraints; and
- Management proposals and guidelines;

5.13 The EMF in GIS Format

Most EMFs are generated for specific geographical areas and most of the information contained in EMFs can also be linked to the attributes in a spatial manner. GIS seems to be the most widely and easily used tool for spatial integration of data in the development of EMFs, enabling the GIS system to be queried to provide quick answers to relatively complex scenarios.

An integrated GIS can often be developed as the main structural element in the production of an EMF around which the various inputs and outputs are centred. The GIS could also ensure that the results of the EMF continue to be useful provided that it is updated periodically in order to deliver an ongoing up to date input into the environmental management of the area.

The GIS can also be made available on a user-friendly GIS-viewer. The GIS-viewer can play an important role in the use and application of the EMF as it integrates two important components of the EMF, namely an integrated spatial data set and a database containing the description of spatial entities. Most importantly, it can also integrate the management proposals and guidelines that are applicable to specific areas.

The GIS-viewer could also contain a report function, which takes an image of a selected area from the GIS map, together with all the attribute data relating to that specific point, and prints it to a structured report that can be taken away and used for inclusion in other documents.

5.14 Keeping the EMF current

It is imperative that the EMF remains current to ensure its applicability over time. Monitoring of the implementation of the EMF over a reasonable review period should take place to ensure that environmental improvement has indeed taken place. The EMFs should be reviewed together with the respective IDPs and SDFs for the area. Only relevant data needs to be updated during the review such as land use, population, and other dynamic data sets prone to short to medium term change. Static data layers remain, unless more appropriate and detailed information has been developed during the update period.

6. PUBLIC PARTICIPATION PROCESS

6.1 Process required by the regulations

The regulations require that the following processes be conducted as a minimum as prescribed by sub-regulation 2 (c) of the EMF regulations:-

- Make the draft EMF available for public comment,
- Inviting potential I&APs by means of advertisements in newspapers, and any other appropriate way,
- Take appropriate steps to ensure that reasonable means have been implemented to engage with I&APs which are illiterate, disabled and have any other disabilities,
- Consider representations and comments,
- To review the draft to include relevant comments,
- Prepare a comments and responses report.

The EMF regulations currently do not provide more detail because of the differences in context and size that may occur from one area to another in developing an EMF. The requirements of the regulations should therefore be regarded as minimum requirements and, in most instances, it will be necessary or preferable to conduct a broader public participation process that takes place during the entire development of the EMF. The remainder of this section provides detail on the undertaking of a broader public participation process and should be applied as a guideline.

6.2 Phases in public participation

The emphasis of public participation in the development of an EMF is to disseminate information about the EMF and its development to the broader public and to elicit comments and suggestions, and to obtain input on existing practises and baseline situations and the determination of what the desired state of the environment should be in the area under consideration. The participation process will therefore usually have at least three goals, namely:

- To inform interested and affected parties (I&APs) of the EMF process and its objectives;
- To provide an opportunity for inputs from I&APs; and
- To give feedback to I&APs with the opportunity for them to respond.

To achieve the end results of the public participation process it is normally conducted in phases. The phases relate to input required in the process and timing with regards to the significant project development milestones. Each of the proposed phases is discussed below.

6.2.1 Phase 1: Preparation

Phase 1 of the public participation entails:

- An initial meeting with the regulatory authorities that have jurisdiction in the area,
- The preliminary compilation of a database of potential I&APs, and
- The preparation of documentation that are necessary for the public participation process, which include -
    - A background information document (BID);
    - Project advertisements to be published in local and regional newspapers (as required by the geographical extent of the EMF. EMFs of national importance should be advertised in a nationally distributed newspaper); and
    - Invitations to attend the initial open day and public meeting, as well as agendas for the meetings.

The aim of a BID is to provide accessible background information on the proposed EMF approach and process. The BID is distributed to the I&APs listed on the database. (The most appropriate language or languages to be used in the BID should be determined by the languages spoken in the area).

To allow the involvement of I&APs which have not been identified through the meeting with the regulatory authorities in the early stages of the process, newspaper advertisements should be placed which inform the public of the development of the EMF, indicate how the public can become involved in the process and notify the public of the details of the open days and public meetings.

The invitations to attend the open day and public meeting, as well as the agendas should be communicated to the public and I&APs, and be prepared in advance to ensure input from all members of the project team regarding the information to be communicated to the public.

6.2.2 Phase 2: Stakeholder consultation

This phase of the participation process focuses on interaction with the I&APs. To ensure that I&APs are afforded sufficient opportunity for engagement in the EMF development process it is recommended that feedback through these suggested phases are conducted at the following project milestones:

- On culmination of the status quo assessment;
- Completion of the constraint zones and environmental sensitivity evaluation; and
- Upon finalisation of the management zones and management guidelines.

The extent of consultation will greatly depend on the extent and sensitivity of the specific EMF. Large scale regional EMFs of a strategic nature will require extensive consultation at various levels and community profiles. The approach to consultation should be flexible and the level of literacy should similarly influence the approach in engagement. The various approaches to consultation could include:

- Presentations;
- Open days with static displays;
- Focused group and subject specialist meetings; and

- Interviews with local leaders and councils.

Public open days and public meetings should be advertised in the most widely read local and community newspapers, by means of flyers and I&APs on the database should receive personal invitations. The aim of public open days are to provide I&APs with more information about the proposed EMF and to invite I&APs to provide inputs regarding their views on current practises and their desired state of the environment and development for the EMF area.

Feedback on the progress of the project should also be provided during the public meeting. The minutes of the meeting should be distributed to I&APs that attended the meeting.

In addition to the open days, a structured interview process can also be used to identify issues, viewpoints, concerns and attitudes held by the various stakeholder groupings in the area. Similarly they should reflect the aspirations of the various stakeholder groupings in the area. These surveys must be of sufficient scope to be statistically acceptable and should include a realistic reflection of the stakeholder groupings within the project area.

I&APs should be engaged on an ongoing basis to ensure that they are informed of the project progress and that they are able to communicate issues and concerns to the project team. The issues, comments and concerns raised during phase 2 should be captured in a public participation report which should form part of the draft EMF. The public participation report should consist of:

- A description of the strategy and process followed;
- A list of issues, comments and concerns raised during the public participation process;
- A list of the registered I&APs;
- Conclusions and recommendations; and
- Minutes of meetings and written comments received during the public participation process (where applicable).

6.2.3 Phases 3: Public review and reporting phase

Phase 3 consists of the finalisation of the EMF development process, entailing the report and public participation finalisation. The EMF will be made available for review by the public and appropriate comments are to be integrated into the draft final report, which is then submitted to the competent

authority for approval and adoption. There are no set commenting timeframes, in general a 30 day review period should be provided for as standard.

The current approach to completed EMFs which meet national and provincial concurrence in terms of NEMA is to pursue gazetting. This will entail a further opportunity to comment on the EMF during the gazetting period.

The EMF report should include a section on the public participation process.

6.3 Access to the final document

The draft final EMF report should be available for public perusal in an accessible location and format. Usually the size and format of the full EMF document content is too large and expensive to provide multiple copies; and singular copies will have to be placed strategically for inspection. Full electronic versions should be made available on the web interphase of the competent authority. Summary documents could be available for more accessibility.

7. INSTITUTIONAL ARRANGEMENTS

The critical success of any EMF lies in its application. The institutional structure to ensure that the EMF can, and will be applied in practice depends largely on the by-in and support of all tiers of government, especially the competent authorities mandated with managing the environment respectively. NEMA provides the framework for co-operative governance between national and provincial authorities in the development and adoption of the EMF through concurrence.

7.1 Concurrence

Section 24 (2), (3) and (5) of NEMA, and Government Notice R.385 Section 70 (1) stipulate that the Minister, and every MEC with the concurrence of the Minister may identify geographical areas based upon environmental attributes in which specified activities may not commence without the approval and authorisation of the competent authority, and similarly activities which may be excluded from authorisation by the competent authority.

Subsection 3 further stipulates that the Minister, and every MEC with the concurrence of the Minister, may compile information and maps that specify the attributes of the environment in particular geographical areas, including sensitivity, extent, interrelationship and significance of such attributes which must be taken into account by every competent authority.

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The further implication for the EMFs are that the Minister, and every MEC with the concurrence of the Minister, may make regulations which are consistent with subsection 4 of NEMA, in laying down the specific procedure to be followed in the compilation of the EMFs. The environmental management framework regulation of 2010 will fulfil this function.

In issues of national importance the Minister may solely initiate an EMF, however in issues of a provincial and local nature there should be concurrence between the MEC and the Minister. This concurrence further strengthens the EMF adoption process in terms of adopting the EMFs as provided for by the EMF regulations of 2010 ensuring support for the EMF at all tiers of government.

7.2 Co-operative Governance

It is imperative that the EMF be developed in a spirit of co-operative governance between all tiers of government, as well as different government departments. Similarly it is important to ensure that all the respective government role-players and decision makers who are directly affected by the implementation of the EMF are part of the development process and that it has been supported from the inception.

The following broad principles should be applied in ensuring co-operative governance:

- The various partners to the EMF must jointly be in agreement on the purpose of the EMF;
- The parties should not have conflicting mandates;

- The roles and responsibilities of the various spheres of government in the development and application process must be clearly established;
- Establish clear distinction between the roles and responsibilities of various levels of government;
- There should therefore be clear agreements between the different spheres of government;
- The agreement should define the desired state of the co-operative governance, roles and responsibilities in the application of the EMF;
- The EMF can provide the framework to highlight areas of, and achieve co-operative agreements;
- Establish network agreements between officials before escalating the agreements to higher levels of co-operation; and
- The practical agreements for implementation of the EMF needs and requires continuation after the formalization of the EMF.

7.3 Role and Responsibility of Government

Government should be the custodian of the completed EMF once it has been adopted and gazetted as it then becomes a statutory application.

8. ADOPTION AND CONSIDERATION

Regulation 5 makes provision for the EMF to be adopted and promulgated. Once adopted and promulgated (published in the Government Gazette) it becomes a statutory mechanism for the evaluation of development proposals through the environmental impact assessment process, as well as activities which may have a negative impact on the listed geographical area.

The intention is to ensure that development decision making is not hampered, and that informed decisions are made upfront in the development process, i.e. discouraging activities in sensitive areas that will have a negative affect on the environment.

8.1 Implementation strategy

The inclusion of a proposed implementation strategy for the implementation of the EMF can add significant value to the EMF. A proposed strategy should address the following:

- Linkages between planning and policy instruments and options for incorporating information contained in the EMF;
- Approaches to co-operative government; and
- Allocation of responsibilities between authorities to ensure desired outcomes.

9. CONCLUSION

EMFs are strategic level decision support instruments that assist environmental impact assessment in the following ways:

- It provides detailed environmental information to all stakeholders;
- It indicates environmental management priorities and targets;
- It highlights opportunities and constraints;
- It helps to facilitate cooperative government;
- It establishes a proactive framework within which development can occur; and
- It provides a platform for informed decision making, integrating environment, and specifically environmental sensitivity into development planning and decision making.

10. REFERENCES

Department of Environmental Affairs. 1992. *Checklist of Environmental Characteristics,* Integrated Environmental Management Guideline Series, Guideline Document 5. Department of Environmental Affairs. Pretoria.

Department of Environmental Affairs. 2010. *Environmental Management Framework Regulations, 2010.* [draft]

DEAT. 2005. *Guideline 6: Environmental Management Frameworks in support of the EIA Regulations, 2005, Integrated Environmental Management Guideline Series.* Department of Environmental Affairs and Tourism. Pretoria. (unpublished)

McHarg, I. L. 1969. Design with Nature. John Wiley & Sons. New York.

Republic of South Africa. 2006. *Environmental Impact Assessment Regulations, 2006.* Regulation Gazette No. 8453. Government Notice. R. 385. Pretoria.

Republic of South Africa. 2008. *National Environmental Management Act, 2008. Act No.62 of 2008.* Government Gazette Vol.523, No. 31789. Cape Town.

Van Riet, W, et al. 1997. Environmental Potential Atlas for South Africa. J.L. van Schaik. Pretoria.

APPENDICES

APPENDIX 1: FREQUENTLY ASKED QUESTIONS

1. **What are the differences between SEA and EMF?**

2. **Will the EMFs take spatial planning processes into consideration and how will the EMFs be aligned with spatial planning processes?**

3. **At what scale must the EMFs be compiled?**

4. **What level of spatial accuracy must be considered?**